MetroWest

METROWEST PHASE 1

Outline Business Case

Appendix 1.2

Option Assessment Report

December 2017

travelwest

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

TRANSPORT APPRAISAL

MetroWest Phase 1

Outline Business Case
Option Assessment Report

Prepared for

West of England Councils

December 2017

1 The Square
Temple Quay
Bristol
BS1 6DG

Contents

Section Page

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
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 Options Assessment Report (OAR) for MetroWest Phase 1. This forms part of the Department for Transport's Transport Appraisal Process, which identifies three stages of work that need to be completed as part of the development of an Outline Business Case (OBC). This OAR documents the option development process and occurs near the end of Stage 1, leaving the project with a short list of options to be considered in Stage 2: Further Appraisal.

1.2 Project Outline

1.2.1 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, subject to separate business cases
- Smaller scale enhancements projects for the WoE local rail network

These projects range from relatively large major schemes, entailing both infrastructure and service enhancement, to smaller scale projects. MetroWest enjoys wide support and backing from business, local cross-party politicians and community stakeholders.

The MetroWest Programme is being jointly promoted by the WoE authorities: Bath & North East Somerset Council (B&NES); Bristol City Council (BCC); North Somerset Council (NSC); and South Gloucestershire (SGC), working alongside Network Rail, Great Western Railways and the wider rail industry. The newly created WoE Combined Authority (WECA), which has responsibility for strategic and transport planning together with B&NES, BCC, NSC and SGC, is also supporting the MetroWest Programme. Each project has a lead authority, MetroWest Phase 1 is being led by North Somerset Council and MetroWest Phase 2 is being led by South Gloucestershire Council.

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)
- A Metro-type service appropriate for a city region with a population which exceeded 1 million in 2016

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).

The MetroWest programme will extend the benefits of strategic transport interventions that are in the process of being delivered or have been delivered by the West of England councils. These include the three MetroBus schemes (Ashton Vale to Temple Meads, South Bristol Link and North Fringe to Hengrove Package), Bath Package, Weston Package and the Local Sustainable Travel Fund programme. The delivery of these projects, together with the MetroWest programme, will result in

better modal integration between rail, bus and active modes, providing an important step towards seamless modal transfer at key hubs across the West of England.

1.3 Background Work to this Report

This OAR is based on work undertaken to develop the Preliminary (Strategic Outline) Business Case (2014) and further appraisal that has taken place since its agreement by the Joint Transport Board. Specifically, this OAR has been informed by:

- MetroWest Phase 1 EAST Appraisal (2014): this OAR builds upon the work undertaken in the EAST, but recognises it reports on the project prior to the changes made earlier in 2017, hence not all the assessment work is relevant. The EAST assessment is presented in Appendix A to this Report for reference, but the most relevant elements have been drawn out into the appropriate sections
- Portishead Branch Link Preliminary Environmental Information Report (PEIR) (2017): this suite of documents presents the information required on likely significant environmental effects of the Scheme, as available to date. Relevant elements have been included in this OAR. The PEIR is available at: https://metrowestphase1.org/peir/
- Ongoing technical work and informal consultations on specific scheme elements

1.4 Structure of this Option Assessment Report

This Option Assessment Report forms step 8 (of 9) of Stage 1 Option Development of the Transport Appraisal Process. It documents the option development process undertaken including the: identification of the need for intervention; development of options and solutions to meet agreed objectives and outcomes; and initial assessment of options to be taken forward for further appraisal.

The Report also includes the identification of better performing options, based on criteria from the Transport Business Case 'Five Case Model', which has enabled the relative merits and disadvantages of the options to be considered. This stage of work has been influenced by stakeholder participation and engagement, which will continue to inform appraisal in Stage 2.

This OAR is structured as per the headings in the Transport Analysis Guidance, and includes the following sections:

- History of Portishead to Bristol Corridor Studies
- Step 1: Understanding the Current Situation
- Step 2: Understanding the Future Situation
- Step 3: Establishing the Need for Intervention
- Step 4a: Identifying Objectives
- Step 4b: Define Geographic Area to be Addressed by the Intervention
- Step 5: Generating Options
- Step 6: Initial Sifting
- Step 7: Development and Assessment of Potential Options
- Summary of Assessment

SECTION 2

Portishead to Bristol Corridor Studies

2.1 Introduction

The Portishead to Bristol corridor has been the subject a number of transport studies over the last thirty years. With housing growth and development in Portishead, and increasing congestion and journey time unreliability on the A369, options to enhance accessibility between the settlements have been considered. This has included consideration of different modes, influencing the need to travel, cost and value, stakeholder input and political support. This section sets the scene for the remainder of this OAR, and the starting point for the option assessment.

2.2 Project History Overview

A brief history of policy development, studies and actions to re-open the Portishead Branch Line as part of MetroWest Phase 1 is provided in Table 2.1.

Table 2.1: Brief history of the project

Year	Studies, Major Milestones & Formal Decisions
1964	Portishead Branch Line was closed to passenger services as part of the Beeching cuts.
1981	The Portishead Branch Line was closed to freight. The railway was not dismantled or formally mothballed.
1986	Advanced Transport for Avon promoted the re-opening of the Portishead Line as a commercially led investment and secured powers to build and operate. However, the organisation subsequently went into liquidation with substantial debts.
1991	The Bristol Integrated Transport and Environmental Study ("BRITES") looked at the possibility of Light Rail Transit ("LRT") along the Portishead line.
1992	Guided Light Transit ("GLT"), a type of guided bus system, was considered as an alternative to LRT along the Portishead line in *GLT BRITES*.
1998	The *Transport and Development Modelling Study*, Bristol North East and South West Sectors looked at a possible park and ride at Portbury.
1999	The *Portishead to Bristol Corridor Study Stage 1* looked at light and heavy rail options for the route. It concluded that the passenger scheme was an incremental development of the rail freight scheme. Further testing was required during Stage 2.
2001	The *Portishead to Bristol Corridor Study Stage 2* examined three heavy rail options versus a light rail option and five bus options. Study concluded: Bus versus heavy rail: it is not possible to achieve journey time between Portishead and Bristol equal to rail options, but buses have a considerable advantage in respect of route and frequency enhancements and in 'penetration' of Portishead and Bristol. Light rail versus heavy rail: Capital investment is higher for light rail than heavy rail, but only marginally more passengers will use the light rail scheme, so the cost benefit suggests a **light rail scheme would not be commercially viable**.
2002	Part of the Portishead Branch Line (as far as Pill) was re-opened for freight trains, along with a new half kilometre section of railway from Pill to Royal Portbury Dock.
2004	Quays Avenue in Portishead was built across the safeguarded rail alignment on the presumption that a rail level crossing would be acceptable and deliverable, should the railway scheme be taken forward. Quays Avenue was built to provide access for new housing developments off Phoenix Way to the external facing A369 corridor without going along Harbour Road and the town centre via Cabstand.
2005	Portishead Quays Masterplan identified a new location for Portishead station at the rear of Waitrose supermarket off Harbour Road.

Table 2.1: Brief history of the project

Year	Studies, Major Milestones & Formal Decisions
2006	*Greater Bristol Strategic Transport Study* explored the potential for a rapid transit system that provided new PT links to Portishead, with stops in the centre of Portishead and good penetration into Bristol. It also considered the introduction of a rail line, with the proposed rail station on the edge of Portishead. The outputs informed JLTP2.
2006	*Joint Local Transport Plan 2* provided a policy basis and stakeholder support for taking forward the project to open the Portishead Branch Line. The **reintroduction of a Bristol to Portishead passenger rail service was identified as a long-term scheme** as part of the Rail Action Plan to tackle congestion. Light rail or Bus Rapid Transit is not included for this corridor. The A369 was included as proposed Greater Bristol Bus Network key corridor 9, but this did not include significant infrastructure improvements.
2007	*Greater Bristol Public Transport Corridor Options Study* considered **Bus Rapid Transit** on the operational rail line or via A4 Portway between Portishead and Avonmouth. **It identified significant deliverability issues with both options.** A fully segregated alignment along A4 Portway was also not considered feasible.
2007	The *North Somerset Adopted Replacement Local Plan* Policy T/1 safeguarded the disused railway alignment between Portishead and Pill while T/3 safeguarded a site for Portishead station at the rear of Waitrose, close to the former station site in 1964.
2008	North Somerset Council purchases the track-bed from Portishead to Portbury to safeguard the alignment for a transportation corridor.
2008	Portishead Branch Line Re-opening Project feasibility study by consultants Halcrow Group Ltd.
2009	Portishead Branch Line Re-opening GRIP1 stages 1 Output Definition and 2 Feasibility, by Network Rail.
2010	Portishead Branch Line Re-opening GRIP stage 3 Option Selection by Network Rail (note this was less detailed GRIP stage 3 before the GRIP process was changed to include Approval in Principle design.
2010	Route Utilisation Strategy for the Great Western Line by Network Rail. This study tested various options for the Greater Bristol Metro (to upgrade the local rail network to provide a rail based Metro)
2011	*WoE Joint Local Transport Plan 3* provided a policy basis, programme prioritisation and stakeholder support for **taking Portishead rail project forward**. WoE Rail Conference – Portishead Branch Line re-opening project was selected by over 70 delegates as the 2nd highest rail priority for delivery. WoE Rail Study by Halcrow Ltd recommends combining Portishead Branch Line re-opening project into the Greater Bristol Metro project with delivery through a phased approach. The study recommended Phase 1 of Greater Bristol Metro should include the re-opening of the Portishead Branch Line and the enhancements for the Severn Beach and Bath to Bristol line, as upgrading these lines were identified as having a positive business case in the 2010 Route Utilisation Strategy and were considered a priority by the councils.
2012	WoE Joint Transport Executive Committee resolution accepted the 2011 Rail Study recommendations to combine the Portishead Branch Line re-opening project into the Greater Bristol Metro project with delivery through a phased approach. The Committee also endorsed a response to the Department for Transport ("DfT") on the Great Western Franchise calling for the project to be included in franchise specification as a priced option. DfT confirmed the inclusion of Greater Bristol Metro Phase 1 as a priced option in the Great Western Franchise.
2013	WoE Joint Transport Executive Committee endorsed proposals by the four councils to allocate resources to fully mobilise the Greater Bristol Metro Phase 1 project. The project is briefly renamed 'Great West Phase 1' project, then changing to 'MetroWest Phase 1'. In February 2013, public consultation was undertaken on NSC's Sites and Policies Development Plan Document (Consultation Version) which included three options for the site of Portishead station.

[1] The management and control process used by Network Rail for delivering projects to enhance or renew the operational railway is called Governance for Railway Investment Projects ("GRIP"). This is an eight-stage process from project identification, through several design stages to construction, commissioning and hand over.

Table 2.1: Brief history of the project

Year	Studies, Major Milestones & Formal Decisions
2014	Public consultation was undertaken on the location for Portishead rail station. GRIP stages 1 and 2 were completed by Network Rail alongside the Preliminary Business Case by the Councils and reported to the Joint Transport Board (comprising both the Joint Transport Executive Committee and the Local Transport Body Board). Portishead Station Options Appraisal Report was submitted to the Office of Rail Regulation. Environmental baseline studies of the proposed Scheme.
2015	Office of Rail Regulation letter states they would not contemplate a level crossing on Quays Avenue. Stage 1 Scheme Consultation undertaken on MetroWest Phase 1 project. A letter submitted to The Planning Inspectorate in June 2015 notifying them of North Somerset's intention to submit an Environmental Statement on the DCO Scheme and requesting a Scoping Opinion, together with copies of the Environmental Scoping Report and Baseline Report. The Planning Inspectorate provided a Scoping Opinion in August 2015.
2015-2017	GRIP stage 3 Option Selection Approval in Principle design (2 trains per hour scheme) completed by Network Rail early 2017 Micro consultation undertaken on Pill station and Ashton Vale Road highway access early 2016 Strategic parcels of land are acquired mid 2016 Further round of micro consultation undertaken on Ashton Vale Road highway access late 2016 Highways design and transportation modelling for Portishead, Pill and Ashton Vale Industrial Estate alternative access. Land assembly and Development Consent Order pre-application stage. Support from incumbent train operator Great Western Railways 2016 - 2017. Environmental Impact Assessment of the emerging DCO Scheme 2016-17 Joint Transport Broad endorsed proposals in March 2017 to take a staged approach to the delivery of MetroWest Phase 1 in light of major an unexpected scheme cost increased arising from completion of GRIP stage 3. The proposals for the Severn Beach Line remain unchanged, while the proposals for the Portishead Branch Line were revised to provide an initial passenger train service (1 train per hour). Value Engineering Assessment Report completed by Network Rail in June 2017, setting out the reduced scope of infrastructure and engineering requirements for delivering an initial passenger train service for the Portishead Line (1 train per hour), along with opportunities for wider cost reduction. Revised GRIP stage 3 Option Selection Approval in Principle design (reduced scope 1 train per hour for the Portishead Line) completed by Network Rail late 2017.

2.3 Summary of Findings Influencing Future Work

Table 2.1 shows multi-modal studies were undertaken to assess the transport options for the three corridors across the MetroWest Phase 1 scheme.

The reopening of the Portishead branch line was initially considered in 1986, but the proposing organisation went into liquidation. During the early 1990's different modal options were looked at for the corridor, with heavy rail not considered fully until 1999. Subsequent studies considered the technical feasibility, affordability and patronage of a heavy rail option compared to bus based and light rail options.

A heavy rail based solution was identified as a preferred long-term scheme in JLTP2 (2006), with feasibility work commencing in 2008. JLTP3 (2011) provided the policy basis, programme prioritisation and stakeholder support for taking Portishead rail project forward.

Following the WoE Rail Study (2011), a formal decision was made in 2012 to accept the study recommendations to combine the Portishead Branch Line re-opening project into the Greater Bristol Metro project, with delivery through a staged approach. MetroWest Phase 1 was mobilised in 2013.

The Preliminary Business Case was prepared in Sept 2014, based on GRIP stage 2, and is available from www.travelwest.info/projects/MetroWest. The Outline Business Case is currently being prepared for completion by December 2017, based on GRIP stage 3 Approval in Principle design.

2.4 Stakeholder Engagement

The design and technical development of the scheme has been informed by engagement with stakeholders on an on-going basis. Various public consultations, where stakeholders and the public have had the opportunity to seek information and be consulted on elements of the proposed scheme, have been held. This includes formal Section 42 consultation, including the full scope and advertising of events, alongside more 'informal' consultation on specific scheme elements. To date the following public consultations have included:

- Portishead station location consultation – June 2014
- Informal Stage 1 scheme consultation – June 2015
- Pill Station consultation – February 2016
- Ashton Vale Road consultation, Round 1 – February 2016
- Ashton Vale Road consultation, Round 2 – November 2016
- Formal Stage 2 scheme consultation – October to December 2017

The engagement and information process has influenced the evolution of the scheme. Detail on specific elements that have been influenced are included in Section 10 of this OAR: Step 7: Development and Assessment of Potential Options.

Stakeholders have been involved throughout the development of the scheme.

SECTION 3

Step 1: Understanding the Current Situation

3.1 Introduction

The need for corridor improvements across the three corridors; Portishead to Bristol, Severn Beach/Avonmouth to Bristol, and Bath to Bristol has been identified and agreed by all West of England authorities, over many years. The understanding of the current situation is informed by the scheme history (Section 2), as well as current transport policies, demands and constraints across the area. This section focuses on the overall transport situation, as well as providing a focus on rail specific elements.

3.2 Current Transport and Other Policies

A full review of the relevant local planning policies, as well as the JLTP, is provided in the MetroWest Preliminary Environmental Impact Report (PEIR) suite of documents. The key points of relevance have been summarised below.

The WoE Joint Local Transport Plan 3 (JLTP3) 2011-2026 covers Bristol City Council, Bath & North East Somerset, North Somerset and South Gloucestershire Council areas. The JLTP3 vision is to provide an "affordable, low carbon, accessible, integrated, efficient and reliable transport network to achieve a more competitive economy and better connected, more active and healthy communities." The JLTP3 aims to deliver:

- "A transport system that recognises the whole journey. Where cycle routes and footways feed into the public transport network
- A transport system where both bus and rail play their part. Where buses serve the movements around and within towns, cities and rural communities. Where rail serves both short and longer journeys
- Where marketing, through ticketing, timetable coordination and interchanges make public transport more desirable than the private car
- Where customer satisfaction is the driver behind encouraging public transport use
- Whilst recognising the car will still provide personal mobility for many."

The four WoE authorities have recently completed (October 2017) a Joint Transport Study (JTS). The purpose of the study was to identify transport schemes and infrastructure that will assist the sub-region in meeting the challenges arising from a growing economy and population in the medium-term. The study has identified potential future strategic transport proposals, for delivery up to 2036.

The JTS assumes that the MetroWest Phase 1 and 2 programme will be delivered in the short-term. These schemes will act as building blocks for the JTS proposals. It assumes that MetroWest will support cross-region movement, contributing towards addressing current challenges on the network and providing infrastructure to reduce reliance on private cars.

Alongside the JTS, the four WoE authorities are progressing strategic land use planning proposals through the Joint Spatial Plan. This will support the authorities in meeting the challenge of delivering 105,000 new homes and creating 82,500 new jobs up to 2036. To translate the JTS and the infrastructure requirements of the JSP into firm proposals, the authorities have commenced early work on scoping Joint Local Transport Plan 4.

The West of England LEP fully support the improvement of local rail services and infrastructure, and have prioritised Local Growth Funding for the MetroWest programme. The Bristol Temple Quarter Enterprise Zone is earmarked as a key driver of economic growth in Bristol and across the West of

England. MetroWest Phase 1 is identified as a key infrastructure project that will help to ensure the success of the ambitious plans.

3.2.1 Rail Policies

The MetroWest programme of improvements has been a long-standing aspiration of the West of England authorities and is identified in their Core Strategies. It has an established and agreed policy context and complements the overarching development plans for the local area.

The MetroWest Phase 1 is identified in the JLTP3 (referenced as Greater Bristol Metro and Portishead line) as a future priority scheme following delivery of the current three MetroBus schemes and the Weston and Bath package, have either been delivered or are in the final stages of delivery.

This policy status is underpinned by technical work prior to the mobilisation of MetroWest Phase 1 in 2013, including:

- The Great Western Main Line Route Utilisation Strategy, March 2010 – this tested various options for the Greater Bristol Metro
- Portishead Line Reopening – GRIP Stage 2 and 3 – 2009 and 2010

The emerging JSP identifies a clear programme of investment, including committed schemes such as MetroWest Phase 1 and Phase 2, together with a number of potential future infrastructure schemes. These aim to provide stronger links to the West of England's priority development sites within the Enterprise Zone and Enterprise Areas.

Industry policy is also evolving, and the Western Route Strategic Plan (February 2017) sets out the route priorities to the end of control period 5 (2019) and into control period 6.

3.3 Current Travel Demands and Levels of Service

As a highly self-contained region, with 90 % of residents also working within the West of England, it is notable that only 6 % of residents use public transport to get to work.

The West of England trend for high rates of private car ownership is magnified in Portishead where only 12% of households (2011 Census) do not have access to a private vehicle. This emphasises the town's over-reliance on private car ownership. These patterns are reflected in the high proportion of residents who travel to work using private vehicles (as car/motorcycle drivers or passengers). At 81 %, the proportion of commuters travelling by private vehicle is considerably above both the West of England (69 %) and nationwide averages (66 %). Less than 1 % of commuters locally use rail services (2011 Census), see Table 3.1.

Table 3.1 Mode of Travel to Work (2011 Census)

Mode of Travel to Work	Pill	Portishead	West of England	England
Train	0.5%	0.8%	2.3%	5.6%
Motor Vehicle	72.6%	80.8%	69.2%	66.4%

3.3.1 Rail Network

The local rail network across the West of England is under-developed compared to similar sized City Regions. Many local rail routes do not have a basic half hourly frequency in the peak and some routes terminate at Bristol Temple Meads rather than operating across the city region. There are some noteworthy deficiencies in the current service patterns. For example, the Bristol/Bath line has a half hourly service to London, yet the service pattern provided for intermediate stations (Keynsham and Oldfield Park) is approximately hourly. The Severn Beach line operates every 40 minutes to Avonmouth and only two hourly to Severn Beach.

3.4 Opportunities and Constraints

MetroWest Phase 1 will provide the foundation for delivering a Metro local rail network across the West of England, serving 16 existing stations and two new stations. This will entail upgrading the existing freight only route between Parson Street junction and Portbury Dock junction, reinstatement of the disused line between Portbury Dock junction and Portishead, along with enhancement works on the main line between Parson Street and Bristol Temple Meads, and at Bathampton and Avonmouth/Severn Beach. A new station (rail head) is required at Portishead with a new intermediate station at Pill.

3.4.1 Opportunities

Implementing MetroWest Phase 1 will:

- Make use of existing infrastructure, by reopening a railway corridor for passenger services
- Deliver a reliable public transport service for the residents of Portishead and Pill and enhance the existing service for the Severn Beach line and Bath line, with competitive journey times that will not be eroded over the medium to long term
- Provide reliable access from the wider sub-region in to central Bristol and the TQEZ for employment, offering a mode choice that is not impacted on by highway network reliability and resilience
- Increase the accessibility of the rail network to residents in North Somerset. This will particularly benefit the people who live in and around Portishead and Pill
- Renew rail assets on the current Portbury Freight Line and ensure the continuity of freight operations, maintaining the existing pathing rights
- Take into consideration other committed West of England Partnership proposals, including interaction with MetroBus and longer term local rail aspirations such as new stations
- Not preclude future cross-Bristol services, such as MetroWest Phase 2 and potential future services, such as Portishead to Bristol Parkway

The opportunities will provide real alternatives to single occupancy car-based travel. This will address the long-term reliance on the car, and enable the local economy to continue to grow. The collaborative development of the JSP and JLTP4 will ensure that the planning and transport strategies and plans for the region are integrated and supporting of each other, ensuring development will maximise the benefits than can be realised.

3.4.2 Constraints

Table 3.2 sets out a summary of the key constraints, identified at a project risk workshop. These are considered further through the cases being prepared for the Business Case submission.

Table 3.2: Key constraints

Category	Internal Constraints	External Constraints	Further Details
Finance	Affordability of the scheme in respect of the scheme capital funding gap Need for train service subsidy in the short term – although this is more than offset by an ongoing revenue surpluses after year six	Arrangements with the DfT Rail Executive for inclusion of the MetroWest Phase 1 train service in the Great Western Rail franchise	Finance Case
Environment	Sites of Special Scientific Interest/Special Area of Conservation Developing in a built environment (particularly new two new stations) Ecology season constraints on the scheme programme	Need for environmental licenses Need for Habitats Regulation Assessment approval	Economic Case

Category	Internal Constraints	External Constraints	Further Details
Governance/ Organisational	Complexity of governance entailing a multi-party promoter proposing to undertake enhancement on an external parties network, i.e. a multi-party third party promoter	Alignment with rail industry processes and decision making of key parties including Network Rail and Great Western Railways	Management Case
Technological/ Engineering	New stations' designs must interface with adjacent highway designs and urban realm	Working within footprint of disused and current rail corridors Alignment between the Network Rail GRIP process and the Development Consent Order process Network capacity constraints at key locations and junctions Need for timetable solutions acceptable to rail industry Provision for MetroWest Phase 2 in parallel with Phase 1 Train operator constraints including availability of rolling stock and other operational resources	Management Case
Consents and Approvals	Local and Central Government funding assurance processes to be followed DCO process technical requirements	DCO Examination and DCO decision to be made by the Secretary of State Other consents outside the DCO process incl Natural England and Environment Agency licenses	Management Case
Asset Management	Need for new station car parks to have a charging tariff in order to meet car park operating costs and other highway maintenance costs, resulting from the scheme	Acceptance of assets by Network Rail to be owned, operated and maintained by them, as part of the national network	Management Case

SECTION 4

Step 2: Understanding the Future Situation

4.1 Introduction

Future priorities identified by the West of England LEP are focussed around improving connectivity in the region to increase access to jobs, reduce congestion and promote sustainable transport choices. This is set in the context of further housing and employment growth across the region.

4.2 Future Land-Uses and Policies

MetroWest Phase 1 forms an important part of the West of England's economic growth agenda, led by the LEP. The West of England LEP's economic development strategy is being driven by its Strategic Economic Plan (SEP), submitted to Government in March 2014. The SEP and the City Region Deal (CRD) provide the framework for unlocking growth across the West of England. The SEP and the CRD will deliver significant growth at the following locations:

- Bristol Temple Quarter Enterprise Zone and new arena
- Bath City Riverside Enterprise Area
- J21 Enterprise Area (Weston-super-Mare)
- Emersons Green/Science Park Enterprise Area via Bristol Parkway
- Filton Enterprise Area
- Avonmouth Severnside Enterprise Area

4.2.1 Changes to the West of England transport system

As part of the JTLP3 transport vision, MetroWest Phase 1 complements and integrates with the West of England transport programme, including:

- MetroBus (bus rapid transit) including Ashton Vale to Temple Meads, South Bristol Link and North Fringe to Hengrove Package)
- Bath package, bus network enhancements
- Weston package, multi-modal package of enhancements including J21 of the M5
- Better Bus Area fund
- Cycle City Ambition Grant
- Local sustainable transport fund
- Local pinch-point fund

4.2.2 Future changes to the rail network and operation

Network Rail's plans for Control Period 5 (CP5), which covers the period 2014 -19, includes delivery of £7.5 billion of rail investment via the Western Programme. The CP5 works include rail infrastructure schemes to enhance the capacity and capability of the rail network into Bristol:

- Electrification of the Great Western main line (deferred scope for WoE routes)
- Filton Bank Four Tracking
- Additional platform at Bristol Parkway station
- Bristol Area Signalling Renewal & Enhancement

- Bristol East Junction Enhanced Renewal – design in CP5, delivery in early CP6

The rail operational challenge needs to take account of:

- The significant growth outlined in Network Rail's Long Term Planning Process and in the Western Route Strategic Plan (2017), in passenger demand around Bristol for both long distance, high speed trains, specifically commuting to London and local, commuter and leisure travel.
- Freight growth predicted for Bristol port.

Electrification of the Great Western main line and the introduction of new Inter City Express Programme (IEP) trains will also see enhanced services between London and Bristol, with potentially four trains per hour (two via Bath and two via Bristol Parkway). The new IEP trains will provide more seats and improved passenger experience, and the cascade of good quality diesel multiple units from the Thames Valley to the West of England will abate overcrowding and operational capacity problems. Modernised infrastructure is also expected to reduce risk of delays and cancellations. It is anticipated these improvements though the Western Route Modernisation Programme will lead to a forecast growth for rail journeys in the West of England by 54% in 2023 and 121% in 2043.

4.3 Future Travel Demands and Levels of Service

Network Rail is assuming over 40% growth in passenger trips at Bristol Temple Meads over the 10 years to 2020-21.

The Temple Quarter Enterprise Zone, centred around Bristol Temple Meads station, aims to create 17,000 new jobs. It is anticipated that a large proportion of employees will come to work by train. Similarly, the five Enterprise Areas including Bath City Riverside (9,000 jobs), J21/Weston-super-Mare Gateway (9,000) and Avonmouth Severnside Enterprise Area (6,000 to 12,000), are all well located to make use of the rail network. These job creation numbers are currently being revised (increased) in light of the emerging Joint Spatial Plan.

