



MetroWest

Phase 2 Preliminary Business Case

Appendix B - EAST assessment of options report

July 2015

travelwest 

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

Report

MetroWest Phase 2 - EAST Appraisal

Prepared for
West of England

5 May 2015

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MetroWest Phase 2

Preliminary (Strategic Outline) Business Case

EAST Appraisal

West of England

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Acronyms and Abbreviations

AQMA	Air Quality Management Area
CO ₂	Carbon Dioxide
CP5	Network Rail Control Period (2014 to 2019)
CP6	Network Rail Control Period (2019 to 2024)
CPNN	Cribbs Patchway New Neighbourhood
CRD	City Region Deal
DLA	Disability Living Allowance
DfT	Department for Transport
EAST	Early Assessment Sifting Tool
GRIP	Governance for Railway Infrastructure Projects
GVA	Gross Value Added
JLTP3	Joint Local Transport Plan 3 for West of England
JSA	Job Seeker's Allowance
JTB	Joint Transport Board
LEP	Local Enterprise Partnership
LTPP	Long Term Planning Process
ORR	Office of Rail and Road
RUS	Route Utilisation Strategy
SEP	Strategic Economic Plan
SOA	Super Output Area
SPD	Supplementary Planning Document
SSSI	Site of Special Scientific Interest
TAG	Transport Appraisal Guidance
TPH	Trains per Hour
TQEZ	Temple Quay Enterprise Zone
WoE	West of England

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 major 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).

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;
- Broadly ½ hourly service frequency (but some variations possible pending business case);
- Cross Bristol service patterns; and
- Providing a Metro type service appropriate for a City Region with a population of 1 million.

The programme includes:

- MetroWest Phase 1 - Service enhancements on the Severn Beach line and Bath to Bristol lines and a re-opened Portishead line with stations at Portishead and Pill;
- MetroWest Phase 2 - Half hourly services at Yate and Weston Milton plus an hourly service for a re-opened Henbury line, with stations at Henbury, North Filton, and possibly Ashley Down and Horfield;
- Further additional station openings subject to separate business cases; and
- Other potential enhancements including feasibility of extending electrification across the West of England network.

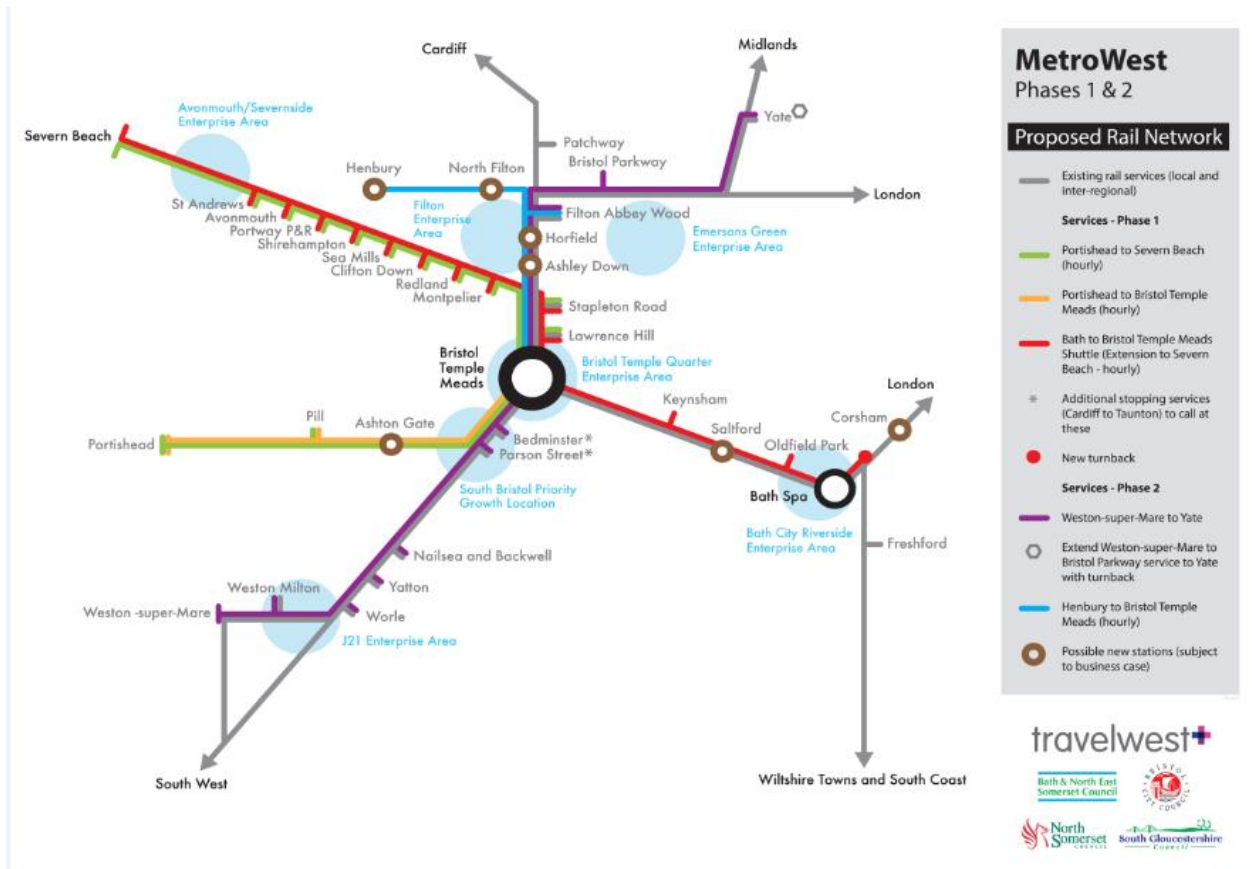
The MetroWest programme is to be delivered over the five to next ten years during Network Rail Control Period 5 (CP5 is 2014-2019) and 6 (CP6 is 2019-2014). The MetroWest programme will also enhance the benefits of strategic transport interventions that are either in the process of being delivered or 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 (LSTF) 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 West of England.

The MetroWest programme has the full backing of the West of England Local Enterprise Partnership (LEP). The West of England LEP together with the Executive Members for Transport of the four councils, who collectively comprise the West of England Joint Transport Board (JTB), has determined that MetroWest Phase 2 is a priority for devolved DfT funding (following MetroWest Phase 1).

Figure 1.1 provides an overview of the MetroWest Phases 1 and 2 proposed train services.

FIGURE 1.1

Diagram showing MetroWest Phase 1 and 2 Proposals



For many years, the West of England councils have recognised the strategic importance of the train service network to the local economy. The West of England area enjoys a good network of long distance train services. However the local train network is under developed and utilised, 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. Furthermore MetroWest 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, addressing network bottlenecks and renewal projects.

MetroWest (and in its former guise of the Greater Bristol Metro) is included in the current Joint Local Transport Plan covering the period 2011-2026 and all of the West of England Councils' Core Strategies.

In summary, MetroWest Phase 2 has:

- Full backing across all four West of England Authorities, including funding for project development;
- A robust policy context;
- A good body of feasibility work and evidence;
- Full backing of the rail industry to be taken forward to build upon committed CP5 schemes;
- An agreed output specification;
- Endorsement as a priority scheme from the West of England Local Enterprise Partnership; and

- Endorsement by the West of England Local Transport Body Board (now the Joint Transport Board) as the second highest priority scheme for devolved major scheme funding, subject to Business Case approval.

The programme has four key stages leading to the start of services in 2021, namely:

1. Option Development (inc GRIP 1-2)
2. Scheme Case (inc GRIP 3)
3. Planning Powers and Procurement (including GRIP 4-5)
4. Construction and Opening (inc GRIP 6-8)

Previous studies estimated the construction cost at £27m, with an operating subsidy requirement of £0.9m over the first three years of operation (at 2012 prices). Allowing for preparation costs, risk and inflation, the equivalent out turn cost is £43m.

1.2 Business case requirements

The Joint Transport Board [JTB] for the West of England has responsibility for allocating funds (which are awarded to them by the Department for Transport) for major transport schemes. Processes are in place to assess schemes and involves the production of business cases at key points, which are in turn reviewed by the JTB Independent Reviewer¹.

MetroWest Phase 2 is targeting a project opening date of summer 2021. This requires, a series of business cases are to be prepared and submitted to the JTB, as follows:

- Preliminary (Strategic Outline) Business Case – to be submitted in July 2015;
- Outline Business Case – to be submitted in March 2017; and
- Full Business Case - to be submitted in March 2020.

The assessment process is based on the DfT's Transport Analysis Guidance (TAG), drawing on elements of TAG that are relevant to the level of detail required by each of the business case stages in turn. Successful submission and approval of each business case is required before proceeding to subsequent stages of development.

1.3 EAST assessment

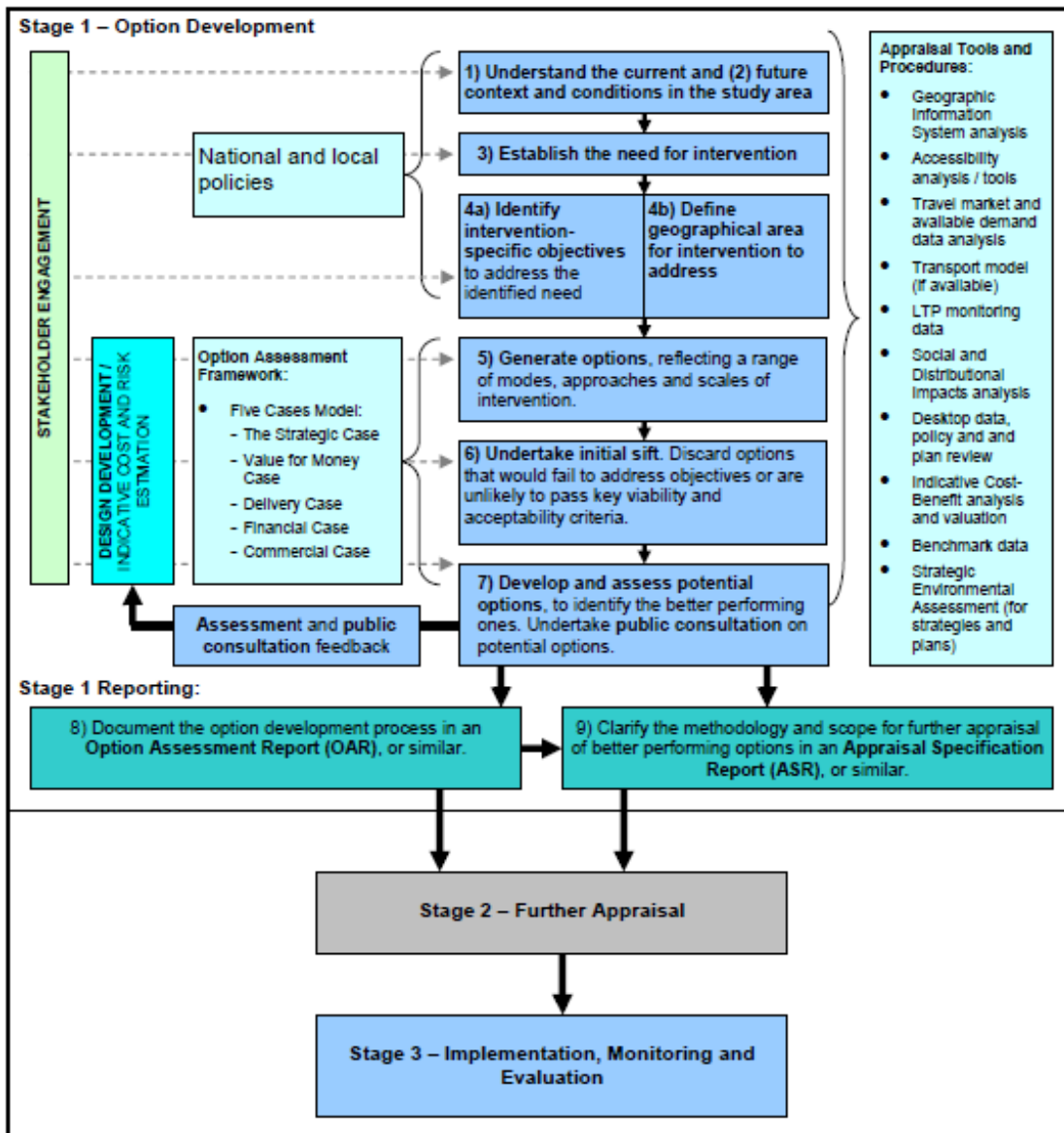
The DfT's Early Assessment Sifting Tool (EAST) is a defined step in the appraisal process set out in TAG. It is a decision support tool that has been developed to 'quickly summarise and present evidence on options in a clear and consistent format'.

Figure 1.2 illustrates the TAG appraisal process. The EAST process is the sixth step in the appraisal process and hence builds on the previous five steps comprising of:

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

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

FIGURE 1.2
Overview of the Option Development Process



1.4 Purpose and structure of this report

The purpose of this report is to document work undertaken to assess MetroWest Phase 2 options using the EAST framework and provide information on the appraisal and assessment steps prior to the EAST assessment. This report will inform the MetroWest Phase 2 Preliminary (Strategic Outline) Business Case.

Section 2 provides information on the need for MetroWest Phase 2, Section 3 provides information on TAG Appraisal Stage 1 (Steps 1 to 5), Section 4 provides details about the scheme options and Section 5 contains the EAST assessments of the options. Section 6 provides supporting information and analysis that underpins the EAST assessment.

2 The context and need for MetroWest Phase 2

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 sections 3 to 6 of this report.

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 main 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; and
- Whilst recognising the car will still provide personal mobility for many.’

2.2.2 Current travel demand

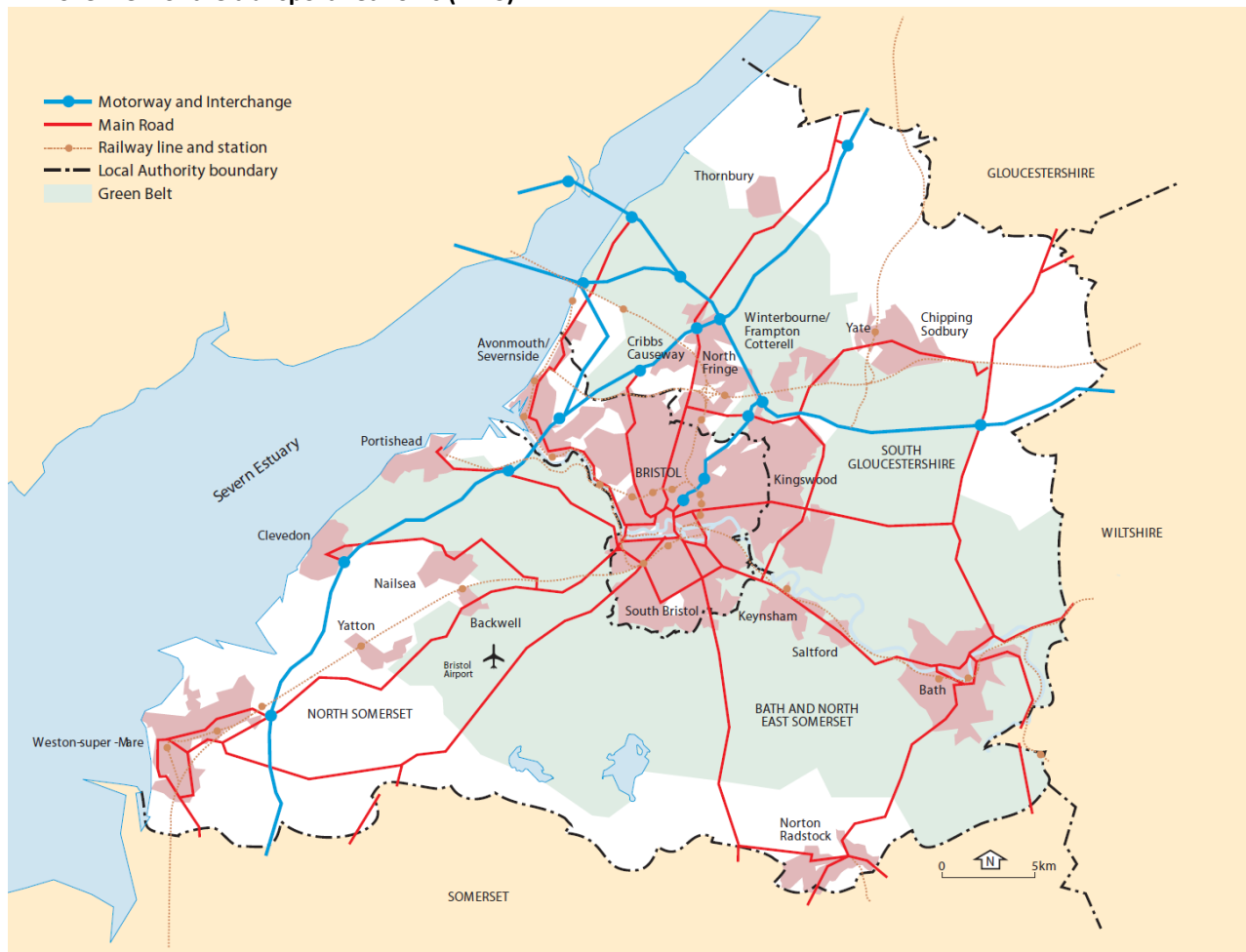
The West of England city region has a population of over 1 million. Table 2.1, derived from the national and local data sources, gives an indication of how people travel. It shows that the car is by far the dominant mode and just 1.5 per cent of all journeys to work are by rail. However, there has been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

- Areas of multiple deprivation;
- Poor transport network resilience;
- Poor air quality in areas of Bristol and Bath; and
- Congestion on West of England's local and strategic road networks.

The transport problems, coupled with the need to encourage economic growth, have been considered by the West of England JTB, to determine 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

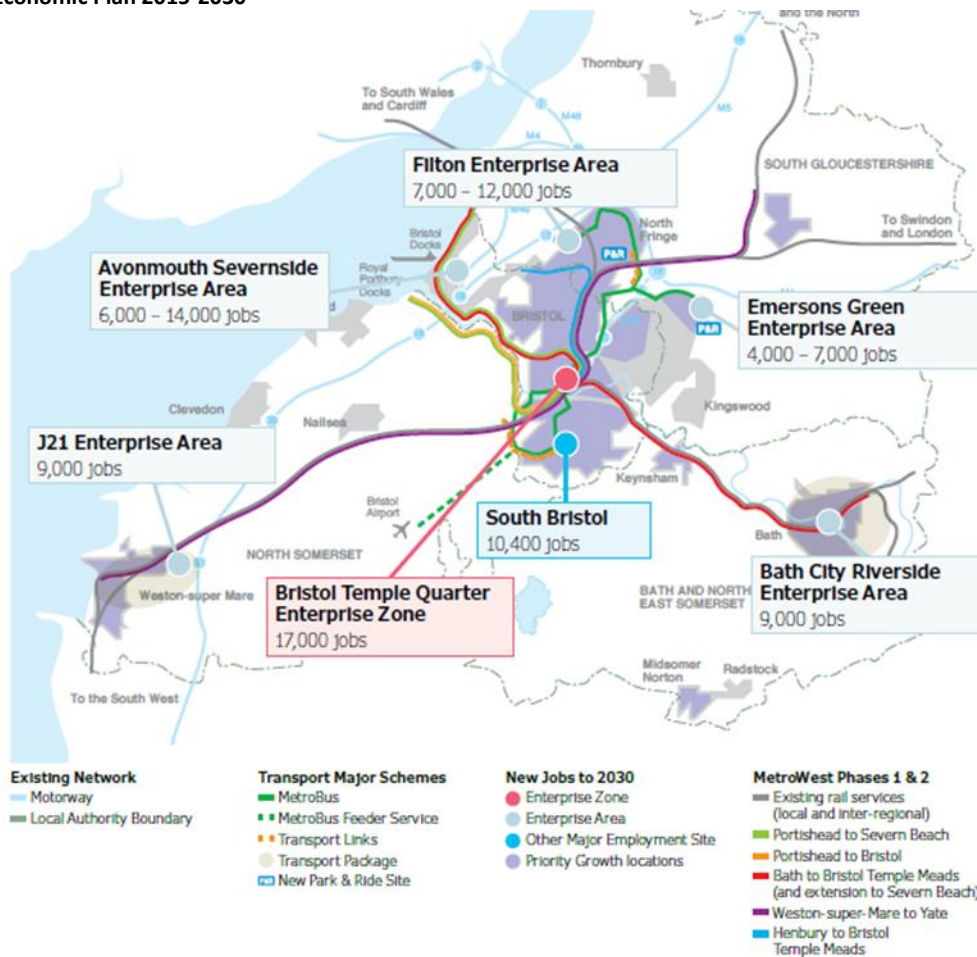
2.3.1 Future land uses and policies

MetroWest Phase 2 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 City Deal includes the following elements, as shown in figure 2.2:

- The Temple Quarter Enterprise Zone (17,000 new jobs)
- Five Enterprise Areas including Filton/A38 (7,000 to 12,000), Avonmouth/Sevenside (6,000 to 14,000), Bath Riverside (9,000), South Bristol (10,400) and Emersons Green (4,000 to 7,000)
- Ministry of Defence at Filton Abbey Wood
- 5,700 homes and 50 ha of employment land at Filton Airfield (partly covered by the Enterprise Area) – the Cribbs Patchway New Neighbourhood [CPNN]
- 3,000 new homes at North Yate

FIGURE 2.2

Map showing major development areas together with the proposed transport interventions (Source: West of England Strategic Economic Plan 2015-2030)



2.3.2 Changes to the West of England transport system

As part of the JTLP3 transport vision (see Figure 6.1 in the JTLP3), the MetroWest Phase 2 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; and
- 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 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 Filton/A38 Avonmouth/ and Bath Riverside are all well located to make use of the rail network. MetroWest Phase 2 will provide a key interface for increasing access to major employment areas. For major employers, it will increase the catchment pool of skilled workers 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 2 will complement the rail industry's substantial programme of investment in 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 in benefits which is considered high value for money.

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 case for the scheme is the excess of travel demand over available capacity which will be exacerbated by development. Without intervention, the local rail 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 JTB 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 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 2 was ranked as the second highest priority and is now on the Priority Programme for Devolved Major Schemes Funding.

3 MetroWest Phase 2 – TAG 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 2 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.

MetroWest Phase 2 is identified in the JLTP3 (Public Transport Supplementary Document, 2013 refresh) as a future priority scheme following the delivery of the current three bus rapid transit schemes and the Weston and Bath packages.

This policy status is underpinned by technical work including the Great Western Main Line Route Utilisation Strategy (March 2010) which tested various options for the Greater Bristol Metro.

