MetroWest

Portishead Branch Line (MetroWest Phase 1)

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CHAPTER 16

Transport, Access and Non-Motorised Users

16.1 Introduction

16.1.1 The Portishead Branch Line (MetroWest Phase 1) Development Consent Order Scheme ("the DCO Scheme") has the potential to give rise to a range of localised transport impacts. This chapter:

- describes the relevant policy framework that underpins the undertaking of the assessment;
- describes the methodology used for the identification and assessment of significant effects on transport, access and non-motorised users in this Environmental Statement ("ES");
- describes the baseline for transport, access and non-motorised users having regard to existing information;
- describes the measures that have been adopted as part of the DCO Scheme;
- identifies and assesses the likely significant effects that could result from the DCO Scheme during the construction and operation phases;
- considers mitigation of significant effects and assesses those residual effects that will result;
- considers the cumulative effects of other developments in combination with the DCO Scheme on transport, access and non-motorised users;
- identifies the limitations encountered in compiling the ES; and
- provides a summary of the residual effects for the mitigated DCO Scheme.

16.1.2 This chapter considers the potential transport impacts of the DCO Scheme in accordance with the methodology that has been used in the Transport Assessment ("TA") of the DCO Scheme (contained in Appendix 16.1 to the ES). The TA follows the guidance outlined in the National Policy Statement for National Networks ("NPSNN"), the National Planning Policy Framework ("NPPF") and the Transport Evidence Bases in Plan Making and Decision Taking (Department of Communities and Local Government, 2015). In addition, it has been informed by the former Department for Transport ("DfT") Guidance for Transport Assessment ("GTA") which was formally archived in October 2014.

16.1.3 The scoping of the transport impacts has been informed by discussions with the relevant highways authorities, other stakeholders and the responses from the public consultation. This included the extent of the study area and specific aspects and concerns that required particular focus.

16.1.4 This chapter should be read in conjunction with the TA in ES Appendix 16.1 (DCO Document Reference 6.25), ES Chapter 4 Description of the

Proposed Works (DCO Document Reference 6.7) and ES Chapter 6 Planning Framework (DCO Document Reference 6.9).

16.1.5 It should be noted that much of the transport assessment reported in the Preliminary Environmental Information Report published for the statutory consultation in autumn 2017 was based on the assumption that the initial service to Portishead would be two trains per hour. The rail service to be delivered by the DCO Scheme is one train per hour, and this is reflected in this chapter and supporting TA. Though NSDC is also considering the potential to run an additional service at peak times (referred to as an 'hourly plus service'), providing an approximate 45-minute frequency in the peak periods.

Strategic transport impacts

16.1.6 The DCO Scheme and the rest of the MetroWest Phase 1 project comprises the delivery of infrastructure and passenger train operations to introduce new/enhanced rail passenger services across Bristol. It is a public infrastructure scheme promoted by the local authorities in the region, along with Network Rail Infrastructure Limited ("Network Rail"). As such it brings the potentially significant benefits of new and enhanced rail access across a wide area.

16.1.7 Hence, while the remainder of this chapter focuses on the immediate impacts of the DCO Scheme, various strategic aspects of change associated with the DCO scheme are also anticipated. These include:

- Supporting economic growth and job creation;
- Supporting delivery of new housing;
- Strategic and local road network performance;
- Accessibility; and
- Environment and social well-being.

16.1.8 Details of the effects can be found in the TA (Appendix 16.1 of the ES, DCO Document Reference 6.25) at Section 6 (Strategic operational impact assessment), including information about passenger rail demand in Section 6.3 and strategic highway and bus impacts in Section 6.4.

16.2 Legislation and Policy Context

National Policy

16.2.1 The Planning Act 2008, Section 104(3) requires the Secretary of State to determine the application for the DCO Scheme in accordance with the NPSNN, unless specified factors provide otherwise. The NPSNN advises on traffic, transport, access and other users of the highway network in the context of Nationally Significant Infrastructure Projects ("NSIP") on road and rail networks. The NPSNN places focus on the need to develop and improve the resilience of the strategic highway network. The NPSNN also states the rail network should provide a safe and reliable route to work.

16.2.2 Table 16.1 identifies those policies of direct relevance to this assessment and the location where they are considered in this ES. These policies are also outlined in Section 2 of the TA (DCO Document Reference 6.25).

Table 16.1: Summary of relevant NPSNN advice regarding transport

Summary of NPSNN provision	Consideration within the ES
Paragraph 2.2 outlines the need to address congestion and provide safe, expeditious resilient, networks that can support social and economic activity, capable of stimulating and supporting economic growth.	Section 16.6 considers the effect of the DCO Scheme after mitigation on congestion and safety.
Paragraph 2.9 states the need to enhance accessibility for non-motorised users.	Section 16.5 outlines the specific non-motorised user measures that are proposed and section 16.6 details the impacts of these measures on improving accessibility.
Paragraph 2.29 outlines the need for schemes to be drivers of economic growth and social development.	Chapter 14 provides details of the socio-economic impacts (DCO Document Reference 6.17).
Paragraph 2.35 focuses on reducing pollution and congestion.	Section 16.6 considers the effect of the DCO Scheme after mitigation on congestion.
Paragraph 5.201 to 5.218 outlines the impacts on transport networks.	Section 16.6 provides detail of the impacts on both the strategic and local transport networks.

National Planning Policy Framework

16.2.3 The National Planning Policy Framework ("NPPF") (July 2018) does not contain specific policies for NSIPs. NPPF paragraph 3 notes that applications for NSIPs are to be determined in accordance with the decision-making framework set out in the Planning Act 2008 and relevant National Policy Statement "*as well as any other matters that are considered both important and relevant (which may include the National Planning Policy Framework)*".

16.2.4 The NPPF sets out the planning policies to achieve sustainable development and supporting infrastructure and therefore provides a useful framework when assessing transport impacts from the DCO Scheme. It aims to integrate planning and transport by noting that transport policies can help facilitate sustainable development as well as contribute to wider sustainability, health and economic objectives. Sustainable transport also improves accessibility to consumer and labour markets for businesses and access to jobs for the labour force.

Network Rail Long Term Planning Process

16.2.5 The Network Rail Long Term Planning Process (“LTPP”) focusses on the strategic planning of the rail network. The process is designed to be flexible so as to take into account the different requirements and demands on the network from various stakeholders. The LTPP includes the preparation of market studies, regional and cross boundaries and route strategies – of which the Great Western Route Utilisation Strategy (“RUS”) is one.

16.2.6 The existing RUS seeks to establish the strategic direction of the railway from a systematic analysis of the future requirements of the network. The RUS seeks to balance the capacity, passenger and freight demand, operational performance and cost whilst addressing the requirements of funders and stakeholders. The current iteration of the RUS focuses on the 10-year period to 2019 but also considers the implications of the growth in demand over a 30-year period.

16.2.7 The RUS identifies a number of issues with the rail network within the 'West of England' area comprising Bristol, North Somerset, Bath and North East Somerset, and South Gloucestershire. These include:

- Overcrowding on local services into Bristol Temple Meads particularly during peak periods (section 3.6);
- Bottle necks on the Filton Bank between Dr Days junction (east of Bristol Temple Meads) and Filton Abbey Wood (section 3.5);
- Track and signalling constraints particularly at junctions and crossovers at Bristol East, St Anne's and towards Parson Street (section 3.9); and
- Limited standard pattern timetable services into Bristol including the Severn Beach Line (section 3.4).

16.2.8 In 2015, Sir Peter Hendy conducted a review on Network Rail's Investment Programme with the aim of determining what can be delivered in an affordable and timely way. Subsequently, electrification of the Great Western Main Line has been delayed, and its scope reduced. The DCO Scheme is not specifically dependent on the Great Western Main Line electrification being complete in the Bristol area. However, there may be timetable dependencies with the delivery of Bristol East junction enhanced renewal. If the programme for this scheme changes, train timetables in the area, including those for MetroWest Phase 1, may need to be revisited.

Regional Strategies and Plans

Emerging Joint Spatial Plan

16.2.9 North Somerset District Council ("NSDC"), Bristol City Council ("BCC"), Bath and North East Somerset Council ("B&NES") and South Gloucestershire Council ("SGC") are jointly producing the West of England Joint Spatial Plan ("JSP"), which will provide a strategic planning framework for the West of England. It will be used to inform local plan reviews and set out objectives for the overall quantum of housing and jobs to be delivered within the West of England, including their distribution across the sub-region, the overall spatial strategy, strategic priorities, and strategic infrastructure necessary to support the deliver the strategy.

16.2.10 The JSP is accompanied by the Joint Transport Study ("JTS"), which establishes a set of integrated proposals for future transport investment to address existing deficiencies as well as the future impact of development supported by the JSP. The Joint Transport Study provided people with an opportunity to voice their opinion on how transport should be provided in the West of England over the next 20 years. One of the concepts for discussion and consultation was to undertake further improvements to the MetroWest rail concept which could improve the Henbury line (part of MetroWest Phase

2), new rail line re-openings, and provide more capacity between Bristol and Bath and to South Wales.

West of England LEP Strategic Economic Plan 2015-2030

16.2.11 The West of England LEP Strategic Economic Plan ("SEP") aims to facilitate the creation of more than 25,000 jobs and develop an economy worth around £25bn per year (which also contributes some £10bn to the Treasury annually). The Local Enterprise Partnership ("LEP") vision is to encourage sustainable economic growth and the creation of substantial numbers of new private sector jobs by:

- Supporting growth of key sectors;
- Driving innovation and creativity and the development of new technologies, products and services;
- Skilling the workforce to meet needs of our businesses now and in the future. Retaining existing talent, raising aspirations and marketing talent to inward investors;
- Assisting business start-up and growth; and
- Making the West of England highly attractive to inward investors and existing companies by securing improved transport, environmental and broadband infrastructure that business needs; providing access to a range of employment land and premises; facilitate new housing and community structure; maintaining an outstanding physical environment and high quality of life to retain and attract highly skilled workers and graduates.

16.2.12 The SEP positions the West of England as 'the city region of choice for a sustainable future', based on the region's legacy of innovation, world class university and research facilities, strong visitor economy and high quality of life. This positioning is supported by a focus on five priority sectors: creative and digital media, low carbon, high tech industries, advanced engineering and aerospace and professional services. The SEP highlights that expansion of these sectors will be driven by a number of 'levers of growth', including investment and promotion and places and infrastructure. In particular, infrastructure is presented as a key enabler of growth in the region, with MetroWest rail improvements Phase 1 and Phase 2 emphasised as key cross-boundary infrastructure interventions in the SEP.

16.2.13 The SEP makes reference to the contribution to the region's economy and jobs as a result of MetroWest Phase 1. These economic outputs will be achieved by increasing the connectivity between Temple Quarter Enterprise Zone ("TQEZ") and the West of England's various Enterprise Areas, meaning major employment sites are brought closer to the skilled workforce residing in the region.

16.2.14 The SEP was submitted to Government on the 31 March 2014, alongside plans from England's other 38 LEPs for a share of the annual investment funds.

Joint Local Transport Plan 3, 2011 to 2026 (March 2011)

16.2.15 This plan was agreed in 2010 by B&NES, BCC, NSDC and SGC.

16.2.16 The plan outlines the West of England as one of the fastest growing economies in the UK and a critical hub for the South-West's economy. It also highlights major transport improvements as a key priority for businesses. The plan aims to synchronise transport investment with major development and regeneration areas, such as Bristol's TQEZ.

16.2.17 The plan indicates that residents in North Somerset would be beneficiaries of any investment in transport infrastructure. Currently, residents in the district have the worst accessibility to major employment sites of any residents across the West of England. Only 21% of residents can access major employment sites by public transport within 20 minutes, compared to a regional average of 31%. At the same time, only 55% of residents have access within 40 minutes, compared to 73% for the West of England. MetroWest Phase 1 will provide both a new link and alternative mode to and from the centre of Bristol with improved connections to North Bristol, Avonmouth and Bath.

16.2.18 The key strategy of the plan is to support economic growth by providing an affordable, low carbon, accessible, integrated, healthy, safe and reliable transport network. Provision of reliable public transport infrastructure is considered to be a vital mechanism for achieving this strategy. In particular, the plan acknowledges a range of major transport schemes that were prioritised through the DfT's Regional Funding Allocation. These major schemes include significant investment in rail infrastructure such as MetroWest Phase 1. The scheme aims to reinstate rail connections between Portishead and Bristol, to provide enhanced accessibility.

West of England Joint Local Transport Plan 4, 2019-2036

16.2.19 The Draft Joint Local Transport Plan 4 was published in January 2019 for consultation between 6 February 2019 and 20 March 2019. MetroWest is confirmed as a committed project (Phase 1 and Phase 2).

Local Policy

16.2.20 The local planning framework comprises a number of key adopted documents which form the statutory development plan for each authority, against which proposals seeking planning permission are assessed. These policy documents comprise saved policies from extant Local Plans as well as new emerging policy documents.

16.2.21 MetroWest Phase 1 affects all four West of England Authorities while the DCO Scheme lies within the jurisdiction of two of the local planning authorities, NSDC and BCC. Table 16.2 summarises the local planning framework for NSDC and BCC regarding transport policies relevant to the DCO Scheme. A more detailed local policy review is available in the TA (Section 2).

Table 16.2: Summary of adopted policies relevant to the DCO Scheme

Policy No.	Title	Policy Summary
North Somerset Council Core Strategy (Adopted January 2017)		
CS1	Addressing climate change and carbon reduction	An overarching policy to encourage implementation of measures to reduce CO_2, through design, use of walking, public transport and reuse of land. Includes a provision to encourage local food production, including support for agricultural activity, in the context of reducing food miles and hence greenhouse gas emissions.
CS10	Transportation and movement	This policy references the reopening of the Portishead to Bristol line for passenger services, which is a priority objective, and outlines the criteria which transport schemes have to fulfil.
CS11	Parking	Requires parking to be provided to meet the needs of the expected users, delivering a balance between good urban design, highway safety, residential amenity and promoting town centre attractiveness and vitality.
CS20	Supporting a successful economy	This policy sets out the aspirations and requirements for future economic development, identifying the quantum of developable employment land available over the plan period along with the general distribution across North Somerset.
CS26	Supporting healthy living and provision of health care facilities	Sets out the requirements for Health Impact Assessments of developments and health impacts of developments to the wider community.
CS31	Clevedon, Nailsea and Portishead	Identifies the quantum of development to be delivered in these towns, with particular regard to the delivery of housing and employment land. The policy seeks to prioritise previously developed land and provides support to sustainable transport proposals, emphasising that the re-opening of a rail/rapid transit link from Portishead to Bristol is a particular priority.
CS32	Service Villages	Identifies the service villages and establishes what development will be supported in these locations. In particular, transport proposals are supported where they would increase accessibility by public transport, community transport, cycling and walking.