MetroWest Phase 1 will provide a key interface for increasing access to major employment areas. For major employers, it will increase the catchment pool of the skilled workforce within a short (half an hour) journey to work.

4.3.1 Future rail demand

Demand for rail travel has grown significantly in recent years. For example, there has been around a 90% increase in passenger numbers through stations in the West of England area between 2004-05 and 2015-16 (based on ORR figures). There have been even larger increases on specific routes, such as more than a doubling of patronage on the Severn Beach line. Apart from a slight levelling in 2007-08, growth has continued and seems likely to continue, albeit it is debatable whether rates may not be as high as recent times.

The Long Term Planning Process (LTPP) Regional Urban Markets study (published by Network Rail in October 2013) uses a series of wider economic scenarios to frame changes in rail use, and forecasts are presented for rail use in and around key urban centres. The resulting growth rates for the Bristol area vary from 0.6 % per annum to 3.9 % per annum. The LTPP concluded that the delivery of MetroWest Phase 1 and Phase 2 is required to provide sufficient operational capacity for the WoE local rail network.

SECTION 5

Step 3: Establishing the Need for Intervention

5.1 Introduction

The primary highway corridors into and across Bristol, Bath and the surrounding towns are systemically congested at peak times and continued traffic growth threatens the future economic prosperity of the sub-region. Over the last 10 years the volume of people using the rail network in the West of England has doubled. As transport demand increases, there is a need to ensure the rail network has sufficient capacity to cater for this demand as part of an integrated approach to managing the transport network. MetroWest Phase 1 will complement the rail industry's substantial programme of investment for the Western Route for Control Period 5 (2014-19) and beyond.

The West of England's current share of national economic growth (GVA) is the highest of any core city region at 3.1%. The overall vision is to build on this economic growth through a range of interventions, including improving access to major employment sites for the skilled workforce. The city region is also set for further population growth, which is expected to exceed 1.1 million by 2026. Planning for this growth means the city region needs to make sure its transport infrastructure is not only fit-for-purpose, but is agile to respond to increasing demand and, therefore, maximise potential for continued economic growth.

5.1.1 The Need for Rail Intervention

MetroWest Phase 1 is a strategic intervention across three rail corridors that complements the CP5 Western Route Modernisation Programme. MetroWest Phase 1 will play a key role in enhancing access to major growth areas including Temple Quarter Enterprise Zone and five Enterprise Areas across the sub-region. The project will bring these major employment centres closer to the skilled workforce catchment, by simultaneously enhancing access to the local train network and increasing train service frequency. Major employers will have a larger skilled workforce pool to draw on within a 30-minute commute and this will play a part in removing barriers to inward investment.

The long-term trend of continued traffic growth threatens the West of England's economic prosperity; in response, the four West of England councils have developed the MetroWest programme as a key part of its integrated 'TravelWest' transport strategy. Key highway corridors into and across the city region are at or near capacity and average vehicle speeds are among the lowest for comparable city regions. The case for intervention to rebalance the transport network, through investment in the local rail network, is compelling.

There is a public recognition of the need for intervention from a diverse range of stakeholders, including major employers and the wider business community through to community groups and local interest groups and campaigns.

Comparison of the West of England local rail network with similar sized city regions shows very clearly how under-developed the network is, see Table 5.1. The limited nature of the local rail network (while having overcrowding problems) explains the relatively low proportion of journeys to work by rail across the West of England (2011 census data: WoE 2.3%, compared with 5.6% average for England). This fundamental supply side problem needs to be addressed in order to realise the potential of the West of England local rail network.

Table 5.1.: Comparison of the West of England local rail network with similar sized city regions

City Region	Population 2015 mid-year estimate	Reach of the Local Rail Network	Train Service Frequency
West of England	1,119,000	5 local rail corridors with 26 stations	Irregular frequencies ranging from ½ hourly to every 2 hours
Sheffield	1,375,000	4 corridors, 3 tram corridors with 48 stations, and one tram-train corridor	Mainly every 8 to 10 minutes, tram-train every 20 minutes
Cardiff	1,505,000	6 local rail corridors with 20 stations across the city with 70 more across the region.	Mainly every 12 or 15 minutes, some lines every 30 minutes
Liverpool	1,525,000	7 local rail corridors with 67 stations	Mainly every 15 minutes, some lines every 30 minutes

While the three corridors are local rail corridors, the WoE local rail network has a number of problems, which in summary are:

- The geographic reach of the local rail network is limited with just five rail corridors feeding into Bristol Temple Meads, which is less than all other comparative Core City Regions
- The local train service frequency is irregular and some corridors have a poor frequency/not clock-face service. Most of the local train network does not have a half hourly a basic half hourly service and there are connectivity issues for cross-Bristol Temple Meads trips
- There are operational capacity problems causing overcrowding problems (arising from a combination of poor train service frequency short formation rolling stock)

5.2 Current and Future Transport Related Problems

The Portishead to Bristol corridor (A369) suffers congestion and journey time reliability problems. This not only causes delays and lost productivity for car drivers and goods vehicle operators, but also presents a major hurdle for an attractive road-based public transport mode along the corridor. Current problems will be exacerbated by committed and proposed growth across the West of England. Current and future transport related problems include:

- **Capacity on rail network**: Lack of capacity (particularly short formation rolling stock) and connectivity across the Bristol area
- **Rail service pattern:** Lack of a standard, 'clock-face' half hourly service pattern across the local rail network, making planning of journeys more difficult
- **Resilience**: Poor transport network resilience, particularly related to the knock-on effects of incidents on the M5, with high volumes of traffic using a constrained local road corridor with few alternative route options. This consequently causes substantial loss of productivity and wider disruption to transport network users (the public)
- **Network offer**: The A369 is the only transport corridor directly linking Portishead with Bristol, which is 10 miles to the east. Capacity constraints are exacerbated by the corridor crossing junction 19 of the M5, one of the busiest parts of the motorway, with the Avonmouth Bridge immediately to the north
- **Air quality**: Poor air quality in areas of Bristol and Bath
- **Alternative to private car**: Lack of real alternatives to the car for some residents and businesses (for example, Portishead and cross-Bristol trips)

- **Car dependency**: High levels of car dependency across the West of England exasperated by limited travel choices in many areas, which will continue into the medium to long term if sustainable travel choices are not broadened
- **Deprivation**: Areas of multiple deprivation, for example north-western parts of Bristol (alongside the Severn Beach line) and parts of Bristol City

The underlying cause for the scheme is the excess of travel demand over available capacity, which will be exacerbated with development. Without intervention, the local train network's contribution to meeting the transport needs of the sub-region will be limited. Furthermore, the local highway network is already systemically congested in key areas. The overall impact would result in constraints to accessing employment opportunities, which would restrict economic growth.

SECTION 6

Step 4a: Identifying Objectives

6.1 Introduction

The scheme objectives were identified and agreed at the outset of this project, and are closely linked to the priorities of the LEP and JLTP. Both principal business objectives and supporting objectives have been identified to guide this project.

6.2 Development of Objectives

These schemes will support the policies and objectives of the Joint Local Transport Plan 2011-26 and 'place' aspect of the LEP Vision.

The Vision for the West of England LEP is summarised as:

- Supporting growth
- Driving innovation
- Developing people
- Promoting business
- Creating a sense of place

The five key transport goals set out in the West of England Joint Local Transport Plan are:

- Reduce carbon emissions
- Support economic growth
- Promote accessibility
- Contribute to better safety, security and health
- Improve quality of life and a healthy natural environment

This context has shaped the objectives below.

6.3 Objective Hierarchy

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
- 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
- To contribute to reducing the overall environmental impact of the transport network by enhancing the public transport offer, which in turn reduces car dependency

6.4 Targets and Benefits

MetroWest will play an important role in bringing these major employment centres closer to the skilled workforce catchment, helping to remove barriers to inward investment. MetroWest is intended to plan for growth and make sure the city region's transport infrastructure has the ability to respond to increasing demand, to realise and maximise continued economic growth.

The benefits of the project have been identified as:

- **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 800 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 (around 23 minutes)
- **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
- **Provide** wide ranging **social/health benefits**

Wider Scheme Outputs:

- Is expected to provide very high value for money with a Benefit to Cost Ratio of 3.48 with wider economic impacts, giving £3.48 of quantified benefits for every £1 invested to implement the scheme
- Is forecast to generate a revenue surplus every year from year 6 onwards
- Will support the delivery of the 105,000 new homes and 82,500 new jobs identified in the WoE Joint Transport Study and WoE Joint Spatial Plan

SECTION 7

Step 4b: Define Geographic Area of Impact to be Addressed by the Intervention

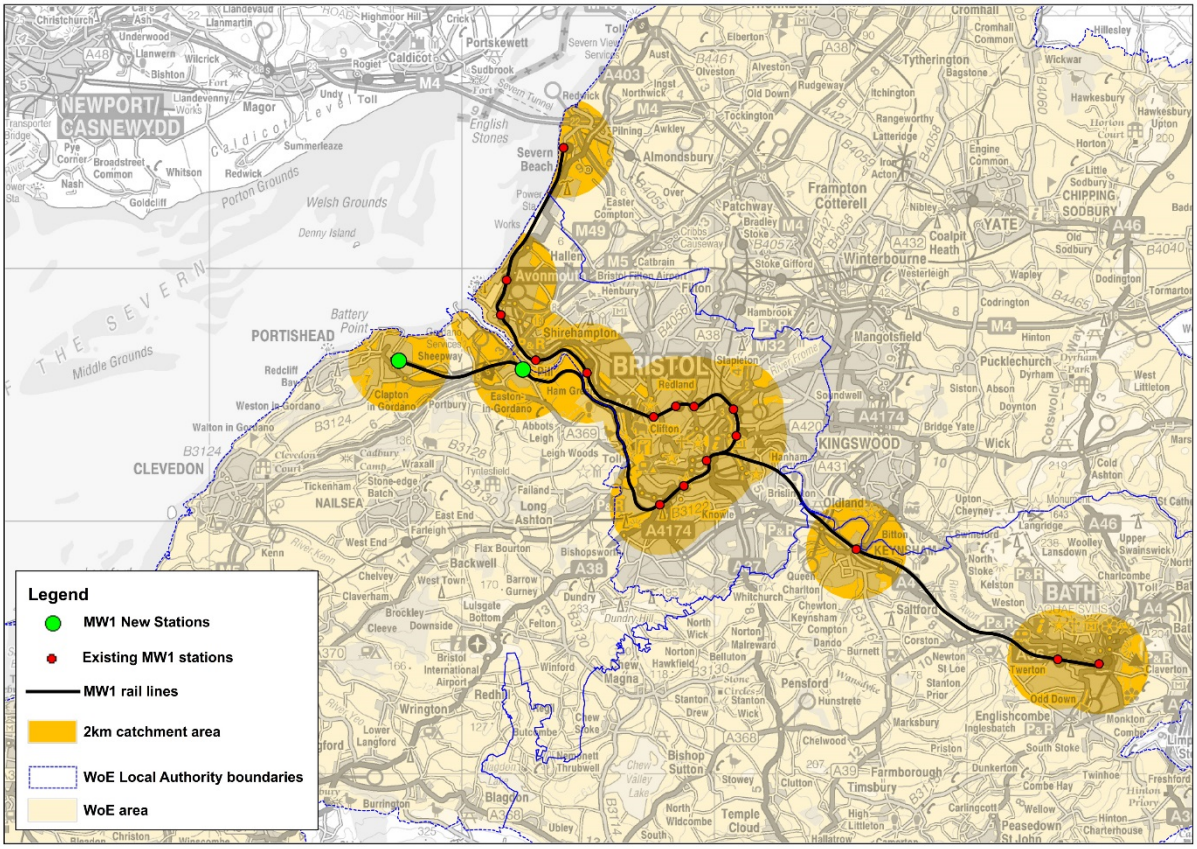
7.1 Introduction

The MetroWest Phase 1 project comprises the delivery of infrastructure and passenger train operations to provide enhanced services on the Severn Beach line, local stations on the Bath to Bristol line and for a reopened Portishead Branch Line with stations at Portishead and Pill. This will involve re-opening 5 km of disused railway from Portishead to Pill and minor works to 9 km of existing operational railway. The re-opened Portishead Branch Line will maintain the existing freight train operations as well as re-introduce passenger train services. It will also serve Parson Street, Bedminster and Bristol Temple Meads stations.

7.2 Geographical Scope of the Travel Market

MetroWest Phase 1 will serve 16 existing stations and two new stations. The geographic scope of the travel market, assuming a 2km catchment area for the new and existing stations, is shown in Figure 7.1.

Figure 7.1: Geographic Scope of Travel Market



Forecast origins and destinations reflect the local nature of MetroWest services. Station pairs that are forecast to be make up most of the journeys made by users of Portishead and Pill are largely within the WoE area. The forecasts indicate that (at both Portishead and Pill) over 85% of journeys are likely to be to and from other stations in the MetroWest area, with around 40% being to/from Bristol Temple Meads itself, 30% to/from other station in Bristol and the rest elsewhere in the WoE. Of the remainder, trips to/from London account for between 1%-2% of demand.

7.3 Geographical Extent of Current and Future Transport Problems

The sub-region's economic prosperity is beginning to be constrained by its transport network. As demand increases due to economic and population growth, further investment is needed to ensure the transport network is sufficiently accessible and has capacity and resilience to continue to meet the sub region's needs. Longer-term problems of sustained traffic growth and car dependency need to be tackled, in addition to wider long-term issues of carbon emissions and social wellbeing.

While the West of England benefits from good long-distance rail routes, the local rail network is relatively underdeveloped. Many of the local rail routes do not have a basic half-hourly peak frequency and some terminate at Bristol Temple Meads, rather than operating across the city region. There are also a number of strategically important disused rail lines and reopening these lines is a key part of the four West of England councils' (B&NES, BCC, NSC and SGC) strategy to uplift the local rail network, through the MetroWest programme. For example, the provision of the new stations at Portishead and Pill will increase the accessibility of the rail network to residents in North Somerset. This will particularly benefit the people who live in and around Portishead and Pill.

The geographical extent of problems and underlying drivers can be summarised as:

- Slow and unreliable journey times (particularly on the A4, A369/M5 and routes into and within Bristol city)
- Commuting from Portishead to Bristol city centre, under typical morning peak hour traffic conditions, takes approximately 50 minutes. Bus journeys can take over an hour in peak periods, and are susceptible to delay. The lack of a rail link between Bristol and Portishead means people without access to a car face additional difficulties
- Within Bristol's central AQMA, 97 % of NOx emissions are from road traffic. CO_2 emissions are expected to rise 19 % by 2011, compared to 2004 levels. This AQMA extends approximately 1 km east of the Portbury Freight Line and includes part of the local railway network within the centre of Bristol. The AQMA has been declared for NO2 (1-hour mean and annual mean objectives) and PM10 (24-hour mean objective)
- Bath & North East Somerset Council has also declared one AQMA in the centre of Bath, which extends along the main roads including Warminster Road and London Road. The Bath AQMA is located approximately 500 m from the proposed Bathampton turn-back and has been declared for NO_2 (1-hour mean and annual mean objectives)
- The Severn Beach line stations have different levels of service, resulting in poor access to the employment opportunities in the Avonmouth area and poor access from the residential areas around the Severn Beach line. The residential areas around the Severn Beach line have a higher proportion of residents claiming Job Seekers Allowance and with no car compared to other parts of the West of England
- Accessibility into Bath suffers from the low level of train services for Keynsham and Oldfield Park

SECTION 8

Step 5: Generating Options

8.1 Introduction

The West of England network provides a range of travel options for different areas and corridors. A number of constraints (such as lack of highway space) and opportunities (such as disused railway lines and freight only lines) have influenced the strategic optioneering. On the A4 between Bath and Bristol, and the A369 Portishead corridors, systemic levels of congestion would significantly impact on feasibility of making improvements highway based modes including a bus option, resulting in unattractive journey times, unreliability and poor resilience. This, combined with the availability of the existing rail corridors, makes rail-based solutions the most appropriate option for these corridors.

As such, option generation considered in this section is related to heavy rail options only. The approach adopted in identifying heavy rail as the preferred option for the Portishead to Bristol line is set out in Section 2 of this OAR.

8.2 Approach to Option Generation

MetroWest enables the four councils and the West of England LEP to realise the strategic potential the local rail network can play in meeting the transport needs of the sub-region. MetroWest also complements committed investment planned by the rail industry during Control Period 5 (2014 to 2019) including electrification of the Great Western line and the Intercity Express Programme, which will address network bottlenecks and renewal key network assets.

The West of England councils and Network Rail have undertaken a considerable number of feasibility studies on MetroWest in its current and former guises. This has resulted in the generation of an option that is well-positioned to be taken forward. In summary, the MetroWest Phase 1 option has:

- Full backing across all four West of England authorities, including funding for project development, as well as from the rail industry, so the scheme can be taken forward alongside committed CP5 schemes
- A robust policy context
- A full body of feasibility work and evidence
- On-going detailed technical interface with Network Rail and Great Western Railways
- Endorsement as a priority scheme from the West of England LEP
- Endorsement by the West of England Joint Transport Board (now the WoE Joint Committee) as the top priority scheme for devolved major scheme Local Growth Funding, subject to business case approval

8.3 Identifying a Wide Range of Options

In the early stages of MetroWest Phase 1, the four Councils, Network Rail and the train operating companies held two optioneering workshops. The purpose was to identify the services and infrastructure required to meet a half hourly service pattern. They also considered current passenger demand characteristics and the known infrastructure constraints across the West of England rail network. The output of this work is set out in the EAST assessment, see appendix A.

8.4 Long List of Options

The optioneering workshops resulted in the identification of the following options:

- Option 1: Shuttles (base case)
- Option 2a and b: Portishead – Bath Spa and Severn Beach shuttle
- Option 3a and b: Portishead – Severn Beach and Bath shuttle
- Option 4a and b: Severn Beach – Bath Spa and Portishead shuttle
- Option 5a and b: Severn Beach to Bath and Severn Beach to Portishead (timetable proposed Halcrow)
- Option 6a and b: Portishead to Bath and Portishead to Severn Beach

These options are defined in more detail in the EAST final document, see Appendix A.

SECTION 9

Step 6: Initial Sifting

9.1 Introduction

The DfT's Early Assessment Sifting Tool (EAST) was used to complete the initial sift of the long list of options. Unlike some EAST appraisals, which occur at a very early stage in scheme development and only high-level information available, there was a considerable amount of information for MetroWest Phase 1 (and some of its component parts, such as the reopening of the Portishead line). The results of the MetroWest Phase 1 EAST assessment for the long-list of scheme options are detailed in the EAST Final Document, see Appendix A.

9.2 Process Adopted

As set out by DfT, the EAST tool has been used to:

- Help refine options by highlighting adverse impact or unanticipated consequences
- Compare options, for example, within or across modes, geographical areas and networks
- Identify trade-offs between objectives, aiding package development
- Filter the number of options, discounting some options early to ease appraisal process and avoid resources being spent unnecessarily
- Identify key uncertainties in the analysis and areas where further appraisal efforts should focus

The forms completed as part of the EAST are included in the EAST Final Document.

9.3 Result of Initial Sift

In summary, the key strengths identified by the EAST assessment are:

- Substantial latent passenger demand for a Portishead to Bristol train service, up to 50,000 people would have access to the national rail network at Portishead and Pill.
- Continued passenger demand supports the enhancement to the Severn Beach and Bath lines, driven by economic and population growth
- Enhancing access for the skilled workforce to major employment markets, helping business to expand and deliver economic growth
- Substantial support from the community and stakeholders for the project
- Majority of capital funding identified
- Provides a sound foundation for taking forward the rest of the MetroWest programme and potential for medium-/long-term commercial expansion

Each option was considered against the 'five cases'. The assessment showed:

- 'Strategic case' - all scheme options are supported by a robust case for change that fits with wider public policy objectives and thus all options have a 'strategic case'
- 'Economic case' - all scheme options demonstrate value for money and thus all have an 'economic case'
- 'Management case' - scheme options 1, 2a/b, 3a/b, 4a/b, 5a and 6a are not considered achievable because of the operational issues associated with finding an acceptable timetable solution. Scheme options 5b and 6b are achievable and thus have a 'management case'

- ‘Financial case’ - scheme options 1, 2, 3, 4, 5a and 6a are not considered affordable because they are likely to require an unaffordable amount of revenue support. Scheme options 5b and 6b are financially affordable and thus have a ‘financial case’
- ‘Commercial case’ - all scheme options are considered commercially viable, thus have a ‘commercial case’

9.3.1 Options Discarded

Following the EAST assessment, options 1, 2, 3, 4, 5a and 6a were discarded due to operational issues in finding an acceptable timetable solution, and an unaffordable amount of revenue support being required. Further detail is provided in the EAST Final Document.

9.3.2 Options to progress

The EAST assessment showed that option 5b and 6b were the preferred options to take forward to the Preliminary Business Case. These two options were shown as being achievable and affordable, as well as supporting wider policy, offering value for money and being considered commercially viable.

SECTION 10

Step 7: Development and Assessment of Potential Options

10.1 Introduction

Following the initial sift of options, option 5b and 6b were identified to be progressed for further development. The next step was the development of the engineering design, GRIP deliverables and supporting technical work to enable the costs, benefits and impacts of both options to be assessed. This enabled the identification of the better performing options to be taken forward.

10.2 Development of Potential Options

As part of the work to progress the two short-listed options, further work was undertaken to develop them to a sufficient level of design. This included the identification of alternatives within options.

In terms of the route for the provision of a railway between Portishead and Pill, there is little purpose in considering alternative alignments. This is because:

- NSC and NR between them own the land forming the former railway corridor
- All the principal structures required for the railway are already in place
- The railway is on a relatively straight alignment between Portishead and the connection to the existing rail network at Portbury Dock Junction
- The corridor has been reserved for transport proposals in relevant planning policy documents

Two strategic options were considered for MetroWest Phase 1:

- An all day, half hourly service to Portishead and Pill
- A lower cost option to reopen the railway to passengers, with a less frequent service pattern

Options for service frequencies were assessed in the Preliminary Business Case (West of England Partnership, September 2014). Half hourly and hourly services for the reopened Portishead Branch Line were considered. The economic assessment, based on the GRIP 2 costs, found an hourly off peak service frequency provided lower value for money than a half hourly option.

However, following the completion of the scheme's outline design including GRIP 3 (Option Selection) for two trains per hour in March 2017, along with an updated scheme capital cost estimate, the amount of works required for a half hourly hour service were considerably higher than estimates made at the feasibility design stage (GRIP 2). This makes the half hourly scheme presently unaffordable.

The key drivers for the cost increasing were:

- The amount of works required through the Avon Gorge to meet modern safety standards. These works are required to deliver the necessary line speeds to achieve the two trains per hour aspiration. This is compounded by poor access in the Gorge, reducing construction productivity
- The impact on the Ashton Vale Level crossing of two passenger trains per hour all day alongside existing freight services, resulting in the need to consider an alternative highway access from the A370 to the rear of the Ashton Vale Road industrial estate
- The consequential impact from the above on the amount of land, DCO (planning) requirements and environmental mitigation needed for the scheme

- The increased risks associated with the project following the expanded works and their constraints

As a result, the four WoE councils determined to take a staged approach to the delivery of the MetroWest Phase 1 project:

- The proposals for the Severn Beach Line and Bath Spa to Bristol Line remain unchanged i.e. half hourly services and associated infrastructure.
- 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:

    i) 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.

    ii) Hourly service plus – Passenger 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 train set during the am and pm peak only.

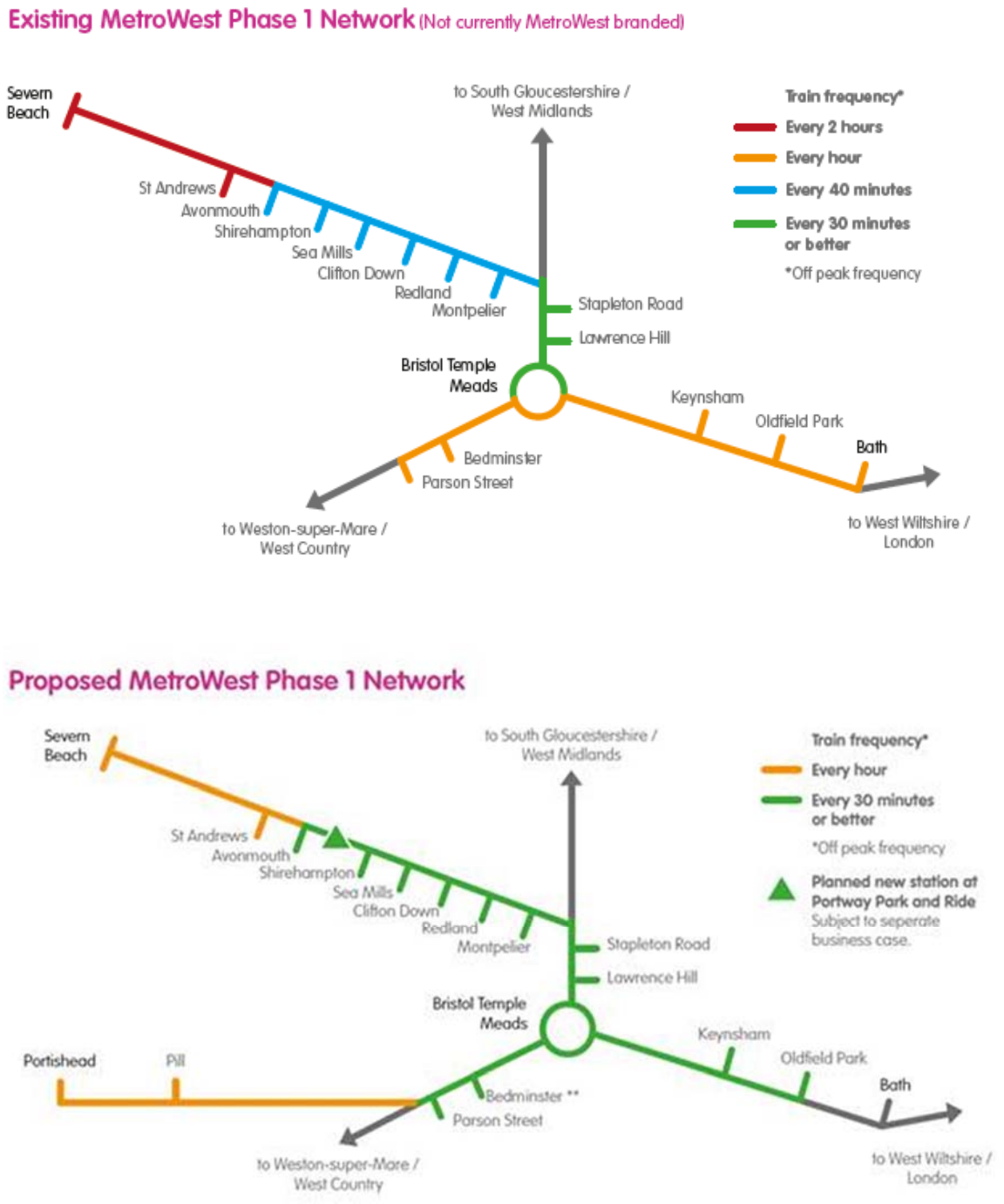
Detailed train path modelling undertaken by Network Rail (using Railsys software) has concluded that there is no difference between the infrastructure required for the hourly service vs the hourly service plus. The key difference between the two levels of service is the hourly service requires just one train set, while the hourly service plus requires two train sets, although one train set operates during the peak only.

