

PORTISHEAD BRANCH LINE PRELIMINARY  
ENVIRONMENTAL INFORMATION REPORT  
VOLUME 2

CHAPTER 16

# Transport, Access and Non-Motorised Users





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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 likely significant effects on transport, access and non-motorised users in this preliminary environmental information report (“PEI Report”);
- 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, operation and decommissioning phases;
- considers mitigation of likely 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 PEI Report; 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”). The TA follows the guidance outlined in the National Policy Statement for National Networks (“NPSNN”), the National Planning Policy Framework and the Transport Evidence Bases in Plan Making and Decision Taking. 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 Appendix 16, Chapter 4 Description of the Works and Chapter 6 Planning Framework.

16.1.5 It should be noted at the outset that transport assessment of the DCO Scheme commenced in 2014, and was largely completed by the end of 2016. More recently, however, there have been a number of significant changes to the rail service to be delivered by the DCO Scheme, in particular the service frequency of trains at Portishead and Pill (reducing the initial service from 2 trains per hour to 1 train per hour). Hence,

while the transport assessment contained in this chapter (drawn from the TA) reflects the planned infrastructure required to facilitate a 1 train per hour service, the rail demand and commensurate traffic impacts reflect the previously assumed 2 train per hour service. Some of the assumptions and assessments that are currently qualitative will be refined.

- 16.1.6 The assessment reported in this chapter will be developed and refined for the ES. As a preliminary assessment, the methodology adopted for transport assessment in the ES will be amended to reflect feedback from statutory consultees.

### Strategic transport impacts

- 16.1.7 The DCO Scheme and the rest of 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 promoted by the local authorities in the region, along with Network Rail. As such it brings the potentially significant benefits of new and enhanced rail access across a wide area.

- 16.1.8 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:

- Economic growth;
- Congestion and transport resilience;
- Accessibility; and
- Environment and social wellbeing.

- 16.1.9 Details of the effects can be found in Chapter 6 of the TA (Strategic operational impact assessment), including information about passenger rail demand in section 6.3 and strategic highway impacts in section 6.4 Further details will be captured in work that will be considered and assessed further with the ES.

## 16.2 Legislation and Policy Context

### National Policy

- 16.2.1 NPSNN advises on the development of nationally significant infrastructure projects (“NSIP”) such as road and rail schemes. The Statement places focus on the need to develop and improve the resilience of the strategic highway network. The Statement also states the rail network should provide a safe and reliable route to work.
- 16.2.2 Table 16-1 below identifies those policies of direct relevance to this assessment and the location where they are considered in this PEI Report. These policies are also outlined in Chapter 2 of the TA.

**Table 16-1: Summary of relevant NPSNN advice regarding transport**

Summary of NPSNN provision	Consideration within the PEI Report
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.

**Table 16-1: Summary of relevant NPSNN advice regarding transport**

<b>Summary of NPSNN provision</b>	<b>Consideration within the PEI Report</b>
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.
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.

- 16.2.3 Whilst only directly applying to planning permissions and not DCO, 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.
- 16.2.4 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.
- 16.2.5 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.
- 16.2.6 The RUS identifies a number of issues with the rail network within the West of England area. 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).
- 16.2.7 In 2015, Sir Peter Hendy conducted a review on Network Rail’s Investment Programme with the aim to determine what can be delivered in an affordable and timely way within the funding period to 2019. Subsequently, electrification of the Great Western Main Line has been delayed, and its scope reduced. Whilst the DCO Scheme is not specifically dependent on the Great Western Main Line electrification being complete in the Bristol area, there are timetable dependencies on the Filton Bank 4 Tracking and linkages with rolling stock cascades and the Bristol East junction remodelling.

## Local Policy

- 16.2.8 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.
- 16.2.9 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, North Somerset District Council (“NSDC”) and Bristol City Council (“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 review is available in the Transport Assessment.

Table 16-2: Summary of adopted policies from the NSDC Core Strategy

Policy No.	Title	Policy Summary
<b>North Somerset Council Core Strategy (Adopted January 2017)</b>		
CS1	Addressing climate change and carbon reduction	An overarching policy to encourage implementation of measures to reduce CO <sub>2</sub> , 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 health 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.
<b>Sites and Policies Plan Part 1 Development Management Policies (Adopted July 2016)</b>		
DM21	Motorway Junctions	Provides protection to land at existing motorway junctions for potential future capacity improvements.

**Table 16-2: Summary of adopted policies from the NSDC Core Strategy**

<b>Policy No.</b>	<b>Title</b>	<b>Policy Summary</b>
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	
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	
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.
<b><i>Bristol Core Strategy, (Adopted June 2011)</i></b>		
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.
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.
<b><i>Bristol Site Allocations and Development Management Policies (Adopted July 2014)</i></b>		
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.

**Table 16-2: Summary of adopted policies from the NSDC Core Strategy**

Policy No.	Title	Policy Summary
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.
Joint Local Transport Plan 3 2011 to 2026 (March 2011)		
-	-	<p>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.</p> <p>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.</p> <p>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.</p>
West of England LEP Strategic Economic Plan (SEP) 2015 to 2030 (March 2014)		
<p>The 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).</p> <p>The LEP vision is to encourage sustainable economic growth and the creation of substantial numbers of new private sector jobs by:</p> <ul style="list-style-type: none"> <li>• Supporting growth of key sectors;</li> <li>• Driving innovation and creativity and the development of new technologies, products and services;</li> <li>• 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;</li> <li>• Assisting business start-up and growth; and</li> <li>• Making the West of England highly attractive to inward investors and existing companies by securing improved</li> </ul>		

**Table 16-2: Summary of adopted policies from the NSDC Core Strategy**

Policy No.	Title	Policy Summary
		<p>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.</p> <p>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.</p> <p>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 and the West of England’s various Enterprise Areas, meaning major employment sites are brought closer to the skilled workforce residing in the region.</p>

- 16.2.10 The NSDC Core Strategy sets out the broad long-term vision, objectives and strategic planning policies for North Somerset up to 2026.
- 16.2.11 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.
- 16.2.12 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
- 16.2.13 The Bristol Site Allocation and Development Management Policies (“SADMP”) supports the Core Strategy and outlines the development management policies, site designations and allocations.

### Emerging Policy

- 16.2.14 A number of emerging policies are also considered relevant to the DCO Scheme as follows:
  - West of England (“WoE”) Joint Spatial Plan, and
  - WoE Joint Transport Study
- 16.2.15 The Emerging WoE Joint Spatial Plan is a proposed statutory document that will establish the housing requirement to be accommodated across the four WoE local authorities for the period from 2016 to 2036. The scope of the plan is limited to the distribution of

housing to be accommodated, identification of strategic locations and the infrastructure that is needed.

- 16.2.16 The four WoE councils, comprising NSDC, BCC, the Bath and North East Somerset Council (“B&NES”), and South Gloucestershire Council (“SGC”) are preparing a joint study in parallel with the WoE Joint Spatial Plan, which is looking at how to meet the need for housing and employment space up to 2036. 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.

## 16.3 Methodology

### Guidance and Best Practice

- 16.3.1 The approach to the assessment of 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.

### Consultation

- 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 Outline 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 was also informed by the public consultation undertaken by NSDC. 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 Details of this consultation work are set out in the Consultation Reports which are available from the TravelWest website at the following address:  
<http://travelwest.info/project/metrowest-phase-1>.
- 16.3.6 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.
- 16.3.7 As a result, the four WoE 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 with an option for a second service to be added during peak times (referred to as an 'hourly plus service') providing an approximate 45-minute frequency. This would minimise the amount of infrastructure required.
    2. It is envisaged that a second stage will 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 will require separate statutory processes, business case and funding package and will not be progressed until after the delivery of the initial stage. There is currently no estimated opening date for the second stage.
- 16.3.8 It is likely that an alternative highway access to Ashton Vale industrial estate will be required should funding for Stage 2 be identified.
- 16.3.9 A summary of the stakeholder consultation undertaken to date is provided in Table 16-3.