MetroWest Phase 2's objectives are well aligned with those of a wide range of existing policies and the scheme will help to deliver the visions set out by each of the four authorities within in their own policy documents.

Transport planning policy context

The West of England JLTP3 (March 2011) outlines the transport strategy for the sub-region. The transport strategy for the West of England revolves around five aspirational goals: reducing carbon emissions, supporting economic growth, improving accessibility, providing for a safe, healthy and secure population, and enhancing quality of life.

The main focus of the plan is to support economic growth by providing an affordable, low carbon, accessible, integrated, healthy, safe and reliable transport network. Providing reliable public transport infrastructure is considered to be a vital mechanism for achieving this goal. In particular, the plan acknowledges a range of major transport schemes that were prioritised and include significant investment in rail infrastructure.

Spatial planning policy context

The relevant spatial planning documents for each local authority area are reviewed briefly below.

South Gloucestershire - The Council's Core Strategy was adopted in December 2013. This supports the improvements to rail services in Policy CS7 (Strategic Transport Infrastructure) and makes specific reference to MetroWest.

The adopted South Gloucestershire Supplementary Planning Document (SPD) for the CPNN, dated March 2014, states under section 5.4 the requirement of developers to identify and safeguard sites for railway stations (and associated interchange facilities) along the route of the Henbury railway line. This is to ensure from the outset that sustainable travel is promoted as more convenient and attractive than car use wherever possible.

Bristol City – Planning in Bristol is guided by the Core Strategy (adopted in 2011) and a number of policies that are saved from the Bristol Local Plan (1997). The Core Strategy (Policy BCS10) states the council will support the delivery of significant improvements to transport infrastructure to provide an integrated transport systems which improves accessibility within Bristol and supports the proposed level of development. This includes the MetroWest programme and the reintroduction of a local rail passenger service along the Henbury line with a new station at Ashley Down.

3.2.2 Current rail demand and levels of service

Figure 3.1 shows a plan of the current railway provision in Bristol and surrounding area.

FIGURE 3.1

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.

The Office of Rail and Road (ORR) station usage information is shown in Table 3.1.

TABLE 3.1

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	

TABLE 3.1
ORR station usage information

Station Name	2012/13 Entries & Exits
Severn Beach	167,078
St.Andrew's Road	9,910
Avonmouth	97,880
Shirehampton	50,654
Sea Mills	58,310
Clifton Down	522,010
Redland	94,984
Montpelier	126,316
<i>TOTAL</i>	<i>1,127,142</i>
OTHER BRISTOL URBAN STATIONS	
Stapleton Road	140,390
Lawrence Hill	124,878
Bedminster	80,262
Parson Street	87,932
<i>TOTAL</i>	<i>433,462</i>
BATH and NE SOMERSET URBAN STATIONS	
Bath Spa	5,757,880
Keynsham	329,274
Oldfield Park	281,622
<i>TOTAL</i>	<i>6,368,776</i>
SOUTH GLOUCESTERSHIRE STATIONS	
Yate	307,148
Patchway	82,198
Filton Abbey Wood	852,250
Pilning	130
<i>TOTAL</i>	<i>1,241,596</i>
NORTH SOMERSET STATIONS	
Nailsea and Backwell	421,892
Yatton	398,530
Worle	253,590
Weston Milton	48,008
Weston-super-Mare	1,037,172
<i>TOTAL</i>	<i>2,159,192</i>

Note: The entries and exit figures for Severn Beach reflect the zonal ticketing system employed on the Severn Beach line and so will over report and under report certain stations.

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
- Train 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 and improved 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).

First Great Western was granted a direct award franchise to April 2019 at the beginning of 2015. The West of England councils will continue to work with DfT and others on the specification for franchises beyond that period.

3.3.2 MetroWest Phase 1

MetroWest Phase 1 is programmed for delivery in 2019, and subsequently MetroWest Phase 2 will provide complementary enhancement to the local rail network. Phase 1 will provide service enhancements on the Severn Beach line and the Bath to Bristol line plus a re-opened Portishead line with stations at Portishead and Pill.

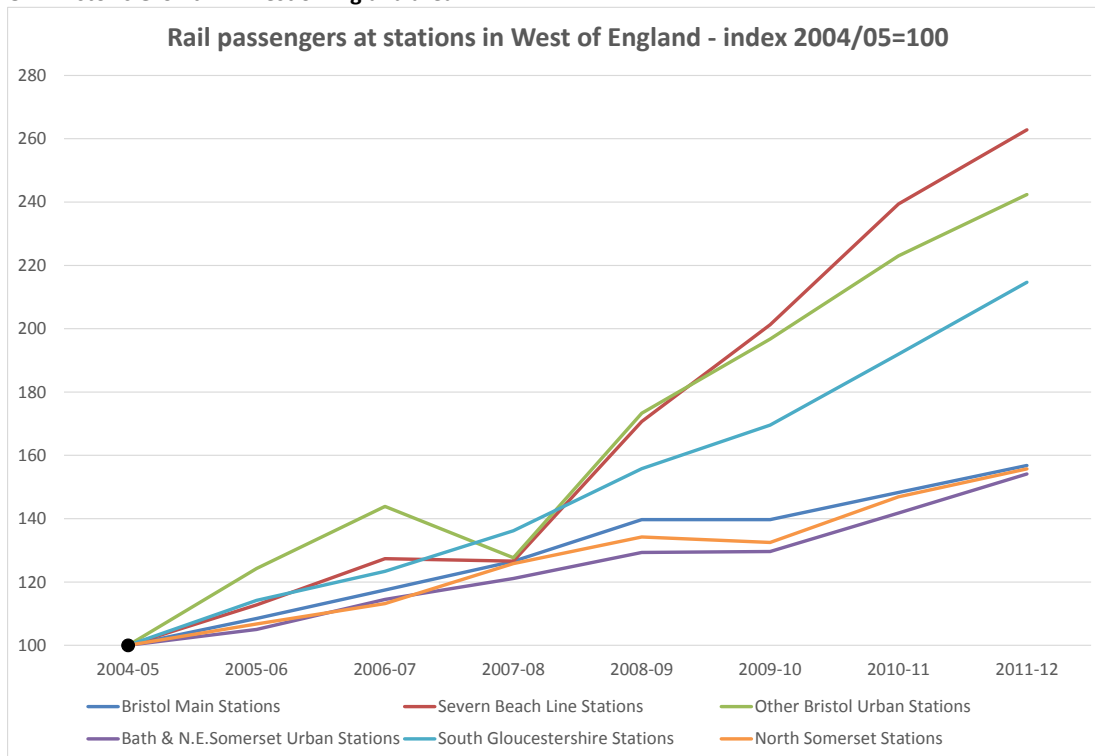
3.3.3 Future rail demand

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 3.2 and Figure 3.2. Apart from a slight levelling in 2007-08, growth has continued in spite of the economic recession, and seems likely to continue, although it is debatable whether increases will continue on their current trajectory.

TABLE 3.2
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%
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 3.2
ORR Historic Growth in West of England area



Looking into the future, the current Great Western Route Utilisation Strategy (RUS) (published in March 2010) forecasted 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.

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

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 forecast 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 3.3.

TABLE 3.3

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

Economic scenario	2013-23	2013-23	2023-2043	2023-2043
	total	per annum	total	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

- 2014 to 2017 – taper from recent historic growth rates at West of England stations (starting at 5.6% per annum from 2014 to 2015) to the 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. TAG (revised unit A5-1) suggests an assumption that patronage growth will continue 20 years after opening, with 10 and 30 year sensitivity tests.

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 2 complements planned CP5 investment through targeted investment in the West of England local rail network. MetroWest Phase 2 will play a key role in enhancing access to major growth areas, in particular the Temple Quarter Enterprise Zone, the Cribbs Patchway New Neighbourhood (which includes the Filton Enterprise Area) and the new urban extension to Yate. The project will bring the 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

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

workforce pool to draw on within a 30 minute commute and 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 close to capacity with 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 2 are:

- To support economic growth, through enhancing the transport links to the Filton Enterprise Area, North Fringe, Yate, Temple Quay Enterprise Zone (TQEZ) and Bristol City Centre
- To deliver a more resilient transport offer, providing more attractive and guaranteed (future proofed) journey times for commuters, business and residents in the area, through better utilisation of strategic heavy rail corridors from Yate and Henbury
- To improve accessibility to the rail network with new and re-opened rail stations and improved service frequencies
- To make a positive contribution to social well being, life opportunities and improving quality of life (along the affected corridors in particular)

Supporting objectives are:

- To mitigate traffic congestion in the North Fringe and Yate corridor
- To enhance the carrying capacity of the local rail network
- To reduce the adverse environmental impacts of the local transport network as a whole.

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, and to realise and maximise continued economic growth.

3.6 Options

Feasibility work to date has included the following reports:

- West of England Joint Local Transport Plan 2011 to 2026 (2011)
- West of England Area Rail Studies, Halcrow, 2012
- North Fringe Stations Study, CH2M HILL, 2014
- Bristol New Stations High Level Assessment Study, CH2M HILL, 2015
- Henbury Station Options Appraisal Report (2015)
- MetroWest Phase 2 GRIP2 (including capability analysis), Network Rail, 2015

The North Fringe Stations Study considered and dismissed the following scheme components:

- Henbury line – station at North Filton east of Charlton Tunnel
- Henbury line – station at Charlton Halt
- Henbury line – station at Fishpool Hill

These findings were endorsed by South Gloucestershire Council in the CPNN SPD.

The scheme options for MetroWest Phase 2 EAST assessment are:

- Option 1.1: Henbury line as a loop service (building on Phase 1 Option 5B)
- Option 1.2: Henbury line as a loop service (building on Phase 1 Option 6B)
- Option 1.3: Henbury line as a spur service (this could build on either Phase 1 5B or 6B)
- Option 2.1: Half-hourly service at Yate provided by extending the existing Weston-Super-Mare – Bristol Parkway terminating service to Yate – short turnaround
- Option 2.2: Half-hourly service at Yate provided by extending the existing Weston-Super-Mare – Bristol Parkway terminating service at Yate – long turnaround
- Option 2.3: Half hourly service at Yate provided by extending the existing Weston-Super-Mare – Bristol Parkway terminating service to Gloucester – short turnaround
- Option 2.4: : Half hourly service at Yate provided by extending the existing Weston-Super-Mare – Bristol Parkway terminating service to Gloucester – long turnaround
- Option 3.1: New Henbury station site – Henbury East
- Option 3.2: New Henbury station site – former Henbury Station site
- Option 3.3: New North Filton Station – former station site
- Option 3.4: New Filton Bank station site - Horfield
- Option 3.5: New Filton Bank station site – Ashley Down
- Option 3.6: New Filton Bank station site – Constable Road

The MetroWest Phase 2 scheme has been split up into a number of components to minimise the number of options considered in the EAST appraisal. For the purpose of the EAST assessment the scheme has been split up to compare:

- Options 1.1, 1.2 & 1.3 – The Henbury line options
- Options 2.1, 2.2, 2.3 & 2.4 – The options for services to Yate
- Options 3.1, 3.2, 3.3, 3.4, 3.5 & 3.6 – The new station location options

This approach therefore means, for example, the environmental impacts associated with the new stations on the Henbury Line are not reported in Options 1.1, 1.2 or 1.3 but instead are reported in Options 3.1, 3.2 and 3.3.

4 The MetroWest Phase 2 options

4.1 Introduction

This section provides a brief overview of each scheme option. Following this Section 5 provides the EAST assessment forms and Section 6 provides further supporting information from the EAST assessment.

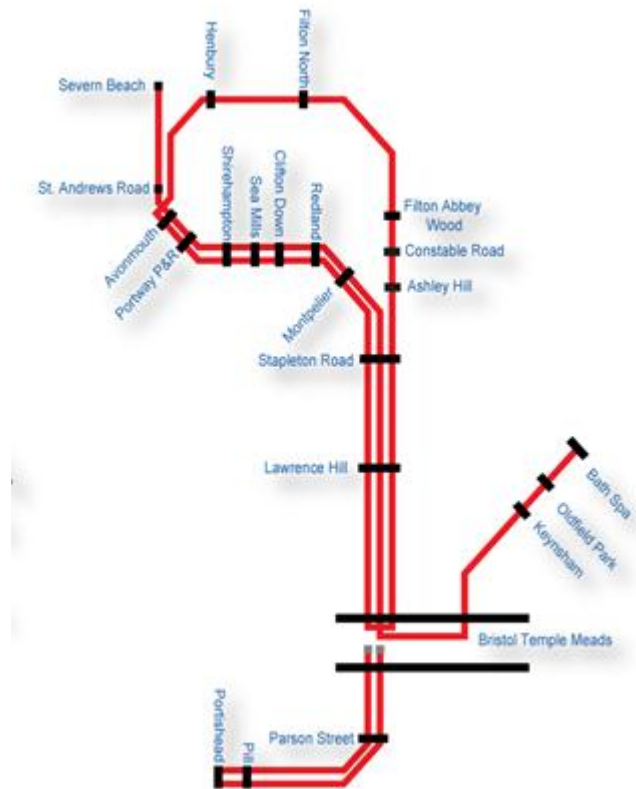
4.2 Option 1.1 Henbury line as a Loop service (building on Phase 1 Option 5B)

This option entails introducing passenger rail services on the Henbury line and integrating them with Severn Beach line services. The option assumes the Loop service (in either direction) would start and terminate at Bristol Temple Meads. The MetroWest Phase 1 service from Severn Beach would operate to Bath Spa meaning that there would be no through services to south Bristol and Portishead.

For brevity, this option is known as '**option 1.1 Henbury Loop (MW Ph1 – Option 5b)**' as shown in Figure 4.1.

FIGURE 4.1

Plan showing proposed Option 1.1 Henbury Loop (MW Ph1 – Option 5b)) (Source: Network Rail MetroWest Phase 2 Capability Analysis)



This option comprises the following elements:

- One train per hour (TPH) in each direction (i.e. anti- and clockwise services) during a typical weekday on the Henbury Loop with services commencing and terminating at Bristol Temple Meads

- One train per hour (TPH) during a typical weekday between Severn Beach and Bath Spa as part of MetroWest Phase 1. South Bristol and Portishead passenger train services to start and terminate at Bristol Temple Meads
- A need for an additional three train units above the minimum MetroWest phase 1 requirement
- Additional crossover at the Hallen Marsh junction to facilitate the potential routings of passenger and freight services and remove the need for the reverse line running by freight services

Options 3.1 to 3.3 outline the catchment and the potential demand for the various Henbury line station options. Note though that these forecasts assumed a 'spur' service (option 1.3) and no assessment has been made to-date of any potential additional demand arising from a loop service. For instance, a loop service would provide links across North and North West Bristol, such as between Filton and Avonmouth.

In terms of impacts, the option is likely to lead to:

- Improved access by public transport, particularly across North and North West Bristol, to jobs and services as a result of new links
- Further closures and downtime at the St Andrews Road level crossing with adverse impacts on the local highway network and Bristol Port operations (68 daily train crossings, compared to 34 daily movements associated with the Spur option).

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

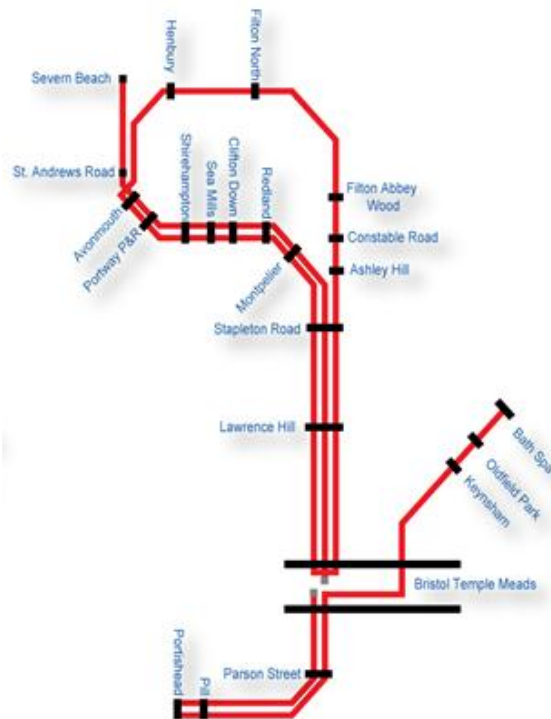
4.3 Option 1.2 Henbury line as a loop service (building on Phase 1 Option 6B)

This option entails introducing passenger rail services on the Henbury line and integrating them with Severn Beach line services. The MetroWest Phase 1 service from Severn Beach would also terminate at Bristol Temple Meads, resulting in no through services to Portishead or Bath and North East Somerset.

For brevity, this option is known as '**option 1.2 Henbury Loop (MW Ph1 – Option 6b)**' as shown in Figure 4.2.

FIGURE 4.2

Plan showing proposed Option 1.2 Henbury Loop (MW Ph1 – Option 6b)) (Source: Network Rail MetroWest Phase 2 Capability Analysis)



This option comprises the following elements:

- One TPH in each direction during a typical weekday on the Henbury Loop with services commencing and terminating at Bristol Temple Meads
- One TPH during a typical weekday between Severn Beach and Bristol Temple Meads. Other MetroWest phase 1 services would typically shuttle between either Portishead and Bristol Temple Meads or Portishead and Bath Spa
- A need for an additional three train units above the minimum MetroWest phase 1 requirement
- Additional crossover at the Hallen Marsh junction to facilitate the potential routings of passenger and freight services and remove the need for the reverse line running

With catchment and demand, this option is similar to option 1.1. The only difference being that opportunities for travel beyond Bristol Temple Meads would involve a change of train under this option. The engineering requirements, as outlined in option 1.1 would be identical.

In terms of impacts, the option is likely to lead to:

- Improved access by public transport, particularly across North and North West Bristol, to jobs and services as a result of new links; however, trips beyond Bristol Temple Meads would require a change of train.
- The same adverse impacts at the St Andrews Road level crossing as for option 1.1.

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

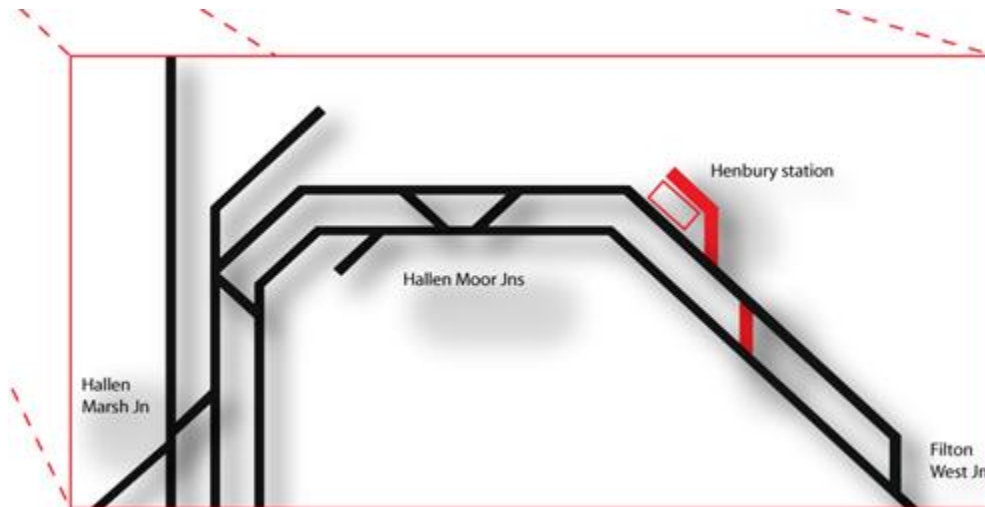
4.4 Option 1.3 Henbury line as a spur service (this could build on either Phase 1 5B or 6B)

This option involves the introduction of a spur passenger railway service between Bristol Temple Meads and Henbury; services would be self-contained and would result in no changes to the MetroWest phase 1 service pattern.

For brevity, this option is known as ‘**option 1.3 Henbury Spur**’ as shown in Figure 4.3.

FIGURE 4.3

Plan showing proposed Option 1.3 Henbury Spur (Source: Network Rail MetroWest Phase 2 Capability Analysis)



This option comprises the following elements:

- One TPH during a typical weekday on the Henbury Spur with services commencing and terminating between Bristol Temple Meads and Henbury
- A need for one additional train unit above the minimum MetroWest phase 1 requirement
- An additional crossover located close to Henbury station
- A need for a bay platform siding at Henbury station for train turnaround, so that existing and future freight movements would not be affected

Whilst this option does not identify the location or number of stations, options 3.1 to 3.3 outline the catchment and the potential demand for a Henbury spur service

In terms of impacts, the option is likely to lead to:

- Improved access by public transport, particularly to and from the North Fringe of Bristol
- No change to the benefits of MetroWest phase 1
- Some localised noise, landscape and built environmental impacts

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

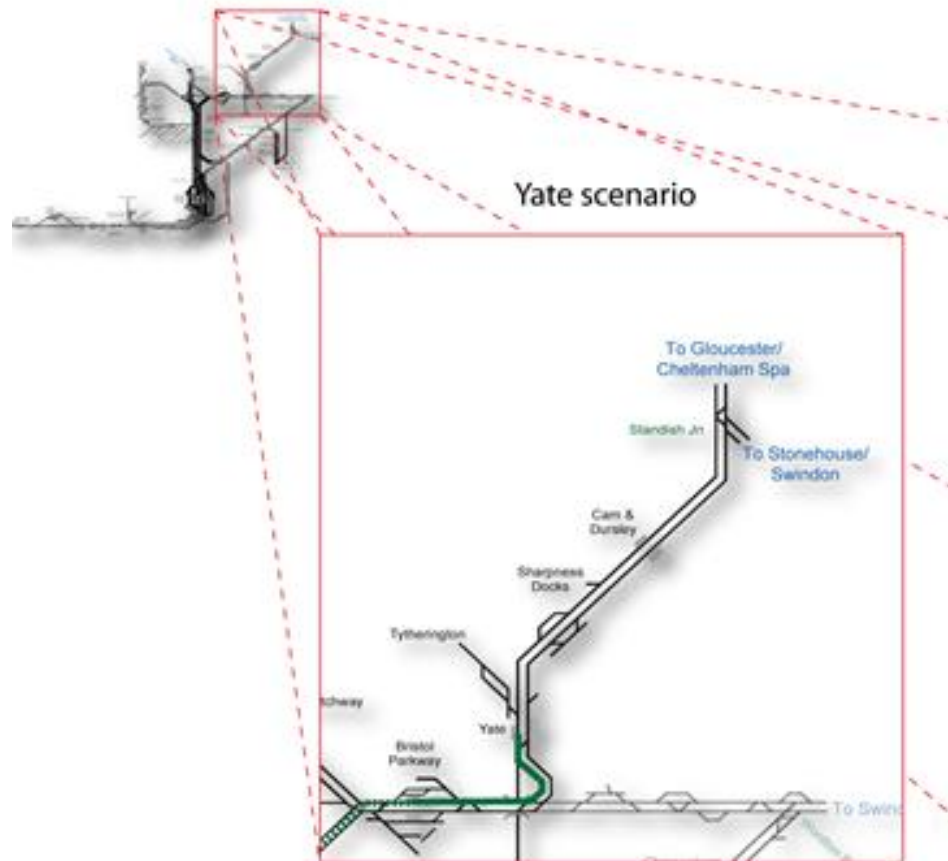
4.5 Option 2.1 Half-hourly service at Yate by extending the existing Weston-Super-Mare - Bristol Parkway terminating service to Yate – short turnaround

This option involves extending the existing weekday Weston-Super-Mare to Bristol Parkway service to Yate. The option assumes no additional train units are required for the service and as a result, requires a very short turnaround period at Yate.