Table 16.2: Summary of adopted policies relevant to the DCO Scheme

Policy No.	Title	Policy Summary
Sites and Policies Plan Part 1 Development Management Policies (Adopted July 2016)		
DM21	Motorway Junctions	Provides protection to land at existing motorway junctions for potential future capacity improvements.
DM22	Existing and proposed railway lines	Provides protection to land at existing motorway junctions for potential future capacity improvements.
DM24	Safety, traffic and provision of infrastructure associated with development	Aims to ensure that new development will not prejudice highway safety or the operation of the highway network and that the impacts of new development are adequately mitigated. Also aims to ensure that road capacity and travel demand can be well managed and that opportunities are taken for integration with other modes.
DM25	Public rights of way, pedestrian and cycle access	Seeks to protect and enhance the existing public rights of way network and strategic cycle routes and ensure the provision of new and improved multi-user routes connecting with new developments.
DM28	Parking Standards	Aims to ensure that new development is provided with adequate parking, which meets the needs of intended users and that parking problems are not created or exacerbated in the surrounding area.
DM29	Car parks	Aims to ensure that new development is provided with adequate parking, which meets the needs of intended users and that parking problems are not created or exacerbated in the surrounding area.
DM49	Royal Portbury Dock	Safeguards land for port related uses associated with the Royal Portbury Dock at Court House Farm subject to proposals meeting the criteria set out in the policy. These include the requirement to demonstrate that development would not prejudice proposals for a station and associated parking facilities off Royal Portbury Dock Road associated the reopening of the Portishead to Bristol line.
Bristol Core Strategy, (Adopted June 2011)		
BCS1	South Bristol	Strategic policy which has the overall objective to regenerate south Bristol and focus development within the existing built up area connected by high quality transport networks.

Table 16.2: Summary of adopted policies relevant to the DCO Scheme

Policy No.	Title	Policy Summary
BCS2	Bristol City Centre	Establishes the quantum and type of development that will be supported within the city centre, including improvements to transport systems and connectivity, such as new public transport, pedestrian and cycling routes and transport hubs.
BCS10	Transport and Access Improvements	This policy confirms the support for the reopening of the Portishead to Bristol Rail Line.
Bristol Site Allocations and Development Management Policies (Adopted July 2014)		
DM23	Transport Development Management	This policy sets out the transport and traffic considerations that development proposals should address, including parking standards for non-residential development. It also seeks to ensure that new development is accessible by sustainable transport methods such as walking, cycling and public transport.
DM24	Transport Schemes	The policy details a number of infrastructure projects, including rapid transit schemes and rail, Park and Ride and highway improvements. These proposals reflect the schemes set out in the West of England Partnership's Joint Local Transport Plan 3 (2011-2026) and the purpose of the policy is to safeguard land required for the implementation of these schemes, which includes safeguarding railway sites and associated land for passenger and rail freight purposes.
DM25	Greenways	The policy sets out how development proposals should facilitate and, where possible, improve access to the network of 'Greenways' in and around Bristol.

16.2.22 The NSDC Core Strategy sets out the broad long-term vision, objectives and strategic planning policies for North Somerset up to 2026.

16.2.23 The Sites and Policies Part 1 document establishes a set of development management policies, which are generic policies that are used when assessing a range of planning applications and development proposals. Part 1 does not contain site allocations, which will be detailed in Part 2, but instead focuses on a broad range of development issues such as the Green Belt, major transport schemes, development in the countryside and retailing.

16.2.24 The Bristol Core Strategy sets the Spatial Vision and Strategic Objectives for Bristol up to 2026, identifying the future development intentions and strategy for the city and its neighbourhoods.

16.2.25 The Bristol Site Allocation and Development Management Policies ("SADMP") support the Core Strategy and outline the development management policies, site designations and allocations.

16.3 Methodology

Guidance and Best Practice

16.3.1 The approach to the identification and assessment of likely significant effects of the DCO Scheme on transport, access and non-motorised users is based on the following guidance and best practice.

Guidance

- Department for Communities and Local Government (2012). National Planning Policy Framework.
- Department for Communities and Local Government (2015). Transport Evidence Bases in Plan Making and Decision Making.
- Department for Transport (1997). Design Manual for Road and Bridges ("DMRB") Volume 12: Traffic Appraisal of Road Schemes – Chapter 6, Section 6.2.
- Institute of Environmental Management and Assessment ("IEMA") (1993). Guidelines for the Environmental Assessment of Road Traffic.
- North Somerset Council (2015). Highways Development Design Guidance ("HDDG").

Best Practice

- Department for Transport (2007). Guidance on Transport Assessments (Archived).
- Department for Transport (2005). DMRB Volume 2: Assessment and Preparation of Road Schemes – Section HD 42/05.

Consultations

16.3.2 As part of the preparation of the TA, a scoping document was prepared and submitted to the relevant highway authorities – Highways England, NSDC and BCC. The consultation responses, as presented in Table 16.3, confirmed the general approach of the TA but additional focus was needed in the following areas.

- Greater assessment of the construction impacts of the DCO Scheme on the highways network. Whilst dependent on the Construction Strategy, this should consider such matters as delivery routes.
- A wider assessment of the parking impacts particularly in Portishead – taking into account existing parking demand and behaviour at other equivalent railway stations.

- The need to look at the A369/St George's Hill at Easton-in-Gordano junction, M5 Junction 19 and a wider consideration of increased level crossings closures at Ashton Vale Road on Winterstoke Road.

16.3.3 The preparation of the TA has also been informed by the public consultations undertaken by NSDC. The first consultation on the Portishead Branch Line was undertaken between 22 June and 3 August 2015. Whilst some 95% of respondents supported the scheme overall, the main traffic or parking issues were:

- general concerns over the impact on parking, congestion and traffic surrounding the stations;
- adequacy of parking spaces at the stations;
- concerns relating to safety;
- impacts to existing cycle paths;
- concerns relating to pedestrian access; and
- impacts on local roads during construction works.

16.3.4 Further localised consultation work was carried out in 2016 in relation to:

- Pill station; and
- Ashton Vale Road area.

16.3.5 The management and control process used by Network Rail for delivering projects that enhance or renew the operational railway is called Governance for Railway Investment Projects ("GRIP"). The GRIP process provides assurance that a project can successfully progress to the next stage and requires the preparation of reports for each GRIP stage. Following the completion of the DCO Scheme's outline design including GRIP 3 (Option Selection) for two trains per hour in March 2017, along with an updated scheme capital cost estimate, the amount of works required for a half hourly hour service were considerably higher than estimates made at the feasibility design stage (GRIP 2). This made the half hourly scheme unviable at the present time.

16.3.6 As a result, the four West of England councils determined to take a staged approach to the delivery of the MetroWest Phase 1 project as follows.

- The proposals for the Severn Beach Line and Bath Spa to Bristol Line remain unchanged i.e. half hourly services and associated infrastructure.
- The proposals for the Portishead Branch Line are to be delivered in two stages:
  1. The initial stage is to deliver infrastructure to operate an hourly service; the potential to run an additional service at peak times is being considered (referred to as an 'hourly plus service'), providing an approximate 45-minute frequency in the peak periods, as it may be possible to operate this with the planned infrastructure.
  2. It is envisaged that a second stage may be promoted separately at some point after the delivery of the initial stage, to upgrade the infrastructure to operate a half hourly passenger train service. This second stage would require separate statutory processes, business

case and funding package and would not be progressed until after the delivery of the initial stage. There is currently no estimated date for the commencement of design of the second stage.

16.3.7 A summary of consultations undertaken to date is presented in Table 16.3. Further information on the consultation process is presented in ES Chapter 5 Approach to the Environmental Statement (DCO Document Reference 6.8). Responses to consultation exercises undertaken in 2015 and 2017 are available on the MetroWest project website at the following address http://travelwest.info/project/metrowest-phase-1 while the Consultation Report is provided in the DCO Document Reference 5.1.

Table 16.3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the ES

Organisation	Summary of Response	Consideration within ES
Scoping Opinion Responses (August 2015)		
Secretary of State	Para. 2.55 and 2.56. Detail all access points for the construction and operational phases and assess the impacts.	The access points are identified in ES Chapter 4 Description of the Proposed Works (DCO Document Reference 6.7) and are shown on Compounds, Haul Roads, and Access to Works Plan (DCO Document Reference 2.29). Associated impacts are described in the relevant technical chapter. Further details of Non-Motorised User ("NMU") access are contained in the TA (sections 3, 7, 8 & 9) at Appendix 16.1 of the ES, DCO Document Reference 6.25.
	Para. 3.92 and 3.93. The assessment of construction activities on transport, access and pedestrians needs to cover: construction of the stations and railway line, vegetation removal and other site clearance works, earthworks, construction of other elements of the Scheme, and traffic management activities including partial or full road closures.	Section 16.6 considers the transport effects at the construction stage. This includes access and non-motorised users.

Table 16.3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the ES

Organisation	Summary of Response	Consideration within ES
	Para. 3.94. In addition to IEMA (1993), more up-to-date methodologies should be considered for the assessment and agreed with the relevant stakeholders.	Section 16.3 outlines the guidance and best practice used in the assessment. This was outlined in the TA scoping report and agreed with relevant stakeholders.
	Para 3.95. The ES should describe the baseline for the assessment of potential impacts on traffic and how this could be affected during construction and operation.	The baseline is described in Section 16.4 and the effects are described in Section 16.6.
	Para. 3.96. Describe and assess the proposed modes of transport and likely routes for delivering materials and removing wastes, and explain how certain routes will minimise / avoid adverse effects.	The Construction Strategy (DCO Document Reference 5.4) sets out details of the construction routes for the delivery of materials and removal of wastes.
	Para. 3.97. Describe and assess the potential impacts of the development on the relevant components of the road network, in particular Junction 19 on the M5. The scope of the assessment should be agreed with Highways England.	The impacts of the development on the road network and the M5 Junction 19 (“J19”) are outlined in section 16.6 and in the TA (sections 6 and 7) (ES Appendix 16.1, DCO Document Reference 6.25) following scoping with Highways England.
	Para. 3.98. Consult with stakeholders regarding any potential impacts on assets (railway line and crossings, bridges) and users, and the need to redesign or relocate assets. The assessment methodology, design and effectiveness of mitigation should be discussed and agreed with the relevant bodies.	The consultation undertaken to date is outlined in this table and in the TA (ES Appendix 16.1, DCO Document Reference 6.25) following scoping.

Table 16.3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the ES

Organisation	Summary of Response	Consideration within ES
	Para. 3.99. Describe and justify based on evidence the assumptions used to inform the assessment. Consider whether the schemes incorporated into the Greater Bristol Area Transport Model ("GBATS")[1] and Rail Demand Model ("RDM")[2] are still relevant and up to date, and if not, consider the need to include or remove other schemes.	The approach to the assessment is outlined in section 16.3. Background assumptions incorporated into GBATS and the RDM are reviewed and updated as appropriate as scheme assessment proceeds.
	Para. 3.100. Consider the relationship with other topics and provide cross-referencing.	Reference is made to other elements where appropriate, in particular air quality emissions is covered in ES Chapter 7 Air Quality and Greenhouse Gases (DCO Document Reference 6.10), traffic noise is covered in ES Chapter 13 Noise and Vibration (DCO Document Reference 6.16), and In-combination effects are assessed in ES Chapter 18 In-combination and Cumulative Effects (DCO Document Reference 6.21).

[1] GBATS is a strategic transport demand model of the greater Bristol area and includes both highways and public transport. This model has been developed to be compliant with, and has been used to assess, a number of schemes in the area that have been given funding approval by the DfT. GBATS produces matrices of trips and journey data (time, cost and distance) for three time periods (AM peak, inter-peak and PM peak hours) and several modes (car, bus, rail and bus rapid transit) also subdivided by user class (commuting, other home based trips and business journeys) and income level of travellers.

[2] The RDM is not a single model, but a combination of bespoke spreadsheet models and railway industry timetable demand modelling software MOIRA. Three impacts on demand for rail services are covered: total trips at new stations; diversion of existing rail trips to new stations; and changes in demand at existing stations from new or amended services (including suppression of demand by additional station calls).

Table 16.3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the ES

Organisation	Summary of Response	Consideration within ES
Highways England	A full and comprehensive assessment of highway and transport related impacts of the proposal should be carried out and reported in accordance with the scope of assessment agreed with Highways England in advance.	This is outlined in sections 16.3, 16.6 and 16.8.
	Assess and report environmental impacts arising from disruption during construction including a full assessment of any changes in traffic volume, composition or routing. Any required transport infrastructure modification (temporary or permanent) should be fully assessed and reported.	Section 16.6 considers the transport effects at the construction and operation stages. This includes access and non-motorised users. The Construction Strategy (DCO Document Reference 5.4) and Construction Transport Management Plan ("CTMP") (Appendix K of the TA, ES Appendix 16.1, DCO Document Reference 8.13) set out construction traffic and routes.
	Consider adverse changes to air quality and noise.	Air quality and noise impacts are assessed in ES Chapters 7 Air Quality and Greenhouse Gases and 13 Noise and Vibration (DCO Document References 6.10 and 6.16) respectively.
	No new connections are permitted to the Highways England drainage network. The existing “permitted” connection can only be retained if there is no change in land use.	The DCO Scheme design does not include any new connections, as detailed in the Surface Water Drainage Strategy for Portishead and Pill Stations, haul roads and compounds and Track Drainage Strategy (DCO Document Reference 6.26).
	Development must not lead to any surface water flooding on the Strategic Road Network ("SRN") carriageway.	The DCO Scheme has been designed to not lead to surface water flooding on the SRN and this is detailed in the ES, Appendix 17.1 Flood Risk Assessment (DCO Document Reference 5.6).

Table 16.3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the ES

Organisation	Summary of Response	Consideration within ES
	Describe and assess the potential impacts of the development on the relevant components of the road network, in particular Junction 19 on the M5. Highways England suggest that the TA should consider and address whether changes are needed to structures, drains or landscaping or other features owned or maintained by Highways England. The scope of the assessment should be agreed with Highways England.	The impacts of the development on the road network and the M5 J19 are outlined in section 16.6 and in the TA (section 6 & 7) following scoping with Highways England.
Informal micro-consultation on DCO scheme boundary (22 June to 3 August 2015)		
Bristol Port Company	Concern regarding potential impact of rail link to Portishead on number or timings of movements on existing freight rail line.	This has been assessed within Section 16.6, which considers the transport effects during the construction stage. Further discussion of the impacts on rail freight is discussed in the TA (section 6.5) (ES Appendix 16.1, DCO Document Reference 6.25).
Pill and Easton-in-Gordano Parish Council	Concern over impact of parking charges on availability of street parking for residents and on parking restrictions on Sambourne Lane on local businesses, with suggestions for mitigation.	Impacts on parking provision are discussed within section 16.6 and there will be post-implementation monitoring of parking provision within Portishead and Pill (discussed in Table 16.8). Section 7 of the TA (ES Appendix 16.1, DCO Document Reference 6.25) also discusses the impact of the scheme on local roads and parking.
	Construction plant and materials should arrive by rail. Concern about road access for construction traffic.	A range of scenarios have been considered and assessed but the construction plan cannot be completely finalised until a contractor has been appointed. Rail and road have both been considered, including the possibility of a

Table 16.3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the ES

Organisation	Summary of Response	Consideration within ES
		slave rail into the Lodway compound. The main construction compounds at Lodway and off the A369 Portbury Hundred will be located west of Pill using the dis-used line as a haul route. However other smaller construction compounds and access points for specific tasks will be needed in Pill, e.g. to bring in cranes for lifting major components where this cannot be done from the railway. Construction impacts and mitigation measures have been reported in the Master Construction Environmental Management Plan ("CEMP") (DCO Document Reference 8.14). The TA (ES Appendix 16.1, DCO Document Reference 6.25) has considered the movements of heavy goods vehicles ("HGV") and outline CTMP. Highway and transport related impacts of the proposal are outlined in sections 16.3, 16.6 and 16.8 and mitigation measures are considered within section 16.7. The outline CTMP is presented in Appendix K of the TA and summarised in section 16.6 (DCO Document Reference 8.13). This sets out details of construction routes for the delivery and removal of wastes.