**Table 16-3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the PEI Report**

<b>Organisation</b>	<b>Summary of Response</b>	<b>Consideration within PEI Report</b>
Scoping Opinion Response		
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 Chapter 4 Description of the Proposed Works and are shown on Figure 4-2. The number and location of access point will be revised once the GRIP 3 design for the hourly plus scheme has been completed and further consideration given to the construction strategy. Associated impacts are described in the relevant technical chapter. Further details of NMU access are contained in the TA.
	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.
	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.
	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 consideration of construction routes for the delivery of materials and removal of wastes will be developed once the GRIP 3 design is completed and further consideration given to the construction strategy. The discussion will be presented in the ES. At present it is anticipated that as much transport of materials and waste as possible will be by rail. The impacts are outlined in section 16.6 and in the TA.

**Table 16-3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the PEI Report**

<b>Organisation</b>	<b>Summary of Response</b>	<b>Consideration within PEI Report</b>
	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 J19 are outlined in section 16.6 and in the TA following scoping with Highways England. This will be revised once the GRIP 3 and construction strategies have been developed, and will be reported in the ES.
	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 following scoping.
	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”) <sup>1</sup> and Rail Demand Model (“RDM”) 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 Chapter 7 Air Quality and Greenhouse Gases, traffic noise is covered in Chapter 13 Noise and Vibration and Cumulative Impacts are assessed in Chapter 18 In-combination and Cumulative Effects.
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.	Section 16.6 considers the transport effects at the construction stage based on the current status of the assessment to date. This includes access and non-motorised users. Further consideration of construction traffic and routes will be developed once the GRIP 3 design is completed and further consideration given to the construction strategy. The results will be presented in the ES. At present it is anticipated that as much transport of materials and waste as possible will be by rail.

Table 16-3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the PEI Report

Organisation	Summary of Response	Consideration within PEI Report
	Consider adverse changes to air quality and noise.	Air quality and noise impacts are assessed in Chapters 7 and 13 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 proposed drainage is summarised in Table 17.13.
	Development must not lead to any surface water flooding on the Strategic Road Network carriageway.	Surface water flooding is being assessed in the Flood Risk Assessment (“FRA”) which will be available in the ES.
<b>Stakeholder Meetings</b>		
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.	A construction traffic management plan is being produced and this is outlined in section 16.5.
	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 Chapter 18 In-combination and Cumulative Effects and accompanying Appendices 18.1 and 18.2.
	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 outline 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.
	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 platoon impacts of traffic using the Wyndham Way/Quays Avenue junction, and the Portbury Hundred.
North Somerset Highways Development Control	Consideration of North Somerset’s new Highways Development Design Guidance.	Consideration was given to North Somerset’s Guidance as described in Section 16.3.

**Table 16-3: Summary of consultation responses on traffic and transport and how/where these have been addressed within the PEI Report**

<b>Organisation</b>	<b>Summary of Response</b>	<b>Consideration within PEI Report</b>
	Additional focus on Wyndham Way, the platoon impacts of traffic using the Wyndham Way/Quays Avenue junction, the Portbury Hundred.	Sections 16.4 and 16.6 outline the existing situation and impacts of the DCO Scheme on Wyndham Way, the platoon impacts of traffic using the Wyndham Way/Quays Avenue junction, and the Portbury Hundred.
	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 Non-Motorised User (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 Schem on Winterstoke Road and Ashton Vale Road.
	Consideration of additional developments such as South Bristol Link Road, Ashton Gate Stadium and UWE Lower Ashton Campus.	The cumulative effect of the DCO Scheme with other developments is assessment in Section 16.8 and in Chapter 18 In-combination and Cumulative Effects and the accompanying appendices 18.1 and 18.2.

<sup>1</sup>GBATS (Greater Bristol Area Transport Study model) 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.

## Definition of the Study Areas

- 16.3.10 In assessing the transport, access and non-motorised user (“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.
- 16.3.11 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 a ‘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 Chapter 5 of the TA.

- 16.3.12 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 PEI Report Volume 3 Book of Figures) and the location of public rights of way between Portishead and Pill are shown on Figure 4-2 of the TA.

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	<p><b><u>Portishead:</u></b> 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</p> <p><b><u>M5 (Easton-in-Gordano):</u></b> Junction 19</p> <p><b><u>Pill:</u></b> Station Road/Heywood Road/Lodway St Georges Hill/Martcombe Road Pill Road/Martcombe Road</p> <p><b><u>Ashton Vale:</u></b> Winterstoke Road/Ashton Vale Road</p>
Level crossing assessments	Ashton Vale Road
Parking assessments	<p><b><u>Portishead:</u></b> 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</p> <p><b><u>Pill:</u></b> 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</p> <p><b><u>Ashton Vale:</u></b> Ashton Vale Road</p>

Table 16-4: Study area

Impact	Study area
Walking and cycling assessments	<p><b><u>Portishead pedestrian routes:</u></b>                      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</p> <p><b><u>Portishead cycling routes:</u></b>                      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</p> <p><b><u>Pill pedestrian routes:</u></b>                      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.</p> <p><b><u>Pill cycle routes:</u></b>                      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.</p>

## Key Receptors

16.3.13 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.

## Defining the Baseline

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

16.3.15 The surveys comprise:

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

16.3.16 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

16.3.17 The construction impact assessment presented in Chapter 8 of the TA 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 PEI Report where it is anticipated that construction will commence in late 2019 with the DCO Scheme opening in late 2021.

16.3.18 The transport assessment of the impacts 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 Construction Traffic Management Plan ("CTMP").

### Assessment of Operation Impacts

16.3.19 The operational impacts of the DCO Scheme have been assessed 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

16.3.20 To assess the wider strategic operational impacts, a combination of outputs has been used from the RDM and GBATS4, the strategic multi-modal model for Bristol and the surrounding area. The RDM is a combination of bespoke spreadsheet models and railway

industry timetable demand modelling software called MOIRA. Three impacts are specifically covered:

- Trips at new stations (whether on existing or re-opened lines);
- Diversions 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).

16.3.21 For new stations, the models estimate 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.

16.3.22 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

16.3.23 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;
- All Scheme related vehicle trips are regarded as additional to the network. No allowance has been made to redistribute existing journeys on the network; and
- For station pick up and drop off trips, 50% are assumed to return to journey origin.

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

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

16.3.25 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 (Stage 1 service, any subsequent expansion to 2 trains per hour in stage 2 would require further assessment.

- 16.3.26 Level crossing downtimes were based on timetable modelling undertaken by Network Rail.
- 16.3.27 All assumptions applied to the model have been described in further detail in Chapter 5 of the TA.

### Walking and cycling impacts

- 16.3.28 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.

The impacts of the scheme which have been regarded as 'high' are presented in Table 7-23 of the TA in Appendix 16 of the PEI Report.

### Public transport impacts

- 16.3.29 Utilising 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.

