MetroWest

MetroWest Phase 2
OUTLINE BUSINESS CASE

Executive Summary

travelwest

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

March 2019

Executive Summary

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

- The MetroWest Phase 1 project;
- The MetroWest Phase 2 project;
- A range of station re-opening/new station projects; and
- Smaller scale enhancement projects.

MetroWest is being jointly promoted and developed by the West of England Combined Authority (WECA), Bath & North-East Somerset Council (B&NES), Bristol City Council (BCC), South Gloucestershire Council (SGC), and North Somerset Council (NSC). 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;
- Increasing service frequency; cross-Bristol service patterns (e.g. Bath to Severn Beach) and to Yate.
- Up to five new stations bringing more people within a 1 km catchment of a rail station.

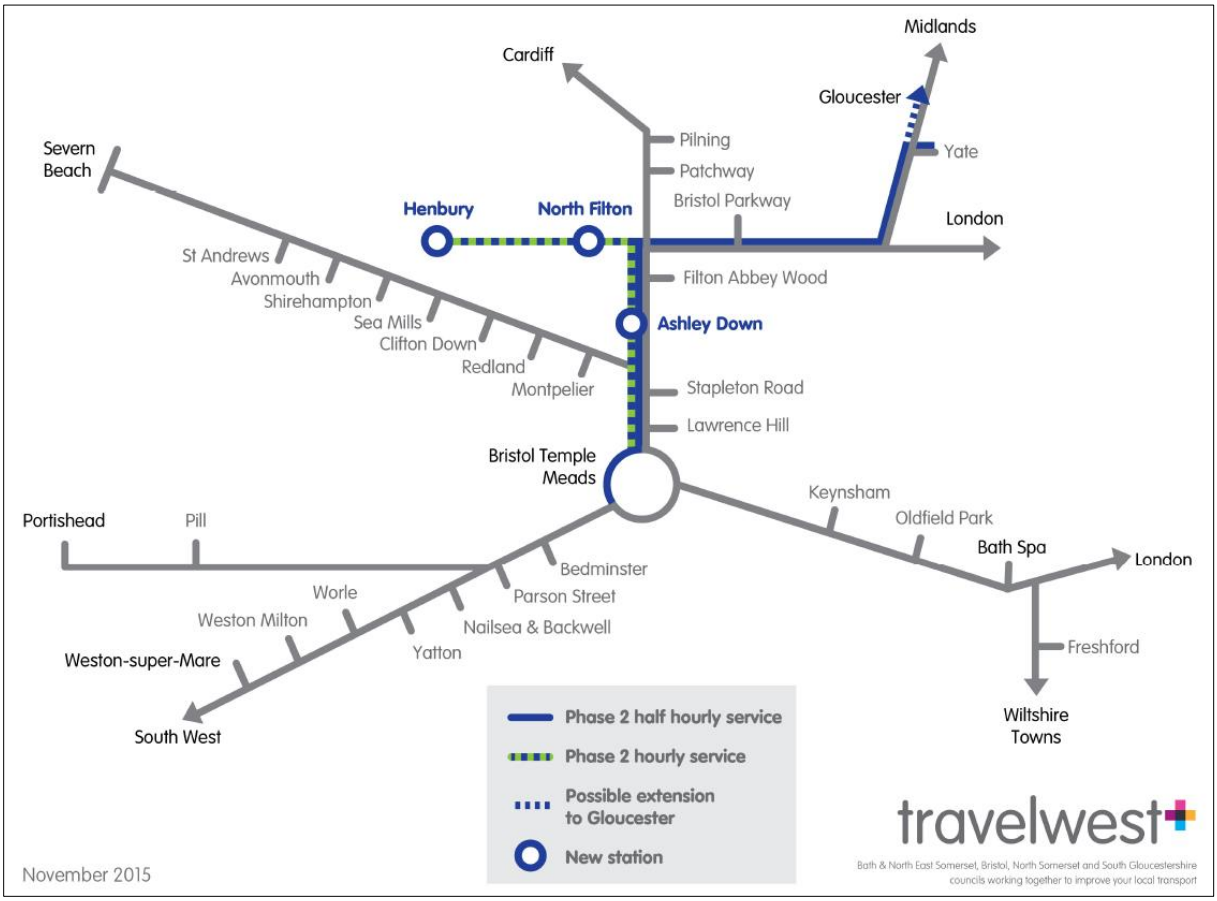
The MetroWest programme builds on and will complement the investment being made by Network Rail (NR) which has been significant and impactful in the last few years including:

- The four tracking of Filton Bank;
- Bristol area re-signalling
- Longer platforms to provide more capacity for passengers;
- New platforms at Filton Abbey Wood and Bristol Parkway stations;
- Electrification of the route from Paddington to Bristol Parkway

This has been complimented by the introduction of trains which are longer and have more seats than previously and which are faster and quieter than previous rolling stock, particularly in electric mode. Towards the beginning of 2020 new timetables will provide faster and more frequent journeys between Bristol and London and lead to reliability improvements in the WoE area.

The MetroWest programme is to be delivered in stages over the next five to ten years. The MetroWest Phase 2 scheme focuses on increasing the frequency of rail services from Bristol to Yate. This would provide a half-hourly service along the Bristol Parkway to Gloucester line with a possible extension to Gloucester in the future. The construction of new rail stations at Ashley Down, North Filton and Henbury, and the re-opening of the Henbury rail line to passenger services which will run on an hourly basis. The new train services will also serve 6 existing stations.

The MetroWest Phase 2 Network



Key benefits of the scheme are:

- Supporting economic growth. MetroWest Phase 2 is part of a wider transport offering to accommodate planned and committed business and residential growth throughout the region. The MetroWest Phase 2 scheme is assumed to be in place before Joint Spatial Plan (JSP) growth. The scheme will support and facilitate this planned growth.

- Improved accessibility and enhanced carrying capacity of the local rail network by providing new stations and services.

- Delivery of a more resilient transport offer. MetroWest Phase 2 results in increased demand to use the local railway network (580,000 passengers per annum at the new stations by 2036). This demand demonstrates the need for additional transport choices in the area.

- A positive contribution to social well-being. The scheme combats high car dependency which can result in inactive lifestyles which pose a major threat to public health.

- Reduction of highway congestion as demonstrated by the high level of highway user benefits.

- The reduction of some adverse environmental impacts on the local transport network as a whole by reducing car use and providing a more sustainable travel option.

Financial case

The MetroWest Phase 2 scheme is affordable as the scheme can be funded through allocated Local Growth Funding, South Gloucestershire Council and Bristol City Council funding, Devolved Major Scheme Funding, WECA Investment Fund and S106 funding.

The MetroWest Phase 2 scheme capital costs are £48,225,000 and the revenue costs from 2021 to 2024 are £5,938,000.

Economic case

The scheme offers a significant level of rail transport user benefits equating to £31.4 million of commuting benefits and £22.0 million of other user benefits.

The scheme also provides a high level of highway transport user benefits equating to £3.9 million of commuting benefits and £10.1 million of other user benefits. These benefits are due to reduced congestion on the roads as individuals transferred their journeys to rail.

The scheme generates Wider Economic Impacts of £27.2 million and regeneration benefits associated with new jobs.

There are likely to be slight to moderate adverse impacts on noise, with existing receptors experiencing an increase in noise despite being already exposed to some level of noise associated with road and rail transport.

In addition, the scheme will have a moderately beneficial impact on greenhouse gases due to rail being more energy efficient than road transport and gives rise to less pollution per passenger kilometre than road transport.

Landscape is expected to be slight to moderately impacted by the scheme due to the clearance of vegetation and the Yate turn-back.

The impact of the scheme on water environment is likely to be moderate to large adverse. This is due to the proposed site for the new station at Henbury being located entirely within Flood Zone 3, and therefore requiring a specific Flood Risk Assessment and mitigation measures in order to ensure the station does not increase flood risk.

The MetroWest Phase 2 scheme offers a Net Present Value of £14.12 million / £65.87 million and currently provides a Benefit to Cost Ratio of 1.88 when adjusted to include wider impacts (with an initial Benefit to Cost Ratio of 1.19). The scheme is considered to offer Moderate Value for Money.

However, there are a number of factors that could improve the Benefit to Cost Ratio. These include considering the demand from other developments within the area, for example the proposed Bristol Arena, as well as better aligning the MetroWest Phase 2 scheme programme with the Cribbs Patchway New Neighbourhood (CPNN) programme. In addition, consideration of the growth that will be produced by the Joint Spatial Plan (JSP) schemes will further enhance the BCR. Further assessment of the BCR will be undertaken as part of the Full Business Case (FBC).

Commercial case

The MetroWest Phase 2 commercial case includes 4 main elements of procurement:

- Professional services pre-construction. Scheme preparation works will be undertaken using in-house resources, framework consultants and Network Rail. Additional legal, land and property support will be procured through a standard procurement process led by SGC Legal and Property teams.

- Railway construction works. Scheme track-side construction will be led by Network Rail and delivered through a Design and Build contract.

- Non-trackside construction works. Non track-side work will be undertaken by Network Rail, local developers, council in-house resources or framework contractors depending on the station.

- Train operator service. DfT Rail, the Train Operating Company (TOC) and the next base Great Western franchise specification will be used to procure train services.

Management Case

The MetroWest Phase 2 scheme benefits from a strong governance structure comprising of local government, Network Rail and train operating company staff. The project programme is considered achievable and includes the following milestones:

- GRIP5 Detail Design (final signalling design) - Dec 2019

- Full Business Case Approval - Jan 2020

- GRIP 6 Construction Start - Dec 2020

- Operation - Dec 2021

The main risks within the project are:

- The upgrade of Bristol East Junction is delayed or funding is not available resulting in the inability to provide Henbury Line Services adding significant cost and delay to programme.
- Delays in obtaining appropriate consents to progress the project.
- Issues which could impact on programme / cost particularly in relation to:

    a. Access / drainage issues in relation to Henbury
    b. Decision on location of Bristol Arena in relation to North Filton and potential access issues if build out rate for the development is slower than predicted

- Managing the interface between NR / SGC and third parties

- Increasing freight demand or train paths not being available which may restrict capacity of passenger services

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Chapter 1: Strategic Case

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Chapter 1: Strategic Case

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CHAPTER 1
Strategic Case

1.1 Introduction

1.1.1 The MetroWest Programme

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

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

MetroWest is being jointly promoted and developed by the West of England Authorities and the West of England Combined Authority (WECA), which covers the areas of Bath & North-East Somerset Council (B&NES), Bristol City Council (BCC) and South Gloucestershire Council (SGC). The MetroWest concept is to deliver an enhanced local rail offer for the sub-region comprising:

- Existing and disused rail corridors feeding into Bristol;
- Increased service frequency on existing lines (e.g. cross-Bristol services such as Bath-Severn Beach); and
- New stations and enhancements to existing stations.

MetroWest will complement the investment being made by Network Rail (NR) and extend the benefits of projects such as electrification of the Great Western main line. The programme is to be delivered during Network Rail Control Period 6 (CP6, 2019 to 2024).

1.1.2 MetroWest Phase 1

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

- A half hourly service for the Severn Beach Line as far as Avonmouth (hourly for St. Andrews Road and Severn Beach stations);
- A half hourly service for the Keynsham and Oldfield Park local stations on the Bath Spa to Bristol Line (through the addition of a new stopping service); and
- An hourly service (potentially with additional peak period services) for a reopened Portishead Line, with new stations at Portishead and Pill.

MetroWest Phase 1 is scheduled to be operational by 2021/22; enhanced services on the Severn Beach line could begin in 2020, with re-opening of the Portishead line to follow. A possible extension of services to Westbury is also under consideration.

1.1.3 MetroWest Phase 2

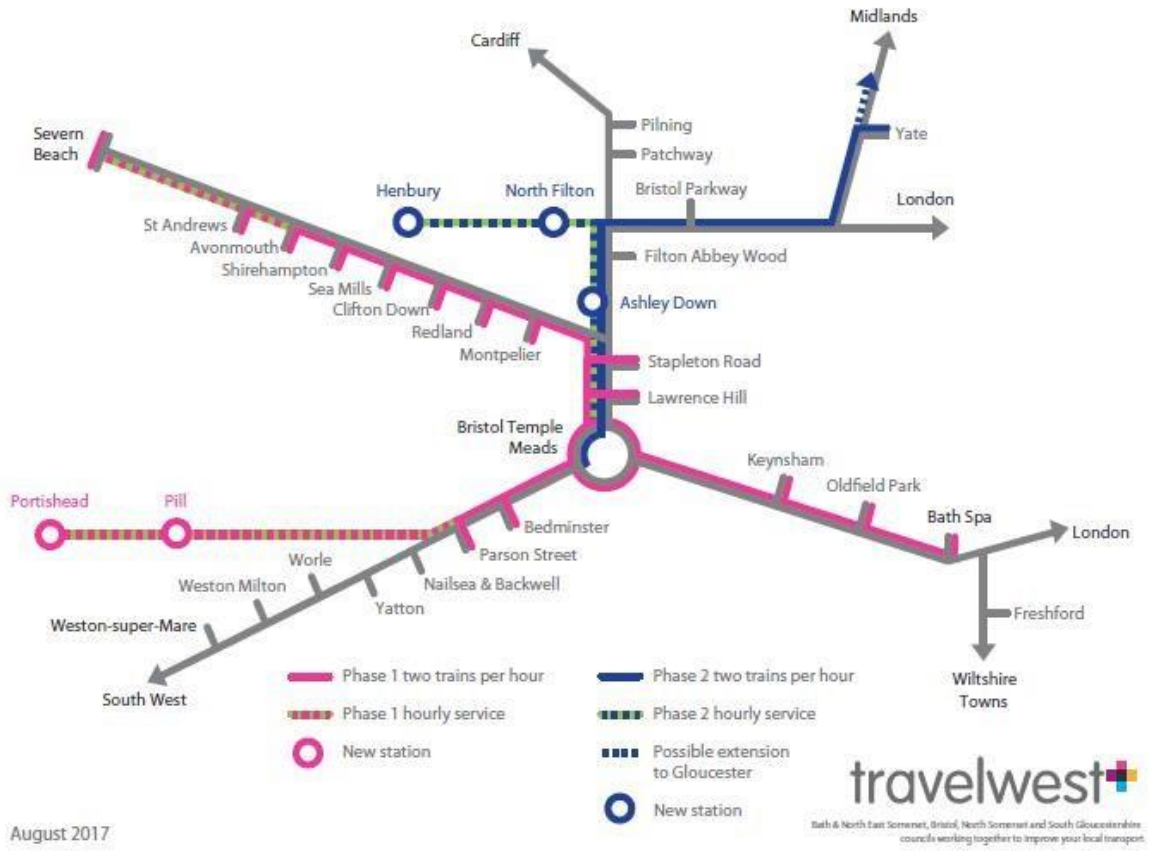
The MetroWest Phase 2 project includes delivery of infrastructure and passenger train operations to provide:

- A half hourly service for Yate local station on the Bristol Parkway to Gloucester line, through the provision of an additional service between Bristol Parkway and Yate; and
- An hourly service for a reopened Henbury Line with new stations at Henbury and North Filton. A new station will also be constructed at Ashley Down, on the existing Filton Bank (between Filton Abbey Wood and Stapleton Road).