For brevity, this option is known as ‘**option 2.1 Yate short turnaround**’ as shown in Figure 4.4.

FIGURE 4.4

Plan showing proposed Option 2.1 Yate short turnaround (Source: Network Rail MetroWest Phase 2 Capability Analysis)



This option includes the following elements:

- Extension of the existing hourly Weston-Super-Mare service beyond Bristol Parkway to Yate. Services would stop at all existing intermediate stations but not stations on the Filton Bank (other than Filton Abbey Wood). This would give Yate 2 TPHs during a typical weekday
- Switching the existing hourly freight path through Westerleigh junction with the additional passenger service so that there would be a better timing separation of services at Yate
- Turnaround on the running lines, which introduces a performance risk in the area and requires resignalling and bidirectional capability.

Limited assessment has been undertaken of the potential demand arising from an improved frequency, however Table 3.1 outlines existing demand at Yate. Increased half-hourly frequency will provide better opportunities and access by public transport particularly from Yate towards Bristol City Centre.

With deliverability, a capability analysis by Network Rail, identifies the historical performance of the Weston-Super-Mare to Bristol Parkway service for the 12 months to September 2014. It notes that just under 28% of services are arriving late at Bristol Parkway. It states that the risk of any delay to Yate services will be higher because of the greater distance covered and the constrained capacity at Westerleigh Junction.

In terms of impacts, the option is likely to lead to:

- High operational risks to service reliability and resilience given the short turnaround time, making the option undeliverable
- Improved access by public transport to jobs and services as a result of improved frequency

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

It is concluded that this option is not taken forward to the Preliminary Business Case as the operational risks are unacceptably high.

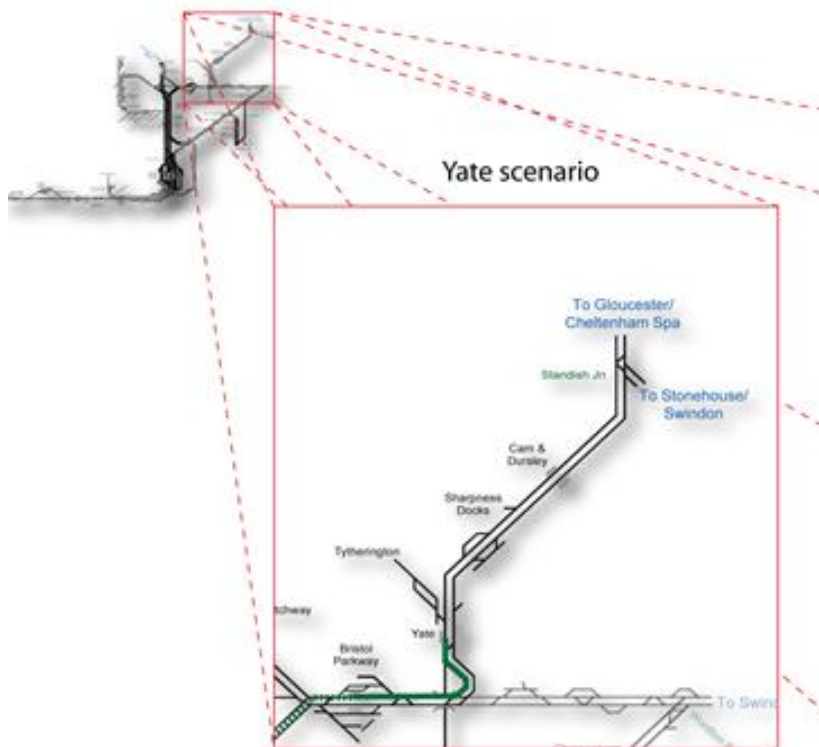
4.6 Option 2.2 Half-hourly service at Yate by extending the existing Weston-Super-Mare - Bristol Parkway terminating service to Yate – long turnaround

This option involves extending the existing weekday Weston-Super-Mare to Bristol Parkway service to Yate with a construction of a turnback at Yate. This option is similar to option 2.1, except an additional train unit will be utilised and a turnback siding constructed, resulting in a longer turnaround period at Yate.

For brevity, this option is known as ‘**option 2.2 Yate long turnaround**’ as shown in Figure 4.5.

FIGURE 4.5

Plan showing proposed Option 2.2 Yate short turnaround (Source: Network Rail MetroWest Phase 2 Capability Analysis)



This option includes the following elements:

- Extension of the existing hourly Weston-Super-Mare service beyond Bristol Parkway to Yate. Services would stop at all existing intermediate stations, but not stations on the Filton Bank (other than Filton Abbey Wood). This would give Yate 2 TPHs during a typical weekday
- Switching the existing hourly freight path through Westerleigh junction with the additional passenger service so that there would be a better separation of services at Yate
- Construction of a turnback siding at Yate plus associated resignalling and bidirectional capability
- The need for one additional train unit

Limited assessment has been undertaken of the potential demand arising from an improved frequency, however table 3.1 outlines existing demand at Yate. Increased half-hourly frequency will provide better opportunities and access by public transport particularly from

The leasing of an additional train unit is likely to introduce greater resilience and reliability to the service, although there would be greater ongoing operating costs as a result.

In terms of impacts, the option is likely to lead to:

- Improved access by public transport to jobs and services as a result of improved frequency
- Some local noise impacts arising from a new siding and stabled rolling stock

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

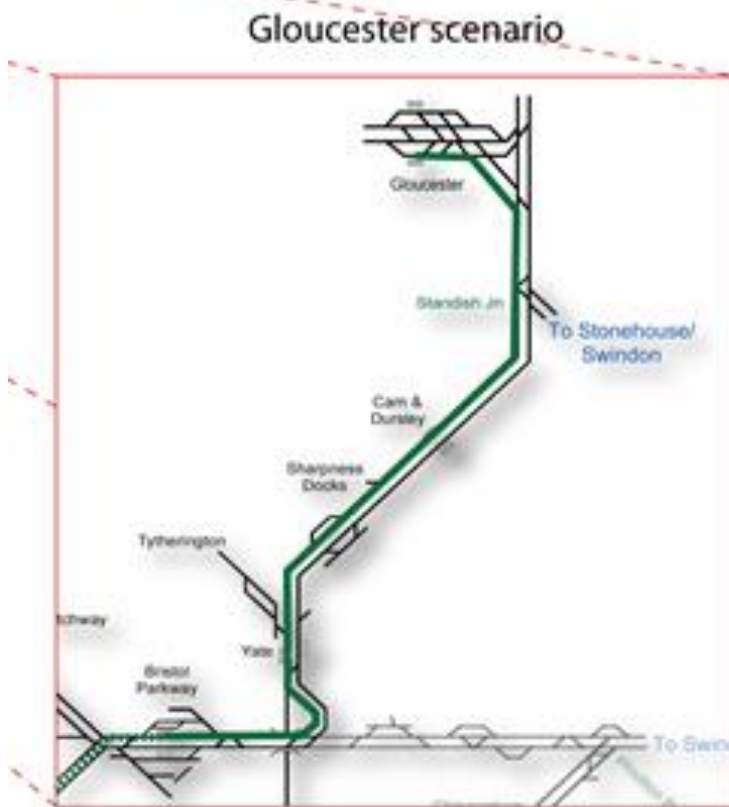
4.7 Option 2.3 Half-hourly service at Yate by extending the existing Weston-Super-Mare – Bristol Parkway terminating service to Gloucester – short turnaround

This option involves extending the existing weekday Weston-Super-Mare to Bristol Parkway service to Gloucester. This option is similar to option 2.1, except it would provide additional opportunities for movement between the Bristol, Yate and the Gloucester corridor. An additional train unit will be utilised although a very short turnaround is expected at Gloucester.

For brevity, this option is known as '**option 2.3 Gloucester short turnaround**' as shown in Figure 4.6.

FIGURE 4.6

Plan showing proposed Option 2.3 Gloucester short turnaround (Source: Network Rail MetroWest Phase 2 Capability Analysis)



This option includes the following elements:

- Extension of the existing hourly Weston-Super-Mare service beyond Bristol Parkway to Gloucester. Services would stop at all existing intermediate stations but not stations on the Filton Bank (other than Filton Abbey Wood). This would provide Yate with 2 TPHs during a typical weekday
- Switching the existing hourly freight path through Westerleigh junction with the additional passenger service so that there would be a better separation of services at Yate and Gloucester
- Utilisation of an existing infrastructure at Gloucester
- The need for one additional train unit

Limited assessment has been undertaken of the potential demand arising from an improved frequency however table 3.1 outlines existing demand at Yate. Increased half-hourly frequency will provide better opportunities and access by public transport not only from Yate towards Bristol City Centre but Bristol and Gloucester.

An additional train unit is required for the extended service to Gloucester; nevertheless, the turnaround time at Gloucester is very short and there are implications for service reliability and resilience.

In terms of impacts, the option is likely to lead to:

- High operational risks to service reliability and resilience given the short turnaround time, making the option undeliverable
- Improved access by public transport to jobs and services as a result of improved frequency
- Better connectivity along the Bristol to Gloucester corridor

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

It is concluded that this option is not taken forward to the Preliminary Business Case as the operational risks are unacceptably high.

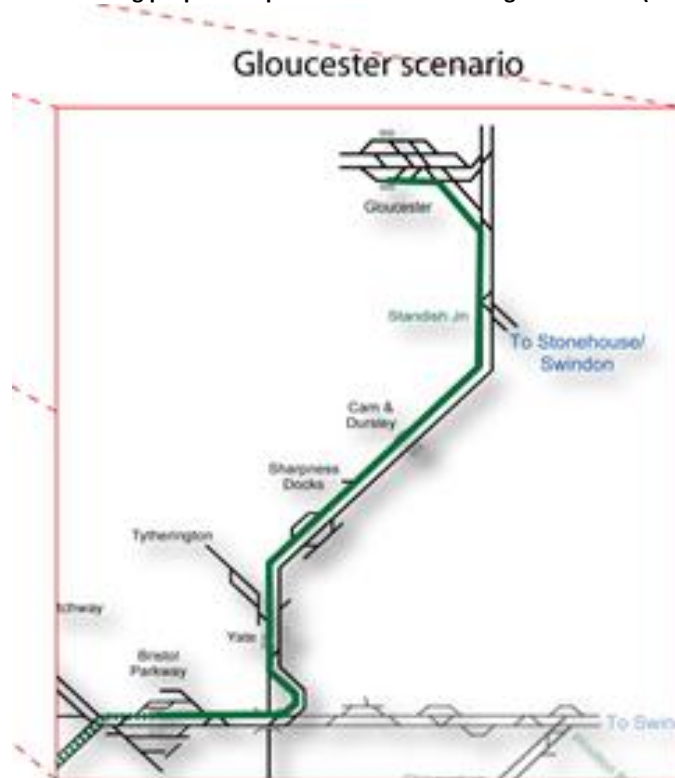
4.8 Option 2.4 Half-hourly service at Yate by extending the existing Weston-Super-Mare – Bristol Parkway terminating service to Gloucester – long turnaround

This option involves extending the existing weekday Weston-Super-Mare to Bristol Parkway service to Gloucester. This option is similar to option 2.2, except it would provide additional opportunities for movement between the Bristol, Yate and the Gloucester corridor. Also two additional train units will be utilised.

For brevity, this option is known as ‘**option 2.4 Gloucester long turnaround**’ as shown in Figure 4.7

FIGURE 4.7

Plan showing proposed Option 2.4 Gloucester long turnaround (Source: Network Rail MetroWest Phase 2 Capability Analysis)



This option includes the following elements:

- Extension of the existing hourly Weston-Super-Mare service beyond Bristol Parkway to Gloucester. Services would stop at all existing intermediate stations but not stations on the Filton Bank (other than Filton Abbey Wood). This would provide Yate with 2 TPHs during a typical weekday
- Switching the existing hourly freight path through Westerleigh junction with the additional passenger service to provide a better separation of services at Yate and Gloucester
- Utilisation of existing infrastructure at Gloucester
- Requirement for two additional train units

Limited assessment has been undertaken of the potential demand arising from an improved frequency however table 3.1 outlines existing demand at Yate. Increased half-hourly frequency will provide better opportunities and access by public transport not only from Yate towards Bristol City Centre but Bristol and Gloucester.

This option requires two additional train units for the extended service to Gloucester. This will ensure that there is sufficient turnaround time at Gloucester with a positive impact on service reliability and resilience.

In terms of impacts, the option is likely to lead to:

- Improved access by public transport to jobs and services as a result of improved frequency
- Better connectivity along the Bristol to Gloucester corridor

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

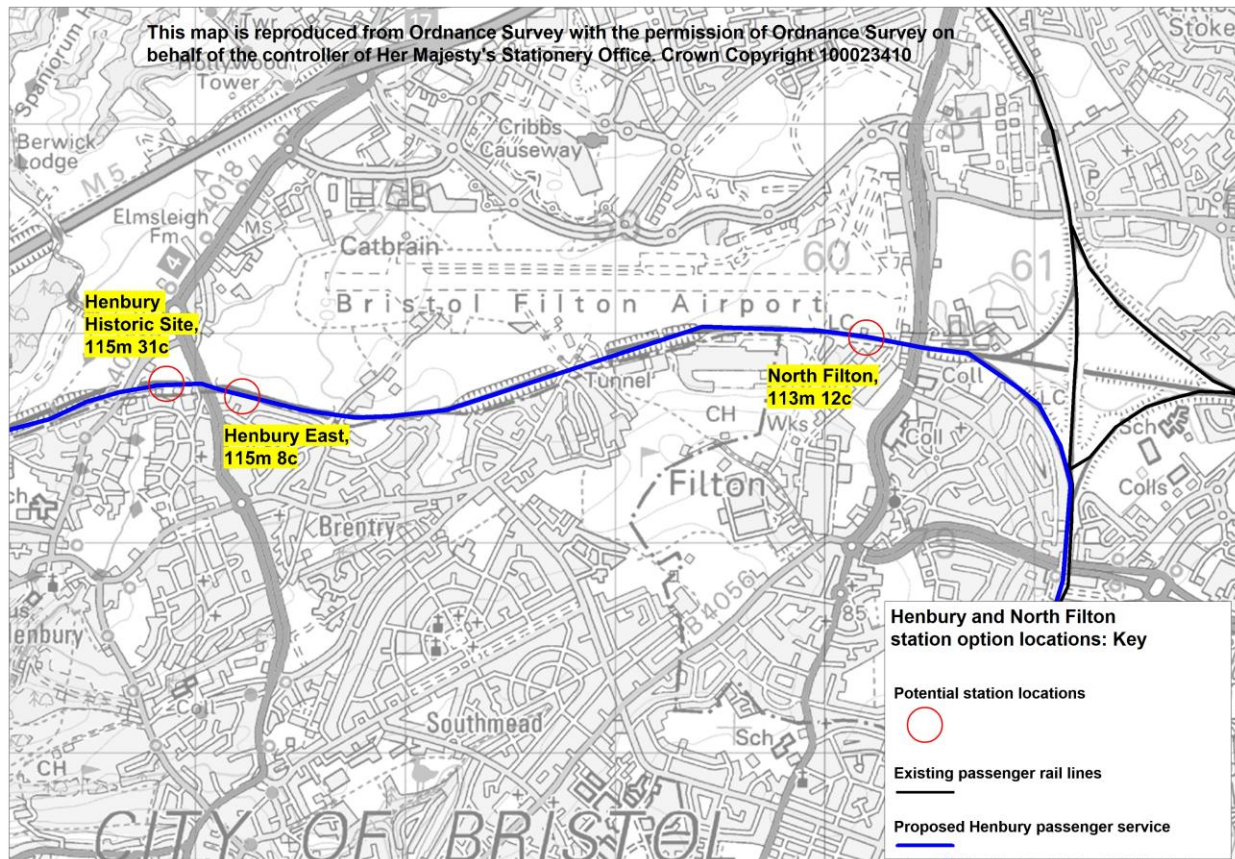
4.9 Option 3.1 New Henbury Station Site – Henbury East

This option involves the construction of a new railway station to the immediate east of the A4018 road bridge over the Hallen railway line as shown below as ‘Henbury East’.

For brevity, this option is known as ‘**option 3.1 Henbury East**’, see location plan in Figure 4.8:

FIGURE 4.8:

Plan showing location of Option 3.1 Henbury East station (Source: Bristol North Fringe Stations Study)



The initial outline design for the option provides for a station with the following components:

- Either a two platform station (150m length by 3m width) with associated automatic ticketing facilities, waiting shelters, real time information and a pedestrian footbridge over the railway line, or a bay platform station (and no footbridge) on a new siding from the Henbury line

- Principal bus and vehicle access from a phase of the neighbouring CPNN development (Outline permission for 1,100 dwellings on 53ha of land with access from Wyck Beck Road)
- An additional pedestrian access point for the Loop options from Tramere Avenue to the south of the site
- A car park that could potentially accommodate up to 30 vehicles of which three will be allocated for disabled users and a bus stop to facilitate the picking up and dropping off of passengers at the stations
- 15 cycle racks

Within a 1 km catchment zone, the option is likely to serve in excess of 3,000 existing addresses. This figure will increase when the CPNN development is implemented.

The initial demand forecasts (MetroWest Phase 2 Bristol North Fringe Stations study) suggests 174,104 users for an opening year of 2021 and 316,413 for the horizon year of 2043. Using 2013 prices, the forecasts suggest a potential revenue amount of £608,857 for the opening year based on a service with one train per hour. It should be noted that this forecast does not reflect the impact of neighbouring stations.

Regarding alignment, the option is likely to have a horizontal alignment of approximately 1,400m radius and a vertical alignment of 1 in 120. It is noted that the existing drainage and formation issues will require attention at this location and that a drainage scheme has been included within Control Period 4. Estimates of construction costs are approximately £6.1m allowing for a 40% contingency and excluding land acquisition costs and VAT.

In terms of impacts, the option is likely to lead to:

- Improved access by public transport to jobs and services
- Positive impact on the west end of the CPNN development site
- Some localised noise impacts at the site
- Impacts to the natural landscape in the vicinity of the station

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

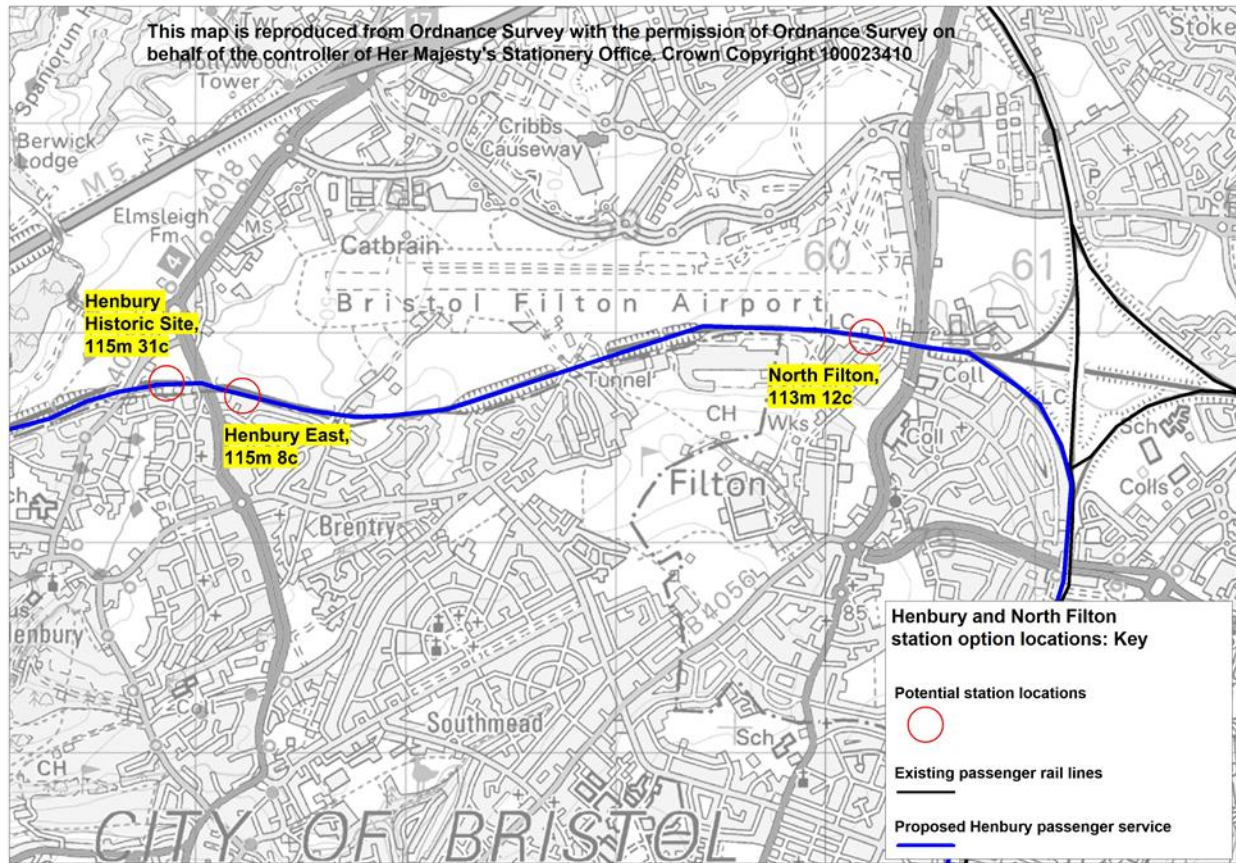
4.10 Option 3.2 New Henbury Station Site – former Henbury Station

This option involves the construction of a new railway station on the previous site of the Henbury railway station immediately west of the A4018 road bridge as shown below as ‘Henbury Historic Site’.

For brevity, this option is known as ‘**option 3.2 Henbury Former Site**’, see location plan in Figure 4.9.

