MetroWest

METROWEST PHASE 1

Outline Business Case

Appendix 2.3

Social Impact Appraisal Report

December 2017

travelwest

Bath & North East Somerset, Bristol, North Somerset and South Gloucestershire councils working together to improve your local transport

MetroWest Phase 1
Social Impact Appraisal Report

Prepared for

West of England Councils

December 2017

1 The Square
Temple Quay
Bristol
BS1 6DG

Contents

Section Page

Document History ..... **vii**

Acronyms and Abbreviations ..... **viii**

Introduction **1-1**
1.1 Background 1-1
1.2 The MetroWest Programme 1-1
1.3 MetroWest Phase 1 1-1
1.4 Scheme Objectives 1-2
1.5 Summary of Scheme Impacts 1-3
1.6 Purpose and structure of this report 1-4

Road Traffic Accidents **2-1**
2.1 Introduction 2-1
2.2 COBA-LT Specifications 2-1
2.3 Scheme Input File - Overview 2-1
2.4 Scheme Input File – Accident Data 2-2
2.5 COBA-LT Analysis Results 2-3
2.6 Summary 2-4

Physical Activity **3-1**
3.1 Introduction 3-1
3.2 Works affecting NMUs 3-1
3.2.1 Portishead 3-1
3.2.2 Sheepway 3-2
3.2.3 Public Rights of Way south of Portbury Dock 3-2
3.2.4 Ashton Vale 3-2
3.3 Reporting Physical Activity Impacts in the Appraisal Summary Table 3-2
3.3.1 Calculating Physical Activity Impacts 3-3
3.3.2 Assessment of Impact of Active Modes 3-3
3.3.3 Existing NMU data 3-4
3.4 Summary 3-4

Security **4-1**
4.1 Introduction 4-1
4.2 Scheme Design 4-2
4.2.1 Along the line 4-2
4.2.2 At the stations 4-2
4.2.3 Portishead 4-3
4.2.4 Pill Station 4-3
4.3 Summary 4-4

Severance **5-1**
5.1 Introduction 5-1
5.2 Severance Assessment 5-2
5.3 Summary 5-4

Journey Quality **6-1**
6.1 Introduction 6-1
6.2 Traveller Care 6-1
6.2.1 Increased frequencies on Severn Beach line and local stations to Bath 6-1
6.2.2 Introduction of passenger rail services to Portishead and Pill 6-2

Section Page

6.3 Traveller Views 6-2
6.3.1 Increased frequencies on Severn Beach line and local stations to Bath 6-2
6.3.2 Introduction of passenger rail services to Portishead and Pill 6-2
6.4 Traveller Stress 6-2
6.4.1 Increased frequencies on Severn Beach line and local stations to Bath 6-2
6.4.2 Introduction of passenger rail services to Portishead and Pill 6-2
6.5 Summary 6-2

Option and Non-use Values 7-1
7.1 Rationale 7-1
7.2 Calculation 7-1

Accessibility 8-1
8.1 Introduction 8-1
8.2 Existing stations 8-1
8.3 New stations 8-1
8.4 Summary 8-2

Personal Affordability 9-1
9.1 Introduction 9-1
9.2 Methodology 9-1
9.3 Deprivation – Portishead to BTM 9-2
9.4 Deprivation – Avonmouth to Bath 9-3
9.5 Appraisal of Affordability – Portishead to BTM 9-4
9.5.1 Affordability – Car 9-4
9.5.2 Affordability – Public Transport 9-4
9.5.3 Affordability – Active Modes 9-4
9.6 Appraisal of Affordability – Avonmouth to Bath Spa 9-4
9.6.1 Affordability – car 9-4
9.6.2 Affordability – Public Transport 9-5
9.7 Summary 9-5

Summary and Conclusions 10-1

Appendices

Appendix A Appraisal Summary Table (AST)

Tables

Table 2.1: COBA-LT scheme input file structure

Table 2.2: COBA-LT results – economic and accident summaries

Table 2.3: COBA-LT results – casualty summary

Table 3.1: Qualitative 7-point scale of impacts on active modes

Table 3.2: Cycle Path (NCR 26) users between Portishead and Pill

Table 3.3: Summary of NMU count data in and around Portishead

Table 3.4: NMUs at Ashton Vale level crossing

Table 4.1: Security Indicators for public transport passengers

Table 5.1: Assessment of Change in Severance

Section Page

Table 5.2: Severance impacts and mitigation

Table 7.1: Option and non-use values from TAG databook

Table 7.2: MetroWest Phase 1 monetised option values

Table 9.1: Grading System for Personal Affordability

Table 9.2: Ranking of Deprivation Portishead to Bristol Temple Meads

Table 9.3: Ranking of Deprivation Avonmouth to Bath Spa

Table 9.4: Portishead to Bristol Temple Meads: Assessment of Monetary Items by Area

Table 9.5: Avonmouth to Bath: Assessment of Monetary Items by Area

Figures

Figure 1-1: MetroWest Phase 1 network

Figure 2-1: COBA-LT analysis of road network in West of England

Figure 2-2: COBA-LT analysis - accidents cost on links

Figure 8-1: Accessibility to Temple Meads area – existing (AM peak, rail only, walk to station)

Figure 8-2: Accessibility to Temple Meads area – with MetroWest Phase 1 (AM peak, rail only, walk to station)

Figure 8-3: Accessibility to Temple Meads area – existing public transport (AM peak)

Figure 8-4: Accessibility to Temple Meads area – with MetroWest Phase 1 (AM peak)

Figure 8-5: Accessibility to Bristol City Centre – existing public transport (AM peak)

Figure 8-6: Accessibility to Bristol City Centre – with MetroWest Phase 1 (AM peak)

Document History

MetroWest Phase 1
Outline Business Case – Economic Case
Social Impact Appraisal Report

FINAL REPORT

Reference Number: 674946.CM.64.01/SIAR

Client Name: West of England Councils

This document has been issued and amended as follows:

Version	Date	Description	Created by	Verified by	Approved by
1.0	6th December 2017	First Draft	LJ/GW	HS	HS
2.0	17th December 2017	Revised Draft	LJ/GW	HS/GW	HS
3.0	20th December 2017	FINAL	LJ/GW	HS/GW	HS

Acronyms and Abbreviations

AQMA	Air Quality Management Area
B&NES	Bath and North-East Somerset Council
BCC	Bristol City Council
BRITES	Bristol Integrated Transport and Environment Study
CP5	Control Period 5
CRD	City Region Deal
DCO	Development Consent Order
DfT	Department for Transport
EAST	Early Assessment Summary Tool
GLT	Guided Light Transit
GRIP	Governance for Railway Infrastructure Projects
GVA	Gross Value Added
GWR	Great Western Railway
GWML	Great Western Main Line
IEP	Intercity Express Programme
JLTP	Joint Local Transport Plan
JSP	Joint Spatial Plan
JTB	Joint Transport Board
JTS	Joint Transport Study
LEP	Local Enterprise Partnership
LTPP	Long Term Planning Process
NCN	National Cycle Network
NMU	Non-Motorised User
NR	Network Rail
NSC	North Somerset Council
OAR	Option Assessment Report
OBC	Outline Business Case
PBC	Preliminary Business Case
PEIR	Preliminary Environmental Impact Report
RUS	Route Utilisation Strategy
SEP	Strategic Economic Plan
SGC	South Gloucestershire Council
TAG	Transport Appraisal Guidance
TQEZ	Temple Quay Enterprise Zone
WoE	West of England

SECTION 1

Introduction

1.1 Background

CH2M has been appointed to prepare an Social Impacts Appraisal Report for MetroWest Phase 1. This forms part of the Department for Transport's (DfT) Transport Appraisal Process, as part of the development of an Outline Business Case (OBC). The OBC is being prepared in support of a submission to the Large Major Scheme fund in December 2017.

1.2 The MetroWest Programme

The West of England (WoE) councils are progressing plans to invest in the local rail network over the next ten years through the MetroWest programme. The MetroWest programme comprises:

- The MetroWest Phase 1 project;
- The MetroWest Phase 2 project;
- A range of station re-opening/new station projects; and
- Smaller scale enhancements projects for the WoE local rail network.

MetroWest is being jointly promoted and developed by the four WoE councils: Bath & North-East Somerset Council (B&NES), Bristol City Council (BCC), North Somerset Council (NSC) and South Gloucestershire Council (SGC). The MetroWest programme will address the core issue of transport network resilience, through targeted investment to increase both the capacity and accessibility of the local rail network. The MetroWest concept is to deliver an enhanced local rail offer for the sub-region comprising:

- Existing and disused rail corridors feeding into Bristol;
- Increased service frequency; cross-Bristol service patterns (e.g. Bath to Severn Beach); and
- A Metro-type service appropriate for a city region.

The MetroWest programme will complement the investment being made by Network Rail (NR) and extend the benefits of projects such as the electrification of the Great Western main line. The programme is to be delivered over the next five to ten years during Network Rail Control Period 5 (2014 to 2019) and Control Period 6 (2019 to 2024).

1.3 MetroWest Phase 1

The MetroWest Phase 1 project includes the delivery of infrastructure and passenger train operations to provide:

- Half hourly service for the Severn Beach Line as far as Avonmouth (hourly for St. Andrews Road and Severn Beach stations);
- Half hourly service for the Keynsham and Oldfield Park local stations on the Bath Spa to Bristol Line; and
- Hourly service (or an hourly service plus) for a reopened Portishead Line, with new stations at Portishead and Pill.

The whole of MetroWest Phase 1 will be operational in 2021. Enhanced services on the Severn Beach line could begin in 2020 and re-opening of the Portishead line will follow in 2021.

For the Portishead Line either an hourly or an hourly plus passenger train service is proposed. The difference between an hourly service and an hourly service plus is:

- Hourly service – Passenger trains operating hourly all day between Portishead and Bristol Temple Meads, calling at Pill, Parson Street, and Bedminster. Providing up to 18 trains in each direction per day (Mon-Sat), and up to 10 trains on Sundays, utilising one train set all day.
- Hourly service plus – trains operating every 45 minutes during the am and pm peak and hourly off peak, between Portishead and Bristol Temple Meads, calling at Pill, Parson Street, and Bedminster. Providing up to 20 trains in each direction per day (Mon-Sat), and up to 10 trains on Sundays, utilising one train set all day and an additional set during the am and pm peaks.

Note though that, while the infrastructure required to deliver the 'hourly service plus' on the Portishead line is identical to that required for an hourly service, it has not been appraised as part of the OBC. Only the hourly service has been considered at this stage, because analysis to confirm the shape of an 'hourly service plus' is still on-going. Note also that, although infrastructure for an hourly service (or hourly service plus) is being provided at this stage, it remains the aspiration of the promoting authorities to develop a 30 minute service in the future.

Figure 1.1 shows the proposed MetroWest Phase 1 passenger network with a more harmonised service frequency, providing the foundation for 'Metro' local rail network.

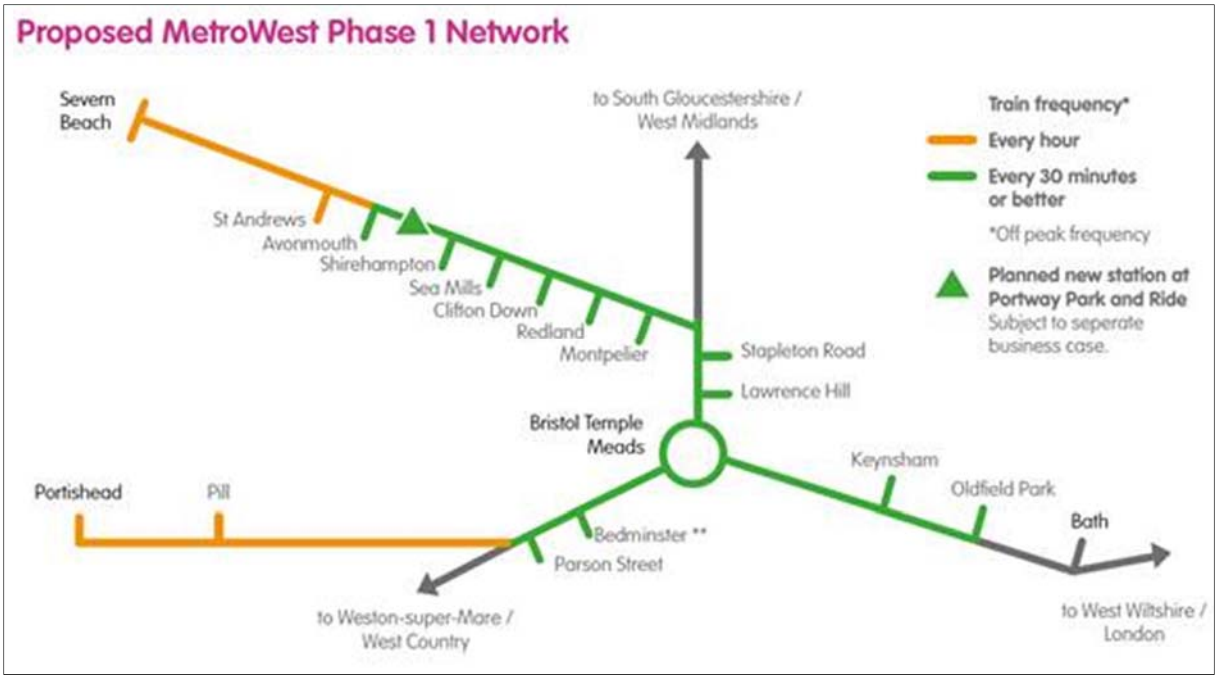

Figure 1-1: MetroWest Phase 1 network

1.4 Scheme Objectives

The MetroWest Phase 1 principal business objectives are:

- To support economic growth, through enhancing the transport links to the Temple Quarter Enterprise Zone (TQEZ) and into and across Bristol city centre, from the Portishead, Bath and Avonmouth and Severn Beach arterial corridors;
- To deliver a more resilient transport offer, providing more attractive and guaranteed (future-proofed) journey times for commuters, business and residents into and across Bristol, through better utilisation of strategic heavy rail corridors from Portishead, Bath and Avonmouth, and Severn Beach;
- To improve accessibility to the rail network with new and reopened rail stations and reduce the cost (generalised cost) of travel for commuters, business and residents; and
- To make a positive contribution to social well-being, life opportunities and improving quality of life, across the three arterial corridors.