In essence, the deduced scope of MetroWest Phase 1 (with an hourly or hourly service plus for the Portishead Branch Line) is in effect the delivery of the scheme Lower Cost Option (revised version since the preliminary Business Case 2014 version).

It is envisaged that a second stage could be promoted separately at some point after the delivery of the initial hourly service or hourly service plus, to upgrade the infrastructure to operate a half hourly passenger train service, for the Portishead Branch Line. This second stage would be a separate project as it would require separate statutory processes, business case and funding package and is not intended to be progressed until after the delivery of the initial stage. There is currently no estimated opening date for the second stage.

Figure 10.1 shows a schematic overview of both the existing network and proposed MetroWest Phase 1 Scheme.

Figure 10.1: Existing MetroWest Phase 1 Network (Not currently MetroWest branded)



10.3 Methodology for Assessing Potential Options

10.3.1 Environmental Impacts

The environmental assessment will be informed by technical work being undertaken for the PEIR for the DCO.

10.3.2 Level of Uncertainty of Impact

An Appraisal Specification Summary Table is shown in Table 10.1. This includes the estimated impact of the project and the proposed proportionate appraisal methodology.

Table 10.1 Appraisal Specification Summary Table

Sub-impacts	Estimated Impact in PBC	Proposed proportionate appraisal methodology	Type of Assessment Output
Economy			
Business users / transport providers	Large Beneficial	Economic assessment using rail demand model, GBATS4 and discounted cash flow model. TEE tables to be produced. Informs AMCB tables.	Monetised/Distributional
Reliability impact on Business users	Likely to be Slight Beneficial	WebTAG Reliability assessment to be completed, with inputs from the GBATS4 model. Informs AMCB tables.	Monetised
Regeneration	Moderate Beneficial	Quantify development assumptions and the impacts, present a regeneration worksheet	Qualitative
Wider Impacts	Large Beneficial	Update the Wider Impacts Assessment spreadsheet model that was used in the PBC. WEBs assessment to use data from GBATS4	Monetised
Environmental			
Noise	Likely to be Moderate Adverse	Plan Level appraisal as described in TAG Unit A3 Section 2. Traffic flow information from counts and GBATS4. Informs AMCB tables.	Monetised/Distributional
Air Quality	Likely to be Neutral or Slight Beneficial	Air quality valuation workbook and Local air quality workbook to be undertaken in line with TAG UNIT A3-Section 3. Traffic flow information from counts GBATS4. Informs AMCB tables	Monetised/Distributional
Greenhouse gases	Likely to be Beneficial	Carbon impacts to be assessed using TUBA (with inputs from the GBATS4) in line with TAG Unit A3 Section 4. Greenhouse gases workbook to be completed. Informs AMCB tables	Monetised
Landscape	Moderate Adverse	Landscape worksheet to be completed as described in TAG Unit A3 Section 6.	Qualitative
Townscape	Not assessed	Townscape will be subject to a 'light touch' appraisal.	Qualitative
Heritage of Historic resources	Neutral	Historic environment will be subject to a 'light touch' appraisal.	Qualitative
Biodiversity	Likely to be Neutral or Slight Adverse	Biodiversity worksheet to be completed as described in TAG Unit A3 Section 9	Qualitative
Water Environment	Likely to be Neutral or Slight Adverse	Water Environment worksheet to be completed as described in TAG Unit A3 Section 10	Qualitative
Social			
Commuting and Other users	Large Beneficial	Economic assessment using rail demand model, GBATS4 and discounted cash flow model. TEE tables to be produced. Informs AMCB tables.	Monetised/Distributional
Reliability impact on Commuting and Other users	Likely to be Slight Beneficial	WebTAG Reliability assessment to be completed, with inputs from the GBATS4 model. Informs AMCB tables.	Scheme costs/funding commitments will be presented in a PA table (output from the TUBA assessment)
Physical activity	Likely to be Slight Beneficial	Physical activity will be subject to a 'light touch' appraisal.	Qualitative
Journey quality	Likely to be Moderate Beneficial	Assessment in line with TAG Unit A4.1 Section 6.	Qualitative
Accidents	Likely to be Slight Beneficial	Assessment spreadsheet tool developed for OBC to be used in line with TAG Unit A4.1 Section 2. Informs AMCB tables	Qualitative
Security	Likely to be Neutral	Security will be subject to a 'light touch' appraisal.	Qualitative/Distributional
Access to services	Likely to be Moderate Beneficial	Assessment in line with TAG Unit A4.2	Qualitative/Distributional
Affordability	Likely to be Slight Beneficial	Affordability will be subject to a 'light touch' appraisal.	Qualitative/Distributional

Table 10.1 Appraisal Specification Summary Table

Sub-impacts	Estimated Impact in PBC	Proposed proportionate appraisal methodology	Type of Assessment Output
Severance	Likely to be Slight Adverse	Severance will be subject to a 'light touch' appraisal (concentrating on specific locations).	Quantitative/Distributional
Option values	Likely to be Large Beneficial	Assessment in line with TAG Unit A4.1 Section 7	Quantitative
SDI assessment		SDI assessment will not be fully WebTAG compliant due to some inputs being subject to 'light touch' appraisal.	See Distributional Impacts listed above
Public Accounts			
Cost to Broad Transport Budget		Scheme costs/funding commitments/changes to tax will be presented in a PA table (output from the TUBA assessment)	Monetised
Indirect Tax Revenues			

10.4 Public Consultation

Consultation is a formal requirement for the elements of MetroWest Phase 1 that require a DCO. The DCO application process requires extensive consultation with affected and interested parties. North Somerset District Council has decided to hold two consultation stages. In June 2015 Stage 1 of this process began, with North Somerset District Council consulting the public, statutory bodies, and stakeholders including community and local interest groups on the plans.

Following the Stage 1 consultation in 2015 and further scheme development, two main areas were identified as requiring possible changes to the design; at Pill Station site and access to Ashton Vale Industrial Estate. The design changes were felt to be significant enough to consult with the local communities to explain the options and gauge opinion. These micro-consultations were carried out in February 2016 and enabled the scheme to be developed further in more detail. A second micro-consultation specifically focused on the Ashton Vale Industrial Estate was undertaken in November 2016.

Since the MetroWest Phase 1 project began in 2013, several informal consultations have taken place to help develop the proposal:

- Portishead Station Site Consultation – February 2013
- Portishead Station Location – June 2014
- DCO Stage 1 Consultation – June 2015
- Micro-consultations for Pill Station House and Ashton Vale alternative highway access – February 2016
- Wider engagement and consultation
  - Local Transport Body Board part of the Joint Transport Board (held in public)
  - Engagement with the West of England Local Enterprise Partnership
  - MetroWest Stakeholder meetings
  - Engagement with rail interest groups
  - MetroWest information brochures
  - TravelWest stakeholder event - 13 October 2013
  - Joint Local Transport Plan 3 - 2011 to 2026 consultation
  - Consultation on the Strategic Economic Plan (SEP)

- Rail conference 2011
- Memorandums of understanding
- Consultation on Joint Spatial Plan and Joint Transport Study – November 2015
- Consultation on planning policy documents
- As part of the consultations on the Core Strategies of each of the four authorities, Joint Local Transport Plan, and LEP's Strategic Economic Plan

Following the publication of the DCO Stage 1 Consultation Report in late 2015, elements of the scheme developed further and this led to some possible design changes significant enough to be consulted on with locally affected parties. Further consultation was then undertaken on these specific elements.

The Project Team launched its formal Stage 2 DCO scheme consultation (Section 42 of the 2008 Planning Act), on 23rd October to 4th December 2017. The Project Team are consulting the local community, land/property owners, statutory bodies, government agencies, local interest groups and wider stakeholders. This consists of a consultation brochure, exhibitions, a post card drop to 5,000 homes, formal and informal letters, media releases, national and local newspaper advertisements, social media and a consultation website. The output of this will feed into the DCO application, which will be submitted in spring 2018, with an examination anticipated in autumn 2018 and a decision being made by Secretary of State in autumn/winter 2019. Technical work, and on-going engagement will also continue alongside this process for elements of the scheme that do not fall within the scope of the DCO.

10.5 Summary of Headline Results

Alternatives have been considered for the location and layout of features associated with the scheme and its operation. A summary of alternatives considered for specific elements of the scheme is presented in 10.2.

Table 10.2: Summary of alternatives considered for specific scheme elements

Option Description	Option Consideration	Outcome
Portishead station location	A total of 6 options were considered for the station location. Some of the options required a level crossing at Quays Avenue but the Office of Rail and Road ruled this out. 3 shortlisted options were included in the June 2014 consultation.	Some of the 3 options had constraints including highway issues, or required demolition of buildings, or had a lack of space for station facilities and parking. The option with the greatest support, which also had the least constraints, was option 2B – the site straddling Quays Avenue. A decision to proceed with option 2B was made by the North Somerset Council Executive in March 2015.
Portishead and Pill station platform length	The initial design brief was for a 105 metre (4 train carriages) platform. Following technical engagement during the outline design (GRIP 3) in 2016 it was decided it would be appropriate to make provision for 5 coach trains.	The outline (GRIP 3) design brief in 2016 was amended to include 130 metre (5 train carriages) platforms. This will be retained for the revised proposals for the one train per hour service.
Portishead station design development	The layout for Portishead station is determined by the available footprint, with the station on the north side of the platform, with a small car park immediately to the north and a larger car park along the disused corridor to the west of a re-aligned Quays Avenue and south of Harbour Road. The form and appearance of the station buildings evolved through consultation to reach a balance between affordability and good design.	The layout of the station encourages multi-modal connections for users of public and private transport as well as pedestrians and cyclists. The design has considered people with mobility restrictions.

Table 10.2: Summary of alternatives considered for specific scheme elements

Option Description	Option Consideration	Outcome
Trinity Primary School Footbridge	The existing permissive pedestrian/cycle crossing over the railway will have to be closed for safety reasons. The crossing is highly used and any diversion route via Quays Avenue (realigned) would increase the walking distance by 600m.	A footbridge is proposed and indicative details were set out in the June 2015 consultation. The footbridge has to conform to accessibility standards. The visual impact has been softened, using earth bunds on the northern side along with landscaping on both sides of the railway.
Sheepway Gate Farm – closure of accommodation crossings	The two existing accommodation crossings used by the farm to access their land to the south of the railway will have to be closed for safety reasons. A private overbridge for the farm was discussed with the farm owner, however the owner did not want a bridge due its considerable footprint and visual impact. The project will seek powers to make alterations to improve the existing access to the southern field from Sheepway.	The option for a private overbridge was dropped as a result of the engagement with the farm owner.
National Cycle Network ("NCN") & bridleway Portishead to Pill	The existing NCN26 links using the railway underbridges at Royal Portbury Dock Road, Marsh Lane and M5 Railway underbridge, are to be retained as permissive paths, as there is sufficient width under the bridges for both the railway and the path. In addition, the following enhancement is proposed. An extension to the existing bridleway routed between the eastern perimeter of Bristol Port, and the western side of the M5. The bridleway extension will provide a link under the M5 bridge (main span) and connect onto NCN 41 west of Pill village. The extension will provide a route for horses and other bridleway users away from the railway, as well as the more direct permissive pedestrian and cycle path alongside the railway under the M5.	Powers to extend the bridleway were sought.
Pill station	The feasibility design (GRIP 2) for Pill station initially entailed a footbridge over the railway with a pedestrian entrance on Monmouth Road. During the outline design (GRIP 3) an alternative option came to light entailing the acquisition and demolition of Pill Station House. The alternative option provided space for a station forecourt and did not require a footbridge. A micro consultation was undertaken in March 2016 on four options.	There was very strong support for the option to demolish Pill station house and create a station forecourt with highway access entering via Sambourne Lane and existing via Station Road. The site has now been purchased by NSDC.
Pill Tunnel Eastern Portal Compound	The initial design for this temporary construction compound and permanent access and maintenance compound, located the compound on the southern side of the railway. Following further technical assessment it became apparent that locating the compound on the northern side would provide a less constrained access for large vehicles. This location was used in 2001/02 for the work to re-open Portbury Freight Line.	Following engagement with the land owner, the compound design has been taken forward on land north of the railway.

Table 10.2: Summary of alternatives considered for specific scheme elements

Option Description	Option Consideration	Outcome
Avon Gorge Line Speed	Initial technical work identified a need for the line speed through the Avon Gorge to be increased from the existing 30 mph to 55 mph, in order to provide sufficient capacity to operate the half hourly passenger train service and accommodate the existing freight train operations. During GRIP 3 more detailed technical work identified that a lower line speed increase to 50 mph would be sufficient. Following the value engineering of the DCO Scheme in 2017, it has been decided to keep the speed to 30 mph, which results in the need for less engineering and hence lower costs.	The GRIP 3 engineering design drawings and deliverables are based on a 30 mph line speed through the Avon Gorge.
Ashton Vale Road highway access	During the development of the outline design of the half hourly services, it became apparent that the traffic impact of the increased operation of the Ashton Vale Road highway level crossing would be severe, with the barriers being down for up to 20 minutes each hour. In March 2016, the project undertook a micro consultation entailing six options for alternative access to the neighbouring industrial estate. Further technical work was undertaken, and consultation on three options was carried out in November 2016. A pedestrian and cycle ramp was also proposed, linked Aston Vale Road with Aston Road, providing alternative connecting pedestrian and cycle routes. However, it has since been determined that for an hourly or hourly service plus, the level crossing can remain in situ as the barrier down time is unlikely to exceed 4 minutes, per cycle. Alternative highway access is no longer required.	The November 2016 consultation resulted in support for two of the three highway options. However, these are not required for the revised scheme, so have been removed. The level crossing will remain operational. The equipment may be replaced, but no alterations will be undertaken to the level crossing itself. To reduce highway impacts from the more frequent barrier down times, the left-hand queuing lane from Winterstoke Road will be extended and the traffic signals optimised. The new pedestrian and cycle ramp remains part of the scheme and will provide an alternative route for NMUs when the level crossing is closed.

SECTION 11

Summary of Assessment

11.1 Introduction

This Option Assessment Report, Step 8 of the Transport Appraisal Process, documents the Stage 1 process of identifying the need for intervention and the process for option development and selection. This final section identifies the better performing options to be taken forward for further, more detailed appraisal, in Stage 2. It satisfies the final requirement of Step 8: Prepare an Option Assessment Report.

11.2 Better Performing Options

The previous sections details the alternatives that have been considered for different scheme elements. Technical work and consultation has resulted in the identification of the better performing options for:

- Portishead station location
- Portishead and Pill station platform length
- Portishead station design development
- Trinity Primary School Footbridge
- Sheepway Gate Farm – closure of accommodation crossings
- National Cycle Network ("NCN") & bridleway Portishead to Pill
- Pill station
- Pill Tunnel Eastern Portal Compound
- Avon Gorge Line Speed
- Ashton Vale Road highway access

Within these better performing options, it is recognised that more detailed design and technical work will still be required to ensure the development of the best performing scheme overall.

The Preliminary Business Case (September 2014) considered a lower cost option at a high level. The option comprised rebuilding a short section of the disused line from Pill to the M5 Junction 19, where a park and ride station could be built, rather than re-opening the dis-used line to Portishead. The main advantage of this option is cost savings. However, it does not fully address the scheme objectives. As set out in section 10.2, in essence the deduced scope of MetroWest Phase 1 (with an hourly or hourly service plus for the Portishead Branch Line) is in effect the delivery of the scheme Lower Cost Option (revised version since the preliminary Business Case 2014 version).

The former lower cost option would not connect Portishead town directly to the national rail network, thus not providing direct access to the rail network for an additional 50,000 people. This would mean the full range of social and economic advantages afforded by a direct rail connection for the residents, businesses and visitors of Portishead, would not be realised. Most users would have to inter-change at the park and ride station, as the residential walking catchment near J19 of the M5 would be almost non-existent. Access to the station at Junction 19 would be limited to car users and possibly feeder bus services. The scheme would result in some undesirable social distributional impacts. Given these fundamental disadvantages, this lower cost option was not developed further.

11.2.1 Formal Stage 2 Consultation

The second round of formal consultation on the Portishead Branch Line Proposals is seeking comment from the public on the scheme, split into sections by location:

- Section 1: Portishead to Royal Portbury Dock
- Section 2: Royal Portbury Dock to east of M5 (Pill)
- Section 3: Pill to Ham Green
- Section 4: Ham Green to Avon Gorge North
- Section 5: Avon Gorge North to Bower Ashton
- Section 6: Bower Ashton to Ashton Vale

The consultation includes a summary of the proposals, including the identification of changes that will be required during construction. The responses will be considered, and where appropriate, changes to the DCO scheme will be made.

Appendix A
EAST assessment

MetroWest Phase 1- EAST Appraisal

Prepared for
West of England

July 2014

CH2MHILL®
Burderop Park
Swindon
SN4 0QD

+44 (0)1793 812479
+44 (0)1793 812089

Contents

Section **Page**

Appendixes

Tables

Figures

SECTION 1

1 Introduction

1.1 What is MetroWest?

MetroWest (formerly known as the Greater Bristol Metro) is an ambitious programme that will transform the provision of local rail services across the West of England. MetroWest comprises of a range of projects from relatively large schemes - entailing both infrastructure and service enhancement - to smaller scale projects. MetroWest is being jointly promoted and developed by the four West of England councils (Bath & North East Somerset, Bristol City, North Somerset and South Gloucestershire Councils).

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 will deliver an enhanced local rail offer for the sub-region comprising:

- Existing and disused rail corridors feeding into Bristol
- Broadly half-hourly service frequency (but some variations possible pending business case)
- Cross-Bristol service patterns for example, Bath to Severn Beach
- A Metro-type service appropriate for a city region of 1 million population.

The programme includes:

- MetroWest Phase 1 – Half-hourly local service for the Severn Beach line, Bath to Bristol line and a reopened Portishead line with stations at Portishead and Pill
- MetroWest Phase 2 - Half-hourly service for the Yate to Bristol line and an hourly service for a reopened Henbury line, with stations at Henbury, North Filton, and possibly Ashley Down and Horfield
- Further additional station openings, subject to separate business cases
- Other potential enhancements including the feasibility of extending electrification across the West of England network

The MetroWest programme is to be delivered over the next five to ten years during Network Rail Control Period (CP) 5 (CP5 is 2014-2019) and 6 (CP6 is 2019-2014). The MetroWest programme will also extend the benefits of strategic transport interventions that are either in the process of being delivered or have been delivered by the West of England councils. These include the three MetroBus schemes (Ashton Vale to Temple Meads, South Bristol Link and North Fringe to Hengrove Package), Bath Package, Weston Package and the Local Sustainable Travel Fund programme. The delivery of these projects, together with the MetroWest programme, will result in better modal integration between rail, bus and active modes, providing an important step towards seamless modal transfer at key hubs across the West of England.

The MetroWest programme has the full backing of the West of England Local Enterprise Partnership (LEP). The LEP together and the four councils' Executive Members for Transport, who collectively make up the West of England Joint Transport Board, has determined that MetroWest Phase 1 and Phase 2 are its highest priorities for devolved DfT (Department for Transport) funding.

Figure 1.1 provides an overview of the MetroWest Phase 1 proposed train services.

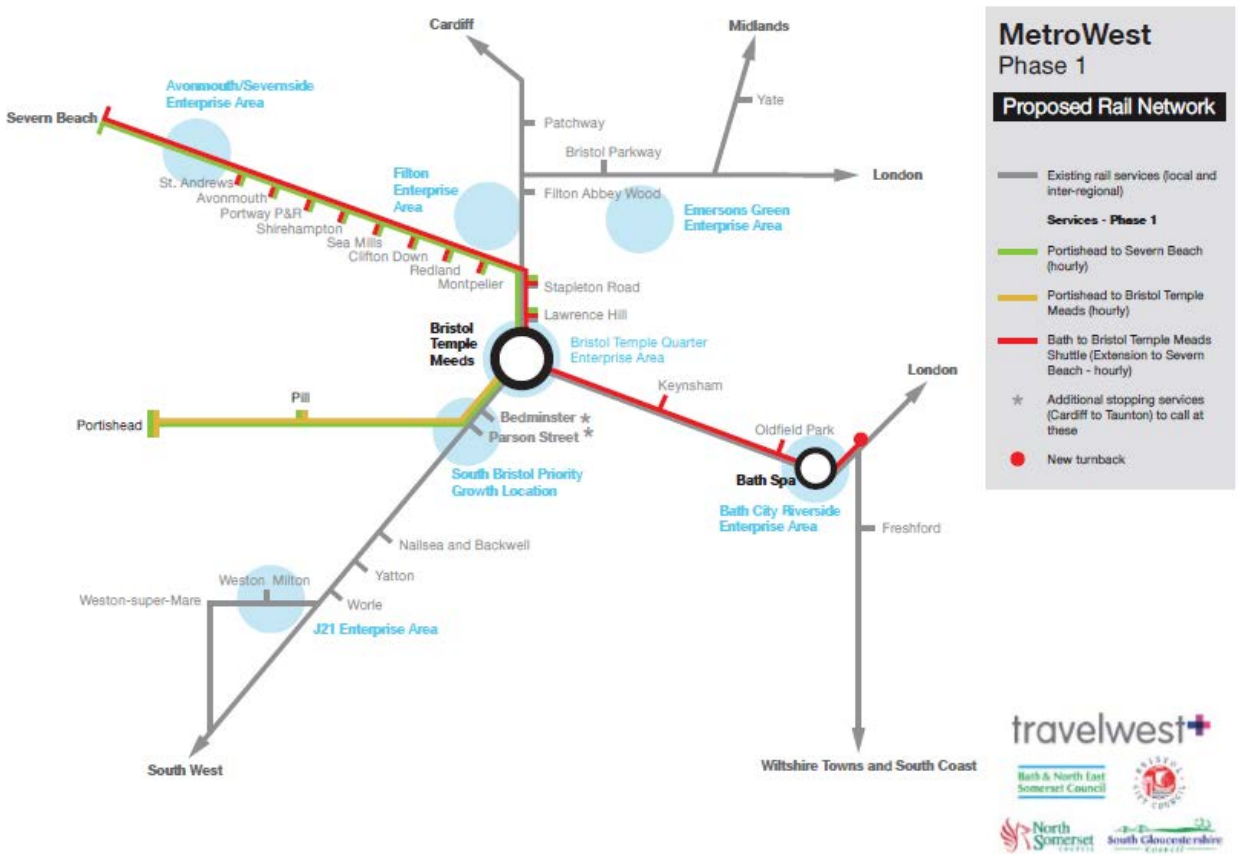


Figure 1.1: Overview of the MetroWest Phase 1 proposed train services

The West of England councils have recognised the strategic importance of the train service network to the local economy for many years. The West of England area enjoys a good network of long-distance train services. However, the local train network is underdeveloped and underutilised, in comparison with other city regions of a similar size. MetroWest fills this strategic gap and will enable the four councils and the West of England LEP to realise the strategic potential for the local rail network to play a bigger role in meeting the transport needs of the sub-region. MetroWest also complements committed investment planned by the rail industry during Control Period 5 (2014 to 2019) including electrification of the Great Western line and the Intercity Express Programme, projects which will address network bottlenecks and renewal projects.

MetroWest (formerly known as the Greater Bristol Metro) is included in the current Joint Local Transport Plan, covering the period 2011-2026 and all of the local authorities' Core Strategies.

The West of England councils and Network Rail have undertaken a considerable number of feasibility studies on MetroWest in its current and former guises. These work-steams are summarised in Figure 2.2.

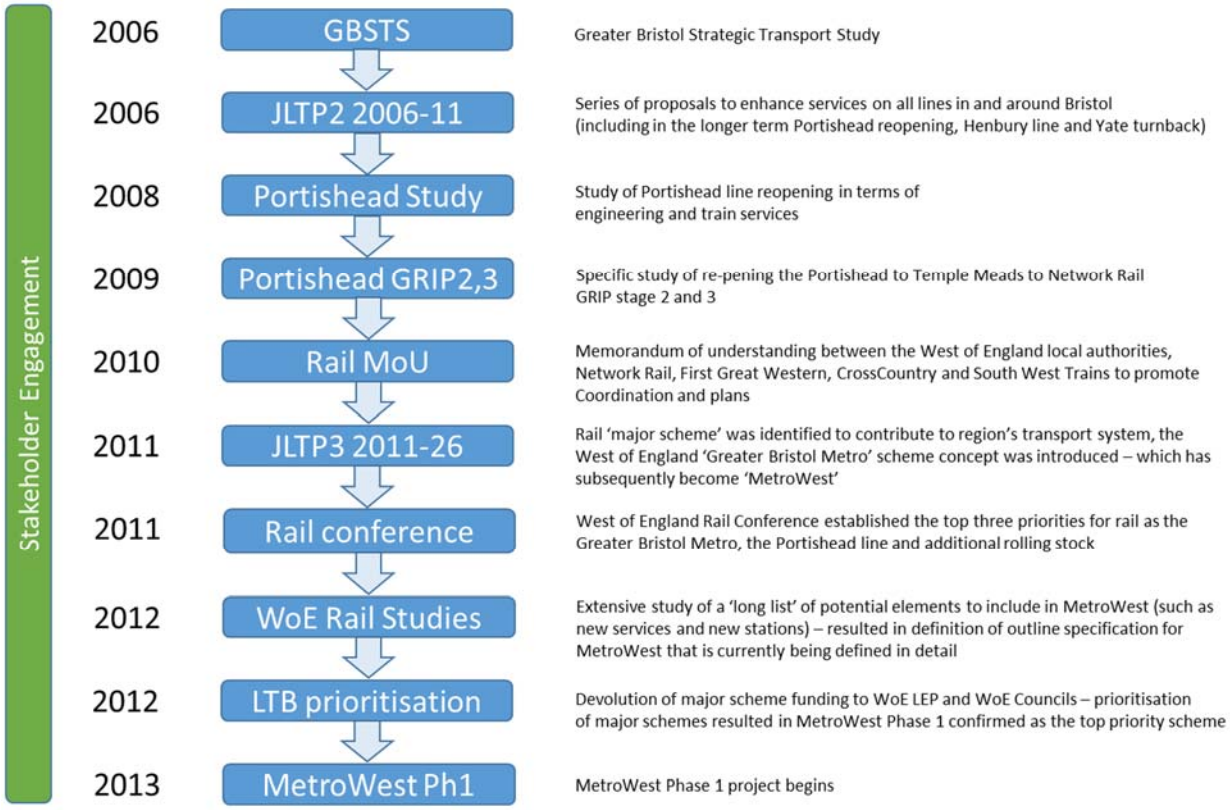


Figure 2.2: Summary of work-streams that have informed the MetroWest Phase 1 project

The outcome of this previous work is that MetroWest Phase 1 is now well-positioned to be taken forward. In summary, MetroWest Phase 1 has:

- Full backing across all four West of England authorities, including funding for project development
- A robust policy context
- A body of feasibility work and evidence
- Full backing of the rail industry to be taken forward alongside committed CP5 schemes
- An agreed output specification
- Endorsement as a priority scheme from the West of England LEP
- Endorsement by the West of England Local Transport Body Board (now the Joint Transport Board) as the top priority scheme for devolved major scheme funding, subject to business case approval

The programme has four key stages:

1. Option development (including GRIP 1-2) - Summer 2013 to Summer 2014
2. Scheme case (including GRIP 3) - Summer 2014 to Winter 2015-16
3. Planning powers and procurement (including GRIP 4-5) - Winter 2015/16 to Autumn 2017
4. Construction and opening (including GRIP 6-8) - Autumn 2017 to Spring 2019

1.2 Business case requirements

The Local Transport Body Board, LTBB (now the Joint Transport Board) for the West of England now has responsibility for allocating funds (which are awarded to them by the DfT) for major transport schemes. The delivery of MetroWest will, therefore, rely on funding from the LTBB.