MetroWest Phase 2 is programmed to be operational in 2021. A possible extension of the new service from Yate to Gloucester is also being considered. This has the potential to change both infrastructure and operational requirements and affect costs and revenue and has been included in the OBC as a sensitivity test.

The MetroWest Programme is being developed in collaboration with the rail industry. The Programme will build on and complement the investment being made by Network Rail (NR), such as the already completed Filton Bank 4-tracking and Bristol area re-signalling projects. It will also help to extend the benefits of on-going projects such as the electrification of the Great Western main line and its accompanying enhancement of services between the WoE area and London. The MetroWest programme is to be delivered in stages over the next five to ten years. The combined MetroWest Phase 1 and Phase 2 proposals are shown in Figure 1.1 below.

Figure 1.1 MetroWest Phase 1 and 2



1.1.4 Structure of this Chapter

This section sets out the Strategic Case for MetroWest Phase 2. It explains the rationale for the scheme; the strategic fit and how MetroWest will further the aims and objectives of the West of England councils. Specifically, this strategic case:

- Sets out the business strategy and context for the scheme, in relation to the West of England authorities' aims and objectives
- Describes the problems identified and the justification for intervention
- Explains the consequences of not changing
- Describes the drivers for change, internal and external
- Outlines the objectives and how they align with the West of England Council's strategic aims
- Sets out the scope of the project
- Identifies any high-level internal or external constraints
- Explains the factors (interdependencies) upon which the successful delivery of the project is dependent
- Outlines the main stakeholder groups and their contribution to the project
- Sets out all the options identified
- Explains how we will measure the success of the scheme

1.2 Business Strategy

1.2.1 Business Context

The West of England is a dynamic city region, with a population of 1.1 million people, over 43,000 businesses and an economy worth over £33 billion a year. It is a highly productive economy, with GVA per capita higher than the national average. The city region is one of the few areas of the UK that is a net contributor to the Treasury. The area is home to world-leading businesses, a growing visitor economy and a rising population attracted by the high quality of life on offer.

Recent economic growth in the West of England has been driven by a diverse sectoral base with strengths in aerospace, creative and environmental industries, IT and microelectronics, finance and tourism. A high proportion of local employment is, therefore, in high-value, knowledge intensive industries. The area is also home to four universities producing cutting-edge research. Economic growth over the last decade has been driven by these sector strengths and the availability of high quality business space with good access to transport networks. Rapid growth has in particular been seen in Bristol City Centre with businesses being attracted by the large skilled workforce, dynamic local business community and availability of appropriate workspaces.

1.2.2 Sub-Region Strategic Aims

The Strategic Economic Plan for the West of England 2015 – 2030 draws on these sectoral and locational strengths with a vision for an area which will continue to be one of the fastest

growing sub-regions in the Country, closing the gap between disadvantaged and other communities. Bristol Temple Quarter is one of the UK's strongest performing Enterprise Zones with Enterprise Areas designated in Filton, Emersons Green, Avonmouth / Severnside, Bath City Riverside and Weston-super-Mare. The West of England's vision is that, by 2030, it will be one of Europe's fastest growing and most prosperous sub-regions with a buoyant economy, rising quality of life, easier local, national and international travel, energy-efficient, whilst protecting and enhancing the natural environment. A key objective of the West of England Combined Authority Business Plan 2018/19 is to provide better links to reduce congestion and connect people with a focus on more people travelling by sustainable modes and promoting more reliable services.

The Joint Spatial Plan (JSP) provides the strategic overarching development framework for the West of England to 2036. It includes the policies and principles required to support the delivery of 105,500 new homes and 82,500 new jobs. In tandem with the JSP, a Joint Transport Study (JTS) was undertaken to recommend how to address both current transport challenges, including carbon reduction, and forecast growth. The JTS identifies current major problems including; increasing congestion on key corridors, increasing problems of poor transport network resilience, transport inequality, environmental problems and poor public transport provision in some areas. The Study highlights that "… without action to improve travel choices, this will result in increased motorised traffic, congestion and continued problems of poor air quality." MetroWest Phase 1 & Phase 2 are included in the base case as committed schemes for the WoE Joint Transport Study and the emerging WoE Joint Spatial Plan. This effectively means for land use and transport planning purposes, the sub-region is assuming that MetroWest Phase 1 and 2 will be delivered early in the planning horizon.

Policy CS5 (Location and Development) of the South Gloucestershire Council Core Strategy identifies land at Cribbs Causeway, Patchway and Filton as having the potential to accommodate 5,700 new dwellings, 50ha of employment and associated facilities. The Cribbs Patchway New Neighbourhood (CPNN) SPD adopted March 2014 sets out how this will be achieved and provides for delivery of:

- A strong new landscape and movement framework for the area.
- A lively, healthy, well integrated and well supported community with its own sense of identity.
- A distinctive and high quality public realm.
- A sustainable development.
- A signifcant part of the Council's strategic housing provision, and
- An enhanced employment area focussed on aerospace and defence sectors, advanced manufacturing, emerging materials technologies, information technology, and micro-electronics.

Sites for railway stations at Henbury and North Filton are identified to form part of the CPNN Transport Package (see Policy CS7). The Filton Enterprise Area overlaps and is adjacent to the CPNN.

The West of England has a well-defined transport strategy and policies within the current Joint Local Transport Plan (2011-2026) and the emerging JLTP4 (2019 – 2036). Significant investment has been made into the transport network in recent years including investment

in the MetroBus Programme, improved cycling facilities in Bristol and multi-modal packages in Bath and Weston-super-Mare. MetroWest Phase 2 is included in the JLTP as one of the major schemes to be taken forward. Key aims and objectives in the JLTP are:

'Connecting people and places for a vibrant and inclusive West of England'

- Support sustainable economic growth
- Enable equality and improve accessibility
- Address poor air quality and take action against climate change
- Contribute to better health, wellbeing, safety and security
- Create better places

The region has a strong legacy of Partnership working. Local government, transport providers and local communities have collaborated for over 10 years.

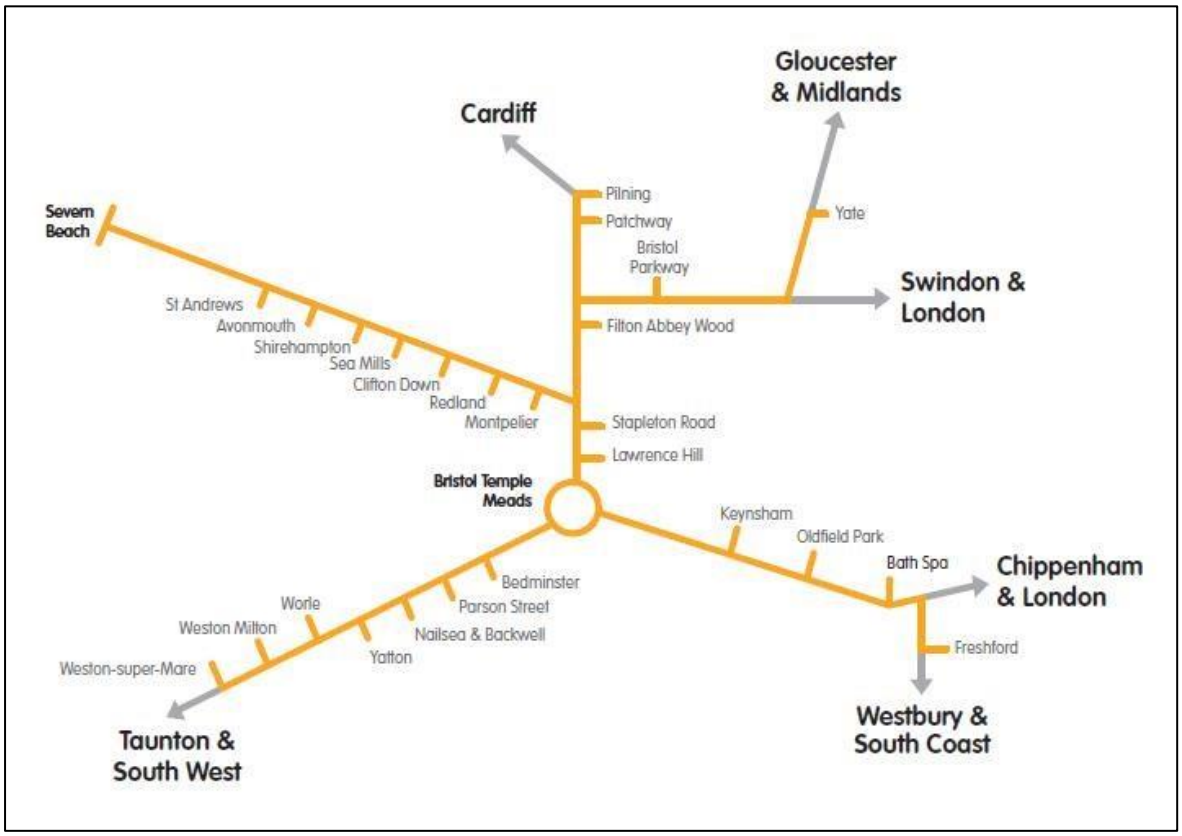
1.2.3 Sub-Region Rail Network Overview

The West of England has a number of frequent long-distance inter-city and regional train services. The network within the WoE area comprises of 26 stations served by four main lines and one branch line, see Figure 1.2. Great Western Railway (GWR) links the region with inter-city trains to London, South Wales and the South West, and regional trains between South Wales and the south coast via Salisbury. CrossCountry intercity train services provide links to the Midlands, the North, Scotland and the far South West, and South Western Railway provide services to London Waterloo.

The last decade has seen rapid growth in demand on the rail network in the West of England. The Office of Rail and Road's published passenger trip figures show a 63% increase between 2006/07 to 2015/16. Furthermore our annual West of England Rail Survey, which counts all passengers not just ticket sales, shows higher total growth at 93% across all local stations an average growth per annum of 6.9.

Bristol Temple Meads station is a nationally significant rail interchange, as well as a vital regional and local transport hub and gateway to the city and wider region. The station has over 11 million passengers passing through each year, with usage anticipated to reach 22 million by 2030. Bristol Temple Meads is crucial to the regeneration and growth agenda providing a transport hub in the Temple Quarter Enterprise Zone connecting to development areas across the West of England. Bristol Parkway station, located on the London to South Wales and cross-country routes, is also a principal station providing access to education and employment facilities and offering faster services to London than from Bristol Temple Meads. The full electrification of the Great Western Main Line to Bristol Temple Meads, via Bath Spa and Bristol Parkway, remains an aspiration, as does the extension of electrification from Birmingham to Bristol and on to Weston-super-Mare.

Figure 1.2 West of England Rail Network



1.2.4 Network Rail Business Plan

The Network Rail Western Strategic Business Plan 2019-24 Control Period 6 is a summary of plans submitted to the Office of Rail and Road for the Western region, which includes the West of England. The plan funds services to realise and support significant passenger benefits, particularly more services and new connections enabled by the investment in Control Period 5, which included signalling upgrades and the redoubling of the line between Bristol Temple Meads and Bristol Parkway. The vision of the plan is '*to deliver a great railway that supports jobs, housing and the economy across the route, now and for the future'*. In developing the plan Network Rail engaged with a wide range of stakeholders and their views were used to influence the plan. Stakeholder priorities are as follows:

- Growing the economy through rail
- Attracting more third-party investment
- Providing meaningful performance figures
- Increasing focus on environmental impacts
- Reducing journey times
- Investing in stations

The plan includes a commitment to continue to develop the MetroWest schemes on behalf of WECA and North Somerset Council. It recognises the importance of these schemes in the improvement of the railway service in this area supporting jobs, housing and growth and shows Network Rail's commitment to seeing them implemented.

Great Western Railways (GWR) signed a Direct Award with the DfT under which they run the Great Western Franchise from September 2015 to March 2019 with an extension agreed to March 2020. Under the Direct Award GWR continue to operate trains between London Paddington, Bristol, South Wales and the south west. Through the Direct Award GWR is committed to working with the West of England and other bodies to deliver MetroWest and secure suitable rolling stock for the new services. Appropriate co-operation provisions are included in the Direct Award.

1.2.5 Shared Strategic Aims

Rail travel across the West of England has doubled in the last ten years and this marks a very clear public appetite to opt increasingly for rail. Rail offers a resilient sustainable and generally reliable way of accessing employment and education in the West of England. Yet while the West of England benefits from good long distance rail routes, the local rail network is relatively underdeveloped. Many of the local rail routes do not have a basic half-hourly peak frequency and some terminate at Bristol Temple Meads, rather than operating across the city region. The key stations in the area, Bristol Temple Meads, Bath Spa and Bristol Parkway, are all well placed to access existing employment and future jobs being developed as part of the key enterprise zones.

The proposal for MetroWest Phase 2 is being taken forward at a time of considerable investment in the Western Route, led by Network Rail. The Western Route has undergone a considerable transformation through the delivery of:

- Electrification of the Great Western Main line
- Bristol Area re-signalling
- Strategic enhancement projects to deal with bottlenecks
- Filton Bank four tracking
- New platforms at Filton Abbey Wood and Bristol Parkway
- Longer platforms at a number of station in the WoE
- Increasing capacity through the delivery of the IET programme and the cascade of trains from other parts of England.

The CP5 programme of committed schemes focuses on the high volume main lines and various strategic investments spread across the rest of the Western Route, underlining its increasing importance and contribution to the national economy.

MetroWest Phase 2 compliments the schemes outline above through a significant expansion of the rail network with MW2 providing three new stations. MetroWest Phase 2 will reintroduce passenger rail services along the Henbury Line across the North Fringe of Bristol and additional services and stations between Bristol Temple Meads and Bristol Parkway as well as increasing services to Yate with a possible extension towards to Gloucester.

The West of England Growth Deal states:

'Tackling congestion and ensuring the West of England has a highly efficient transport network are essential for the area to attract new investors and remain a globally competitive region. This is why the Government has given a long-term commitment to support MetroWest Phases 1 and 2, which opens up rail connections to Portishead and North Bristol, and is providing an additional £20m to upgrade the transport network over the next 6 years.'

MetroWest Phase 2 supports areas of housing and employment growth and will allow new communities to access the rail network through local stations which can be reached by walking and cycling.