### Assessment of Decommissioning

- 16.3.30 No specific plans have been put in place for the decommissioning phase of the Portishead Branch Line. It is expected that the services will continue for as long as there is a business case for doing so.
- 16.3.31 In the event that the train operating company decides to cease services on the Portishead Branch Line, the railway assets may remain in place, as occurred after traffic ceased in the 1980s, or Network Rail may decide to remove assets. It is anticipated the line between Royal Portbury Dock and Parson Street would remain open for services to the Port.
- 16.3.32 All Network Rail structures would continue to be maintained by them even along disused lines. All purpose highways and PRoWs would continue to be maintained to standards appropriate for the public use, as a result of the obligation of North Somerset District Council as local highway authority.
- 16.3.33 For any abandoned part of the railway track bed, vegetation would gradually encroach upon the railway line, with herbaceous plants, shrubs and trees gradually recolonising the railway corridor. The assets would gradually fall into disrepair due to the action of erosion and corrosion from rain, plants and animals. As the railway to be authorised by the DCO is largely laid at surface level between Portishead and Pill it is not anticipated that there would be significant need for ongoing maintenance work for embankments or cuttings. Although ongoing maintenance of the cuttings and embankments would still be required along the operational railway from the Port to the main line.

- 16.3.34 It is not anticipated that the associated development comprising highway works at Portishead would be altered as a result of the cessation of passenger services between Portishead and Bristol.
- 16.3.35 Depending on the circumstances, the DCO Scheme will revert back to something approaching the current situation, with the addition of new structures such as the stations.

### Assessment of Cumulative Impacts

- 16.3.36 Cumulative effects of the DCO Scheme operation when in combination with other projects that may affect the study area are considered in the transport assessment 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 the transport assessment in the TA in Appendix 16.
- 16.3.37 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.
- 16.3.38 The assessment of cumulative effects will also consider other projects being undertaken by Network Rail under their permitted development rights. This includes other works required for MetroWest Phase 1, namely, the Parson Street Junction, Parson Street Station, Liberty Lane Freight Depot, 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 Network Rail under their own project management procedures.

### Significance Criteria

- 16.3.39 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 effect and its significance is largely based on the analysis undertaken as part of the TA.
- 16.3.40 Tables 16-5 and 16-6 outline the criteria that have been used to define “significant” for both the construction and operational phases of the DCO Scheme. They have also been applied at a strategic and local highway network level. This includes the impacts on non-motorised and public transport users.

**Table 16-5: Construction Assessment Criteria – Definition of Significant**

Heading	Assessment Criteria
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 significant 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 significant 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 space 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 – Definition of Significant

Heading	Assessment Criteria
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

16.3.41 Following the definition of significant, the classification of effects 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 – Limited impact (by extent, duration or magnitude); or
  - Major – Considerable impact (by extent, duration or magnitude) or more than local importance or in breach of recognised standards, policy or legislation.

16.3.42 The EIA Regulations do not specify what is or is not significant. It is essential for the assessor to define which of the effects are significant/not significant, and this needs to be related to the matrix used to identify the level of impact i.e. effects rated as Moderate or greater are regarded as significant, less than this they are not significant. Each contributor needs to consider what is appropriate for the scheme and the receptors.

16.3.43 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 Table 16-7 summarises the baseline transport conditions across the study area.

Table 16-7: Baseline transport conditions

Issue	Baseline assessment
Collision data between 2011 - 2016	<p><b><u>Portishead</u></b></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><b><u>Pill</u></b></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><b><u>M5 J19</u></b></p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p><b><u>Ashton Vale</u></b></p> <p>A total of 33 collisions in the five-year period all classified as slight with 16 taking place on Winterstoke Road.</p>
Highway junctions and level crossings	<p><b><u>Portishead</u></b></p> <p>The following junctions have been assessed to be operating within capacity in the morning and evening peaks (0800 to 0900 and 1700 to 1800):</p> <ul style="list-style-type: none"> <li>Phoenix Way/Quays Avenue/Harbour Road</li> <li>Station Road/Harbour Road/Cabstand</li> <li>Quays Avenue/Wyndham Way/Serbert Way</li> <li>Wyndham Way/Sheepway/Portbury Hundred</li> </ul> <p>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):</p> <ul style="list-style-type: none"> <li>Cabstand/Wyndham Way/High Street</li> </ul> <p><b><u>M5 J19</u></b></p> <p>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).</p>
Highway junctions and level crossings Cont/d	<p><b><u>Pill</u></b></p> <p>The following junctions have been assessed to be operating within capacity in the morning and evening peaks (0800 to 0900 and 1700 to 1800):</p> <ul style="list-style-type: none"> <li>Station Road/Heywood Road/Lodway</li> <li>A369/St Georges Hill</li> <li>A369/Pill Road</li> </ul>

Table 16-7: Baseline transport conditions

Issue	Baseline assessment
	<p data-bbox="395 282 564 309"><b><u>Level Crossings</u></b></p> <p data-bbox="395 324 1385 383">The following level crossing has been observed to operating at capacity although freight trains currently run at irregular intervals at this location:</p> <ul data-bbox="395 398 616 427" style="list-style-type: none"> <li data-bbox="395 398 616 427">• Ashton Vale Road</li> </ul>
Parking	<p data-bbox="395 479 1385 537">Parking surveys undertaken in Portishead, Pill and Ashton Vale revealed the following observations:</p> <p data-bbox="395 553 517 580"><b><u>Portishead</u></b></p> <ul data-bbox="395 595 1385 1279" style="list-style-type: none"> <li data-bbox="395 595 1385 719">• 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.</li> <li data-bbox="395 734 1385 815">• 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.</li> <li data-bbox="395 831 1385 889">• Within Gordano Gate Business Park a very low level of on-street parking along Serbert Way and Serbert Close was observed.</li> <li data-bbox="395 904 1385 1028">• 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.</li> <li data-bbox="395 1043 1385 1102">• Within the Town Centre both car parks are well-used throughout the day and are often full to capacity.</li> <li data-bbox="395 1117 1385 1176">• Along Old Mill Road parking demand reflects the surrounding employment land use with high demand throughout the day.</li> <li data-bbox="395 1191 1385 1279">• 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.</li> </ul> <p data-bbox="395 1294 432 1321"><b><u>Pill</u></b></p> <ul data-bbox="395 1337 1385 1460" style="list-style-type: none"> <li data-bbox="395 1337 1385 1460">• 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.</li> </ul> <p data-bbox="395 1476 592 1503"><b><u>Ashton Vale Road</u></b></p> <ul data-bbox="395 1518 1385 1621" style="list-style-type: none"> <li data-bbox="395 1518 1385 1621">• 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.</li> </ul>
Public transport	<p data-bbox="395 1637 1385 1800">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.</p>

Table 16-7: Baseline transport conditions

Issue	Baseline assessment
Traffic volume	<p data-bbox="395 282 517 309"><b><u>Portishead</u></b></p> <ul data-bbox="395 327 1385 712" style="list-style-type: none"> <li data-bbox="395 327 1385 387">• The highest traffic flows both in the morning and afternoon peaks were observed along the A369 Wyndham Way and Portbury Hundred corridor.</li> <li data-bbox="395 394 1385 517">• 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.</li> <li data-bbox="395 524 1385 618">• 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.</li> <li data-bbox="395 624 1385 712">• 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.</li> </ul> <p data-bbox="395 734 480 761"><b><u>M5 J19</u></b></p> <p data-bbox="395 784 1385 844">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.</p> <p data-bbox="395 875 437 902"><b><u>Pill</u></b></p> <ul data-bbox="395 925 1385 1115" style="list-style-type: none"> <li data-bbox="395 925 1385 1019">• 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</li> <li data-bbox="395 1025 1385 1115">• 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.</li> </ul> <p data-bbox="395 1137 536 1164"><b><u>Ashton Vale</u></b></p> <ul data-bbox="395 1187 1385 1312" style="list-style-type: none"> <li data-bbox="395 1187 1385 1312">• 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.</li> </ul>
Walking and cycling networks	<p data-bbox="395 1335 517 1361"><b><u>Portishead</u></b></p> <ul data-bbox="395 1384 1385 1509" style="list-style-type: none"> <li data-bbox="395 1384 1385 1509">• 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.</li> </ul> <p data-bbox="395 1532 437 1559"><b><u>Pill</u></b></p> <ul data-bbox="395 1581 1385 1671" style="list-style-type: none"> <li data-bbox="395 1581 1385 1671">• 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 in reducing vehicle speeds.</li> </ul>

## 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 adopting best practices techniques, which will be set out in the CoCP. This document is still being finalised and will be submitted with the DCO application.