A process to assess schemes has been set out, which includes production of business cases at key points, followed by the LTBB Independent Reviewer[1]'s review.

MetroWest Phase 1 is targeting a project opening date of May 2019. A series of business cases are to be prepared and submitted to the LTBB:

- Preliminary (Strategic Outline) Business Case – to be submitted to the LTBB in September 2014
- Outline Business Case – to be submitted in October 2015
- Full Business Case - to be submitted in October 2017

The assessment process is based on the DfT's WebTAG, drawing on elements of WebTAG that are relevant to the level of detail required by each of the business cases in turn. Successful submission of each business case is required to proceed to subsequent stages of development.

1.3 EAST assessment

The DfT's Early Assessment Sifting Tool (EAST) is a defined step in the appraisal process set out in WebTAG. It is a decision support tool that has been developed to 'quickly summarise and present evidence on options in a clear and consistent format'.

Figure 1.3 illustrates the WebTAG appraisal process. The EAST process is the sixth step in the appraisal process and hence builds on the previous five steps:

- Understanding the current situation
- Understanding the future situation
- Establishing the need for intervention
- Identifying objectives and defining geographic area of impact
- Generating options for consideration.

An overview of these five steps is set out in Sections 2 and 3 of this report.

[1] Steer Davies Gleave (SDG) has been appointed the West of England LTBB's Independent Reviewer for major transport schemes.]

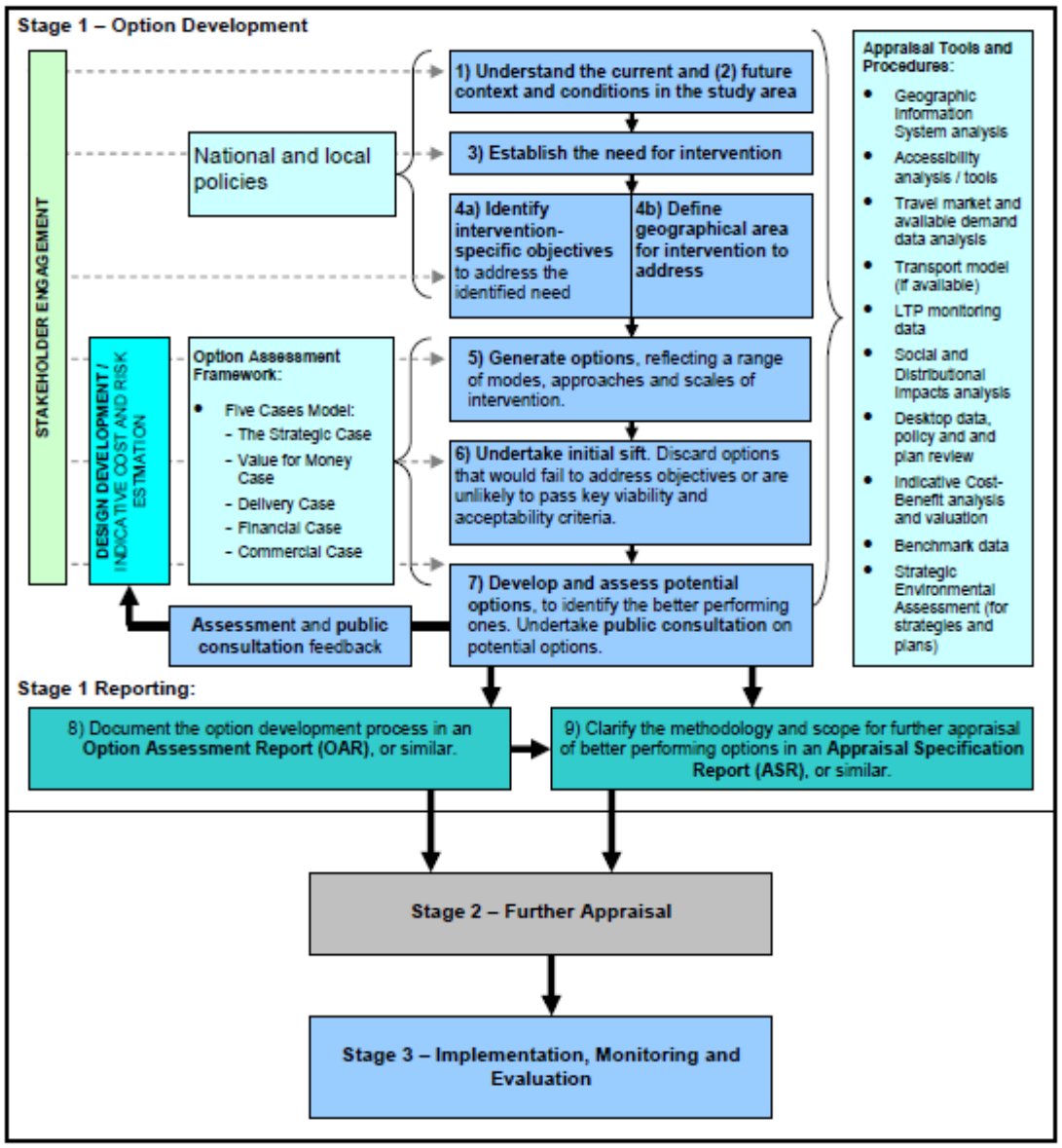


Figure 1.3: Outline of the WebTAG appraisal process

1.4 Purpose and structure of this report

The purpose of this report is to document work undertaken to assess MetroWest Phase 1 options EAST framework and provide information of the appraisal and assessment steps prior to the EAST assessment. This report will inform the MetroWest Phase 1 Preliminary (Strategic Outline) Business Case.

The question of the 'need for the scheme' has been considered at two levels:

- Macro level - the scheme is compared with other Major Schemes in the West of England (see Section 2)
- Mode-specific level - considering rail matters in more detail (see Section 3)

The EAST assessment is set out in Section 4 of this report.

SECTION 2

2 The context and need for MetroWest Phase 1

2.1 Introduction

This section sets out the context of the current and future situations and considers the need for the intervention. It considers transport by all modes across the West of England area. More detailed rail issues are reported in section 3.

2.2 Understanding the current transport situation

2.2.1 Current transport and other policies

The Joint Local Transport Plan 3 (JLTP3) 2011-2026 is a joint plan which covers Bristol City Council, Bath & North East Somerset, North Somerset and South Gloucestershire Council areas. The principal aims and objectives are to reduce CO2, provide support to the economy, and to improve quality of life and environmental conditions. It also includes a number of associated documents on various transport topic areas such as cycling, rural transport and public transport.

The JLTP3 vision is to provide an "affordable, low carbon, accessible, integrated, efficient and reliable transport network to achieve a more competitive economy and better connected, more active and healthy communities."

The JLTP3 aims to deliver:

- "A transport system that recognises the whole journey. Where cycle routes and footways feed into the public transport network
- A transport system where both bus and rail play their part. Where buses serve the movements around and within towns, cities and rural communities. Where rail serves both short and longer journeys
- Where marketing, through ticketing, timetable coordination and interchanges make public transport more desirable than the private car
- Where customer satisfaction is the driver behind encouraging public transport use
- Whilst recognising the car will still provide personal mobility for many."

2.2.2 Current travel demand

The West of England city region has a population of over 1 million. Table 2.1, derived from the national and local data sources, gives an indication of how people travel. It shows that the car is by far the dominant mode and just 1.5 per cent of all journeys to work are by rail. However, there has been 44 per cent growth from 2004 to 2008 in rail demand in the West of England.

TABLE 2.1
2013 Mode Split

Mode	Mode share
Car driver	46.6%
Walk	17.1%
Bus	6.3%
Car passenger	13.1%
Cycle	13.8%
Train	3.2%

An overview of the transport networks is shown in Figure 2.1.

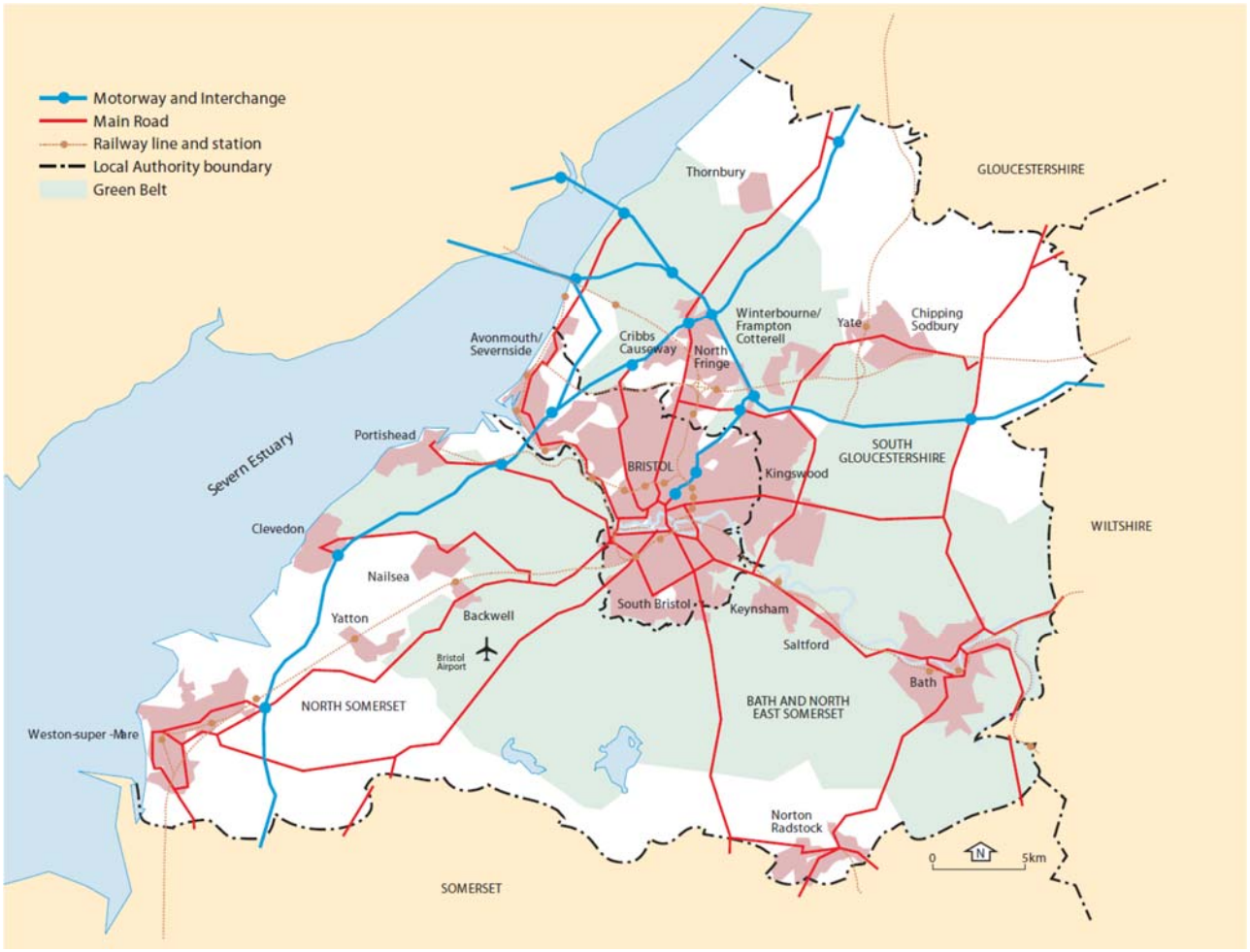


Figure 2.1 - An overview of the transport networks (source: LTP3)

2.2.3 Current transport opportunities and constraints

Current transport-related problems include:

- Lack of real alternatives to the car for some residents and businesses in the West of England (for example, Portishead and cross-Bristol trips.

- Areas of multiple deprivation for example, Weston-super-Mare and in north-western parts of Bristol (alongside the Severn Beach line).
- Poor transport network resilience. Incidents and accidents on the national and local highway network can ripple and cause disruption to the normal operation of the network elsewhere. Furthermore, there is a need to provide real alternatives to single occupancy car-based travel to address the long-term reliance on the car, and enable the local economy to continue to grow.
- Poor air quality in areas of Bristol and Bath.
- Congestion on West of England local and strategic road networks.

The transport problems, coupled with the need to encourage economic growth, have been considered by the West of England LTBB, to shape determining proposals to provide medium- to long-term benefits for the people, businesses and residents of the West of England. As part of this, a process of assessing and prioritising major local transport schemes was undertaken in June 2013.

2.3 Understanding the future situation

2.3.1 Future land uses and policies

Metro Phase 1 forms an important part of the West of England's economic growth agenda, led by the LEP. The West of England LEP's economic development strategy is being driven by its Strategic Economic Plan (SEP), submitted to Government in March 2014. The SEP and the City Region Deal (CRD) provide the framework for unlocking growth across the West of England. The SEP and the CRD will deliver significant growth at the following locations (see section 3.2.1 for more details):

- Bristol Temple Quarter Enterprise Zone and new arena
- Bath City Riverside Enterprise Area
- J21 Enterprise Area (Weston-super-Mare)
- Emersons Green/Science Park Enterprise Area via Bristol Parkway
- Filton Enterprise Area
- Avonmouth Severnside Enterprise Area

2.3.2 Changes to the West of England transport system

As part of the JTLP3 transport vision (see Figure 6.1 in the JLTP3), the MetroWest Phase 1 complements and integrates with the West of England transport programme, including:

- MetroBus (bus rapid transit) including Ashton Vale to Temple Meads, South Bristol Link and North Fringe to Hengrove Package)
- Bath package, bus network enhancements
- Weston package, multi-modal package of enhancements including J21 of the M5
- Better Bus Area fund
- Cycle City Ambition Grant
- Local sustainable transport fund
- Local pinch-point fund

2.3.3 Future travel demands

The Temple Quarter Enterprise Zone, centred around Bristol Temple Meads station, aims to create 17,000 new jobs with 4,000 by 2017. It is anticipated that a large proportion of employees will come to work by train.

Network Rail is assuming over 40 per cent growth in passengers at Bristol Temple Meads over the 10 years to 2020-21.

Similarly the five Enterprise Areas including Bath City Riverside (9,000 jobs), J21/Weston-super-Mare Gateway (9,000) and Avonmouth Severnside Enterprise Area (6,000 to 12,000,000), are all well located to make use of the rail network. MetroWest Phase 1 will provide a key interface for increasing access to major employment areas. For major employers, it will increase the catchment pool of the skilled workforce within a short (half an hour) journey to work.

2.4 The need for transport intervention

The primary highway corridors into and across Bristol, Bath and the surrounding towns are congested and continued traffic growth threatens the future economic prosperity of the sub-region. Over the last 10 years the volume of people using the rail network in the West of England had doubled. As transport demand increases, there is a need to ensure the rail network has sufficient capacity to cater for this demand as part of an integrated approach to managing the transport network. MetroWest Phase 1 will complement the rail industry's substantial programme of investment to the Western Route for Control Period 5 (2014-19).

The West of England's current share of national economic growth (GVA) is the highest of any core city region at 3.1%. The overall vision is to build on this economic growth through a range of interventions including improving access to major employment sites for the skilled workforce. The city region is also set for further population growth which is expected to exceed 1.1 million by 2026. Planning for this growth means the city region needs to make sure its transport infrastructure is not only fit-for-purpose, but has the ability to respond to increasing demand and, therefore, maximise potential for continued economic growth.

Strategic investment in transport infrastructure provides wider economic benefits. A recent West of England study found that every £1 invested in rail generates £2 benefits.

There is a public recognition of the need for intervention from a diverse range of stakeholders, including major employers and the wider business community through to community groups and local interest groups and campaigns.

2.4.1 Underlying causes

The underlying cause for the scheme is the excess of travel demand over available capacity which will be exacerbated with development. Without intervention, the local train network's contribution to meeting the transport needs of the sub-region will be limited. Furthermore, the local highway network is already congested in key areas. The overall impact would result in constraints to accessing employment opportunities which would restrict economic growth.

2.5 LTP and LEP objectives

From April 2015, the LTBB will manage major scheme funding to deliver high value for money transport schemes. These schemes will support the policies and objectives of the Joint Local Transport Plan 2011-26 and 'place' aspect of the LEP Vision.

The Vision for the West of England LEP is summarised as:

- Supporting growth
- Driving innovation
- Developing people

- Promoting business
- Creating a sense of place

The five key transport goals set out in the West of England Joint Local Transport Plan are:

- Reduce carbon emissions
- Support economic growth
- Promote accessibility
- Contribute to better safety, security and health
- Improve quality of life and a healthy natural environment

2.6 Options considered for major schemes

The West of England authorities recently undertook a process of assessment and prioritisation of more than 50 potential major local transport schemes. The outcome was reported to the LTTB in June 2013. MetroWest Phase 1 was ranked as the highest priority and is now on the Priority Programme for Devolved Major Schemes Funding.

SECTION 3

3 MetroWest Phase 1 – WebTAG Appraisal Stage 1 – Steps 1 to 5

3.1 Introduction

This section provides details of the current rail situation and optioneering relating to the MetroWest Phase 1 scheme options.

3.2 Understanding the current rail situation

3.2.1 Current policy framework

The MetroWest programme of improvements has been a long-standing aspiration of all of the West of England authorities and is identified in their Core Strategies. It therefore has an established and agreed policy context and complements the overarching development plans for the local area.

The MetroWest Phase 1 is identified in the JLTP3 (referenced as Greater Bristol Metro and Portishead line) as a future priority scheme following delivery of the current three bus rapid transit schemes and the Weston and Bath package.

This policy status is underpinned by technical work including:

- The Great Western Main Line Route Utilisation Strategy, March 2010 – this tested various options for the Greater Bristol Metro
- Portishead Line Reopening – GRIP Stage 2 and 3 – 2009 and 2010

A full review of the relevant local planning policies, as well as the JLTP, is provided in the MetroWest EIA (Environmental Impact Assessment) suite of documents.

3.2.2 Current rail demand and levels of service

Figure 2.2 shows a plan of the current railway provision in Bristol and surrounding area.

Figure 2.2 A plan of the current railway provision in Bristol and the surrounding area

The local rail network across the West of England is under-developed. Many local rail routes do not have a basic half hourly frequency in the peak and some routes terminate at Bristol Temple Meads rather than operating across the city region. There are some noteworthy deficiencies in the current service patterns. For example, the Bristol/Bath line has a half hourly service to London, yet the service pattern provided for intermediate stations (Keynsham and Oldfield Park) is approximately hourly. The Severn Beach line operates every 40 minutes to Avonmouth and only two hourly to Severn Beach.

Office of Rail Regulator (ORR) station usage information is shown in Table 2.2.

TABLE 2.2
ORR station usage information

Station Name	2012/13 Entries & Exits
TOTAL (stations in study area - 3)	**20,324,156**
BRISTOL MAIN STATIONS	
Bristol Temple Meads	9,099,368
Bristol Parkway	2,255,298
TOTAL	*11,354,666*
SEVERN BEACH LINE STATIONS	
Severn Beach	167,078
St.Andrew's Road	9,910
Avonmouth	97,880
Shirehampton	50,654
Sea Mills	58,310
Clifton Down	522,010

TABLE 2.2
ORR station usage information

Station Name	2012/13 Entries & Exits
Redland	94,984
Montpelier	126,316
TOTAL	*1,127,142*
OTHER BRISTOL URBAN STATIONS	
Stapleton Road	140,390
Lawrence Hill	124,878
Bedminster	80,262
Parson Street	87,932
TOTAL	*433,462*
BATH and NE SOMERSET URBAN STATIONS	
Bath Spa	5,757,880
Keynsham	329,274
Oldfield Park	281,622
TOTAL	*6,368,776*
SOUTH GLOUCESTERSHIRE STATIONS	
Yate	307,148
Patchway	82,198
Filton Abbey Wood	852,250
Pilning	*130*
TOTAL	*1,241,596*
NORTH SOMERSET STATIONS	
Nailsea and Backwell	421,892
Yatton	398,530
Worle	253,590
Weston Milton	48,008
Weston-super-Mare	1,037,172
TOTAL	*2,159,192*

3.2.3 Current rail opportunities and constraints

Key factors affecting Bristol rail services include:

- Lack of a standard, 'clock-face' half hourly service pattern across the local rail network
- Bottlenecks at key junctions and sections of the track
- Lack of capacity (particularly short formation rolling stock) and connectivity across the Bristol area
- Ageing signalling equipment
- Congestion at Bristol Temple Meads station

3.3 Understanding the future rail situation

3.3.1 Future changes to the rail network and operation

Network Rail's plans for Control Period 5 (CP5), which covers the period 2014 -19, includes delivery of £7.5 billion of rail investment via the Western Programme. This will become Europe's largest construction project, covering the London Paddington, Newbury, Oxford and Bristol lines. The CP5 works include a number of rail infrastructure schemes to enhance the capacity and capability of the rail network into Bristol:

- Electrification of the Great Western main line

- Additional platform at Bristol Parkway station
- Additional infrastructure between Bristol Parkway and Bristol Temple Meads (Filton Bank)
- Bristol Temple Meads additional platform and station capacity
- Renewal of Bristol area signalling
- Line speed improvements between Bristol Temple Meads and Taunton

The rail operational challenge needs to take account of:

- The significant growth predicted by the Great Western Route Utilisation Strategy (RUS) in passenger demand around Bristol for both long distance, high speed trains, specifically commuting to London and local, commuter and leisure travel.
- Freight growth predicted for Bristol port.

Electrification of the Great Western main line (expected completion 2017-18) will introduce enhanced services between London and Bristol, with potentially four trains per hour (two via Bath and two via Bristol Parkway). Although not a specific part of current plans, the West of England authorities are investigating extension of electrification to local rail lines.

The DfT Great Western specification consultation is currently being undertaken. The consultation sets out the scope of the new franchise and feedback on the proposals is being sought. The components of MetroWest Phase 1 are listed as potential third party promoted schemes in the report:

- Bristol – Portishead
- Additional half hourly services between Bristol and Bath
- Half hourly services on the Bristol – Severn Beach line

3.3.2 MetroWest Phase 2

MetroWest Phase 2 is programmed for delivery within two years of the opening of MetroWest Phase 1. Phase 2 will reintroduce passenger services on the existing Henbury freight line, provide new station(s) on Filton Bank, and increase service frequencies at Yate and Weston Milton. The interaction between Phase 1 and Phase 2 services on the Severn Beach Line is reported in Section 3.6.

3.3.3 Future rail demand

Demand for rail travel has grown significantly in recent years. For example, there has been an almost 70 per cent increase in passenger numbers through stations in the West of England area between 2004-05 and 2011-12 (based on ORR figures). There have been even larger increases on specific routes, such as more than a doubling of patronage on the Severn Beach line. Historic growth rates at groups of West of England stations are shown in Table 3.1 and Figure3.1. Apart from a slight levelling in 2007-08, growth has continued in spite of the economic recession, and seems likely to continue, albeit it is debatable whether rates may not be as high as recent times.

TABLE 3.1
ORR historic patronage growth in West of England area
2004-2012 figures

Station groupings	2010-11 to 2011-12	2009-10 to 2010-11	2004-05 to 2011-12	2004-05 to 2011-12
	per annum	per annum	TOTAL	per annum
Bristol main (Temple Meads and Parkway)	5.7%	6.1%	57%	6.6%

TABLE 3.1
ORR historic patronage growth in West of England area
2004-2012 figures

Station groupings	2010-11 to 2011-12	2009-10 to 2010-11	2004-05 to 2011-12	2004-05 to 2011-12
	per annum	per annum	TOTAL	per annum
Severn Beach Line	9.8%	18.9%	163%	14.8%
Other Bristol urban	8.7%	13.3%	142%	13.5%
B&NES (including Keynsham)	8.7%	9.3%	54%	6.4%
South Gloucestershire(excluding Parkway)	11.8%	13.2%	115%	11.5%
North Somerset	6.0%	10.9%	56%	6.5%
OVERALL	8.7%	10.9%	69%	7.8%[2]

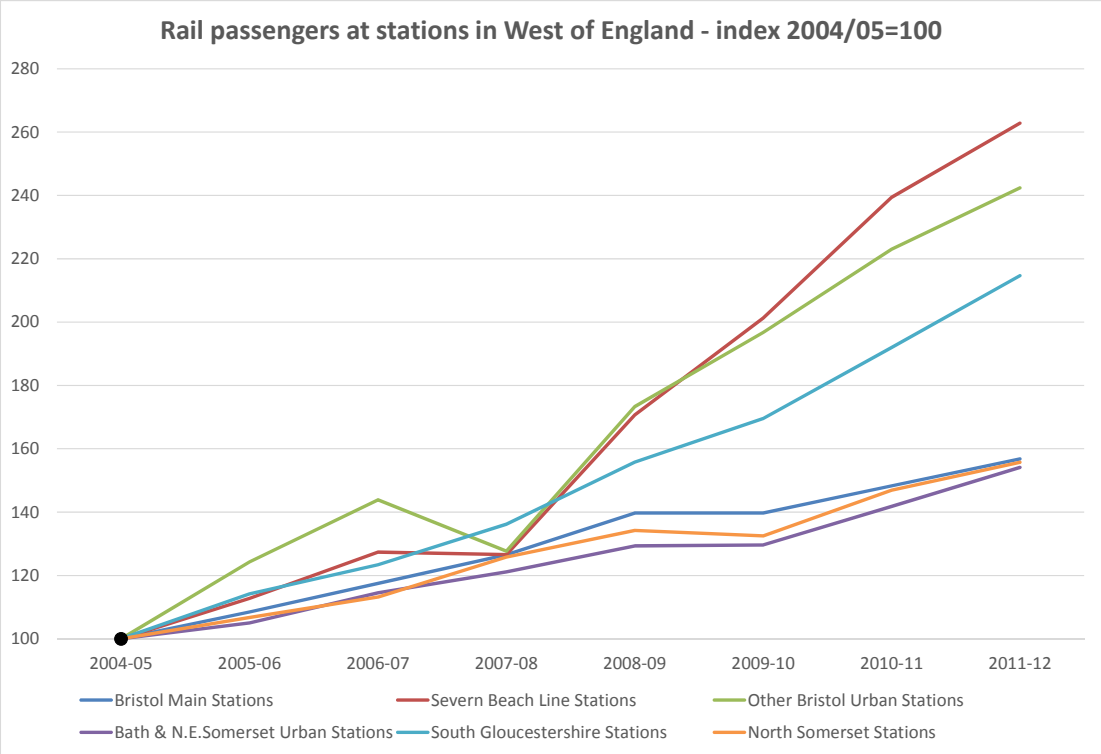


Figure 3-1: ORR historic growth in West of England area

Looking into the future, the Great Western Route Utilisation Strategy (RUS) (published in March 2010) forecasted that demand in the Bristol area would rise by 41 per cent at peak times between 2008 and 2019 (a rate of 3.2 per cent per annum), and 37 per cent off peak (2.9 per cent per annum), with an average growth rate of 3.0 per cent per annum.