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Organisation	Summary of Response	Consideration within ES
	Concern regarding potential disruption to cycle route and footpaths.	Closures of NMU routes and provision of diversion routes are outlined in the TA. Section 16.7 outlines the mitigation measures for the scheme, including the impacts on cyclists and pedestrians.
	Concern regarding impact of parking restrictions on local businesses.	Impacts on parking provision are discussed within section 16.6. There will be post-implementation monitoring of parking provision within Portishead and Pill (discussed in table 16.8). Section 7 of the TA (ES Appendix 16.1, DCO Document Reference 6.25) discusses the impact of the scheme on local roads and parking
Formal Stage 1 Consultation (22 June to 3 August 2015)		
North Somerset Local Access Forum/British Horse Society	Railway crossing provision should be suitable for cyclists. NCN Route 26 between Sheepway and Pill follows bridleways, and the needs of horse riders should be considered in the realigned route and through fencing provision. Suggestions for realignment provided.	Details of the proposed crossing points and NMU diversion routes are outlined within the TA (sections 8 & 9) (ES Appendix 16.1, DCO Document Reference 6.25).

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Organisation	Summary of Response	Consideration within ES
Transport Focus	Concerns regarding accessibility of Portishead Station via public transport, access to Trinity Primary School, impact on cycle network and need for communications regarding closure of pedestrian crossing.	Sections 16.4 and 16.6 outline the existing capacity of public transport and the potential effect of the DCO Scheme. Access to stations is discussed in Section 16.7. NMU diversion routes and closures are outlined within the TA (sections 8 and 9) (ES Appendix 16.1, DCO Document Reference 6.25), including links near to Trinity Primary School and to the cycle network.
	Concern over whether rail passenger demand estimates are robust.	The approach to the assessment is outlined in section 16.3. Background assumptions incorporated into GBATS and the RDM are reviewed and updated as appropriate as scheme assessment proceeds.
Business West	There should be no disruption to rail freight movements to and from Portbury Docks during construction process.	Section 16.6 considers the transport effects of the scheme, including rail freight. Further discussion of the impacts on rail freight can be found in section 6.5 of the TA.
Harbourside Family Practice	Concerns regarding access along Harbour Road for emergency vehicles and availability of parking for users of Marine Healthcare Centre.	These issues have been considered in the TA, ES Appendix 16.1 (DCO Document Reference 6.25) along with other traffic, parking and related issues. The emergency services have been consulted on the DCO Scheme and they have not raised any concerns. Construction constraints and processes have been covered in the CTMP (DCO Document Reference 8.13), appended to the TA. A Traffic Management Working Group (“TMWG”) will be formed at the construction

Table 16.3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the ES

Organisation	Summary of Response	Consideration within ES
		phase. The Contractor will consult with the TMWG regarding traffic management, non-motorised users and public transport issues. The members of the TMWG (including the Network Rail representative) will agree a resolution procedure for disputes relating to traffic management and other traffic related measures to be implemented during the construction of the DCO Scheme. Details on closures and diversions are given in the CTMP. Impacts on parking provision are discussed within section 16.6 and there will be post-implementation monitoring of parking provision within Portishead and Pill (discussed in Table 16.8).
Sustrans	Opportunities to enhance existing approaches to road bridges at Portbury Docks on NCN 26 and existing cycle and pedestrian access to Portishead Station, and provide cycle/pedestrian access to Portishead Station from Tansy Way should be considered.	Access to stations is discussed in Section 16.7. Table 16.8 outlines the infrastructure measures to be provided as part of the DCO Scheme. The TA (ES Appendix 16.1, DCO Document Reference 6.25) outlines a diversion route along NCN26 at Royal Portbury Dock Road using the existing Bridleway. A new bridge will connect Tansy Lane to Galingale Way (Section 3.6 of the TA).

Table 16.3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the ES

Organisation	Summary of Response	Consideration within ES
Public	Concerns regarding pedestrian cycling infrastructure within the wider area and opportunities to enhance infrastructure within the general areas, Quays Avenue, Tansy Lane, Galingale Way, Conference Avenue and on routes to Pill.	Sections 16.4 and 16.6 outline the existing transport situation and the impacts of the DCO Scheme on the area surrounding the stations. Table 16.8 outlines the infrastructure measures to be provided as part of the DCO Scheme including provisions for cyclists/pedestrians. Provision of bicycle parking facilities at the stations is discussed in Section 16.7 and a new bridge will connect Tansy Lane to Galingale Way (Section 3.6 of the TA, ES Appendix 16.1, DCO Document Reference 6.25).
Public	General concerns about the connectivity of transport within the area and opportunities for enhancement of existing infrastructure is highlighted. There is also concern over how any new developments within the area can be connected to the scheme.	Sections 16.4 and 16.6 outline the existing capacity of public transport and the potential effect of the DCO Scheme. Table 16.8 outlines the infrastructure measures to be provided as part of the DCO Scheme in order to improve transport and Section 16.7 outlines the mitigation measures for the DCO Scheme, including the impacts on cyclists and pedestrians.
Public	Concerns over the availability of street parking for local residents and congestion on local roads.	Section 16.6 considers the transport effects at the construction stage while Section 16.7 considers mitigation measures in order to reduce congestion impacts. In addition, the outline CTMP is included in Appendix K of the TA (DCO Document Reference 8.13) and outlines the transport impacts arising from the construction works

Table 16.3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the ES

Organisation	Summary of Response	Consideration within ES
		and how these can be dealt with. Section 7 of the TA (ES Appendix 16.1, DCO Document Reference 6.25) also discusses the impact of the scheme on local roads and parking.
Informal Stakeholder Meetings		
Highways England (Additional to the points raised above)	A construction traffic management plan including a delivery route management plan would minimise the impacts of construction traffic on residential neighbourhoods, local businesses, local schools and other services.	An outline CTMP is presented in Appendix K of the TA (DCO Document Reference 8.13) and summarised in this Chapter.
	Consideration of other major construction works in the area such as the National Grid Projects.	The cumulative effects of other major construction works are considered in section 16.8 and ES Chapter 18 In-combination and Cumulative Effects (DCO Document Reference 6.21) and accompanying ES Appendices 18.1 and 18.2 (DCO Document Reference 6.25).
	Abnormal loads should be identified at the earliest opportunity and communicated to Highways England.	This is outlined in section 16.6.
	An assessment of the traffic impacts on M5 J19.	Section 16.4 describes the current situation with regard to the M5 J19 and Section 16.6 outlines the impacts of the DCO Scheme on the M5 J19.
	Consideration needs to be undertaken of the existing capacity of public transport.	Sections 16.4 and 16.6 outline the existing capacity of public transport and the potential effect of the DCO Scheme.

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Organisation	Summary of Response	Consideration within ES
	Additional focus on Wyndham Way, the platoon impacts of traffic using the Wyndham Way/Quays Avenue junction, and the Portbury Hundred.	Sections 16.4 and 16.6 outline the existing situation and the impacts on Wyndham Way, the impacts of traffic using the Wyndham Way/Quays Avenue junction, and the Portbury Hundred.
North Somerset Highways Development Control (Additional to the points raised above)	Consideration of North Somerset's new Highways Development Design Guidance.	Consideration was given to North Somerset's Guidance as described in Section 16.3.
	Consideration of desire lines for station access including the use of an existing informal crossing north west of Quays Avenue.	Consideration was given to the desire lines for station access. Mitigation is outlined in section 16.7.
	The need for detailed NMU audits.	Sections 16.4 and 16.6 explain that detailed NMU audits have been undertaken.
Bristol City Council Highways Development Control	Consideration of the impacts on Winterstoke Road and Ashton Vale Road.	Sections 16.4 and 16.6 outline the existing situation and impacts of the DCO Scheme on Winterstoke Road and Ashton Vale Road.
	Consideration of additional developments such as South Bristol Link Road, Ashton Gate Stadium and the University of the West of England ("UWE") Lower Ashton Campus.	The cumulative effect of the DCO Scheme with other developments is assessed in Section 16.8 and in the ES Chapter 18 In-combination and Cumulative Effects (DCO Document Reference 6.21) and the accompanying ES Appendices 18.1 and 18.2 (DCO Document Reference 6.25).
Formal Stage 2 Consultation (23 October to 4 December 2017)		
North Somerset Council	The Council is concerned about construction traffic and would like to see a robust and detailed Construction Traffic Management Plan.	The CTMP (Appendix K of the TA, DCO Document Reference 8.13) has been updated to reflect the latest construction methodology, The revised CTMP provides a

Table 16.3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the ES

Organisation	Summary of Response	Consideration within ES
		framework for the management of the construction traffic and the impacts, a detailed CTMP will be prepared once contractors have been appointed.
	Specific issues: - Tracking assessments for compounds and road safety audits	- Not reported in the CTMP – to be provided once contractor is appointed.
	- CTMP to include parking for contractors and wheel washing facilities	- Not reported in the CTMP – to be provided once contractor is appointed.
	- Table 16-12 C1 bus travel – explore the possibility of linked ticketing.	- Ticketing options will be defined by the bus/train operators
	- Satisfied that mitigation to facilitate access by non-car modes is being addressed.	- Noted
	- Discussions taking place to discuss mitigation to address on street parking by rail users.	- Revised TA (ES Appendix 16.1, DCO Document Reference 6.25) contains revised parking strategy
	- There was TRO consultation on change to speed limit on Marsh Lane.	- Noted
	- Need to provide plans on proposed parking restrictions in Portishead and Pill.	- Revised TA (ES Appendix 16.1, DCO Document Reference 6.25) contains revised parking strategy
	- Need further assessment of construction traffic on highway network.	- Not reported in the CTMP – to be provided once contractor is appointed.
	- Court House Farm planning application includes a bridge over the disused railway.	- This has not been considered in the TA. It affects localised movements within the Port.
Bristol City Council	The Project would contribute to the delivery of an integrated transport system by linking into the existing rail network and MetroBus, and would accord with Policy BSC10 by making the best use of existing transport	- Noted

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Organisation	Summary of Response	Consideration within ES
	infrastructure and reusing the Portbury Freight Line.	
	Elements of the DCO Scheme could impact on the highway network in Bristol in terms of construction management, construction traffic and minimising the impact on the Portbury freight line in terms of potential displacement of freight onto the highway. These need to be considered early on in the development of the scheme.	- Noted
	Agreements would be required under s.278 and s.38 of the Highways Act 1980 for the works at Ashton Vale Level Crossing and the new vehicular maintenance road and construction compound at Clanage Road.	- Noted
	The principle of the works to extend the left turn lane onto Ashton Vale Road from the Ashton Vale Industrial Estate is supported. The TA should quantify the impacts upon traffic congestion on Clanage Road, Winterstoke Road and surrounding area.	- Reported in Table 5.3 of the CTMP (Appendix K of the TA, DCO Document Reference 8.13)
	A dedicated CTMP should be submitted as soon as practicable for all sites within BCC that would be subject to engineering works. The CTMP will be expected to confirm the duration of the works and meet the standard requirements of the LPA as a minimum.	- The CTMP has been updated, noting further detailed will be provided once contractor is appointed.
	Specific comments on PEIR	
	- Pedestrian / Cycle Ramp in Ashton Vale. Further details on dimensions, lighting, drainage, ownership environmental mitigation and any works	- ~~This is reported in ES Chapter 4 Description of the Proposed Works (DCO Document Reference 6.7) and Ashton Vale Road Pedestrian Ramp Design Plan (DCO Document Reference~~

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Organisation	Summary of Response	Consideration within ES
	requiring adjustment to structures. - Winterstoke Road. Require an explanation why an additional exit lane from the industrial estate to increase capacity is no longer considered necessary. BCC's traffic signals team is content with the measures to signal the junction, but have requested dedicated signals ducting under the railway line.	~~2.48)~~Component removed from the scheme - Reported in Appendix N of the TA (ES Appendix 16.1, DCO Document Reference 6.25).
British Horse Society	We understand that the permissive bridleway opposite Shipway Gate Farm will be temporarily diverted during the works. We would ask you to make sure that 'hatching' will be marked in front of the gate to stop motorists from blocking horse access.	It was agreed the bridleway needs to align with National Grid's for the Hinkley Point C Connection Project. The potential cumulative effects on the Sheepway area associated with the DCO Scheme and the National Grid Hinkley Point C Connection project is discussed in ES Chapter 18 In-combination and Cumulative Effects Assessment (DCO Document Reference 6.21) and ES Appendix 18.2: Matrix 2 Assessment Matrix (DCO Document Reference 6.25). The design uses asphalt for the access path next to the layby, which enables hatching to be marked once complete.
Highways England	Specific waiting areas for construction traffic, located off the SRN should be identified. Drivers should be informed of these prior to visiting the site in order to stop construction vehicles waiting at inappropriate locations on the network.	Section 16.6 considers the transport effects at the construction stage. Waiting areas to be determined at a later stage in project development, However both the A369 Portbury Hundred and Lodway compounds are located less than 2 miles from the SRN, so construction vehicles would be able to wait

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Organisation	Summary of Response	Consideration within ES
		within them and therefore there is no need to provide additional waiting areas.
Highways England	Highway Mitigation – The draft transport assessment identifies that the impact of the scheme is unlikely to have a major detrimental impact on the capacity and operation of junctions and links assessed. As noted previously, the impact of the scheme on junctions will change when the TA has been updated to reflect changes in rail stopping patterns. The level of mitigation may also have to be changed to recognise these differences. Taking in to account the above, details included within this section of the draft TA have not been reviewed by us.	Sections 16.4 and 16.6 outline the existing situation and impacts of the DCO Scheme on the capacity and operation of junctions and links assessed.
Highways England	Construction Impact Mitigation - Six of the eight delivery routes identified involve vehicles using M5 junction 19. Traffic Management Plans ("TMP") will be produced to assess the impact of construction traffic on the network. This may include the identification of additional measures which may be required.	Section 16.6 considers the transport effects at the construction stage while Section 16.7 considers mitigation measures. The outline CTMP is included as Appendix K to the TA (DCO Document Reference 8.13).
Highways England	Abnormal loads will be grouped together and moved outside the network peaks in order to reduce disruption to traffic. A feasibility report looking at the access route used to deliver the abnormal load will be prepared before the load is moved. This should be approved by Highways England, prior to any moving of abnormal loads.	Section 16.6 considers the transport effects at the construction stage while Section 16.7 considers mitigation measures. The outline CTMP (Appendix K of the TA, DCO Document Reference 8.13) states: • Prior to transportation of the first abnormal load, an access route survey feasibility report will be undertaken;

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Organisation	Summary of Response	Consideration within ES
		• The transport of abnormal loads will be timed to be moved outside peak traffic hours to minimise disruption. These deliveries will be pre-arranged and will meet the requirements of the Police, the Local Highway Authority and Highways England.
Highways England	Operationally, Highways England will need to understand and approve any physical works which are carried out under or in close proximity to the M5.	ES Chapter 4 Description of the Proposed Works (DCO Document Reference 6.7) sets out the works to be undertaken for the DCO Scheme. The impacts of the development on the road network and the M5 J19 are outlined in Section 16.6 and in the TA following scoping with Highways England. Engagement with Highways England is continuing.
Highways England	Any works or maintenance compounds with the potential to impact on the SRN should be discussed and approved by Highways England.	There are no works that directly affect the SRN. An agreement has been sought for the compound beneath the M5 Avonmouth Bridge and works that may affect the maintenance routes to the bridge. Traffic impacts have been calculated and included in the CTMP, TA Appendix K Outline (DCO Document Reference 8.13). The tables show the impact on the roads surrounding the sites and compounds to be minimal with the highest additional trips along any one of the links being traffic coming off the M5 Junction 19 (North) which equates to 29-64 trips per hour period. This is a small fraction of the total

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Organisation	Summary of Response	Consideration within ES
		traffic which is already using this heavily trafficked route, which currently generates over 1,000 trips (2-way) per hour at peak periods. Section 16.6 considers the transport effects at the construction stage while Section 16.7 considers mitigation measures. More details on construction traffic will become available as scheme design progresses.
Bristol Port Company	The Port is not convinced of the need for some of the proposed works including, those for the installation of pedestrian / equestrian crossings at Royal Portbury Dock Road and Marsh Lane as well as the acquisition, by compulsory purchase, of an area of the Port's land to the south of the M5 overbridge. The Port will wish to see the detail before they can give due and proper consideration to them.	Further details were provided to the Port as for the need for the land: • The land identified at Royal Portbury Dock Road is identified for minor highway safety improvements to the current crossing of the bridleway on the road. • No new pedestrian/ equestrian crossing is being provided at Marsh Lane. • The bridleway extension south of the M5 has been identified to provide equestrian users with a safe route to pass the M5 to reach the bridleway network established by the Port. Details of the proposed crossing points at Portbury Dock Road and Marsh Lane are discussed in the TA (section 8). Initial plans for a Pegasus crossing on Royal Portbury Dock Road have been dropped.