- (c) compliance with regulatory and legislative regimes as required by law.

16.5.2 Chapter 3 in the TA sets out the measures, but specific transport related embedded mitigation measures are outlined in tables 16.11 and 16.13. The final ES will fully set out and detail those embedded mitigation measures within the description of the proposed development and each of the topic chapters.

## 16.6 Assessment of Effects

### Construction Phase

16.6.1 Table 16-8 summarises the transport effects at the construction stage. The scheme, which includes embedded mitigation, has been considered in Table 16.8. The table reports likely impacts based on assessment work to date. These impacts will be quantified, where appropriate, in the ES.

Table 16-8: Transport effects at construction stage

Impact	Embedded Mitigation	Consequence of that mitigation	Significance
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 as also away from local schools.	Moderate adverse impact to local road network.  No significant impact to strategic road network.
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.	Moderate adverse impact to local road network.  No significant impact to strategic road network.
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.	No significant impact to strategic road network.
	Local traffic management measures	In conjunction with above, additional local traffic management measures are proposed (signage, communications, etc.) which should reduce the effects of the works.	Moderate adverse 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.	Moderate adverse impact to local road network.  No significant impact to strategic road network.

## Operations Phase

16.6.2 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 Chapter 6 of the TA. The impacts reported cover:

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

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

16.6.4 Table 16-9 summarises the expected number of passengers using Portishead and Pill stations for the opening year and 10 years later, 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 16-9: Number of passengers using the DCO Scheme Stations (rounded) and mode of access for a typical weekday**

Station and year	Walk	Bus	Car	Car drop off	Bicycle	Taxi	Total
Portishead opening year	387	26	273	121	37	3	846
Portishead 10 years	548	36	386	171	53	4	1198
Pill opening year	75	1	44	20	5	0	145
Pill 10 years	106	2	62	28	7	1	206

16.6.5 Impacts on the strategic highway network have also been assessed (refer to section 6.4 of the TA). Figures 1 to 12 attached to Appendix E of the TA present the congestion hotspots on the network for baseline, 2020 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.

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

16.6.7 Table 16-10 summarises the future transport conditions across the study area, with the DCO Scheme in operation. The table reports likely impacts based on assessment work to date. These impacts will be quantified, where appropriate, in the ES.

Table 16-10: Future transport conditions

Issue	Assessment 10 years after scheme opening	Future significance of effect relative to baseline
Highway junctions and level crossings	<p><b><u>Portishead</u></b></p> <p>The following junctions have been assessed to be operating within capacity in the morning and evening peaks (0800 to 0900 and 1700 to 1800):</p> <ul style="list-style-type: none"> <li>• Phoenix Way/Quays Avenue/Harbour Road</li> <li>• Station Road/Harbour Road/Cabstand</li> <li>• Quays Avenue/Wyndham Way/Serbert Way</li> <li>• Wyndham Way/Sheepway/Portbury Hundred</li> </ul> <p>The following junction has been assessed to be exceeding capacity with congestion occurring in the morning and evening peaks (0800 to 0900 and 1700 to 1800):</p> <ul style="list-style-type: none"> <li>• Cabstand/Wyndham Way/High Street</li> </ul>	Negligible
	<p><b><u>M5 J19</u></b></p> <p>This junction has been assessed to be exceeding capacity with congestion occurring in the morning and evening peaks (0800 to 0900 and 1700 to 1800)</p>	Negligible
	<p><b><u>Pill</u></b></p> <p>The following junctions have been assessed to be operating within capacity in the morning and evening peaks (0800 to 0900 and 1700 to 1800):</p> <ul style="list-style-type: none"> <li>• Station Road/Heywood Road/Lodway</li> <li>• A369/St Georges Hill</li> <li>• A369/Pill Road</li> </ul>	Negligible
	<p><b><u>Ashton Vale</u></b></p> <ul style="list-style-type: none"> <li>• The Winterstoke Road/Ashton Vale Road junction and Ashton Vale Road level crossing has been assessed using VISSIM micro-simulation modelling. The impact of increased level crossing closures, combined with scheme measures at the junction, will have an insignificant impact on queuing and delays on Winterstoke Road (northbound carriageway) and Ashton Vale Road.</li> </ul>	Negligible
Parking	<p><b><u>Portishead</u></b></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	Moderate adverse
	<p><b><u>Pill</u></b></p> <ul style="list-style-type: none"> <li>• Existing parking demand is likely to continue with no major changes expected</li> </ul>	Minor adverse

Table 16-10: Future transport conditions

Issue	Assessment 10 years after scheme opening	Future significance of effect relative to baseline
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	<p><b>Portishead</b></p> <p>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.</p>	Minor adverse
	<p><b>Pill</b></p> <p>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</p>	Negligible
	<p><b>Ashton Vale</b></p> <p>Baron’s Close pedestrian crossing has been temporarily closed as part of the AVTM MetroBus scheme. NR and BCC may bring forward separate proposals permanently to close this pedestrian crossing before MetroWest Phase 1 opens and passenger trains recommence service.</p> <p>Alternative pedestrian access will be provided via a new pedestrian and cycle ramp, thus providing a replacement pedestrian and cycling route following the closure of Baron’s Close pedestrian crossing. The ramp is an integral part of the scheme and will accommodate the increased frequency of the barrier down times as a result of the passenger service. This is particularly important on match days (at Ashton Gate stadium) where there is a high volume of pedestrians, and the police can direct them via the ramp and away from the crossing.</p>	Minor adverse

## 16.7 Mitigation and Residual Effects

### Introduction

16.7.1 At this stage, the detailed design and supporting mitigation measures have not been finalised for all components of the DCO Scheme. The objective of this section is to outline the planned and anticipated mitigation, noting that specific aspects will be developed and refined further during the production of the Environmental Statement (“ES”) and GRIP Stage 3. The known embedded mitigation measures have been set out in this chapter at Table 16.11, however the potential overall mitigation that could occur for the scheme is discussed in more detail below. It has not been finalised yet what mitigation would be design as part of the final scheme and what would form specific mitigation measures .

16.7.2 Such measures will promote the DCO Scheme outcomes through:

1. Ensuring the new stations are accessible by all modes and in particular, facilitates walking, cycling and other public transport trips to and from the stations;
2. Improves the quality of transport infrastructure along the DCO Scheme alignment which will enhance the local environment, quality of life and social well-being; and
3. Ensuring any adverse localised transport impacts are minimised through supporting measures.

16.7.3 The TA outlines a Transport Implementation Strategy (Chapter 10) that brings together all the ‘hard’ and ‘soft’ measures that will be required, the aim being that all measures should complement and reinforce the effectiveness of each other. Essentially there are three groups of measures as follows.

- Infrastructure measures – These are physical measures that are being put in place that will either mitigate against any adverse transport impacts or will reinforce the overall objectives of the DCO Scheme.
- Measures in the CTMP – The aim of the CTMP is to outline the specific transport impacts arising from the construction works and to provide a framework for addressing these impacts. The document sets out the principles that will be followed to manage construction traffic during the works.
- Measures in the Outline Station Travel Plans – To encourage and reinforce sustainable journeys, outline station travel plans have been prepared and identify a range of measures before, at and after opening.