The Long Term Planning Process (LTPP) Regional Urban Markets study (published by Network Rail in October 2013) uses a series of wider economic scenarios to frame changes in rail use, and forecasts are presented for rail use in and around key urban centres. The resulting growth rates for the Bristol area vary from 0.6 per cent per annum to 3.9 per cent per annum. More details of the LTPP growth rates are shown in Table 3.2.

[2] As a comparison, the West of England station survey showed a 6.5% per annum increase from 2005 to 2012

TABLE 3.2
Network Rail LTPP: Regional Urban Markets Study – Bristol area forecast growth
(October 2013)

Economic scenario	2013-23 total	2013-23 per annum	2023-2043 total	2023-2043 per annum
'Prosperity in isolation'	14%	1.3%	33%	1.4%
'Global stability'	47%	3.9%	44%	1.8%
'Struggling in isolation'	6%	0.6%	15%	0.7%
'Global turmoil'	35%	3.0%	21%	1.0%
AVERAGE	26%	2.3%	29%	1.3%

In spite of recorded growth in recent years, it is possible that these rates would not continue unabated in the long term. Therefore, a more robust approach is proposed for future year forecasts for West of England stations, based on a combination of decrementing historic rates, RUS and LTPP figures, as follows: [3]

- 2013 to 2017 – taper from recent historic growth rates at West of England stations (7.8% per annum) to RUS average of peak and off peak (3.0 per cent per annum)
- 2018 and 2019 – RUS average rate (3.0 per cent per annum)
- 2020 to 2023 – taper from RUS average rate (3.0 per cent per annum) to an LTPP average rate derived from the four economic scenarios (2.3 per cent per annum)
- 2023 to 2043 – taper from 2023 LTPP average rate (2.3 per cent per annum) to 2043 LTPP average rate (1.3 per cent per annum)

For appraisal purposes, demand would be assumed to level off after a period of growth. The point at which future growth is zero would be determined by opening year and prevailing assumptions surrounding the scenario being tested. WebTAG (revised unit A5-1) suggests 20 years' growth after opening should be assumed, with sensitivities of 10 and 30 years' growth.

3.4 The need for rail intervention

As demand on the transport network increases as a result of economic and population growth, further investment is needed to ensure the transport network is accessible and has enough capacity and resilience to continue to meet the sub-region's needs.

MetroWest Phase 1 complements planned CP5 investment through targeted investment in the West of England local rail network, to enhance the Severn Beach line, the Bath to Bristol line and reopen the Portishead to Bristol line. MetroWest Phase 1 will play a key role in enhancing access to major growth areas including Temple Quarter Enterprise Zone and five Enterprise Areas across the sub-region. The project will bring these major employment centres closer to the skilled workforce catchment, by simultaneously enhancing access to the local train network and increasing train service frequency. Major employers will have a larger skilled workforce pool to draw on within a 30 minute commute and this will play a part in removing barriers to inward investment.

The long-term trend of continued traffic growth threatens the West of England's economic prosperity; in response, the four West of England councils have developed the MetroWest programme as a key part of its integrated 'TravelWest' transport strategy. Key highway corridors into and across the city region are at or

[3] Given recent historic rates of growth of rail patronage, the forecast growth rates assumed can be considered comparatively conservative.

near capacity and average vehicle speeds are among the lowest for comparable city regions. The case for intervention to rebalance the transport network, through investment in the local rail network, is compelling.

3.5 Scheme-specific objectives and geographical area of impact

The principal business objectives of the MetroWest Phase 1 project are:

- To support economic growth, by enhancing the transport links to the Bristol Temple Quarter Enterprise Zone (TQEZ) and into and across Bristol City Centre, from the Portishead, Bath and Avonmouth/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/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
- To make a positive contribution to social wellbeing, life opportunities and improving quality of life, across the three arterial corridors

The MetroWest Phase 1 supporting objectives are:

- To contribute to reducing traffic congestion on the Portishead, Bath and Avonmouth/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
- To contribute to reducing the overall environmental impact of the transport network

The 2012 report by Atkins 'GVA Impacts of Major Transport Schemes' states that rail schemes (including MetroWest and the new stations package are forecast to unlock 2,550 jobs and will generate £153 million in GVA per annum by 2030. MetroWest will play an important role in bringing these major employment centres closer to the skilled workforce catchment, helping to remove barriers to inward investment. MetroWest is intended to plan for growth and make sure the city region's transport infrastructure has the ability to respond to increasing demand, to realise and maximise continued economic growth.

3.6 MetroWest Phase 1 option generation and descriptions

In the early stages of MetroWest Phase 1, the four Councils, Network Rail and the train operating companies held two optioneering workshops. These workshops identified the services and infrastructure required to meet a half hourly service pattern. They also considered current passenger demand characteristics and the known infrastructure constraints across the West of England rail network. This resulted in the identification of the following options:

- Option 1: Shuttles (base case)
- Option 2a and b: Portishead – Bath Spa and Severn Beach shuttle
- Option 3a and b: Portishead – Severn Beach and Bath shuttle
- Option 4a and b: Severn Beach – Bath Spa and Portishead shuttle
- Option 5a and b: Severn Beach to Bath and Severn Beach to Portishead (timetable proposed Halcrow)

- Option 6a and b: Portishead to Bath and Portishead to Severn Beach

These are described in Table 3.3.

TABLE 3.3
Option descriptions

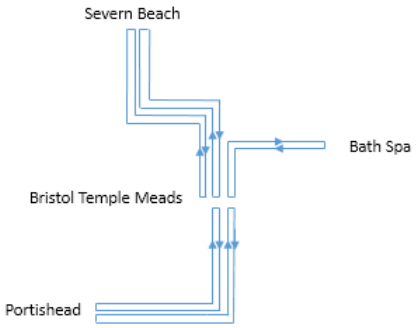
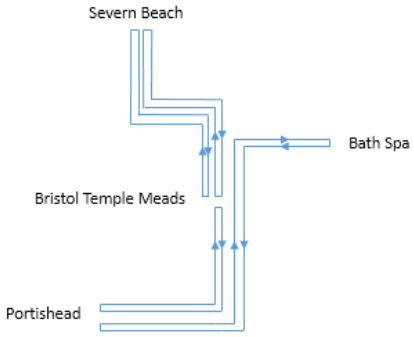
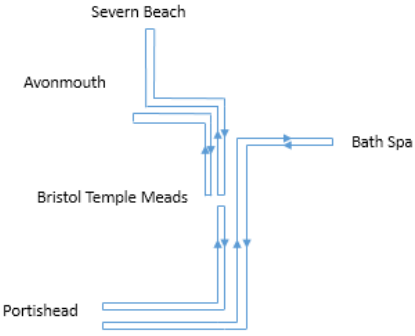
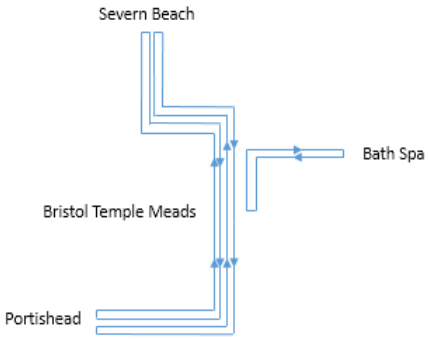
Option		Service pattern
Option 1: Shuttles (Base Case)		Metro services operate as shuttles: • 2tph (trains per hour) Severn Beach – Bristol Temple Meads (BTM) • 1tph Bath Spa – BTM • 2tph Portishead – Bristol Temple Meads (BTM) 1tph off peak
Option 2a: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads		Link Portishead to Bath Spa: • 2tph Severn Beach – BTM • 1tph Bath Spa – Portishead • 1tph Portishead – BTM (off peak)
Option 2b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads		Link Portishead to Bath Spa: • 1tph Severn Beach – BTM • 1tph Bath Spa – Portishead • 1tph Portishead – BTM • 1tph Avonmouth - BTM
Option 3a: Portishead to Severn Beach and Bath shuttle		Link Portishead to Severn Beach: • 2tph Severn Beach – Portishead (peak) • 1tph Bath Spa – BTM • This option is presented as an all day timetable without a peak variant

TABLE 3.3
Option descriptions

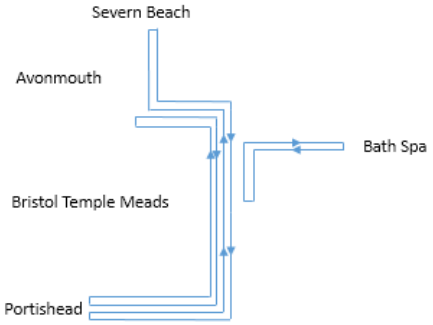
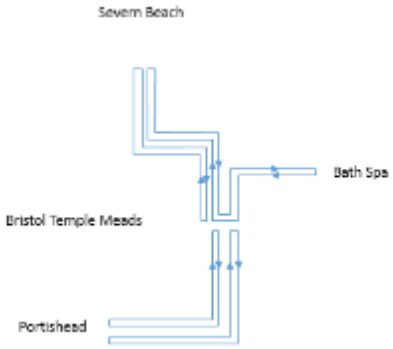
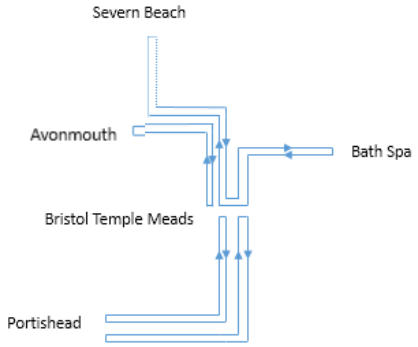
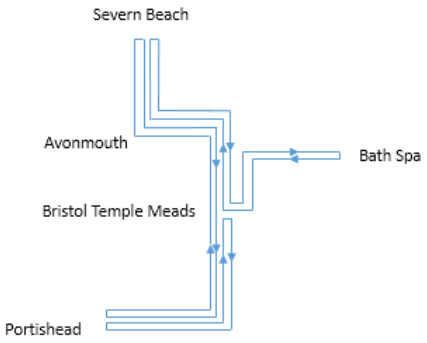
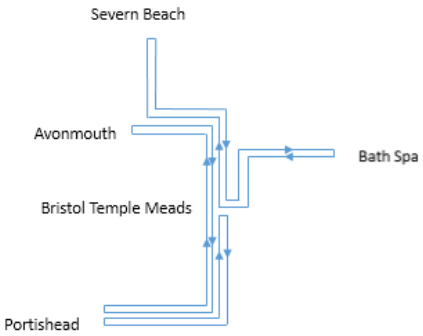
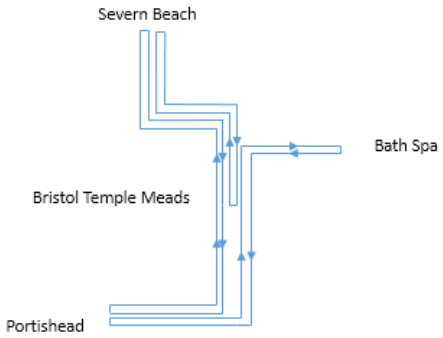
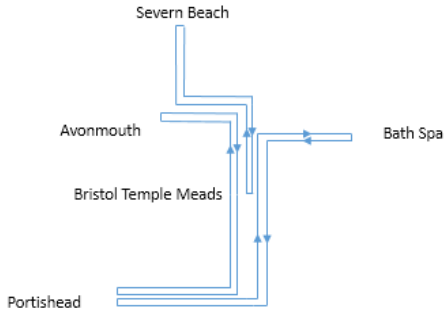
Option		Service pattern
Option 3b: Portishead to Severn Beach and Bath shuttle		Link Portishead to Severn Beach: • 1tph Severn Beach – Portishead • 1tph Bath Spa – BTM • 1tph Avonmouth – Portishead • This option is presented as an all day timetable without a peak variant
Option 4a: Severn Beach to Bath Spa and Portishead shuttle		Link Severn Beach to Bath Spa • 1tph Severn Beach – Bath Spa • 1tph Severn Beach – BTM • 2tph Portishead – BTM (1tph off peak)
Option 4b: Severn Beach to Bath Spa and Portishead shuttle		Link Severn Beach to Bath Spa • 1tph Severn Beach/Avonmouth – Bath Spa • 1tph Severn Beach/Avonmouth – BTM • (total of 1tph on Severn Beach Line) • 2tph Portishead – BTM
Option 5a: (timetable proposed by Halcrow): Severn Beach to Bath Spa and Portishead		Link Severn Beach – Bath Spa and Portishead • 1tph Severn Beach – Bath Spa • 1tph Severn Beach - Portishead • 1tph Portishead - BTM

TABLE 3.3
Option descriptions

Option		Service pattern
Option 5b: Severn Beach to Bath Spa and Portishead		Link Severn Beach – Bath Spa and Portishead • 1tph Severn Beach – Bath Spa • 1tph Portishead - Avonmouth • 1tph Portishead - BTM
Option 6a: Portishead to Severn Beach and Bath Spa and Severn Beach Shuttle		Link Portishead – Severn Beach and Bath Spa • 1tph Portishead – Bath Spa • 1tph Portishead – Severn Beach • 1tph Severn Beach - BTM
Option 6b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle		Link Portishead – Avonmouth and Bath Spa • 1tph Portishead – Bath Spa • 1tph Portishead - Avonmouth • 1tph Severn Beach - BTM

SECTION 4

4 MetroWest Phase 1 – WebTAG Appraisal Stage 1 – Steps 6 - EAST

4.1 Introduction

The DfT's Early Assessment Sifting Tool (EAST) is a defined step in the appraisal process set out in WebTAG. EAST is an early comparison of options and tools under consideration, prior to the more detailed appraisal which will provide recommendations for funding decisions.

DfT sets out that the EAST tool should be used to:

- Help refine options by highlighting adverse impact or unanticipated consequences
- Compare options, for example, within or across modes, geographical areas and networks
- Identify trade-offs between objectives, aiding package development
- Filter the number of options, discounting some options early to ease appraisal process and avoid resources being spent unnecessarily
- Identify key uncertainties in the analysis and areas where further appraisal efforts should focus

When undertaking an EAST appraisal, it is often at a very early stage in the scheme development work and therefore only high-level information is available. In this case, there is already a considerable amount of information for MetroWest Phase 1 (and some of its component parts, such as the reopening of the Portishead line).

Section 4 of this report sets out the results of the MetroWest Phase 1 EAST assessment for the scheme options detailed in Section 3.6, the EAST forms are set out in Appendix B.

4.2 Strategic Case

4.2.1 Scale of Impact

Table 4.1 shows the scale of the impact of the scheme options.

TABLE 4.1

Scale of impact

Response options are:

1 Very small overall impact -Would have a very small positive impact, possibly with undesirable consequences

2 Minor impact -Would have a modest overall impact

3 Moderate impact - Expected to have a reasonably significant impact on the problem identified

4 Significant impact - Expected to significantly alleviate the problem

5 Very significant impact - Expected to alleviate the problem

Option	EAST Response	Justification
Option 1: Shuttles (base case)	3 Moderate impact	The option results in benefits for trips to/from Bristol Temple Meads station from the new and enhanced routes. However the scheme option does not include a cross-Bristol service pattern, and this option would have lower demand than the other options. There is potential for an even service pattern on each route, which will result in additional demand (compared to uneven service patterns). This option has the negative impacts of increased passenger interchange at Bristol Temple Meads, which will have a resulting impact on station capacity.

TABLE 4.1

Scale of impact

Response options are:

1 Very small overall impact -Would have a very small positive impact, possibly with undesirable consequences

2 Minor impact -Would have a modest overall impact

3 Moderate impact - Expected to have a reasonably significant impact on the problem identified

4 Significant impact - Expected to significantly alleviate the problem

5 Very significant impact - Expected to alleviate the problem

Option	EAST Response	Justification
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	4 Significant impact	This option has the potential to reduce the rolling stock inefficiencies of the shuttle option, whilst also providing direct connectivity between Portishead and Bath Spa. The option also reduces the number of crossing moves at Bristol East Junction, and therefore may be better supported by the current layout. Of the cross Bristol connections, the Portishead to Bath connection would provide the second highest additional demand from the base case.
Option 3a/b: Portishead to Severn Beach and Bath shuttle	4 Significant impact	This option has the potential to reduce the inefficient rolling stock usage further (compared to options 1 and 2) by linking both of the 2tph required between Severn Beach and Portishead together. The option does not introduce additional crossing moves at Bristol East Junction. Of the cross Bristol connections, the Portishead to Severn Beach connection would provide the lowest additional demand from the base case (option 1).
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	4 Significant impact	This option would improve the rolling stock inefficiencies of the Bath Spa services operating as a shuttle by linking them to Severn Beach line. The option also potentially allows for the Portishead services to operate with 2tph even shuttles in the peak with the removal of 1tph in the off peak to reduce operational expenditure. This option would potentially have uneven frequencies. This option links the key demand between stations on the route so, of the cross Bristol connections, the Severn Beach to Bath connection would provide the highest additional demand from the base case. The connections to the Portishead line would be constrained by shuttle operations (for example, need to change at BTM).
Option 5a/b: Severn Beach to Bath Spa and Portishead	4 Significant impact	MetroWest Phase 1 routes linked, improving cross-Bristol connectivity. This option provides more effective use of rolling stock. Of the cross-Bristol connections, the Severn Beach to Bath connection would provide the highest additional demand from the base case, in addition to the Portishead to Severn Beach demand.
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle	4 Significant impact	This option potentially offers a more efficient use of platform capacity at Bristol Temple Meads when compared to option 1, 2 or 3. It also provides additional connectivity for Phase 1 services when compared to options 1-3. The option would result in less conflicting crossings at Bristol East Junction (Bath-Spa Portishead planned to cross at BWJ). Of the cross Bristol connections, the Portishead to Bath connection would provide the second highest additional demand from the base case, in addition to the Portishead to Severn Beach demand.

4.2.2 Fit with wider transport and government objectives

The scheme options are all seeking to address the same problems and meet the same objectives. The MetroWest business objectives are set out in section 3.5.

Table 4.2 shows how the scheme options fit with the wider transport and government objectives.

TABLE 4.2
Fit against wider transport and government objectives

Option	1. To support economic growth	2.To deliver a more resilient transport offer	3. To improve accessibility	4. To improve quality of life
Option 1: Shuttles (base case)	3Moderate Fit	3Moderate Fit	5 High Fit	5 High Fit
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	5 High Fit	5 High Fit	5 High Fit	5 High Fit
Option 3a/b: Portishead to Severn Beach and Bath shuttle	4 Moderate/High Fit	4 Moderate/High Fit	5 High Fit	5 High Fit
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	5 High Fit	5 High Fit	5 High Fit	5 High Fit
Option 5a/b: Severn Beach to Bath Spa and Portishead	5 High Fit	5 High Fit	5 High Fit	5 High Fit
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach Shuttle	5 High Fit	5 High Fit	5 High Fit	5 High Fit

4.2.3 Fit with other objectives

The MetroWest Phase 1 supporting objectives are set out in section 3.5. Table 4.3 shows the schemes fit against these objectives.

TABLE4.3
Fit against other objectives

Option	5. Reducing traffic congestion	6. Enhancing the capacity of the local rail network	7. Reducing the overall environmental impact
Option 1: Shuttles (base case)	3 Moderate Fit	4 Moderate/5 High Fit	3 Moderate Fit
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	4 Moderate/5 High Fit	4 Moderate/5 High Fit	4 Moderate/5 High Fit
Option 3a/b: Portishead to Severn Beach and Bath shuttle	4 Moderate/5 High Fit	4 Moderate/5 High Fit	4 Moderate/5 High Fit
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	4 Moderate/5 High Fit	4 Moderate/5 High Fit	4 Moderate/5 High Fit
Option 5a/b: Severn Beach to Bath Spa and Portishead	5 High Fit	4 Moderate/5 High Fit	4 Moderate/5 High Fit
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle-	5 High Fit	4 Moderate/5 High Fit	4 Moderate/5 High Fit

4.2.4 Key uncertainties

The key risks for the project are:

- Lack of sufficient devolved major scheme funding in the 4- and 10-year Comprehensive Spending Review allocations from April 2015 (identification of alternative sources of funding and/or reducing scope of the scheme and/or delaying implementation to match available funds)
- Possible lack of capacity in the base year 2019 timetables to accommodate the new MetroWest services

- Lack of sufficient resources to develop the projects through the GRIP (Guide to Rail Investment Process) requiring the identification of alternative sources of funding and/or reducing scope of the scheme and/or delaying implementation to match available funds
- Lack of public support for the preferred options (effective and ongoing public and stakeholder consultation, including sharing results of technical studies to inform all interested parties; provision of a communications officer for the rail programme), although it is noted that there is overall support for the scheme
- The potential need for additional works required at Avon Road, Portishead station and/or additional signal requirements.

Note, subsequent risk analysis has been undertaken as part of the GRIP 1 / 2. This work was not available when this EAST assessment was undertaken.

Key issues for the Business Case are:

- Deriving an acceptable timetable incorporating MetroWest Phase 1
- GRIP 1-2 construction cost estimates which are higher than anticipated
- Estimated train service subsidy – initial works shows this ranges from £400,000 to over £1.0 million per annum. Affordability is a significant issue for the councils
- Up to £44.9 million is available via DfT devolved funding up to 2021. A funding gap is likely but various options are being considered to fill a potential gap

In addition, Table 4.4 shows the option specific key uncertainties.

TABLE 4.4
Key uncertainties

Option	Key uncertainties
Option 1: Shuttles (base case)	The Network Rail initial 2013 analysis focused firstly on assessing shuttle services to and from Bristol Temple Meads in order to build up a timetable in the context of the updated assumptions. This analysis demonstrated that shuttle services are not preferred because: • They are inefficient in the use of the limited platform capacity at Bristol Temple Meads. • They are inefficient in terms of rolling stock unit numbers. • It proves difficult to deliver an even pattern for the MetroWest Phase 1 services.
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	It may prove difficult to achieve even service intervals on the Portishead and Bath Spa routes of MetroWest.
Option 3a/b: Portishead to Severn Beach and Bath shuttle	There are challenges to achieving an even service interval on the Severn Beach and Portishead routes. Significant performance risk is also inherent in linking these two routes with single lines.
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	This option increases the likelihood of requiring enhancements to Bristol East Junction, and presents performance risk because of additional crossing moves between the Bath Spa route and the Severn Beach route. It may also result in uneven intervals on the Severn Beach Line, limiting the level of service provision on the Severn Beach Line.
Option 5a/b: Severn Beach to Bath Spa and Portishead	Increased performance risk to services via Bath Spa if not using Bathampton turn-back (otherwise increases in operational expenditure).
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle	This option may result in uneven frequencies across all three routes potentially constraining the Severn Beach line's ability to achieve 2tph to Severn Beach. Also with all three routes linked together the potential impact on performance may be worse than Options 1-3. Option 6b has been developed to reduce the potential impact on performance and the operational costs.

More detailed construction issues are set out in section 4.4.5.

4.2.5 Degree of consensus over outcomes

Table 4.5 shows the degree of consensus about the scheme options.

TABLE 4.5

Degree of consensus over outcomes

Response options are:

1 Little or no consultation has taken place yet, or consultation has revealed a high level of disagreement about the scheme's ability to deliver the stated outcomes.

2 Little consultation and/or strong reasons to suggest the outcomes are controversial.

3 Some consultation has taken place with some agreement.

4 Wide consultation and broad agreement on the outcomes, with a possibility that one or two areas of disagreement remain.

5 Extensive consultation has taken place with a high degree of consensus on the outcomes.

Option	EAST Response	Justification
Option 1: Shuttles (base case)	3 Some agreement	Known support for rail schemes. The scale impact of this scheme option would mean it is likely to receive less support than other options. Limited connectivity.
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	4 Broad agreement of outcomes	Known support for rail schemes
Option 3a/b: Portishead to Severn Beach and Bath shuttle	4 Broad agreement of outcomes	Known support for rail schemes
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	4 Broad agreement of outcomes	Known support for rail schemes
Option 5a/b: Severn Beach to Bath Spa and Portishead	4 Broad agreement of outcomes	Known support for rail schemes
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle	4 Broad agreement of outcomes	Known support for rail schemes

4.2.6 Summary of strategic case

In summary, all scheme options are supported by a robust case for change that fits with wider public policy objectives. Thus all options have a 'strategic case'.

4.3 Economic Case

4.3.1 Economic growth

The West of England has a substantial economic growth agenda which is being developed through the Strategic Economic Plan. The SEP states that the region's current share of national economic growth (GVA) is the highest of any core city region at 3.1%. The overall vision is to build on this economic growth through a range of interventions including improving access to major employment sites for the skilled workforce catchment. The SEP notes that the population is expected to exceed 1.1 million by 2026.

Planning for this growth means the city region needs to make sure its transport infrastructure is not only fit for purpose, but has the ability to respond to increasing demand, and therefore maximise potential for continued economic growth. The modal share for journey to work within the Temple Quay Enterprise Zone is increasing rapidly; the recent TQEZ Transport Report (June 2012, Halcrow/CH2M HILL) forecasts that 15 per cent of trips to the Enterprise Zone will be by rail).

The Enterprise Areas are now becoming established and expected to be major trip generators. Rail will play a significant part in meeting this demand (see Table 4.6).

TABLE 4.6

Enterprise Zone and Enterprise Areas

Enterprise Zone/Area	Jobs	Rail Schemes
Bristol Temple Quarter Enterprise Zone and new arena	17,000	MetroWest Phase 1 and 2 New stations package Portway platform
Bath City Riverside Enterprise Area	9,000	MetroWest Phase 1 New stations package
J21 Enterprise Area (Weston-super-Mare)	9,000	MetroWest Phase 1 and 2
Emersons Green/Science Park Enterprise Area via Bristol Parkway	4,000 to 7,000	MetroWest Phase 2
Filton Enterprise Area	7,000 to 12,000	MetroWest Phase 2
Avonmouth Severnside Enterprise Area	6,000 to 12,000	MetroWest Phase 1 and 2
South Bristol priority growth location	10,400	MetroWest Phase 1

Source: West of England Response to the Great Western Franchise, updated using info from the SEP

As Table 4.7 shows, a considerable number of new homes and jobs are planned in the West of England area to 2029. Table 4.8 indicates those major housing areas directly served or with potential for rail links.

TABLE 4.7

Planned housing and employment growth in the West of England

Council	Homes	Jobs	Core Strategy Period
Bath & North East Somerset*	13,000	10,300	2011- 2029
Bristol City	32,800	21,900	2011- 2026
North Somerset*	17,130	14,000**	2006- 2026
South Gloucestershire	28,355	18,600-21,870	2006 - 2027
All	91,285	68,070	

Source: West of England Response to the Great Western Franchise, updated using info from the SEP

*Proposed figures and subject to local plan examinations ongoing 2014.

** Homes updated February 2014 but job figures to be revised.

TABLE 4.8

Major new housing areas served by rail schemes

Housing Area	Homes	Rail Schemes
Cribbs Patchway New Neighbourhood	5,700	MetroWest Phase 2 (Henbury Line)
	50 ha employment land	
North Yate	3,000	MetroWest Phase 2
Somerdale (former Cadbury site at Keynsham)	700	MetroWest Phase 1
Weston-super-Mare	11,000	MetroWest Phase 1 and 2

Source: Core Strategies. Housing area figures are included in the Core Strategies.

The Atkins report 'Unlocking Our Potential: The Economic Benefits of Transport Investment in the West of England' November 2012 found that MetroWest would deliver some 2,500 jobs. MetroWest, therefore, has significant benefits in bringing forward private sector investment.