1.3 Problems Identified and Objectives

1.3.1 Overview

This section sets out the challenges facing the West of England and identifies how MetroWest Phase 2 will help to address these. It includes the impacts of not changing, the MetroWest Phase 2 objectives and the measures that will be used to determine the scheme's success. The key challenges are:

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

1.3.2 Economic Growth

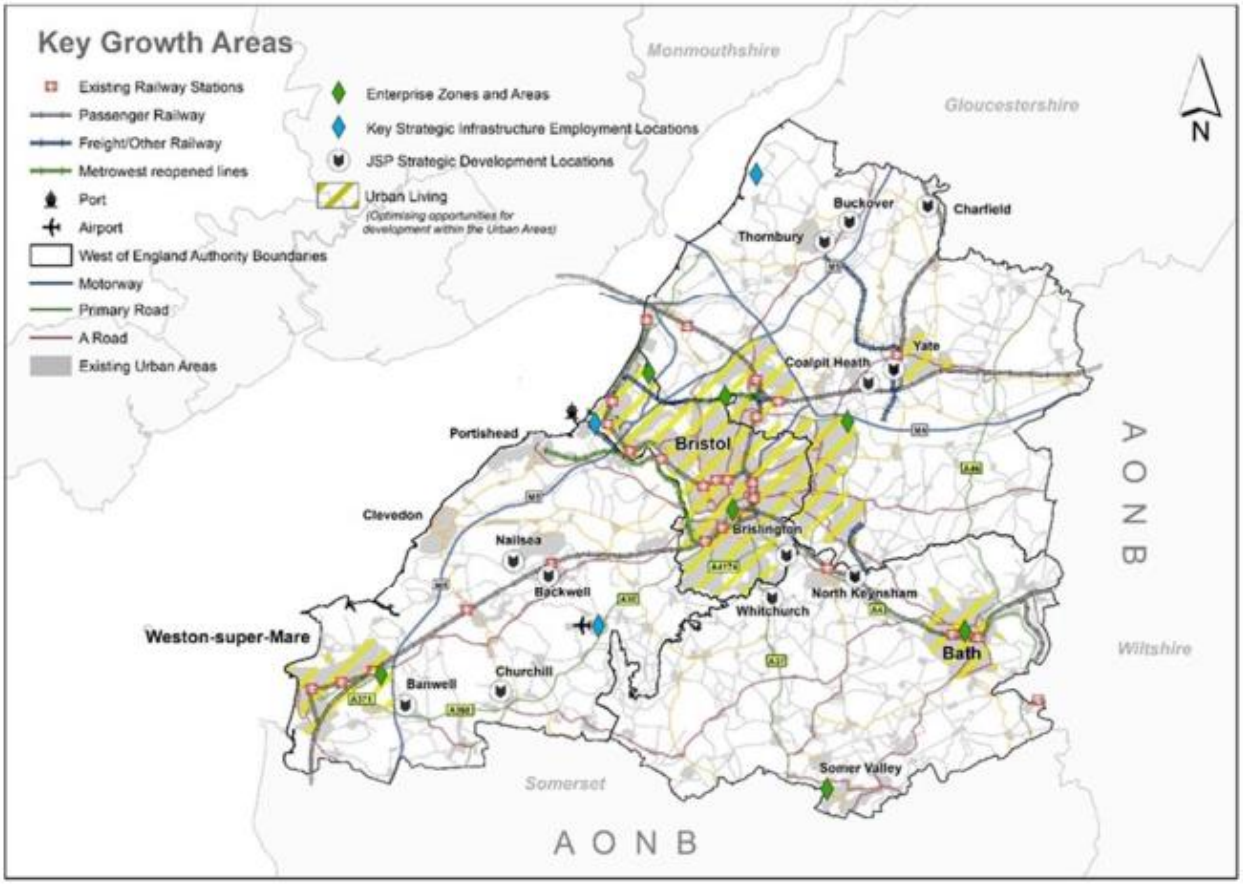
The West of England has a substantial economic growth agenda which is being driven through the Strategic Economic Plan see 1.2.2 above. However, without improvement to the transport network, including rail infrastructure, it is likely that economic prosperity will be constrained by the capacity of the existing transport networks. The vision for the West of England is to build on previous economic growth through a range of interventions including improving access to major employment sites for the skilled workforce catchment.

The West of England LEP is encouraging sustainable economic growth and the creation of substantial numbers of jobs in the region. As part of this, it recognises the need to 'improve transport,…provide access to a range of employment land and premises'. The LEP strategy focuses resources on the priority growth locations – the Enterprise Zone and network of Enterprise Areas. The new jobs to 2030 are forecast to include:

- Filton Enterprise Area – 7,000-12,00 jobs
- Emersons Green Enterprise Area – 4,000-7,000 jobs
- Temple Quarter Enterprise Zone – 17,000 jobs

The Joint Spatial Plan sets out a prospectus for sustainable growth to help the region meet its housing, employment and transport needs to 2036. It includes the policies and principles required to support the delivery of 105,500 new homes and 82,500 new jobs. The key growth areas – combining the Strategic Development Locations, Urban Living and employment locations (including Enterprise Zones and Areas) – are shown in Figure 1.3.

Figure 1.3 Key Growth Areas



Enterprise zones/areas are expected to be major trip generators. Rail will play a part in meeting the transport demand. Table 1.1 shows the Enterprise Zones / Areas that MetroWest Phase 2 will serve.

Table 1.1 MetroWest Phase 2 connection to EZ / EAs

Enterprise Zone/Area	Jobs
Filton Enterprise Area	7,000 to 12,000
Emersons Green/Science Park Enterprise Area via Bristol Parkway	4,000 to 7,000
Bristol Temple Quarter Enterprise Zone and new arena	17,000

Source: WoE SEP

Table 1.2 Major new housing areas served by MetroWest Phase 2

Housing Area	Homes	Rail Schemes
Cribbs Patchway New Neighbourhood	5,700 50 ha employment land	MetroWest Phase 2
North Yate	3,000	MetroWest Phase 2

Source: House numbers from Core Strategies

Table 1.3 MetroWest Phase 2 Economic Growth Summary

Strategic consideration	MetroWest Phase 2
Problem	• Congestion and poor accessibility will constrain economic growth particularly the potential of new development
Consequence (impact of not changing)	• Negative perceptions of transport have an adverse impact on business location decisions and deter investment • Depressed demand and property values in some areas • Transport could prevent the area from fulfilling its full potential • Labour market is constrained • Travel time/cost for employees is high
MetroWest Phase 2 objective	• Business objective – To support economic growth • Supporting objective – To enhance the carrying capacity of the local rail network particularly across the North Fringe and Yate corridor
Outcome	• Jobs unlocked • Increased depth and skills base of accessible labour market • Increased agglomeration of business activity • Reduced cost of business travel • Support growth at TQEZ, Filton Enterprise Area and Avonmouth Enterprise Area • Improved perceptions of competitiveness • Reduced congestion on road network

1.3.3 Tackling congestion and improving transport network resilience

The West of England faces serious transport challenges and these will become more acute with the anticipated scale of growth in the area. The forecast numbers of people living and working in the area will increase demand on the transport system, which will have significant economic, social and environmental impacts. Whilst the West of England has benefited from a strong economy over the last decade, the sub-region's economic prosperity is beginning to be constrained by its transport network. 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 sufficiently accessible and has sufficient capacity and resilience to continue to meet the sub region's needs. Longer-term problems of sustained traffic growth and car dependency also need to be tackled, in addition to wider long-term issues of carbon emissions and social wellbeing.

The Draft Joint Local Transport Plan 4 (JLTP4), being prepared by the West of England Combined Authority with the local authorities of B&NES, Bristol City, North Somerset and South Gloucestershire, identifies ongoing and new transport challenges in the west of England, including:

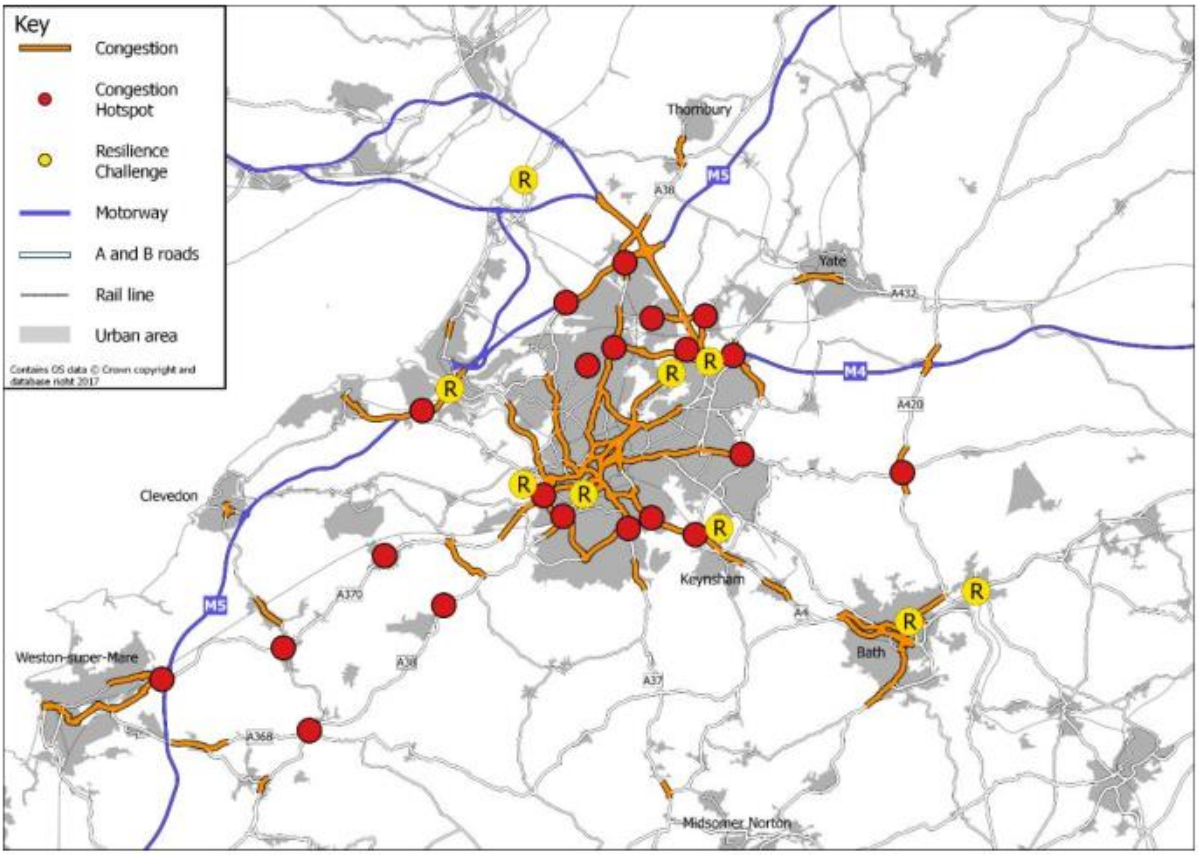
- Travel demand is growing, and there is an increased need to improve walking, cycling and public transport
- For some people the private car is the only realistic mode of travel
- Parts of the road and rail networks are under strain
- There are high levels of inequality in the West of England, and many different accessibility needs
- Transport continues to impact on safety, security, air quality, public health and public realm

- There is a need to manage emerging technology and innovation
- Transport funding has been constrained over recent years, and funding levels have not been high enough to address the scale of growth in the region

Figure 1.4 below shows current levels of traffic congestion in the West of England. In relation to the project this is particularly notable in:

- 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
- A432 in Yate

Figure 1.4 Traffic Congestion in the West of England



Note: map is sourced from the Joint Transport Study Final Report (October 2017) and is based on data collated before the opening of South Bristol Link in early 2017. The congestion problems shown at Barrow Gurney (south west of Bristol) have now been largely mitigated by the South Bristol Link.

In terms of travel to work for the study area there is a particular correlation between car use and distance from the city centre with data from the 2011 census for the wards located surrounding the MetroWest Phase 2 station locations showing that car use increases whilst public transport and cycling decreases with distance away from the centre of Bristol see table 1.4.

Table 1.4 Method of travel to work from the 2011 Census

	Car (incl. sharing)	Bus	Rail	Walking	Cycle	Motorcycle	Works mainly at home
England	63.0%	7.5%	9.5%	10.8%	3.0%	0.8%	5.4%
West of England	64.9%	6.7%	2.3%	14.3%	5.1%	1.2%	5.5%
Bishopston	46.7%	9.3%	2.1%	18.7%	14.9%	0.9%	7.3%
Horfield	56.5%	14.0%	1.3%	14.3%	8.5%	1.1%	4.1%
Lockleaze	60.5%	13.0%	0.6%	12.6%	7.8%	1.5%	3.7%
Filton	61.3%	8.7%	1.4%	16.1%	6.5%	1.7%	3.5%
Henbury	70.3%	10.7%	0.5%	8.2%	4.2%	1.5%	4.3%
Patchway	71.9%	5.9%	0.5%	12.0%	4.9%	1.3%	3.3%
Dodington	79.7%	3.2%	0.8%	7.1%	4.3%	1.8%	2.4%
Yate Central	72.2%	3.3%	0.9%	13.2%	4.2%	1.3%	4.0%
Yate North	77.4%	2.4%	1.7%	9.0%	3.2%	1.2%	4.7%

Figures from the Office of the Rail Regulation (ORR) show increasing demand on the rail network. As a result the West of England now faces challenges with acute overcrowding on many services, which is not confined to just the am and pm peak. Demand forecasts developed through the Network Rail Market Studies forecast show there will be significant growth in rail demand in the West of England over the next 20-30 years. Great Western Railways and other local train operators have responded to this level of growth by adding additional capacity incrementally but the increases on the supply side have not kept pace with the increased demand, particularly in respect of the local rail network (all stopping services). The barriers to increasing capacity on the local rail network have, until very recently, focused on the unavailability of additional diesel multiple units but there are also infrastructure barriers in respect of achieving an increase to service frequency.

The geographic reach of the local rail network is also limited and the train service frequency is irregular in places with some corridors having a poor frequency or not being clock-faced. There are connectivity issues for cross-Bristol Temple Meads trips and most of the local rail network does not have a basic half hourly service, falling well short of most other comparative Core Cites in England. The limited nature of the local rail network (while having overcrowding problems) explains the relatively low proportion of journeys to work by rail across the West of England (2011 census: WoE 2.3%, compared with 5.6% average for England). Table 1.5 below summaries the West of England's current local rail network in terms of service frequency.