In addition, the MetroWest Phase 1 supporting objectives are:

- To contribute to reducing traffic congestion relative to a 'Do Minimum' scenario (as opposed to current levels of congestion) on the Portishead, Bath and Avonmouth, and Severn Beach arterial corridors;
- To contribute to enhancing the capacity of the local rail network, in terms of seats per hour in the AM and PM peak; and
- To contribute to reducing the overall environmental impact of the transport network.

1.5 Summary of Scheme Impacts

MetroWest Phase 1 will deliver the following benefits:

- Increase the local economy by generating £264M of Gross Value Added (GVA) in first ten years from opening) and creating 514 net new permanent jobs;
- Enhance rail capacity by delivering over 600 additional seats per hour for the local rail network, which in turn will extend the benefits of Network Rail's Western Route Modernisation Programme;
- Deliver a reliable and more frequent public transport service, directly benefitting 180,000 people within 1km of 16 existing stations, with enhanced train service frequency;
- Increase the number of people living within 30 minutes travel time of key employment areas, such as TQEZ;
- Reduce highway congestion on arterial corridors, including A369 between Portishead and Bristol, significantly improving network resilience;
- Provide competitive journey times from Portishead and Pill to Bristol Temple Meads;
- Improve accessibility to sites for new homes and employment development in proximity to the rail corridors and bring an additional 50,000+ people within the immediate catchment of the rail network with new stations at Portishead and Pill;
- Reduce overall environmental impact, resulting in improved air quality, on key arterial highway routes;
- Provide attractive mode choice and capacity for journeys to work (alternatives to single occupancy car-based travel) addressing long-term car dependency; and
- Provide wide ranging social/health benefits.

In summary, the MetroWest Phase 1 scheme could add a net total of over 950,000 new rail journeys to the network in 2021 (rising to almost 1.3m in 2036). Service improvements at existing stations are forecast to generate over 600,000 new rail trips in 2021 (over 800,000 in 2036). New stations demand forecasts indicate that around 320,000 passengers would use the proposed station at Portishead in 2021, rising to over 430,000 by 2036. Pill station generates over 53,000 users in 2021, and over 72,000 in 2036. Benchmarking indicates that the demand forecast for Portishead and Pill is in line with expectations for stations of their size and catchment, with the services provide. With an hourly service, while initially there is sufficient capacity, there is however scope for crowding from 2030 onwards. This could be alleviated though if proposals to run 'infill' peak time services are achieved.

The MetroWest Phase 1 OBC Forecasting Report provides details of forecasting and modelling work undertaken to assess the proposed MetroWest Phase 1 OBC scheme.

1.6 Purpose and structure of this report

This Social Impact Appraisal Report has been prepared to set out the findings from the technical work undertaken with relation to:

- Accidents
- Physical activity
- Security
- Severance
- Journey quality
- Option and non-use values
- Accessibility
- Personal affordability

The report includes a mix of analysis, based on the relative importance and data availability for the different elements. Wherever possible, analysis has been undertaken to quantify and monetise the impacts so robust values can be presented in the appraisal. The output of each section is a summary of the anticipated impact of the scheme, as presented in the Appraisal Summary Table.

After this introductory chapter, the remainder of the social impacts appraisal report follows the structure above, with a chapter for each of the impacts listed.

SECTION 2

Road Traffic Accidents

2.1 Introduction

This section has been prepared to appraise the impact of the MetroWest Phase 1 scheme introduction on road traffic accidents. The assessment has been carried out using the DfT's Cost and Benefit to Accidents – Light Touch (COBA-LT) software, which compares the accidents and costs associated with them, based on road network details (road type, speed limit etc.), forecasted traffic volume, accident rates and economical parameters which monetise and discount the accidents' costs. Forecast traffic volume for different scenarios as well as road characteristics were taken from GBATS4, as the strategic transport model representing road traffic movement around the West of England Area (WoE). Additionally, speed limit and accidents data (2012-2016) for the WoE region was processed and used as the remaining part of the COBA-LT input.

2.2 COBA-LT Specifications

The scheme impact on road traffic accident costs was performed using the latest version of COBA-LT (cobalt2013_02.xls). Two input files were required to proceed the calculation process:

- Scheme input file – requires road network characteristics to be specified in three possible ways: link based, junction based, or combined. For this analysis, the combined approach was used as the area of coverage is wide, and specific locations were not anticipated to be affected; and
- Economic parameter input file – contains data e.g. costs of accidents and costs growth rates. The standard parameter file shared by DfT (cobalt-2016-2-webtag-parameters.txt) has been used.

2.3 Scheme Input File - Overview

The main part contains elements defining the modelled scheme area, such as the network and traffic flows corresponding with it. Apart from that, it allows historical accident data to be inputted to each link, enabling the network section to more realistically represent the area of interest. Alternatively, the accidents data can be omitted and national averages utilised in the benefit assessment.

The structure of the scheme input file used for MetroWest Phase 1 cost of accident analysis, along with sources of information, is presented in Table 2.1.

Table 2.1: COBA-LT scheme input file structure

Input file subsection	Data item	Source or value
Years	Current Year	2017
	Base Year	2013
	Year 1	2021
	Year 2	2036
	Scheme Opening Year	2021
Classification (for each link)	Link name	GBATS4 network
	Link type	Based on GBATS4 Capacity Index
	Length (km)	GBATS4 network
	Speed limit (mph)	GBATS4 network and other information
Flow (for each link)	Base year AADT	GBATS4
	Do Minimum AADT – for Years 1 & 2	GBATS4
	Do Something AADT – for Years 1 & 2	GBATS4
Local Accident Rate (for each link)	Total observed accidents by road and year	STATS19

The network defined in the scheme input file has been presented on Figure 2.1.

Figure 2-1: COBA-LT analysis of road network in West of England

COBA-LT assumes that all links defined within the network section are two-way, however inside the GBATS4-SATURN model, links represent each direction separately (unless given link represents one-directional road by definition). To take account of this, SATURN's 'Coba Link' value, which identifies each two-directional link in the model (allocating the same parameter value to every link representing the same stretch of road in each direction), was extracted along with other data, such as traffic flows, free-flow speeds and link length.

Allocation of speed limits to each of the analysed links was made initially through usage of modelled free-flow speed. These were then compared against speed data provided and adjusted where necessary. The exception were the links with speed limit of 20mph. COBA-LT assumes that no accidents occur on these links, which is not necessarily correct. To overcome this, the speed limit for these links was altered from 20 to 30 mph.

If link characteristics, other than flow (i.e. link type), changes between analysed scenarios i.e. Base, Do-minimum, Do-something, separate link entries are needed within the input file for each scenario. For example, if link type changes from 4 in Base to 6 in Do-minimum there are separate entries for the Base (link type = 4, forecast flow = 0) and Do-minimum (link type = 6, base flow = 0).

2.4 Scheme Input File – Accident Data

Historical accident data can be provided for COBA-LT, so local conditions can be considered and it reflects reality satisfactorily. They can be included within the input file as either:

- Absolute number of accidents on a given link for a maximum of 5 consecutive years; and
- Calculated accidents rate (Personal Injury Accidents per million vehicle kilometres).

For this accident costs analysis, STATS19 absolute number of observed accidents for the period 2012-2016 was utilised. Accident to link allocation was done through GIS analysis, where initially a

10-metre buffer around each link within the analysis area was made. Any accident within that buffer was then allocated to a link. Any new link included in forecast scenarios uses accidents national averages from within the economic parameter file, which differentiate link type and speed limits.

2.5 COBA-LT Analysis Results

COBA-LT produces results based on traffic flow comparisons on a given link type between Do-minimum and Do-something scenarios. The output figures represent three main parts:

- Economic summary – monetised costs of the accidents in Do-minimum and Do-something scenarios, along with the difference between them, indicating the actual impact of the scheme;
- Accident summary – consists of the total number of accidents occurring in both Do-minimum and Do-something scenarios, along with the difference between them; and
- Casualty summary – consists of the total number of accident victims divided between 3 groups: Fatal, Serious and Slight, within the Do-minimum and Do-something scenarios with the difference between them.

Accident costs analysis for MetroWest Phase 1 were set up with 2 forecast years: 2021 and 2036. Summarised results over a 60-year appraisal period are presented in Tables 2.2 and 2.3.

Table 2.2: COBA-LT results – economic and accident summaries

Scenario	Accident cost (£'000)	Accident numbers
Without scheme	2,138,405.9	47,240.0
With scheme	2,132,560.4	47,110.0
Savings	5,845.5	130

Table 2.3: COBA-LT results – casualty summary

Scenario	Severity	Casualty summary
Without scheme	Fatal	405.9
	Serious	5,873.7
	Slight	57,603.0
With scheme	Fatal	404.8
	Serious	5,857.7
	Slight	57,445.3
Savings	Fatal	1.1
	Serious	16.0
	Slight	157.8

Figure 2.2 shows the distributional impact of the scheme on road traffic accident costs, by link, on a thematic map. The colours indicate:

- Blue – links with accident cost benefits (benefit value higher than 5)
- Red – links with accident cost disbenefits (benefit value smaller than -5)
- Grey – other links – minimal or zero changes (benefit value between -5 and 5)

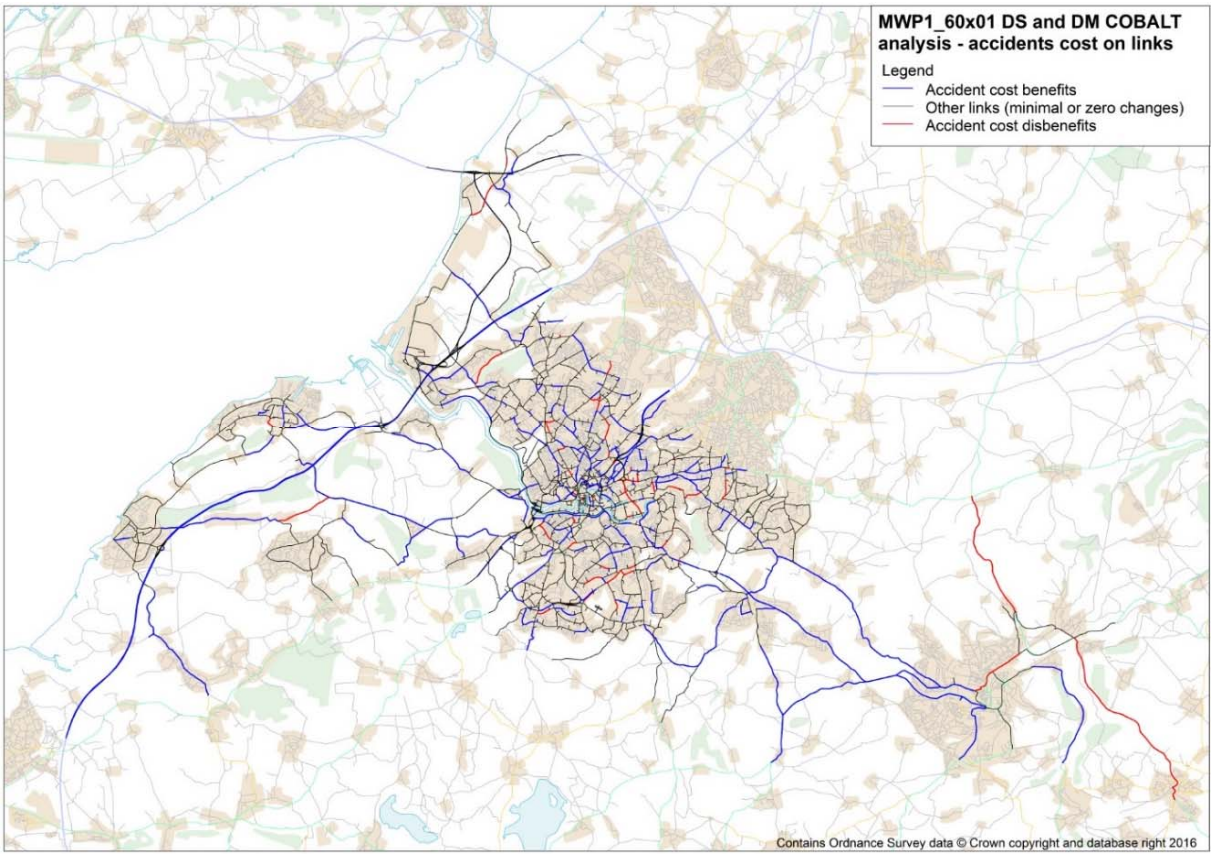

Figure 2-2: COBA-LT analysis - accidents cost on links

2.6 Summary

The full assessment of the likely road traffic accident impacts of the MetroWest Phase 1 show that there will be a **neutral impact** on accidents in the West of England area.

SECTION 3

Physical Activity

3.1 Introduction

There is increasing recognition of the interrelation between transport, the environment and health[1]. Transport can affect levels of physical activity. Physical inactivity is a primary contributor to a broad range of chronic diseases such as coronary heart disease, stroke, diabetes and some cancers[2]. Physical activity also has an important role to play in preventing weight gain and obesity and improving mental health.

Health implications of transport proposals can be identified by assessing changes in the opportunities for increased physical activity through cycling and walking. More walking and cycling can also give benefits by improving the physical environment within communities, in turn helping to foster community spirit, with implications for health.

The proposed scheme accounts for cyclists, pedestrians and even equestrians by delivering and planning for measures to minimise the interaction between these modes and motorised traffic (including trains). The measures provided for Non-Motorised Users (NMUs) that will be delivered as part of the scheme ensures that the opportunity to undertake trips through active modes will be enhanced.

3.2 Works affecting NMUs

The following is a summary of the works that will have an impact on NMUs and have therefore been considered in the Physical Activity Assessment.