TABLE 4.9

Economic growth

Option	Impact to end-to-end journey time (JT)	Impact to cost of travel (time and money)	Impact to transport reliability and resilience	Impact to accidents	Impact to new housing/ employment development	Wider economic impacts	Accessibility changes	Improved connectivity to central business districts	Overall RAG (red-amber-green)
Option 1: Shuttles (base case)	New rail journey opportunities associated with new stations at Pill/Portishead. Removal of car trips will result in overall JT savings on highway network.	Reduction	Improvement	Reduction, as reduction in highway trips	Scheme supports housing growth	Slight positive impact	New accessibility options provided by enhancing the West of England public transport network	Yes	Amber/Green
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	Same as Option 1 plus JT savings between Portishead and Bath Spa	Significant reduction	Significant improvement						Green
Option 3a/b: Portishead to Severn Beach and Bath shuttle	Same as Option 1 plus JT savings between Portishead and Severn Beach	Significant reduction	Significant improvement						Green
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	Same as Option 1 plus JT savings between Severn Beach and Bath Spa	Significant reduction	Significant improvement						Green
Option 5a/b: Severn Beach to Bath Spa and Portishead	Same as Option 3 + Option 4	Significant reduction	Significant improvement						Green
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle	Same as Option 2 + Option 4	Significant reduction	Significant improvement						Green

4.3.2 Carbon emissions

Scheme options will have an impact on carbon emissions but, until detailed transport assessment work is undertaken, it is not possible to fully differentiate between option. The impacts of the scheme options are:

- Reduction in the volume of non-public transport trips, due to mode switch from car to rail
- Increase in public transport services resulting in a reduction in car mileage
- Decongestion benefits
- Shift from low to high occupancy vehicles
- Construction works
- No impact associated with the use of lower carbon fuel
- No impact associated with a change in fuel efficiency, however scheme makes passive provision for electrification
- Reduction in overall emissions, due to an overall reduction in fuel consumption.

The RAG assessment for carbon is Amber/Green- for Option 1 and green for Option 2,3,4,5 and 6.

4.3.3 Socio-distributional and regional impacts

Table 4.10 shows the schemes socio-distributional and regional impacts. Information about the social composition of the area is provided in:

- Figure 4.1: Population aged under 16
- Figure 4.2: Population aged 16-25
- Figure 4.3: Population aged 70 and over
- Figure 4.4: Population claiming Disability Living Allowance (DLA)
- Figure 4.5: Population claiming Jobseeker's Allowance (JSA)
- Figure 4.6: Black and minority ethnic (BME) population
- Figure 4.7: Households with no car
- Figure 4.8: Indices of Deprivation – Income
- Figure 4.9: Indices of Deprivation

Data is displayed at Super Output Areas (SOA) level and identifies the top 20 per cent SOAs in the West of England for that data theme.

Figures 4.1-4.8 have been considered in determining the socio-distributional impacts of the scheme options.

TABLE 4.10
Socio-distributional and regional impacts

Option	Social distributional impact	Regeneration	Regional imbalance	Overall RAG
option 1: Shuttles (base case)	Potential benefits on the Severn Beach line for those on JSA, and young people in Bath, and older people in Portishead	The scheme links into the Temple Quarter Enterprise Zone. The scheme will increase the catchment of skilled labour in a commutable distance	Not relevant	Green/amber
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	Same as option 1, but greater benefits to Portishead corridor.			Green/amber
Option 3a/b: Portishead to Severn Beach and Bath shuttle	Similar to option 1			Green/amber
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	Same as Option 1, but greater benefits to Severn Beach corridor.			Green/amber
Option 5a/b: Severn Beach to Bath Spa and Portishead	Similar to Option 4			Green/amber
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle-	Similar to Option 2			Green/amber
Option 6b: Portishead – Avonmouth and Bath Spa	Similar to Option 2			Green/amber