Table 1.5 West of England Local Rail Network Overview

Local Rail Corridor	Daytime Frequency
Yate / Parkway to Bristol Corridor	Yate to Bristol TM every hour (regional services to / from Gloucester / Worcester). Overcrowding from Yate to Bristol Temple Meads particularly on the pm peak.
Severn Beach to Bristol Corridor	Avonmouth to Bristol TM every 40 mins Severn Beach to Bristol TM every 2 hours
Cardiff to Bristol Corridor	Cardiff to Bristol local station Patchway every ½ hour (Cardiff to Portsmouth service). Pilning is only served in

	eastbound direction one journey on Saturdays. Overcrowding on peak trains to and from Cardiff and Bristol
	Parkway to Bristol TM every ½ hour (Cross Country non-stopping service)
Bath Spa to Bristol Corridor	Bath Spa to Bristol TM local stations Keynsham & Oldfield Park every hour, (trains to and from Westbury or Weymouth), supplemented by occasional peak time Cardiff to Portsmouth services. . Overcrowding on this route between Bristol and Bath. Bath Spa to Bristol TM every ½ hour (GWR non stopping service to and from London Paddington) Freshford to Bath Spa mixed service pattern (Weymouth to Bristol service)
Weston-super-Mare to Bristol Corridor	Weston-super-Mare to Bristol TM every ½ hour supplemented by some peak HST services to/from Weston-super-Mare, Bristol Temple Meads and London Paddington

The current passenger experience of the local rail network falls short of what could be expected for a City Region of a population of over 1.1 million. The biggest issues that passengers raise are the poor levels of service (frequency), poor travel conditions (overcrowding) and poor network reach. There has been a growing feeling of frustration and dis-satisfaction and increasing calls from the public and stakeholders for strategic investment in the local rail network.

In 2011 the West of England Councils undertook a series of local rail studies to identify what interventions were required to address the deficiencies of the local rail network, in response to calls from the public and local stakeholders. These studies led to the mobilisation of the MetroWest Programme in 2013.

Table 1.6 MetroWest Phase 2 Congestion and Transport Network Resilience Summary

Strategic consideration	Issue/response
Problem	• Congestion on the road and rail networks
Consequence (impact of not changing)	• Lack of choice for new residents and increased car dependency • Continued overcrowding and poor frequency on the Yate services making rail use less desirable • Reduced size of accessible labour pool • Contribute to slow and unreliable journey times particularly on the A38, A4018, M32 and the A432 • Contribute to traffic congestion delaying buses • Impact on perception/attractiveness of the region for investment/business location • Cost of congestion • Environmental impact of traffic and congestion (air quality management areas)
MetroWest Phase 2 objective	• 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 • Supporting objective – 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

Strategic consideration	Issue/response
	• Supporting objective – to improve accessibility to the rail network with new and re-opened rail stations and improved service frequencies
Outcome	• More reliable journey times • Increased rail capacity • Improved transport choice for the North Fringe, A38 and Yate corridors • Reduced overcrowding on the route between Yate and Bristol • increased frequency and better connections between Yate and Bristol Temple Meads • Reduce road congestion • Improved air quality

1.3.4 Accessibility

'Making the Connections' (Social Exclusion Unit, 2003) identified five key barriers impacting on accessibility:

- *The **availability** and physical accessibility of transport: For some people in isolated urban and rural areas there are limited or no public transport services or the services are unreliable, or do not go to the right places or at the right times.*
- ***Cost** of transport: Some people find the costs of personal or public transport very high or unaffordable.*
- *Services and activities located in **inaccessible places**: Developments including housing, hospitals, business and retail are often located in areas not easily accessible to people without a car.*
- ***Safety and security**: Some people will not use public transport or walk to key services because of the fear of crime or anti-social behaviour.*
- ***Travel horizons**: Some people are unwilling to travel long journey times or distances, or may not know about or trust transport services.*

The MetroWest Phase 2 scheme predominantly covers the North Fringe area of Bristol and Yate, but also enhances links to the wider WoE area. Commuting from the North Fringe, Yate and A38 corridor areas is dominated by car use with bus services also affected by congestion during peak period times. This creates resilience issues with journeys susceptible to delays. Whilst Bristol Parkway and Filton Abbey Wood railway stations have a wide range of frequent services, Yate and Patchway typically have one train per hour in both directions. The length and frequency of the journey may, in some instances, mean some of the local population are discouraged from seeking employment or education opportunities within the wider Bristol area.

The MetroWest Phase 2 scheme would improve rail service frequency between Yate and Bristol and introduce three new stations to the rail network. The scheme would provide linkages to key facilities across the WoE, including employment (in particular Bristol and Bath city centres, Temple Quarter Enterprise Zone and Filton Enterprise Area), education (South Gloucester & Stroud and City of Bristol Colleges) and retail areas (e.g. central Bristol). More information on access to service assessments can be found in the MetroWest Phase 2 'Social Impact Appraisal Report', provided in Appendix 2.3. Table 1.7 sets out the strategic considerations associated with accessibility.

Table 1.7 MetroWest Phase 2 Accessibility Summary

Strategic consideration	Issue / response
Problem	• Congestion on the roads and the limited existing rail services mean that travel times into Bristol or to key employment centres by bus or car are currently lengthy and costly
Consequence (impact of not changing)	• Missed work and educational opportunities • Likely growing social inequalities • Increasing reliance on the car • Attractiveness of the bus will decline (will suffer from general congestion and journey time delay)
MetroWest Phase 2 objective	• Business objective – improve accessibility to the rail network with new and re-opened rail stations and improved service frequencies • Supporting objective - To enhance the carrying capacity of the local rail network.
Outcome	• More people within easy access of a rail station • Increased mode choice • Rail will be a genuinely attractive alternative to the car • Increased range of employment and educational opportunities available

1.3.5 Environment and social well being

Transport is the largest contributor to greenhouse gas and CO2 emissions. A recent study in Bristol suggests that N02 is linked to over 300 premature deaths a year with 59% of locally controllable nitrogen dioxide within the City of Bristol being associated with local road traffic. Poor air quality, which is recorded across several of our urban areas, has health impacts on local communities and negatively effects the natural environment. Air Quality Management Areas (AQMAs) continue to be in place in areas including Bath, Bristol and other locations on major roads with heavy and/or slow-moving traffic. The Government has directed local authorities to prepare Clean Air Plans to reduce nitrogen dioxide (NO2) levels in the Bath and Bristol urban areas to legal levels by 2021 at the latest.

With MetroWest Phase 2, there are two AQMAs to consider. Bristol City Council has declared an AQMA which covers Bristol city centre and parts of the main radial roads including the M32. South Gloucestershire Council has declared an AQMA adjacent to M5 Junction 17 at Cribbs Causeway. Although outside the immediate scheme area, the AQMA has been declared for NO_2 (annual mean objective).

Some streets in the West of England are perceived to have safety or security issues, including high numbers of heavy vehicles. These issues make walking or cycling unappealing, thereby leading to a potential increase in vehicle trips, such as on the 'school run'. This vicious circle can have a negative effect across local communities and wider areas. High car dependency, poor air quality and inactive lifestyles pose a major threat to public health. The quality of public realm in some local areas is poor, and often exacerbated by severance and noise caused by motorized traffic. As well as impacting on physical health, it deters the use of active modes, limits the integration and vitality of local communities and negatively affects quality of life.

Table 1.8 MetroWest Phase 2 Environment and Social Wellbeing Summary

Strategic consideration	Issue / response
Problem	• Worsening air quality, particularly in the Bristol urban area • Health issues - obesity, inactivity which may, in part, be linked to high reliance on the private car
Consequence (impact of not changing)	• traffic will increasingly be a major contributor to high levels of CO2 and poor air quality • Deteriorating health of the local population
MetroWest Phase 2 objective	• Business - to make a positive contribution to social well-being, life opportunities and improving quality of life (along the affected corridors) • Supporting - to reduce the adverse environmental impacts of the local transport network as a whole
Outcome	• Reduced use of the car leading to lower levels of CO2 • Increased levels of physical activity (as rail journeys are more likely to include a walking component)

1.4 Drivers for change

The proposal for MetroWest Phase 2 is being taken forward during a period of considerable change for the rail network (CP5, 2014 to 2019). Western area schemes include:

- Electrification of the Great Western Main Line – complete to Bristol Parkway
- Filton Bank four tracking – recently completed
- Bristol East Junction improvements – expected delivery Autumn 2021
- Other smaller schemes

Delivery of MetroWest Phase 1 and MetroWest Phase 2 would fall into CP6.

Drivers for change in relation to rail:

- Rail service in the West of England is under-developed compared to other city regions
- WoE suffers from below average rail use – 2011 census: WoE 2.3%, compared with 5.6% average for England
- Over-crowding on some services including services to Yate

Some of the non-rail drivers for change include:

- Significant economic development particularly at the Temple Quarter Enterprise Zone and enterprise areas across the West of England including Filton
- Major new mixed-use developments at CPNN and North Yate
- Significant projections for housing growth to 2036 through the Joint Spatial Plan
- Worsening levels of air quality across the West of England

1.5 Objectives

The scheme has four principal objectives and four supporting objectives, these are set out in Table 1.9 below along with an explanation of how the objectives will be addressed by the scheme proposals.

Table 1.9 Scheme Objectives

Principal Objectives	How the objective will be addressed
To support economic growth	Through enhancing the transport links to the Filton Enterprise Area, Cribbs Patchway New Neighbourhood, North Fringe, Yate, Temple Quay Enterprise Zone and Bristol City Centre.
To deliver a more resilient transport offer	By 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	Through new and re-opened rail stations and improved service frequencies
To make a positive contribution to social well-being,	By improving life opportunities and improving quality of life (along the affected corridors in particular) through access to education and employment.
Supporting Objectives	**How the objective will be addressed**
To contribute to reducing traffic congestion	On the North Fringe and Yate corridor.
To enhance the carrying capacity of the local rail network.	Through the delivery of strategic infrastructure enhancement and through the operation of enhanced / new train services to Yate / Gloucester and in the North Fringe.
To reduce the adverse environmental impacts of the local transport network as a whole	By enhancing the public transport network offer which in turn reduces car dependency. Increasing access to rail through new train stations.
To support housing delivery	By enhancing the public transport network

1.6 Scheme Outputs and Benefits

MetroWest Phase 2 will deliver the following outputs and benefits:

- Increase the local economy by generating £8M of Gross Value Added (GVA) per annum and creating around 160 net new permanent jobs;
- Enhance rail capacity by delivering over 400 additional seats per hour for the local rail network, which in turn will extend the benefits of Network Rail's Western Route Modernisation Programme;
- Increase the number of people living within 30 minutes travel time of key employment areas, such as Temple Quarter Enterprise Zone;
- Improve accessibility to sites for new homes and employment development in proximity to the rail corridor, in particular the Cribbs Patchway New Neighbourhood development area;
- Bring an additional 50,000+ people within the immediate catchment of the rail network with new stations at Henbury, North Filton and Ashley Down;

- Reduce overall environmental impact, resulting in improved air quality, on key arterial highway routes;
- Provide attractive mode choice and capacity for journeys to work (alternatives to single occupancy car based travel) addressing long-term car dependency; and
- Provide wide ranging social/health benefits.

In summary, the MetroWest Phase 2 scheme could add a net total of almost 350,000 new rail journeys to the network in 2021 (rising to around 620,000 in 2036). Service improvements at existing stations are forecast to generate almost 70,000 new rail trips in 2021 (over 100,000 in 2036). New stations demand forecasts indicate that almost 100,000 passengers could use the proposed station at Henbury in 2021, rising to over 200,000 by 2036. North Filton station generates over 100,000 users in 2021, and almost 200,000 in 2036. Ashley Down also generates over 100,000 journeys in 2021, rising to 180,000 in 2036. Benchmarking indicates that the demand forecasts at the new stations is in line with expectations for stations of their size and catchment, with the services provided. With an hourly service, while initially there is sufficient capacity, there is however scope for crowding from the late 2020s onwards. The MetroWest Phase 2 OBC Forecasting Report provides details of forecasting and modelling work undertaken to assess the proposed MetroWest Phase 2 OBC scheme. Further detail on how the benefits of the scheme will be monitored and reported is provided in Appendix 3.4

1.7 Policy Context

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

Regional policies

Joint Local Transport Plan 3 (JLTP3)

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

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

Providing reliable public transport infrastructure is considered to be a vital mechanism for achieving this strategy. In particular, the plan acknowledges a range of major transport schemes that were prioritised and include significant investment in rail infrastructure.

The Joint Local Transport Plan 4 is currently being produced and will cover the period from 2019 – 2036 [1]. This document will consider the recommendations of the Joint Transport Study and develop a long-term transport policy framework that is consistent with the Joint Spatial Plan.

Joint Transport Study (JTS) (2017)

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

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

West of England LEP Strategic Economic Plan (2014)

The Strategic Economic Plan (SEP) prepared by West of England LEP outlines how the region will achieve sustainable economic growth over the plan period. The LEP vision is to encourage sustainable economic growth and the creation of substantial numbers of new private sector jobs.

The SEP positions the West of England as 'the city region of choice for a sustainable future', based on the region's legacy of innovation, world class university and research facilities, strong visitor economy and high quality of life. The SEP highlights that expansion of these sectors will be driven by a number of levers of growth', including investment and promotion and places and infrastructure. In particular, infrastructure is presented as a key enabler of growth in the region. The MetroWest Phase 2 scheme can contribute to the LEP vision by improving accessibility to the wider rail network and improving mode choice and resilience, making the area more attractive to businesses.

Local Policies

South Gloucestershire Council Local Plan Core Strategy (2013)

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.

South Gloucestershire Council Supplementary Planning Document (2014)

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 encouraged and more convenient and attractive than car use wherever possible.

Bristol City Council Core Strategy (2011)

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 and a new station at Ashley Down.

[1] https://s3-eu-west-1.amazonaws.com/travelwest/wp-content/uploads/2015/05/Full-Draft-JLTP4.pdf

Bristol City Council Corporate Strategy (2017)

BCC Corporate Strategy covers the period from 2017-2022 and sets out aims for the city to become 'an affordable, low carbon, accessible, clean, efficient and reliable transport network to achieve a more competitive economy and better connected, more active and healthy communities'. MetroWest Phase 2 can contribute to this aim by improving accessibility to services and opportunities within the region, as well as reducing reliance on the private car and associated congestion and pollution issues.

Bristol Resilience Strategy (2016)[2]

This document sets out a series of goals and challenges to help Bristol flourish as well as become more resilient to future challenges. One of the goals of this strategy is to achieve clean air for Bristol and enable people of all ages to access necessary services within a 20 minute journey by active travel or a sustainable mode of transport by 2066. By providing another mode of sustainable transport and reducing reliance on the private car, the MetroWest Phase 2 scheme can contribute towards this goal.

1.8 Scope of the Scheme

MetroWest Phase 2 includes a half-hourly train service at Yate and hourly services on a reopened Henbury line. This would include new stations at Henbury and North Filton and the re-opening of Ashley Down station. A turn-back will be required at Yate station to facilitate the increased frequency. A turn-back will also be required at Henbury with the upgrade of the Henbury line for use by passenger trains.