3.2.1 Portishead

In order to accommodate the new station at Portishead, a number of alterations will be undertaken to the public highway which will include various formal and informal pedestrian crossings and cycling route enhancements as follows:

- Construction of new roundabout will include controlled parallel crossings on the Harbour Road and Phoenix Way arms (Figure 3.1 in the TA);
- A toucan crossing across Quays Avenue is proposed which will link the new bus stops that are planned to the south west of the station site (Figure 3.1 in the TA);
- A new shared use path that will run parallel with Harbour Road and will provide the principal pedestrian and cyclist access from the station towards the town centre (Figure 3.1 in the TA);
- A new shared pedestrian and cycle path will be constructed across the new railway line, which will connect Quays Avenue with the new pedestrian and cycle bridge at Trinity Primary School;
- Extension of shared footway and cycleway on the west side of Quays Avenue (opposite junction with Galingale Way) to the existing crossing west of the junction with Conference Avenue; and
- A new pedestrian and cycle bridge to the east of Portishead station adjacent to Trinity Primary School that will replace the current permissive at-grade crossing. This will promote route continuity between Trinity Primary School and residential areas on the north side of the new railway line and the residential area to the south of the line.

[1] Road Transport and Health, British Medical Association, 1997

[2] Dept. of Health 2004 'At Least Five a Week' A report from the Chief Medical Officer

3.2.2 Sheepway

The existing permissive path that forms part of National Cycle Route No. 26 will be diverted to accommodate the new maintenance compound at Sheepway. The path will be relocated to run along the outer edge of the new compound, with an entry point off Sheepway to the north of the bus stop to minimise conflict between cyclists and vehicles. The cyclepath will be 3 m wide, surfaced with gravel, and separated from the new compound by a security fence.

3.2.3 Public Rights of Way south of Portbury Dock

The existing cycling infrastructure (forming part of National Cycle Network 26) under the Royal Portbury Dock Road Bridge, Marsh Lane Bridge and the M5 Bridge will be realigned and rebuilt to allow both the permissive cyclepath and railway to pass under the structures. The width of the cycle path will be increased from between 1.8 and 2.03 m at present to between 2.5 and 2.65 m. Cycleways will be segregated from the line by appropriate fencing.

On Royal Portbury Dock Road, an uncontrolled bridleway (LA8/66/10) crossing will be provided over the road, comprising a “holding area” on both sides of the carriageway connecting to the bridleway and fenced along their outer boundaries. The equestrian can wait safely back from the road until there is a suitable gap in the traffic before crossing.

Works to National Cycle Route 26 are also proposed in the vicinity of the M5 underbridge. In this location NRIL has granted a license for NCR 26 to pass under the M5 alongside the railway and join National Cycle Route 41 between Pill and Avonmouth. The licensed route connects to a bridleway (LA8/67/10) on the north side of the railway and M5, which does not cross under the M5, but terminates beneath the Avonmouth Viaduct of the M5. Although no licence or PRoW exists, equestrians currently use the cyclepath to pass under the M5.

Consent is proposed to be sought for works to allow for the extension of bridleway LA8/67/10 north of the M5 underbridge to connect with NCN 41 to the east of the M5 that connects with Pill. The extension will provide a safe route for horses and other bridleway users away from the railway. The bridleway, if constructed, would be 3 m wide with a maximum gradient of 1 in 12. On the south-eastern side of the M5, the new bridleway would be raised above existing ground levels due to the marshy conditions. The existing licensed route under the M5 is intended to be re-provided for and will (subject to Network Rail granting a new license for its use) be available for pedestrians and cyclists, separated from the railway by security fencing.

3.2.4 Ashton Vale

The existing permissive crossing at Barons Close has been temporarily closed as part of the AVTM MetroBus Scheme. MetroWest Phase 1 is proposing to close this crossing permanently as part of the DCO Scheme. Alternative 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. Time previously spent waiting to safely cross the Barons Close at-grade will now be replaced by physical activity whilst travelling on the footbridge ramps.

3.3 Reporting Physical Activity Impacts in the Appraisal Summary Table

In preparing inputs for the Appraisal Summary Table (AST) the changes in the extent of walking and cycling should be estimated using forecasting tools or methods where walking or cycling measures are key to the intervention being considered.

In schemes that are demonstrated to have a relatively insignificant impact on physical activity, such as MetroWest Phase 1, it will be satisfactory to enter a qualitative indicator in the AST, showing

separately the forecast changes in the numbers of cyclists, pedestrians and equestrians. In this context, 'insignificant' means that the impacts are recorded as neutral, or in some marginal cases, slight. Where the impacts may be larger, monetisation should be undertaken. This includes interventions that may, for example, ease travel by motorised modes and encourage car use rather than active modes.

3.3.1 Calculating Physical Activity Impacts

For calculation of physical activity impacts, an estimate of the following was provided:

- The number of persons walking, cycling and on-horseback affected (based on Non-Motorised User (NMU) surveys); and
- Changes to journeys times as a result of the scheme (calculated from distance and speed along the specific route).

This methodology estimates the benefit to the population using active modes for any level of activity, not just those achieving a specific threshold. There are these considerations for new and existing users:

- For any new walk and cycle trips (shifting from mechanised modes) there will be some health benefits to each individual; and
- For existing walk and cycle trips, health benefits may change where the duration of travel may change (e.g. removal of severance on a specific route to decrease journey times).

3.3.2 Assessment of Impact of Active Modes

Where active modes are not explicitly modelled and the impact on them is relatively small, a proportionate approach should be used to assess these impacts. This is often reported qualitatively using the standard seven-point scale in the Appraisal Summary Table (refer to Table X) as described in TAG Unit A5.5 Appendix A. This is in line with guidance in Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 8, which provides details of the assessment of the impact on pedestrians, cyclists, equestrians and others.

Combining the number of active mode users affected (number of persons) with how much they are affected (in minutes) in each case is sufficient information to formulate an overall assessment score (in person 'minutes') for transport economic efficiency impacts on active mode users. This approach involves developing a schedule, for each important route, of changes in typical journey lengths (times and distances) and likely changes in travel patterns, with an estimate of the number of people affected in each case.

Using the information in the worksheet, the assessment score may be obtained using the following guidelines. Define the changes in journey times as: small (less than one minute), moderate (between one and two minutes) and large (greater than three minutes) and the numbers of travellers affected as: low (less than 200 in total), moderate (between 200 and 1000) and high (greater than 1000). Then the assessment can then be based on the following matrix (shown in Table 3.1) of impacts where beneficial impacts occur if journey times are reduced or adverse impacts if journey times are increased.

Table 3.1: Qualitative 7-point scale of impacts on active modes

	Travellers Affected		
Journey Time Changes	Low	Moderate	High
Low	Neutral	Neutral	Slight
Moderate	Neutral	Slight	Moderate
High	Slight	Moderate	Large

3.3.3 Existing NMU data

Data obtained during numerous surveys has been used to estimate the likely number of NMU's that will be affected by the scheme. NMU surveys have been undertaken at three specific locations at different periods along the Scheme alignment as follows:

- Within Portishead;
- On NCN Route 26 to and from Pill; and
- Ashton Vale Road.

The data obtained during the surveys are summarised in Tables 3.2-3.4. For further detail about the surveys refer to section 4.10.5 of the MetroWest Phase 1 Transport Assessment (TA).

Table 3.2: Cycle Path (NCR 26) users between Portishead and Pill

Location	2010	2011	2012	2013
NCR 26 Pill to Portishead	110	125	102	105
NCR 26 Portishead to Pill	103	106	91	96

Note: Data based on 7-day average over a 24-hour period

Table 3.3: Summary of NMU count data in and around Portishead

Location	Time Period	Pedestrian	Cyclists	Equestrians
Trinity Footbridge	7am-10am	161	16	0
Trinity Footbridge	2pm-6pm	234	33	0
Quays Avenue	12-1pm	26	8	0
NCN 26 (Sheepway)	10am-3pm	26	215	4
NCN26 (Portbury)	10am-3pm	28	45	1

Note: Data based on 2-way movements

Table 3.4: NMUs at Ashton Vale level crossing

	Pedestrians	Cyclists
Ashton Vale Industrial Estate (2-way)	556	169

Note: Based on data collected between 6 am and 7 pm on a weekday

In the absence of local data, the following assumptions have been made about average journey speeds: 5 km/hr for people on foot, 10 km/hr for equestrians and 20 km/hr for cyclists.[3]

3.4 Summary

Based on the assessment undertaken, the overall impact of the scheme on physical activity, is considered to be **slightly beneficial**.

[3] DMRB Volume 11 Section 3 Part 8. Pedestrian, Cyclists, Equestrians and Community Effects

SECTION 4

Security

4.1 Introduction

The security assessment has been undertaken in accordance with WebTAG guidance and assesses how the Scheme will impact the level of security for transport users.

The impacts on the security of road users, public transport passengers and freight has been presented in the Appraisal Summary Table (AST). For public transport passengers, guidelines for railway stations and public transport operators (DETR, 1998) raises a number of key security issues and gives guidance on design and management practices. These are broad ranging and a number of issues relevant to the Scheme have been included in the security indicator list in Table 4.1.

Although there are no formal guidelines for road users, indicators in the table can be readily applied to road users. Points to note when considering these security indicators in relation to road users are:

- Road users are more vulnerable to crime in circumstances where they are required to stop their vehicles or travel at slow speeds, such as at the approaches to signals or in congested conditions;
- Road users are more vulnerable to crime at locations where they are required to leave their vehicles, such as at service stations, car parks and so on; and
- The importance of each indicator is likely to vary according to the location and nature of the road; for example: emergency call facilities are likely to be more important than surveillance when considering a rural road.

For freight, security at the terminal or interchange should be assessed under journey quality impacts. As for road users, the indicators shown in the table may be interpreted for application to other aspects of freight movement.

Table 4.1: Security Indicators for public transport passengers

Security Indicator	Poor	Moderate	High
Site perimeters, entrances and exits	Unmarked or poorly marked site perimeters, exits, etc.	Attention to boundary and exit marking, but otherwise unfavourable use of materials.	Clearly marked site perimeters/exits. Use of open fencing rather than solid walls.
Formal surveillance	CCTV system in place, but number, location of system not optimal. Poor design, which discourages staff surveillance.	Effective CCTV system in place. Design to encourage staff surveillance and group passengers.	CCTV system in place, but number, location of system not optimal. Poor design, which discourages staff surveillance.
Informal surveillance	Poor use of materials (fencing etc) and design. Poor visibility from site surrounds. Very isolated from retailers or other human activity.	Unfavourable use of materials (fencing etc) but reasonable proximity of retailers or other activity.	Poor use of materials (fencing etc) and design. Poor visibility from site surrounds. Very isolated from retailers or other human activity.
Landscaping	Landscaping features (design, plants etc) inhibits visibility and encourages intruders.	Evidence of some positive use of landscaping features (design, plants etc), but more measures needed to contribute to visibility and deter intruders.	Landscaping features (design, plants etc) inhibits visibility and encourages intruders.

Table 4.1: Security Indicators for public transport passengers

Security Indicator	Poor	Moderate	High
Lighting and visibility	Poor design including recesses, pillars, obstructions etc., which hinder camera/monitor view. Poor or no lighting in passenger areas at night when facility open. No or poor lighting on any signing, information or help points.	Design includes some recesses but not problematical to camera/monitor view. Lighting in passenger areas at some, but not all times when facility open. Lighting not to daylight standard. Attention to lighting on signing, information and help points.	Poor design including recesses, pillars, obstructions etc., which hinder camera/monitor view. Poor or no lighting in passenger areas at night when facility open. No or poor lighting on any signing, information or help points.
Emergency call	No or very poor provision of emergency phones, help points and public telephones. Little provision or information on emergency help procedures.	Basic provision of emergency phones, help points and public telephones. Improvements to these and on emergency help procedures needed.	No or very poor provision of emergency phones, help points and public telephones. Little provision or information on emergency help procedures.

4.2 Scheme Design

The proposals have been designed to ensure that there are no adverse impacts upon the security of transport users. Overall, the provision of better lighting, footways, and route continuity will all help to reduce levels of transport related crime and affect a range of social groups across a vast geographical area. The investment in the existing transport network will help to enhance public perceptions of security.

4.2.1 Along the line

The scheme will not alter the existing alignment of the line, which is relatively straight with good sight lines and no 'hidden' sections for pedestrians or stopped vehicles. There are a number of permanent maintenance and emergency access points proposed as part of the scheme, whilst surveillance provisions are considered to be broadly consistent with the baseline. No adverse impacts are expected, but there will be some moderate benefits associated with the new footbridges at Trinity Primary School and Ashton Vale, and the formalising of these routes.

The presence of the line between Portishead and Pill will improve security for users of the PRoWs. The same will apply to the PROW through Avon Gorge, due to the presence of passenger trains in addition to the existing freight trains.

4.2.2 At the stations

Although the addition of rail stations can enhance security of an area by providing formal and natural surveillance, these benefits are tempered by the reality that rail stations can also attract criminality regardless of the measures to prevent this.

The DfT Secure Stations Scheme (SSS) provides an incentive to station operators to improve security and provide reassurance to passengers and staff. There are four accreditation criteria:

- The design of the station must conform to standards judged by the local British Transport Police (BTP) Crime Reduction Officer to prevent and reduce crime and improve passenger perceptions;
- The management of the station must enable you to take steps to prevent crimes, respond to incidents, and communicate effectively with passengers;

- Crime statistics for the station over the twelve months prior to the inspection must show that you are managing crime; and
- A survey of when using the users must show that, on the whole, passengers feel secure station.

The SSS recognises that security can be improved both through physical design measures and through management practices. Many stations are old and were designed without personal security in mind. In such cases operators will need to make whatever improvements are possible (through, for example, lighting and signage) and take steps to manage the problems that remain. The design of a new station (in this case Portishead) or a major refurbishment (in this case Pill) will provide an opportunity to incorporate good practice in the features of the physical environment. Even so, management practices which give priority to preventing crime and providing a reassuring environment will be crucial to ensuring that the stations are (and remain) secure.