16.7.4 Table 16-11 provides a summary of the particular mitigation measures proposed while the rationale for their implementation has been outlined in Table 10-1 of the TA.

Table 16-11: Transport related mitigation measures proposed to be implemented

Area	Location	Measure
Portishead	Quays Avenue (between the station and Serbert Way)	Extension of the shared footway and cycleway on the west side of Quays Avenue
Portishead	Quays Avenue (between the station and Serbert Way)	Existing traffic island to be replaced with a pedestrian island
Portishead	Harbour Road (Between Quays Avenue and Newfoundland Road)	Double yellow lines
Portishead	Haven View (From Harbour Road to Haven View)	Waiting restrictions to 2 hours
Portishead	Quays Avenue	Double yellow line
Portishead	Phoenix Way (from Quays Avenue to Marjoram Way)	Double yellow lines (except existing parking bays)
Portishead	Galingale Way (from Quays Avenue to Peartree Field)	Single yellow line with limited waiting period (e.g. between 1200 and 1300)
Portishead	Peartree Field	Single yellow line with limited waiting period (e.g. between 1200 and 1300)
Portishead	Tansy Lane	Adoption by the highway authority and single yellow line with limited waiting period (e.g. between 1200 and 1300)

**Table 16-11: Transport related mitigation measures proposed to be implemented**

<b>Area</b>	<b>Location</b>	<b>Measure</b>
Portishead	Camomile Walk	Adoption by the highway authority and single yellow line with limited waiting period (e.g. between 1200 and 1300)
Portishead	Malin Parade	Adoption by the highway authority and single yellow line with limited waiting period (e.g. between 1200 and 1300)
Portishead	Biscay Drive	Adoption by the highway authority and single yellow line with limited waiting period (e.g. between 1200 and 1300)
Portbury to Pill	Under the M5 bridge	Bridleway extension under the M5
Pill	Monmouth Road (from Crusty Lane to Station Road)	Double yellow lines
Pill	Station Road (Monmouth Road to Sambourne Lane)	Double yellow lines
Pill	Sambourne Lane (from Station Road to the Health Centre front entrance)	Double yellow lines
Pill	Station Road (Sambourne Lane to Heywood Road)	Double yellow lines
Pill	Station Road (New Road to Church Walk)	Double yellow lines
Pill	Chapel Row/New Road/Myrtle Hill Gyratory	Double yellow lines
Parking (Generally)	In the vicinity of Portishead and Pill Railway Stations	Post implementation monitoring of parking

## Construction Phase

16.7.5 The Outline CTMP identifies five areas of potential mitigation, these being:

- 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.

- 16.7.6 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.
- 16.7.7 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.
- 16.7.8 The Construction Strategy for the DCO Scheme is being developed by Network Rail, but will not be finalised until the construction contractor is appointed. The Outline Construction Strategy is being development and this focuses upon the compounds and access points from the highway network that will be needed.
- 16.7.9 Given part of the DCO Scheme involves upgrading part of an operational railway, it is likely there will be a requirement for either temporary possessions or periods of night time working. Whilst the aim will be to minimise construction related traffic particularly in peak traffic periods on the highway network, construction hours may vary.
- 16.7.10 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;
  - 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.
- 16.7.11 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.

## Operations Phase

- 16.7.12 Travel plans are documents that are intended 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. The details of these are still being finalised and the main measures will be presented in the ES .
- 16.7.13 Table 16-12 summarises the possible main actions that have been identified for the outline station travel plans.

**Table 16-12: Recommended possible actions in the Outline Station Travel Plans**

<b>Objective</b>	<b>Action Ref</b>	<b>Action</b>	<b>Timescale</b>	<b>Impact</b>
(48% Portishead/ 46% Pill) people walking to the station	A1	Review walking routes to the station and identify infrastructure improvements which could encourage walking.	Before opening	High
(4% Portishead/3% Pill) people cycling to the station.	B1	Review cycle access routes in the vicinity of the station to identifying and implementing improvements to cycling infrastructure.	Before opening	High
	B2	Ensure as part of the station design, good surveillance and lighting for the cycling parking area.	Before opening	Low
	B3	Generate awareness of secure cycle parking through promotion on the station (posters and 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 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. Include information on connections with trains.	Before and after Opening	Medium
(30% Portishead/ 37% Pill) driving to and from the station	D1	Investigate the feasibility of providing car share priority spaces in a prominent area of the 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 incentives for local residents to try the new rail service, for example discounted tickets in the opening week.	After opening	High
	E2	Provide information on new rail services to residents and businesses in Portishead.	After opening	Medium
	E3	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

16.7.14 Table-16-13 summarises the likely transport effects following the application of mitigation. Many of the mitigation measures reinforce each other and on this basis, have been grouped where appropriate.

**Table 16-13: Significance of residual impacts following mitigation**

<b>Area</b>	<b>Location</b>	<b>Embedded mitigation</b>	<b>Consequence of mitigation</b>	<b>Significance</b>	<b>Effect on highway network</b>
Portishead	Quays Avenue (between the station and Serbert Way)	Extension of the shared footway and cycleway on the west side of Quays Avenue.	Should ensure a pedestrian and cycle desire line from west of the station is met.	Slight Beneficial	Strategic highway network: Not Significant Local highway network: Significant
Portishead	Quays Avenue (between the station and Serbert Way)	Existing traffic island to be replaced with a pedestrian island.	Should ensure a pedestrian and cycle desire line from west of the station is met.	Slight Beneficial	Strategic highway network: Not Significant Local highway network: Significant
Portishead	Harbour Road (Between Quays Avenue and Newfoundland Road)	Double yellow lines.	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Portishead	Haven View (From Harbour Road to Haven View)	Waiting restrictions to 2 hours.	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Portishead	Quays Avenue	Double yellow line.	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Portishead	Phoenix Way (from Quays Avenue to Marjoram Way)	Double yellow lines (except existing parking bays).	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Portishead	Galingale Way (from Quays Avenue to Peartree Field)	Single yellow line with limited waiting period (e.g. between 1200 and 1300)	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Portishead	Peartree Field	Single yellow line with limited waiting period (e.g. between 1200 and 1300)	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Portishead	Tansy Lane	Adoption by the highway authority and single yellow line with limited waiting period (e.g. between 1200 to 1300)	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant

Table 16-13: Significance of residual impacts following mitigation

Area	Location	Embedded mitigation	Consequence of mitigation	Significance	Effect on highway network
Portishead	Camomile Walk	Adoption by the highway authority and single yellow line with limited waiting period (e.g. between 1200 and 1300)	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Portishead	Malin Parade	Adoption by the highway authority and single yellow line with limited waiting period (e.g. between 1200 and 1300)	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Portishead	Biscay Drive	Adoption by the highway authority and single yellow line with limited waiting period (e.g. between 1200 and 13.00)	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Pill	Monmouth Road (from Crusty Lane to Station Road)	Double yellow lines	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Pill	Station Road (Monmouth Road to Sambourne Lane)	Double yellow lines	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Pill	Sambourne Lane (from Station Road to the Health Centre front entrance)	Double yellow lines	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Pill	Station Road (Sambourne Lane to Heywood Road)	Double yellow lines	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Pill	Station Road (New Road to Church Walk)	Double yellow lines	Reduce the risk of overspill parking from the station.	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant
Pill	Chapel Row/New Road/Myrtle Hill Gyratory	Double yellow lines	Reduce the risk of overspill parking from the station	Adverse – Minor	Strategic highway network: Not Significant Local highway network: Significant

- 16.7.15 Other mitigation measures will be considered as appropriate where adverse (but not significant effects with regards to the EIA Regulations) are identified. The project team is currently finalising the design of the project and appropriate measures will be documented the Environmental Statement. The ES will also report further on discussions with key stakeholders prior to submission of the DCO application.