Figure 4.1: Socio-demographics: population aged under 16

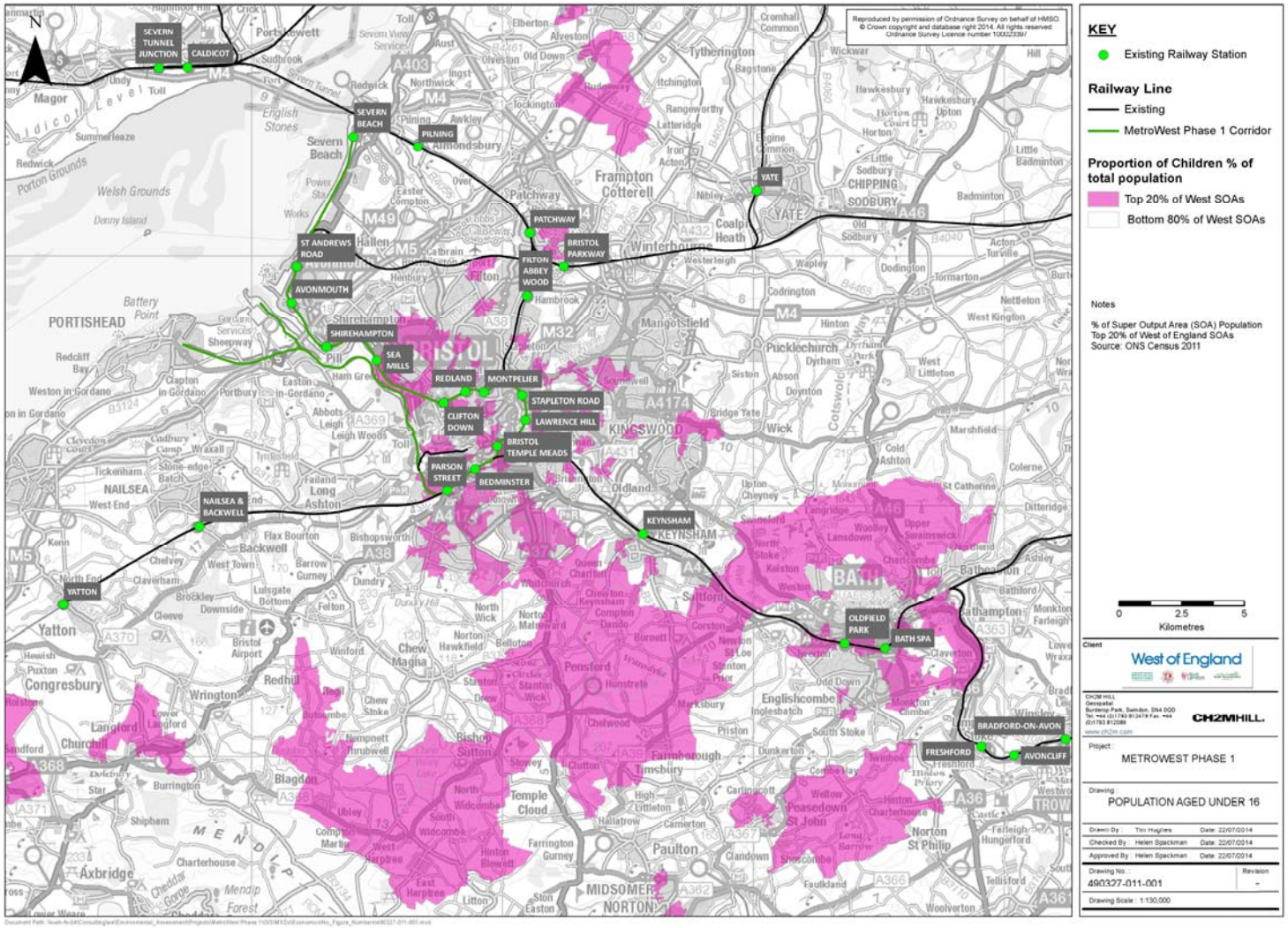


Figure 4.2: Socio-demographics: population aged 16-25

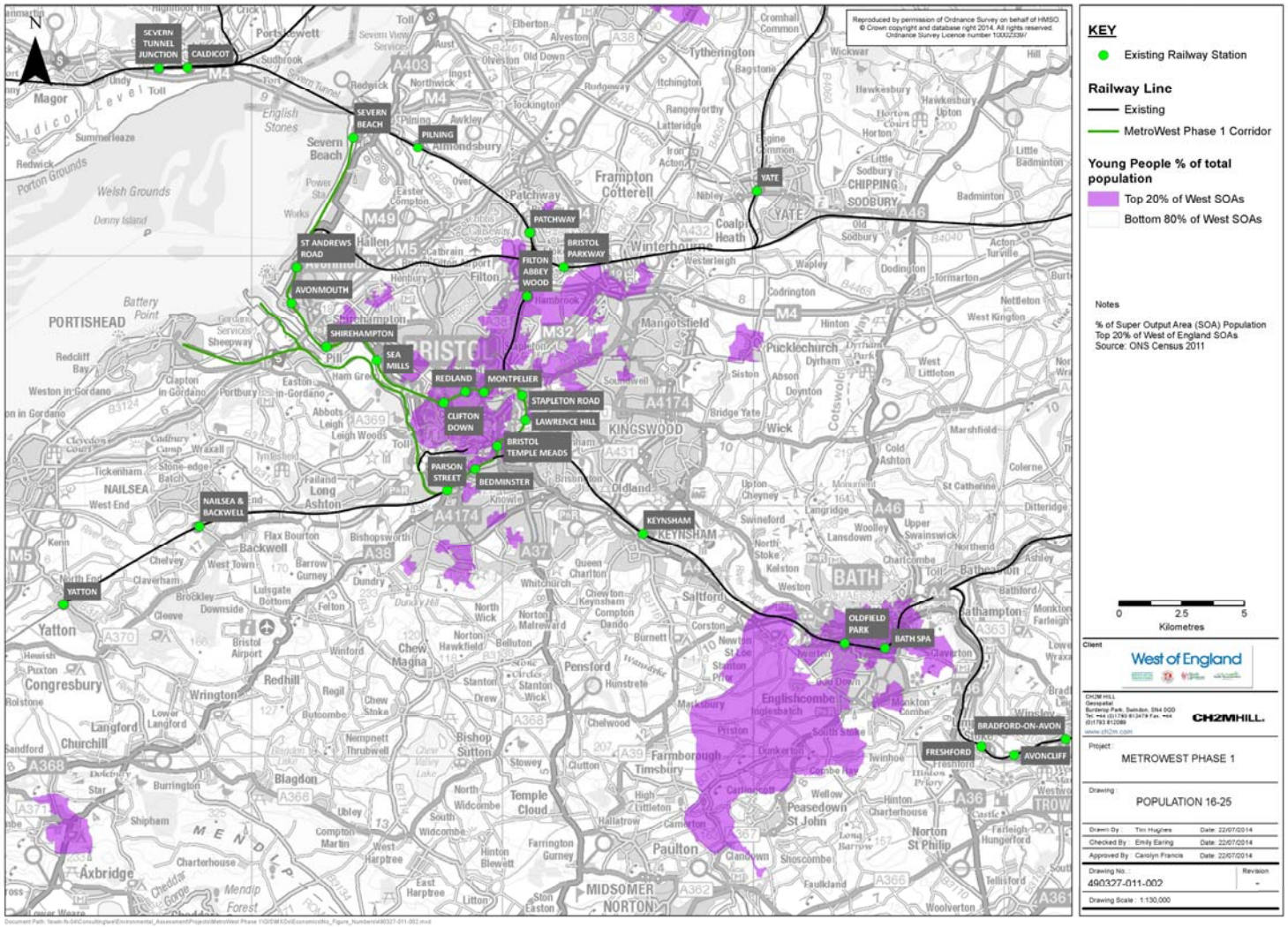


Figure 4.3: Socio-demographics: population over 70

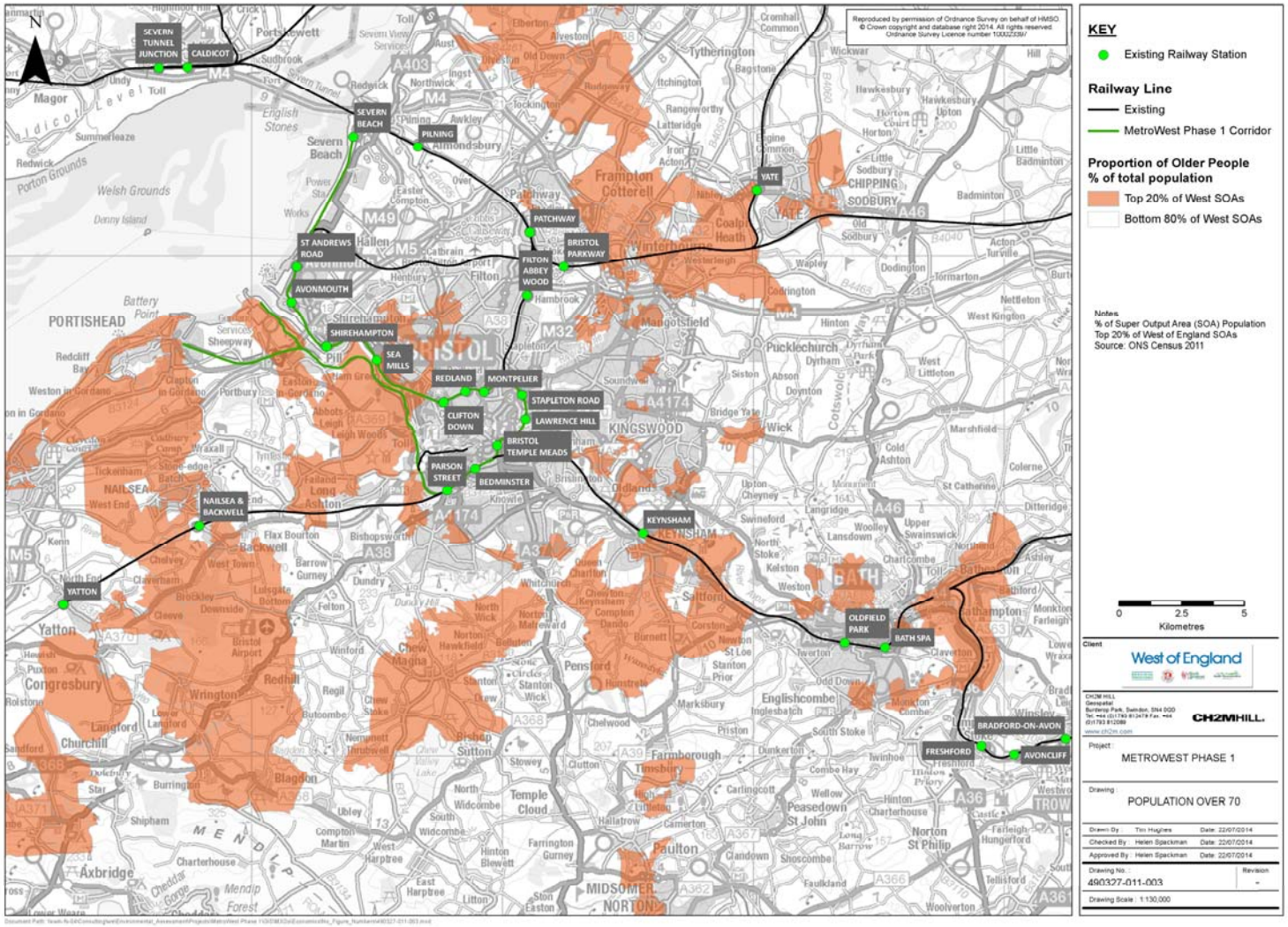


Figure 4.4: Socio-demographics: Disability Living Allowance claimants

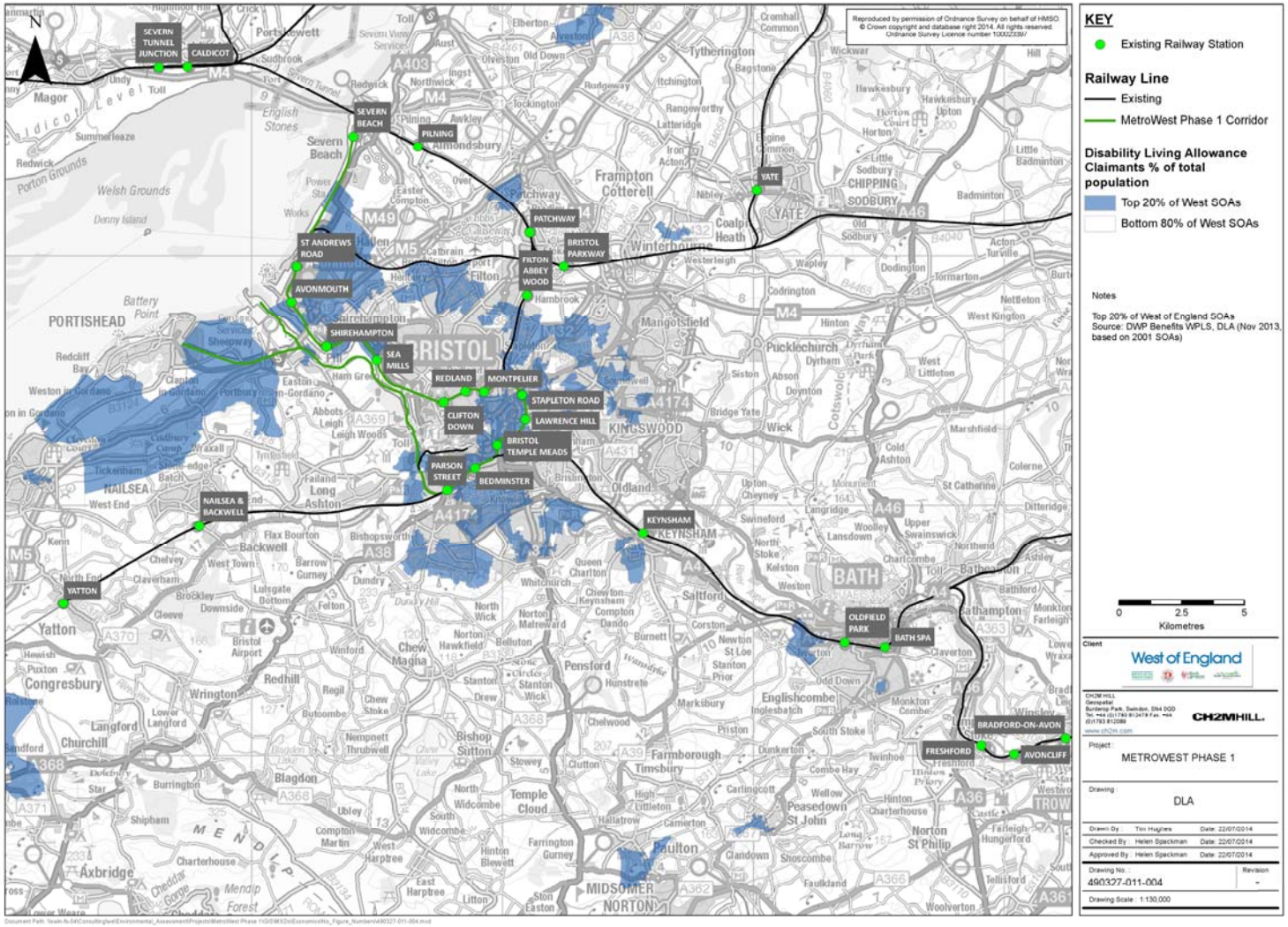


Figure 4.5: Socio-demographics: Job Seeker's Allowance claimants

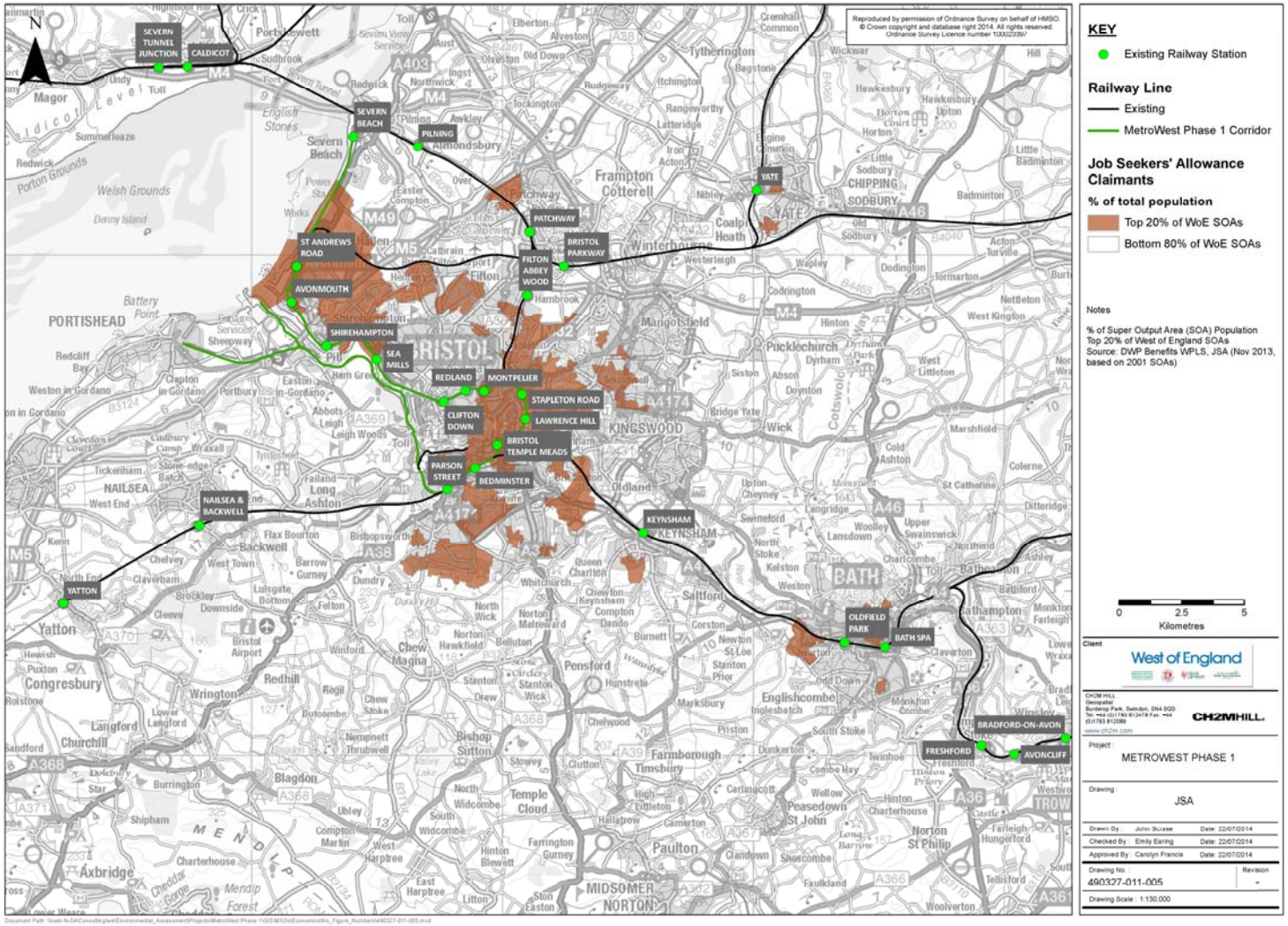


Figure 4.6: Socio-demographics: black and minority ethnic population

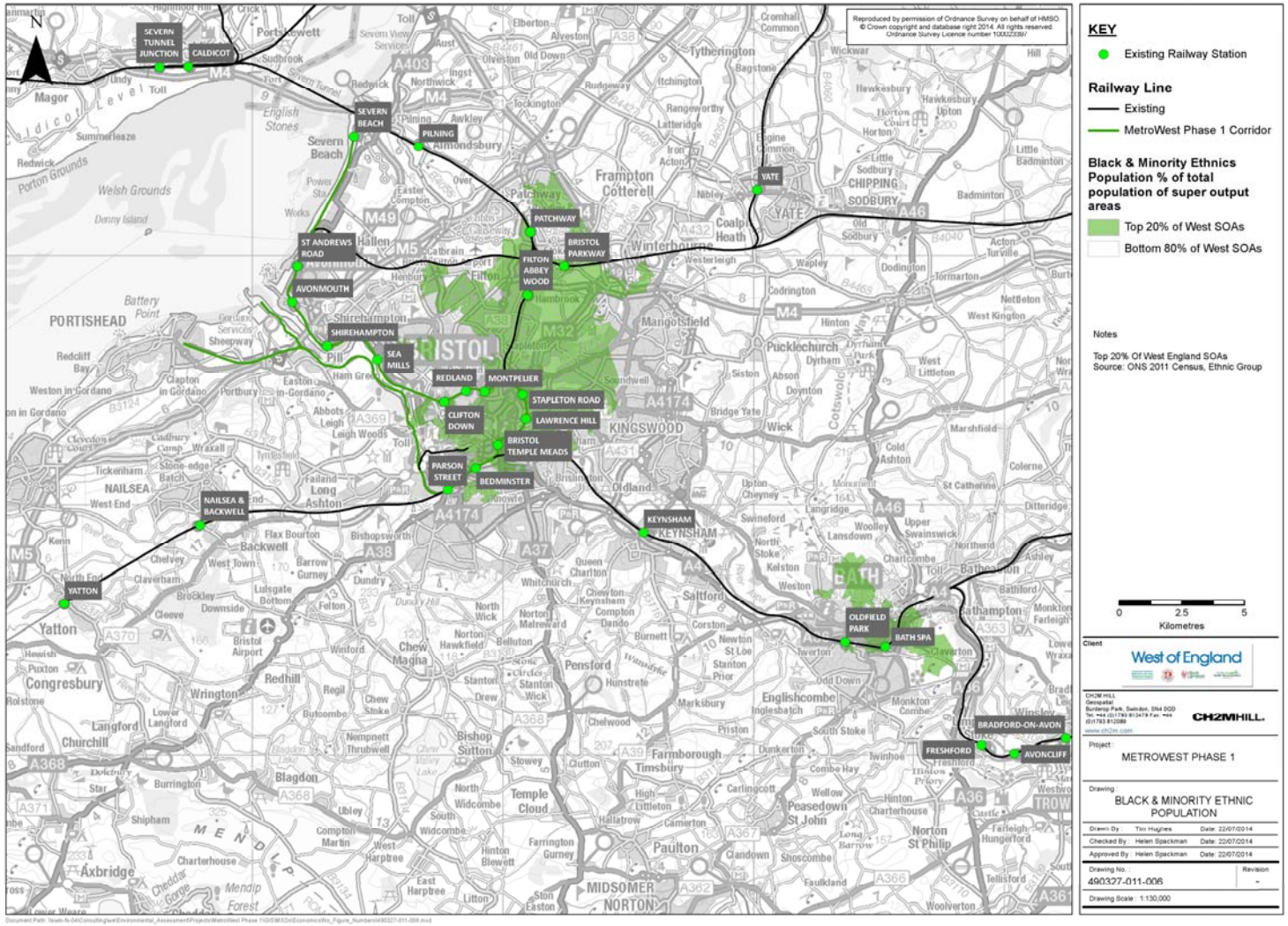


Figure 4.7: Socio-demographics: households with no car

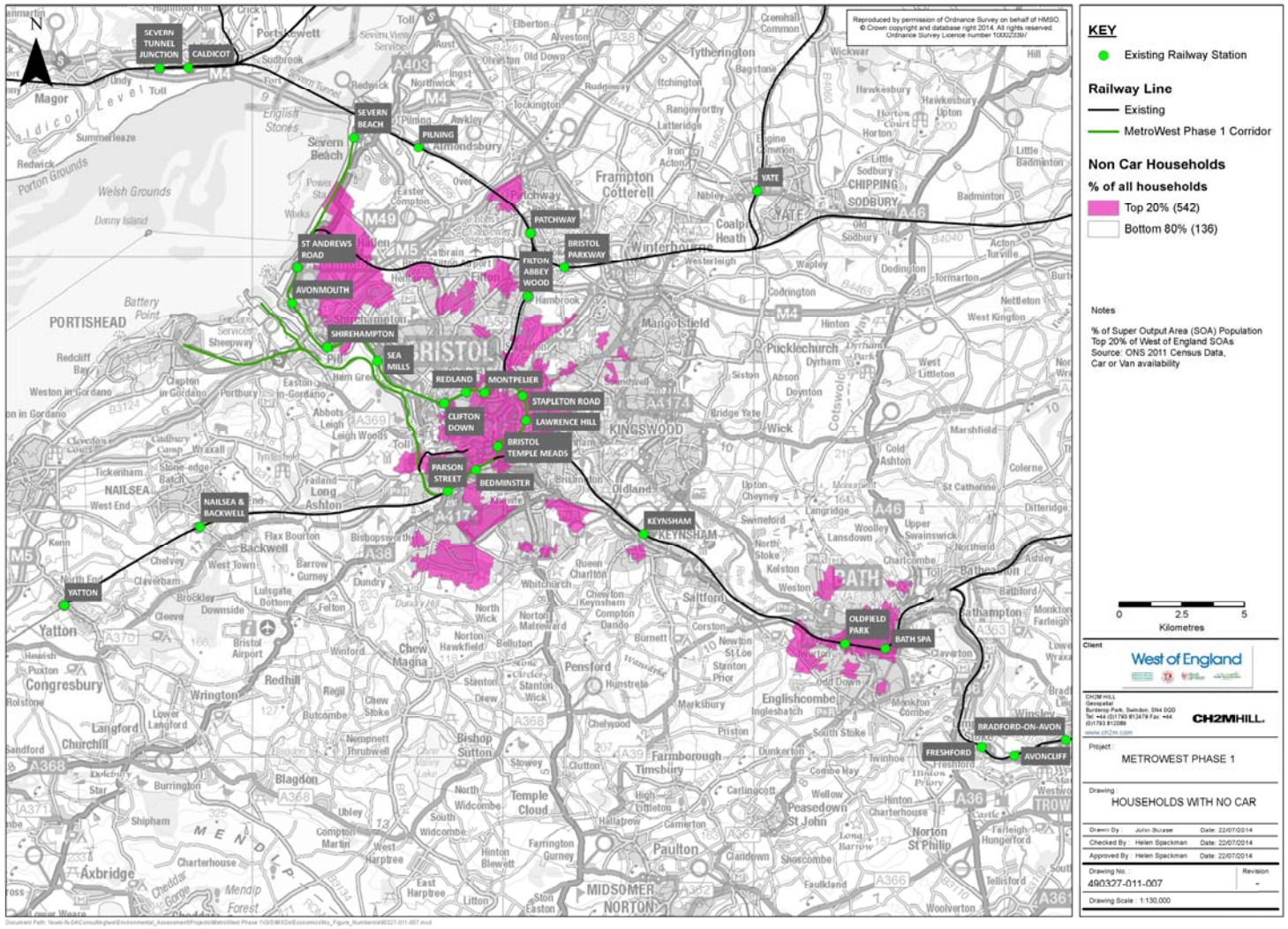


Figure 4.8: Socio-demographics: Income deprivation

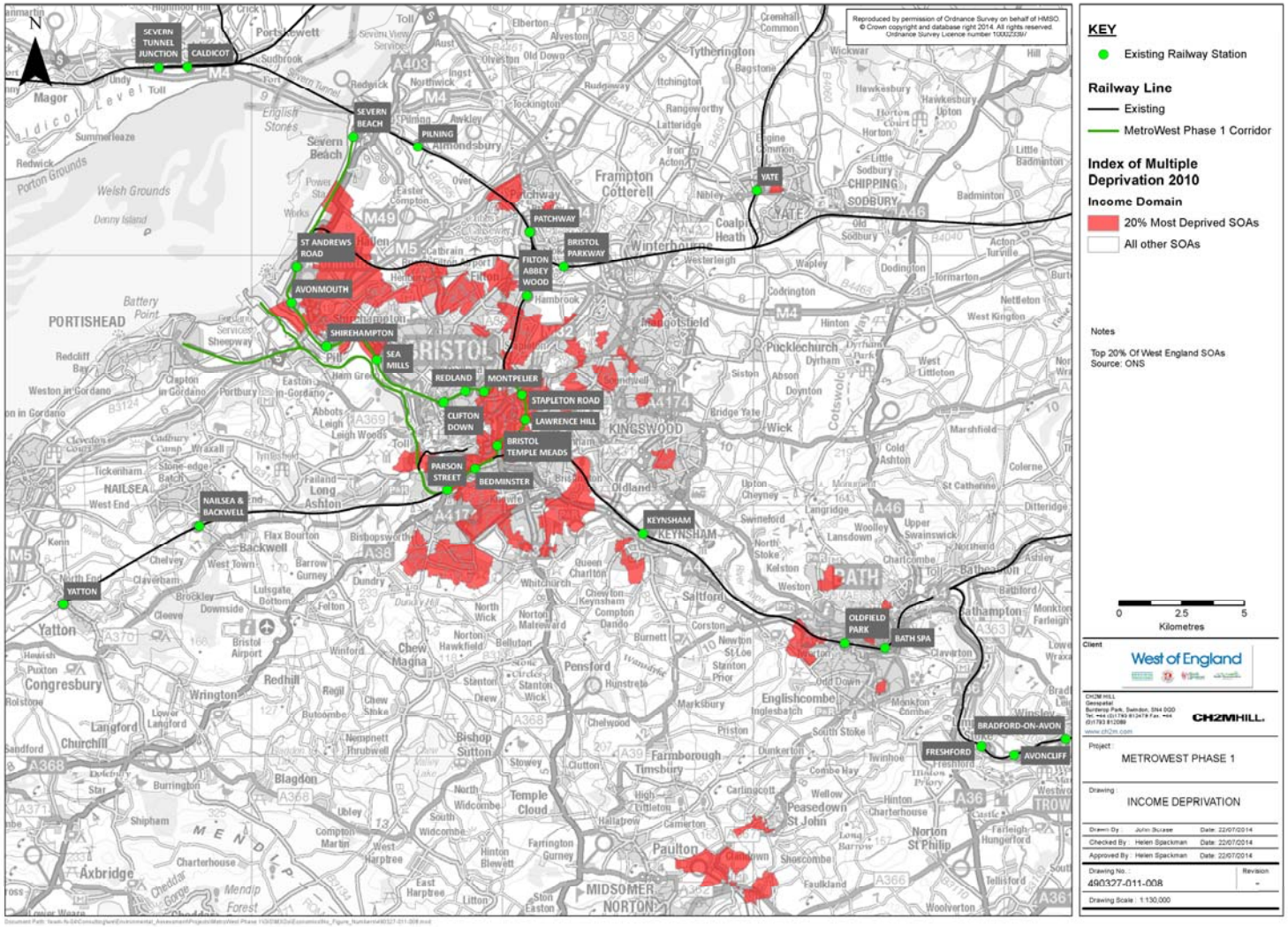
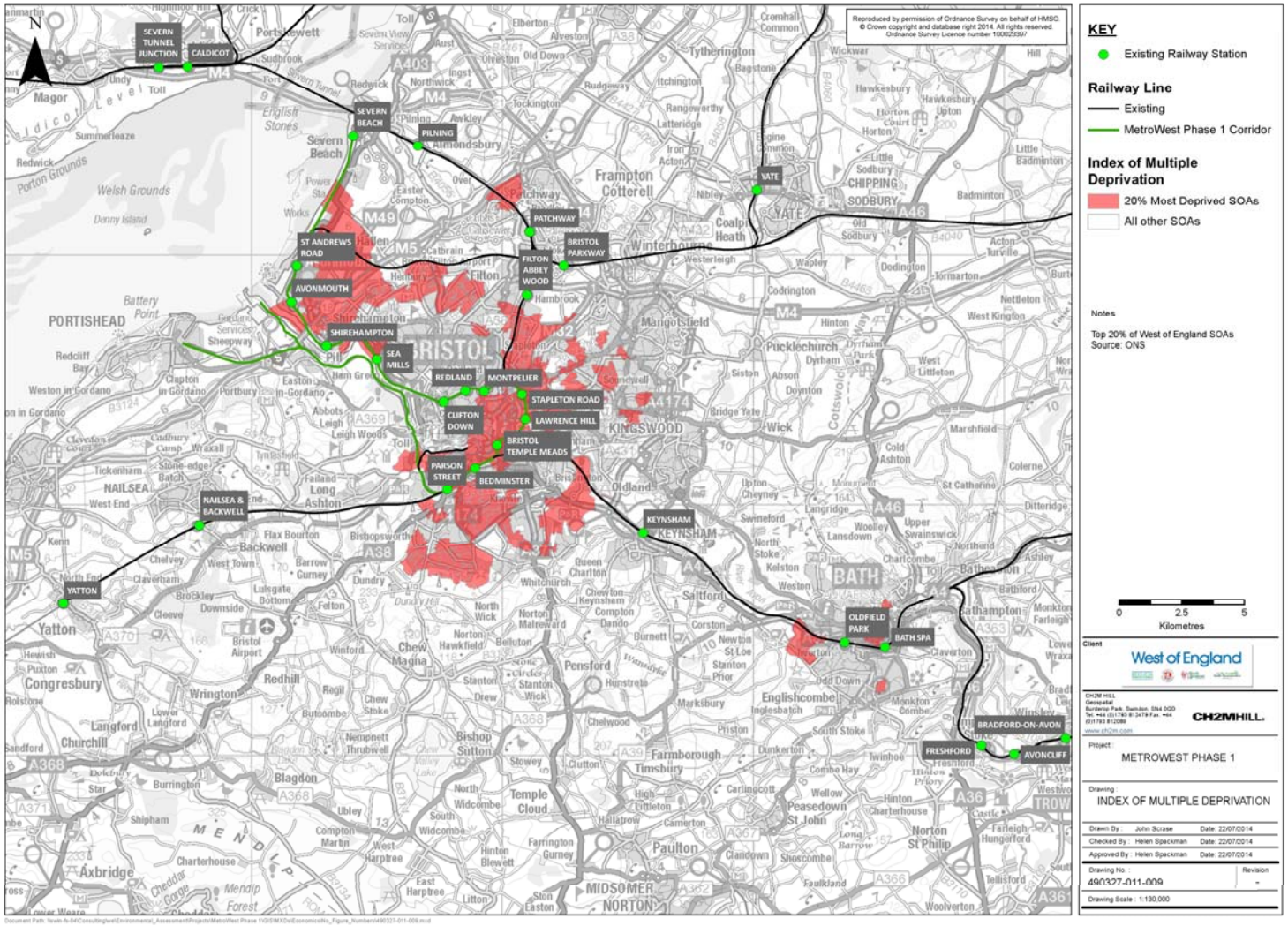


Figure 4.9: Socio-demographics: index of multiple deprivation



4.3.4 Local environment

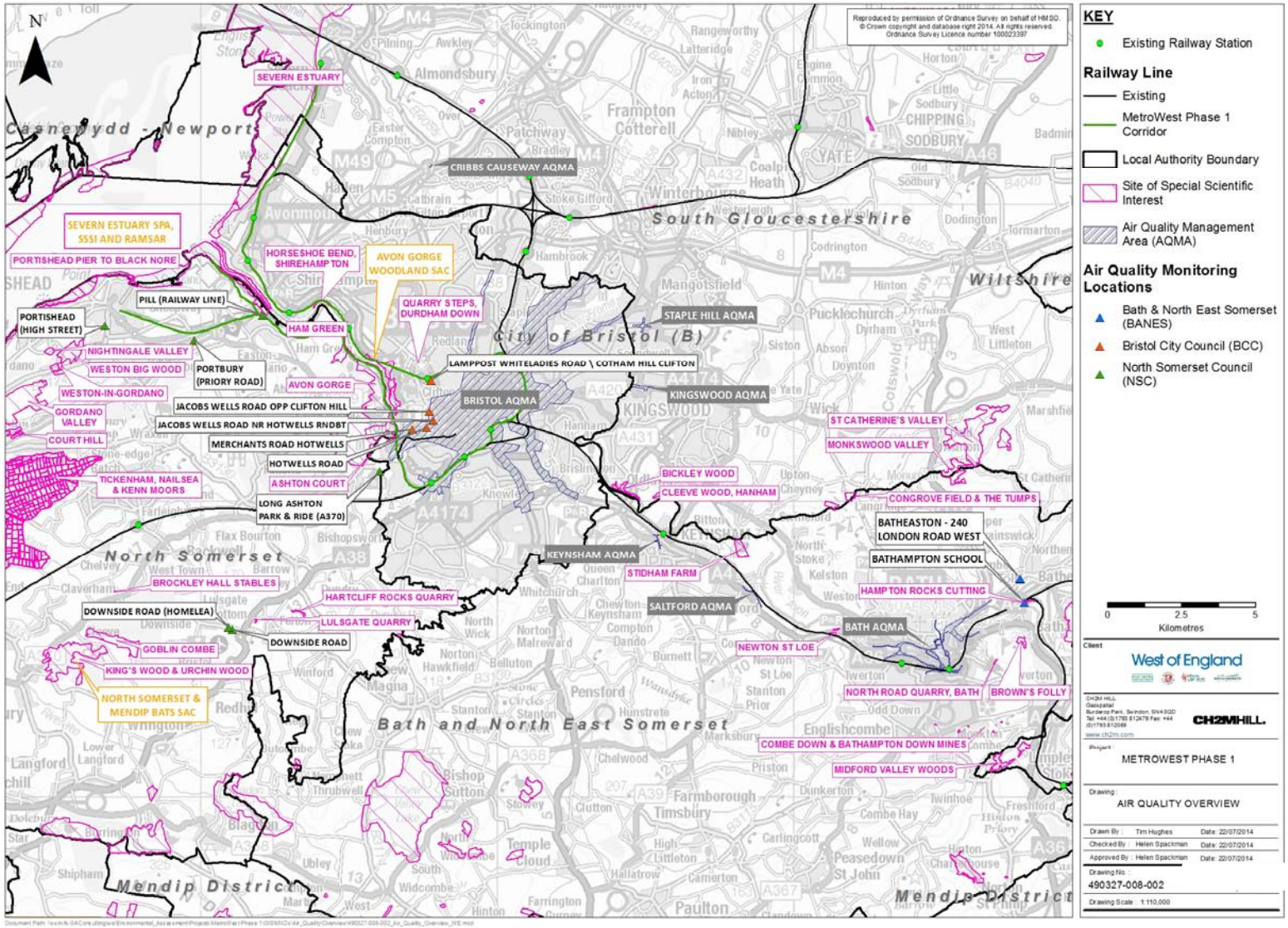
Table 4.11 shows the schemes' impact on the local environment. The environmental impacts of the scheme options are broadly similar. More detailed transport modelling would indicate differences in changes in vehicle traffic, with associated variations in noise and air quality impacts.

TABLE 4.11
Local environmental impacts

Impact	Comment
Impact on air quality	Adverse local impact, but general reduction in traffic resulting in wider benefits. Work will be required to rebuild the track formation - this could generate dust if undertaken during a dry spell.
Impact on existing AQMAs*	No adverse impacts, could remove car trips from Bristol and Bath centres, see Figure 4.1.
Will scheme create an AQMA?	No
Impact on noise	Adverse local impact, but general reduction in traffic resulting in wider benefits.
Impact on natural and urban environment	Some vegetation clearance required including areas sensitive to reptiles (including great crested newts and badgers). The scheme will have a lighting impact in areas near the new stations and it is likely that this cannot be fully mitigated. The scheme will have a visual impact at the new stations and where new structures are built. It will also enhance the street screen and built environments. Some of the Portishead station location options are close to residential properties. The Avon Gorge and Ham Green Sites of Special Scientific Interest (SSSI) may be affected.
Value of land effected	Not relevant as alignment is former railway alignment
Overall RAG	Amber

* AQMA - Air Quality Management Area

Figure 4.10: Air Quality Management Areas (AQMA) and Sites of Special Scientific Interest (SSIs)



4.3.5 Wellbeing

Table 4.12 shows the schemes' impact on the wellbeing of local residents. The consequences are broadly similar for each option.

TABLE 4.12
Wellbeing

Impact	Comment
Severance	Severance impacts associated with reopening the railway line are being mitigated where viable, but may not all be fully mitigated.
Physical activity level	Walking and cycling to/from station will increase physical activity.
Changes in accidents	Possible reduction in road accidents, due to reduced car traffic.
Impact on crime/ fear of crime	Good design and use of natural surveillance, lighting and CCTV will minimise impacts.
Access to goods, services, people and places	Positive impacts. Active rights of way not impacted
Terrorism	Not relevant so not assessed
Overall RAG	Amber/green

4.3.6 Value for money

The Greater Bristol Metro - Bristol Area Rail Study – Final Report, for West of England Partnership, February 2013 reported that the Benefit to Cost Ratio (BCR) for Option 5 (for the sensitivity test including 10 per cent increase in optional costs) was 2.38. The BCRs for the other options costs have been estimated by considering the relative difference in costs and benefits reported in this EAST appraisal.

Table 4.13 shows the likely value for money levels of the scheme options.

TABLE 4.13
Value for money

Option	Expected value for money	Comments
Option 1: Shuttles (base case)	Medium, BCR 1.5-2	
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	Medium, BCR 1.5-2	The Network Rail Interim Report states that Option 2a has a 13,000 passenger demand incremental increase per annum compared to Option 1. The incremental increase per annum compared to Option 1 in revenue and value of time is £170,000.
Option 3a/b: Portishead to Severn Beach and Bath shuttle	Medium, BCR 1.5-2	The Network Rail Interim Report states that 3a has a 2,000 demand incremental increase per annum compared to Option 1. The incremental increase per annum compared to Option 1 in revenue and value of time is £20,000.
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	Medium, BCR 1.5-2	The Network Rail Interim Report states that Option 4a has a 30,000 demand incremental increase per annum compared to Option 1. The incremental increase per annum compared to Option 1 in revenue and value of time is £400,000.
Option 5a/b: Severn Beach to Bath Spa and Portishead	High, BCR 2-4	The 2013 Halcrow study analysis indicated a BCR of 2.38. PVB = £349,537,000, PVC = £138,993,000, NPV = £210,544,000. Values discounted to 2010.

TABLE 4.13
Value for money

Option	Expected value for money	Comments
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach Shuttle	Option a – Medium, BCR 1.5-2 Option b - High, BCR 2-4	

Current appraisal work indicates that the option BCRs are particularly sensitive to additional train resources.

4.3.7 Summary of economic case

In summary all scheme options demonstrate value for money and thus all have an 'economic case'.

4.4 Managerial case

4.4.1 Implementation timetable

All scheme options have the same proposed implementation timetables as follows:

- Stage 1 option development (including GRIP1-2) - Summer 2013 - Summer 2014.
- Stage 2 scheme case (including GRIP 3) - completion Summer 2014 - Winter 2015/16.
- Stage 3 planning powers and procurement (including GRIP 4-5) - Winter 2015/16 - Autumn 2017.
- Stage 4 construction and opening (including GRIP 6-8) - Autumn 2017 to Spring 2019. Project opening is currently scheduled for December 2018.

4.4.2 Public acceptability

In general terms, the MetroWest scheme has a good level of public support. Indeed, the West of England Rail Conference on 4 November 2011 established the top three priorities for rail as the Greater Bristol Metro, Portishead line and additional rolling stock. In addition, the TravelWest website has galvanised stakeholder support for MetroWest with over 34,000 hits since its launch in February 2012.

Consultation has not been undertaken on the specific scheme options considered in this EAST assessment. It has been assumed that scheme options would have similar levels of support, but that scheme option 1 would be less supported than other options, as it does not offer the cross-Bristol movements. Assumed public acceptability has been assessment on a scale from '1 - low level of public acceptability' to '5 - high level of public acceptability', as shown in Table 4.14.

TABLE 4.14
Public acceptability

Option	Level of public acceptability
Option 1: Shuttles (base case)	3 Moderate level
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	5 High level
Option 3a/b: Portishead to Severn Beach and Bath Shuttle	5 High level
Option 4a/b: Severn Beach to Bath Spa and Portishead Shuttle	5 High level
Option 5a/b: Severn Beach to Bath Spa and Portishead	5 High level
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach Shuttle	5 High level

TABLE 4.14
Public acceptability

Option	Level of public acceptability

Overall, all scheme options are at a very comparable level of development and have similar quality of supporting evidence.

Aspirations for rail are high and there is a clear need to explain what is happening, promote understanding and encourage support for proposals across the programme. The Communications Framework for MetroWest is co-ordinated at the Rail Programme level.

The Communications Framework for MetroWest is based on the following principles:

- Specific communication activities are focussed at the right level for particular consultees and stakeholders. Different types of consultees and stakeholders will have different concerns and require either a different level of information or have different interests in the project.
- Projects seek an appropriate level of feedback from consultees and stakeholders to be incorporated into the development of the Metro.
- Concerns of potential objectors are addressed as far as possible.
- The core project team will be responsible for ensuring statutory consultation meets the requirements for the appropriate process.

Key business/industry stakeholders include, but are not limited to:

- DfT
- Office of Rail Regulation (ORR)
- Network Rail
- Train operating companies (existing and potential)
- Freight operating companies
- Bus operators
- Bristol Port Company

Consultees and stakeholders include, but are not limited to:

- Local Members
- West of England Local Enterprise Partnership
- Joint Scrutiny
- Business West and other business organisations
- Local MPs
- Neighbouring authorities
- Parish and town councils affected by the schemes
- Resident and community groups affected by the schemes
- Public transport users and non-users

- Local rail and transport campaign groups

Meetings with local stakeholders and consultees will be held to share technical work where possible; this will help inform a more technical rather than aspirations-based approach and enable better understanding of the projects. The frequency of meetings will depend on the level of involvement needed by different stakeholders and consultees in the project.

It is envisaged that potential objections would be associated with local environmental impacts in Portishead and Pill.

4.4.3 Practical feasibility

4.4.3.1 Local endorsement

The scheme is endorsed, as follows:

- Joint Transport Executive Committee (JTEC) 7 March 2012 Phase 1 and 2 agreed for franchise consultation
- JTEC 12 December 2012 development costs Phase 1 and 2 agreed
- LTTB 14 June 2013 prioritised Phase 1 for post-2015 major transport scheme funding
- The Councils have identified funding for project development

4.4.3.2 Operational issues

The scheme options have the same physical feasibility issues, as the options only differ by service pattern.

Network Rail owns and maintains the infrastructure and coordinates track access. The Councils are working with Network Rail on a range of technical and legal matters.

There are some challenges adding MetroWest Phase 1 train services into the existing network due to significant bottlenecks in parts of the network. The large programme of investment led by NR (CP5), including both enhancements and renewals, and four-tracking of Filton Bank will help relieve these.

Network Rails 2012 timetabling analysis indicates that scheme options 1, 2, 3, 4 and 6 would require seven-car units and option 5 would require six-car units. The number of car units has a direct impact on revenue costs.

4.4.3.3 Construction issues

The scheme alignment has been subject to local planning policies for many years to protect encroachment of development that would prevent the line from being reopened. The only location where development has created an obstacle to the reopening of the line is at Quays Avenue, a new road crossing over the railway alignment. At the time of the master planning of the Portishead Vale development, the design standards for road easements across railway branch lines allowed for level crossings. However, the rail industry design standards have since changed and level crossings are no longer acceptable to the ORR.

In light of this, the project team undertook public consultation on three options for the location of Portishead station in June/July 2014. The consultation feedback is being considered and a decision on the preferred options for the station is anticipated by early 2015.

The disused and down relief lines are free-standing construction sites away from operational railway. Works at Bathampton and Avonmouth stations will require possessions but these are considered achievable. Works on the freight line will require a detailed possession strategy.

4.4.3.4 Summary of practical feasibility

Other practical feasibility issues include:

- Need for an acceptable timetable solution

- Development consent order is required for some work (other works fall under Network Rail's permitted development rights)
- The new asset is to be transferred to Network Rail and associated negotiation is required
- Governance is agreed and agreements are in place

For these reasons, all the scheme options have been scored between 3 and 5, on a scale of '1 - low level of practical feasibility' to '5 - high level of practical feasibility', see Table 4.15.

TABLE 4.15
Practical acceptability

Option	Level of public acceptability
Option 1: Shuttles (base case)	3 Moderate level
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	3 Moderate level
Option 3a/b: Portishead to Severn Beach and Bath Shuttle	3 Moderate level
Option 4a/b: Severn Beach to Bath Spa and Portishead Shuttle	3 Moderate level
Option 5a/b: Severn Beach to Bath Spa and Portishead	Option a - 3 Moderate level Option b - 5 High level
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle	Option a - 3 Moderate level Option b - 5 High level

4.4.4 Quality of supporting evidence

All scheme options have been developed to a relatively high level for this EAST level of assessment. This has been due to a number of studies that have been undertaken in recent years about MetroWest or its components parts. The consideration of the scheme options to date is shown in Table 4.16

TABLE 4.16
Consideration of scheme options in previous work

Option	Portishead GRIP 1-3 report	Greater Bristol Metro Bristol Area Rail Study – Final Report	Network Rail – Analysis and Forecasting MetroWest Interim Report
Option 1: Shuttles (base case)	Report of relevance to scheme option		Study considers scheme option as base case
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	Report of relevance to scheme option		Study considers scheme option
Option 3a/b: Portishead to Severn Beach and Bath Shuttle	Report of relevance to scheme option		Study considers scheme option
Option 4a/b: Severn Beach to Bath Spa and Portishead Shuttle	Report of relevance to scheme option		Study considers scheme option
Option 5a/b: Severn Beach to Bath Spa and Portishead	Report of relevance to scheme option	Study considers scheme option	Study considers scheme option
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle	Report of relevance to scheme option		Study considers scheme option

TABLE 4.16
Consideration of scheme options in previous work

Option	Portishead GRIP 1-3 report	Greater Bristol Metro Bristol Area Rail Study – Final Report	Network Rail – Analysis and Forecasting MetroWest Interim Report

Overall, all scheme options are at a very similar level of development and have a comparable quality of supporting evidence. Thus all the scheme options have been scored as 4, on a scale of '1 - low quality of supporting evidence' to '5 - high quality of supporting evidence'.

4.4.5 Key risks

General project and operational uncertainties are set out in Section 4.2.4 of this report. This section provides details of the construction-related risks.

As part of the Portishead GRIP 3 work, the following risks were identified:

- Signalling cost estimate uncertainty
- Generic GRIP 4/5 design risks, such as changes resulting from approvals process
- Generic GRIP 6 construction risks, such as late possession, finding contaminated land
- Renewals' funding
- Delays caused by implementation agreement
- Delays and changes caused by planning requirements
- Environmental risks
- Network changes
- Access issues on six-mile freight section between Parson Street and Pill
- Interface with construction at Baron's Close and construction of Bus Rapid Transit (BRT)
- Signal sighting issues
- Cable from Parson Street to Bristol panel not suitable to use

4.4.6 Summary of management case

In summary, scheme options 5b and 6b are achievable and thus have a 'management case'. However, scheme options 1, 2a/b, 3a/b, 4a/b, 5a and 6a are not considered achievable because of the operational issues associated with finding an acceptable timetable solution.