4.2.3 Portishead

Portishead station will be the terminus of the new service and will be located to the southeast of the Quays Avenue, Harbour Road and Phoenix Way roundabout. The station will be staffed and will comprise of a canopy structure sheltering the station building and a section of the single platform. The building will include a ticket and waiting area and public toilets. CCTV, public announcement speakers and a communications mast will also be located on the platform, which will be lit by luminaires on lighting columns at 15 m spacing along the platform.

The scheme will provide two car parks: one to the immediate north of the station which will be accessed directly off Phoenix Way; and one to the south-west of the station site and will be accessed from Harbour Road. The carpark to the north will comprise of 71 spaces, of which 13 will be designated for disabled users (close to the platform), 3 allocated to the train company and 3 for taxis. The car park will also include a covered bicycle parking area, as well as a small area for drop off movements and for taxis.

The presence of staff, in addition to CCTV, lighting, appropriate signage and movement of traffic (both vehicular and NMUs) through the carpark, will help to discourage instances of anti-social behaviour such as personal, vehicle or bike theft within the north car park. While the larger carpark to the south-west is located more remote from the main station, the presence of lighting and CCTV will help to provide a greater sense of security for users of the service.

4.2.4 Pill Station

The access to Pill station will be off Station Road on the south side of the road overbridge. The station will be a one platform unstaffed facility with a car park accessed from Monmouth Road. Passenger access to the station will be from the former station forecourt building on Station Road.

The station forecourt will include three disabled parking spaces and a car passenger drop off area. A shelter by the entrance will house a ticket machine, waiting area, seating and cycle parking for about 20 bicycles. Having mobility impaired parking facilities close to the platform will greatly benefit the utility of the station for those who might find parking at the proposed car park at Monmouth Road too challenging a distance.

The presence of nearby residential properties opposite the station forecourt and on Sambourne Lane will provide a greater sense of security for transport users, particularly for the more vulnerable users, such as disabled and elderly.

A new pedestrian ramp will be constructed from the site of the new station forecourt to the platform. A small shelter will be provided on the platform in front of the pedestrian ramp. An emergency refuge area will be provided at the Down (Portishead) end of the platform in the event of a fire on the train in the station. Lighting will consist of about 9 no. lighting columns about 5 m high and by lighting bollards in the emergency refuge area, all at 11 m spacings. CCTV and public announcement speakers will be provided on the platform. These measures will help improve security and help discourage instances of anti-social behaviour at Pill Station.

The pedestrian route to the station from the main car park will be via Monmouth Road and across Station Road bridge to the railway station. The car park will be lit by 7 no. lighting columns, while the presence of further public lighting and residential properties will provide transport users with a greater sense of security when travelling between the carpark and station forecourt.

4.3 Summary

The analysis indicates that the security impacts of MetroWest Phase 1 will be 'neutral'. The new rail stations will enhance the security of both locations by providing additional footfall, CCTV, emergency contact points and improved lighting. However, while there will be a general improvement in security of the area, rail stations can also attract crime. The scheme is therefore envisaged to have a **neutral impact** on security.

SECTION 5

Severance

5.1 Introduction

Community severance is defined here as the separation of residents from facilities and services they use within their community caused by substantial changes in transport infrastructure or by changes in traffic flows. Severance will only be an issue where either vehicle flows are significant enough to significantly impede pedestrian movement or where infrastructure presents a physical barrier to movement.

Severance primarily concerns those using non-motorised modes, particularly pedestrians. To ensure a consistent approach, classification should be based on pedestrians only. The impact of severance on cyclists will differ for two reasons: they travel more quickly; and crossing facilities may not be available to them. Interpretation of these levels for individual modes is discussed below.

Severance may be classified according to the following four broad levels.

- None - Little or no hindrance to pedestrian movement;
- Slight - All people wishing to make pedestrian movements will be able to do so, but there will probably be some hindrance to movement;
- Moderate - Pedestrian journeys will be longer or less attractive; some people are likely to be dissuaded from making some journeys on foot; and
- Severe - People are likely to be deterred from making pedestrian journeys to an extent sufficient to induce a reorganisation of their activities. In some cases, this could lead to a change in the location of centres of activity or to a permanent loss of access to certain facilities for a particular community. Those who do make journeys on foot will experience considerable hindrance.

Table 5.1 sets out the methodology for considering change in severance between without and with scheme situations.

Table 5.1: Assessment of Change in Severance

Without-scheme severance scoring	**With-scheme severance scoring**			
	None	**Slight**	**Moderate**	**Large**
None	None	Slight negative	Moderate negative	Large negative
Slight	Slight positive	None	Slight negative	Moderate negative
Moderate	Moderate positive	Slight positive	None	Slight negative
Large	Large positive	Moderate positive	Slight positive	None

An overall assessment for the option should then be based on the following guidelines (in each case, the assessment is: beneficial if severance is reduced; or adverse if severance is increased):

- The overall assessment is likely to be Neutral if increases in severance are broadly balanced by relief of severance;
- The overall assessment is likely to be Slight where change in severance is slight or the total numbers of people affected across all levels of severance is low (less than 200 per day, say);
- The overall assessment is likely to be Large where change in severance is large, and affects a moderate or high number of people or the total numbers of people affected across all levels of severance is high (greater than 1,000, say); and
- The overall assessment is likely to be Moderate in all other cases.

Where significant numbers of cyclists are affected, a comment should be made in the Qualitative section of the AST, indicating whether the impact of severance is more or less severe than for pedestrians.

5.2 Severance Assessment

The severance assessment has been undertaken in accordance with WebTAG guidance and assesses how the Scheme will impact severance. The reinstatement of the disused railway between Portishead and Pill has potential to cause severance to existing farm operations and influence planning developments. It is hoped that impacts of severance will be mitigated during the construction phase in such a way as to mitigate the effects during both construction and operational stages of the DCO Scheme.

The Severance Impacts Worksheet that documents the appraisal process and outcomes in further detail is included in the WebTAG worksheets appendix.

Table 5.2 outlines the locations along the Scheme where severance will be impacted and the measure of mitigation proposed to reduce the severity of these impacts.

Table 5.2: Severance impacts and mitigation

Location	Severance	Alternative access arrangements	Impact	Notes
Quays Avenue/ Harbour Road/ Phoenix Way roundabout	Quays Avenue severed due to proposed location of Portishead Station	1) Quays Avenue to be modified to re-align the northern part of the road to the west; 2) Alterations to Phoenix Way; 3) Existing roundabout relocated approximately 100 metres to the west; 4) Installation of controlled crossings on the Harbour Road and Phoenix Way Arms	Slight Beneficial	The measures provided for pedestrians and cyclists will ensure that existing communities and the anticipated major development in Portishead will not be adversely affected in terms of severance by the scheme.
Permissive crossing between Trinity PS and residential area to the south of the line	Permanent closure of crossing due to re-opened Porrtishead Line	A new pedestrian and cycle bridge will be constructed over the Portishead Branch Line Railway.	Slight Negative	The new footbridge will retain a safe means of access between Trinity PS and the residential area to the south of the line. Journey times will however be increased.
New maintenance compound at Sheepway	Section of permissive path to the north of the new Portishead Line will be permanently closed to accommodate a maintenance compound.	The permissive path will be diverted in order to accommodate the construction of the new maintenance compound and access road on the northern side of the railway off Sheepway. The existing route is to be relocated to run along the outer edge (to the north) of the new compound and will merge with NCR26 at Sheepway.	Neutral	The diverted path will maintain a safe means of access for pedestrians and cyclists.

Table 5.2: Severance impacts and mitigation

Location	Severance	Alternative access arrangements	Impact	Notes
2 no. farms between Sheepway and The Portbury Hundred (A396).	2 no. farms are served by internal tracks with three at-grade crossings across the disused track. These crossings will be severed by the new Portishead Line and permanently closed.	Alternative access will be provided as well as the relocation of certain items of farm infrastructure. The assumption is that mitigation will be in place before the land is severed.	Slight Negative	Details of alternative means of access are currently unknown. It is however likely that journey times between land on both sides of the new Portishead Line will be increased.
1 no. field east of Marsh Lane	Field will be severed due to the infilling of the Cattle Creep underbridge.	Alternative access to this land will be provided off Marsh Lane.	Slight Negative	Journey times between land on both sides of the new Portishead Line will be increased.
NCR26 under the Royal Portbury Dock Road Bridge, Marsh Lane Bridge and the M5 Bridge	Works required to accommodate both the permissive path and new Portishead Line under the Royal Portbury Dock Road Bridge, Marsh Lane Bridge and the M5 Bridge.	The existing cycle path (forming part of NCR26) under the three bridges will be realigned and rebuilt to allow both the permissive route and railway to pass underneath. The cyclepath will be segregated from the line by appropriate fencing.	Neutral	
M5 Bridge	Use of existing permissive path (NCR 26) under the M5 is not of sufficient width to safely accommodate equestrians and the new Portishead Line. The licenced route NCR26 connects to a bridleway (LA8/67/10) on the north side of the railway and M5 but the bridleway does not cross under the M5; it terminates beneath the Avonmouth Viaduct of the M5. Although no licence or PRoW exists, equestrians currently use the cyclepath to pass under the M5.	Consent is proposed to be sought for works to allow for the extension of the bridleway LA8/67/10 north of the M5 underbridge to connect with NCN 41 to the east of the M5 that connects with Pill. The extension will provide a safe route for horses and other bridleway users away from the railway.	Slight Negative	Journey times for equestrians will be increased.
Barons Close permissive crossing	The existing permissive crossing has been temporarily closed as part of the AVTM MetroBus Scheme. If NR don't bring forward plans to permanently close this crossing before the Scheme becomes operational, MetroWest Phase 1 is proposing to close this crossing permanently as part of the DCO Scheme on safety grounds.	Alternative pedestrian access will be provided, using a pedestrian and cycle path (currently under construction by the MetroBus scheme) linking to the Ashton Vale Road level crossing and the proposed MetroWest Phase 1 pedestrian/cycle ramp. The pedestrian and cycle 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.	Moderate Negative	While the proposed footbridge will benefit pedestrian and cyclist safety, the proposed ramp will result in longer journey times between Ashton Vale Industrial estate and Winterstoke Road.

5.3 Summary

The improvement works proposed along the Portbury Freight Line between Pill and Parson Street Junction are associated with operational railways, so there will be **no new severance** with the exception of the closure of Barons Close crossing. However, some land will be required for the emergency access to the tunnels, which includes agricultural land at Pill.

This analysis indicates that the severance impacts will be overall **slight negative** relative to existing conditions.

SECTION 6

Journey Quality

6.1 Introduction

This assessment focuses on how the Scheme will impact on the journey quality for users. The assessment has been undertaken in line with TAG Guidance A4.1 on Social Impact Appraisal.

Journey quality is a measure of the physical and social environment that is experienced when travelling. The number of factors can be wide ranging such as the level of crowding on trains, the provision of information, perceptions of personal safety and the ease/convenience of using the route by that mode.

Journey quality can have an important influence on travel choices. Poor quality may dissuade users from using specific modes but conversely users may be willing to pay extra for certain elements of a journey. This can all impact on the overall generalised cost of journeys.

The TAG guidance states where improvements are primarily geared towards improving journey quality then a quantitative assessment may be desirable. Where quality may be regarded as a lower priority, then a qualitative assessment can be used. Given the aim of the MetroWest Phase 1 Scheme is to increase rail services, a qualitative assessment has been undertaken.

The TAG guidance identifies three main components of journey quality as follows:

- Traveller care – This focuses on the general transport environment such as cleanliness, facilities, the provision and quality of information, smoothness of the ride and the extent of overcrowding;
- Travellers view – Largely based on the views of both the townscape and landscape during the journey; and
- Travellers stress – This is based on the convenience of the journey including the ease of using the route.

In this assessment, the main elements of the Scheme have been divided into two – the first, increased frequencies on the Severn Beach line and local stations to Bath and the second, introduction of passenger rail services to Portishead and Pill. This is to recognise that journey quality is likely to differ between the two elements based on existing transport conditions. The first comparing existing rail services and other modes whereas the second is focused on the new rail service against other transport modes.

The TAG guidance outlines the overall impact score for journey quality. Broadly, a neutral assessment is where all or most of the sub factors are neutral or balance each other out. If there is a net improvement, this is deemed beneficial or conversely adverse where factors have worsen.

6.2 Traveller Care

6.2.1 Increased frequencies on Severn Beach line and local stations to Bath

The greatest benefits to traveller care are likely to be crowding on trains. The improved frequencies are likely to reduce the extent of overcrowding on both lines particularly during peak periods. Whilst passenger demand will increase as a result of the improved service, the additional number of services will partially offset the extent of overcrowding.

With other aspects of traveller care such as cleanliness, facilities, information and environment there is likely to be no change for existing rail users. The introduction of Class 165/166 trains on West of England local services is not dependent upon the Scheme. These will be in place at the outset of the Scheme but are an improvement on the existing 150 class trains.

For users transferring from other modes, the main changes to traveller care relate to the differences with rail. There will be beneficial impacts in terms of comfort such as seating arrangements and smoothness of rides but this may be offset by more people using the services.

6.2.2 Introduction of passenger rail services to Portishead and Pill

There will be a beneficial impact arising from the new option to travel to and from Portishead and Pill by rail. As stated above the main change will be compared to other transport modes will largely revolve around comfort such as seating arrangements and the smoothness of the ride. There will also be benefits from the facilities at the new railway stations.

6.3 Traveller Views

6.3.1 Increased frequencies on Severn Beach line and local stations to Bath

There will be a neutral impact arising from the Scheme on traveller views as no significant changes are proposed to physical infrastructure along both lines.

6.3.2 Introduction of passenger rail services to Portishead and Pill

There will be a beneficial impact to traveller views arising from the opening of the line to Portishead. The route of the line through the Avon Gorge Site of Special Scientific Interest (SSSI) should offer views of the gorge itself, the River Avon, woodland and the Clifton Suspension Bridge. However, the line will go through three tunnels which will reduce the overall impact of traveller views.