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Organisation	Summary of Response	Consideration within ES
Bristol Port Company	The preservation of the Port's road access arrangements during all construction works is essential to ensure business continuity. The Port was concerned to note the extent of the proposed working areas and works affecting several of those key access points including the critical Royal Portbury Dock Road. The compulsory acquisition of part of Royal Portbury Dock Road to the south of the rail route and crossings for equestrian use could have significantly adverse long-term implications for unimpeded road access. Concerned about continuity of access at all times, both during and after construction.	Section 16.6 considers the transport effects at the construction stage while Section 16.7 considers mitigation measures. There is sufficient capacity within the local highway network to not impede the flow of traffic to the Port. Since the comment was made in 2017, the scheme proposals have been refined in respect of the interface with the Port's perimeter access track from Marsh Lane.
British Horse Society	The BHS asks that on the sections where the bridleway passes right alongside the railway tracks (principally on the sections alongside the docks car parks and various industrial buildings), there will be high, non-see-through fencing so as to minimise the risk of horses panicking along this very narrow section.	The bridleway west of the M5 is being extended under the Avonmouth Bridge to the eastern side to avoid use of the railway under the M5 Bridge. Marsh Lane and Royal Portbury Dock Bridges are not dedicated bridleways so Network Rail standard fencing will be provided. The separation of the line from the bridleway has been discussed within the TA.
British Horse Society	The BHS understands that it is not possible to make the Avon Road underbridge higher, so would be pleased if mounting blocks for riders could be placed at either end. At present, the route is usable on a smaller horse, but riders of larger horses need to dismount. Mounting blocks at either end will make this easier and safer.	This section of the route is not dedicated as bridleway, and therefore mounting blocks are not appropriate.

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Organisation	Summary of Response	Consideration within ES
North Somerset Levels Internal Drainage Board	Dwg 103 and Land Plan Sheet 2 Sheepway access point. Access for watercourse maintenance using 13 tonne slew excavators is currently provided here and should be maintained, including provision for offloading from low-loader. The North Somerset Levels Internal Drainage Board ("NSLIDB") was unable to confirm this point from the drawings provided.	It was agreed that the NSLIDB clear The Cut before construction, and the contractor clears it during the 18-month construction period. The contractor would also need to provide emergency cover 24/7.
Pill and Easton-in-Gordano Parish Council	The Parish Council has identified the area around the Co-op, Sambourne Lane, the new car park, and the bus stop outside The Memorial Club as potentially the most pressurised for traffic. They need reassurance that the implications will have been carefully modelled to ensure that access to and from the railway station does not become congested. They believe that special attention should be given to the junction of Station Road, Heywood Road and Lodway to improve access and improve the current Bus Stop outside the Memorial Club to make it DDA compliant and safer for pedestrians crossing the road.	Traffic, parking and related issues have been considered in detail in the TA, ES Appendix 16.1 (DCO Document Reference 6.25). This has informed the requirements needed. Modelling has been undertaken and indicates that the DCO Scheme does not have a significant impact on the Station Road / Heywood Road junction and it works well within capacity. The TA (ES Appendix 16.1, Document Reference 6.25) section 7 shows traffic volume increases to be small in 2021 and 2031 on Station Road. Section 16.6 considers the transport effects during operation while Section 16.7 considers mitigation measures. The area outside of the Memorial Club was highlighted as an area of concern by several consultees, including equalities groups who stated the bus stop needed upgrading to serve a railway station. Crossing points, pavement widths, and

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Organisation	Summary of Response	Consideration within ES
		dropped kerbs were examined on the route between the bus stop and station. As a result of this examination the DCO Scheme is now proposing works to the bus stops to ensure they are adequate. Bus stops on both sides of Heywood Road have been redesigned, in particular the southern side where adjacent land has been purchased to widen and provide a shelter and enough space for wheeled users.
Avon and Somerset Constabulary – Crime Prevention	Pill Station cycle parking – re-oriented would allow greater natural surveillance over cycles in this shelter – consider more secure cycle security solutions as above.	The location and type of stand provision has been carefully considered, balancing all needs including security, space, and adequate provision. Provision of bicycle parking facilities at stations is discussed in Section 16.7.
Avon and Somerset Constabulary – Crime Prevention	The Pill station ramp is shown with barriers half way down. Will this affect the flow of pedestrians, how will wheelchairs and buggys navigate this? What are these barriers for? Would some measure at the top of the slope (and bottom) be more effective?	Access to stations discussed in Section 16.7. It was noted that the barriers are intended to stop cyclists travelling at excessive speed down the ramp. The barriers do not impede pedestrian flow, and wheelchair and buggy access have been considered.
Public	…Ramp should not be built – stairs and a lift instead.	All aspects of railway design must conform with Network Rail standards. Access to Pill station has been considered during all stages of the development and led to the design changing to include a forecourt and disabled parking area at the site of the former station house. A lift at Pill Station would result in

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Organisation	Summary of Response	Consideration within ES
		more land take from householders than a ramp because of site constraints and the cutting. Pill will be an unmanned station, so if anybody becomes trapped in the lift they will need to wait for an engineer to resolve the problem. Also, as the station is unmanned the lift is more vulnerable to vandalism. A ramp provides a more inclusive access arrangement than a lift because it does not have the very limited capacity of a lift and it is not a mechanical devise so is not prone to failure and becoming out of use. The project consulted with various equalities groups during the consultation period as detailed in the DCO Consultation Report (DCO Document Reference 5.1) and they were satisfied with the ramp proposal. Access to stations discussed in Section 16.7.
Public	Links / adequate routes to bus stops. No steps. Concerns around access to areas for emergency vehicles during construction and operation.	Access to stations is discussed in Section 16.7. All aspects of railway design must conform with Network Rail standards.
National Trust	The National Trust is concerned about options to strengthen Quarry Underbridge No. 2. The National Trust does not support remedial works to reinforce the underside of the bridge arch which would reduce the head room and constrain their vehicular access. The Trust does support rebuilding the	Refer to the ES Chapter 4 Description of the Proposed Works (DCO Document Reference 6.7). The current proposals for the DCO Scheme are to strengthen Quarry Underbridge No. 2 by partial replacement of parts of the

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	bridge deck and use of a construction compound to facilitate the works. The Trust believes that their access through Quarry Underbridge No. 2 needs to be maintained at its current level, as this is their only access to the quarry.	bridge with pre-cast units and reinforcement of the deck. This will preserve the headroom requested by the National Trust. These works will require the use of part of the quarry (National Trust land) but will avoid the most environmentally sensitive areas where possible.
HCA (now Homes England)	The HCA (now Homes England) land is affected by two Demarcation Agreements dated 6 March 1996 and 29 February 1996 between RailTrack PLC and British Railways Board. The Demarcation Agreements provides a number of rights including access to the principal development site, via the rail bridge accessed off Clanage Road. This access must be maintained under any future development of the Portishead Branch Line. The HCA would be concerned of any impact on access to HCA land as a result of these proposals.	This access will be maintained.
Local business	Concern of the definition of the hourly plus service and the proposed number of barrier closures on the Ashton Vale Level Crossing during the working day.	The service pattern is clarified in the TA (ES Appendix 16.1, DCO Document Reference 6.25) Appendix N.
Local business	During the recent serious disruption to access to the level crossing due to the construction of the AVTM Metrobus scheme, we have experienced at first hand the problem of traffic lights operating at the level crossing. There have been considerable delays for customers, and unfortunately there has also been a number of serious incidents … given the amount of	The impacts at Ashton Vale Road are clarified in the TA Appendix N (ES Appendix 16.1, DCO Document Reference 6.25) .

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Organisation	Summary of Response	Consideration within ES
	traffic building up on Ashton Vale Road when the crossing barriers are down, it is very difficult for vehicles from the Cala Industrial Estate to get on to Aston Vale Road and into the queue for the level crossing…. Concern expressed that the highway traffic modelling results suggested that the Ashton Vale Road level crossing can remain open as the sole access to the entire estate.	
Local business	Concern regarding the lack of alternative access into the industrial estate, particularly for emergency service vehicles namely police, fire and ambulance.	The emergency services have been consulted on the DCO Scheme and they have not raised any concerns.
Public	Extension of the left hand lane on Winterstoke Road should be longer. Level crossing will negatively impact on traffic to and from the Ashton Vale Industrial Estate.	The length of the proposed extension is adequate to mitigate any increase in queuing traffic during barrier down times. Assessment of Ashton Vale Road is reported in the TA Appendix N (ES Appendix 16.1, DCO Document Reference 6.25).
Local business	The transport planning impact of the MetroWest has not been assessed for the use of the Site which takes into account the permanent acquisition of land within the main entrance and any future uses or operations which may take place there. This will require further consideration and if required further assessments or works to be included within the DCO application. We have not seen any assessment which would give it the comfort that vehicle movements and access to site will be unaffected. This would include any assessment	Since the comment was made in 2017, the scheme proposals have been refined and permanent acquisition of the businesses land is no longer being proposed. Assessment of Ashton Vale Road is reported in the TA Appendix N (ES Appendix 16.1, DCO Document Reference 6.25).

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Organisation	Summary of Response	Consideration within ES
	concerning level crossing increases above existing freight train movements during the operation of MetroWest.	

Definition of the Study Areas

16.3.8 In assessing the transport, access and NMU impacts, two study areas have been defined. The first relates to the strategic multi-modal impacts across the Bristol and wider area and the second to local multi-modal impacts along the scheme alignment. The strategic impacts are largely based on GBATS4 a strategic transport demand model which covers the city of Bristol, the urban and southern part of South Gloucestershire, and immediate surrounding areas in Bath and North East Somerset and North Somerset. Figure 5.1 of the TA shows the GBATS4 zones covered.

16.3.9 A key feature of the type of model represented by GBATS4 is that they are mostly driven by demographic changes such as population and employment. However, when forecasting rail demand, it is acknowledged that these sorts of models can struggle to reflect changes in such 'minority modes'. Hence it has always been anticipated that a degree of adjustment would have to be made to GBATS4 outputs to align GBATS4 forecasts with RDM forecasts. Further detail regarding the use of GBATS4 is outlined in Section 5 of the TA (ES Appendix 16.1, DCO Document Reference 6.25).

16.3.10 The local multi-modal impacts have been determined following discussion with the relevant highway authorities. The study area includes not only assessments of traffic flows at particular roads and junctions but also on-street parking at specific locations in Portishead and Pill. The assessment also includes walking and cycling networks at specific distance thresholds in Portishead and Pill. The extent of the study area is summarised in Table 16.4. The location of roads close to the DCO Scheme are shown in Figure 4.2 (Sheets 1 to 20 in the ES Volume 3 Book of Figures – DCO Document Reference 6.24) and the location of public rights of way between Portishead and Pill are shown on Figure 4.2 of the TA (ES Appendix 16.1, DCO Document Reference 6.25).

Table 16.4: Study area

Impact	Study area
Strategic operational impact	Bristol and wider area (based on the strategic model for Bristol and the wider area)
Junction assessments	**Portishead:** Phoenix Way/Quays Avenue/Harbour Road Station Road/Harbour Road/Cabstand Cabstand/Wyndham Way/High Street Quays Avenue/Wyndham Way/Serbert Way Sheepway/Portbury Hundred/Bristol Road/Wyndham Way **M5 (Easton-in-Gordano):** Junction 19 (included in the strategic operational impact assessment) **Pill:** Station Road/Heywood Road/Lodway St Georges Hill/Martcombe Road Pill Road/Martcombe Road **Ashton Vale:** Winterstoke Road/Ashton Vale Road
Level crossing assessments	Ashton Vale Road
Parking assessments	**Portishead:** The Anchorage, Biscay Drive, Camomile Walk, Conference Avenue, Finnisterre Parade, Galingale Way, Harbour Industrial Estate, Harbour Road, Haven View, Holmlee, Malin Parade, Marjoram Way, Martingale Way, Mulberry Avenue, Mulberry Close, Newfoundland Way, Quays Avenue, Old Mill Road, Peartree Field, Phoenix Way, Rosemary Crescent, Serbert Close, Serbert Road, Serbert Way, Tansy Lane, Town Centre Car Parks, Tyndeman Road, Wright Row **Pill:** Avon Road, Back Lane, Chapel Row, Church Walk, Crusty Lane, Hardwick Road, Heywood Terrace, Lodway Close, Mariners Way, Monmouth Court, Monmouth Road, Newport Road, Sambourne Lane, Severn Road, Station Road, Upper Myrtle Way **Ashton Vale:** Ashton Vale Road

Table 16.4: Study area

Impact	Study area
Walking and cycling assessments	**Portishead pedestrian routes:** Quays Avenue towards Brampton Way Phoenix Way towards Port Marine Harbour Road towards Portishead Marina Harbour Road towards Waitrose Harbour Road to Nore Road via Old Mill Road Wyndham Way towards the Portbury Hundred Trinity School towards Brampton Way **Portishead cycling routes:** Towards Portishead town centre along Harbour Road (with onward links towards the Marine Lake area and northern Portishead); To Portishead town centre along Wyndham Way (with onward links to western Portishead); To Brampton Avenue (with links to southern Portishead); To Sheepway via National Cycle Network 26; and To Port Marine **Pill pedestrian routes:** From the station towards Pill Wharf; Towards Avon Road; To Crosslanes through Station Road; To Brookside via Station Road and Heywood Road; To Ham Green via Underbanks; To Easton-in-Gordano via Stoneyfields; and To Lodway via Station Road. **Pill cycle routes:** From the Station towards Royal Portbury Dock and Sheepway through NCN Route 26; To Easton-in-Gordano and Portbury via Lodway; and To Ham Green via Heywood Road.

Key Receptors

16.3.11 The key receptors for the transport, access and non-motorised assessment are:

- Residents and visitors;
- Businesses;
- Local services including schools, health and emergency services;
- Motorists;

- NMUs comprising pedestrians, cyclists, and equestrians; and
- Public transport users.

16.3.12 These receptors do not have an intrinsic value in the way that other environmental assets are adjudged to have.

Defining the Baseline

16.3.13 The following baseline data have been gathered from commissioned surveys, existing information, analysis and review of stakeholder information.

16.3.14 The surveys comprise:

- Manual vehicle turning counts;
- Automatic traffic counts;
- Parking survey counts;
- Public transport user counts; and
- NMU counts.