FIGURE 4.9

Plan showing location of Option 3.2 Henbury Former Site (Source: Bristol North Fringe Stations Study)



The initial outline design for this option, as shown below, provides for a station with the following components:

- Demolition of the former station infrastructure
- Either a two platform station (150m length by 3m width) with associated automatic ticketing facilities, waiting shelters, real time information and a pedestrian footbridge over the railway line, or a bay platform station (and no footbridge) on a new siding from the Henbury line
- Principal bus, vehicle and pedestrian access via the neighbouring district centre (one phase of the proposed CPNN development – 51.5ha development with access from the A4018)
- A car park that could potentially accommodate up to 30 vehicles of which three will be allocated for disabled users and a bus stop to facilitate the picking up and dropping off of passengers at the stations
- 15 cycle racks

Similarly to Option 3.1:

- It is likely to serve in excess of 3,000 existing addresses within a 1 km catchment zone and the west end of the Cribbs Patchway New Neighbourhood (CPNN)
- An initial demand forecast of 174,104 users for an opening year of 2021 and 316,413 for the horizon year of 2043. Has a potential revenue amount of £608,857 for the opening year based on a service with one train per hour (2013 prices). It should be noted that this forecast does not reflect the impact of neighbouring stations.

Regarding alignment, the option is likely to have a horizontal alignment of approximately 1,400m radius and a vertical alignment of 1 in 264. It is noted that the existing drainage and formation issues will require attention at this location although there is an existing platform on the downside, so it is unlikely to damage current drainage assets in the area. Estimates of construction costs are approximately £5.4m allowing for a 50% contingency and excluding land acquisition costs and VAT.

In terms of impacts, the option is likely to lead to:

- Improved access by public transport to jobs and services
- Positive impact on the west end of the CPNN development site
- Some localised noise impacts at the site
- Requirement for the acquisition of third party land to accommodate a pedestrian access route

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

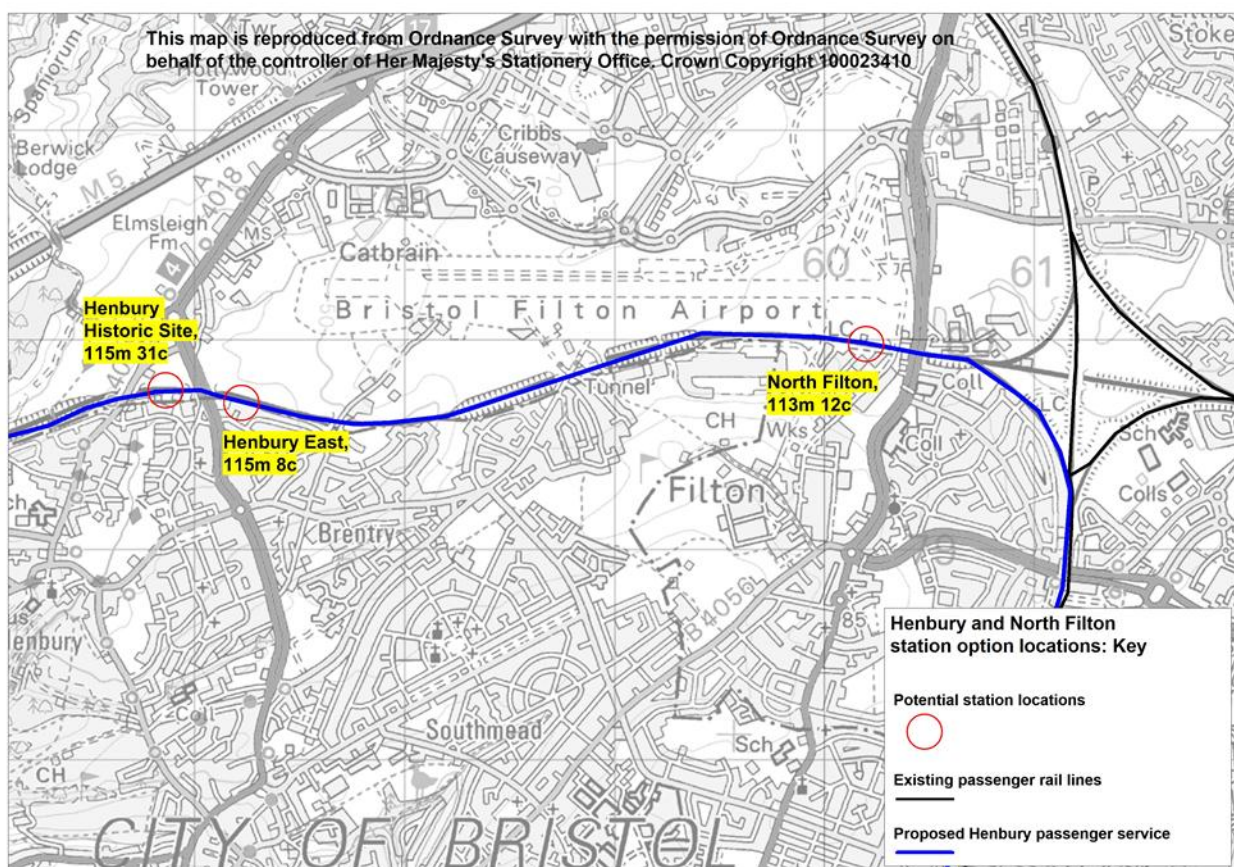
4.11 Option 3.3 New North Filton Station – Former Station Site

This option involves the construction of a new railway station on the previous site of the North Filton railway station to the immediate west of the A38 Gloucester Road bridge as shown below as ‘North Filton Historic site’.

For brevity, this option is known as ‘**option 3.3 North Filton**’, see location plan in Figure 4.10:

FIGURE 4.10

Plan showing location of Option 3.3 North Filton (Source: Bristol North Fringe Stations Study)



The initial outline design for this option, as shown below, provides for a station with the following components:

- Demolition of existing former station infrastructure
- A two platform station (150m length by 3m width) with associated automatic ticketing facilities, waiting shelters, real time information and a pedestrian footbridge over the railway line
- Principal bus and vehicle access from both the Airbus site access route from the A38 and the wider CPNN development
- One additional pedestrian access point from the A38
- A car park that could potentially accommodate up to 30 vehicles of which three will be allocated for disabled users and a bus stop to facilitate the picking up and dropping off of passengers at the stations
- 30 cycle racks

This option would primarily cater for both the existing and future employment sites, as well as for existing and new residents, within a walking and cycling catchment area. Walking and cycling links to the north would be integrated into the CPNN; to the east there would be links to the A38; to the south is controlled site access into Airbus.

The initial demand forecasts (MetroWest Phase 2 Bristol North Fringe Stations study) suggests 137,842 users for an opening year of 2021 and 299,140 for the horizon year of 2043. Using 2013 prices, the forecasts suggest a potential revenue amount of £498,650 for the opening year based on a service with one TPH. It should be noted that this forecast does not reflect the impact of neighbouring stations.

Regarding alignment, the option will have a straight alignment with a vertical alignment of 1 in 210. It is noted that the existing drainage and formation issues will need consideration although there is an existing platform which is unlikely to damage current drainage assets in the area. Estimates of construction costs are approximately £6.4m allowing for a 50% contingency and excluding land requisition costs and VAT.

In terms of impacts, the option is likely to lead to:

- Improved access by public transport particularly to jobs and services
- Positive impact on the east side of the CPNN development and the Filton Enterprise area
- Limited negative environmental impacts as the immediate area is largely industrial rather than residential
- Requirement for the acquisition of third party land to accommodate both a car parking area and the pedestrian route to and from the A38

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

4.12 Option 3.4 New Filton Bank Station Site – Horfield

This option involves the construction of a new railway station on the previous site of the Horfield railway station close to Bonnington Walk as shown below.

For brevity, this option is known as ‘**option 3.4 Horfield**’, see location plan in Figure 4.11:

FIGURE 4.11:
Plan showing location of Option 3.4 Horfield (Source: Bristol New Stations High Level Assessment Study)



The initial outline design for the option, as shown below, provides for a station with the following components:

- A two platform station with associated automatic ticketing facilities, waiting shelters, real time information and either a pedestrian footbridge over the railway line or ramps/steps directly to Bonnington Walk road bridge
- Principal vehicle access will be a drop-off/pick up area adjacent to the station site with no on-site car parking provided
- Space for unspecified number of cycle spaces.

No vehicle parking provision will be made at this site.

This option would primarily cater for local journeys. The immediate land use is mainly residential and most journeys will be to access local employment, leisure and services. One key feature of this option is the relative proximity of Filton Abbey Wood station, less than 1km away. Given the level of current services at Filton Abbey Wood, this is expected to have an effect on potential demand at Horfield station.

The initial demand forecasts (Bristol New Stations High Level Assessment Study) suggests 92,350 users for an opening year of 2021 and 139,364 for the horizon year of 2043. Using 2014 prices, the forecasts suggest a potential revenue amount of £191,062 for the opening year based on the implementation of MetroWest phase 2. It should be noted that this forecast does not reflect the impact of neighbouring stations.

The proposed station site is located in an area designated by Network Rail for crossovers as part of the Filton Bank four tracking scheme. This is a critical issue.

Regarding alignment, the option has a straight alignment but there are issues relating to the vertical alignment where south of the station the gradient is 1.45%. Extensive work to gradients are required along the Filton Bank as a result. Also, the proposed station site is located in a cutting and there is a limitation of space. Consequently, access would need to be constructed from Bonnington Walk which will also involve the removal of woodland. There are two principal access options involving either steps/ramps directly to Bonnington Walk road bridge or a footbridge to link directly to a drop off/pick up area. As a result, the estimates of construction costs are in the region of £8.5m to £8.6m, including a 40% contingency and excluding land acquisition costs and VAT.

In terms of impacts, the option is likely to lead to:

- Improved access by public transport particularly to jobs and services
- A beneficial effect on congestion along the A38 corridor
- Potential increased demand for on-street parking in the immediate area as there is no parking provision at the station
- Localised environmental impacts, particularly the loss of woodland
- Requirement for the acquisition of third party land

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

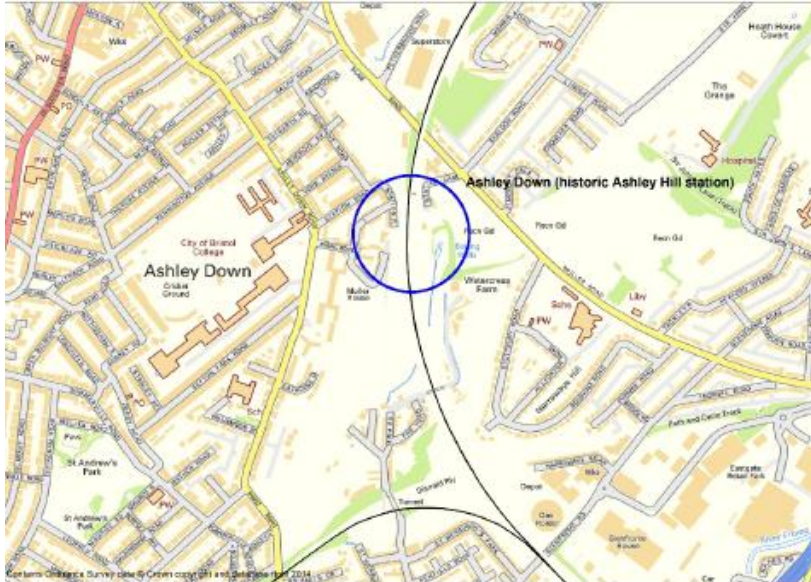
4.13 Option 3.5 New Filton Bank Station Site – Ashley Down

This option involves the construction of a new railway station on the previous site of the Ashley Hill railway station, south of Muller Road as shown below.

For brevity, this option is known as ‘**option 3.5 Ashley Down.**’, see location plan in Figure 4.12:

FIGURE 4.11

Plan showing location of Option 3.3 Ashley Down (Source: Bristol New Stations High Level Assessment Study)



The initial outline design for the option, as shown below, provides for a station with the following components:

- A two platform station with associated automatic ticketing facilities, waiting shelters, real time information and a pedestrian footbridge
- Principal vehicle access will be a drop/off pick up area adjacent to the station site along Station Road with no on-site car parking provided
- Space for unspecified number of cycle spaces.

The option would primarily cater for local journeys. The immediate land use is mainly residential and most journeys will be to access local employment, leisure and services. Although the option is located 1.5km away from the existing Stapleton Road station, it is located on the opposite side to the M32 which combined with limited crossing points effectively splits the catchment areas.

The initial demand forecasts (Bristol New Stations High Level Assessment Study) suggests 170,281 users for an opening year of 2021 and 256,969 for the horizon year of 2043. Using 2014 prices, the forecasts suggest

a potential revenue amount of £352,293 for the opening year based on the implementation of MetroWest Phase 2. It should be noted that this forecast does not reflect the impact of neighbouring stations.

Regarding alignment, the option has a proposed horizontal alignment radius of 1016m but there are issues relating to the vertical alignment where south of the station the gradient is 1.32%. As a result, extensive work to gradients along the Filton Bank are required. Another consideration is that the option would require an area of woodland that would need to be fully or partially cleared and a public footpath that may need relocation. Furthermore, additional traffic is likely to impact on the immediate local highway network.

In terms of impacts, the option is likely to lead to:

- Improved access by public transport particularly to jobs and services
- A beneficial effect on congestion along the A38 corridor
- Possible localised traffic impact on surrounding streets
- Localised environmental impacts, particularly the loss of woodland
- The need to realign a foot/cyclepath (Concorde Way)

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

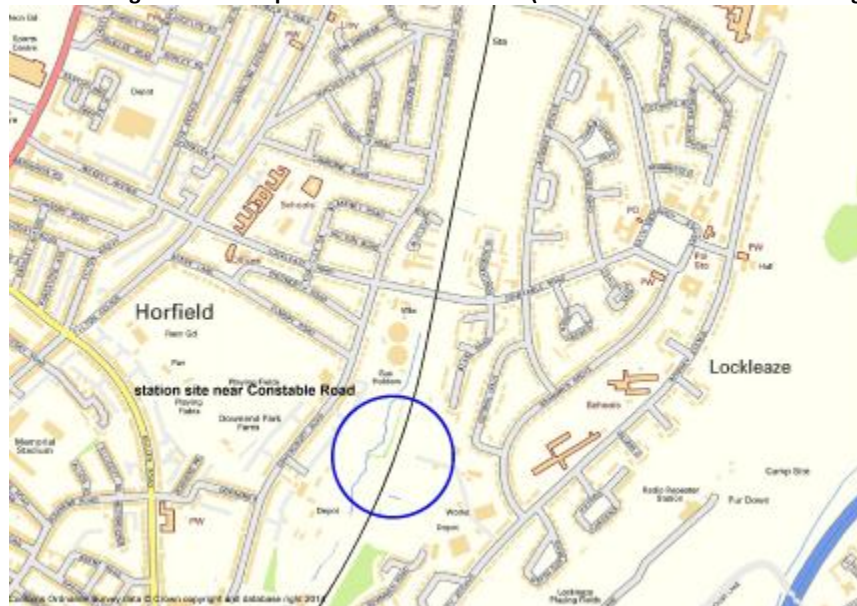
4.14 Option 3.6 New Filton Bank Station Site – Constable Road

This option involves the construction of a new railway station on a new site south of Constable Road as shown below.

For brevity, this option is known as ‘**option 3.6 Constable Road**’, see location plan in Figure 4.13:

FIGURE 4.13:

Plan showing location of Option 3.6 Constable Road (Source: Bristol New Stations High Level Assessment Study)



The initial outline design for the option, as shown below, provides for a station with the following components:

- A two platform station with associated automatic ticketing facilities, waiting shelters, real time information and a footbridge

- Principal vehicle access will be a drop/off pick up area adjacent to the east of station site from Romney Avenue with no on-site car parking provided
- Space for unspecified number of cycle spaces

No vehicle parking provision will be made at the site.

The option would primarily cater for local journeys. The immediate land use is mainly lower density residential (with limited industrial or commercial uses) and most journeys will be to access local employment, leisure and services. The majority of station users are anticipated to come from within a 2km zone and will comprise 85% approximately of the demand.

The initial demand forecasts (Bristol New Stations High Level Assessment Study) suggests 91,841 users for an opening year of 2021 and 138,597 for the horizon year of 2043. Using 2014 prices, the forecasts suggest a potential revenue amount of £190,010 for the opening year based on the implementation of MetroWest phase 2. It should be noted that this forecast does not reflect the impact of neighbouring stations.

Regarding alignment, the option has a straight alignment but there are issues relating to the vertical alignment where south of the station the gradient is 1.2%. As a result, extensive work to gradients along the Filton Bank are required. Another engineering consideration is that the option is located in a cutting where woodland/vegetation is present. Consequently, this option may require some limited clearance of woodland to facilitate both construction works and access to the site. Furthermore, additional traffic is likely to impact on the immediate local highway network. The construction cost estimates are in the region of £9.2m, including a 40% contingency and excluding land requisition costs and VAT.

In terms of impacts, the option is likely to lead to:

- Improved access by public transport particularly to jobs and services
- A beneficial effect on congestion along the A38 corridor
- Localised traffic impact on surrounding streets
- Localised environmental impacts, particularly the partial loss of woodland

Refer to section 5 for the EAST appraisal of this option and the supporting information for further detail.

SECTION 5

5 MetroWest Phase 2 – TAG Appraisal Stage 1 –EAST Tables

Early Assessment and Sifting Tool - *Saved Option*

1

Option	1.1
Date	11/12/2014
Description	Herbury Line as a loop service (building on Phase 1 option 5B) (All loop services terminating at Bristol Temple Meads with the exception of Bath Spa to Severn Beach)

Strategic

Identified problems and objectives	Helps to deliver a more resilient transport offer, partially mitigates against existing congestion problems and improves accessibility. Consistent with CPNN, the JTLF and the SEP.	
Scale of Impact	4	Better links across N Bristol. Loss of x-Bristol service
Fit with wider transport and government objectives	3	
Fit with other objectives	3	
Key uncertainties	Depend. on station locations, early stage of design, Hallen Marsh junction capacity	
Degree of consensus over outcomes	5. Majority	

Economic

Economic growth	5 Green	Supports Avonmouth/Filton EA, North Fringe & TQEZ
Carbon emissions	4. Amber/green	Increase in PT trips & reduction in car trips
Socio-distributional impacts and the regions	5 Green	Increase in GVA, Improved access by PT
Local environment	3. Amber	Air pollution reduces, localised noise/built env. disbenefit
Well being	5 Green	Increased use of PT & accessibility
Expected V/M Category	4. Low 1-1.5	With options combined, V/M is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	Commencement of passenger trains 2021
Public acceptability	5. High	Public support; St Andrews Rd level crossing closure
Practical feasibility	2	Timetable resilience concerns
What is the quality of the supporting evidence?	2	
Key risks	Dependent upon station locations (and demand). Loss of through Bristol TM links reduce benefits of MetroWest 1 - offset by improved links across North Bristol	

Financial

Affordability	2	Above MetroWest budget
Capital Cost (£m)	02. 0-5	Hallen Marsh junction upgrade; Excl. station costs
Revenue Costs (£m)	02. 0-5	£0.75m pa for each train unit
Cost profile	Cap. costs excl. VAT and land costs	
Overall cost risk	2	Other costs P1e-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Competing loop and spur options
Where is funding coming from?	Devolved scheme funding, developer contributions	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

2

Option	1.2
Date	11/12/2014
Description	Herbury line as a loop service (building on Phase 1 option 6b) (With all services terminating at Bristol Temple Meads)

Strategic

Identified problems and objectives	Helps to deliver a more resilient transport offer, partially mitigates against existing congestion problems and improves accessibility. Consistent with CPNN, the JTLF and the SEP.	
Scale of Impact	4	Better links across N Bristol. Loss of x-Bristol services
Fit with wider transport and government objectives	3	
Fit with other objectives	3	
Key uncertainties	Depend. on station locations, early stage of design, Hallen Marsh junction capacity	
Degree of consensus over outcomes	3	

Economic

Economic growth	5 Green	Supports Avonmouth/Filton EA, North Fringe & TQEZ
Carbon emissions	4 Amber/green	Increase in PT trips & reduction in car trips
Socio-distributional impacts and the regions	5 Green	Increase in GVA, improved access by PT
Local environment	3 Amber	Air pollution reduces, localised noise/built env. disbenefit
Well being	5 Green	Increase use of PT & accessibility
Expected VFM Category	4. Low 1-1.5	With options combined, VFM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	Commencement of passenger trains 2021
Public acceptability	5. High	Public support; St Andrews Road level crossing closures
Practical feasibility	3	Depend. on station locations loss of thru Bristol TM links
What is the quality of the supporting evidence?	2	
Key risks	Dependent upon station locations (and demand). Loss of thru Bristol TM links reduce the benefits of MetroWest 1 but offset by improved links across North Bristol	

Financial

Affordability	2	Above MetroWest budget
Capital Cost (£m)	02. 0-5	Upgrade to Hallen Marsh junction. Excl. station costs
Revenue Costs (£m)	02. 0-5	£0.75m pa for each train unit
Cost profile	Cap. costs excl. VAT and land costs	
Overall cost risk	2	Other costs Pre-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Competing loop and spur options
Where is funding coming from?	Devolved scheme funding, developer contributions	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

3

Option	1.3
Date	11/12/2014
Description	Herbury line as a spur service (this could build either on MetroWest phase option 1 5B or 6B)

Strategic

Identified problems and objectives	Helps to deliver a more resilient transport offer, partially mitigates against existing congestion problems and improves accessibility. Consistent with the CPNN, the JILP and the SEP.	
Scale of Impact	3	Does not change MetroWest Phase 1 benefits
Fit with wider transport and government objectives	3	
Fit with other objectives	3	
Key uncertainties	Benefits of service dependent upon final station locations	
Degree of consensus over outcomes	3	Support for a Severn Beach loop service instead of spur

Economic

Economic growth	5 Green	Supports Filton EA, North Fringe and TQEZ
Carbon emissions	4 Amber/green	Modal shift towards PT expected
Socio-distributional impacts and the regions	4 Amber/green	Increase in GVA, Improved access by PT
Local environment	4 Amber/green	Air pollution reduces, localised noise/built env. disbenefit
Well being	5 Green	Increased use of PT & accessibility
Expected VM Category	4. Low 1-1.5	With options combined, VM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	
Public acceptability	3	Local desire for a Severn Beach loop service
Practical feasibility	4	Dependent on station locations
What is the quality of the supporting evidence?	2	
Key risks	Dependent upon location of final stations. Spur Service does not impact on MetroWest Phase 1 proposals and will complement these	

Financial

Affordability	4	Within current MetroWest phase 2 budget
Capital Cost (£m)	02. 0-6	Crossover/siding at Herbury; Ex cl. station cap. cost
Revenue Costs (£m)	02. 0-6	£0.75m pa for each train unit
Cost profile	Cap costs ex cl. VAT and land costs	
Overall cost risk	4	Other costs Pre-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Loop service alternatives
Where is funding coming from?	Devolved scheme funding	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

4

Option	2.1
Date	11/12/2014
Description	Half-hourly service at Yate provided by extending the existing Weston-Super-Mare - Bristol Parkway terminating service at Yate - short turnaround

Strategic

Identified problems and objectives	Partially mitigates against existing congestion problems and improves accessibility. Consistent with the JTLF and the SEP	
Scale of Impact	2	Forecast not yet available, modest impact expected.
Fit with wider transport and government objectives	2	
Fit with other objectives	3	
Key uncertainties	Existing services can be utilised but operational performance risk	
Degree of consensus over outcomes	4	

Economic

Economic growth	4. Amber/green	Supports TQEZ. Network resilience issues
Carbon emissions	4. Amber/green	Some modal shift expected
Socio-distributional impacts and the regions	3. Amber	Improved frequency will increase access by PT
Local environment	4. Amber/green	
Well being	5. Green	
Expected VFM Category	4. Low 1-1.5	With options combined, VFM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	
Public acceptability	4	
Practical feasibility	1. Low	Operationally risky; network resilience issues
What is the quality of the supporting evidence?	2	
Key risks	Documented performance issues with existing Parkway services. Extension to Yate will increase this risk - particularly with capacity constraints at Westerleigh Jctn.	