6.4 Traveller Stress

6.4.1 Increased frequencies on Severn Beach line and local stations to Bath

There is likely to be a beneficial impact to the ease and convenience of the route from improved frequencies. An increased level of service is likely to reduce the level of passenger frustration about making good progress on the route particularly with late running or cancellations given the existing lower frequencies on both lines.

For users transferring from other transport modes, there will be minor benefits arising from improved perceptions of rail being a viable and convenient option on that route. The provision of accessible travel information and a good safety record on the rail system should all contribute to the benefits.

6.4.2 Introduction of passenger rail services to Portishead and Pill

There is likely to be a beneficial impact to traveller stress from the introduction of rail services. The provision of a new public transport option and the convenience of reduced travel times compared to both road and existing bus services will bring benefits to making good progress along the route. The integration of Portishead and Pill stations into the national rail network using existing communication portals will bring improvements in the availability of information.

The TAG Journey Quality Impacts Worksheet that documents the appraisal process and outcomes is presented in the WebTAG worksheets appendix.

6.5 Summary

The analysis suggests that improved frequencies on the Severn Beach line and local stations to Bath will help reduce the extent of overcrowding and lower traveller stress by improved ease and convenience. The analysis also suggests that there will be neutral impacts on other factors such as cleanliness, facilities, information and traveller's views.

With the introduction of passenger rail services to Pill and Portishead, there will be larger beneficial impacts such as new facilities at the railway stations, smoothness of ride, traveller views and integration into existing national railway information portals.

Based on the evidence, it is concluded in the AST that MetroWest Phase 1 will result in a **moderate beneficial impact** in respect of journey quality.

SECTION 7

Option and Non-use Values

7.1 Rationale

Option value is the willingness to pay to preserve the option of using a transport service, which is new or not currently used, over and above the expected value of any future use. In the context of this scheme, it is the additional benefit of a rail service being added to existing buses.

An assessment of option values has been undertaken as the scheme includes new rail stations and the reopening of a disused passenger rail line. This will change the availability of transport services in the West of England area, by adding a new mode (local rail) to the existing public transport offer, and supplementing existing bus services. Option values are particularly apposite in the appraisal of new services and infrastructure, especially if the scheme being appraised is introducing services where there were none before. In the context of MetroWest Phase 1, option values are relevant through the Portishead line's reopening introducing a new mode.

The calculation of monetised option values is based on WebTAG Unit A4.1 section 7, using parameters from Table A4.1.8 from the WebTAG databook (July 2017, reproduced as Table 7.1)

Table 7.1: Option and non-use values from TAG databook
Source: Table A4.1.8, TAG_data_book_jul_2017.xls

Mode	**Value per household per annum**		
	Option value & non-use value	**Excluding non-use value**	**Mixed mode package**
Train	£240.73	£144.44	-
Bus	£121.21	£72.73	-
Train and bus	£240.73	£144.44	£361.94

The methodology follows the calculations based on monetising the reopening of a local rail station, in a location with an existing bus service. This uses the difference between the 'train' and 'bus' values excluding non-use. Monetised option value calculations have also taken into account the comparative levels of train and bus services, scaling these values by 40%, as prevailing bus services are more frequent than the train, and likely to remain so after the railway re-opens.

7.2 Calculation

Table 7.2 shows the calculations of monetised option values. Populations affected are the sub-2km catchments of the new stations at Portishead and Pill, as used in the demand forecasts (i.e. including adjusted catchments to reflect linkages to the stations). The total MetroWest Phase 1 option value calculated is £25.48m over a 60-year appraisal period. This is not included in the AMCB table for the scheme, but is reflected in the adjusted BCR.

Table 7.2: MetroWest Phase 1 monetised option values
Source: Census, TEMPRO, Demand models & TAG databook

Location	Population affected	Annual value	**Appraisal period (discounted)**
Portishead	20,192	£0.87m	£19.61m
Pill	6,043	£0.26m	£5.87m
Total	26,235	£1.13m	£25.48m

Note: Populations are drawn from new stations demand model, the direct catchments of the stations within 2km

Whilst recognising that the values assessment is very sensitive to the size of the population affected by the proposals, the calculations suggest that the nature of the change in service will have a **beneficial impact** on the population of the area.

SECTION 8

Accessibility

8.1 Introduction

Individuals without access to a car are reliant on public transport, walking and cycling to access jobs, services, education and health. Outside major cities, many services are not available within acceptable walking and cycling distance and, in the absence of good quality public transport, people can be classified as 'transport excluded'. This can lead to social exclusion, and is particularly acute when there are limited or no opportunities to travel by means other than car, for those households and individuals with no access to a car.

MetroWest Phase 1 will not provide wholly new accessibility for areas where there is no public transport at present, as it is a combination of enhanced services on existing rail lines and a new rail service to places currently only served by bus. It will therefore generally enhance the public transport offer across the area served, albeit more substantially enhance the public transport offer in Portishead and Pill.

The area served by MetroWest Phase 1 covers much of the WoE, and improves services at 15 existing stations, as well as introducing two new stations to the rail network. The rail network provides linkages to key facilities across the WoE, including employment (in particular Bristol and Bath city centres, Temple Quarter Enterprise Zone and Avonmouth/Severnside), health facilities (notably the hospitals in central Bristol), education (several stations are located near schools, and existing Severn Beach line trains are already well-used by scholars) and retail areas (Clifton Down, Portishead, central Bristol).

8.2 Existing stations

Service levels at the existing stations impacted by MetroWest Phase 1 are either 1 train per hour (every 60 minutes) or a train every 40 minutes, both of which will be improved a train every 30 minutes. Measuring accessibility is typically accomplished with reference to access journey times to key socially necessary facilities (such as employment, education, medical services and food shopping) at different times of the day. In effect, increasing the service frequency will not specifically address journey times, though if the whole journey is considered, and an allowance for waiting times incorporated, this will result in de facto improvements in generalised journey times of 10-15 minutes. Another measure of accessibility is an index of accessibility such as PTALS, which were defined for and used extensively in London, though such indices are not considered appropriate for MetroWest Phase 1 assessment. [4]

Overall therefore, MetroWest Phase 1 will improve accessibility across the WoE area through generalised journey time improvements from enhanced services. This has not been quantified or monetised, as the improvements are relatively small, widespread, and not specific to particular movements or journey opportunities.

8.3 New stations

The opening of two new stations represents a more specific benefit to two communities, with more than 40,000 people in and around Portishead and Pill being brought into the catchment of the rail network. As noted earlier though, as there are already bus services in these areas, so accessibility

[4] Public Transport Accessibility Levels (PTALs) are a detailed and accurate measure of the accessibility of a point to the public transport network, taking into account walk access time and service availability. PTALs reflect walking time to public transport stops/stations, service availability, reliability and frequency, but does not consider routeing of services, crowding and interchange. The PTAL methodology was developed for London where a dense integrated public transport network means that nearly all destinations can be reached within a reasonable amount of time.

improvements are manifest in journey time and opportunity improvements. There is already a large amount of out-commuting to nearby centres from Portishead, particularly Bristol, and while use is made of the current bus services, these suffer from unpredictable journey times as a result of congestion on the one main road (A369) out of Portishead, linking to the M5 at junction 19. At peak times, the A369, M5 junction 19, and the Bristol end of the A369. The opportunity to use a rail service in addition to (or instead of) the bus service provides improved access to jobs and services on offer in the city. This is illustrated in Figures 8.1-8.6, that show journey time contours for trips to central Bristol, as follows:

- Figure 8 1 – shows accessibility to the Temple Meads area by rail only (with walk only access to stations) in the weekday AM peak, with existing rail services;
- Figure 8 2 – shows accessibility to the Temple Meads area by rail only (with walk only access to stations) in the weekday AM peak, with MetroWest Phase 1 services to Portishead;
- Figure 8 3 – shows accessibility to the Temple Meads area by all public transport in the weekday AM peak, with existing rail services;
- Figure 8 4 – shows accessibility to the Temple Meads area by all public transport in the weekday AM peak, with MetroWest Phase 1 services to Portishead;
- Figure 8 5 – shows the same information as Figure 8.3 for access to Bristol City Centre; and
- Figure 8 6 – shows the same information as Figure 8.4 for access to Bristol City Centre.

In each example, there is an increase in the area covered by lower journey time contours, though this is more noticeable when rail only accessibility is considered, and more generally also for trips to the Temple Meads area, compared to trips to Bristol city centre. This is unsurprising as a result of the proximity of this area to the station, and more favourable routeing of bus services (to/from Portishead) near the city centre. However, note that these maps do not take into account the potential journey time variability that bus services can suffer as a result of traffic congestions, and are therefore represent best case public transport access without MetroWest Phase 1.

8.4 Summary

MetroWest Phase 1 will generally enhance the public transport offer in area served, particularly around locations near existing stations, thus improving links to key services. There is a more substantial enhancement to the public transport offer in Portishead and Pill. Overall, MetroWest Phase 1 is assessed to have a slight beneficial on access to services.

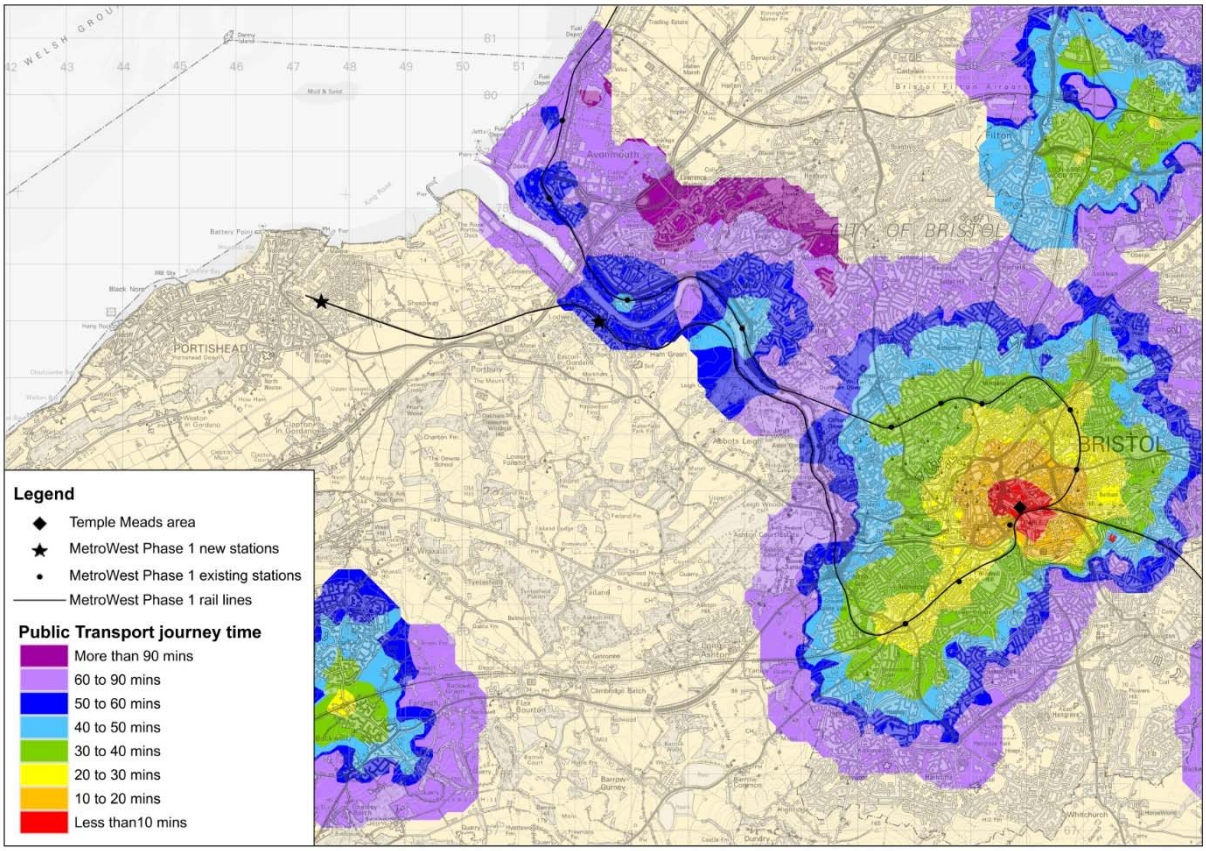

Figure 8-1: Accessibility to Temple Meads area – existing (AM peak, rail only, walk to station)