The project seeks to:

- Deliver a reliable and resilient public transport service for the residents across the North Fringe of Bristol and enhance the existing service to Yate providing additional opportunities to travel and increased capacity.
- Delivering access for new communities to the national rail network supporting sustainable travel
- Ensure freight operations and pathing rights are not jeopardised
- Take into consideration other committed West of England Partnership proposals including interaction with MetroBus
- Be delivered in collaboration with Network Rail and the Great Western Train Operating Company, subject to business case, powers to build and operate and allocation of funding

1.8.1 Ashley Down Station

The design for Ashley Down Station will include:

- platforms to accommodate a 5 car formation, totaling a length of 126m. The width of the platform will be designed to a minimum useable width of 3.2m where possible plus the width of any platform furniture

[2] https://www.bristol.gov.uk/documents/20182/1308373/Bristol+Resilience+Strategy/31a768fc-2e9e-4e6c-83ed-5602421bb3e3

- a steel footbridge with lifts
- 2 waiting shelters, one on each platform. Seating along the platform will consist of 3 x 4 seat benches on each of the platforms distributed over the platform length.
- Ticket machines will be provided on each platform with one ticket machine in each of the waiting shelters.
- The station is adjacent to a key cycle route into the centre of Bristol (Concorde Way). Because of this location it is thought that the station may be used by a large number of cyclists and a greater number of cycle racks than usual will be provided.
- Fencing, lighting, signaling and CCTV
- Improvements to pedestrian and cycle access and provision of 2 disabled spaces are included in the overall scheme costs and are being designed by Bristol City Council

Figure 1.5 Visual of Ashley Down Station

1.8.2 Henbury Station

The design for Henbury station will include:

- platform will be designed to accommodate a 5 car formation, totaling a length of 126m. The width of the platform will be designed to a minimum useable width of 3.2m plus the width of any platform furniture.
- waiting shelter will be provided.
- seating along the platform will consist of 3 x 4 seat benches distributed over the platform length.

- ticket machine will be provided on the platform in the waiting shelter
- standard cycle provision will be made at the station adjacent to the new station access
- drainage will be provided if the wider site does not come forward within the timetable for construction
- fencing, lighting, signage, signaling and CCTV
- 30 space car park
- Access to the station will either be provided by the developer of the wider site or alternatively overall scheme costs currently allow for the project to provide access

1.8.3 North Filton station

The design for North Filton station will include:

- platforms to accommodate a 5 car formation, totaling a length of 126m. The width of the platform will be designed to a minimum useable width of 3.2m plus the width of any platform furniture
- a steel footbridge with lifts
- 2 waiting shelters, one on each platform. Seating along the platform will consist of 3 x 4 seat benches on each of the platforms distributed over the platform length
- Ticket machines will be provided on each platform with one ticket machine in each of the waiting shelters.
- Fencing, lighting, signage, signaling and CCTV
- Cycle racks will be provided adjacent to the entrance on the Up side and will consist of 2 x 16 cycle modules.
- The developer of the adjacent Filton airfield site (YTL) will be constructing the access and a multi-storey car park alongside the new station entrance. This will serve both the station and the new town square
- North Filton is positioned adjacent to the BAC (Brabazon) Crossing which is due to be closed prior to the project start

See Appendix 1.2 for detailed designs.

Scheme costs also include provision of a turnback at Yate.

Figure 1.6 Visual of North Filton Station

1.8.4 Scope Opportunities

There is an opportunity to extend the MetroWest Phase 2 train service proposals beyond Yate to Gloucester. Early investigations suggest an extension could be achieved subject to further train path modelling (Railsys) and resolving issues around station capacity. Although this does not form part of the current scope of the project it is a DfT priority and sensitivity testing has been undertaken as part of the Economic Assessment. The extension is also under consideration by DfT Rail Executive to form part of the franchise. If the extension to Gloucester is achieved a turn-back facility at Yate would not be required.

1.8.5 Not in Scope

We are aware of proposals to develop the Brabazon Hangar into an arena. This would be adjacent to the new North Filton Station. Service and infrastructure enhancements are likely to be required at the station to support the potential increase in passengers if the arena does go ahead. However, whilst we are keen to 'future proof' the new station, it would not be appropriate to include enhancements to the station in the current scope of the project at this stage. Any additional enhancements would need to be led by the developer as part of a future phase of this scheme.

1.8.6 Increasing Value for Money

The current scope of the scheme offers medium value for money (see 2.10 of Economic Case). There are however a number of factors that would have a positive impact on the BCR going forward and will become clearer as we progress to Full Business Case. These are:

- The Economic Assessment does not currently include JSP growth which includes significant development in Yate as well as increased development on the CPNN. The status of the JSP will be clearer by Full Business Case submission and inclusion of JSP growth would have a positive impact on the BCR.
- Similarly, any growth in rail patronage in relation to the use of the Brabazon Hangar has not been included.
- A sensitivity test has been undertaken in relation to bringing the MetroWest programme more in line with current build-out rates of the CPNN. This has shown a positive effect on the BCR (see 2.10 of Economic Case).
- Inclusion of the increased services to Yate / Gloucester within the next franchise which would remove the revenue costs of this element of the scheme. A sensitivity test has been undertaken in relation to this (see 2.10 of Economic Case)
- Scheme costs currently allow for the cost of CPO and provision of access / drainage at Henbury station which may not be required if the wider development is in line with the MW2 programme.

1.9 Constraints

Table 1.10 sets out a summary of the key constraints for the MetroWest Phase 2 project. These matters were considered at the project risk workshop. Further information is set out in the QCRA Appendix 3.3 of this report.

Table 1.10 Constraints

Category	Internal Constraints	External Constraints	Further Details
Finance	• Availability of funding • Need for train service subsidy in the short term		Finance Case
Environment	• Localised environmental impacts • Developing in a built environment • Integration with adjacent development		Economic Case
Governance / organisational	Multi-party promoted scheme		Management Case
Technological / engineering	New stations' designs must interface with the wider railway	• Working within the footprint of current rail corridors • Network Rail technical guidance to be followed (GRIP)	

		• Network is close to/at capacity in key locations • Need for timetable solutions, acceptable to rail industry • Need to integrate with Phase 1 enhancements	
Land	Providing access and appropriate drainage to Henbury Station if the wider development does not come forward within the required timescales.		

Table 1.11 Route specific Constraints

Location	Issue	
Westerleigh Junction – impact on Yate service	Point at which the Yate service leaves the main London line. Currently have objections on the increased frequency to Yate from both Freight and Cross Country train operators.	Previously identified that MW2 would take the last path through this junction. NR confident that objections can be resolved but will need the new base timetable to be issued before working with freight and cross country operators.
Gloucester Station	Extension of services to Gloucester is an aspiration of this project. NR identified that infrastructure improvements to Gloucester station will be required to facilitate this.	Feasibility study to be undertaken to determine requirements. GCC considering funding options.

1.10 Interdependencies

Table 1.12 Dependencies / Interfaces with other projects

Project	Timescales	Detail
Bristol East Junction Enhanced Renewal	Autumn 2021 but dependent on funding	**Dependent – MW2 is dependent on delivery of this project.** This project is currently at GRIP 4 with a funding decision expected to

		be made by DfT in Autumn 2019.
Electrification of Great Western main line and Intercity Express programme	December 2019	**Related** - Electric trains will be quicker to accelerate and have higher top speeds allowing shorter journey times and releasing some network capacity.
Great Western Franchise	2019 onwards	**Related** - MetroWest is identified as a third party scheme in the November 2017 DfT franchise consultation. The councils are making the case for MetroWest to be included in the franchise specification.
MetroWest Phase 1	Currently at GRIP stage 4	**Related** – MW2 is not dependent on MetroWest Phase 1. The train services of the two schemes overlap for a short section of railway between Bristol Temple Meads and Narrows Ways Junction (taking in Lawrence Hill and Stapleton Road stations) but neither scheme is proposing infrastructure works on this section of railway.
CPNN		**Related –** although build out of the CPNN is not directly required in order to deliver the scheme the delay to revenue growth does impact on the BCR for the project.

1.11 Stakeholders

A Stakeholder Management and Engagement Plan has been produced for MetroWest Phase 2 (see Management Case Appendix 3.2). The purpose of the plan is to set out how we intend to engage with stakeholders and the public during the project. The Plan is intended to be a 'live' document which will be reviewed as the scheme progresses.

1.12 Options

Feasibility work has been ongoing for many years and has been used to inform the development of options to progress through the Business Case process. The rail options for MetroWest Phase 2 have been assessed using DfTs Early Assessment Sifting Tool (EAST) in parallel with a Capability Analysis undertaken by Network Rail (which involved building concept timetables using 'Railsys' software).

Prior to and during the early stages of PBC development, feasibility work included:

- 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 (2014) considered and dismissed the following scheme components, which were endorsed by South Gloucestershire Council in the CPNN SPD:

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

Following the initial feasibility work, there have been three main phases of option development:

- Prior to the Preliminary Business Case,
- As part of the Preliminary Business Case,
- As part of the Outline Business Case

The Preliminary Business Case was prepared in 2015 based on GRIP stage 2. At this stage various options were considered including a Henbury loop service, various station locations along the Henbury line and options for providing half-hourly services to Yate. The Preliminary Business Case and the supporting Economic Assessment informed the decision to pursue the Henbury line as a spur service with stations at North Filton, Henbury and Ashley Down. Two options for the location of the Henbury station were to be considered one further to the East of the A4018 on land known as Fishpool Hill and one to the West of the A4018 being the location of the former Henbury station. Consultation was undertaken on these two potential locations in 2016 and this together with a report written by Network Rail informed that the location to the east of the A4018 should be progressed to GRIP3 (single option assessment). This forms the current scope of the project which is assessed through the Outline Business Case. Further detail on the Options Assessment process is provided in Appendix 1.1 Options Assessment Report.

Table 1.13 shows a summary of the option development work to date.

Table 1.13 Summary of Option Development Work

Option	Detailed options	Outcome of option assessment
Henbury line options	Option 1.1: Henbury line as a loop service (building on Phase 1 Option 5B)	Rejected at PBC EAST assessment due to poor management case (operational reasons) and financial/economic performance
	Option 1.2: Henbury line as a loop service (building on Phase 1 Option 6B)	Rejected at PBC due to poor management case (operational reasons) and financial/economic performance
	Option 1.3: Henbury line as a spur service (this could build on either Phase 1 5B or 6B)	Proceed to OBC
The options for services to Yate	Option 2.1: Half-hourly service at Yate provided by extending the existing Weston-Super-Mare –Bristol Parkway terminating service to Yate – short turnaround	Rejected at PBC EAST assessment due to poor management case (operational reasons)
	Option 2.2: Half-hourly service at Yate provided by extending the existing Weston-Super-Mare -Bristol Parkway terminating service at Yate – long turnaround	Proceed to OBC
	Option 2.3: Half hourly service at Yate provided by extending the existing Weston-Super-Mare –Bristol Parkway terminating service to Gloucester – short turnaround	Rejected at PBC EAST assessment due to poor management case (operational reasons)
	Option 2.4: Half hourly service at Yate provided by extending the existing Weston-Super-Mare –Bristol Parkway terminating service to Gloucester – long turnaround	Proceed to OBC as a sensitivity test (Gloucestershire County Council also carried out some assessments since PBC)
The new station location options	Option 3.1: New Henbury station site – Henbury East	Proceed to OBC
	Option 3.2: New Henbury station site – former Henbury Station site	Proceeded to OBC, but rejected as part of the GRIP3 work and documented in the Henbury station OAR
	Option 3.3: New North Filton Station – former station site	Proceed to OBC, but subsequently relocated to Brabazon site option (see below)
	Option 3.4: New Filton Bank station site - Horfield	Rejected at PBC EAST assessment due to poor management case (operational reasons)
	Option 3.5: New Filton Bank station site – Ashley Down	Proceed to OBC
	Option 3.6: New Filton Bank station site – Constable Road	Rejected at PBC due to impact to the overall scheme cost and BCR

1.13 State Aid Considerations

In relation to the four tests of State Aid:

1. MetroWest Phase 2 will be funded through state resources.
2. MW2 is a strategic project which will benefit the wider community as a whole. If the wider development at Fishpool Hill does not come forward in time the project may need to provide access to Henbury station. Access will either be provided at a level purely to serve the station site or we will seek to reclaim costs from the developer for providing a full access arrangement that accommodates the wider development.

3. The assistance does not distort or have the potential to distort competition. Procurement for rail facilities will be through using Network Rail's framework contractors. Highways works will either be delivered through the council's own engineering teams or by framework contractors.
4. On this basis the assistance does not affect trade between Member states.

1.14 Equalities Impact Assessment

An Equality Impact Assessment and Analysis (EqIAA) has been conducted for the Scheme. This shows that it is expected that the Scheme would benefit all groups in society by providing a significant improvement in public transport which would provide residents with improved access to job opportunities in Bristol and the North Fringe as well as to a wider range of services including retail and leisure facilities.

MetroWest services and associated infrastructure will be compliant with disability access requirements with accessible vehicles and passenger information systems. Passenger lifts are being provided at both North Filton and Ashley Down stations. Station designs were discussed at an early stage of development at Network Rail's Built Environment Accessibility Panel (BEAP). The main concerns raised were around access designs for Ashley Down station. Ashley Down is an existing station site and the topography is challenging, however, comments have been taken into account and actioned where possible by the design team. The design is due to be discussed at a future BEAP prior to submission of planning applications.

1.15 Summary of Strategic Case

The evidence presented within this section demonstrates that MetroWest Phase 2 has a strong strategic case. The scheme:

- Has **a clear business strategy which is closely aligned with the strategic aims and responsibilities** of the four West of England authorities, the West of England Combined Authority and Network Rail.
- **Addresses a number of genuine, evidenced problems** relating to congestion, resilience, accessibility and the constraints these have on economic growth.
- Would **support and several housing and employment developments** that are planned in the sub-region.
- Has a **clearly defined scope** with a number of opportunities to **increase value for money.**
- **Will affect a wide range of stakeholder groups** and local communities by providing better access to a local rail service.
- Has been **subject to a robust optioneering process**.
- Is **aligned with the business objectives of the rail industry** and the programme of CP5 / 6 investment planned for the Western Route. Thus extending the benefits of CP6 further across the rail network to wider population, yielding wider economic growth.

- **Responds to both internal (rail industry) and external (public pressure) drivers for change.**
- Provides an **integrated approach to the travelling public by providing the basis for a truly 'Metro' level of service for** West of England **local rail network**, alongside the substantial investment in the long distance rail routes to and from the West of England.
- **Has clear objectives** that directly address the problems identified and are aligned with the objectives of the JLTP, the various spatial planning policies, and the vision and objectives of the West of England.

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 workforce pool to draw on within a 30 minute commute and will play a part in removing barriers to inward investment. MetroWest Phase 2 has been ranked as a high priority for delivery within the West of England Joint Local Transport Plan and is on the Priority Programme for devolved major schemes funding. The importance of the scheme has also been reflected in the Strategic Economic Plan.