Financial

Affordability	5. Affordable	
Capital Cost (£m)	02. 0-5	Estimated approx £2m for Yate Turnback
Revenue Costs (£m)	02. 0-5	No extra leasing costs except running/maintenance
Cost profile	Existing units can be utilised.	
Overall cost risk	4	Other costs P16-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Competing long turnback and Gloucester options
Where is funding coming from?	Devolved scheme funding	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - Saved Option

5

Option	2.2
Date	11/12/2014
Description	Half-hourly service at Yate by extending the existing Weston-Super-Mare - Bristol Parkway terminating service at Yate - long turnaround.

Strategic

Identified problems and objectives	Helps to deliver a more resilient transport offer, partially mitigates against existing congestion problems and improves accessibility. Consistent with the JTLF and the SEP.	
Scale of Impact	3	Forecast not yet available. Modest impact expected.
Fit with wider transport and government objectives	3	
Fit with other objectives	3	
Key uncertainties	Requires one additional train unit	
Degree of consensus over outcomes	4	

Economic

Economic growth	4. Amber/green	Supports TQEZ.
Carbon emissions	4. Amber/green	Some modal shift expected
Socio-distributional impacts and the regions	3. Amber	Improved frequency will increase access by PT
Local environment	4. Amber/green	
Well being	5. Green	
Expected VFM Category	4. Low 1-1.5	With options combined, VFM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	
Public acceptability	4	Approx £2m for Yate turnback
Practical feasibility	4	Requires turnback & one additional train unit
What is the quality of the supporting evidence?	2	
Key risks	One additional train unit will be required but will ensure performance issues (e.g. capacity constraints at Westerleigh Junction) are minimised	

Financial

Affordability	4	
Capital Cost (£m)	02. 0-6	
Revenue Costs (£m)	02. 0-6	Annual leasing costs of £0.75m pa for each train unit
Cost profile	Additional unit + staffing costs. Maintenance costs of new turnback	
Overall cost risk	4	Other costs P18-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Competing short turnback and Gloucester options
Where is funding coming from?	Devolved scheme funding	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

6

Option	2.3
Date	11/12/2014
Description	Half-hourly service at Yate provided by extending the existing Weston-Super-Mare - Bristol Parkway terminating service to Gloucester - short turnaround

Strategic

Identified problems and objectives	Partially mitigates against existing congestion problems and improves accessibility. Consistent with the JTLF and the SEP	
Scale of Impact	2	Forecast not yet available, Glos-TM some impact.
Fit with wider transport and government objectives	2	
Fit with other objectives	3	
Key uncertainties	Additional unit but operational risk from short turnaround times	
Degree of consensus over outcomes	4	

Economic

Economic growth	4. Amber/green	Supports TQEZ. Network resilience issues
Carbon emissions	4. Amber/green	Some modal shift expected
Socio-distributional impacts and the regions	4. Amber/green	Some benefits particularly Gloucester - Bristol corridor
Local environment	5. Green	
Well being	5. Green	
Expected VFM Category	4. Low 1-1.5	With options combined, VFM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	Can be implemented fairly quickly
Public acceptability	5. High	
Practical feasibility	1. Low	Operationally risky; network resilience issues
What is the quality of the supporting evidence?	2	
Key risks	Documented performance issues with existing Parkway services. One additional train unit required but operational issues at Westerleigh and Gloucester	

Financial

Affordability	4	
Capital Cost (£m)	01. None	Existing turnaround at Gloucester can be utilised
Revenue Costs (£m)	02. 0-6	£0.75m pa for each train unit
Cost profile	One additional unit required + staff	
Overall cost risk	4	Other costs P18-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Competing long turnaround and Yate options
Where is funding coming from?	Devolved scheme funding	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - Saved Option

7

Option	2.4
Date	11/12/2014
Description	Half-hourly service at Yate provided by extending the existing Weston-Super-Mare - Bristol Parkway terminating service at Gloucester - long turnaround

Strategic

Identified problems and objectives	Helps to deliver a more resilient transport offer, partially mitigates against existing congestion problems and improves accessibility. Consistent with the JTLF and the SEP.	
Scale of Impact	3	Forecast not yet available. Glos - Bristol some impact.
Fit with wider transport and government objectives	3	
Fit with other objectives	3	
Key uncertainties	Two additional units required	
Degree of consensus over outcomes	4	

Economic

Economic growth	4. Amber/green	Supports TQEZ. Improves Bristol - Glos connectivity
Carbon emissions	4. Amber/green	Some modal shift expected
Socio-distributional impacts and the regions	4. Amber/green	Some benefits particularly Gloucester - Bristol corridor
Local environment	5. Green	
Well being	5. Green	
Expected VFM Category	4. Low 1-1.5	With options combined, VFM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	Can be implemented fairly quickly
Public acceptability	5. High	
Practical feasibility	5. High	Utilisation of existing turnback at Gloucester
What is the quality of the supporting evidence?	2	
Key risks	Two additional units required + staff	

Financial

Affordability	4	
Capital Cost (£m)	01. None	Existing turnback at Gloucester can be utilised
Revenue Costs (£m)	02. 0-5	£0.75m pa for each train unit
Cost profile	Two additional units required + staff	
Overall cost risk	4	Other costs Pre-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Competing short turnback and Yate options
Where is funding coming from?	Devolved scheme funding	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

8

Option	3.1
Date	
Description	New Herbury Station - Location Herbury East

Strategic

Identified problems and objectives	Supports economic growth, helps deliver a more resilient transport offer and improves accessibility. Consistent with CPNN Framework SPD, the JLTIP and the SEP.	
Scale of Impact	3	Patronage forecast 174k (2021), 316k (2043)
Fit with wider transport and government objectives	3	
Fit with other objectives	3	
Key uncertainties	Passenger service required, early stage of design, land required	
Degree of consensus over outcomes	5. Majority	

Economic

Economic growth	5. Green	Supports CPNN
Carbon emissions	4. Amber/green	Increase in PT trips & reduction in car trips
Socio-distributional impacts and the regions	4. Amber/green	Increase in GVA, improved access by PT
Local environment	4. Amber/green	Air pollution reduces, localised noise/built env. disbenefit
Well being	5. Green	Increased use of PT & accessibility
Expected VFM Category	4. Low 1-1.5	With options combined, VFM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	Commencement of passenger trains 2021
Public acceptability	4	
Practical feasibility	4	Early stage of design & land requirements
What is the quality of the supporting evidence?	2	
Key risks	Passenger rail service required, early stage of design and land required	

Financial

Affordability	5. Affordable	current MetroWest phase 2 budget
Capital Cost (£m)	03. 5-10	£6.1m at 2013 prices incl. 50% contingency
Revenue Costs (£m)	02. 0-5	Station only
Cost profile	Cap. costs excl. VAT and land costs	
Overall cost risk	4	Other costs Pre-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Alternative Herbury location
Where is funding coming from?	Devolved scheme funding, developer contributions	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

9

Option	3.2
Date	
Description	New Henbury Station - Location Former Henbury Station

Strategic

Identified problems and objectives	Supports economic growth, helps deliver a more resilient transport offer and improves accessibility. Consistent with CPNN framework, SPD, the JLTP and the SEP	
Scale of Impact	3	Patronage forecast 174k (2021), 316k (2043)
Fit with wider transport and government objectives	3	
Fit with other objectives	3	
Key uncertainties	Passenger service required, early stage of design, land required	
Degree of consensus over outcomes	5. Majority	

Economic

Economic growth	5. Green	Supports CPNN
Carbon emissions	4. Amber/green	Increase in PT trips & reduction in car trips
Socio-distributional impacts and the regions	4. Amber/green	Increase in GVA, improved access by PT
Local environment	4. Amber/green	Air pollution reduces, localised noise/built env. disbenefit
Well being	5. Green	Increased use of PT & accessibility
Expected VFM Category	4. Low 1-1.5	With options combined, VFM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	Commencement of passenger trains 2021
Public acceptability	5. High	
Practical feasibility	4	Early stage of design & land requirements
What is the quality of the supporting evidence?	2	
Key risks	Passenger rail service required, early stage of design and land required	

Financial

Affordability	5. Affordable	current MetroWest phase 2 budget
Capital Cost (£m)	03. 5-10	£5.3m at 2013 prices incl. 50% contingency
Revenue Costs (£m)	02. 0-6	Station only
Cost profile	Capital costs ex cl. VAT and land costs	
Overall cost risk	4	Other costs P1E-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Alternative Henbury location
Where is funding coming from?	Devolved scheme funding, developer contributions	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

10

Option	3.3
Date	11/12/2014
Description	New North Filton Station Site

Strategic

Identified problems and objectives	Supports economic growth, helps deliver a more resilient transport offer and improves accessibility. Consistent with CPNN Framework, SPD, the JTLF and the SEP	
Scale of Impact	3	Patronage forecast 138k (2021), 259k (2043)
Fit with wider transport and government objectives	3	
Fit with other objectives	3	
Key uncertainties	Passenger service required, early stage of design (rebuild of former station site)	
Degree of consensus over outcomes	5. Majority	

Economic

Economic growth	5. Green	Supports Filton EA, North Fringe (& TQEZ to less extent)
Carbon emissions	4. Amber/green	Increase in PT trips & reduction in car trips
Socio-distributional impacts and the regions	4. Amber/green	Increase in GVA (part. accessing employment in Filton)
Local environment	4. Amber/green	Air pollution reduces. Immediate area industrial
Well being	5. Green	Increased use of PT & accessibility (part. employment)
Expected VFM Category	4. Low 1-1.5	With options combined, VFM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	Commencement of passenger trains 2021
Public acceptability	5. High	
Practical feasibility	4	Early stage of design & land requirements
What is the quality of the supporting evidence?	2	
Key risks	Passenger rail service required, early stage of design and land (for accessibility) required	

Financial

Affordability	5. Affordable	current MetroWest phase 2 budget
Capital Cost (£m)	03. 5-10	£6.4m at 2013 prices incl. 50% contingency
Revenue Costs (£m)	02. 0-6	Station only
Cost profile	Capital costs excl. VAT and land costs	
Overall cost risk	4	Other costs Pie-GRIP2 costs

Commercial

Flexibility of option	1. Static	No alternatives
Where is funding coming from?	Devolved scheme funding, developer contributions	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - Saved Option

11

Option	3.4
Date	11/12/2014
Description	New Filton Bank Station - Horfield

Strategic

Identified problems and objectives	Helps to deliver a more resilient transport offer, partially mitigates against existing congestion problems and improves accessibility. Consistent with the JFLP and the SEP.	
Scale of Impact	2	Patronage forecast 92k (2021), 139K (2043)
Fit with wider transport and government objectives	2	
Fit with other objectives	2	
Key uncertainties	Early stage of design, land needed. Use of existing services but timetabling issues	
Degree of consensus over outcomes	3	

Economic

Economic growth	4. Amber/green	Mainly residential but improved access to TQEZ
Carbon emissions	4. Amber/green	Increase in PT trips & reduction in car trips
Socio-distributional impacts and the regions	4. Amber/green	Increase in GVA (TQEZ), improved access by PT
Local environment	3. Amber	Localised impacts on immediate land uses
Well being	5. Green	Increased PT and accessibility
Expected VFM Category	4. Low 1-1.5	With options combined, VFM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	Commencement of passenger trains 2021
Public acceptability	5. High	
Practical feasibility	1. Low	Early design stage, gradient/crossover/embank. issues
What is the quality of the supporting evidence?	2	
Key risks	Early stage of design. Land required. Gradient issues along Filton Bank, crossover relating to four tracking and embankment/access issues	

Financial

Affordability	4	Within current MetroWest phase 2 budget
Capital Cost (£m)	03. 5-10	£8.5m at 2014 prices
Revenue Costs (£m)	02. 0-6	Station only
Cost profile	Capital costs exclude VAT and land costs	
Overall cost risk	3	Other costs P1e-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Competing station locations along Filton Bank
Where is funding coming from?	Devolved scheme funding. Developer contributions v. limited	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

12

Option	3.5
Date	11/12/2014
Description	New Filton Bank Station Site - Ashley Down

Strategic

Identified problems and objectives	Helps to deliver a more resilient transport offer, partially mitigates against congestion problems and improves accessibility. Consistent with the JTLF and the SEP.	
Scale of Impact	3	Patronage forecast 170k (2021), 260k (2043)
Fit with wider transport and government objectives	3	
Fit with other objectives	3	
Key uncertainties	Early stage of design, land needed. Use of existing services but timetabling issues	
Degree of consensus over outcomes	4	

Economic

Economic growth	4. Amber/green	Mainly residential but improved access to TQEZ
Carbon emissions	4. Amber/green	Increase in PT trips & reduction in car trips
Socio-distributional impacts and the regions	4. Amber/green	Increase in GVA (TQEZ), improved access by PT
Local environment	2. Red/amber	Removal of woodland and localised increases in traffic
Well being	4. Amber/green	Increased PT. Some localised severance re path
Expected VFM Category	4. Low 1-1.5	With options combined, VFM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	Commencement of passenger trains 2021
Public acceptability	5. High	Existing footpath will need to be relocated
Practical feasibility	3	Early design stage; gradient/woodland issues
What is the quality of the supporting evidence?	2	
Key risks	Early stage of design. Land required. Gradient issues along Filton Bank. Some earthworks and removal of trees will be required.	

Financial

Affordability	4	Within current MetroWest phase 2 budget
Capital Cost (£m)	03. 5-10	£8.1m at 2014 prices
Revenue Costs (£m)	02. 0-6	Station only
Cost profile	Capital costs exclude VAT and land costs	
Overall cost risk	4	Other costs Pre-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Competing station locations along Filton Bank
Where is funding coming from?	Devolved scheme funding. Developer contributions v. limited.	
Any income generated	Yes	Don't know

Early Assessment and Sifting Tool - *Saved Option*

13

Option	3.6
Date	11/12/2014
Description	New Filton Bank Station Site - Constable Road

Strategic

Identified problems and objectives	Helps to deliver a more resilient transport offer, partially mitigates against existing congestion problems and improves accessibility. Consistent with the JTLF and the SEP.	
Scale of Impact	2	Patronage forecast 92k (2021), 139k (2043)
Fit with wider transport and government objectives	3	
Fit with other objectives	2	
Key uncertainties	Early stage of design, land needed. Use of existing services but timetabling issues	
Degree of consensus over outcomes	3	

Economic

Economic growth	3. Amber	Limited catchment area - improved access to TQEZ
Carbon emissions	4. Amber/green	Increase in PT trips and reduction in car trips
Socio-distributional impacts and the regions	4. Amber/green	Increase in GVA (TQEZ), Improved access by PT
Local environment	2. Red/amber	Embankment vegetation issues
Well being	5. Green	Increased PT and accessibility
Expected VM Category	5. Poor <1	.With options combined, VM is expected to be higher

Managerial

Implementation timetable	6. 5-10 years	Commencement of passenger trains 2021
Public acceptability	4	
Practical feasibility	3	Early design stage. Gradient/embankment/access issue
What is the quality of the supporting evidence?	2	
Key risks	Early stage of design. Land required. Gradient issues along Filton Bank. Embankment and access issues - considerable engineering works required.	

Financial

Affordability	3	Greater capital costs
Capital Cost (£m)	03. 5-10	£9.2m at 2014 prices
Revenue Costs (£m)	02. 0-6	Station only
Cost profile	Capital costs exclude VAT and land costs	
Overall cost risk	4	Other costs Pre-GRIP2 costs

Commercial

Flexibility of option	5. Dynamic	Competing station locations along Filton Bank
Where is funding coming from?	Devolved scheme funding. Developer contributions v. limited	
Any income generated	Yes	Don't know

6 MetroWest Phase 2 EAST – Supporting Information

6.1 Introduction

DfT's Early Assessment Sifting Tool (EAST) is a defined step in the appraisal process set out in TAG. EAST is an early comparison of options and tools being considered, prior to the more detailed appraisal which will enable recommendations to be made 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, i.e. discount non-runners early on to ease the appraisal burden 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 certain amount of information for MetroWest Phase 2.

6.2 Strategic Case

6.2.1 Scale of Impact

Table 6.1 shows the scale of the impact of the scheme options.

TABLE 6.1
Scale of impact

Option	EAST Response	Justification
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	4 Significant Impact	The option would result in new, direct journey opportunities by rail between the CPNN and Bristol and Avonmouth and encourage modal shift.
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	4 Significant Impact	The option would result in new, direct journey opportunities by rail between the CPNN and Bristol and Avonmouth and encourage modal shift.
Option 1.3: Henbury Spur	3 Moderate Impact	This option would result in new, direct journey opportunities by rail between the CPNN and Bristol and encourage modal shift.
Option 2.1: Yate Short Turnaround	2 Minor Impact	Frequency of services between Yate and Bristol would become half-hourly and encourage modal shift; however, there is a significant operational performance risk, which would undermine the service reliability and its attractiveness and may limit modal shift.
Option 2.2: Yate Long Turnaround	3 Moderate Impact	Frequency of services between Yate and Bristol would become half-hourly and encourage modal shift.
Option 2.3: Gloucester Short Turnaround	2 Minor Impact	Frequency of services between Yate, Gloucester and Bristol would become half-hourly and encourage modal shift. However, there is a significant operational performance risk, which could undermine the service reliability and its attractiveness and may limit modal shift.
Option 2.4: Gloucester Long Turnaround	3 Moderate Impact	Frequency of services between Yate, Gloucester and Bristol would become half-hourly and encourage modal shift.

TABLE 6.1
Scale of impact

Option	EAST Response	Justification
Option 3.1: Henbury East	3 Moderate Impact	Initial high level demand forecasts suggests 174,000 passengers in the opening year of 2021 rising to 316,000 in the forecast year of 2043 (gross).
Option 3.2: Henbury Former Station	3 Moderate Impact	Both sites would provide the rail gateway to the western end of the CPNN.
Option 3.3: North Filton	3 Moderate Impact	Initial high level demand forecasts suggests 138,000 passengers in the opening year of 2021 and rising to 259,000 in the forecast year of 2043 (gross). The station would provide the rail gateway to the eastern end of the CPNN, which includes the Filton Enterprise Area.
Option 3.4: Horfield	2 Minor Impact	The initial high level demand forecasts suggests 92,000 in the opening year of 2021 and rising to 139,000 in the forecast year of 2043 (gross); however, it is located close to Filton Abbey Wood station, which has a more comprehensive service and would retain some of the local demand.
Option 3.5: Ashley Down	3 Moderate Impact	The initial high level demand forecasts suggest that opening year of 170,000 passengers in 2021 and 260,000 in 2043 (gross). This option would open up new opportunities for rail travel for adjacent communities and is unlikely to be impacted by Stapleton Road station
Option 3.6: Constable Road	2 Minor Impact	The demand forecast for 2021 as a result is more modest – 92,000 with 139,000 in 2043 (gross). This option would open up new opportunities for rail travel for adjacent communities and would not be as affected by neighbouring existing/proposed stations

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

6.2.2 Fit with wider transport and government objectives

The scheme options are all seeking to address the same problems and meet the same objectives. The principal business objectives of the Metro Phase 2 project are:

1. To support economic growth, through enhancing the transport links to the Filton Enterprise Area, North Fringe, Yate, Temple Quay Enterprise Zone and Bristol City Centre
2. To deliver a more resilient transport offer, providing more attractive and guaranteed (future proofed) journey times for commuters, business and residents in the area, through better utilisation of strategic heavy rail corridors from Yate and Henbury
3. To improve accessibility to the rail network with new and re-opened rail stations and improved service frequencies
4. To make a positive contribution to social well-being, life opportunities and improving quality of life (along the affected corridors in particular)

Table 6.2 shows how the scheme options fit with the wider transport and government objectives.

TABLE 6.2
Fit against wider transport and government objectives

Option	To support economic growth	A more resilient transport offer	Improve accessibility	Positive contribution to social well being
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	3 Moderate fit	3 Moderate fit	4 Moderate/high fit	3 Moderate fit

TABLE 6.2

Fit against wider transport and government objectives

Option	To support economic growth	A more resilient transport offer	Improve accessibility	Positive contribution to social well being
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	3 Moderate fit	3 Moderate fit	4 Moderate/high fit	3 Moderate fit
Option 1.3: Henbury Spur	3 Moderate fit	4 Moderate/high fit	3 Moderate fit	3 Moderate fit
Option 2.1: Yate Short Turnaround	3 Moderate fit	1 Low fit	2 Moderate fit	3 Moderate fit
Option 2.2: Yate Long Turnaround	3 Moderate fit	3 Moderate fit	3 Moderate fit	3 Moderate fit
Option 2.3: Gloucester Short Turnaround	3 Moderate fit	1 Low fit	2 Minor fit	3 Moderate fit
Option 2.4: Gloucester Long Turnaround	3 Moderate fit	3 Moderate fit	3 Moderate fit	3 Moderate fit
Option 3.1: Henbury East	3 Moderate fit	4 Moderate/ high fit	3 Moderate/high fit	3 Moderate fit
Option 3.2: Henbury Former Station	3 Moderate fit	4 Moderate/ high fit	3 Moderate/high fit	3 Moderate fit
Option 3.3: North Filton	3 Moderate fit	4 Moderate/ high fit	3 Moderate/high fit	3 Moderate fit
Option 3.4: Horfield	3 Moderate fit	1 Low fit	3 Minor fit	2 Minor fit
Option 3.5: Ashley Down	3 Moderate fit	3 Moderate fit	3 Moderate fit	3 Moderate fit
Option 3.6: Constable Road	3 Moderate fit	3 Moderate fit	3 Moderate fit	2 Minor fit

Note: Under improving accessibility, the Horfield station option has been given a minor fit due to its close proximity to Filton Abbey Wood. With contribution to social well-being, both Horfield and Constable Road have been given a minor fit due to their smaller catchment and thus lower potential passenger demand.