16.3.15 Existing information was obtained from:

- Data from the 2011 census;
- Committed developments information from the strategic Bristol area transport model;
- Highway collision data;
- Existing traffic regulation orders including height and weight restrictions, speed limits and parking controls;
- Traffic signal data;
- Existing railway patronage data; and
- Current freight train movements.

Assessment of Construction Impacts

16.3.16 The construction impact assessment presented in Section 8 of the TA (ES Appendix 16.1, DCO Document Reference 6.25) forms the basis for the assessment of the construction impacts on transport. The construction programme for the scheme has been described in Chapter 4 of the ES – Description of the Proposed Works – where it is anticipated that construction will commence in spring 2022 and finish in winter 2023/24.

16.3.17 The TA (ES Appendix 16.1, DCO Document Reference 6.25) has focussed upon:

- Access to and from construction sites and compounds;
- The size and type of compound;
- Construction traffic generation and impacts at locations including heavy goods vehicle (“HGV”) movements, the effects on existing users and the duration of works;
- Routes for construction traffic;

- Impact of construction on NMUs, such as pedestrians, cyclists, and equestrians; and,
- The main requirements and mitigation required in the outline CTMP, Appendix K of the TA (DCO Document Reference 8.13).

Assessment of Operational Impacts

16.3.18 The DCO Scheme will open in Winter 2023/24 and the operational impacts have been assessed in Sections 6 and 7 of the TA (ES Appendix 16.1, DCO Document Reference 6.25) as follows:

- Strategic scale highway impacts across Bristol and the surrounding area;
- Local highway impacts focussed upon routes to and from the stations, parking levels and at level crossings;
- Walking and cycling impacts including existing provision; and
- Impacts on existing public transport.

Strategic operational impacts

16.3.19 The strategic operational impact assessment is presented in Section 6 of the TA (ES Appendix 16.1, DCO Document Reference 6.25). To assess the wider strategic operational impacts, a combination of outputs has been used from the RDM (the modelling process that forecasts demand at new and existing rail stations) and GBATS4 (strategic multi-modal model for Bristol and the surrounding area).

16.3.20 The RDM forecasts trips at new stations, diversions of existing rail trips to new stations and changes in demand at existing stations from new or amended services. For the DCO Scheme's new stations, the RDM estimates total demand using the catchments at the new stations in conjunction with catchments at potential destination stations with journey times between the two. Potential destination stations are based on those observed for nearby existing stations, with journey times calculated for the new station. This generates demand for each movement and ticket type, for which a simple gravity model is used to distribute trips.

16.3.21 GBATS4 is a variable demand model which adheres to Department for Transport guidance (Transport Appraisal Guidance Unit M2). It incorporates a wide range of travel choices reflecting behaviour where people decide to change mode, decide to travel to alternative destinations or as a last resort not to travel at all. The impacts include:

- Changes in the amount of travel;
- Changes in the travel patterns;
- Changes in highway use; and
- Changes in bus use.

Local operational impacts

16.3.22 The local operational impact assessment is presented in Section 7 of the TA (ES Appendix 16.1, DCO Document Reference 6.25). The focus of local operational impacts is on the local highway network at locations agreed in scoping discussions with the relevant highway authorities. To understand

the changes in trips as a result of the DCO Scheme, outputs from the GBATS4 model have been used to determine the origin and destination of trips. These trips have been manually assigned to the local highway network using a number of assumptions, which are considered to be conservative, as follows:

- The most direct route to and from the stations has been assumed where possible (in reality some trips will use other routes, potentially reducing impacts at key junctions);
- All Scheme related vehicle trips are regarded as additional to the network and no allowance has been made to redistribute existing journeys on the network (not all trips will be additional); and
- For station pick up and drop off trips, 50% are assumed to return to journey origin (this does not include consideration of “single” train trips).

16.3.23 Other assumptions have been used to assess the impacts. These include:

- An assessment period of scheme opening year (2021) and a 10-year period after opening (2031); 3
- Application of traffic growth rates from the DfT approved software called TEMPRO (Trip End Model Presentation Program);
- Parking calculations based on NSDC’s parking standards; and
- Vehicle occupancy based on one person per car in the morning and evening peak.

16.3.24 To assess the impact of the DCO Scheme during the main hours of operation, the following rail service frequencies have been assumed:

- Between Avonmouth and Bristol Temple Meads: 2 trains per hour per direction;
- Between Severn Beach and Avonmouth: 1 train per hour per direction;
- Between Bath Spa and Bristol Temple Meads; 1 additional local stopping train per hour per direction (service linked to the Severn Beach line); and
- Portishead line: 1 train per hour per direction / an hourly plus service.

16.3.25 Level crossing downtimes were based on timetable modelling undertaken by NRIL.

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[3] Transport modelling has been carried out assuming an opening year of 2021, which was the opening year anticipated at the time this analysis was done, and hence also with a commensurate 10-year horizon year of 2031 (with some of the strategic impacts assessed in 2036). It is acknowledged that the scheme opening year is now likely to be delayed, by approximately two years (to Winter 2023/24). However, it is not proposed to amend the analysis of transport impacts at this stage, as it is unlikely that the background situation for transport (and in particular road traffic) at a revised opening year (of 2023) and 10-year horizon (2033) will change much. Indeed, TEMPro 7.2 suggests that average weekday trip generation in the West of England area would increase by around 1.5% from 2021 to 2023, and around 1% from 2031 to 2033. As such, the relative impact of the scheme would remain the same as currently modelled.

16.3.26 Assumptions have been described in further detail in Section 5 of the TA (ES Appendix 16.1, DCO Document Reference 6.25).

Walking and cycling impacts

16.3.27 The walking and cycling impact assessment is presented in Section 7 of the TA (ES Appendix 16.1, DCO Document Reference 6.25). To assess the impact of the scheme on walking and cycling, an audit of existing provision was undertaken on designated routes that are used by members of the public. The audit assessed the suitability of each route using the following ranking system:

- High – The impact of the scheme is likely to lead to significant highway safety concerns for pedestrians and cyclists and/or are critical for improving access to and from the stations;
- Medium – These are moderate highway related concerns and/or would be beneficial for improving access to and from the stations; and
- Low – These concerns would be beneficial in improving the conditions for walking and cycling trips.

16.3.28 The impacts of the scheme which have been regarded as ‘high’ are presented in Table 7.23 of the TA.

Public transport impacts

16.3.29 Using existing public transport survey data, the assessment examined the strategic impacts by looking at the changes in demand arising from the DCO Scheme, of particular focus being the abstraction from current bus services to the new rail service and the use of local bus services to access the stations.

16.3.30 The impacts are presented in Section 6 of the TA.

Assessment of Decommissioning

16.3.31 ES Chapter 4 Description of the Proposed Works (DCO Document Reference 6.7) explains that consideration has been given to likely significant effects arising during the decommissioning phase. However, owing to the nature and life span of the proposed development, the regulated process of any closure in the future, which would be overseen by the Office of Rail and Road, and there being no reasonably foreseeable decommissioning proposals such that likely impacts could be identified and assessed, these effects are not considered further in this chapter.

Assessment of Cumulative Impacts

16.3.32 Cumulative effects of the DCO Scheme operation when in combination with other projects that may affect the study area are considered in the TA (ES Appendix 16.1, DCO Document Reference 6.25) as GBATS4 includes forecast traffic generated by committed developments between the base year and the DCO Scheme opening year. The other projects are detailed in Section 4 of the TA.

16.3.33 The assessment of cumulative effects also considers other projects not incorporated into GBATS4. These may include developments for example that have come forward more recently than the latest revision of GBATS4 or projects that do not generate sufficient highways traffic to be included in

GBATS4 but may still have a cumulative effect when taken into consideration with the DCO Scheme.

16.3.34 The assessment of cumulative effects also considers other projects being undertaken by NRIL under their permitted development rights. This includes other works required for MetroWest Phase 1, namely, the Parson Street Junction (including Liberty Lane Depot Sidings), Parson Street Station, the Bedminster Down Relief Line, Avonmouth / Severn Beach Signalling and Bathampton Turnback, as well as other railway projects in the greater Bristol area. Further environmental assessments of these works will be undertaken by NRIL under their own project management procedures.

Significance Criteria

16.3.35 The classification of impacts presented in this chapter are defined as follows:

- Beneficial – Advantageous or positive change to an environmental resource or receptor;
- Adverse – Detrimental or negative change to an environmental resource or receptor and are considered:
  - Negligible – No perceivable impact; or
  - Minor – Slight, very short term or highly localised impact; or
  - Moderate – Medium term impact of more than local importance affecting the local highway network (by extent, duration or magnitude); or
  - Major – Considerable impact (by extent, duration or magnitude) or more than local importance affecting the SRN or in breach of recognised standards, policy or legislation.

16.3.36 As the receptors have no intrinsic environmental asset value, the significance of effect is wholly related to the magnitude of the impact.

16.3.37 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ("EIA Regulations 2017") do not specify the threshold above which predicted effects are considered to be likely significant effects or not. This enables the decision-maker to take into account the particular characteristics of each development and its receiving environment. For the purposes of this chapter, effects rated as Moderate or greater are regarded as likely significant effects for the purposes of the EIA Regulations 2017. A likely significant effect is taken to be moderate or greater in relation to the EIA Regulations 2017.

16.3.38 Guidelines set out by the IEMA and the DfT have been considered in order to identify significance criteria applicable to this assessment. In some instances, additional criteria have been based on local transport conditions. The magnitude of each impact and its significance is largely based on the analysis undertaken as part of the TA (ES Appendix 16.1, DCO Document Reference 6.25).

16.3.39 Tables 16.5 and 16.6 outline the criteria that have been used to define a moderate impact, which is considered to be significant for both the construction and operational phases of the DCO Scheme in relation to the EIA Regulations 2017. They have also been applied at a strategic and local

highway network level and includes non-motorised and public transport users.

Table 16.5: Construction Assessment Criteria

Criteria	Significant impacts
Traffic levels and delays	A temporary diversion for more than four weeks in any 12-month period that leads to a maximum increase in trip lengths of 2.5 km
	A delay (5-10 mins) on any route as a result of partial closures
	Material increase in the level of HGV traffic
Delay to road based public transport	A delay (5-10 mins) or disruption affecting existing public transport routes for a period of more than five days
Parking	Loss of more than four weeks in any 12-month period of 20 on street car parking spaces
	A material impact due to loss of loading facilities for more than four weeks
Vulnerable users	A temporary increase in journey length of 250 m for pedestrians and 1.5 km for cyclists

Table 16.6: Operational Assessment Criteria

Criteria	Significant impacts
Traffic levels and delays	A ratio to flow capacity exceeding 85% at junctions
	Increased queue lengths (related to above) of 10%
	Permanent increase in journey lengths of more than 1.25 km
Delay to road based public transport	A permanent change in journey distance of more than 400 m
Parking	A loss of private parking
	Any predicted increase in on-street parking in the vicinity of the station of 20 spaces
Vulnerable users	A predicted permanent increase in journey length of more than 250 m for pedestrians
	A predicted permanent increase in journey length of more than 1.5 km for cyclists

16.3.40 The overall significance of impacts, whether adverse or beneficial, has been defined based on professional judgment.

16.4 Baseline, Future Conditions and Value of Resource

Baseline conditions

16.4.1 The DCO Scheme has been developed to address significant baseline issues. These are detailed in Section 4 of the TA (ES Appendix 16.1, DCO Document Reference 6.25) and include:

- Highway congestion on arterial corridors, in particular the A369 between Portishead and Bristol;
- Lack of network resilience;
- Lengthy and unreliable journey times between Portishead/Pill and Bristol City Centre (peak time journey times are approximately double those incurred off peak);
- Poor accessibility to key employment areas, in particular the TQEZ, from Portishead and Pill; and
- Lack of attractive mode choice (alternatives to single occupancy car-based travel).

16.4.2 Table 16.7 summarises the baseline transport conditions across the study area. More details can be found in section 4 of the TA (ES Appendix 16.1, DCO Document Reference 6.25).

Table 16.7: Baseline transport conditions

Issue	Baseline assessment
Collision data between 2011-2016	**Portishead** Collision data assessment for a five-year period suggest no collision clusters in Portishead. There were no fatalities in the period assessed while three collisions were classed as serious.
	Pill A total of nine collisions took place along the A369 with a further eight collisions occurring at the various junctions between M5 J19 and the A369/Happerton Lane junction. One of these collisions is classified as serious. There is no other collision cluster in the rest of Pill.
	M5 J19 A total of 25 collisions took place either at the junction or on the slip roads. Although traffic volumes and speeds are far greater, the data indicate that there have been more collisions on the southbound on-slip and off-slip.
	Ashton Vale A total of 33 collisions in the five-year period all classified as slight with 16 taking place on Winterstoke Road.

Table 16.7: Baseline transport conditions

Issue	Baseline assessment
Highway junctions and level crossings	**Portishead** The following junctions have been assessed to be operating within capacity in the morning and evening peaks (0800 to 0900 and 1700 to 1800): • Phoenix Way/Quays Avenue/Harbour Road • Station Road/Harbour Road/Cabstand • Wyndham Way/Sheepway/Portbury Hundred The following junction has been assessed to be exceeding capacity with congestion in the morning and evening peaks (0800 to 0900 and 1700 to 1800): • Cabstand/Wyndham Way/High Street The following junction has been assessed to be exceeding capacity with congestion in the evening peak (1700 to 1800): • Quays Avenue/Wyndham Way/Serbert Way
	M5 J19 The junction has been assessed to be exceeding capacity with congestion occurring in the morning and evening peaks (0800 to 0900 and 1700 to 1800).
	Pill The following junctions have been assessed to be operating within capacity in the morning and evening peaks (0800 to 0900 and 1700 to 1800): • Station Road/Heywood Road/Lodway • A369/St Georges Hill • A369/Pill Road
	Level Crossings The following level crossing has been observed to operating at capacity although freight trains currently run at irregular intervals at this location: • Ashton Vale Road

Table 16.7: Baseline transport conditions

Issue	Baseline assessment
Parking	Parking surveys undertaken in Portishead, Pill and Ashton Vale revealed the following observations: **Portishead** • In Port Marine parking demand is fairly consistent throughout the day. The exception is Rosemary Crescent which saw a spike in parking levels around 1500. The main explanation is the close proximity to Trinity Primary School where parking restrictions exist on Marjoram Way outside the school entrance. • Around Harbour Road parking fluctuated during the day time particularly in the vicinity of the health centre. There was a peak in demand between 1200 and 1300 along Harbour Road. • Within Gordano Gate Business Park a very low level of on-street parking along Serbert Way and Serbert Close was observed. • Around Galingale Way, the survey showed reduced demand for parking space during the off-peak period. There was one main exception being Galingale Way where the close of the proximity of the road to the Trinity Primary School produces a localised spike in demand. • Within the Town Centre both car parks are well-used throughout the day and are often full to capacity. • Along Old Mill Road parking demand reflects the surrounding employment land use with high demand throughout the day. • Towards Portishead Marina, the survey showed parking demand to be relatively consistent during the day along Newfoundland Way and Martingale Way. The Anchorage had a peak and off-peak fluctuation reflecting surrounding residential land use. **Pill** • In the older parts of Pill, with narrow streets and limited off-street parking, demand was fairly consistent through the day. This is not reflected in more recently developed areas of Pill where the provision of off-street parking is greater and there is a greater fluctuation in demand throughout the day. **Ashton Vale Road** • There are a number of on-street parking spaces within the Ashton Vale industrial estate where, on occasions over the 2-day survey period, the number of vehicles exceeded the total number of available spaces available on the road.
Public transport	Both Portishead and Pill are served by a frequent weekday 15-minute bus service linking with the centre of Bristol along the A369 corridor. There are additional services in Portishead linking Clevedon and Weston-Super-Mare and North Bristol (Aztec West, Abbey Wood and the University of the West of England). Evening and weekend services are more limited with typically 30 minute or hourly services.