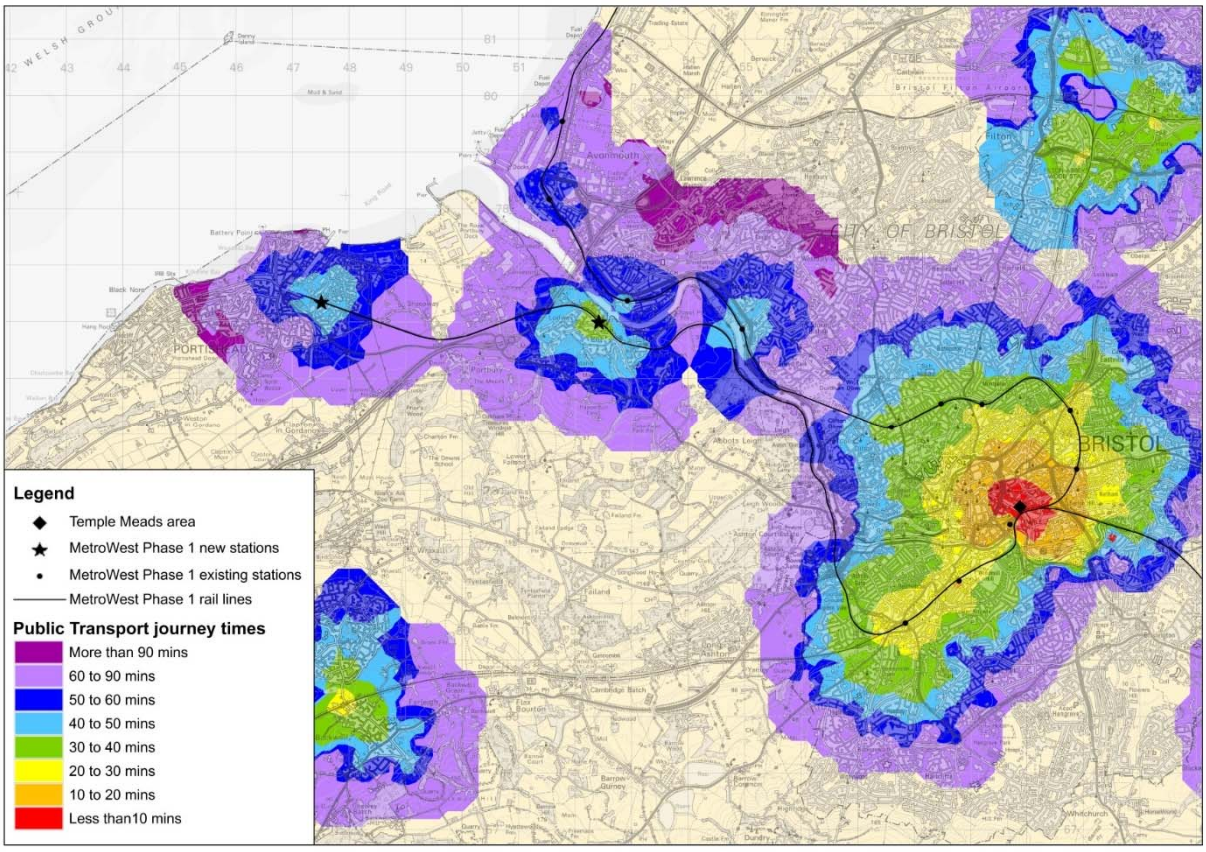

Figure 8-2: Accessibility to Temple Meads area – with MetroWest Phase 1 (AM peak, rail only, walk to station)

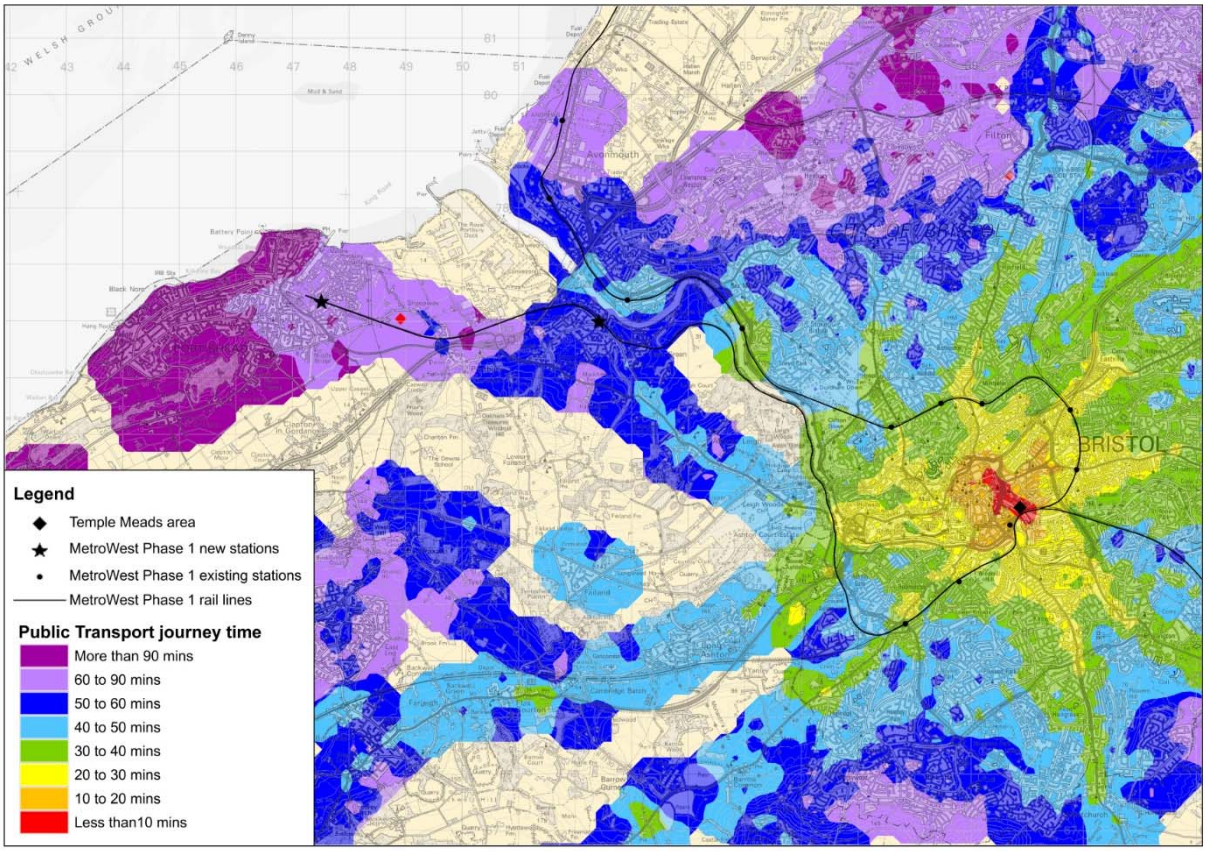

Figure 8-3: Accessibility to Temple Meads area – existing public transport (AM peak)

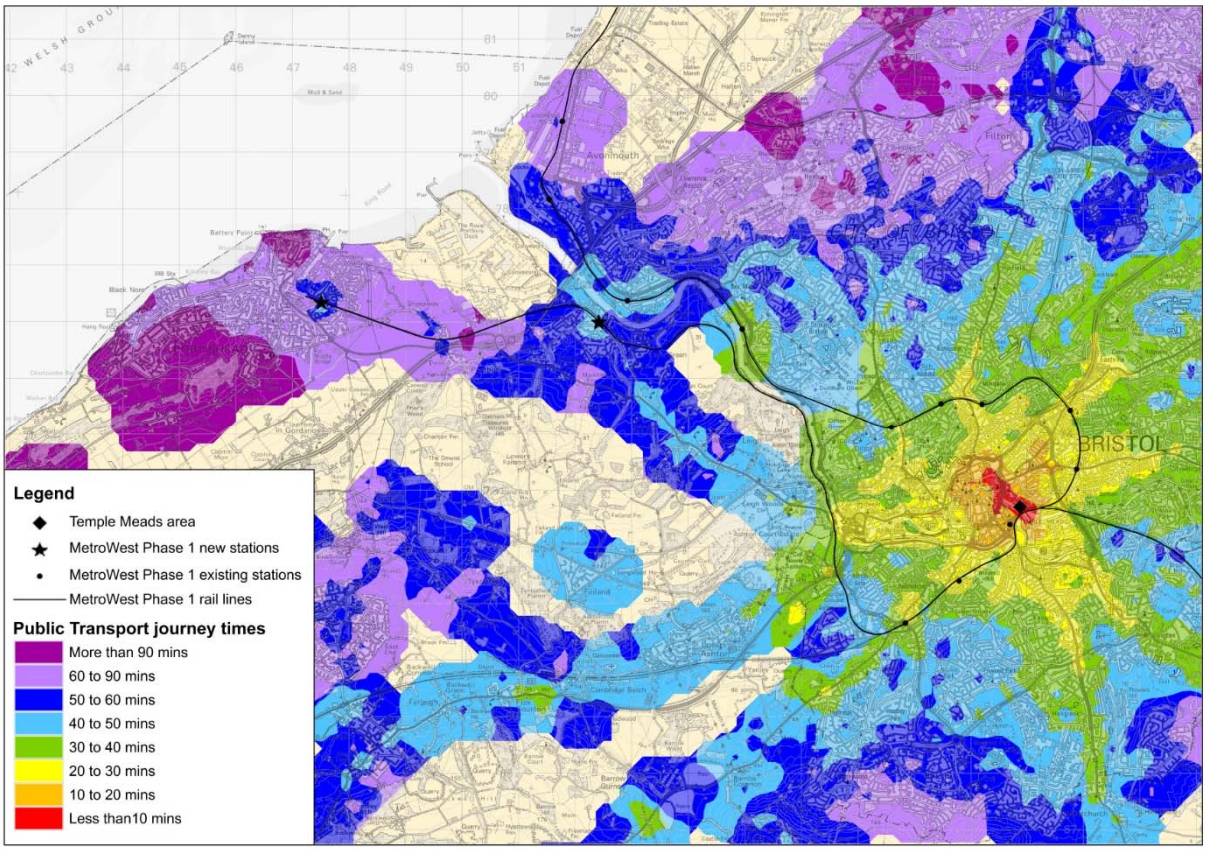

Figure 8-4: Accessibility to Temple Meads area – with MetroWest Phase 1 (AM peak)

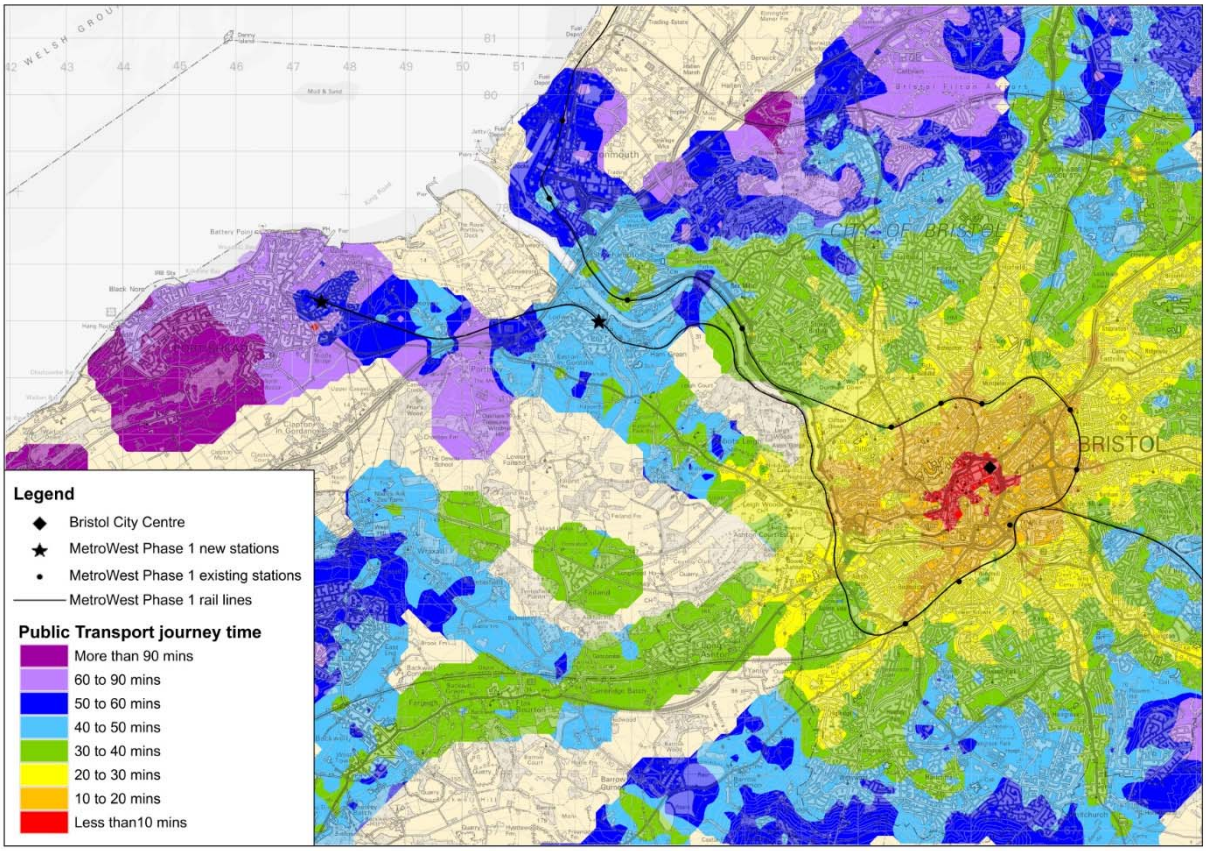

Figure 8-5: Accessibility to Bristol City Centre – existing public transport (AM peak)

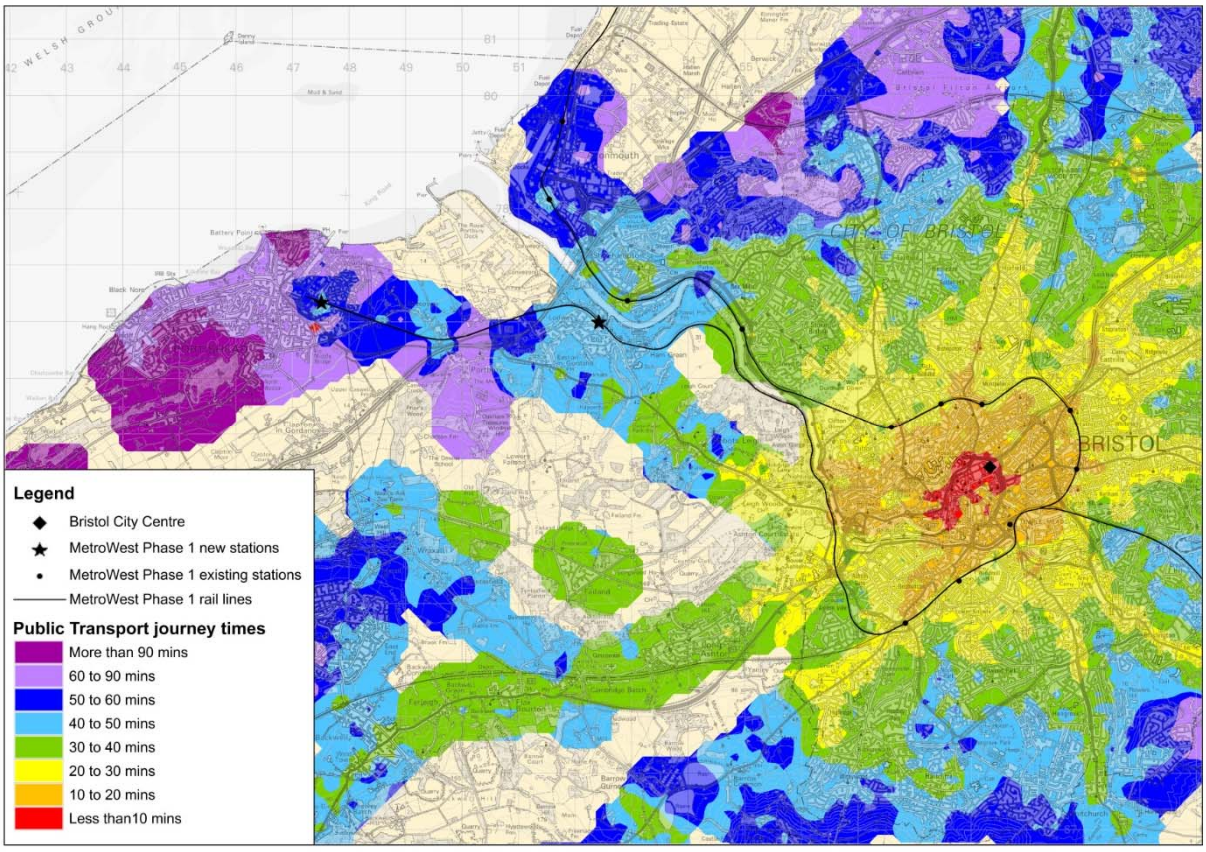

Figure 8-6: Accessibility to Bristol City Centre – with MetroWest Phase 1 (AM peak)