6.2.3 Fit with other objectives

The MetroWest Phase 2 supporting objectives are:

- To mitigate traffic congestion in the North Fringe and Yate corridor
- To enhance the carrying capacity of the local rail network
- To reduce the adverse environmental impacts of the local transport network as a whole

Table 6.3 shows the schemes fit against these objectives.

TABLE 6.3

Fit against other objectives

Option	Mitigate traffic congestion	Enhance capacity of the rail network	Reduce the adverse environmental impacts
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	3 Moderate fit	4 Moderate/ high fit	3 Moderate fit
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	3 Moderate fit	4 Moderate/ high fit	3 Moderate fit
Option 1.3: Henbury Spur	3 Moderate fit	4 Moderate/ high fit	3 Moderate fit
Option 2.1: Yate Short Turnaround	3 Moderate fit	2 Minor fit	3 Moderate fit
Option 2.2: Yate Long Turnaround	3 Moderate fit	3 Moderate fit	3 Moderate fit
Option 2.3: Gloucester Short Turnaround	3 Moderate fit	2 Minor fit	3 Moderate fit
Option 2.4: Gloucester Long Turnaround	3 Moderate fit	3 Moderate fit	3 Moderate fit
Option 3.1: Henbury East	3 Moderate fit	4 Moderate/ high fit	3 Moderate fit

TABLE 6.3
Fit against other objectives

Option	Mitigate traffic congestion	Enhance capacity of the rail network	Reduce the adverse environmental impacts
Option 3.2: Henbury Former Station	3 Moderate fit	4 Moderate/ high fit	3 Moderate fit
Option 3.3: North Filton	3 Moderate fit	4 Moderate/ high fit	3 Moderate fit
Option 3.4: Horfield	2 Minor fit	2 Minor fit	2 Minor fit
Option 3.5: Ashley Down	3 Moderate fit	3 Moderate fit	3 Moderate fit
Option 3.6: Constable Road	2 Minor fit	3 Moderate fit	2 Minor fit

Note: Under mitigating traffic congestion and environmental impact, both Horfield and Constable Road have been given a minor fit due to their smaller catchment and thus lower potential passenger demand.

6.2.4 Key uncertainties

The key risks for the project are:

- Failure to secure JTB and/or DfT requirements/approvals at key milestones (e.g. Outline and Full Business Case VfM >2.0 Potentially unaffordable capital and operating costs)
- Interest Groups, Residents Groups etc. opposing the scheme, causing delays and increasing costs
- Delay in securing local funding contribution to meet scheme programme
- Changed national and local priorities following the May'15 elections

In addition, Table 6.4 shows the option specific key uncertainties.

TABLE 6.4
Key uncertainties

Option	Key uncertainties
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	Hallen Marsh Junction reconfiguration. Adverse impacts on the Port access at St Andrews Level Crossing.
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	Lack of platform capacity at Bristol Temple Meads. Interaction with the Severn Beach Line.
Option 1.3: Henbury Spur	Provision of bay platform and siding at cross-over at Henbury.
Option 2.1: Yate Short Turnaround	High operational performance risk.
Option 2.2: Yate Long Turnaround	Construction of a turnback siding at Yate plus associated track and signalling.
Option 2.3: Gloucester Short Turnaround	High operational performance risk. Support from Glos County Council.
Option 2.4: Gloucester Long Turnaround	Support from Glos County Council.
Option 3.1: Henbury East	Acquisition of third party land.
Option 3.2: Henbury Former Station	(Refer to options 1.1 to 1.3 for rail operational issues)
Option 3.3: North Filton	Costs and Value for Money. Acquisition of third party land. (Refer to options 1.1 to 1.3 for rail operational issues)
Option 3.4: Horfield	Dependant on the delivery of the Henbury loop or spur service. Costs and Value for Money. Acquisition of third party land. Adverse impact on Filton Bank cross-overs..
Option 3.5: Ashley Down	Dependant on the delivery of the Henbury loop or spur service. Acquisition of third party land. Diversion of a right of way.

TABLE 6.4

Key uncertainties

Option	Key uncertainties
Option 3.6: Constable Road	Dependant on the delivery of the Henbury loop or spur service. Acquisition of third party land.

6.2.5 Degree of consensus over outcomes

Table 6.5 shows the known degree of consensus about the scheme options. MetroWest Phase 2 has been considered at West of England stakeholder meetings, JTEC/LTB meetings and as part of CPNN planning consultation, this has been considered for the degree of consensus over outcomes

TABLE 6.5

Degree of consensus over outcomes

Option	EAST Response	Justification
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	3. Some agreement	Known support for the Henbury line loop service with the Severn Beach line. Value for Money and Wider Economic Benefits relative to the spur unclear
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)		
Option 1.3: Henbury Spur		
Option 2.1: Yate Short Turnaround	4. Broad agreement	Known support for a more frequent service for Yate Wider support when improved service extended to Gloucester.
Option 2.2: Yate Long Turnaround		
Option 2.3: Gloucester Short Turnaround		
Option 2.4: Gloucester Long Turnaround		
Option 3.1: Henbury East	5. Majority	Known support for a station at Henbury
Option 3.2: Henbury Former Station		
Option 3.3: North Filton	5. Majority	Known support for a station at North Filton
Option 3.4: Horfield	3. Some agreement	Known support for a station at Horfield, but Network Rail has operational concerns
Option 3.5: Ashley Down	4. Broad agreement	Known support for a station at Ashley Down
Option 3.6: Constable Road	3. Some agreement	Known support for a station to serve Horfield, but precise location to be determined

6.2.6 Summary of strategic case

A review of the headings under the strategic case, indicate that all options fit in with the wider public policy objectives.

6.3 Economic Case

6.3.1 Economic growth

The West of England has a substantial economic growth agenda which is being developed through the Strategic Economic Plan. The 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. 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% of trips will be by rail)

The Enterprise Areas are now becoming established and are expected to be major trip generators; it is anticipated that rail will play a significant part in meeting this demand (see Table 6.6).

TABLE 6.6

Enterprise Zone and Enterprise Areas applicable to MetroWest Phase 2

Enterprise Zone/Area	Jobs
Filton Enterprise Area	7,000 to 12,000
Bristol Temple Quarter Enterprise Zone and new arena	17,000
15% of journeys to work by train#	
Avonmouth Severnside Enterprise Area	6,000 to 12,000

Source: WoE Response to the GW Franchise, updated using info from the SEP

TABLE 6.7

Major new housing areas served by MetroWest Phase 2

Housing Area	Homes
Cribbs Patchway New Neighbourhood (CPNN)	5,700
	50 ha employment land
North Yate	3,000

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 (both phases 1 and 2) delivers some 2,500 jobs, which based upon on the level of self-containment, equates to unlocking some 2,900 homes. MetroWest, therefore, has significant benefits in bringing forward private sector investment.

Economic growth impacts for the scheme options are set out in Table 6.8.

SECTION 6

**TABLE 6.8
Economic growth**

Option	Impact to end to end journey time	Impact to cost of travel (time & money)	Impact to transport reliability & resilience	Impact to accidents	Impact to new housing/ employment development	Wider economic impacts	Accessibility changes	Improved connectivity to central business districts	Overall RAG
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	Decrease	Reduction	Improvement	Reduction from reduced highway trips	Supports both	Positive impacts	Improvement	Yes	Green
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	Decrease	Reduction	Improvement	Reduction from reduced highway trips	Supports both	Positive impacts	Improvement	Yes	Green
Option 1.3: Henbury Spur	Decrease	Reduction	Improvement	Reduction from reduced highway trips	Supports both	Positive impacts	Improvement	Yes	Green
Option 2.1: Yate Short Turnaround	Decrease	Reduction (imp. Frequency)	Reduce	Reduction from reduced highway trips	Supports both	No change	Slight improvement	Yes	Amber/Green
Option 2.2: Yate Long Turnaround	Decrease	Reduction (imp. Frequency)	Improvement	Reduction from reduced highway trips	Supports both	Slight positive impacts	Slight improvement	Yes	Amber/Green
Option 2.3: Gloucester Short Turnaround	Decrease	Reduction (imp. Frequency)	Reduce	Reduction from reduced highway trips	Supports both	Slight positive impacts	Slight improvement	Yes	Amber/Green
Option 2.4: Gloucester Long Turnaround	Decrease	Reduction (imp. Frequency)	Improvement	Reduction from reduced highway trips	Supports both	Slight positive impacts	Slight improvement	Yes	Amber/Green
Option 3.1: Henbury East	Decrease	Reduction	Improvement	Reduction from reduced highway trips	Supports both	Slight positive impacts	Significant improvement	Yes	Green
Option 3.2: Henbury Former Station	Decrease	Reduction	Improvement	Reduction from reduced highway trips	Supports both	Slight positive impacts	Significant improvement	Yes	Green
Option 3.3: North Filton	Decrease	Reduction	Improvement	Reduction from reduced highway trips	Supports both	Positive impacts	Significant improvement	Yes	Green
Option 3.4: Horfield (Along A38 corridor)	Decrease	Reduction	Reduce	Reduction from reduced highway trips	Minor impact on employment	No change	Slight improvement	Yes	Amber/Green

TABLE 6.8
Economic growth

Option	Impact to end to end journey time	Impact to cost of travel (time & money)	Impact to transport reliability & resilience	Impact to accidents	Impact to new housing/ employment development	Wider economic impacts	Accessibility changes	Improved connectivity to central business districts	Overall RAG
Option 3.5: Ashley Down	Decrease (Along A38 corridor)	Reduction	Improvement	Reduction from reduced highway trips	Minor impact on employment	No change	Slight improvement	Yes	Amber/Green
Option 3.6: Constable Road	Decrease (Along A38 corridor)	Reduction	Improvement	Reduction from reduced highway trips	Minor impact on employment	No change	Slight improvement	Yes	Amber

Note: Filton Bank stations have been classed as having a slight improvement to accessibility. This is on the basis of the catchment being in close proximity to Filton Abbey Wood, Stapleton Road and Montpelier stations.

SECTION 6

6.3.2 Carbon emissions

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

- Reduction in the volume of non-public transport trips, due to mode switch from car to rail
- Increase in public transport services resulting in reduction in car mileage
- Decongestion benefits (associated with corridors into Bristol city such as the A38 Gloucester Road and the A4018, Bristol city centre and approaches to Bristol Temple Meads, the M5 Junction 17 and along the A432 in Yate)
- Shift from low to high occupancy vehicles
- Construction works
- No impacts associated with the use of lower carbon fuel
- (No impacts associated with a change in fuel efficiency, however scheme makes passive provision for electrification)
- Reduction in overall emissions, as an overall reduction in fuel consumption

On this basis, all options have been classed as Amber/Green.

6.3.3 Socio-distributional and regional impacts

Table 6.9 shows the schemes socio-distributional and regional impacts. The West of England WEST LSTF Value for Money assessment contained background information about the social composition of the area:

- Figure 6.1: Population Aged Under 16
- Figure 6.2: Population Aged 16-25
- Figure 6.3: Population Aged 70% and over
- Figure 6.4: Population Claiming DLA
- Figure 6.5: Population Claiming JSA
- Figure 6.6: Black & Minority Ethnic BME Population
- Figure 6.7: Households with no car
- Figure 6.8: Indices of Deprivation – Income
- Figure 6.9: Indices of Deprivation

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

TABLE 6.9

Socio-distributional and regional impacts

Option	Social distributional impact	Regeneration	Regional imbalance	Overall RAG
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	Positive – JSAs in Kingweston, Henbury, Horfield & Lockleaze	Positive – TQEZ, Filton and Avonmouth EA	No change	Green
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	Positive – JSAs in Kingweston, Henbury, Horfield & Lockleaze	Positive – TQEZ, Filton and Avonmouth EA	No change	Green
Option 1.3: Henbury Spur	Positive – JSAs in Henbury, Horfield & Lockleaze	Positive – TQEZ, Filton EA	No change	Amber/green
Option 2.1: Yate Short Turnaround	No change	Positive - TQEZ	No change	Amber
Option 2.2: Yate Long Turnaround	No change	Positive - TQEZ	No change	Amber
Option 2.3: Gloucester Short Turnaround	No change	Positive - TQEZ	Positive – links btwn Gloucester & Bristol	Amber/green
Option 2.4: Gloucester Long Turnaround	No change	Positive -TQEZ	Positive – links btwn Gloucester & Bristol	Amber/green
Option 3.1: Henbury East	Positive – JSAs in Henbury	Positive – TQEZ, Filton EA	No change	Amber/green
Option 3.2: Henbury Former Station	Positive – JSAs in Henbury	Positive – TQEZ, Filton EA	No change	Amber/green
Option 3.3: North Filton	Positive – Filton employment area	Positive – TQEZ, Filton EA	No change	Amber/green
Option 3.4: Horfield	Positive – JSAs in Horfield	Positive - TQEZ	No change	Amber/green
Option 3.5: Ashley Down	Positive –JSAs in Lockleaze	Positive - TQEZ	No change	Amber/green
Option 3.6: Constable Road	Positive – JSAs in Lockleaze	Positive - TQEZ	No change	Amber/green