Table 16.7: Baseline transport conditions

Issue	Baseline assessment
Traffic	**Portishead** • The highest traffic flows both in the morning and afternoon peaks were observed along the A369 Wyndham Way and Portbury Hundred corridor. • The two-way traffic flow along Quays Avenue is fairly consistent between the morning and evening peaks. This reflects the outflow from the residential area of Port Marine in the morning peak but the inflow towards the commercial and industrial areas around the marina. This trend is effectively reversed in the evening peak. • The evening traffic flows into the Gordano Business Park are higher than the morning peak indicating the impact of Sainsbury's Supermarket is more pronounced later in the day. • The Portbury Hundred junction as the principal vehicle access route into and out of Portishead is the most heavily trafficked although the Sheepway arm has much lower flows. • Journey times between Portishead and Bristol are unreliable during peak periods, as a result of congestion (for example, journey times on the A369 between Portishead and Ashton Gate can be twice as long in free-flow conditions – Table 6.3 in the TA - ES Appendix 16.1, DCO Document Reference 6.25).
	M5 J19 This junction has capacity issues in the morning and evening peaks – in particular the northbound off-slip in the morning peak and the southbound off-slip in the evening peak.
	Pill • The main traffic flows within Pill are along Heywood Road and Lodway. There is a larger north-south directional flow towards Bristol in the morning peak and this reversed in the afternoon peak. • The traffic volumes along Station Road and Monmouth Road reflect this largely residential area of Pill. There is a directional variation which again reflects the morning and evening peaks.
	Ashton Vale • An analysis of the count data shows some differences in the morning and afternoon flows in and out of the Ashton Vale Road industrial estate but consistent flows along Winterstoke Road. This reflects the peripheral distributor function of Winterstoke Road.
Walking and cycling networks	**Portishead** • The area surrounding Portishead station has relatively good walking and cycling links although provision is lacking at specific locations and desire lines. There are many different potential routes to the town centre although the quality of the route can vary.

Table 16.7: Baseline transport conditions

Issue	Baseline assessment
	Pill • The older part of Pill has a walking and cycling environment that reflects the street layout and does not meet current standards. However, the environment is conducive to reducing vehicle speeds.

16.5 Measures Adopted as Part of the Project

16.5.1 A number of measures have been included as part of the project design in order to minimise certain environmental effects. This includes:

a) Careful designing of the project to ensure key receptors are avoided where possible;

b) Construction methodology adopting best practices techniques, which are set out in the Construction Strategy (DCO Document Reference 5.4), Code of Construction Practice ("CoCP") (ES Appendix 4.1, DCO Document Reference 8.15), and the Master CEMP (ES Appendix 4.2, DCO Document Reference 8.14), including an outline CTMP (Appendix K of the TA, DCO Document Reference 8.13), which are provided in the ES submitted with the DCO application.

c) Compliance with regulatory and legislative regimes as required by law, including the exercise by North Somerset District Council, as Highways Authority of its statutory function. Such measures will fall within the jurisdiction of North Somerset District Council as Highway Authority, rather than North Somerset District Council as local planning authority, and will be exercised using powers granted under the Highways Act 1980 and other statutory provisions.

16.5.2 Table 16.8 shows the infrastructure measures to be implemented for the DCO Scheme.

Table 16.8: Infrastructure measures to be implemented

Ref	Area	Location	Measure	Type of measure	Rationale	Time-scale	Responsible
1	Portishead	Phoenix Way / Quays Avenue / Harbour Road	Realignment of Quays Avenue and construction of new roundabout which also includes controlled parallel crossings on the Harbour Road and Phoenix Way arms.	Integral part of scheme	Level crossings not permitted by ORR	Prior to opening	Scheme Promoter
2	Portishead	Quays Avenue	Provision of a Toucan crossing on Quays Avenue west of the station site (entrance).	Integral part of scheme	To meet a pedestrian and cycle desire line from west of the station	Prior to opening	Scheme Promoter
3	Portishead	Quays Avenue	Provision of two bus stops (east bound and west bound) closer to the railway station.	Integral part of scheme	To enable easier transfer between bus and rail services	Prior to opening	Scheme Promoter
4	Portishead	Quays Avenue (between the station and Serbert Way)	Extension of the shared footway and cycleway on the west side of Quays Avenue.	Integral part of scheme	To meet a pedestrian and cycle desire line from west of the station	Prior to opening	Scheme Promoter

Table 16.8: Infrastructure measures to be implemented

Ref	Area	Location	Measure	Type of measure	Rationale	Time-scale	Responsible
5	Portishead	Quays Avenue (between the station and Serbert Way)	Existing traffic island to be replaced with a pedestrian island.	Integral part of scheme	To meet a pedestrian and cycle desire line from west of the station	Prior to opening	Scheme Promoter
6	Portishead	Trinity Primary School	Provision of a bridge compliant with the Equalities Act 2010.	Integral part of scheme	To formalise the crossing point across the railway and to provide access to and from the primary school	Prior to opening	Scheme Promoter
7	Portishead	Harbour Road (Between Quays Avenue and Newfoundland Road)	Double yellow lines	Traffic management measure	To reinforce use of the provided station car parks and minimise detrimental impacts on local businesses	Prior to opening	Highway Authority
8	Portishead	Haven View (From Harbour Road to Haven View)	Waiting restrictions to 2 hours	Traffic management measure	To reinforce use of the provided station car parks and minimise detrimental impacts on local businesses, residents and the health centre	Prior to opening	Highway Authority

Table 16.8: Infrastructure measures to be implemented

Ref	Area	Location	Measure	Type of measure	Rationale	Time-scale	Responsible
9	Portishead	Quays Avenue	Double yellow line	Traffic management measure	To reinforce use of provided station car parks and minimise detrimental impacts on local residents	Prior to opening	Highway Authority
10	Portishead	Phoenix Way (from Quays Avenue to Marjoram Way)	Double yellow lines (except existing parking bays)	Traffic management measure	To reinforce use of provided station car parks and minimise detrimental impacts on local residents	Prior to opening	Highway Authority
12	Sheepway to Pill	National Cycle Network 26	Realignment of existing of NCN 26 and ensure it is constructed to the latest standards	Integral part of scheme	To accommodate railway alignment	Prior to opening	Scheme Promoter
13	Portbury	Royal Portbury Dock Road	Improvements to the existing bridleway uncontrolled crossing point.	Integral part of scheme	To improve safety conditions for pedestrians and cyclists	Prior to opening	Scheme Promoter
14	Portbury to Pill	Under the M5 bridge	Closure of existing bridleway and replacement with a new bridleway under the M5.	Mitigation	To ensure a safe and appropriate route for horse riders as the existing bridleway will be partially required for the new railway alignment	Prior to opening	Scheme Promoter

Table 16.8: Infrastructure measures to be implemented

Ref	Area	Location	Measure	Type of measure	Rationale	Time-scale	Responsible
15	Pill	Monmouth Road (from Crusty Lane to Station Road)	Double yellow lines	Traffic management measure	To reinforce use of provided station car parks and minimise detrimental impacts on local residents and businesses	Prior to opening	Highway Authority
16	Pill	Station Road (Monmouth Road to Sambourne Lane)	Double yellow lines	Traffic management measure	To reinforce use of provided station car parks and minimise detrimental impacts on local residents, health centre and businesses	Prior to opening	Highway Authority
17	Pill	Sambourne Lane (from Station Road to the Health Centre front entrance)	Double yellow lines	Traffic management measure	To reinforce use of provided station car parks and minimise detrimental impacts on local residents, health centre and businesses	Prior to opening	Highway Authority
18	Pill	Station Road (Sambourne Lane to Heywood Road)	Double yellow lines	Traffic management measure	To reinforce use of provided station car parks and minimise detrimental impacts on local residents, health centre and businesses	Prior to opening	Highway Authority

Table 16.8: Infrastructure measures to be implemented

Ref	Area	Location	Measure	Type of measure	Rationale	Time-scale	Responsible
19	Pill	Station Road (New Road to Church Walk)	Double yellow lines	Traffic management measure	To reinforce use of provided station car parks and minimise detrimental impacts on local residents, health centre and businesses	Prior to opening	Highway Authority
20	Pill	Chapel Row / New Road / Myrtle Hill Gyratory	Double yellow lines	Traffic management measure	To reinforce use of provided station car parks and minimise detrimental impacts on local residents, health centre and businesses	Prior to opening	Highway Authority
21	Pill	Ham Green / Macrea Road	Provision of a ghost island	Integral part of scheme	To facilitate HGV movement towards the Pill Tunnel access route	Prior to construction works	Scheme Promoter

Table 16.8: Infrastructure measures to be implemented

Ref	Area	Location	Measure	Type of measure	Rationale	Time-scale	Responsible
22	Ashton Vale	Ashton Vale Road / Winterstoke Road junction	Extension of left-turn lane on Winterstoke Road northbound and upgrade of the mode of control of traffic signals to MOVA. ~~Installation of a replacement pedestrian/cycle ramp to the north of the level crossing to connect pedestrians and cyclists to Ashton Road and the existing network of at grade and subway footpaths and cycle paths.~~	Integral part of scheme	To improve access to Ashton Vale industrial estate	Prior to opening	Scheme Promoter
23	Ashton Vale	Barons Close Pedestrian Crossing	Closure of existing pedestrian crossing across the railway line with a replacement route.	Integral part of scheme	To improve safety for pedestrians	Prior to opening	Scheme Promoter
24	Parking (Generally)	In the vicinity of Portishead and Pill Railway Stations	Post implementation monitoring of parking	Monitoring	To measure effectiveness of parking provision	Post imple-mentation for 2 years	Scheme Promoter

16.5.3 The outline CTMP (see Appendix K of the TA, ES Appendix 16.1, DCO Document Reference 8.13) identifies five areas in which measures can reduce or avoid predicted transport effects.[4] Many of these are standard measures that would be proposed whether or not the proposed development was an EIA development, so are not presented as measures to mitigate identified likely significant effects. The five areas are:

- Highway delivery routes;
- Management of abnormal loads;
- Phasing of construction and operating periods;
- Traffic management measures within compounds including parking; and
- Local traffic management measures relating to temporary or partial local highway network closures.

16.5.4 A number of highway delivery routes have been identified and these routes take account of weight restrictions, the capacity of the local highway network to accommodate HGV movements where required and the need to minimise the impacts on residential neighbourhoods, local business, local schools and other services.

16.5.5 A number of principles should apply to the management of abnormal delivery loads to minimise disruption. This includes careful consideration on whether loads can be broken into smaller blocks, travelling in convoys and timed at outside peak hours, the need for an access route feasibility report to be undertaken and the communication of information to local residents, businesses and services.

16.5.6 The Construction Strategy for the railway works of the DCO Scheme has been developed by Network Rail. The Construction Strategy focuses upon the compounds and access points from the highway network that will be needed.

16.5.7 Given part of the DCO Scheme involves upgrading part of an operational railway, it is likely there will be a need for either temporary possessions or periods of night time working.

16.5.8 Whilst the aim will be to minimise construction related traffic particularly in peak traffic periods on the highway network, construction hours may vary.

16.5.9 To mitigate against the transport impacts of the construction compounds, the following will be required:

- Preparation and submission of construction compound layout plans which includes parking and security details;
- Access details including separate arrangements for vehicles and pedestrians, crossing points and visibility splays;

[4] Note that the CTMP presented as Appendix K of the TA (DCO Document Reference 8.13) is an outline plan that provides a framework for the management of the construction traffic and its impacts. A detailed CTMP will be prepared once contractors have been appointed.

- Vehicle movement on site will be controlled through designated parking areas and the location of storage areas so that delivery vehicles do not have to cross the site; and
- Additional control measures such as banksmen who will be responsible to control manoeuvres and gatekeepers will be in place.

16.5.10 There will be a requirement for the main contractor(s) to produce traffic management plans for the impacts on the highway network. The traffic management plans will provide details of the following.

- Control measures that may be required such as manning of signals, notification and enforcement by local police; and
- The need for Travel Demand Management ("TDM") measures that comprises communication and measures for the public, businesses and local services.

16.6 Assessment of Effects

Construction Phase

16.6.1 Table 16.9 summarises the transport impacts, the embedded measures (see 16.5.1(a) and (c) above), the predicted effects with these measures in place, and the magnitude of the impact at the construction stage. The outline CTMP (Appendix K of the TA, DCO Document Reference 8.13) has further details of the measures and assessments.

Table 16.9: Transport effects at construction stage

Impact	Embedded Measures	Consequence of that mitigation	Magnitude of impact
Impact of HGVs and other construction vehicles on the highway network	The CTMP identifies recommended construction routes	The recommended routes are designed to adhere to principal routes where possible and minimise impacts on local roads. The routes are also designed to move traffic away from predominately residential streets as much as possible and also away from local schools.	Minor adverse. No significant impact to local road network. No significant impact to SRN.
Delivery of abnormal loads	The CTMP identifies the framework for the delivery of abnormal loads	The CTMP recommends that the delivery of abnormal loads should be minimised and timed for quiet periods on the highway network. This should reduce the impact on the operation of the highway network.	Minor adverse. No significant impact to local road network. No significant impact to SRN.

Table 16.9: Transport effects at construction stage

Impact	Embedded Measures	Consequence of that mitigation	Magnitude of impact
Partial or full highway closures	Phasing of construction and operating periods	Construction works will need to be phased so that alternative routes are readily available or minimised on existing routes.	Minor adverse. No significant impact to SRN.
	Local traffic management measures	In conjunction with above, additional local traffic management measures may be required (signage, communications, etc.) which should reduce the effects of the works. This would be agreed with the Highway Authority post DCO.	Minor adverse. No significant impact to local road network.
Construction compounds could have a detrimental localised impact	Traffic management measures within compounds	The CTMP provides a framework for the management of compounds. These should reduce the impact on the highway network and surrounding properties.	Minor adverse. No significant impact to local road network. No significant impact to SRN.

16.6.2 In summary, the effect of the construction works, including construction traffic, will result in **minor adverse** impacts on the local road network and SRN, which are not significant in relation to the EIA Regulations 2017.

Operations Phase

16.6.3 The impact of the DCO Scheme has been assessed at a strategic level across Bristol and the wider area. These impacts have been presented in Section 6 of the TA (ES Appendix 16.1, DCO Document Reference 6.25). The impacts reported cover:

- Passenger rail demand;
- Strategic highway and bus impacts; and
- Rail freight.

16.6.4 The calculation of the trips to and from Pill and Portishead stations have been informed by the outputs of the RDM (refer to section 6.3 of the TA).

16.6.5 Table 16.10 summarises the expected number of passengers using Portishead and Pill stations for the opening year (2021) and 10 years later (2031), on a typical weekday during operational hours of 0600 and 2400. The table breaks down the number of passengers by likely mode to and from the stations. These data have also been presented in Tables 6.13 (Portishead Station) and Table 6.14 (Pill Station) of the TA where the number of passengers has been broken down further into distance travelled to the respective stations.