SECTION 9

Personal Affordability

9.1 Introduction

This section considers the personal affordability impacts of the Scheme. The assessment focuses on changes in the monetary cost of travel and which form part of the decision-making process for travellers. TAG Unit A4.2 outlines the issues around personal affordability such as the costs of travel on younger or older people and low-income households, particularly travelling to employment or education. The guidance also discusses changes in transport costs may have disproportionate effects where there are few or non-travel alternatives, especially where income levels preclude car ownership and use.

9.2 Methodology

One of the recommended approaches to measure relative affordability is to use the Index of Multiple Deprivation (IMD). The most recent measure of IMD across England was undertaken in 2015 and are based on LSOAs (Lower-layer Super Output Areas). These are small areas with a similar population size and approximately 1,500 residents or 650 households. The IMD itself is based on seven domains of deprivation as follows:

- Income Deprivation (22.5%);
- Employment Deprivation (22.5%);
- Education, Skills and Training Deprivation (13.5%);
- Health Deprivation and Disability (13.5%);
- Crime (9.3%);
- Barriers to Housing and Services (9.3%); and
- Living Environment Deprivation (9.3%).

Each LSOA is ranked – with 1 being the most deprived across England with the 32,844 being the least deprived. The LSOAs are divided into 10 equal groups with LSOAs in decile 1 fall within the most deprived 10% of LSOAs nationally and LSOAs in decile 10 fall within the least deprived 10% of LSOAs nationally. The guidance also recommends the system as shown in Table 9.1 for grading the personal affordability for each of the social groups

Table 9.1: Grading System for Personal Affordability

Beneficial and 5% or more of the proportion of the group in the total population	✓✓✓
Beneficial and in line (+/-5%) of the proportion of the group in the total population	✓✓
Beneficial and 5% or more smaller than the proportion of the group in the total population	✓
There are no transport user benefits or disbenefits experienced	○
A disbenefit which is 5% or more smaller than the proportion of the group in the total population	×
A disbenefit which is in line (+/-5%) of the proportion of the group in the total population	××
A disbenefit which is 5% or more of the proportion of the group in the total population	×××

In assessing the relative affordability, the Scheme has been considered in two sections, to reflect the differences in impacts. Between Portishead to Bristol Temple Meads (BTM), the re-opening of the Portishead line will introduce a new modal choice and likely to have greater impacts on existing bus services and traffic congestion. As such, LSOAs along the route alignment have been considered.

Improvements on the existing lines between Avonmouth and Bath Spa considers the improved railway frequencies on affordability surrounding each existing station. This takes into account that the existing railway stations already are well served by existing bus and rail services.

9.3 Deprivation – Portishead to BTM

Table 9.2 shows the relative level of deprivation along the route alignment between Portishead and Bristol Temple Meads. It shows deprivation is lower around the proposed stations at Portishead and Pill. The most deprived area is the LSOA around West Pill and in the immediate vicinity of the proposed Pill station. Within Portishead, the majority of areas are within the 20% least deprived group, with one area in the south Portishead area being in the 50% least deprived category.

There are higher levels of deprivation and affordability within the Bristol area but railway services already serve the stations at Parson Street and Bedminster. The area is also relatively well served by existing bus services that operate across South Bristol and North Somerset.

Table 9.2: Ranking of Deprivation Portishead to Bristol Temple Meads

Area (Station if applicable)	LSOA Area	Most deprived						Least Deprived		
		10%	20%	30%	40%	50%	60%	70%	80%	90%
Portishead East (Portishead)	NSC 003D						✓			
	NSC 003E									✓
	NSC 003F								✓	
	NSC 006F								✓	
Portishead Central (Portishead)	NSC 001E									✓
	NSC 001F									✓
	NSC 001G							✓		
Portishead Coastal (Portishead)	NSC 001B								✓	
Portishead South (Portishead)	NSC 001C					✓				
	NSC 003C								✓	
Easton in Gordano	NSC 004B									✓
Pill (Pill)	NSC 004D								✓	
	NSC 004C				✓					
Leigh Woods	NSC 004A							✓		
Ashton Vale	Bristol 036A			✓						
	Bristol 041A			✓						
	Bristol 041D							✓		
Bedminster (Parson Street)	Bristol 039A				✓					
	Bristol 041B				✓					
Bedminster (Bedminster)	Bristol 039E	✓								
	Bristol 040C					✓				

9.4 Deprivation – Avonmouth to Bath

The assessment along the Severn Beach Line and local stations to Bath shows that there are higher levels of deprivation around Avonmouth and Lawrence Hill/Eastville. Deprivation is lower around Clifton, Keynsham and in Bath as shown in Table 9.3.

Table 9.3: Ranking of Deprivation Avonmouth to Bath Spa

Area (Station if applicable)	LSOA Area	Most deprived						Least Deprived		
		10%	20%	30%	40%	50%	60%	70%	80%	90%
Avonmouth	Bristol 003B			✓						
	Bristol 008E				✓					
	Bristol 008F			✓						
Shirehampton	Bristol 008A				✓					
	Bristol 008B			✓						
	Bristol 008C				✓					
Sea Mills	Bristol 007C		✓							
	Bristol 015E								✓	
Clifton Down	Bristol 026B							✓		
	Bristol 026C							✓		
	Bristol 022B					✓				
	Bristol 022D							✓		
Redland	Bristol 022E						✓			
	Bristol 025C						✓			
Montpelier	Bristol 020A					✓				
	Bristol 020E					✓				
	Bristol 020F					✓				
	Bristol 023C				✓					
	Bristol 023D				✓					
Stapleton Rd	Bristol 014D				✓					
	Bristol 023A				✓					
	Bristol 055C	✓								
	Bristol 057A		✓							
Lawrence Hill	Bristol 029A		✓							
	Bristol 029C				✓					
	Bristol 055A			✓						
	Bristol 055B	✓								
	Bristol 055C	✓								
Keynsham	B&NES 001A					✓				
	B&NES 001B							✓		
	B&NES 001C				✓			✓		
Oldfield Park	B&NES 012F							✓		
	B&NES 013A								✓	
	B&NES 013C							✓		
	B&NES 014A									✓

The TAG guidance outlines the detailed appraisal of personal affordability. It identifies several factors that affordability needs to be assessed against including car fuel, parking, rail fares, bus fares, walking and cycling.

9.5 Appraisal of Affordability – Portishead to BTM

9.5.1 Affordability – Car

9.5.1.1 Car fuel and non-fuel cost

Table 9.4 shows the main benefits should arise from a modal shift from car to rail, with shorter vehicle journeys and a reduction in congestion. On this basis, there should be a minor beneficial impact on affordability as fuel and non-fuel costs should fall.

9.5.1.2 Public parking

Except for the planned stations at Portishead and Pill, parking is expected to have no impact on affordability. At Portishead and Pill only, parking charges are planned for the proposed station car parks and this is likely to have a minor adverse impact on affordability.

9.5.1.3 Residents only parking permits

Whilst the introduction of residents only parking permits is subject to a separate consenting process and sits outside the DCO application, there is likely to be a minor adverse impact on affordability for residents and visitors in the immediate vicinity of Portishead and Pill stations. As with public parking above, there is likely to be a neutral impact on affordability at other locations.

9.5.2 Affordability – Public Transport

9.5.2.1 Bus fares

The introduction of passenger rail services is expected to lead to some extraction of demand from existing commercial bus services. This may lead to an increase in bus fares along the alignment of the railway route except for the Ashton Vale and Bedminster areas where there are a number of bus services serving other corridors and areas.

9.5.2.2 Rail fares

Within the vicinity of Portishead and Pill, rail fares are likely to have a minor adverse impact on affordability although this will be dependent on users existing transport choice and the level of use. At other locations along the route alignment, there will be no impact.

9.5.2.3 Concessionary fares

Currently many groups of people receive either free or discounted bus tickets. The Scheme may lead to a reduction in the level of commercial bus services with less opportunity to use these passes. As a result, there could be a minor adverse impact with the exception of the Ashton Vale and Bedminster areas.

9.5.3 Affordability – Active Modes

The Scheme will have no monetary impacts on existing walking and cycling routes.

9.6 Appraisal of Affordability – Avonmouth to Bath Spa

9.6.1 Affordability – car

Table 9.5 shows the main benefits in fuel reductions should arise from a modal shift from car to rail, with shorter vehicle journeys and a reduction in congestion. The Scheme does not propose to change current parking provision or controls near existing railway stations. Based on this, there should be a minor beneficial impact on affordability as fuel and non-fuel costs should fall.

9.6.2 Affordability – Public Transport

9.6.2.1 Bus fares

The improvement in train frequencies is expected to lead to some extraction of demand from existing commercial bus services. The extraction of demand is likely to take place where bus services are less comprehensive and journey times can be relatively long (for example, Avonmouth). This may lead to an increase in bus fares at those locations.

9.6.2.2 Rail fares

Rail fares are likely to have a minor adverse impact on affordability although this will be dependent on users existing transport choice and level of use.

9.6.2.3 Concessionary fares

Currently many groups of people receive either free or discounted bus tickets. Improved rail frequencies may lead to a reduction in the level of commercial bus services with less opportunity to use these passes. As a result, there could be a minor adverse impact in areas such as Avonmouth and Keynsham where bus services are less comprehensive.

9.6.2.4 Affordability - Active Modes

The Scheme will have no monetary impacts on existing walking and cycling routes.

9.7 Summary

The analysis indicates that personal affordability is less of an issue in Portishead and Pill where the Scheme is likely to have its greatest impact. The assessment also indicates where personal affordability and deprivation are greater in areas where the Scheme will have the least impact.

The assessment against several factors indicates there will be beneficial affordability impacts from reduced fuel costs, shorter journeys and reduced congestion. However, this needs to be set against the additional costs of rail fares and car parking charges (if travelling to the stations by car).

Elsewhere, improved frequencies are expected to increase the numbers travelling by rail but there may be some extraction from existing public transport provision which could impact on affordability.

Based on the evidence, it is concluded in the AST that MetroWest Phase 1 will result in a **neutral** overall distributional impact in respect of personal affordability.

Table 9.4: Portishead to Bristol Temple Meads: Assessment of Monetary Items by Area

Monetary Modal Cost Change	Description of main impact	Portishead East	Portishead Central	Portishead Coastal	Portishead South	Easton in Gordano	Pill	Leigh Woods	Ashton Vale	Bedminster	Overall score
	Population:	7468	4891	1515	3129	1309	3551	1372	5480	6277	
Car fuel and non-fuel cost	Reduction in costs arising from: (1) Change of mode from vehicle to train; (2) Shorter vehicle journeys; (3) Reduction in congestion	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	✓
Public Parking	The stations at Pill and Portishead will have parking charges	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	No impact	Minor adverse impact	No impact	No impact	No impact	×
Residents only parking permits	Requirement for residents only parking zones will incur additional annual related costs for residents and businesses	Minor adverse impact	No impact	No impact	No impact	No impact	Minor adverse impact	No impact	No impact	No impact	○
Bus Fares	Impact on commercial bus services may result in an increase in bus fares	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	No impact	No impact	×
Rail Fares	New costs arising from rail fares	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	No impact	No impact	No impact	×
Concessionary Fares	Impact on commercial bus services may result in reduced frequencies and less opportunity to use bus passes	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	No impact	No impact	×
Walking	No monetary impacts	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	○
Cycling	No monetary impacts	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	○

Table 9.5: Avonmouth to Bath: Assessment of Monetary Items by Area

Monetary Modal Cost Change	Description of main impact	AVN	SHH	SML	CFN	RDA	MTP	SRD	LWH	KYN	OLF	Overall score
	Population:	5084	4603	2681	7110	3600	9786	7892	11029	5448	8526	
Car fuel and non-fuel cost	Reduction in costs arising from: (1) Change of mode from vehicle to train; (2) Shorter vehicle journeys; (3) Reduction in congestion	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	Minor beneficial impact	✓
Bus Fares	Impact on commercial bus services may result in an increase in bus fares	Minor adverse impact	Minor adverse impact	Minor adverse impact	No impact	No impact	No impact	No impact	No impact	Minor adverse impact	No impact	○
Rail Fares	New costs arising from rail fares	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	Minor adverse impact	×
Concessionary Fares	Impact on commercial bus services may result in reduced frequencies and less opportunity to use bus passes	Minor adverse impact	Minor adverse impact	Minor adverse impact	No impact	No impact	No impact	No impact	No impact	Minor adverse impact	No impact	○
Walking	No monetary impacts	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	○
Cycling	No monetary impacts	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	○

AVN = Avonmouth
SHH = Shirehampton
SML = Seamills
CFN = Clifton Down
RDA = Redland
MTP = Montpelier
SRD = Stapleton Road
LWH = Lawrence Hill
KYN = Keynsham
OLF = Oldfield Park

SECTION 10

Summary and Conclusions

The results of the appraisal of social impacts have been summarised in the MetroWest Phase 1 Outline Business Case Chapter 2 'Economic Case'.