## 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 Chapter 18 of the PIER. 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 Appendix 18 of the PEI Report Volume 4 Appendices.

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. This scheme may be constructed at the same time as the DCO scheme.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan (“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. <b>Neutral residual effect.</b>
Avon Power Station	During construction the road network will be used by site workers and to transport materials. This may include the M49 and is likely to include the M5 at junction 19 on the south side, which may be used as a servicing route for the DCO Scheme. However, as the construction of the power plant is likely to occur after the construction of the Portishead Branch Line, cumulative effects on traffic and transport are unlikely.	In the unlikely event that the Avon Power Station is constructed at the same time as the DCO Scheme, the project would be considered through the DCO Scheme CTMP in order to reduce or avoid any potential adverse cumulative traffic and transport effects. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	As this scheme is likely to be constructed once the DCO Scheme is operational, the residual effect is likely to be <b>neutral</b> .
Seabank 3 CCGT	During construction the road network will be used by site workers and to transport materials. This may include the M49 and is likely to include the M5 at junction 19 on the south side, which may be used as a servicing route for the DCO Scheme. However, as the construction of the power plant is likely to occur after the construction of the Portishead Branch Line, cumulative effects on traffic and transport are unlikely.	In the unlikely event that the Avon Power Station is constructed at the same time as the DCO Scheme, the project would be considered through the DCO Scheme CTMP in order to reduce or avoid any potential adverse cumulative traffic and transport effects. Haulage routes of all coincidental developments will be agreed with the Local Authority to minimise adverse cumulative effects.	As this scheme is likely to be constructed once the DCO Scheme is operational, the residual effect is likely to be <b>neutral</b> .

Table 16-14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
<p>Site Allocation at Old Mill Road, Portishead in NSC's Site Allocation Plan Consultation Draft 2016) for proposed as a mix of offices, retail, leisure, cafes, bars and restaurants and 20 residential units. Pedestrian/cycleway links to dockside development and adjacent supermarket required.</p>	<p>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.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan ("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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. <b>Neutral residual effect.</b></p>
<p>14/P/2570/F Erection of assisted living development at Harbour Road/Martingale Way Portishead</p>	<p>Potential for adverse cumulative impacts on traffic and transport on the local road network to occur during construction if both schemes are being constructed at the same time, as the same access routes may be used.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan ("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. Portishead Station has been designed as a multi-modal transport hub, allowing visitors to change easily between travel on foot/bicycle and by road and rail and increasing connectivity between residential, employment and retail areas. The design includes easy pedestrian access from the station into the car park and on to the centre of Portishead.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. <b>Neutral residual effect.</b></p>

Table 16-14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
<p>12/P/1255/O Outline planning permission for the erection of a new furniture store, petrol filling station and associated parking. Land next to Premier Inn off Wyndham Way, Gordano Gate, Portishead</p>	<p>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.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan (“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. Portishead Station has been designed as a multi-modal transport hub, allowing visitors to change easily between travel on foot/bicycle and by road and rail and increasing connectivity between residential, employment and retail areas.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. <b>Neutral residual effect.</b></p>
<p>17/P/1229/F Erection of 35 dwellings. Land off Wyndham Way, Portishead</p>	<p>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.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan (“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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. <b>Neutral residual effect.</b></p>
<p>14/P/1196/O Office Units to rear of Gordano House, Marsh Lane, Easton-in-Gordano BS20 ONE.</p>	<p>If construction phases coincide, an adverse cumulative impact on the local road network (including Sheepway and Marsh Lane) may occur while site workers and materials travel to and from the sites, due to the close proximity of the developments.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan (“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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. <b>Neutral residual effect.</b></p>

Table 16-14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
<p>16/P/1987/F</p> <p>Provision of hardstanding for storage of cargo in transit through Royal Portbury Docks including a crossing over the disused railway (by a crossing at grade and/or vehicle bridge) between the current Royal Portbury Dock estate and the proposed site at Court House Farm, Marsh Lane, Easton-in-Gordano, North Somerset.</p>	<p>The main construction phase of this development is unlikely to coincide with that of the DCO Scheme. However, it is unclear when the bridge across the railway line will be built. Construction traffic will access the site from the Port estate via Marsh Lane and the new railway crossing, once constructed. If the bridge construction coincides with the DCO Scheme construction period, there is a potential for adverse cumulative traffic and transport impacts to occur.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan ("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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. <b>Neutral residual effect.</b></p>

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 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 Construction Traffic Management Plan ("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. <b>Neutral residual effect.</b>
13/01483/F Erection of a bridge link between the main headquarters office building and the retained office building at Imperial Tobacco Ltd Winterstoke Road Bristol BS3 2LJ	The proposed development adjoins the railway line close to Barons Close crossing. Access points for this development are likely to be different from those of the DCO Scheme although there may be some limited construction traffic along Winterstoke Road. On this basis, there is unlikely to be an adverse cumulative impact on traffic and transport if construction phases coincide.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan ("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. <b>Neutral residual effect..</b>

Table 16-14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
13/03556/COND Demolition of existing factory and erection of new office building (Use Class B1) with associated car parking and landscaping at Imperial Tobacco Ltd Winterstoke Road Bristol BS3 2LJ	Access points for this development are likely to be different from those of the DCO Scheme although there may be some limited construction traffic along Winterstoke Road. On this basis, there is unlikely to be an adverse cumulative impact on traffic and transport if construction phases coincide.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan ("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. <b>Neutral residual effect..</b>
14/01187/FB MetroBus construction of North Fringe to Hengrove Package. Includes widening of Bradley Stoke Way, a new bus junction at M32 and new bus infrastructure.	MetroBus and MetroWest are planned as complementary schemes as part of the wider transport strategy across the West of England. On this basis, there are general beneficial impacts.  The construction works associated with NFHP will not be impacted by the DCO Scheme.	No mitigation required	The DCO Scheme will complement other transport schemes.  <b>Beneficial – moderate.</b>
13/05648/FB (for revised route) 13/05921/K (for Transport and Works Act Order) MetroBus Ashton Vale to Temple Meads and Bristol City Centre Rapid Transit Land Between the A370 Long Ashton Bypass In North Somerset And Cater Road Roundabout Cater Road Bristol	MetroBus and MetroWest are planned as complementary schemes as part of the wider transport strategy across the West of England. On this basis, there are general beneficial impacts.  The construction works associated with NFHP will not be impacted by the DCO Scheme.	No mitigation required	The DCO Scheme will complement other transport schemes.  <b>Beneficial – moderate.</b>

Table 16-14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
15/06069/F Bristol Arena in Temple Quarter Enterprise Zone. 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.	None required.	The DCO Scheme will improve access through provision of non-car options. <b>Beneficial – moderate.</b>
15/06070/P Development on Bristol Arena site in Temple Quarter Enterprise Zone. Development to include retail, offices, residential and student accommodation.	The proposed development is located close to Bristol Temple Meads station and may be used by passengers on the Portishead Branch Line.	None required.	The DCO Scheme will improve access through provision of non-car options. <b>Beneficial – moderate.</b>
16/00222/FB Part of the Arena Island development in Temple Quarter Enterprise Zone. The proposed development includes a new single span, steel footbridge over the River Avon to connect Victor Street and the River Avon Path to the Arena Island. River Avon Path also requires minor realignment.	The proposed development is located close to Bristol Temple Meads station and may be used by passengers on the Portishead Branch Line.	None required.	The DCO Scheme will improve access through provision of non-car options <b>Beneficial – moderate.</b>