4.5 Financial Case

4.5.1 Affordability

The scheme capital and revenue costs for the schemes are detailed in section 4.5.2 and 4.5.3. Table 4.17 sets out the scheme affordability, where "5" indicates the scheme is affordable and "1" indicates the scheme is unaffordable. An initial joint promotion agreement is in place to ensure that the shortfall between available major scheme funding and scheme costs can be funded locally.

TABLE 4.17
Affordability

Option	Affordability	Justification
Option 1: Shuttles (base case)	3	Revenue funding implications, due to ineffective operations

TABLE 4.17
Affordability

Option	Affordability	Justification
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	3	Revenue funding implications, due to ineffective operations
Option 3a/b: Portishead to Severn Beach and Bath shuttle	3	Revenue funding implications, due to ineffective operations
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	3.	Revenue funding implications, due to ineffective operations
Option 5a/b: Severn Beach to Bath Spa and Portishead	Option a – 3 Option b - 5 Affordable	Revenue funding implications, due to ineffective operations for Option a
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach Shuttle	Option a – 3 Option b - 5 Affordable	Revenue funding implications, due to ineffective operations for Option a

4.5.2 Capital Cost (£m)

For the purpose of this EAST appraisal, the scheme cost estimates have been taken from the Greater Bristol Metro - Bristol Area Rail Study – Final Report, for West of England Partnership, February 2013, allowing consideration of consistent costs and benefits. The capital costs were reported at £42 million.

Table 4.18 presents the capital cost (£m) for the scheme options.

TABLE 4.18
Capital Cost (£m)

Option	Capital Cost (£m)	Justification (comments provided from 2013 Network Rail report)
Option 1: Shuttles (base case)	25-50	Likely to require enhancement to BEJ. Likely to require Platforms 0, 1 and 2 at BTM. High capital expenditure/infrastructure requirements.
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	25-50	Likely to require Platforms 0 or 2 at BTM. Moderate Capital Expenditure/ Infrastructure Requirements.
Option 3a/b: Portishead to Severn Beach and Bath shuttle	25-50	May require Platform 0 at BTM.
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	25-50	Platform 2 and 0 BTM may be required. High capital expenditure/ infrastructure requirements.
Option 5a/b: Severn Beach to Bath Spa and Portishead	25-50	Requires platform 1 and 0 at BTM. May also require BEJ enhancements. High capital expenditure/infrastructure requirements.
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach Shuttle	25-50	Platform 0 BTM may be required.

4.5.3 Revenue Costs (£m)

Table 4.19 presents the approximate discounted Revenue Cost (£m) for the scheme options, for the 60-year appraisal. The Option 5 cost has been derived from information in Greater Bristol Metro - Bristol Area Rail Study – Final Report, for West of England Partnership, February 2013. The options' costs have been estimated by considering the relative difference in operational cost sets out in the Network Rail – Analysis & Forecasting, MetroWest Interim Report 2013.

The revenue costs quoted below are for the resultant revenue costs. Revenue gained has been estimated and included in the net revenue costs.

TABLE 4.19
Revenue Cost (£m)

Option	Revenue Cost (£m)	Justification
Option 1: Shuttles (base case)	50-100	2013 Network Rail analysis states this option is likely to result in high operational costs due to the inefficient use of rolling stock required to operate a MetroWest Phase 1 service. Option is likely to require several units to operate. High operational expenditure.
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	50-100	A high-level assessment of demand of this option (against the base option) was undertaken. Demand increases as this option provides an opportunity to travel across Bristol without the need to interchange. In this case, the connection between Portishead and Bath Spa provides a medium increase in revenue and value of time improvements, significantly more than Option 3, but less than half of Option 4. Each route would require multiple units to operate, a potential unit reduction from option 1. High operational expenditure. Option 2b (Portishead – Bath Spa 1tph, Portishead shuttle 1tph, Severn Beach shuttle, 1tph Avonmouth shuttle 1tph) may result in some reduction of unit requirements when compared to 2a, thus operational expenditure could be moderate.
Option 3a/b: Portishead to Severn Beach and Bath shuttle	50-100	A high-level analysis shows that the demand for travel between Portishead and Severn Beach is low and therefore the value of time improvement and revenue impact is significantly less when compared to other connectivity options. Likely to require several units to operate each route, potential unit reduction from option 1. High operational expenditure.
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	50-100	Option 4 provides the largest incremental increase in passenger demand and revenue due to better connections, and is over double that offered by Option 2. Demand increases as this option provides an opportunity to travel across Bristol without the need to interchange and connecting large catchment areas (eg Clifton Down) with the major employment centres (eg Bath and Bristol). Historic demand data shows that a large number of passengers (72,000 in 2012) travel from Clifton Down to Bath Spa. Likely to require several units to operate each route, potential unit reduction from option 1. High operational expenditure. Option 4b: (Severn Beach/Avonmouth – Bath Spa 1tph, Severn Beach/Avonmouth – BTM 1tph, Portishead Shuttle 2tph). This could include potential reduction in unit requirements using Avonmouth to turn-back services, resulting in moderate operational expenditure. Potential reduction in unit requirements (moderate if using Bathampton turn-back).
Option 5a/b: Severn Beach to Bath Spa and Portishead	Option a - 50-100 Option b - 25-50	Potential reduction in unit requirements (moderate if using Bathampton turn-back). Low operational expenditure.
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle	Option a - 50-100 Option b - 25-50	Likely to require several units to operate each route. High operational expenditure.

Emerging timetabling analysis indicates that option 5 is the only option available, requiring six trains, and 6b is the best-performing option, requiring 7 units.

It is assumed that the responsibility for revenue subsidy for the first three years will rest with the West of England councils but, thereafter, this would be transferred to DfT, subject to a detailed funding agreement.

4.5.4 Cost Profile

The capital costs for all scheme options are the same and hence there are no inconsistency issues. The capital cost estimate includes a risk allowance. The revenue costs for the scheme options have all been considered by Network Rail at a high level.

4.5.5 Overall cost risk and other costs

The scheme costs are all affected by the following risks:

- Construction costs are at a GRIP1-2 (feasibility) level and subsequent engineering design work could result in cost increases.
- Revenue costs are to be fully derived following completion of timetabling analysis.
- Parking strategies will affect the station parking charges at Portishead and Pill.
- Funds are to be secured from LTBB, following acceptance of full business case.
- Funding split between the four promoting authorities is to be agreed.

In addition to the risks above, Table 4.20 presents the overall cost risk and other costs for the scheme options.

TABLE 4.20
Overall cost risk and other costs

Option	Overall cost risk	Other costs
Option 1: Shuttles (base case)	2. Moderate/High risk	Revenue costs could be unaffordable
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	2. Moderate/High risk	Revenue costs could be unaffordable
Option 3a/b: Portishead to Severn Beach and Bath shuttle	2. Moderate/High risk	Revenue costs could be unaffordable
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	2. Moderate/High risk	Revenue costs could be unaffordable
Option 5a/b: Severn Beach to Bath Spa and Portishead	Option a - 2. Moderate/high risk Option b - 3. Moderate risk	
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle	Option a - 2. Moderate/high risk Option b - 3. Moderate risk	

The cost risk assessment is on a scale of '1 high risk' to '5 low risk'.

4.5.6 Summary of financial case

In summary, scheme options 5b and 6b are financially affordable and thus have a 'financial case'. However, scheme options 1, 2, 3, 4, 5a and 6a are not considered affordable because they are likely to require an unaffordable amount of revenue support.

4.6 Commercial Case

4.6.1 Flexibility of option

All schemes contain the same infrastructure package and a large component of the capital costs is the reopening of Portishead Line between Pill and Portishead. Hence, there is little scope to change the scale of the scheme options. However, there would be opportunities to consider alternative service patterns. There would be potential for medium- to long-term commercial development by the train operator.

Overall, flexibility of the options have been scored as 4, on a scale of '1 – Dynamic' to '5 - Static'.

4.6.2 Funding sources

In addition to the West of England Local Transport Body – Developed Major Scheme Funding, other potential funding sources include:

- City Region Deal
- Funding associated with the Strategic Economic Plan
- Any new government funding competition
- Developer contributions
- New Homes Bonus (where not already allocated)

These funding sources would be applicable for all scheme options.

4.6.3 Income generation

The scheme options will generate revenue via:

- Ticket sales
- Car park changes
- Track access charges.

The approximate scheme income generation values have been incorporated into the revenue totals presented in Section 4.5.3, and currently are not disaggregated.

4.6.4 Summary of commercial case

In summary all scheme options are considered commercially viable, thus have a 'commercial case'.

4.7 Summary and EAST forms

Appendix B contains EAST forms, summarising the information in this section.

In summary, the key strengths for the Business Case are:

- Substantial latent passenger demand for a Portishead to Bristol train service. Portishead's population is approximately 27,000 (2012 estimate) and up to 1600 people live within 1 km of the station (the catchment size is dependent on the station location).
- Continued passenger demand supports the enhancement to the Severn Beach and Bath lines, driven by economic and population growth.
- Enhancing access for the skilled workforce to major employment markets, helping business to expand and deliver economic growth.
- Substantial support from the community and stakeholders for the project.

- Majority of capital funding identified.
- Provides a sound foundation for taking forward the rest of the MetroWest programme and potential for medium-/long-term commercial expansion.

Table 4.21 shows a summary of how the scheme options meet the five cases. The EAST analysis shows that option 5 and 6B are the preferred options to take forward to the Preliminary Business Case.

TABLE 4.21
Summary of how the scheme options meet the five cases

Option	Strategic case	Economic case	Management case	Financial case	Commercial case
Option 1: Shuttles (base case)	✓	✓	✓	✓	✓
Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads	✓	✓	✓	✓	✓
Option 3a/b: Portishead to Severn Beach and Bath shuttle	✓	✓	✓	✓	✓
Option 4a/b: Severn Beach to Bath Spa and Portishead shuttle	✓	✓	✓	✓	✓
Option 5a/b: Severn Beach to Bath Spa and Portishead	✓	✓	Option a × Option b ✓	Option a × Option b ✓	✓
Option 6a/b: Portishead to Severn Beach and Bath Spa and Severn Beach shuttle	✓	✓	Option a × Option b ✓	Option a × Option b ✓	✓

Appendix A
LTB Prioritisation

The West of England Local Transport Body undertook a process of assessment and prioritisation of major local transport schemes in June 2013. The prioritisation process is summarised in Figure A.1.

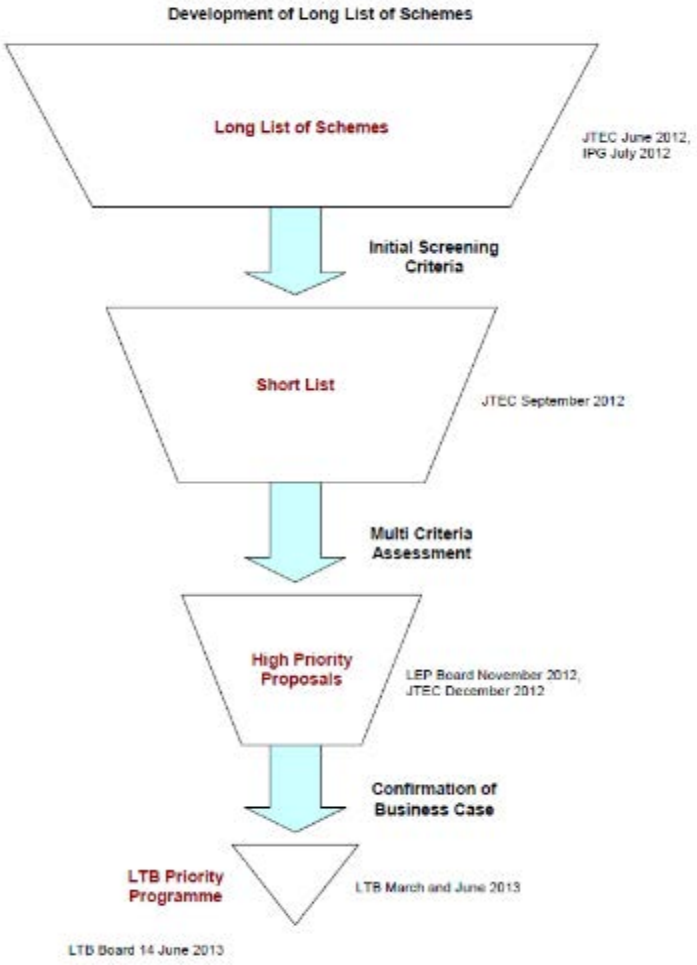


Figure A.1: Overview of prioritisation process

The initial long list of schemes was derived by reviewing the Joint Local Transport Plan 2011-26 (JLTP3), the authorities Core Strategies and other more detailed infrastructure plans, including those for the Enterprise Zone or Areas. The long list included a comprehensive set of schemes including those expected, or with the potential, to be funded by others, together with those outside of the immediate cost or delivery constraints.

The long list

The long list of schemes was reviewed by officers across the authorities to seek to identify those which fit less well in terms of deliverability or affordability within the likely allocation through the devolved major schemes' funding approach. This process involved the application of three initial screening criteria:

1) Affordability – schemes which cannot be funded within the likely allocation for the CSR period. Based on guidance at the time, this was expected to be some £38 million in the period 2015/16 to 2018/19, if population based, up to £50 million if using GVA. The criterion was applied, based on the higher GVA-based allocation and assuming a 10 per cent local contribution (schemes over £55 million at 2015/16 prices will be considered unaffordable through the devolved major schemes process).

2) Minimum cost threshold – given the requirement for assurance and appraisal, including evidencing value for money, and the associated resource implications, a minimum cost threshold of £2 million was applied.
3) Deliverability – schemes must be sufficiently well defined to have the realistic potential to progress through design, consultation and statutory processes to be substantially complete within the review period.

Schemes were excluded from the shortlist where they were:

- Already funded though others sources
- Unable to be delivered through the developed major scheme funding allocation due to:
  - Timescale
  - Affordability
- Below the minimum threshold for developed funding

The emerging shortlist

The short list of schemes, considered affordable and deliverable through the initial assessment process, were subject to a multi-criteria assessment with the aim of identifying a set of high priority proposals for devolved funding. A set of weighted assessment criteria were developed, based on strategic fit, deliverability and outputs. These were refined, scored and weighted, as shown in Figure A.2.

The shortlist assessment was undertaken by a panel of officers from across the West of England authorities. These officers reviewed technical information about each of the schemes - provided through individual summaries prepared by the promoting authority(ies)- and then allocated a score for each criterion. Scores were then averaged and weightings applied to provide an overall score.

Figure A.2: Scoring and Weighting Criteria for Short List Assessment

Criteria	Scoring (1 - 5, Five Highest)	Weighting (Highest 3)
Strategic fit		
Core Strategies	Identified priority scheme = 5 Identified scheme = 4 Part of identified programme = 3 Accords with wider framework = 1	3
Joint Local Transport Plan	Identified priority scheme = 5 Identified scheme = 4 Part of identified programme = 3 Accords with wider framework = 1	3
Enterprise Zone and Area	Strong Links = 5, through to Limited Support =1	3
Links with wider programmes	eg links with existing major schemes, rail franchise, other funding programmes.	1
Identification in previous technical studies programmes	eg GBSTS, other studies, TIF, RGF, DIIP	1
Deliverability		
Stakeholder Support	Strong and tested support = 5 Likely strong support = 3 Mixed support = 1	2
Construction Start [Note: To have regard to number of statutory powers and consents required]	2015/16 = 5 2016/17 = 4 2017/18 = 3 2018/19 = 2 2019/20+ = 1	3
Reliance on Third Parties eg NR, HA	No reliance = 5 Reliance but strong support = 3 Reliance support uncertain = 1	1
Current State of Development	Outline business case = 5, through to Initial Identification = 1	2
Outputs & Value for Money		
Ability to draw on other funding	Significant local funding (30%+) = 5 20-30% = 4 15-20% = 3 10-15% = 2 Minimal local funding (<10%) = 1	2
Assist in delivery of job growth	Significant jobs = 5, through to Minimal = 1	3
Assist in delivery of homes	Significant homes = 5, through to Minimal = 1	3
Contribution to congestion reduction	Significant = 5, through to Minimal = 1	2
Contribution to carbon reduction	Significant = 5, through to Minimal = 1	2
Other significant wider benefit: - Noise/Air Quality, Accidents, Natural Resources, Landscape/Townscape, Heritage, Social/Distributional/ Equalities	Significant Impact = 5, through to Minimal = 1	2

Appendix B
EAST forms

Early Assessment and Sifting Tool - *Saved Option*

Option name/no.	**1**
Date	20/05/2014
Description	Option 1: Shuttles (Base Case)

Strategic

Identified problems and objectives	To support economic growth, to deliver a more resilient transport offer, to improve accessibility, to improve quality of life.	
Scale of Impact	3	No cross Bristol service pattern
Fit with wider transport and government objectives	3	
Fit with other objectives	3	
Key uncertainties	Funding, timetable capacity, resources, lack of support, may need additional works	
Degree of consensus over	3	

Economic

Economic growth	4. Amber/green	
Carbon emissions	4. Amber/green	
Socio-distributional impacts and the regions	4. Amber/green	
Local environment	3. Amber	
Well being	4. Amber/green	
Expected VfM Category	3. Medium 1.5-2	

Managerial

Implementation timetable	5. 2-5 years	Scheme opening planned for Dec 2018
Public acceptability	3	
Practical feasibility	3	
What is the quality of the supporting evidence?	4	
Key risks	GRIP 1/2 level of design, consents required	

Financial

Affordability	3	Possible revenue funding issues	
Capital Cost (£m)	05. 25-50		
Revenue Costs (£m)	06. 50-100		
Cost profile			
Overall cost risk	2	Other costs	Revenue costs could be unaffordable

Commercial

Flexibility of option	4	
Where is funding coming from?	City Region Deal, SEP, funding competitions, development contributions	
Any income generated (£m)	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

Option name/no.	**2**
Date	20/05/2014
Description	Option 2a/b: Portishead to Bath Spa and Severn Beach to Bristol Temple Meads

Strategic

Identified problems and objectives	To support economic growth, to deliver a more resilient transport offer, to improve accessibility, to improve quality of life.	
Scale of Impact	4	
Fit with wider transport and government objectives	5. High	
Fit with other objectives	4	
Key uncertainties	Funding, timetable capacity, resources, lack of support, may need additional works	
Degree of consensus over	4	

Economic

Economic growth	5. Green	
Carbon emissions	5. Green	
Socio-distributional impacts and the regions	4. Amber/green	
Local environment	3. Amber	
Well being	4. Amber/green	
Expected VfM Category	3. Medium 1.5-2	

Managerial

Implementation timetable	5. 2-5 years	Scheme opening planned for Dec 2018
Public acceptability	5. High	
Practical feasibility	3	
What is the quality of the supporting evidence?	4	
Key risks	GRIP 1/2 level of design, consents required	

Financial

Affordability	3	Possible revenue funding issues	
Capital Cost (£m)	05. 25-50		
Revenue Costs (£m)	06. 50-100		
Cost profile			
Overall cost risk	2	Other costs	Revenue costs could be unaffordable

Commercial

Flexibility of option	4	
Where is funding coming from?	City Region Deal, SEP, funding competitions, development contributions	
Any income generated (£m)	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

Option name/no.	**3**
Date	20/05/2014
Description	Option 3a/b: Portishead to Severn Beach and Bath Shuttle

Strategic

Identified problems and objectives	To support economic growth, to deliver a more resilient transport offer, to improve accessibility, to improve quality of life.	
Scale of Impact	4	
Fit with wider transport and government objectives	4	
Fit with other objectives	4	
Key uncertainties	Funding, timetable capacity, resources, lack of support, may need additional works	
Degree of consensus over	4	

Economic

Economic growth	5. Green	
Carbon emissions	5. Green	
Socio-distributional impacts and the regions	4. Amber/green	
Local environment	3. Amber	
Well being	4. Amber/green	
Expected VfM Category	3. Medium 1.5-2	

Managerial

Implementation timetable	5. 2-5 years	Scheme opening planned for Dec 2018
Public acceptability	5. High	
Practical feasibility	3	
What is the quality of the supporting evidence?	4	
Key risks	GRIP 1/2 level of design, consents required	

Financial

Affordability	3	Possible revenue funding issues	
Capital Cost (£m)	05. 25-50		
Revenue Costs (£m)	06. 50-100		
Cost profile			
Overall cost risk	2	Other costs	Revenue costs could be unaffordable

Commercial

Flexibility of option	4	
Where is funding coming from?	City Region Deal, SEP, funding competitions, development contributions	
Any income generated (£m)	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

Option name/no.	**4**
Date	20/05/2014
Description	Option 4a/b: Severn Beach to Bath Spa and Portishead Shuttle

Strategic

Identified problems and objectives	To support economic growth, to deliver a more resilient transport offer, to improve accessibility, to improve quality of life.	
Scale of Impact	4	
Fit with wider transport and government objectives	5. High	
Fit with other objectives	4	
Key uncertainties	Funding, timetable capacity, resources, lack of support, may need additional works	
Degree of consensus over	4	

Economic

Economic growth	5. Green	
Carbon emissions	5. Green	
Socio-distributional impacts and the regions	4. Amber/green	
Local environment	3. Amber	
Well being	4. Amber/green	
Expected VfM Category	3. Medium 1.5-2	

Managerial

Implementation timetable	5. 2-5 years	Scheme opening planned for Dec 2018
Public acceptability	5. High	
Practical feasibility	3	
What is the quality of the supporting evidence?	4	
Key risks	GRIP 1/2 level of design, consents required	

Financial

Affordability	3	Possible revenue funding issues	
Capital Cost (£m)	05. 25-50		
Revenue Costs (£m)	06. 50-100		
Cost profile			
Overall cost risk	2	Other costs	Revenue costs could be unaffordable

Commercial

Flexibility of option	4	
Where is funding coming from?	City Region Deal, SEP, funding competitions, development contributions	
Any income generated (£m)	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

Option name/no.	**5a**
Date	11/06/2014
Description	Option 5a: Severn Beach to Bath Spa & Portishead

Strategic

Identified problems and objectives	To support economic growth, to deliver a more resilient transport offer, to improve accessibility, to improve quality of life.	
Scale of Impact	4	
Fit with wider transport and government objectives	5. High	
Fit with other objectives	4	
Key uncertainties	Funding, timetable capacity, resources, lack of support, may need additional works	
Degree of consensus over	4	

Economic

Economic growth	5. Green	
Carbon emissions	5. Green	
Socio-distributional impacts and the regions	4. Amber/green	
Local environment	3. Amber	
Well being	4. Amber/green	
Expected VfM Category	2. High 2-4	

Managerial

Implementation timetable	5. 2-5 years	Scheme opening planned for Dec 2018
Public acceptability	5. High	
Practical feasibility	3	
What is the quality of the supporting evidence?	4	
Key risks	GRIP 1/2 level of design, consents required	

Financial

Affordability	3	Possible revenue funding issues
Capital Cost (£m)	05. 25-50	
Revenue Costs (£m)	06. 50-100	
Cost profile		
Overall cost risk	2	Other costs

Commercial

Flexibility of option	4	
Where is funding coming from?	City Region Deal, SEP, funding competitions, development contributions	
Any income generated (£m)	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

Option name/no.	**5b**
Date	11/06/2014
Description	Option 5a: Severn Beach to Bath Spa & Portishead

Strategic

Identified problems and objectives	To support economic growth, to deliver a more resilient transport offer, to improve accessibility, to improve quality of life.	
Scale of Impact	4	
Fit with wider transport and government objectives	5. High	
Fit with other objectives	4	
Key uncertainties	Funding, timetable capacity, resources, lack of support, may need additional works	
Degree of consensus over	4	

Economic

Economic growth	5. Green	
Carbon emissions	5. Green	
Socio-distributional impacts and the regions	4. Amber/green	
Local environment	3. Amber	
Well being	4. Amber/green	
Expected VfM Category	2. High 2-4	

Managerial

Implementation timetable	5. 2-5 years	Scheme opening planned for Dec 2018
Public acceptability	5. High	
Practical feasibility	5. High	
What is the quality of the supporting evidence?	4	
Key risks	GRIP 1/2 level of design, consents required	

Financial

Affordability	5. Affordable		
Capital Cost (£m)	05. 25-50		
Revenue Costs (£m)	05. 25-50		
Cost profile			
Overall cost risk	3	Other costs	

Commercial

Flexibility of option	4	
Where is funding coming from?	City Region Deal, SEP, funding competitions, development contributions	
Any income generated (£m)	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

Option name/no.	**6a**
Date	20/05/2014
Description	Option 6a: Portishead to Severn Beach & Bath Spa and Severn Beach Shuttle

Strategic

Identified problems and objectives	To support economic growth, to deliver a more resilient transport offer, to improve accessibility, to improve quality of life.	
Scale of Impact	4	
Fit with wider transport and government objectives	5. High	
Fit with other objectives	4	
Key uncertainties	Funding, timetable capacity, resources, lack of support, may need additional works	
Degree of consensus over	4	

Economic

Economic growth	5. Green	
Carbon emissions	5. Green	
Socio-distributional impacts and the regions	4. Amber/green	
Local environment	3. Amber	
Well being	4. Amber/green	
Expected VfM Category	3. Medium 1.5-2	

Managerial

Implementation timetable	5. 2-5 years	Scheme opening planned for Dec 2018
Public acceptability	5. High	
Practical feasibility	3	
What is the quality of the supporting evidence?	4	
Key risks	GRIP 1/2 level of design, consents required	

Financial

Affordability	3	Possible revenue funding issues	
Capital Cost (£m)	05. 25-50		
Revenue Costs (£m)	06. 50-100		
Cost profile			
Overall cost risk	2	Other costs	Revenue costs could be unaffordable

Commercial

Flexibility of option	4	
Where is funding coming from?	City Region Deal, SEP, funding competitions, development contributions	
Any income generated (£m)	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

Option name/no.	**6b**
Date	20/05/2014
Description	Option 6b: Portishead to Severn Beach & Bath Spa and Severn Beach Shuttle

Strategic

Identified problems and objectives	To support economic growth, to deliver a more resilient transport offer, to improve accessibility, to improve quality of life.	
Scale of Impact	4	
Fit with wider transport and government objectives	5. High	
Fit with other objectives	4	
Key uncertainties	Funding, timetable capacity, resources, lack of support, may need additional works	
Degree of consensus over	4	

Economic

Economic growth	5. Green	
Carbon emissions	5. Green	
Socio-distributional impacts and the regions	4. Amber/green	
Local environment	3. Amber	
Well being	4. Amber/green	
Expected VfM Category	2. High 2-4	

Managerial

Implementation timetable	5. 2-5 years	Scheme opening planned for Dec 2018
Public acceptability	5. High	
Practical feasibility	5. High	
What is the quality of the supporting evidence?	4	
Key risks	GRIP 1/2 level of design, consents required	

Financial

Affordability	5. Affordable		
Capital Cost (£m)	05. 25-50		
Revenue Costs (£m)	05. 25-50		
Cost profile			
Overall cost risk	3	Other costs	

Commercial

Flexibility of option	4	
Where is funding coming from?	City Region Deal, SEP, funding competitions, development contributions	
Any income generated (£m)	Yes	Don't know