SECTION 6

FIGURE 6.1

Socio-demographics population aged under 16

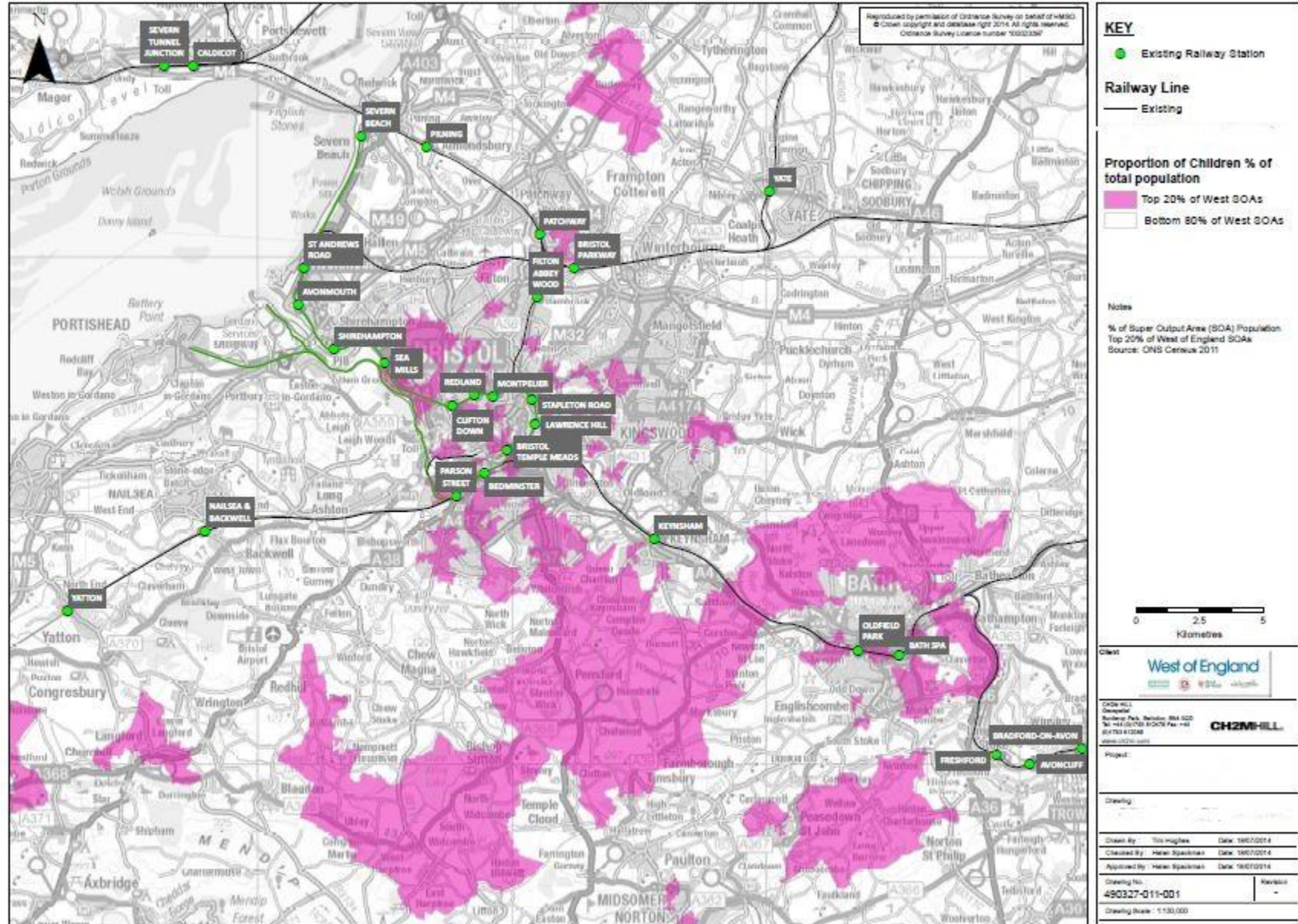


FIGURE 6.2:
Socio-demographics: population aged 16-25

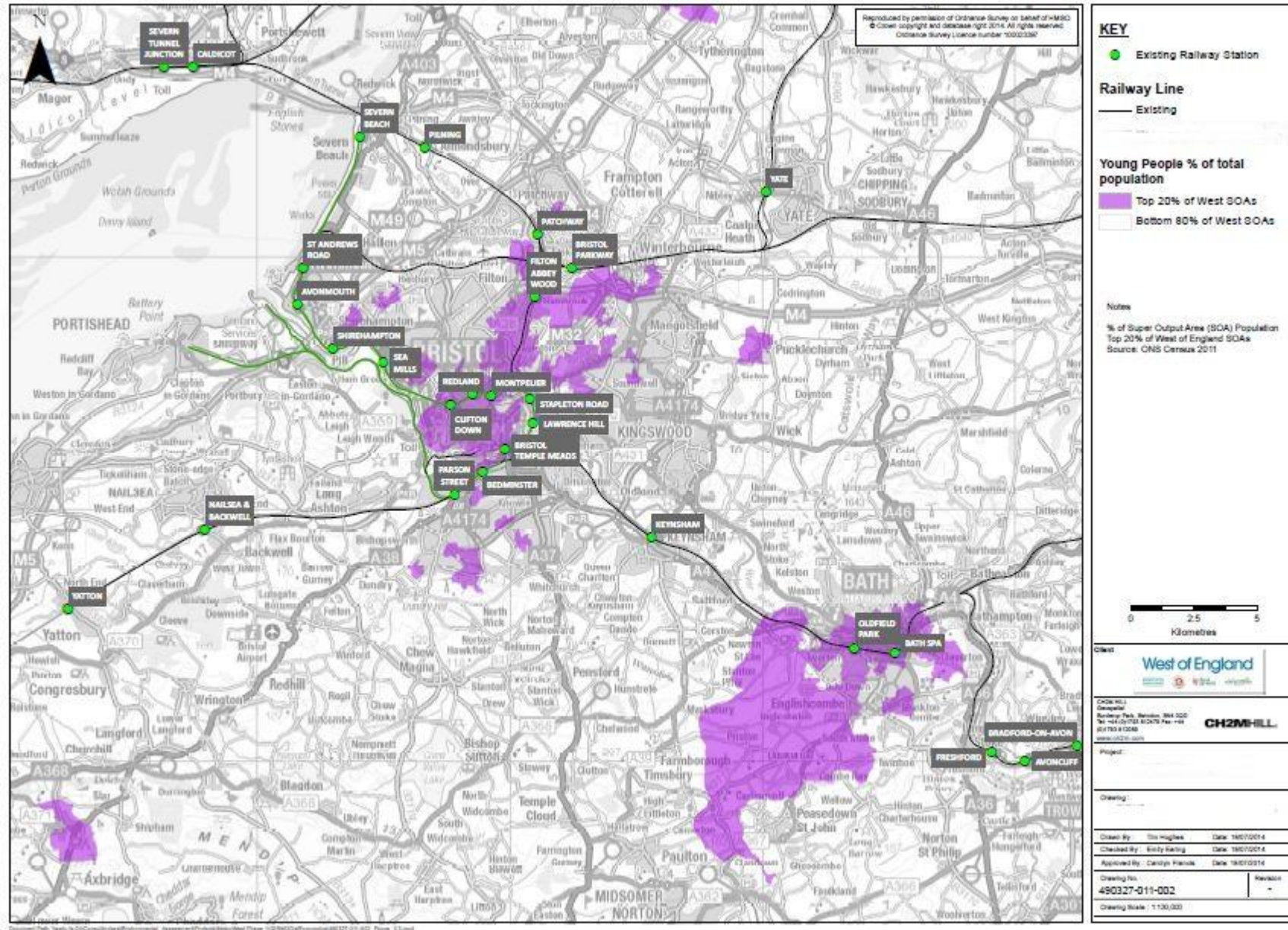


FIGURE 6.3:
Socio-demographics: population over 70

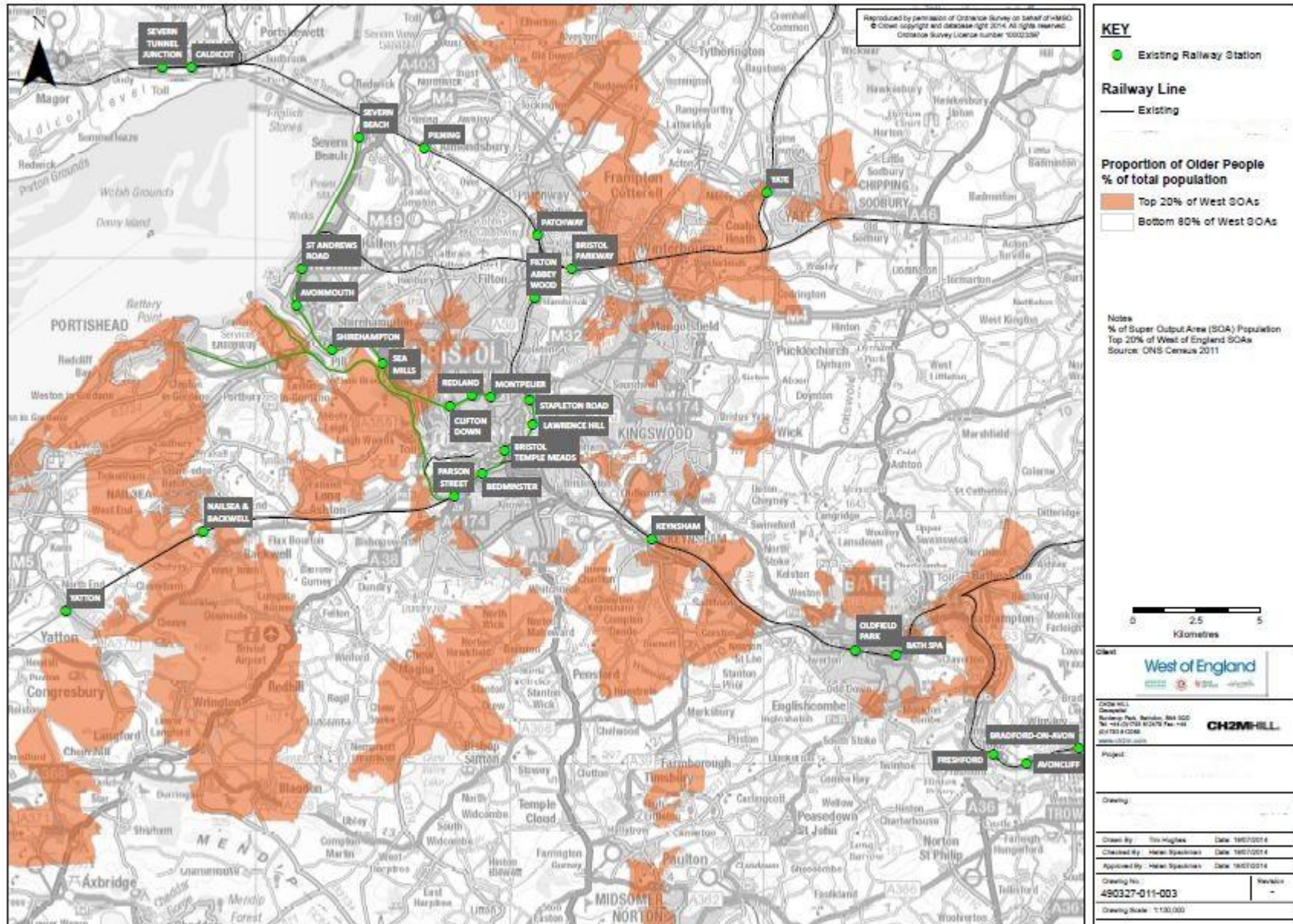


FIGURE 6.4:
Socio-demographics: Disability Living Allowance claimants

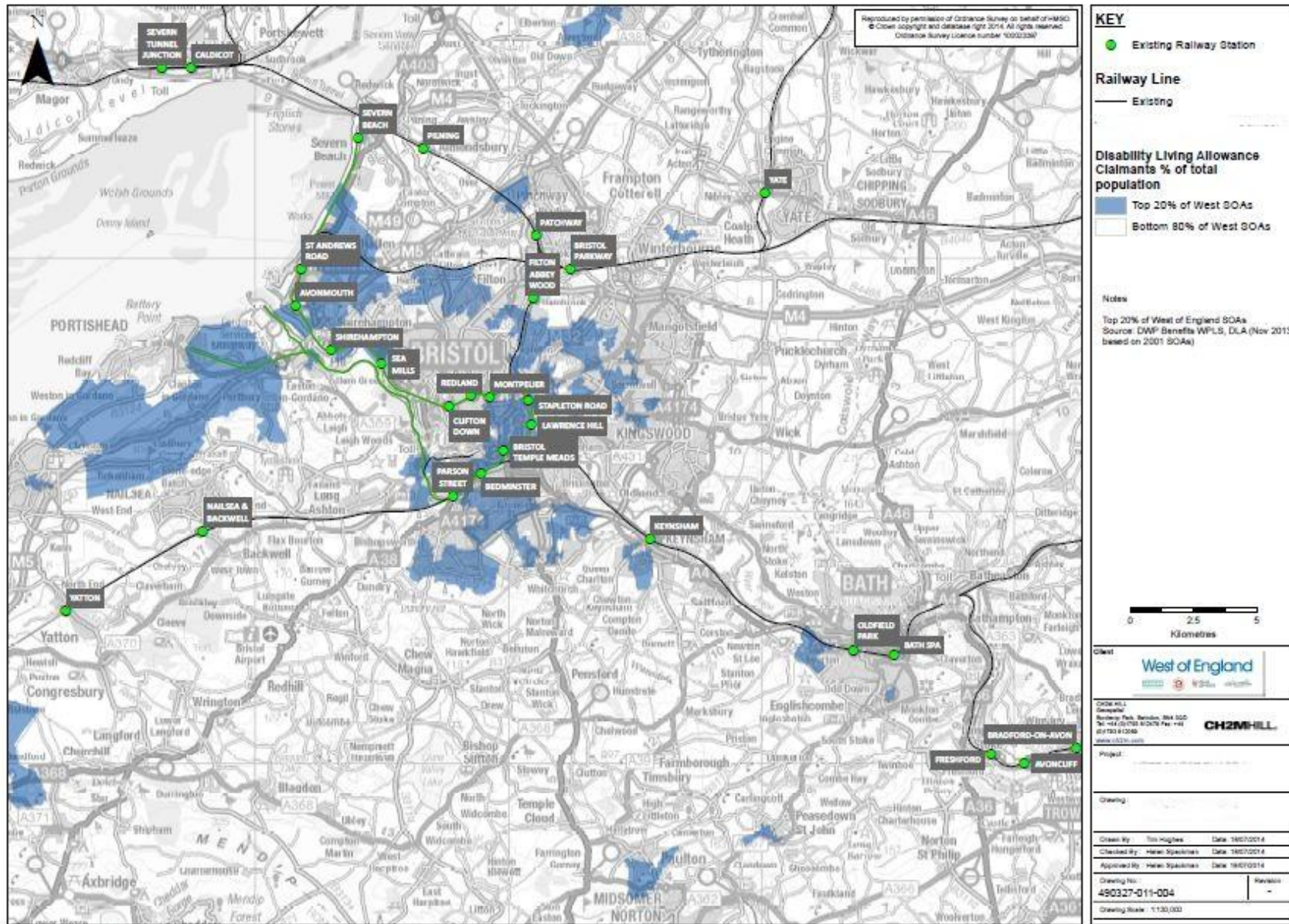


FIGURE 6.5:
Socio-demographics: Job Seeker's Allowance claimants

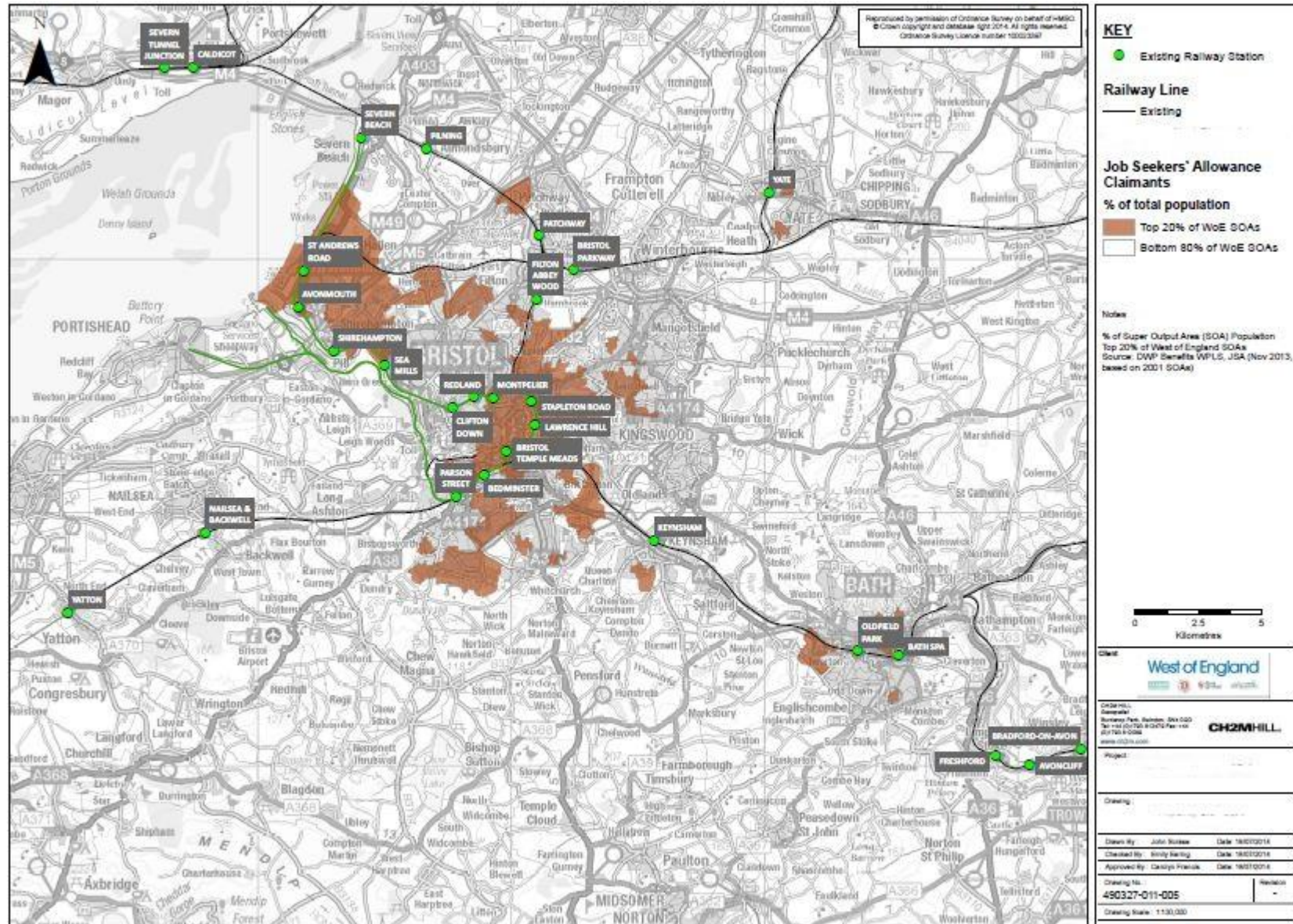


FIGURE 6.7:
Socio-demographics: households with no car

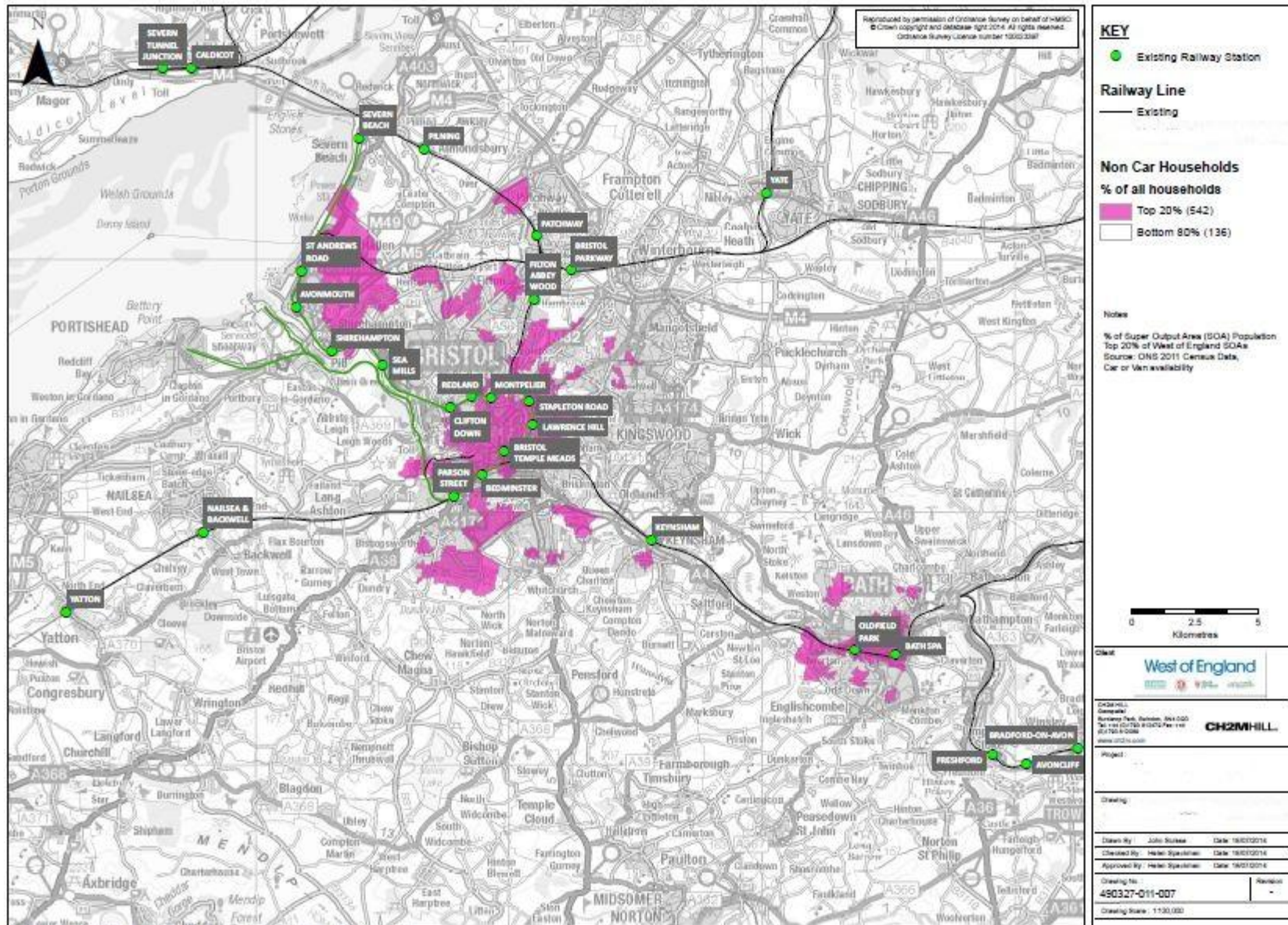


FIGURE 6.8:
Socio-demographics: Income deprivation

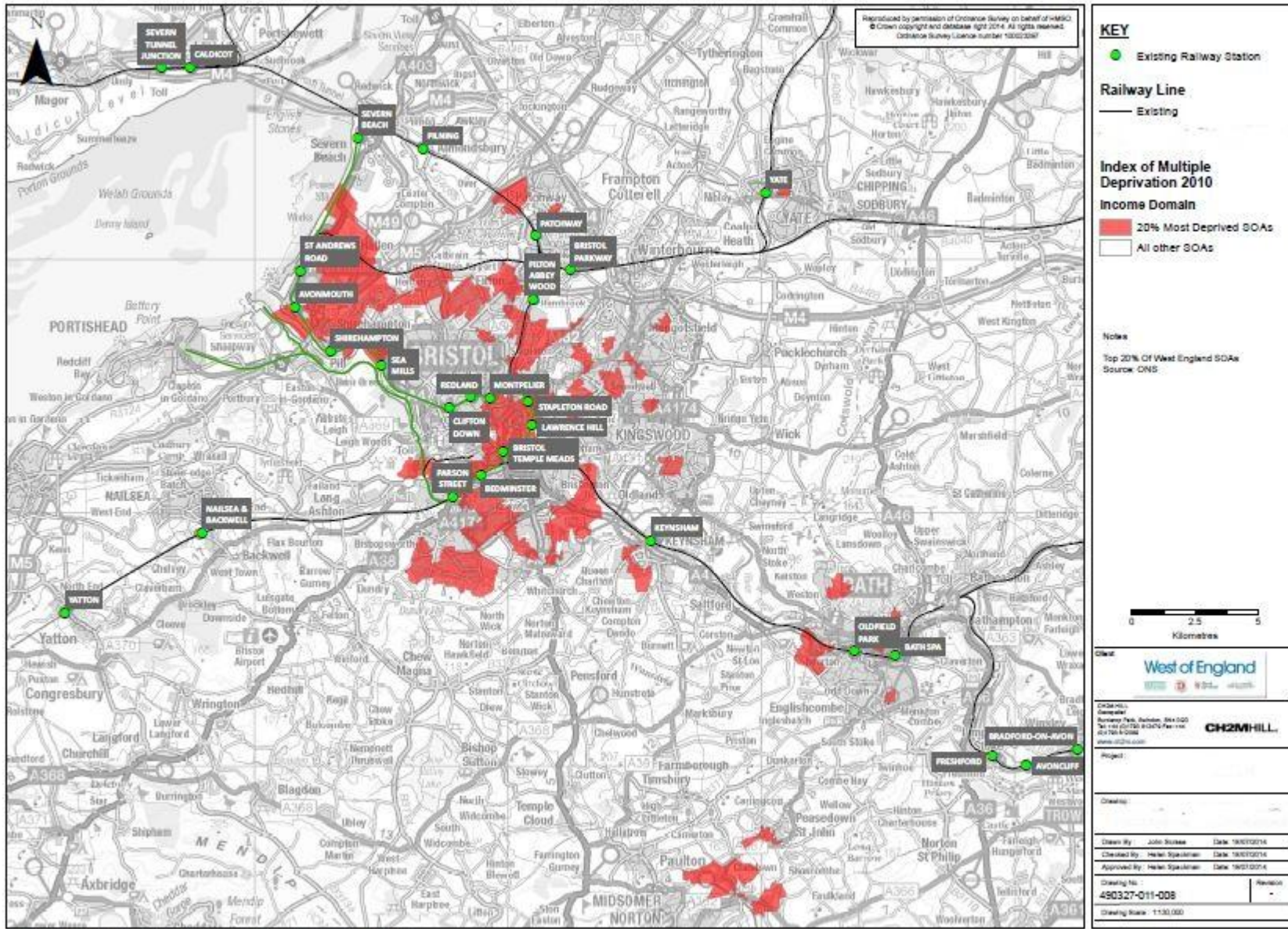
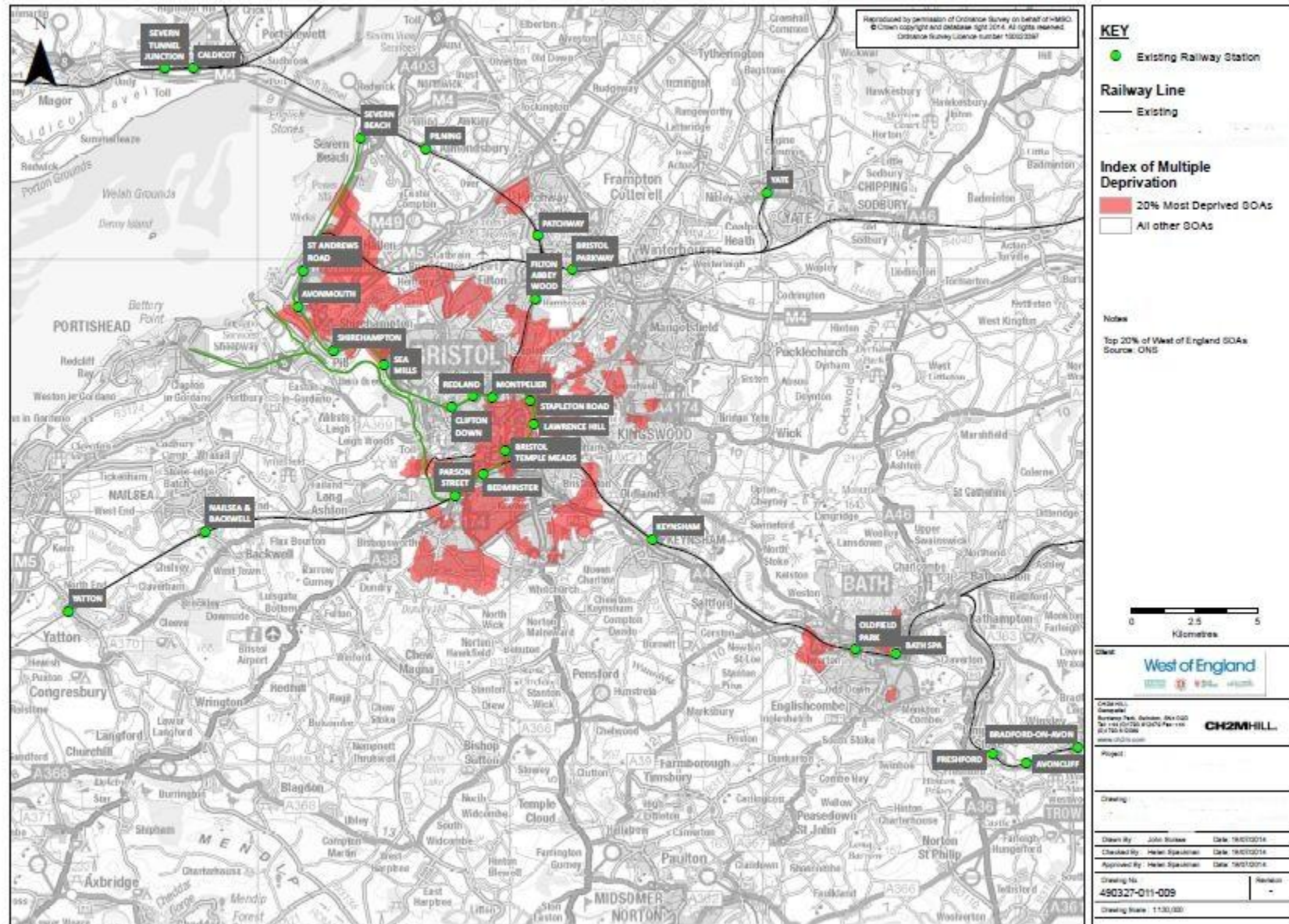


FIGURE 6.9:
Socio-demographics: index of multiple deprivation



SECTION 6

6.3.4 Local environment

Table 6.10 shows the schemes impact to the local environment.