The MetroWest Phase 1 OBC Appraisal Summary Table (AST) is set out in Appendix A. As well as social impacts, this includes results of environmental impact, economic impact and distributional impact appraisal, reported in the MetroWest Phase 1 Outline Business Case Chapter 2 'Economic Case', MetroWest Phase 1 Outline Business Case 'Economic Assessment Report' and MetroWest Phase 1 Outline Business Case 'Distributional Impacts Report' respectively.

Appendix A
Appraisal Summary Table (AST)

MetroWest Phase 1 OBC – Appraisal Summary Table (AST)

Appraisal Summary Table

Date produced:	20/12/2017

Contact:	
Name	James Willcock
Organisation	North Somerset Council
Role	Project Manager

Name of scheme:	MetroWest Phase 1
Description of scheme:	Infrastructure and passenger train operations to provide a half-hourly service for the Severn Beach Line (to Avonmouth, hourly to Severn Beach); half hourly service for local stations on the Bath Spa Line; and hourly service for a reopened Portishead Line (new stations at Portishead and Pill).

Impacts		Summary of key impacts	Assessment			
			Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	Journey time savings are significant in geographical areas where impacts are anticipated. This covers savings for public transport users as a result of the new stations at Portishead/Pill and frequency improvement, and for highway users as a result of decongestion in the highway network where modal shift to rail occurs. (NOTE - benefit split by journey times for highway only)	Value of journey time changes(£) Net journey time changes (£) 0 to 2min: £18,545,216 / 2 to 5min: £3,736,568 / > 5min: £19,227	Not required	£46,438,407	Large beneficial distributional impact
	Reliability impact on Business users	Some reduction in highway traffic will result in small changes in journey time, and quantifiable reliability benefits for all users. Rail reliability has not been modelled.	NOTE - impact is highway only and total for all users	Not required	£1,823,385	
	Regeneration	The scheme links a number of regeneration and enterprise zones, and has the potential to generate new jobs, both during construction and operational stages.	1400 jobs & £57m GVA - construction stage 500 permanent jobs & £32m GVA per annum - operational	Not required	£264,781,565	
	Wider Impacts	The scheme improves productivity of local economy through improving transport provision, bringing businesses closer to each other and to the labour market.	£68.4m agglomeration benefits, £4.6m imperfect competition and £1.0m labour supply	Not required	£74,025,119	
Environmental	Noise	The increases in noise are due to the operation of the new rail service. These are not significant increases but the change in noise is sufficient to move a band in the noise worksheet. There would be a minor adverse impact at the Trinity Primary School in Portishead. Negligible impacts are expected within the Avon Gorge Woodlands SAC and SSSI and other designated areas along the route. No dwellings are expected to be eligible under the Noise Insulation Regulations. There are predicted to be no impacts are night due to the service only being operational during the day.	Households experiencing increased daytime noise in forecast year: 523 Households experiencing reduced daytime noise in forecast year: 0 Households experiencing increased night time noise in forecast year: 0 Households experiencing reduced night time noise in forecast year: 0	Not required	-£511,257	Minor adverse distributional impact
	Air Quality	The physical works for the Project cross a short section of the Bristol Air Quality Management Area (AQMA) and during operation passenger services from the scheme would extend from Portishead to Bristol passing through the AQMA from Parson Street Junction into Bristol. Air quality monitoring data suggest that AQS objectives are being met within the Project extent in North Somerset. The Project crosses one ecological designated site (Avon Gorge Woodlands SAC and SSSI) where baseline NOx levels are close to the critical level. The Project offers an alternative travel mode that promotes a Modal shift which leads to some beneficial air quality impacts in the surrounding area. These benefits are however offset by the additional diesel locomotives on the Portishead Branch Line which are expected to lead to an increase in NOx and PM10 emissions. These changes are likely to lead to adverse impacts at receptors nearest to the rail line. The Project is not predicted to result in any exceedances of the annual mean AQS objective for traffic pollutants.	**Assessment Score:** PM10: 586.09 NO2: 8,216.57 **Emissions:** PM10: +1 tonnes NOx: +936 tonnes	Not required	**AIR QUALITY VALUATION:** Value of change in PM10 concentrations: NPV: £-0.0m Value of change in NOx emissions: NPV: £-0.5m Total value of change in air quality: £-0.5m **MAIN-SENSITIVITY:** Value of change in PM10 concentrations: NPV: £-0.0m Value of change in NOx emissions: NPV: £-9.6m Total value of	Minor adverse distributional impact
	Greenhouse gases	The Project is expected to result in decrease in vehicle kilometers travelled across the road network which has the potential to result in a decrease in CO2 emissions. However, rail emissions associated with the Project are expected to contribute to an increase in CO2 emissions.	Change in non-traded carbon over 60y (CO2e): N/A Change in traded carbon over 60y (CO2e): N/A	Not required	£250,774	
	Landscape	Area north of Avon Gorge and Avon Gorge itself: **slight adverse effect** due to vegetation clearance creating more open views of construction activities and of the railway when the DCO Scheme is in operation. Area south of Avon Gorge: **neutral/slight adverse effect** due to opening up of views in the landscape, although existing landscape already has dominant transport infrastructure features and urban land cover. Overall **slight adverse effect** due to the reasons set out above. DCO Scheme will affect areas of recognised landscape quality and will impact on certain views across the area.	N/A	Slight adverse	N/A	
	Townscape	**Neutral effect** on the townscape of the Ashton Gate/Ashton Vale area due to the fact that transport infrastructure (including the existing Portbury Freight Line) is already a dominant feature in the landscape, and many views are restricted by commercial/industrial buildings so would not change significantly with the DCO Scheme. Future trends in the area are likely to include increased development and expansion outwards into the urban/rural fringe, and increased traffic volumes, so the DCO Scheme would fit this trend.	N/A	Neutral	N/A	
	Historic Environment	The DCO Scheme is assessed to have a direct **slight adverse/neutral** effect on non-designated cultural heritage assets during the enabling works and construction through the removal of known and hitherto unknown archaeological remains along the railway corridor. The adverse effects arising from these direct impacts on this resource can be adequately mitigated through preservation by record and the significance effect of the residual impact is assessed to be neutral and not significant in regards to the EIA Regulations. The effect of the DCO Scheme on the setting of the designated cultural heritage assets along the route during construction and operation is generally neutral and not significant in regards to the EIA Regulations. This results largely from the lack of inter-visibility between the DCO Scheme and heritage assets.	N/A	Slight adverse/Neutral	N/A	
	Biodiversity	The Portishead to Pill line will have **slight adverse** effects on Field east of M5 Motorway, Lodway Wildlife Site due to loss of habitat, however this impact is considered to be negligible in magnitude due to the minor loss of habitat anticipated. **Slight adverse** effects are also considered possible on protected species such as great crested newts, other amphibian species, badgers, otter and bats through the fragmentation of habitats and disturbance and death/injury from direct collision with trains. The operational maintenance of the railway corridor may also cause **slight adverse** effects on habitats such as woodland, trees and scrub due to direct loss, as well as Japanese knotweed due to the potential of facilitating the spread of this invasive species. The impact on North Somerset and Mendips Bats SAC is **to be assessed** following further bat survey in 2018. The Freight Line section of the DCO is assessed to have a **slight adverse** effect on internationally and nationally important sites/species such as the Avon Gorge and Woodlands SAC/SSSI, Leigh Woods NNR and Ancient Woodland and the notable and the important plant species these sites support, these impacts are likely to arise through the routine maintenance and clearance of the railway corridor, however they will be mitigated through the implementation of a Site Vegetation Management Statement which will be developed in consultation with Natural England. A slight adverse effect is also anticipated on the internationally important site Bath and Bradford on Avon Bats SAC, however this assessment is ongoing due to further assessment on the use and value of the tunnels to bats. A number of Local Wildlife Sites are also predicted to have potentially **slight adverse** effects due to the Freight Line section of the scheme. These include Bower Ashton BWNS, River Avon NSWS and River Avon SNCI, effects on these sites will arise due to habitat loss. A **slight adverse** effect may also occur on protected species such as badger, otters and bats through the fragmentation of habitats, disturbance and death/injury from direct collision with trains. Habitats that may be subject to a slight adverse impact includes ephemeral/short perennials which may be effected due to the routine maintenance and clearance of the railway corridor. In addition a slight adverse effect may occur due to the potential spread of invasive plant species during this routine maintenance and clearance.	N/A	Slight adverse	N/A	
	Water Environment	The water environment is typical of the locality with watercourses mostly comprising small watercourse with primarily a drainage function (some man-made) of low to medium importance discharging directly into the tidal River (Bristol) Avon which is of Very High importance. Groundwater is of Medium to High importance on a local to regional scale. The larger watercourses - Severn Estuary, River (Bristol) Avon and Easton-in-Gordano Stream are of High quality, whereas the smaller watercourses are of medium to low quality. Most are important on a local scale, with on the River (Bristol) Avon being important at a regional scale and the Severn Estuary at a national scale due to its size and ecological designations. There will be little impact upon the water environment as the scheme involves minimal additional impermeable surfaces (mostly relating to the stations and associated car parking areas) and results in little change in water quality, with some improvement in some areas through the removal of contaminated old sleepers and renewal of ballast. As the scheme involves very little change from the existing situation the magnitude of all the impacts is considered to be negligible, except for a slight adverse impact relating to the increased flood risk to the railway line from the River (Bristol) Avon, which will worsen over time. This results in a significance score of "Insignificant" for all of the impacts, apart from two exceptions for which the significance score is "Low Significance". The first exception is the flood risk to the railway from the River (Bristol)	N/A	Neutral	N/A	
Social	Commuting and Other users	Journey time savings are significant in geographical areas where impacts are anticipated. This covers savings for public transport users as a result of the new stations at Portishead/Pill and frequency improvement, and for highway users as a result of decongestion in the highway network where modal shift to rail occurs. (NOTE - benefit split by journey times for highway only)	Value of journey time changes(£) Net journey time changes (£) 0 to 2min: £23,997,886 / 2 to 5min: £3,821,405 / > 5min: £37,577	Not required	£198,842,893	Evenly spread across vulnerability
	Reliability impact on Commuting and Other users	Some reduction in highway traffic will result in small changes in journey time, and quantifiable reliability benefits for all users. Rail reliability has not been modelled.	NOTE - impact is highway only and total for all users	Not required	£1,823,385	
	Physical activity	The proposed scheme accounts for cyclists, pedestrians and equestrians by delivering and planning for measures to minimise the interaction between these modes and motorised traffic (including trains). The measures provided for Non-Motorised Users (NMUs) that will be delivered as part of the scheme ensures that the opportunity to undertake trips through active modes will be enhanced. Based on the work undertaken, the assessment suggests that the scheme will have an overall slight beneficial impact on physical activity.	N/A	Slight beneficial	N/A	
	Journey quality	Improved frequencies on the Severn Beach line and local stations to Bath will help reduce the extent of overcrowding and lower traveller stress by improved ease and convenience. The analysis also suggests that there will be neutral impacts on other factors such as cleanliness, facilities, information and traveller's views. With the introduction of passenger rail services to Pill and Portishead, there will be larger beneficial impacts such as new facilities at the railway stations, smoothness of ride, traveller views and integration into existing national railway information portals. Based on the evidence, it is concluded that there will be a moderate beneficial impact.	N/A	Moderate beneficial	N/A	
	Accidents	A full assessment of the likely impacts of the scheme was undertaken, and this suggests that as MetroWest is a rail scheme, with minimal changes on other parts of the network.	A saving of 130 accidents	Not required	£5,845,450	
	Security	The new rail stations will enhance the security of both locations by providing additional footfall, CCTV, emergency contact points and improved lighting. However, while there will be a general improvement in security of the area, rail stations can also attract crime. The scheme is therefore envisaged to have a neutral impact on security.	N/A	Neutral	N/A	
	Access to services	MetroWest Phase 1 will generally enhance the public transport offer in area served, thus improving links to key services. There is a more substantial enhancement to the public transport offer in Portishead and Pill. Overall, MetroWest Phase 1 is assessed to have a slight beneficial on access to services.	N/A	Slight beneficial	N/A	Evenly spread across vulnerability
	Affordability	The assessment indicates there will be beneficial affordability impacts from reduced fuel costs, shorter journeys and reduced congestion. However, this needs to be set against the additional costs of rail fares and car parking charges (if travelling to the stations by car).Improved frequencies are expected to increase the numbers travelling by rail, but there may be some extraction from existing public transport provision which could impact on affordability. Based on the evidence, it is concluded that MetroWest Phase 1 will result in a neutral impact.	N/A	Neutral	N/A	
	Severance	Negative impacts are expected at the various at-grade crossing points affected by the Scheme. The negative impact is a result of increased journey times opposed to safety. It is expected that the overall safety of pedestrians and cyclists will be improved, particularly at Ashton Vale.Overall the scheme has a slight adverse impact on severance.	N/A	Slight adverse	N/A	
	Option and non-use values	The scheme will add a rail option to a public transport offer that currently only includes bus, and a bus service that is adversely affected by traffic congestion	26,235 population within 2km of new rail station	Not required	£25,480,590	
Public Accounts	Cost to Broad Transport Budget	Public sector costs associated with investments for scheme implementation and ongoing support/maintenance, such as capital investment, operating costs and revenue income.	N/A	Not required	£93,642,672	
	Indirect Tax Revenues	The impact on tax and fuel duty loss as a result of reduction in fuel consumption.	N/A	Not required	-£12,677,961	