Table 16-14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
Temple Quarter Enterprise Zone – other proposed developments.	The proposed development is located close to Bristol Temple Meads station and may be used by passengers on the Portishead Branch Line.	None required.	The DCO Scheme will improve access through provision of non-car options <b>Beneficial – moderate.</b>
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, the scheme sits within a group of rail improvement schemes in the West of England. On this basis, the scheme complements the benefits offered by this scheme.	None required.	The DCO Scheme will complement other transport schemes <b>Beneficial - moderate</b>
Bristol Area Signalling Renewal and Enhancement (BASRE) – Network Rail works including resignalling at Bristol Temple Meads, replacement of signal structures, installation of fibre optic cable and Return Screening.	The DCO Scheme is related to BASRE and will complement the benefits provided by signalling renewal and enhancement.	No mitigation required.	The DCO Scheme will complement other transport schemes <b>Beneficial - moderate</b>

Table 16-14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
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 <b>Beneficial – moderate.</b>
Avonmouth/Severn Beach Signalling  This may be required to facilitate terminating trains at Avonmouth Station.	The DCO Scheme will complement the benefits provided by signalling renewal and enhancement.	No mitigation required	The DCO Scheme will complement other transport schemes <b>Beneficial – moderate.</b>
Part of Road Investment Strategy. New junction on M49 near Severnside and Avonmouth.	The DCO Scheme is located near Severnside and Avonmouth. If the construction of this scheme coincides with that of the DCO Scheme, there may be adverse cumulative traffic and transport impacts.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan (“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. <b>Neutral residual effect.</b>
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 Construction Traffic Management Plan (“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
Bristol's status as European Green Capital 2015. The Green Capital year has passed but projects are ongoing.	The DCO Scheme is promoting a mode of transport more sustainable than road travel, and may encourage people to walk to their destinations once they have reached their station. Bristol's European Green Capital has launched A Good Transport Plan for Bristol 2016, which promotes sustainable, accessible and enjoyable transport. The DCO Scheme is included in this plan, and may interact positively with the other schemes proposed to cause beneficial cumulative effects on traffic and transport (reducing the number of cars on the roads),		Potentially minor beneficial effect.
16/P/1608/F Erection of 70 no. dwellings, means of access, landscaping and associated works at Former Severn Paper Mill Harbour Road Portishead BS20 7DF	The proposed development is located in close proximity to the proposed site for Portishead Station. There is the potential for adverse cumulative effects on traffic and transport on the local road network to occur during construction if both schemes are being built at the same time, as the same access routes may be used. In addition, adverse cumulative effects on traffic and transport may also occur during operation.	Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan ("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. Portishead Station has been designed as a multi-modal transport hub, allowing visitors to change easily between travel on foot/bicycle and by road and rail and increasing connectivity between residential, employment and retail areas	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
<p>16/P/2066/F Construction of 93 no. residential apartments (C3 use) and office floor space at Harbour Crescent, Serbert Road, Portishead.</p>	<p>If both schemes are constructed at the same time, the same haulage routes may be used and this may lead to adverse traffic and transport impacts.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan (“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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. Neutral residual effect.</p>
<p>16/P/1938/F New access between cargo storage areas Plot 25 and 26 off Marsh Lane at Royal Portbury Dock</p>	<p>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.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan (“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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. Neutral residual effect.</p>
<p>16/01606/N Application for prior notification of proposed demolition of the Art Deco Tower at Former Mercedes Car Dealership Marsh Road and Winterstoke Road Bristol.</p>	<p>If tower is demolished during the construction phase of the DCO Scheme, construction/demolition traffic may use the same routes. Potential cumulative traffic and transport impact.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan (“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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. Neutral residual effect.</p>

Table 16-14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
<p>16/04957/F</p> <p>Proposed extensions, at first floor level, to raise the height of 2 no. existing workshops and proposed external staircase mezzanine floor office space at 46 Ashton Vale Road Bristol BS3 2HQ</p>	<p>During construction, the Development would need access via Ashton Gate level crossing as the development is within the industrial estate. Potential cumulative traffic and transport impact if construction coincided with that of DCO Scheme.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan ("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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. Neutral residual effect.</p>
<p>16/01991/SCR</p> <p>Request for a Screening Opinion as to whether an Environmental Impact Assessment is required for the proposed residential development of approximately 131 dwellings with associated private gardens, car parking, open space and access roads. The dwellings to include a mix of bungalows, flats and two and three storey properties.</p> <p>Former Alderman Moores Allotments Silbury Road Bristol</p>	<p>If construction phases coincides, there is a potential for adverse cumulative traffic and transport impacts as access/haulage routes may coincide.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan ("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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. Neutral residual effect.</p>

Table 16-14: Assessment of the Transport Cumulative Effects

Scheme	Assessment of cumulative effects	Proposed Mitigation	Potential residual cumulative effect
<p>16/01699/P Bailey of Bristol caravan manufacturer remodelling their site at 16-20 South Liberty Lane Bristol BS3 2SR</p>	<p>Development may use same haulage routes as DCO Scheme – potential traffic and transport impact if they are constructed at the same time.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan (“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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. Neutral residual effect.</p>
<p>West of England Joint Spatial Plan and Transport Study – Draft Strategy</p>	<p>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.</p>	<p>Measures to reduce or avoid any likely significant adverse cumulative traffic and transport effects will be considered in the Construction Traffic Management Plan (“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.</p>	<p>It is envisaged that the CTMP will address any significant adverse cumulative effects. Neutral residual effect.</p>
<p>Bedminster Down Relief Line</p>	<p>The proposed scheme will complement other transport schemes and is required for MetroWest Phase 1 to operate.</p>	<p>None required.</p>	<p>The proposed scheme will complement other transport schemes. Beneficial – moderate.</p>
<p>Bathampton Turnback</p>	<p>The proposed scheme will complement other transport schemes and is required for MetroWest Phase 1 to operate.</p>	<p>None required.</p>	<p>The proposed scheme will complement other transport schemes. Beneficial – moderate.</p>

## 16.9 Limitations Encountered in Compiling the PEI Report

- 16.9.1 Information from the Outline Construction Strategy and the Code of Construction Practice is evolving during the compilation of this chapter. The construction strategy, where possible, will seek to move as much of the construction materials and waste by rail. Where access by road is needed, deliveries and waste removals will avoid the peak traffic periods, where possible. The strategy is not sufficiently advanced at this stage to indicate the likely volume and quantities of material that will need to be moved or the likely number of construction workers. As a result, whilst it is possible to identify the major impacts of construction works at specific locations, it is not possible to calculate the number of construction vehicle movements. Once the GRIP 3 design has been completed, the construction strategy will be developed further.
- 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 Scheme.
- 16.9.3 A number of mitigation measures are still being considered as part of the iterative environmental impact assessment. As the PEI Report only demonstrates those environmental effects at a certain point in time pre-application, these will be further refined as the Environmental Statement to be submitted with the DCO application is finalised.

## 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 modes.
- 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 would promote modal shift away from vehicle use. The DCO Scheme would improve access to employment opportunities such as the Temple Quarter Enterprise Zone and would provide further benefits to those without access to a private car.
- 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.
- 16.10.4 A strategic assessment of the DCO Scheme suggests 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.
- 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 (2019 to 2029), demand at the station will increase across all modes of transport.