Table 16.10: Number of passengers using the DCO Scheme Stations and mode of access for a typical weekday

Station and year	Walk	Bus	Car	Car drop off	Bicycle	Taxi	Total
Portishead opening year (2021)	243	16	171	76	23	2	530
Portishead 10 years (2031)	334	22	235	104	32	2	729
Pill opening year (2021)	42	1	24	11	3	0	80
Pill 10 years (2031)	63	1	37	16	4	0	123

16.6.6 Impacts on the strategic highway network have also been assessed; for details refer to Section 6 and Appendix E of the TA (ES Appendix 16.1, DCO Document Reference 6.25). Figures 1 to 12 in Appendix E present the congestion hotspots on the network for baseline, 2021 and 2036 scenarios, for morning (“AM”), interpeak (“IP”) and afternoon (“PM”) models. The plots showing differences in congestion indicate increases in the congestion associated with development growth in future years, but little change associated with the DCO Scheme. Also, it is useful to note that the changes are small in comparison to the traffic flows on the M5.

16.6.7 The DCO Scheme has been designed such that there will be no adverse impacts on rail freight operation (refer to section 6.5 of the TA - ES Appendix 16.1, DCO Document Reference 6.25). Timetabling analysis has been undertaken which illustrates that rail freight paths can be accommodated alongside the proposed DCO Scheme, providing as many freight paths as are available (albeit not all used) at present.

16.6.8 Table 16.11 summarises the future transport conditions across the study area, with the DCO Scheme in operation. This is based on assessments described in the TA (sections 6 and 7) at ES Appendix 16.1, DCO Document Reference 6.25.

Table 16.11: Future transport conditions

Topic	Assessment 10 years after scheme opening	Magnitude of impact
Rail use	The provision of the new railway infrastructure and services provides opportunities for many more people to have improved access to the rail network than beforehand, and results in additional demand for rail trips that is forecast to grow over time, from around 375,000 rail trips in the opening year (at Portishead and Pill stations) to almost 500,000 by 2036.	Significant beneficial
Highway junctions and level crossings	**Portishead** The following junctions have been assessed to be operating within capacity in the morning and evening peaks (08:00-09:00 and 17:00-18:00): • Phoenix Way/Quays Avenue/Harbour Road • Station Road/Harbour Road/Cabstand • Wyndham Way/Sheepway/Portbury Hundred The following junction has been assessed to be exceeding capacity with congestion occurring in the morning and evening peaks (08:00-09:00 and 17:00-18:00). However, the proposed scheme will not have significant impact on the junction: • Cabstand/Wyndham Way/High Street The following junction shows an increase in queuing and delay times at the junction, this increase will be negligible: • Quays Avenue/Wyndham Way/Serbert Way	Negligible
	M5 J19 This junction has been assessed to be exceeding capacity with congestion occurring in the morning and evening peaks (08:00-09:00 and 17:00-18:00).	Negligible
	Pill The following junctions have been assessed to be operating within capacity in the morning and evening peaks (08:00-09:00 and 17:00-18:00): • Station Road/Heywood Road/Lodway • A369/St Georges Hill • A369/Pill Road	Negligible
	Ashton Vale	Negligible

Table 16.11: Future transport conditions

Topic	Assessment 10 years after scheme opening	Magnitude of impact
	• The detailed operation of the Winterstoke Road/Ashton Vale Road junction and Ashton Vale Road level crossing has been assessed using LinSig and VISSIM micro-simulation modelling, in particular to consider the impact of increased level crossing closures that passenger services will require. Results of this modelling indicate that increased closures combined with scheme measures at the junction will have a neutral impact on queuing and delays on Winterstoke Road (northbound carriageway) and Ashton Vale Road; other approaches are also unaffected. (for further details see Appendix N of the TA - ES Appendix 16.1, DCO Document Reference 6.25).	
Parking	**Portishead** • A review of committed developments suggests further development in the vicinity of Harbour Road and Serbert Way. As a result, there is likely to be an increase in demand in on-street parking in these areas. Other areas of Portishead are likely to see a continuation of existing demand.	Moderate adverse This issue is considered further in Section 16.8 in relation to cumulative effects.
	Pill • Existing parking demand is likely to continue with no major changes expected.	Minor adverse
Public transport	The majority of bus services are provided on a commercial basis and as a result it is difficult to forecast future provision.	Negligible
Walking and cycling networks	**Portishead** No major changes are expected to existing walking and cycling provision and as a result use is likely to change in line with local trends across North Somerset.	Minor adverse

Table 16.11: Future transport conditions

Topic	Assessment 10 years after scheme opening	Magnitude of impact
	Pill No major changes are expected to existing walking and cycling provision and as a result use is likely to change in line with local trends across North Somerset.	Negligible
	Ashton Vale Baron's Close pedestrian crossing has been temporarily closed as part of the MetroBus m2 route. Permanent closure is included in the DCO scheme. The DCO Scheme will dedicate a new public right of way for pedestrians and cyclists between Barons Close and Ashton Vale Road along the MetroBus maintenance path.	Minor adverse

16.6.9 In summary, the operation of the DCO Scheme will mostly result in **negligible** to **slight adverse** effects on highway junctions and level crossings, parking in Pill, public transport, and walking and cycling networks. These effects are not significant in relation to the EIA Regulations 2017.

16.6.10 The assessment has identified **moderate adverse** effects on parking in Portishead, based on a review of committed developments in the town which are likely to drive on-street parking. This effect is significant in relation to the EIA Regulations 2017.

16.7 Mitigation and Residual Effects

Introduction

16.7.1 The TA (Section 10) (ES Appendix 16.1, DCO Document Reference 6.25) outlines a Transport Implementation Strategy that brings together measures that will be required to support the DCO Scheme, most of which are intrinsic to the DCO Scheme so the aim being that all measures should complement and reinforce the effectiveness of each other. No further mitigation measures have been identified for the DCO Scheme and the assessment of residual effects remains as reported in Section 16.6.

Enhancements

16.7.2 A travel plan is used to show how transport proposals will be managed to reduce environmental, social and economic impacts. Travel Plans are a planning requirement for all new large developments, and without an approved Travel Plan document the application would have to be refused. As such, NSDC's 'Development Management Advice' includes 'Travel Plans: Supplementary Planning Document (SPD)', to provide certainty and consistency for all those involved in development related Travel Plans;

developers, applicants and their agents, tenants/occupiers, and council officers, which was adopted in November 2010.[5]

16.7.3 A key aim of travel plans is to manage travel to and from key trip generating places. To reduce the number of vehicle trips to and from the stations, travel plans are recommended good practice and are likely to be implemented. Outline station travel plans have been prepared and identify a range of measures before, at and after opening. Table 16.12 summarises the possible main actions that have been identified for the outline station travel plans. Further details are available in the TA (section 10 and Appendix M) - ES Appendix 16.1, DCO Document Reference 6.25.

Table 16.12: Recommended possible actions in the Outline Station Travel Plans

Objective	Action Ref	Action	Timescale	Impact
People walking to the station (Portishead 48%, Pill 46%)	A1	Review walking routes to the station and identify infrastructure improvements which could encourage walking.	Before opening	High
People cycling to the station (Portishead 4%, Pill 3%)	B1	Review cycle access routes in the vicinity of the station to identifying and implementing improvements to cycling infrastructure.	Before opening	High
	B2	Ensure good surveillance and lighting for the cycling parking area as part of the station design	Before opening	Low
	B3	Generate awareness of secure cycle parking through promotion on the station (posters, signage on secure compound).	Station opening	Low
	B4	Make local cycling maps available at the station and other key centres, including online.	Station opening	Low
	B5	Establish a station-based Bicycle User Group (BUG) - possibly linked to an existing group.	Post opening	Medium
Ensure that bus travel to the station is a realistic option for passengers	C1	Liaise with bus operators about the need to connect to with the station and improve services including existing frequency	Before and after opening	Medium
	C2	Ensure information about bus times is easily available at bus stops, the station and online.	Before and after opening	Medium

[5] http://www.n-somerset.gov.uk/wp-content/uploads/2015/11/travel-plans-supplementary-planning-document.pdf

Table 16.12: Recommended possible actions in the Outline Station Travel Plans

Objective	Action Ref	Action	Timescale	Impact
		Include information on connections with trains		
	C3	Ensure information about bus times is easily available at bus stops, the station and online. Include information on connections with trains	Before and after opening	Medium
30% driving to and from the station	D1	Investigate the feasibility of providing car share priority spaces in a prominent area of car park	Before and after opening	High
	D2	Promotion of Travelwest car sharing scheme	After opening	Low
Maximise awareness and options for using the new rail service	E1	Provide information on new rail services to residents and businesses in Portishead	After opening	Medium
	E2	Provide local residents and businesses with information on travel options to the station, including cycling, bus services and local car sharing schemes.	After opening	Medium

16.7.4 Most physical infrastructure measures to address transport-related issues and allied traffic management measures are integral to the scheme. One physical measure (the extension of existing bridleway and replacement with a new bridleway under the M5) is considered an enhancement of the DCO Scheme. This is to ensure a safe and appropriate route for horse riders as the existing bridleway will be partially required for the new railway alignment.

16.8 Cumulative Effects

16.8.1 An assessment has been made of the cumulative effects of the DCO Scheme on other Schemes along the Portishead Branch Line and these are summarised in Table 16.14. The full Cumulative Impact Assessment is presented in the ES Chapter 18 (DCO Document Reference 6.21). Where available, detailed information was compiled for each shortlisted 'other development' and the cumulative effects were assessed. This information is presented in Matrix 1 and Matrix 2 in Appendices 18.1 and 18.2 of the ES Volume 4 Appendices (DCO Document Reference 6.25).

Table 16.14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
National Grid Hinkley Point C Connection Project	Construction compounds for the Hinkley project will be located approximately 0.20 km south of the disused railway south of Sheepway. Construction of the project has started and is likely to overlap with the construction of the DCO Scheme.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**
18/P/3591/OUT Redevelopment of Old Mill Road, Portishead for a mix of offices, retail, leisure, cafes, bars and restaurants and up to 350 residential units. Pedestrian/cycleway links to dockside development and adjacent supermarket required.	The proposed development is located in close proximity to the proposed site for Portishead Station. Access to this site will be through the main Wyndham Way and Quays Avenue junction which is one of the main access routes to the construction compound at Portishead station. There is potential for adverse cumulative effects on traffic and transport on the local road network to occur during construction (if construction programmes coincide) and operation.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects. The layout of Quays Avenue and adjoining roads has been designed to create safe and accessible transport routes.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**

Table 16.14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
17/P/1229/F Erection of 33 dwellings. Land off Wyndham Way, Portishead	Due to the proposed development's location, there are to be limited adverse cumulative traffic and transport impacts during construction as access to this site will be through the main Wyndham Way and Quays Avenue junction which is one of the main access routes to the construction compound at Portishead station.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**
16/P/1938/F New access between cargo storage areas Plot 25 and 26 off Marsh Lane at Royal Portbury Dock	There is a potential for adverse cumulative traffic and transport effects if the construction phase coincides with that of the DCO Scheme as the same haulage routes may be used.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**

Table 16.14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
18/02847/ FB(BCC) PT18/2505/ R3F (South Gloucestershire Council) Avonmouth/Severnside Enterprise Area ("ASEA") Ecology Mitigation and Flood Defence Project. Major Application.	The construction phases of both schemes are likely to coincide. They may both use the same haulage route (the M5) so there is potential for adverse cumulative traffic and transport effects to occur.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**
18/P/4072/EA1 Formal screening opinion request for a mixed-used development with up to 1000 dwellings, employment space, local centre, primary school and public open space in Pill.	Potential adverse cumulative effect on traffic and transport during construction if both schemes are constructed at the same time as the same access roads may be used.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**

Table 16.14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
15/00291/P UWE Bower Ashton Campus at Kennel Lodge Road, Bristol BS3 2JT	The access to the proposed development is provided via Kennel Lodge Road which forms a junction with Clanage Road. The DCO Scheme will have a main construction compound located on Clanage Road to the north of this junction. There is a potential for moderate adverse cumulative impacts on traffic and transport on the local road network to occur during construction as the same access roads may be used.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**
Mixed use development on Temple Island. Potential to include a conference centre, hotel, commercial spaces, retail and housing. Former Diesel Depot Bath Road Brislington Bristol BS4 3DT	The proposed development is located close to Bristol Temple Meads station and may be used by passengers on the Portishead Branch Line.	No mitigation required.	The DCO Scheme will improve access through provision of non-car options. **Beneficial – moderate.**

Table 16.14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
Bristol TQEZ: greenways, changes to road layout, new pedestrian and cycle routes, redevelopment of Bristol Temple Meads Station	Both developments will increase provision of non-car options of transport and improve accessibility.	No mitigation required.	The developments will complement each other. **Beneficial – moderate.**
Great Western Mainline Electrification project. Electrifying the line from London Paddington to Cardiff (via Bristol Temple Meads). This scheme is currently under construction although the sections from Bristol Parkway to Bristol Temple Meads and Bath to Bristol Temple Meads have now been deferred.	Whilst the DCO Scheme is not dependent on electrification, it sits within a group of rail improvement schemes in the West of England. On this basis, the DCO Scheme complements the benefits offered by this scheme.	No mitigation required.	The DCO Scheme will complement other transport schemes **Beneficial – moderate**
Bristol East Junction will be remodelled to improve the track layout and reduce congestion in order to prepare for the new electric trains and support the provision of additional fast train services between Bristol and London.	Whilst the DCO Scheme is not dependent on the remodelling of the Bristol East junction, it sits within a group of rail improvement schemes in the West of England. On this basis, the DCO Scheme complements the benefits offered by this scheme.	No mitigation required	The DCO Scheme will complement other transport schemes **Beneficial – moderate.**

Table 16.14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
Residents' parking scheme in Bristol.	Residents' parking schemes are in operation across Bristol. The Southville scheme located near Parson Street Station may conflict with increased numbers of people using the station who will require places to park.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**
17/06938/F New plant machinery and buildings and demolition of existing buildings at ETM recycling facility, Ashton Vale Road, Bristol.	The site will be accessed by Ashton Vale Road and the Ashton Gate crossing. If the development is built during the construction phase of the DCO Scheme, construction traffic may use the same routes. Potential cumulative traffic and transport impact.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**
17/01789/F Erection of self-storage unit and on site car parking at Former Mercedes Car Dealership Marsh Road and Winterstoke Road Bristol.	If the development is built during the construction phase of the DCO Scheme, construction traffic may use the same routes. Potential cumulative traffic and transport impact.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**

Table 16.14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
17/06559/FB Erection of 133 no. dwellings with associated access, landscaping and services. Former Alderman Moores Allotments Silbury Road Bristol.	Development is currently under construction, so it is unlikely that it will overlap with the construction of the DCO Scheme. If it does overlap, there is a potential for adverse cumulative traffic and transport impacts as construction transport routes may coincide.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**
19/01796/SCO Request for a Scoping Opinion for Sport and Convention Centre, hotels, residential and office development and associated transport infrastructure (including a multi-storey car park) on the Ashton Gate Stadium site.	Development in early stages. Development may use same haulage routes as DCO Scheme – potential traffic and transport impact if they are constructed at the same time.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**
19/01794/SCO Cumberland Village: linked to the new Sports and Convention centre, proposal for up to 520 homes. Field south of David Lloyd, Long Ashton.	Development in early stages. Development may use same haulage routes as DCO Scheme – potential traffic and transport impact if they are constructed at the same time.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**