MetroWest

MetroWest Phase 2
OUTLINE BUSINESS CASE

Chapter 2: Economic Case

travelwest

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

March 2019

Chapter 2: Economic Case

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Appendix 2.2: Economic Assessment Report
Appendix 2.3: Social Impact Appraisal Report
Appendix 2.4: Distributional Impact Assessment Report

CHAPTER 2
Economic Case

2.1 Introduction

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

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

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

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

The MetroWest programme builds on and will complement the investment being made by Network Rail (NR), such as the already completed Filton Bank 4-tracking and Bristol area re-signalling projects, and help to extend the benefits of on-going projects such as the electrification of the Great Western main line and its accompanying enhancement of services between the WoE area and London. The MetroWest programme is to be delivered in stages over the next five to ten years.

2.1.1 Structure of this chapter

Following this introductory section, this chapter contains:

- Section 2.2: Scheme appraised
- Section 2.3: Transport modelling overview
- Section 2.4: Summary of modelled scheme impacts
- Section 2.5: Key economic assumptions
- Section 2.6: Economy impacts
- Section 2.7: Environment impacts
- Section 2.8: Social impacts
- Section 2.9: Public Accounts impacts
- Section 2.10: Performance of option variants
- Section 2.11: Summary of impacts

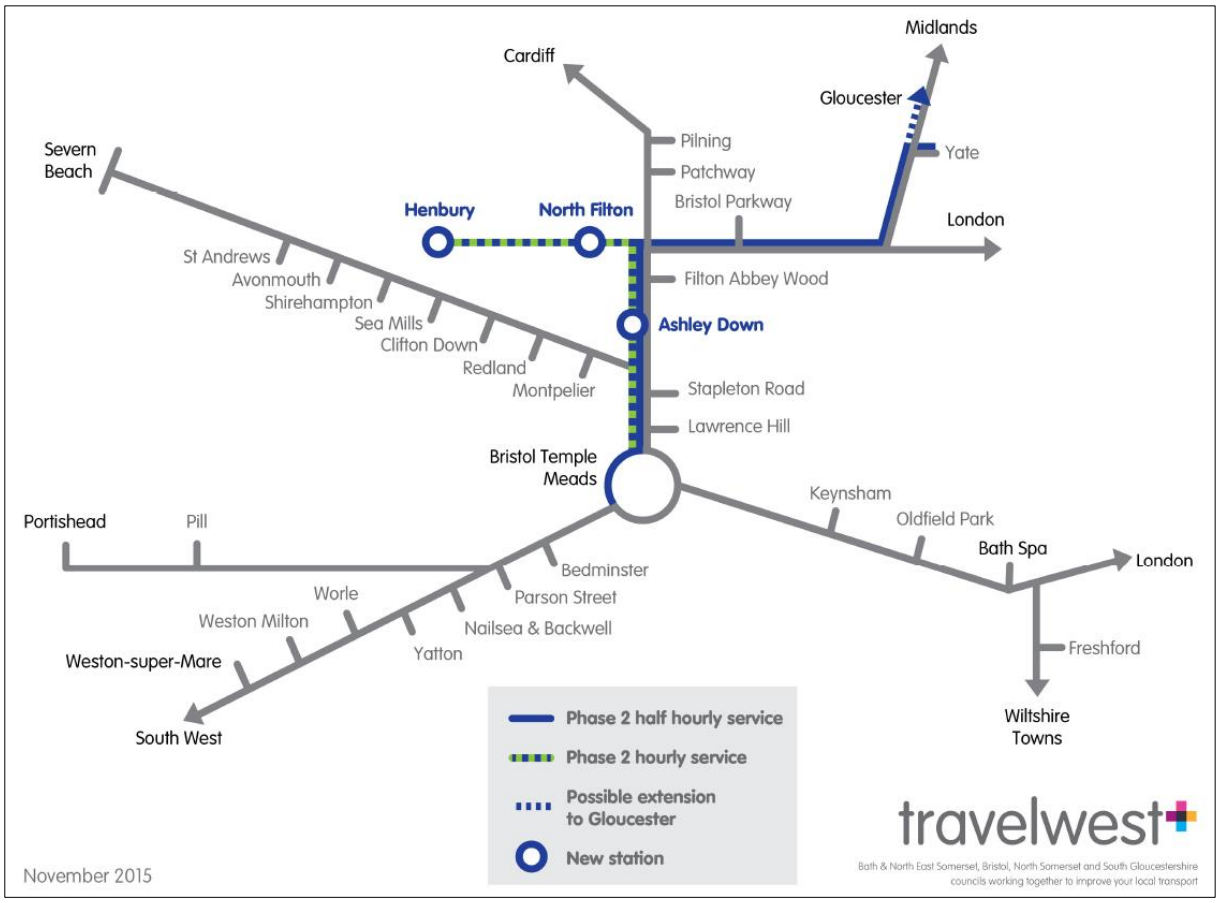
2.2 Scheme appraised

The MetroWest Phase 2 project includes delivery of infrastructure and passenger train operations to provide:

- A half hourly service for Yate local station on the Bristol Parkway to Gloucester line, through the provision of an additional service between Bristol and Yate; and
- An hourly service for a reopened Henbury Line, with new stations on the reopened line at Henbury and North Filton, and additionally a new station at Ashley Down on the existing Filton Bank (between Filton Abbey Wood and Stapleton Road).

Figure 2.1 shows the proposed MetroWest Phase 2 passenger network. MetroWest Phase 2 is programmed to be operational in 2021. A possible extension of the new service to Yate to Gloucester is also being considered, which has the potential to change both infrastructure and operational requirements and affect costs and revenue; this has been included in the OBC as a sensitivity test.

Figure 2.1: MetroWest Phase 2 network



2.3 Transport modelling overview

The key rationale of the transport modelling methodology is that it makes best use of available tools. In particular, the approach utilises tools and approaches accepted by the rail industry such as MOIRA and the West of England's GBATS4 multi-modal demand model, a WebTAG compliant demand model. The methodology is in accordance with both WebTAG and Governance of Railway Investment Projects (GRIP) demand forecasting requirements.

Advice relating to demand forecasting of rail-based schemes is in TAG Units M1-1 and M4, noting in the first instance that there are two main approaches to modelling rail passenger demand. 'Multi-stage'

modelling may be employed, such as making use of an existing multi-modal transport model. Alternatively, an elasticity-based approach may be used.

The guidance notes there are advantages and disadvantages to both. In particular though, multi-stage models are cited as often being less accurate (than elasticity approaches) when forecasting rail. This is not necessarily a problem specific to rail but to 'minority modes' in general (rail accounts for only about 2% of all journeys in the UK). Multi-stage models do not always reflect growth in the demand for travel by modes, as they concentrate on overall demand modelled as a function of demographic characteristics and car ownership trends. For instance, the National Travel Survey (NTS) indicates a disconnect between demographic changes and growth in rail use, such that the rate of rail trip making has risen by more than simply population.

Elasticity approaches are therefore commonly used in rail forecasting. Those suggested in TAG Unit M4 (section 8) draw heavily on the Passenger Demand Forecasting Handbook (PDFH), which sets out relationships between rail demand and service related characteristics, and are enshrined in MOIRA.

A combination of bespoke spreadsheet models and MOIRA were used to assess rail enhancements offered by MetroWest Phase 2, before bringing the results together in an aggregate forecast for use in subsequent analyses. There are two main elements covered:

- Changes in demand at existing stations from new or amended services (including suppression of demand by extra station calls); and

- Demand at newly opened stations (including assessment of the number of trips that are made by people who are already rail users, albeit using other stations).

New stations demand models (and highway modelling) take into account future year housing and employment development in the area. In essence, only committed developments and plans that are reasonably certain are included in the models, such as those included in adopted development plans. As such, potential specific future developments that could impact on MetroWest Phase 2 such as the WoE's Joint Structure Plan (JSP) proposals for new development areas or densification are not included. Similarly, specific potential proposals such as an Arena development near the proposed North Filton station site can also not be included at this stage. Suffice it to say though that these two examples could present potential increases in demand for MetroWest Phase 2 new stations.

A full explanation of the transport modelling approach and modelled impacts is set out in the MetroWest Phase 2 OBC Forecasting Report contained in Appendix 2.1.

2.4 Summary of modelled scheme impacts

2.4.1 Rail demand

Demand forecasts for Henbury, North Filton and Ashley Down are shown in Table 2.1, showing initial 2017 forecasts of demand and revenue, as well as opening year 2021 and future year 2036 figures. [1] [2] [3] Future year figures were derived using the growth profile discussed in Chapter 2 of the Forecasting Report, as well as the development trajectory currently anticipated for CPNN build-out.

[1] Indicative timetable information has been used in the demand forecasts, with an hourly service running between Bristol Temple Meads and Henbury, which has journey times between Bristol Temple Meads and Henbury of around 18 minutes, 15 minutes to North Filton and 8 minutes to Ashley Down. More details can be found in the MetroWest Phase 2 OBC Strategic Case.

[2] Revenue is calculated from the total number of journeys and potential geographical distribution, generating a total passenger mile figure. An effective average revenue per passenger mile of 26.6p is applied, which takes into account the mix of ticket types (full price, reduced and seasons). This is based on a local comparison of revenue and demand, and does not include Severn Beach line fares, as these are out of step with surrounding fares (much cheaper).

[3] Note that demand and revenue figures include an uplift to account for the potential for greater demand from local stations to take advantage of enhanced London services with the introduction of IETs (of 2.6%). This uplift was derived from investigation of demand and revenue information from MOIRA base data and do minimum forecasts (including IET). Also included is an uplift (of 2.5%) to account for

Table 2.1: New stations demand forecasts – OBC core scenario

	USED IN OBC		**NO development**		**Full CPNN development**	
	Incorporating development build-out trajectory and future growth		Forecast equivalent to situation with current population/employment only, plus future growth		Forecast equivalent to full CPNN population/employment plus future growth	
	Journeys	Revenue	Journeys	Revenue	Journeys	Revenue
HENBURY						
2021	105,544	£456,891	100,500	£435,057	117,179	£507,262
2036	205,828	£891,014	126,332	£546,881	205,828	£891,014
NORTH FILTON						
2021	112,549	£445,891	102,424	£405,782	135,905	£538,422
2036	197,024	£780,563	108,405	£429,474	197,024	£780,563
ASHLEY DOWN						
2021	126,433	£324,735	no effect on catchment		no effect on catchment	
2036	178,557	£458,611				

Early years ramp-up is not factored into the figures in this table. [4]

All forecasts assume hourly services between Bristol Temple Meads and Henbury

Two-way journeys, annual totals for the years indicated

MetroWest Phase 2's new stations at Henbury and North Filton are located immediately adjacent to the former Filton Airfield area, a significant proportion of the land included in the Cribbs Patchway New Neighbourhood (CPNN) development area. As such, CPNN development is important to these new stations, though MetroWest Phase 2 overall is not dependent on CPNN development, and neither is the CPNN development on MetroWest Phase 2's implementation. CPNN is a committed development area in local planning documents, with large parts already subject to planning applications as it is being built-out, but as a significant development area (including almost 6,000 dwellings and around 50 hectares of employment land) this will take some time to fully complete. The interrelationship relates principally to timing of development build-out.

A current estimated trajectory of anticipated development completion has been used to generate population and employment figures for CPNN areas within the catchments of Henbury and North Filton stations, and hence also feed into the forecasts of demand at these stations. Population and employment figures illustrated previously in Table 2.1 reflect an estimated trajectory of build-out of CPNN in future years. As a result of this, changes between individual years can be (at Henbury and North Filton) significantly different to that projected by the growth profile on its own.

The effects of service enhancements at existing stations has been modelled using MOIRA.[5] This used the latest available update of MOIRA at the time (May 2018) to test MetroWest Phase 2 services. The total number of new journeys forecast by MOIRA are shown in Table 2.2. This includes the core OBC scenario, with new journeys modelled with the Henbury Line service (calling at Lawrence Hill,

the proximity of the stations to Cribbs Causeway shopping and leisure area. Although not immediately adjacent to the area, there is evidence that similarly located stations elsewhere experience some enhancement in demand as a result of this proximity, especially if there is a reasonable walk/cycle or bus link.

[4] New stations typically take some time to achieve their full potential demand. Initial forecasts are based on the catchment area and service level, but it is likely that this will not be achieved from opening year. As such, the basic assumption that 90% of forecast demand will be achieved in year 1, with 95% of forecasts in year 2 and the full forecast (100%) being achieved from year 3 onwards.

[5] MOIRA is a key modelling tool used by the rail industry to forecast the impact of service related changes on passenger demand. MOIRA1 has been used in this assessment. MOIRA2 is also available that has additional functions, such as crowding modelling, but this version has not been fully adopted by the industry as a result of technical issues. MOIRA is updated several times a year, based on ticket sales. MetroWest Phase 2 demand at existing stations has been assessed by Network Rail using MOIRA containing 2017-18 annual figures.

Stapleton Road and Filton Abbey Wood) and the enhancement of Yate services to half-hourly, as well as sensitivity tests where the Yate service runs to Gloucester, and the situation where a Henbury Line service is implemented independently.

Table 2.2: MOIRA demand forecasts – new journeys per annum

Year	OBC core scenario	Sensitivity tests	
		Gloucester services	Henbury line only
2021	74,690	103,858	52,174
2036	100,934	140,351	70,506

Note: Early years' ramp-up is not factored into the figures in this table.

Note that the additional demand forecast by MOIRA for the enhanced service at Yate is considered pessimistic. Because MOIRA works off the existing timetable, it models changes as a function of the detail of the timetable, and specific timings and an in-fill service combine to mean that Yate already has a better than hourly service in the morning peak. This means the model's changes are based on a service enhancement that doesn't actually represent a big uplift (there are currently four services from Yate to Bristol Temple Meads in less than 90 minutes, arriving in Bristol Temple Meads between 07:10 and 08:40). However, it is contended from local surveys, and some evidence of overcrowding in the evening peak, that this may be underrepresenting potential additional demand, and that the ultimate timetable recast that this proposal includes could have a bigger impact.

Table 2.3 illustrates the number of new journeys that MetroWest Phase 2 generates on the rail network, for each of the scenarios being considered in this technical note. The figures in this table show the total of new journeys at existing stations and new stations, net of those journeys at the new stations that previously travelled by rail via an existing station.

Table 2.3: MetroWest Phase 2 demand forecasts – net annual new rail journeys

Year	OBC core scenario	Sensitivity tests	
		Gloucester services	Henbury line only
2021	344,463	373,632	321,947
2036	621,825	661,243	591,398

Note: early years' ramp-up of demand is not factored into the figures in this table.