SECTION 6

TABLE 6.10

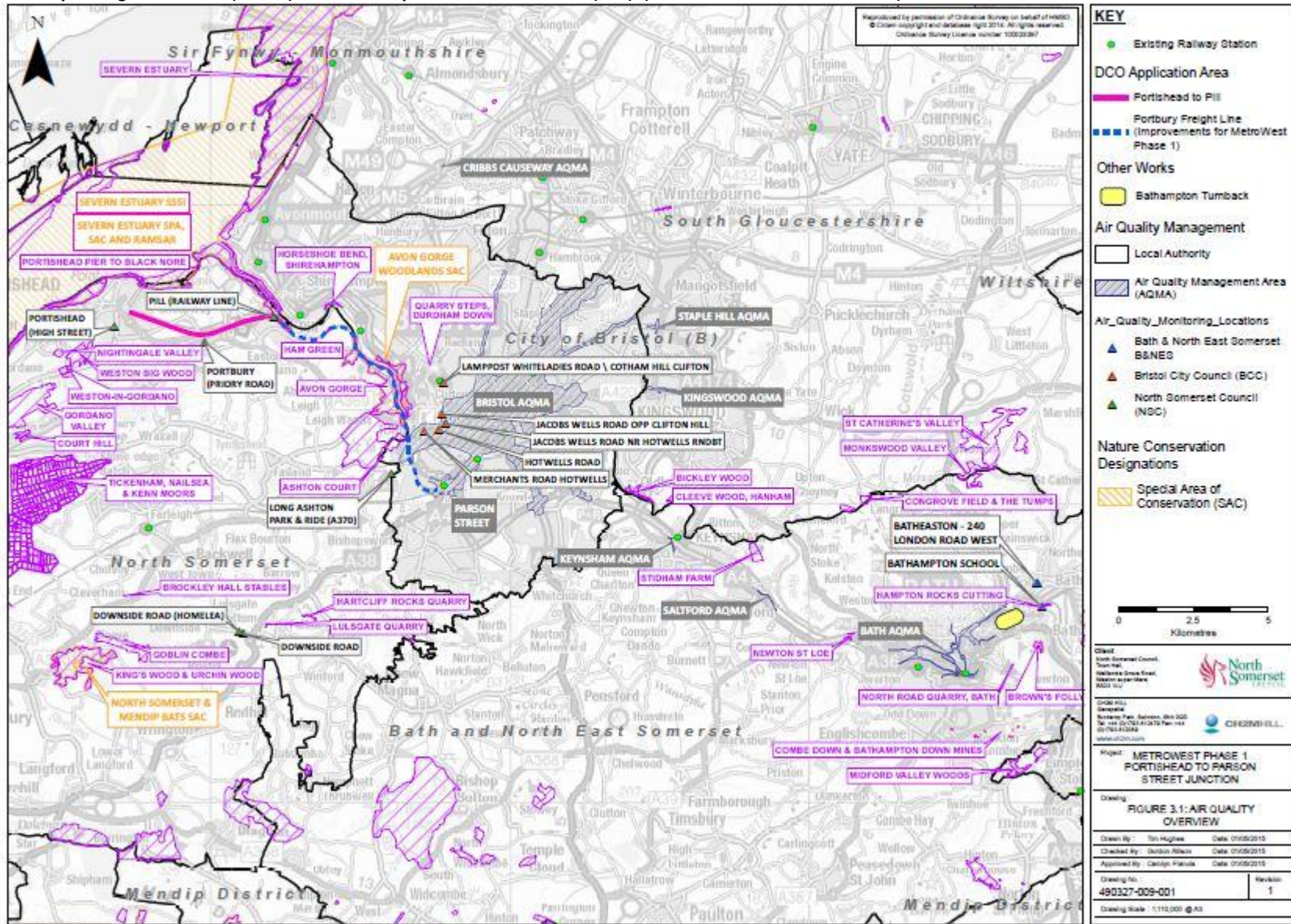
Local environment impacts

Option	Impact to air quality	Impact to existing AQMAs	Will scheme create an AQMA	Impact to noise	Impact to natural and urban environment	Value of land effected	Overall RAG
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	Slight improvement – modal shift towards rail	No change	No	Moderate impact – additional trains along Henbury loop	No change (operational railway)	No change – rail service option	Amber
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)							
Option 1.3: Henbury Spur	Slight improvement – modal shift towards rail	No change	No	Moderate impact – additional trains along line to/from Henbury	No change (operational railway)	No change – rail service option	Amber/green
Option 2.1: Yate Short Turnaround	Slight improvement – modal shift towards rail	No change	No	Slight impact – localised impact from additional trains	Slight impact – building of siding	No change – works on operational railway land	Amber/Green
Option 2.2: Yate Long Turnaround							
Option 2.3: Gloucester Short Turnaround	Slight improvement – modal shift towards rail	No change	No	Slight impact – localised impact from additional trains	No change	No change	Green
Option 2.4: Gloucester Long Turnaround							
Option 3.1: Henbury East	Slight reduction – additional trips to station	No change	No	Moderate impact – additional trips and activity at station site	Slight impact – localised impacts (in context of CPNN re-development)	Slight impact – possible uplift in land values	Amber/green
Option 3.2: Henbury Former Station							
Option 3.3: North Filton							
Option 3.4: Horfield	Slight reduction – additional trips to station	No change	No	Moderate impact – additional trips and activity at station site	Moderate impact – localised impacts on surrounding areas	Slight impact – possible uplift in land values	Amber

TABLE 6.10
Local environment impacts

Option	Impact to air quality	Impact to existing AQMAs	Will scheme create an AQMA	Impact to noise	Impact to natural and urban environment	Value of land effected	Overall RAG
Option 3.5: Ashley Down	Moderate reduction – additional trips to station	No change	No	Adverse impact – additional trips and activity at station site	Adverse impact – loss of woodland and impact on adjoining properties	Slight impact – possible uplift in land values	Red/Amber
Option 3.6: Constable Road	Slight reduction – additional trips to station	No change	No	Moderate impact – additional trips to station	Moderate impact – loss of scrub	Slight impact – possible uplift in land values	Amber

FIGURE 6.10:
Air Quality Management Areas (AQMA) and Sites of Special Scientific Interest (SSIs) (Taken from MetroWest Phase 1)



SECTION 6

6.3.5 Well being

Table 6.11 shows the schemes impact to the well-being of local residents.

TABLE 6.11
Well being

Option	Impacts						Overall RAG
	Severance	Physical Activity Level	Changes to Accidents	Impact to crime/fear of crime	Access to goods, service, people and place	Terrorism	
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 1.3: Henbury Spur	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 2.1: Yate Short Turnaround	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 2.2: Yate Long Turnaround	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 2.3: Gloucester Short Turnaround	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 2.4: Gloucester Long Turnaround	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 3.1: Henbury East	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 3.2: Henbury Former Station	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 3.3: North Filton	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 3.4: Horfield	No change	Increase	No change	No change	Positive impact	No impact	Green
Option 3.5: Ashley Down	Negative – impact on right of way	Increase	No change	No change	Positive impact	No impact	Amber/Green
Option 3.6: Constable Road	No change	Increase	No change	No change	Positive impact	No impact	Green

SECTION 6

6.3.6 Value for Money

The capital and revenue costs have been compared to the scale of benefits to estimate likely Value for Money. Value for Money categorisation is as follows:

- Poor –Benefit to Cost Ratio less than 1
- Low - Benefit to Cost Ratio between 1 and 1.5
- Medium - Benefit to Cost Ratio between 1.5 and 2
- High - Benefit to Cost Ratio between 2 and 4
- Very High - Benefit to Cost Ratio greater than 4

All options have been assessed to have a low value for money, except for option 3.6 Constable Road which has been assumed to offer poor value for money because of its smaller population catchment area. However, it is envisaged that when combined, the MetroWest Phase 2 scheme could present high value for money.

6.3.7 Summary of economic case

In summary all scheme options provide economic benefit, particularly in terms of economic growth and well-being. Work to date indicates that the scheme options would offer a low value for money.

6.4 Managerial Case

6.4.1 Implementation timetable

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

- Stage 1 Option Development (including GRIP1-2) – Complete Summer 2015
- Stage 2 Scheme Case (including GRIP 3) – Complete Winter 2016/17
- Stage 3 Planning Powers & Procurement (including GRIP 4-5) - Complete Winter 2019/20
- Stage 4 Construction & Opening (including GRIP 6-8) - Complete by Winter 2022/2023
 - Completion of construction – Summer 2021
 - Commencement of Passenger Trains – Summer 2021

6.4.2 Public acceptability

As part of the wider consultation that informed both the JLTP and the formulation of the MetroWest Phase 2 proposals, there is some understanding of the acceptability of the various options at this stage. The greatest discussion to date has focussed on the competing options for either a Henbury Loop or Spur service; local representatives and campaigners, in particular, have publically supported a Loop service.

Table 6.12 provides information about the public acceptability of options.

TABLE 6.12

Public acceptability

Option	Level of public acceptability
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	5 High
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	
Option 1.3: Henbury Spur	3 Moderate Higher levels of preference for a Henbury loop service
Option 2.1: Yate Short Turnaround	4
Option 2.2: Yate Long Turnaround	4

TABLE 6.12

Public acceptability

Option	Level of public acceptability
Option 2.3: Gloucester Short Turnaround	5
Option 2.4: Gloucester Long Turnaround	5
Option 3.1: Henbury East	4
Option 3.2: Henbury Former Station	5
Option 3.3: North Filton	5
Option 3.4: Horfield	5
Option 3.5: Ashley Down	5
Option 3.6: Constable Road	4

Notes: Informal feedback suggests that: Horfield has more support than Constable Road; Henbury former site has more support than the East site; and that there is a wider support for extending new Yate services to Gloucester.

As the options are refined, it is planned to continue holding meetings with elected representatives, local stakeholders/consultees to share the outcomes of technical work.

6.4.3 Practical feasibility

The assessment of practical feasibility of each of the options has been based on the series of studies that have been undertaken to date (see Section 3.6). As the options are refined and further technical work is undertaken, the extent and detail of the practical feasibility will be better known. For this reason, all the scheme options have been scored between 3 and 5, where on a scale of “1 - Low level of practical feasibility” to “5 - High level of practical feasibility”, see Table 6.13.

TABLE 6.13

Practical acceptability

Option	Level of practical acceptability	Comments
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	2 Moderate/Low	Improvements to Hallen Marsh junction and associated cross-overs will be required to safeguard freight capacity. Mitigation at St Andrews Level Crossing to maintain appropriate levels of access for road traffic to/from the Port. Platform capacity at Temple Meads needs addressing. MetroWest Phase 1 services to/from Portishead would need to be terminated at Temple Meads and would reduce opportunities for cross Bristol travel through Temple Meads. As a result, there are greater resilience concerns arising from the timetable.
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	3 Moderate	Improvements to Hallen Marsh junction and associated cross-overs will be required to safeguard freight capacity. Mitigation at St Andrews Level Crossing to maintain appropriate levels of access for road traffic to/from the Port. Platform capacity at Temple Meads needs addressing. MetroWest Phase 1 services to/from Severn Beach would need to be terminated at Temple Meads to underpin a robust timetable.
Option 1.3: Henbury Spur	4 Moderate/High	A bay platform and cross-overs would be required at Henbury to safeguard freight capacity.
Option 2.1: Yate Short Turnaround	1 Low	Network Rail’s Capability Analysis for MetroWest Phase 2 indicates a service with a short turnaround would pose too high a risk to service and network resilience and reliability. The amount of additional revenue has to be forecasted.
Option 2.2: Yate Long Turnaround	4 Moderate/High	Provision of an additional train unit should make this service operationally feasible and robust.

TABLE 6.13

Practical acceptability

Option	Level of practical acceptability	Comments
		A turnback siding at Yate and associated signalling is required. The amount of additional revenue has to be forecasted.
Option 2.3: Gloucester Short Turnaround	1 Low	Network Rail's Capability Analysis for MetroWest Phase 2 indicates a service with a short turnaround would pose too high a risk to service and network resilience and reliability. The amount of additional revenue requires forecasting.
Option 2.4: Gloucester Long Turnaround	5 High	Provision of two additional train units should make this service operationally feasible and robust. Existing infrastructure at Gloucester can be utilised. The amount of additional revenue requires forecasting..
Option 3.1: Henbury East	4 Moderate/High	Moderate/high confidence that a station for loop or spur at this location is feasible.
Option 3.2: Henbury Former Station	4 Moderate/High	Moderate/high confidence that a station for loop or spur at this location is feasible.
Option 3.3: North Filton	4 Moderate/High	Moderate/high confidence that a station for loop or spur at this location is feasible.
Option 3.4: Horfield	1 Low Level	Significant concern that the requirements for cross-overs as part of the Filton Bank 4-tracking scheme will prevent realisation of a station at this site.
Option 3.5: Ashley Down	3 Moderate	Moderate confidence that a station for loop or spur at this location is feasible, but it is a constrained site and a number of issues need to be resolved..
Option 3.6: Constable Road	3 Moderate Level	Moderate confidence that a station for loop or spur at this location is feasible, but a number of design and access issues need to be resolved..

6.4.4 Quality of supporting evidence

To date, the scheme options have been developed to establish feasibility.

Consideration of the Henbury line options have been informed by the North Fringe Stations (2014) and Henbury Station Options (2014) reports, although analysis of the potential demand associated with the Henbury loop options has yet to be undertaken. Both these reports are at a concept stage with design and analysis yet to be undertaken.

Similarly, the Yate options have been considered as part of the Network Rail Metro West Phase 2 Capability Analysis (2014) but assessment of the potential demand has yet to be fully undertaken. With the Filton Bank options, the Bristol New Stations High Level Assessment Study (2014) has formed the basis for the EAST appraisal although more technical work is required.

As a result, the quality of supporting evidence for all options is considered relatively low level (EAST response 2).

6.4.5 Key risks

General project and operational uncertainties are set out in Section 6.2.4 of this report. Pending the GRIP2 and risk assessment workshop, the following risks have been identified at this stage. Further technical work will expand on these headings:

- Henbury line options (loop)
 - Upgrades to the Hallen Marsh junction will be required in order to facilitate both passenger and freight services.

- Lack of platform capacity at Temple Meads.
- A key risk is the impact on the St Andrews Road level crossing and the wider local highway network impacts arising from potential more frequent closures.
- Henbury line options (spur) – Provision of a bay platform and cross-overs at Henbury.
- Yate line option – one of the options requires a siding and signalling.
- Henbury line station options – the initial work as part of the North Fringe station options have identified site specific issues relating to both gradients and drainage. Track and signalling improvements are required. The need to acquire land is a further risk.
- Filton Bank options - Interdependency with the Filton Bank four tracking scheme – this scheme has highlighted issues relating to gradients and the need for crossovers. This will have a significant effect on the location of the Filton Bank station options and whether they confirm to the required station standards in terms of horizontal and vertical alignment and access arrangements

6.4.6 Summary of management case

In summary, most scheme options are considered achievable and thus have a ‘management case’; the exceptions are options 2.1 and 2.3 (services to Yate with a short turnback), which are considered operationally unachievable because reliability issues associated with delivering the short term backs; and Horfield station, because of Filton Bank 4-tracking.

6.5 Financial Case

6.5.1 Affordability

The scheme capital and revenue costs for the schemes are shown in section 6.5.2 and 6.5.3. Table 6.14 sets out the scheme affordability, where “5” indicates the scheme is affordable and “1” indicates the scheme is unaffordable. The majority of the scheme funding will be from the developed major scheme funding. In July 2014 MetroWest Phase 2 took a further step forward towards delivery with the provisional allocation of £3.2m Local Growth Funding as part of the Governments assessment of the West of England Strategic Economic Plan.

TABLE 6.14
Affordability

Option	Affordability	Justification
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	3	Based upon the requirement for 3 additional trains and works to the Hallen Marsh junction
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)		
Option 1.3: Henbury Spur	4	Based upon the requirement for 1 additional train
Option 2.1: Yate Short Turnaround	5 - Affordable	No requirement for additional trains, although maintenance costs
Option 2.2: Yate Long Turnaround	4	Based on the requirement for 1 additional train
Option 2.3: Gloucester Short Turnaround		
Option 2.4: Gloucester Long Turnaround	4	Based on the requirement for 2 additional trains
Option 3.1: Henbury East	5 – Affordable	Based on the capital cost for a new station and the potential for developer contributions (not yet secured)
Option 3.2: Henbury Former Station		
Option 3.3: North Filton		
Option 3.4: Horfield	4	Based on the capital cost for a new station and engineering costs

TABLE 6.14
Affordability

Option	Affordability	Justification
Option 3.5: Ashley Down	4	
Option 3.6: Constable Road	3	Based on the capital cost for a new station and engineering costs

6.5.2 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, as it is important in an appraisal to consider consistent costs and benefits. In this work the capital; costs were reported at £42 million.

Table 6.15 presents the Capital Cost (£m) for the scheme options.

TABLE 6.15
Capital Cost (£m)

Option	Capital Cost (£m)	Source
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	Expected to be less than £5m for Hallen Marsh junction upgrade	Metro West Phase 2 Capability Analysis - This study focussed upon the timetable and the capacity of the network to accommodate additional services. The study highlighted the additional infrastructure required but did not highlight specific costs. On this basis, indicative costs based on the bandings within EAST have been provided
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	Cost of mitigation works at St Andrews Level Crossing are not known	
Option 1.3: Henbury Spur	Expected to be less than £5m for track/signal improvements	
Option 2.1: Yate Short Turnaround	Minimum.	
Option 2.2: Yate Long Turnaround	Expected to be less than £5m for an additional siding/crossover and signal works	
Option 2.3: Gloucester Short Turnaround	Minimum.	
Option 2.4: Gloucester Long Turnaround		
Option 3.1: Henbury East	£6.1m at 2013 prices incl. 50% contingency	North Fringe Stations and Bristol New Stations High Level Assessment Studies
Option 3.2: Henbury Former Station	£5.3m at 2013 prices incl. 50% contingency	
Option 3.3: North Filton	£6.4m at 2013 prices incl. 50% contingency	
Option 3.4: Horfield	£8.5m at 2014 prices incl. 40% contingency	
Option 3.5: Ashley Down	£8.1m at 2014 prices incl. 40% contingency	
Option 3.6: Constable Road	£9.2m at 2014 prices incl. 40% contingency	

Note: Cap. costs excl. VAT and land costs

6.5.3 Revenue Costs (£m)

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

TABLE 6.16
Revenue Cost (£m)

Option	Revenue Cost (£m)	Justification
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	0-5m	Based on three additional trains (approx.. £0.75m pa)
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)		
Option 1.3: Henbury Spur	0-5m	Based on one additional train (approx.. £0.75m pa)

TABLE 6.16
Revenue Cost (£m)

Option	Revenue Cost (£m)	Justification
Option 2.1: Yate Short Turnaround	0-5m	No additional train although additional operating costs associated with the extension to Yate
Option 2.2: Yate Long Turnaround		
Option 2.3: Gloucester Short Turnaround	0-5m	Based on one additional train (approx.. £0.75m pa)
Option 2.4: Gloucester Long Turnaround	0-5m	Based on two additional trains (approx. £0.75m pa)
Option 3.1: Henbury East		
Option 3.2: Henbury Former Station		
Option 3.3: North Filton	0-5m	Based on operating and maintenance costs of the station only
Option 3.4: Horfield		
Option 3.5: Ashley Down		
Option 3.6: Constable Road		

Notes: Costs are shown as positive. Costs are in 2014 factor prices, at GRIP stage 2 and refer to the first full year of benefits; they are undiscounted and exclude optimism bias.

6.5.4 Cost Profile

The capital costs for all station options have been costed on difference price bases and include different levels of contingency. These are stated on the EAST assessment. The capital cost estimates for the route options and revenue costs have not been estimated to the same level of details as the station costs.

6.5.5 Overall cost risk and other costs

The scheme costs are all effected 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
- The approach to asset management of the station car parks has not been agreed, and hence parking strategies (need for charging/level of charging) have not been developed
- Funds are to be secured from JTB, following acceptance of full business case
- Funding split between the four promoting authorities is to be agreed

In addition to the risks above, Table 6.17 presents the overall cost risk and other costs for the scheme options.

TABLE 6.17

Overall cost risk and other costs

Option	Overall cost risk	Other costs
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	2 – Major risk	
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	2 – Major risk	
Option 1.3: Henbury Spur	4 – Minor risk	
Option 2.1: Yate Short Turnaround	4 – Minor risk	
Option 2.2: Yate Long Turnaround	4 – Minor risk	
Option 2.3: Gloucester Short Turnaround	4 – Minor risk	
Option 2.4: Gloucester Long Turnaround	4 – Minor risk	GRIP2 costs
Option 3.1: Henbury East	4 – Minor risk	
Option 3.2: Henbury Former Station	4 – Minor risk	
Option 3.3: North Filton	4 – Minor risk	
Option 3.4: Horfield	3 – Medium risk	
Option 3.5: Ashley Down	4 – Minor risk	
Option 3.6: Constable Road	4 – Minor risk	

Cost risk has been assessment on a scale of “1 high risk” to “5 low risk”.

6.5.6 Summary of financial case

In summary, all scheme are financially affordable and thus have a ‘financial case’. However, further analysis is required to determine the level of revenue support, and this may, at a later date deem some options unaffordable.

6.6 Commercial Case

6.6.1 Flexibility of option

Most scheme options are deemed dynamic as there is an alternative option that could be progressed. For example if Henbury East was deemed unfeasible, Henbury former station site could be progressed. The exception being North Filton where no alternative location is available.

6.6.2 Funding sources

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

- City Region Deal
- Developer contributions
- Funding associated with the Strategic Economic Plan
- Any new Government funding competition

These funding sources would be applicable for all scheme options.

6.6.3 Income generation

The scheme options will generate revenue via:

- Ticket sales
- Car park charges (if applied)
- Track access charges

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

6.6.4 Summary of commercial case

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

6.7 Summary

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

- Demand for new stations
- Access to new development areas (CPNN, Filton, TQEZ and Avonmouth/Sevenside Areas)
- Enhancing access for the skilled workforce to major employment markets, helping business to expand and deliver economic growth
- Support from the community and stakeholders for the project
- Majority of capital funding identified
- Contributes to the West of England Local Transport Plan strategy

TABLE 6.18

Summary of how the scheme options meet the five cases

Option	Strategic case	Economic case	Management case	Financial case	Commercial case
Option 1.1: Henbury Loop (MW Phase 1 – Option 5b)	✓	✓	✗	✓	✓
Option 1.2: Henbury Loop (MW Phase 1 – Option 6b)	✓	✓	✓	✓	✓
Option 1.3: Henbury Spur	✓	✓	✓	✓	✓
Option 2.1: Yate Short Turnaround	✓	✓	✗	✓	✓
Option 2.2: Yate Long Turnaround	✓	✓	✓	✓	✓
Option 2.3: Gloucester Short Turnaround	✓	✓	✗	✓	✓
Option 2.4: Gloucester Long Turnaround	✓	✓	✓	✓	✓
Option 3.1: Henbury East	✓	✓	✓	✓	✓
Option 3.2: Henbury Former Station	✓	✓	✓	✓	✓
Option 3.3: North Filton	✓	✓	✓	✓	✓
Option 3.4: Horfield	✓	✓	✗	✓	✓
Option 3.5: Ashley Down	✓	✓	✓	✓	✓
Option 3.6: Constable Road	✓	✓	✓	✓	✓