Table 16.14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
16/01699/P Bailey of Bristol caravan manufacturer remodelling their site at 16-20 South Liberty Lane Bristol BS3 2SR.	Development may use same haulage routes as DCO Scheme – potential traffic and transport impact if they are constructed at the same time.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**
West of England Joint Spatial Plan and Transport Study – Draft Strategy	Potential for cumulative impacts relating to traffic and transport. These may be both beneficial, i.e. improved accessibility across the wider Bristol area, and adverse, for example if any schemes are constructed at the same time as the DCO Scheme and the same haulage routes are used.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**
West of England Joint Local Transport Plan 4 – Draft Strategy	Potential for cumulative impacts relating to traffic and transport. These may be both beneficial, i.e. improved accessibility across the wider Bristol area, and adverse, for example if any schemes are constructed at the same time as the DCO Scheme and the same haulage routes are used.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the CTMP, which will be cognisant of other schemes being developed at the same time. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	It is envisaged that the CTMP will address any significant adverse cumulative effects. **Neutral residual effect.**

Table 16.14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
Bedminster Down Relief Line – part of MetroWest Phase 1	The proposed scheme will complement other transport schemes and is required for MetroWest Phase 1 to operate.	No mitigation required.	The proposed scheme will complement other transport schemes. **Beneficial – moderate.**
Bathampton Turnback – part of MetroWest Phase 1	The proposed scheme will complement other transport schemes and is required for the Bath line increased service frequency of MetroWest Phase 1 to operate.	No mitigation required.	The proposed scheme will complement other transport schemes. **Beneficial – moderate.**
Parson Street Junction – part of MetroWest Phase 1	The proposed scheme will complement other transport schemes and is required for MetroWest Phase 1 to operate.	No mitigation required.	The proposed scheme will complement other transport schemes. **Beneficial – moderate.**
Parson Street Station – part of MetroWest Phase 1	The proposed scheme will complement other transport schemes and is required for MetroWest Phase 1 to operate.	No mitigation required.	The proposed scheme will complement other transport schemes. **Beneficial – moderate.**

16.9 Limitations Encountered in Compiling the ES

16.9.1 The Construction Strategy in DCO Document Reference 5.4 presents options based on the GRIP 3 approval in principle ("AIP") designs where available, designs are still in development and are subject to change during the detailed design stage. Further ground investigation and surveys are also required in some areas to inform the construction strategy. The construction strategy will be refined as the project progresses and is subject to change as designs develop. However the construction methodology and options discussed are unlikely to change materially from those discussed in the document and the TA (ES Appendix 16.1, DCO Document Reference 6.25) is based on reasonable assumptions regarding construction methodologies.

16.9.2 There is also limited information on the potential impacts on existing bus services. It is noted that most local bus services are run on a commercial basis and operators are required by legislation to give the traffic commissioner 56 days' notice to start, amend or cease bus services. Whilst a calculation has been made of the potential modal transfer from bus to rail, it is not possible at this time to determine the extent of impact on existing bus services or the behaviour of commercial operators to any changes to bus demand as a result of the DCO Scheme.

16.10 Summary

16.10.1 This chapter has considered the transport aspects of the DCO Scheme in terms of the existing and future conditions and during construction works. It followed the guidance on the preparation of transport assessments and its scope was determined following discussion with stakeholders. The impacts were considered at strategic and local levels and across all transport modes. This chapter is based on, and should be read in conjunction with, the TA, Appendix 16.1 of the ES (DCO Document Reference 6.25), which sets out full details of the assumptions made, methodology used and findings of the assessments.

16.10.2 As a public transport scheme, the Portishead Branch Line (MetroWest Phase 1) DCO Scheme represents a major enhancement to the local transport network and will promote modal shift away from vehicle use. The DCO Scheme will improve access to employment opportunities such as the TQEZ and will provide further benefits to those without access to a private car (TA section 3).

16.10.3 An analysis of the baseline conditions indicated that many locations on the local highway network are operating within capacity and not suffering from prolonged congestion. The same analysis indicated that there are capacity concerns at specific locations with delays and queue lengths evident (TA section 4).

16.10.4 Strategic assessment of the DCO Scheme predicts that there will be reductions in highway demand resulting from the scheme which correspond with an increase in rail demand. However, the model suggests an increase in highway congestion associated with development growth in future years but little change associated with the DCO Scheme (TA section 6).

16.10.5 The calculation of the trips to and from Pill and Portishead stations have been informed by the output of the passenger Rail Demand Model. For

Portishead station, the data show that, in the 10-year period assessed (2021 to 2031), demand at the station will increase across all modes of transport (TA section 5).

16.10.6 The local assessment of the DCO Scheme indicates that the network will be operating within capacity at the majority of locations both with and without the DCO Scheme, and the impact of the scheme itself do not materially push locations over capacity. The proposed station parking would meet demand at both Portishead and Pill stations. Monitoring of parking will be required to measure effectiveness of station parking provision, particularly in Portishead, as a result of parking pressures caused by committed developments, which are likely to drive on-street parking (TA section 7).

16.10.7 The number of walking and cycling trips are forecast to increase and improvements to infrastructure is included in the vicinity of the stations. With public transport, it is estimated that the DCO Scheme will lead to an extraction of 25% to 40% demand from existing bus services (TA section 7).

16.10.8 Proposed infrastructure measures integral to the DCO Scheme will improve access to and in and around the stations and would underpin the level of sustainable trips. The proposed parking controls (through double yellow lines on local roads) would have the beneficial effect of reinforcing the use of the station car parks and prevent adverse impacts on neighbouring properties (TA section 9).

16.10.9 As a result of the additional trains on the line, the level crossing barriers at Ashton Vale Road would need to operate more often than they do currently. As Ashton Vale Road is the only road access to the industrial estate this could lead to access restrictions to the businesses located there and cause traffic queues on both sides of the level crossing. A such, the DCO Scheme includes extending the length of the left-turn lane on the northbound side of Winterstoke Road and~~,~~ upgrading the mode of control of the signals to MOVA~~ and installing a ramp to the north of the level crossing to connect pedestrians and cyclists to Ashton Road and the existing network of at grade and subway footpaths and cycle paths~~ (Appendix N of the TA).

16.10.10 Mitigation measures associated with construction of the DCO Scheme focus upon highway delivery routes, delivery of abnormal loads, phasing of construction and operating periods, traffic management measures and compounds. Implementing these will have the effect of managing the adverse impacts on local residents, businesses and services (TA section 8).

16.10.11 The potential impacts, measures of mitigation and residual impacts of the DCO Scheme on transport, access and NMUs are presented in Table 16.15 (and more details are in the TA, sections 6, 7, 8 & 9).

16.10.12 Note that this chapter focuses on the immediate impacts of the DCO Scheme. The DCO Scheme, and the rest of MetroWest Phase 1, brings the significant benefits of new and enhanced rail access across a wide area. More details of strategic impacts can be found in Section 6 of the TA (Strategic operational impact assessment).

Table 16.15: Summary of the assessment of the DCO Scheme on Transport, Access and NMUs

Aspect and control measures embedded in the DCO Scheme	Receptors	Impact	Environmental Mitigation	Residual Effects
Construction activities				
Construction of stations. Implementation of the CTMP that comprises measures to reduce the impact of construction activities on existing users.	Highway users, residents, businesses, local services, public transport operators **Value: N/A**	Changes in existing traffic management arrangements including partial and temporary closures and access. On existing desire lines for non-motorised users. **Magnitude of Impact: Minor adverse**	None	Construction activities will have an impact with works being undertaken over a prolonged period. **Magnitude: Minor adverse** **Significance of Effect: Not significant** **Significance for EIA legislation: N/A**
Line construction. Implementation of the CTMP that comprises measures to reduce the impact of construction activities on existing users.	Highway users, residents, businesses, local services, public transport operators. **Value: N/A**	Changes in existing traffic management arrangements including partial and temporary closures and access. On existing desire lines for non-motorised users. **Magnitude of Impact: Minor adverse**	None	Construction activities will have an impact with works being undertaken over a prolonged period **Magnitude: Minor adverse** **Significance of Effect: Not significant** **Significance for EIA legislation: N/A**

Table 16.15: Summary of the assessment of the DCO Scheme on Transport, Access and NMUs

Aspect and control measures embedded in the DCO Scheme	Receptors	Impact	Environmental Mitigation	Residual Effects
Operation activities				
Walk/cycle demand to access Portishead station. Improvements in the vicinity of station and for other rights of way.	Users, and residents / business in the area. **Value: N/A**	Increase in the level of demand and use of existing walking and cycling provisions. **Magnitude of Impact: Minor Beneficial**	None	Improvements to NMU provision will have a beneficial effect on increasing the numbers walking and cycling to and from the station **Magnitude: Minor Beneficial** **Significance of Effect: Not Significant** **Significance for EIA legislation: N/A**
Vehicular demand (bus, taxi, car) to access Portishead station car park. Improvements to the local highway network at specific locations.	Highway users, residents, businesses, local services, public transport operators **Value: N/A**	Changes in travel demand in Portishead, abstraction from other routes / modes. **Magnitude of Impact: Minor Adverse**	None	Assessment indicates a largely minor impact on the operation of the local highway network and the need for mitigation is limited. **Magnitude: Minor Adverse** **Significance of Effect: Not significant** **Significant for EIA legislation:** N/A

Table 16.15: Summary of the assessment of the DCO Scheme on Transport, Access and NMUs

Aspect and control measures embedded in the DCO Scheme	Receptors	Impact	Environmental Mitigation	Residual Effects
Walk/cycle demand to access Pill station. Improvements in the vicinity of station and for other rights of way.	Users, and residents / business in the area. **Value: N/A**	Increase in the level of demand and use of existing walking and cycling provisions. **Magnitude of Impact: Minor Beneficial**	None	Improvements to NMU provision will have a beneficial effect on increasing the numbers walking and cycling to and from the station. **Magnitude: Minor Beneficial** **Significance of Effect: Not Significant** **Significance for EIA legislation: N/A**
Vehicular demand (bus, taxi, car) to access Pill to use the station. Improvements to the local highway network at specific locations.	Highway users, residents, businesses, local services, public transport operators. **Value: N/A**	Changes in travel demand in Pill, abstraction from other routes / modes. **Magnitude of Impact: Minor Adverse**	None	Assessment indicates a largely minor impact on the operation of the local highway network and the need for mitigation is limited. **Magnitude: Minor Adverse** **Significance of Effect: Not significant** **Significance for EIA legislation:** Unknown at this stage

Table 16.15: Summary of the assessment of the DCO Scheme on Transport, Access and NMUs

Aspect and control measures embedded in the DCO Scheme	Receptors	Impact	Environmental Mitigation	Residual Effects
Increased use of Ashton Vale Road and associated level crossing. Extension of left-turn lane on Winterstoke Road northbound, upgrade of the mode of control of traffic signals to MOVA. ~~and ramped pedestrian access to the north of the level crossing to connect pedestrians and cyclists to Ashton Road and the existing network of at grade and subway footpaths and cycle paths.~~	Highway users, residents, businesses, local services, public transport operators. **Value: N/A**	Increased downtimes will not have a detrimental impact on the operation of the highway network as a result of proposed scheme measures. ~~Magnitude of Impact:~~	None	Proposed works will have a beneficial effect on highway safety and operation. The extended left turn flare on Winterstoke Road northbound will contain queuing traffic without blocking the adjacent ahead movement. Queuing traffic on Ashton Vale Road will be well managed following the re-opening of the level crossing with the additional green phase. ~~Ramped pedestrian access will provide an alternative link between Winterstoke Road and the industrial estate for NMUs.~~ **Magnitude: Neutral** **Significance of Effect: Not Significant** **Significance for EIA legislation:** Unknown at this stage

Table 16.15: Summary of the assessment of the DCO Scheme on Transport, Access and NMUs

Aspect and control measures embedded in the DCO Scheme	Receptors	Impact	Environmental Mitigation	Residual Effects
Cumulative Effects				
Construction of scheme components outside the DCO scheme extent Implementation of the CTMP that comprises measures that seek to minimise the impact of construction activities on existing users.	Highway users, residents, businesses, local services, public transport operators. **Value: N/A**	Changes in existing traffic management arrangements including partial and temporary closures and access. On existing desire lines for non-motorised users.		Construction activities will have an impact although the required works will be more limited. **Magnitude: Minor Adverse** **Significance of Effect: Not Significant** **Significance for EIA legislation: N/A**
Increased use of level crossings on the Severn Beach line. No embedded measures as analysis suggests impact will be limited.	Highway users, residents, businesses, local services. **Value: N/A**	Increased number of closures will have a limited impact on the operation of the local highway network.		**Magnitude: Minor Adverse** **Significance of Effect: Not significant** **Significance for EIA legislation: N/A**
Possible local vehicular demand associated scheme. No embedded measures as analysis suggests impact will be limited.	Highway users, residents, businesses, local services. **Value: N/A**	Cumulative impacts limited to construction works.		**Magnitude: Negligible** **Significance of Effect: Not Significant** **Significance for EIA legislation: N/A**
An assessment has been made of the cumulative effects of the DCO Scheme on other Schemes along the Portishead Branch Line and these are summarised in Table 16.14. The full Cumulative Impact Assessment is presented in Chapter 18 (DCO Document Reference 6.21) and Appendices 18.1 and 18.2 of the ES (DCO Document Reference 6.25).				**Magnitude: Neutral, with some beneficial impacts**

16.11 References

Department for Communities and Local Government (2015), Transport Evidence Bases in Plan Making and Decision Making

Department for Communities and Local Government (2012), National Planning Policy Framework

Department for Transport (2007), Guidance on Transport Assessments (Archived)

Department for Transport (2005), Design Manual for Road and Bridges (DMRB) Volume 2: Assessment and Preparation of Road Schemes – Section HD 42/05

Department for Transport (1997), Design Manual for Road and Bridges (DMRB) Volume 12: Traffic Appraisal of Road Schemes – Chapter 6, Section 6.2

North Somerset Council (2015). Highways Development Design Guidance

16.12 Abbreviations

ASEA	Avonmouth and Severnside Enterprise Area
B&NES	Bath and North East Somerset
BASRE	Bristol Area Signalling Renewal and Enhancement
BCC	Bristol City Council
BUG	Bicycle User Group
CEMP	Construction Environmental Management Plan
CoCP	Code of Construction Practice
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DfT	Department for Transport
DMRB	Design Manual for Road and Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
FRA	Flood Risk Assessment
GBATS4	Bristol and wider area strategic transport model
GRIP	Governance for Railway Investment Projects
GTA	(Department for Transport) Guidance on Transport Assessments
HDDG	Highways Development Design Guidance
HGV	Heavy Goods Vehicle
IEMA	Institute of Environmental Management and Assessment
IP	Interpeak
LEP	Local Enterprise Partnership
LTPP	(NRIL) Long Term Planning Process
MOIRA	Railway industry timetable demand modelling software
MOVA	Microprocessor Optimised Vehicle Actuation

NMU	Non-Motorised User
NPPF	National Planning Policy Framework
NPSNN	National Policy Statement for National Networks
NSDC	North Somerset District Council
NSIP	Nationally Significant Infrastructure Project
NSLIDB	North Somerset Levels Internal Drainage Board
ORR	Office of Rail and Road
RDM	Rail Demand Model
RUS	Route Utilisation Strategy
SADMP	Site Allocation and Development Management Policies
SEP	Strategic Economic Plan
SGC	South Gloucestershire Council
SPD	Supplementary Planning Document
TA	Transport Assessment
TDM	Travel Demand Management
TMP	Traffic Management Plan
TMWG	Traffic Management Working Group
TQEZ	Temple Quarter Enterprise Zone
UWE	University of West of England