New stations demand forecasts considered the amount of potential transfer from existing stations.[6] At Henbury, initially some 11% of demand is modelled to have come from existing rail users transferring from existing stations. However, this figure drops in relative terms as the CPNN development is built-out, as this increases population in the immediate catchment of Henbury, resulting in only around 8% of trips in future being adjudged to be existing rail users transferring. At North Filton the corresponding figures are higher, reflecting that North Filton is closer to both Patchway and Filton Abbey Wood stations than Henbury just over 20% on opening, falling to 17% over time). At Ashley Down the transfer proportions are lower (at around 7%), reflecting that Ashley Down is situated between the catchments of Filton Abbey Wood and Montpelier and Stapleton Road, all of which will continue to provide a better service than at Ashley Down; as a result, Ashley Down is largely carving its own new catchment of rail users.

[6] Note that MOIRA automatically calculates the net number of new users on the rail network with enhancements, as such the total uplift at individual stations could be higher than the net totals quoted. In calculating the total number of new rail trips generated by MetroWest Phase 2, the impact on existing users of the new stations is also taken into account.

2.4.2 Highway impacts

The proportion of additional rail trips that are forecast to switch from highway have been identified from the GBATS4 multi-modal assessment results. These have been applied to the AM peak, inter-peak and PM peak rail demand figures. Table 2.4 shows a comparison of rail demand results of the full demand model runs using GBATS4 with figures derived by the RDM suite of models described earlier in this report, which requires a breakdown of annual to daily and peak period figures. TUBA factors shown in the table have been used to adjust elements of benefits calculated from each of the periods. The proportion of rail trips that are forecast to switch from highway trips (identified by GBATS4) are also shown assessment results, which vary by time period.

Table 2.4: Change in rail trips – comparison of RDM and GBATS4

Change in rail demand (from do minimum)	2021				2036			
	Annual	Average day			Annual	Average day		
		AM	IP	PM		AM	IP	PM
RDM								
Henbury	105,544	72	11	90	205,828	140	22	175
North Filton	112,549	80	10	96	197,024	141	18	169
Ashley Down	126,433	99	15	78	178,557	140	21	110
New stations total (net of ramp-up)	310,073	226	33	237	581,408	421	62	453
New trips at existing stations	74,690	46	14	35	100,934	62	20	48
Transfers from other stations	40,299	29	4	33	60,517	44	6	49
TOTAL (new rail users)	344,463	243	44	240	621,825	439	75	452
GBATS4								
Henbury		49	55	64		81	68	85
North Filton		108	27	124		166	44	192
Ashley Down		56	15	45		64	17	52
Existing stations		45	14	34		60	19	46
TOTAL		257	111	268		371	149	376
Figures derived from models used in calculation of highway benefits								
TUBA factors (based on net total new rail trips)		0.95	0.39	0.90		1.19	0.51	1.20
Proportion of rail trips formerly car (from GBATS4 demand model)		52%	27%	62%		63%	62%	45%

Table 2.5 shows model summary statistics from across the model area of GBATS4, with changes from 2021 and 2036 do minimum scenarios to MetroWest Phase 2 scheme in Table 2.6. Whereas changes from the 2013 base to the 2021 do minimum and 2036 do minimum are generally reflective of worsening traffic conditions, particularly in the 2036 do minimum, Table 2.6 indicate that changes as a result of MetroWest Phase 2 are mostly improvements to traffic. However, the scale of impact is much lower than that modelled between the base and do minima, with reductions in highway trips of around 0.5% feeding through to similar order changes in the other metrics (around 1% improvements in peak period travel times and average vehicle speeds being the most notable).

Table 2.5: MetroWest Phase 2 scheme effects – GBATS4 model statistics

Network Statistics		2021 OBC scheme			2036 OBC scheme		
	units	AM	IP	PM *	AM	IP	PM
TOTALS – all modelled area, for hour modelled							
Delay	pcu.hrs/hr	645	370	613	883	609	892
Travel time	pcu.hrs/hr	28,959	20,330	28,434	34,237	24,317	33,664
Travel distance	pcu.kms/hr	1,220,193	983,439	1,247,501	1,360,947	1,148,041	1,386,471
Trips loaded	pcu/hr	132,599	113,611	131,178	149,646	131,796	147,253
AVERAGES – per modelled vehicle							
Travel time	mins	13.1	10.7	13.0	13.7	11.1	13.7
Distance	kms	9.2	8.7	9.5	9.1	8.7	9.4
Speed	kph	42.1	48.4	43.9	39.8	47.2	41.2

* Results of the 2021 PM peak model were not all representative of changes in rail demand modelled in the same time period, or highway changes modelled in all other time periods and model years, something that was traced to routeing sensitivity of some congested areas to minor changes in demand. As a result of these figures, initial calculations of highway benefits were found to produce anomalous results (i.e. large disbenefits) that were not representative of mode shift changes modelled overall. As such, calculations of highway benefit and wider economic impacts ultimately used model outputs adjusted to remove anomalous figures. Original figures are included for reference.

Table 2.6: MetroWest Phase 2 scheme effects – GBATS4 model statistics – % CHANGES

Network Statistics		2021 Do Min to OBC scheme			2036 Do Min to OBC scheme		
	units	AM	IP	PM *	AM	IP	PM
TOTALS – all modelled area, for hour modelled							
Delay	pcu.hrs/hr	-0.12%	-0.16%	-5.21%	-0.06%	-0.10%	-0.12%
Travel time	pcu.hrs/hr	-0.11%	-0.02%	1.02%	-0.10%	-0.05%	-0.12%
Travel distance	pcu.kms/hr	-0.05%	-0.04%	-0.45%	-0.04%	-0.02%	-0.04%
Trips loaded	pcu/hr	-0.03%	-0.01%	-0.06%	-0.04%	-0.03%	-0.05%
AVERAGES – per modelled vehicle							
Travel time	mins	-0.07%	-0.01%	1.08%	-0.05%	-0.03%	-0.07%
Distance	kms	-0.01%	-0.02%	-0.39%	0.01%	0.01%	0.00%
Speed	kph	-	-	-1.35%	0.25%	-	-

Note: Negative changes to travel times, travel distances and trips loaded reflect improvements in conditions on the highway network. Similarly, positive changes to speeds are also an improvement

* Original figures are included (greyed out) for reference only – see Table 2.5 notes.

2.5 Key economic assumptions

The main non-project specific economic appraisal parameters and assumptions are drawn from the requisite units of the DfT's appraisal guidance contained in various WebTAG guidance units and the WebTAG databook. These are also enshrined in the Network Rail DCF model used for scheme appraisal, as well as TUBA, used for highway benefits assessments. Key assumptions made for the economic assessment are as follows.

General assumptions

- Opening year (late) 2021, preparation and construction profile from 2019-2021
- Appraisal period = 60 years
- Network Rail Discounted Cash Flow model = current model year 2019, first year of benefits 2021
- Price base year and base year for discounting = 2010
- Discount rate = 3.5% for 30 years from current year then 3% thereafter
- The appraisal approach identifies cost items that it is considered will change in real terms with respect to the prevailing inflation rate

Cost assumptions

- Train operating staff costs to increase in real terms, approx. 2% per annum above GDP deflator
- Cost of train operating company profit as a percentage of any change in operating costs = 8%
- Optimism bias level for capital costs = 18% applied to costs including quantified risks (GRIP3)
- Optimism bias level for operating costs = 1% per annum (GRIP3)
- Capital expenditure is assumed to be funded by devolved major scheme funding, Local Growth Fund and the four Authorities
- Future renewal expenditure is assumed to be funded through general rail network funding
- Each train is assumed to be formed of 3-car 165/166 diesel multiple units
- TOC revenue and operating cost transfer to government = 50% during franchise that is operating at the time of opening, then 100% after franchise expires (and all as government costs if franchise is publicly owned)
- Network Rail operating cost treated as central government costs

Transport demand assumptions

- Values of time in the DCF model are drawn from the WebTAG Databook (May 2018)
- Value of time is assumed to grow in line with GDP
- The 'Rule of a Half' is applied to time savings for new users in calculating benefits
- Average fare increases (above RPI) = 1% up to 2013 and after 2021, and 0% between 2014 and 2020 inclusive (based on current Government policy for regulated rail fares)
- Highway network growth has been forecast using the GBATS4 multi-modal model, which is in turn based on local development assumptions controlled to DfT's TEMPro 7.2 forecasts
- Growth in background rail demand is assumed to initially carry on from historic trends, tending towards future year forecast rates over time. As such, background rail demand growth in 2017 is assumed at 5.5% per annum, declining to 1.3% per annum by 2043, although for economic assessments, no further growth is assumed after 20 years (other than sensitivity testing).
- Development assumptions based on local planning documents and TEMPro 7.2, with specific allowance for CPNN development build-out trajectory at new stations.

2.6 Economy impacts

Further details of the economic assessment process and results are set out in the MetroWest Phase 2 Economic Assessment Report contained in Appendix 2.2, as well as in the WebTAG workbooks included in Appendix 2.5.

2.6.1 Business users and transport providers (TEE)

The Economic Efficiency of the Transport System (TEE table) for the MetroWest Phase 2 OBC scheme is shown in Table 2.7. Note that, in addition to impacts for business users, the TEE table also shows impacts for commuting and other users.

Table 2.7: MetroWest Phase 2 OBC, Economic Efficiency of the Transport System (TEE)

Consumer - Commuting user benefits	**All Modes**	**Road**		**Rail**	
Travel Time	35,292	3,486		31,806	
Vehicle operating costs	510	510		0	
User charges	-44	-44		0	
During Construction & Maintenance	-454	0		-454	
NET CONSUMER - COMMUTING BENEFITS	**35,304**	**3,952**		**31,352**	
Consumer - Other user benefits	**All Modes**	**Road**		**Rail**	
Travel Time	33,467	10,029		23,438	
Vehicle operating costs	498	498		0	
User charges	-413	-413		0	
During Construction & Maintenance	-454	0		-454	
NET CONSUMER - OTHER BENEFITS	**33,097**	**10,113**		**22,983**	
Business	All Modes	Personal	Freight	Personal	Freight
Travel Time	15,870	1,893	5,466	8,511	0
Vehicle operating costs	777	199	578	0	0
User charges	-0	-0	-0	0	0
During Construction & Maintenance	-908	0	0	-908	0
Subtotal	**15,739**	**2,092**	**6,045**	**7,602**	**0**
Private Sector Provider Impacts					
Revenue	61,202	0		61,202	
Operating costs	-101,451	0		-101,451	
Investment costs	0	0		0	
Grant/subsidy	40,249	0		40,249	
Subtotal	**0**	**0**		**0**	
Other business Impacts					
Developer contributions	0	0		0	
NET BUSINESS IMPACT	**15,739**				
TOTAL					
Present Value of Transport Economic **Efficiency Benefits (TEE)**	**84,140**				

Notes:

Benefits appear as positive numbers, while costs appear as negative numbers.

All entries are £'000s, present values discounted to 2010, in 2010 prices

2.6.2 Reliability impacts on business users

The overall reduction in congestion on the highway network set out in Section 2.6.1 will have some positive impact on journey time reliability. Highway reliability has also been specifically considered, with reference to WebTAG unit A1.3 section 6, based on variation in journey times caused by events unpredictable by the users such as incidents or recurring congestion in certain days (day-to-day variability). Predictable elements like varying levels of demand by time of day, day of week or seasonal effects are excluded, as travellers are assumed to be aware of them.

Results of the analysis indicate that highway reliability benefits of £1.787m could be realised across the full appraisal period as a result of MetroWest Phase 2. This does not distinguish between business users and commuting or other users.

More information about the assessment of reliability impacts is discussed in the MetroWest Phase 2 Economic Assessment Report.

2.6.3 Wider impacts and regeneration

Transport infrastructure can play a key role in regeneration and making an area's economy more productive. Improved infrastructure can lead to improved access to markets and customers, higher mobility and flexibility of the labour market and more reliable supply of goods and services. There is a clear role for transport infrastructure, including public transport services, in driving regeneration and enhancing the economic output of an area.

The Wider Impacts assessment that has been undertaken follows guidance in WebTAG Unit A2.1 to A2.4 (May 2018 release) and considers Level 2 Wider Economic Impacts only. A Level 1 assessment considers user benefits, as discussed in this report. It is not considered that there will be any land-use change as a result of the scheme, and as such level 3 economic impacts have not been considered as part of this scheme at this stage. However, it is recognised that the scheme may have an impact on property values in the vicinity of new stations. Whilst not included for the Outline Business Case, a Level 3 assessment to include land value uplift could be undertaken prior to or for the Full Business Case.

The Level 2 impacts identified in the economic narrative are imperfect competition, employment effects, and productivity. Welfare and Non-Welfare GDP impacts have been considered.[7] Table 2.8 shows summary and total values of wider impacts. More details of the methodology and results of the wider economic impacts assessment are contained in MetroWest Phase 2 OBC Economic Impacts Report (which is included as Appendix B to the MetroWest Phase 2 OBC Economic Assessment Report, itself Appendix 2.2 of OBC).

Table 2.8: Summary Total Wider Impacts (2021-80)

Source: Jacobs calculations

(£000s)	Welfare impacts	GDP impacts
Productivity impacts	£25,161	£25,161
Imperfect competition impacts	£1,574	£1,574
Labour supply impacts	£427	£1,068
TOTAL Wider Impacts	£27,162	£27,803

2.6.3.1 Economic Development and Regeneration

In addition to the wider impacts assessment set out above, further assessments have also been carried out that is consistent with previous analysis undertaken for MetroWest projects.

The assessment adopts a bespoke methodology to estimate the economic development and wider regeneration impacts of the Scheme, and attempts to reconcile the West of England LEP's economic impact guidance with DfT's Wider Economic Impact guidance and labour market modelling that is consistent with previous analysis undertaken for MetroWest projects. In particular, the West of England LEP's economic impact guidance was utilised to inform construction stage job creation and

[7] Welfare benefits shown here are additional to the user benefits calculated in the economic assessment report. These benefits are considered as an impact across the entire UK, and so are not biased toward the location of the scheme. These benefits are included in the MetroWest Phase 2 Value for Money calculations. Non-welfare benefits have been assessed as an increase in GDP. These benefits are indicative, and so cannot be included within the Value for Money calculations, but are evidence of linkages to economic development objectives of the scheme.

GVA uplift, as well as providing the overall framework for analysis encompassing treatment of wider 'operational stage' impacts and treatment of additionality. The DfT's recently revised Wider Economic Impact guidance was consulted to establish the narrative linking transport investment to economic externalities. Existing labour market modelling, in the form of spatial labour market balance sheets that were used extensively on the MetroWest project, was retained as the primary model driving analysis of wider economic development impacts.

The economic development and regeneration analysis demonstrates that the scheme has the potential to facilitate significant positive economic impacts across the West of England, in both the construction and operational phases. The analysis is consolidated and summarised in the table below, which suggests that the Scheme could generate more than 715 jobs and £24.5m in GVA during the construction stage as well as more than 164 permanent jobs and £7.9m in GVA per annum during the operational stage. The regeneration benefits described support the strategic case for the scheme, but due to their synergies with the wider impacts have been reported in this economic case.