- 16.10.6 The local assessment of the DCO Scheme indicates that the network will be operating within capacity at the majority of locations. The assessment indicates that one location – Winterstoke Road and Ashton Vale Road – would have adverse impacts without mitigation. The proposed station parking would meet demand at both Portishead and Pill stations with the exception of 10 years after opening at Portishead – but provision has been made to accommodate parking for the nearby health centre.
- 16.10.7 The number of walking and cycling trips are forecast to increase and there will be a need to improve provision along identified desire lines. With public transport, it is estimated that the DCO Scheme will lead to an extraction of 25% to 40% demand from existing bus services.
- 16.10.8 With the exception of Ashton Vale Road/Winterstoke Road, a number of modest mitigation measures will be required. These essentially improve access to and in and around the stations and would underpin the level of sustainable trips. The proposed parking controls would have the beneficial effect of reinforcing the use of the station car parks and prevent adverse impacts on neighbouring properties. Elsewhere, some limited measures will be required principally as the result of the realigning existing routes to accommodate the railway line.
- 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 significantly more often than they do currently. As Ashton Vale Road is the only road access to the industrial estate this could lead to significant access restrictions to the businesses located there and cause traffic queues on both sides of the level crossing. While closure of the existing access to Ashton Vale industrial estate and the provision of an alternative access from the A370 to the north has been considered, more recent VISSIM based modelling has demonstrated that this will not be required (for Stage 1 of the DCO Scheme). The impact can be mitigated by extending the length of the left-turn lane on the northbound side of Winterstoke Road, 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.
- 16.10.10 Without mitigation, the DCO Scheme would have adverse impacts during construction works. The mitigation measures evolve around a CTMP that focuses 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.
- 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.
- 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 Chapter 6 of the TA (Strategic operational impact assessment). These effects will be captured in work that will be considered and assessed further with the ES.

Table 16-15: Potential Impacts, Mitigation and Residual Impacts of the DCO Scheme on Transport, Access and NMUs

Aspect	Impact	Receptors	Mitigation	Residual Impact
<b>Construction activities</b>				
Construction of stations	Changes in existing traffic management arrangements including partial and temporary closures and access.  On existing desire lines for non-motorised users.	Highway users, residents, businesses, local services, public transport operators  <b>Value: N/A</b>	Implementation of the CTMP that comprises measures that seek to minimise the impact of construction activities on existing users.	Construction activities will have an impact with works being undertaken over a prolonged period.  <b>Magnitude: Moderate</b> <b>Significance of Effect: Significant</b> <b>Significance for EIA legislation: N/A</b>
Line construction	Changes in existing traffic management arrangements including partial and temporary closures and access.  On existing desire lines for non-motorised users.	Highway users, residents, businesses, local services, public transport operators.  <b>Value: N/A</b>	Implementation of the CTMP that comprises measures that seek to minimise the impact of construction activities on existing users.	Construction activities will have an impact with works being undertaken over a prolonged period  <b>Magnitude: Moderate</b> <b>Significance of Effect: Significant</b> <b>Significance for EIA legislation: N/A</b>
<b>Operation activities</b>				
Walk/cycle demand to access Portishead station	Increase in the level of demand and use of existing walking and cycling provisions.	Users, and residents / business in the area.  <b>Value: N/A</b>	Improvements to provision along desire lines and crossing points.	Improvements to NMU provision will have a beneficial effect on increasing the numbers walking and cycling to and from the station  <b>Magnitude: Beneficial</b> <b>Significance of Effect: Not Significant</b> <b>Significance for EIA legislation: N/A</b>
Vehicular demand (bus, taxi, car) to access Portishead station car park	Changes in travel demand in Portishead, abstraction from other routes / modes.	Highway users, residents, businesses, local services, public transport operators  <b>Value: N/A</b>	Improvements to the local highway network at specific locations where the impacts may lead to operational and capacity concerns.	Assessment indicates that there will be a largely minor impact on the operation of the local highway network and the need for mitigation is limited.  <b>Magnitude: Minor</b> <b>Significance of Effect: Not significant</b>

Table 16-15: Potential Impacts, Mitigation and Residual Impacts of the DCO Scheme on Transport, Access and NMUs

Aspect	Impact	Receptors	Mitigation	Residual Impact
				<b>Significant for EIA legislation:</b> Unknown at this stage
Walk/cycle demand to access Pill station	Increase in the level of demand and use of existing walking and cycling provisions.	Users, and residents / business in the area. <b>Value: N/A</b>	Improvements to provision along desire lines and crossing points.	Improvements to NMU provision will have a beneficial effect on increasing the numbers walking and cycling to and from the station. <b>Magnitude: Beneficial</b> <b>Significance of Effect: Not Significant</b> <b>Significance for EIA legislation: N/A</b>
Vehicular demand (bus, taxi, car) to access Pill to use the station	Changes in travel demand in Pill, abstraction from other routes / modes.	Highway users, residents, businesses, local services, public transport operators. <b>Value: N/A</b>	Improvements to the local highway network at specific locations where the impacts may lead to operational and capacity concerns.	Assessment indicates that there will be a largely minor impact on the operation of the local highway network and the need for mitigation is limited. <b>Magnitude: Minor</b> <b>Significance of Effect: Not significant</b> <b>Significance for EIA legislation:</b> Unknown at this stage
Increased use of Ashton Vale Road and associated level crossing	Increased downtimes will not have a detrimental impact on the operation of the highway network as a result of proposed scheme measures.	Highway users, residents, businesses, local services, public transport operators. <b>Value: N/A</b>	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.	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 (two to three minutes). Ramped pedestrian access will provide an alternative link between Winterstoke Road and the industrial estate for NMUs. <b>Magnitude: Beneficial</b>

Table 16-15: Potential Impacts, Mitigation and Residual Impacts of the DCO Scheme on Transport, Access and NMUs

Aspect	Impact	Receptors	Mitigation	Residual Impact
				<b>Significance of Effect: Significant</b> <b>Significance for EIA legislation: Unknown at this stage</b>
<b>Cumulative Effects</b>				
Construction of scheme components outside the DCO scheme extent	Changes in existing traffic management arrangements including partial and temporary closures and access.  On existing desire lines for non-motorised users	Highway users, residents, businesses, local services, public transport operators.  <b>Value: N/A</b>	Implementation of the CTMP that comprises measures that seek to minimise the impact of construction activities on existing users.	Construction activities will have an impact although the required works will be more limited.  <b>Magnitude: Minor</b> <b>Significance of Effect: Not Significant</b> <b>Significance for EIA legislation: N/A</b>
Increased use of level crossings on the Severn Beach line	Increased number of closures will have a limited impact on the operation of the local highway network.	Highway users, residents, businesses, local services.  <b>Value: N/A</b>	None as analysis suggests impact will be limited.	<b>Magnitude: Minor</b> <b>Significance of Effect: Not significant</b> <b>Significance for EIA legislation: N/A</b>
Possible local vehicular demand associated scheme.	Cumulative impacts limited to construction works.	Highway users, residents, businesses, local services.  <b>Value: N/A</b>	None as analysis suggests impact will be limited.	<b>Magnitude: Negligible</b> <b>Significance of Effect: Not Significant</b> <b>Significance for EIA legislation: N/A</b>

## 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

BANES	Bath and North East Somerset
BASRE	Bristol Area Signalling Renewal and Enhancement
BCC	Bristol City Council
BUG	Bicycle User Group
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
GBATS4	Bristol and wider area strategic transport model
GTA	(Department for Transport) Guidance on Transport Assessments
HDDG	Highways Development Design Guidance
HGV	Heavy Goods Vehicle
IEMA	Institute of Environmental Management and Assessment
JLTP	Joint Local Transport Plan
LEP	Local Enterprise Partnership
LTPP	(Network Rail) 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
PEI Report	Preliminary Environmental Information Report
RDM	Rail Demand Model
RUS	Route Utilisation Strategy
SADMPP	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
UWE	University of West of England
WoE	West of England

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