More details of the economic development and regeneration assessment methodology can be found in the MetroWest Phase 2 'Preliminary Outline Business Case Regeneration Effects', reproduced as Appendix C to the MetroWest Phase 2 OBC Economic Assessment Report.

2.7 Environment

This section provides an overview of the environmental elements associated with the MetroWest Phase 2 scheme, which comprises three new stations at Ashley Down, North Filton and Henbury and a turnback at Yate. The anticipated level of impact is based on the information currently available which includes the following:

- Preliminary Business Case[8] for the Metro West Phase 2 scheme;
- Supporting studies such as GBATS4, and the GRIP process;
- Environmental appraisals undertaken to support the Environmental Impact Assessment (EIA) Screening Requests for Ashley Down Station[9], Henbury Station and North Filton Station[10] alongside Bristol City Councils (BCC)[11] and South Gloucestershire Councils (SGC)[12] EIA Screening Opinions for all three stations sites;
- Network Rail Station recommendation reports for the three station sites[13]; and
- Details on the proposed environmental appraisal to be undertaken for the three station sites by Jacobs to support the three planning applications for each of the proposed stations.

Where environmental information relates specifically to one of the individual station sites, this is clearly set out within the sections below. However, unless explicitly stated otherwise, the overall assessment of impacts are applicable to the scheme as a whole, and compares Phase 2 with the 'do minimum'.

Information is presented for the following technical areas:

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8 MetroWest Phase 2 Preliminary Business Case, Travel west, July 2015

9 Request for Environmental Impact Assessment Screening – Re-opening of Ashley Down Railway Station (to be now called Ashley Down Station) on the Filton Bank (ELR:BSW, Mileage: 2m 44ch) as part of the MetroWest Phase 2 Project, Network Rail, April 2017 (Planning Application Reference BCC: 17/02120/SCR)

10 Request for Environmental Impact Assessment Screening – Re-opening of Henbury and North Filton Railway Stations on the AFR Line (between Bristol Parkway and Avonmouth) as part of the MetroWest Phase 2 Project, Network Rail, April 2017

11 Formal Screening Opinion Planning Application Reference 17/02120/SCR, Bristol City Council, April 2017

12 Formal Screening Opinion Planning Application Reference PT17/015/SCR, South Gloucestershire Council, June 2017

13 Metrowest Phase 2 – Ashley Down Station Recommendations to the Options Report, Network Rail, April 2018; Metrowest Phase 2 – Henbury Station Recommendations to the Options Report, Network Rail, April 2018; Metrowest Phase 2 – North Filton Station Recommendations to the Options Report, Network Rail, April 2018

- Noise;
- Air Quality;
- Greenhouse Gases;
- Landscape and Townscape;
- Heritage of Historic Resources;
- Biodiversity; and
- Water Environment

The EIA procedures in European Union member states are based on the European Community Directive, 'The Assessment of the Effects of Certain Public and Private Projects on the Environment' (85/337/EEC) as amended by Council Directive 97/11/EC, Directive 2003/35/EC and Directive 2009/31/EC (subsequently replaced in 2011 by a new Codified EIA Directive 2011/92/EU) – collectively termed the 'EIA Directive'.

The Directive was implemented in the UK through the Town and Country Planning (Assessment of Environmental Effects) Regulations 1988 (SI No 1199), this was superseded by the Town & Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 (SI No 1824) (hereafter referred to as the EIA Regulations). Whilst it is acknowledged that the 2011 EIA Regulations were subsequently superseded on the 16th May 2017 (by the Town & Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2017, SI No 571). As the EIA Screening Requests for each of the three station developments were submitted to SGC and BCC prior to the 2017 EIA Regulations coming into force, the three stations were screened under the 2011 EIA Regulations[14].

- Schedule 1 of the EIA Regulations identifies those developments for which environmental assessment is mandatory. The three proposed stations do not fall in this category.
- Schedule 2 of the EIA Regulations lists developments which require environmental assessment if the proposed scheme is likely to have significant effects on the environment 'by virtue of its nature, size or location'. The process of determining whether a Schedule 2 development requires an environmental impact assessment is referred to as "screening". Under Regulation 5 of the EIA Regulations, the applicant may request a Screening Opinion from the relevant Local Planning Authority (LPA) to determine whether the proposed development requires an EIA. For each of the station sites, a formal request for a Screening Opinion has been submitted to the LPAs (SGC and BCC). The Screening Opinions received from SGC and BCC confirmed that each of the station sites are considered as independent projects and are non EIA development. i.e. and EIA is not required to accompany any planning application submitted.

Notwithstanding the above, a number of environmental assessments will be undertaken to support the planning applications for each of the three station sites. Details of the proposed assessments to be undertaken have been summarised within the sections below, where relevant.

[14] The 2017 EIA Regulations sets out the following in relation to the transitional arrangements between the 2011 and the 2017 EIA Regulations: Paragraph *'76.—(1) Subject to paragraphs (2) to (4), the 2011 Regulations are revoked…..*
(3) Notwithstanding the revocation in paragraph (1), Parts 1 and 2 of the 2011 Regulations continue to apply to—
(a) requests for a screening opinion or direction;
(b) screening opinions adopted by the relevant planning authority; and
(c) screening directions made by the Secretary of State;
where, before the coming into force of these Regulations [the 2017 EIA Regulations], such requests were made or the relevant planning authority or the Secretary of State, as the case may be, initiated the making or adoption of such screening opinions or screening directions'.

2.7.1 Noise

A review of England noise map viewer[15] indicates the main corridors leading into Bristol exceeds 70dB (A). This includes the M32, the A38 Gloucester Road and the A4018. The A38 in particular may benefit from changes in traffic arising from the scheme.

Each station has the potential to generate noise and vibration impacts during construction and once operational. The main sources of potential impacts in relation to noise and vibration from the scheme are considered to be; pre-construction vegetation clearance works; proximity of receptors to site compounds; construction plant and vehicles; installation of bridge structures; operational activity at station on opening; and operational rail noise.

To assess the potential sources of noise attributable to the proposed station developments, the existing noise climate needs to be considered to ensure that noise sensitive receptors are protected. Given the presence of the existing, operational rail lines along the scheme, the scheme is not considered to constitute a new source of noise during operation. However, it will introduce localised impacts arising from diesel trains accelerating and stopping, vehicle movements and station audio announcements.

In relation to the Ashley Down station site, given the urban environment and existing operational railway line the site is characterised by a combination of existing road and rail noise. Both the Henbury and North Filton station sites are located on the edge of an urban environment and the existing rail line is currently used by freight trains at any time of the day or night seven days a week; the sites are also characterised by a combination of existing road and rail noise.

Due to the urban and edge of urban nature of each of the three station sites, there are a significant number of nearby sensitive receptors, including residential properties and schools. Noise impacts will have greatest affect during the construction phase when noise and vibration levels associated with the works will unavoidably increase and potentially impact upon sensitive receptors. Night time working will also be required for certain elements of the project. With appropriate mitigation in place, the construction noise impacts are considered to be localised and temporary in nature.

As part of the environmental appraisal to support the planning applications for the three station developments, a noise assessment will be undertaken. The noise assessments are anticipated to include baseline measurements to obtain information on the baseline noise climate, however the scope of assessment will be agreed in advance with the Environmental Health Departments of SGC and BCC. The assessments will identify the potential impact on identified receptors from the scheme, including the new railway stations and any associated changes to train numbers, the potential impact from vehicles arriving / departing the station and any fixed noise sources (e.g. public-address systems). It will also consider the potential change to the noise climate from all the new or changed noise sources. Depending upon the outcome of the assessments, consideration would be given to any mitigation measures that are deemed necessary.

Based on the information currently available, overall it is envisaged that the scheme will have a **slight to moderate adverse noise impact.**

2.7.2 Air Quality

During operation, potential air quality impacts will be due to changes in road traffic and rail movements. This will give rise to a change in the nature and location of vehicle and train emissions, with consequent impacts on local air quality.

Defra guidance[16] relating to the review and assessment of air quality impacts associated with railways and diesel locomotives identifies the Bristol Temple Meads to Bristol Parkway line as a line to be considered due to it having heavy traffic from diesel passenger trains and the estimated background

[15] Source: http://www.extrium.co.uk/noiseviewer.html -[accessed 18/02/2019]

[16] Local Air Quality Management Technical Guidance (TG16), Department for Environment, Food and Rural Affairs, February 2018

annual mean NO_2 concentration is above 25µg/m^3 in the area of the line[17]. The scheme will introduce additional diesel trains along this line alongside local diesel train services stopping at each of the three stations. The frequency of the stopping services proposed are; twice an hour at Ashley Down station and once an hour at both Henbury and North Filton stations. Whilst this will likely result in localised increase in air pollution over and above the current situation, it is not considered that this will result in significant increase in emissions. It is also recognised that electrified trains are planned to be introduced on the Bristol Temple Meads to Bristol Parkway line. Therefore, in relation to the Ashley Down station, as detailed within the EIA Screening Letter it is considered that any increase in diesel emissions from stopping services will be off set against the use of electrified trains which should be running on the line and the predicted reduction of car use in the locality. In addition, off site works to improve pedestrian / cycle access to this railway station are also proposed.

Under the Local Air Quality Management regime, Local Authorities have a duty to make periodic reviews of local air quality against the air quality objectives. Where this indicates that the objectives are not expected to be achieved, they are required to designate an Air Quality Management Area (AQMA). An Air Quality Action Plan (AQAP) must then be formulated, outlining a plan of action to meet the air quality objectives in the AQMA. A review of information held on the Defra AQMA website,[18] SGC has declared three Air Quality Management Areas (AQMAs) within its boundary and BCC has declared one AQMA. The AQMAs are listed within Table 2.9, alongside the approximate distance of each station from each AQMA. Figure 2.2 shows the locations of the AQMAs relative to the scheme. The existing Bristol Temple Meads to Parkway line does include a section within the Bristol AQMA, however, none of the three station sites fall within any of the designated AQMAs. In addition, the Bristol and Cribbs Causeway AQMAs are likely to experience a minor reduction in highway traffic.

Bus stops are proposed at both Henbury and North Filton stations to encourage integrated use of public transport. Overall, the scheme is intended to result in a decrease in vehicle usage within the local area.

Table 2.9: SGC and BCC AQMA relative approximate distances from the station sites

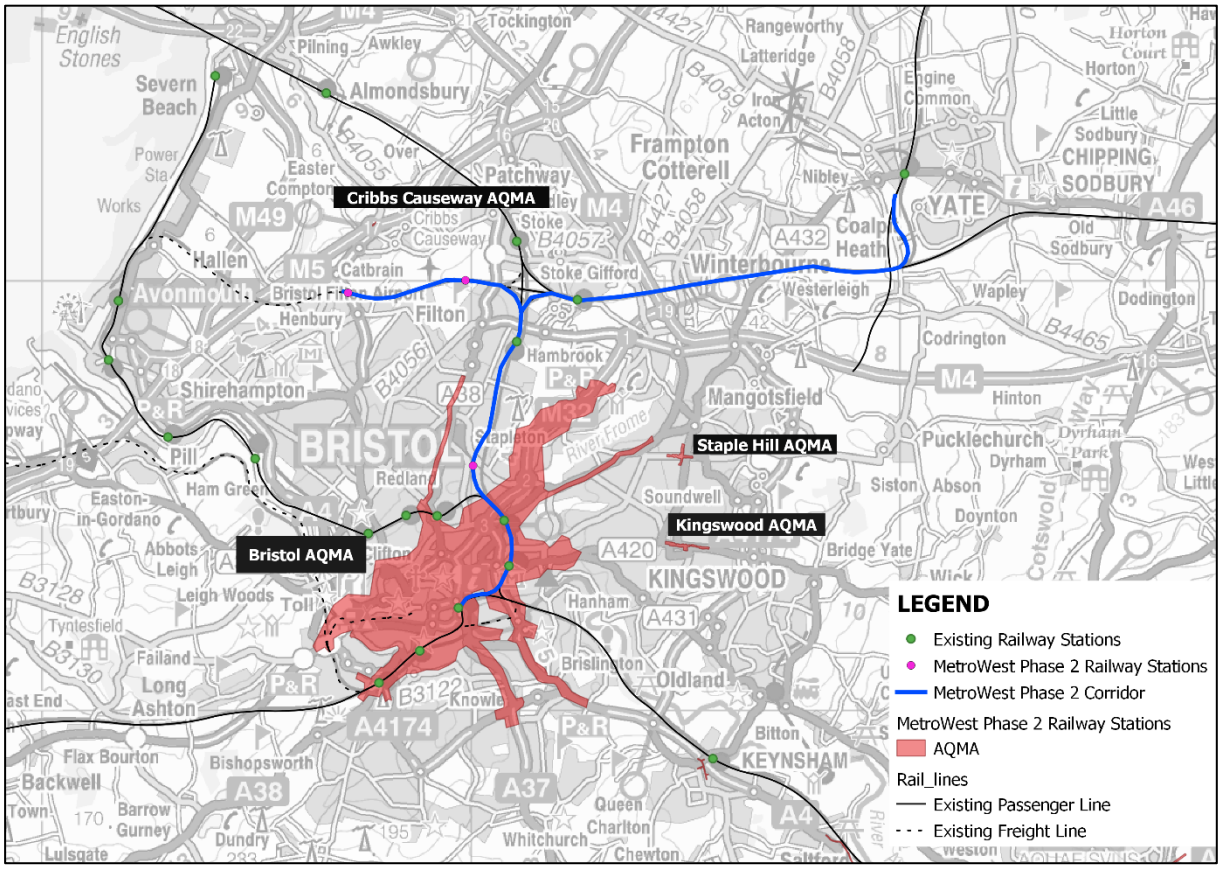
AQMA	Approximate Distance from Station to AQMA (km)		
	Ashley Down	**Henbury**	**North Filton**
SGC AQMAs			
Staple Hill – at the Broad Street (A4175), High Street (B4465), Victoria Street and Soundwell Road (A4017) crossroads	4.60km east of the station	8.40km southeast of the station	6.25km northeast of the station
Kingswood – along Regent Street (A420)	4.85km southeast of the station	9.40km southeast of the station	7.65km to the southeast of the station
Cribbs Causeway – adjacent to the M5 Roundabout (Junction 17)	6km northwest of the station	1.75km north of the station	2.50km northwest of the station
BCC AQMA			
The city centre, the M32 corridor to Frenchay, A38 to Horfield, A432 to Fishponds and A4134 to Brislington.	0.77km west and 0.88km east and south of the station	3.35km southeast of the station	2.30km south of the station

On balance, based on the information currently available, it is envisaged that the scheme will have a **neutral** to potentially **slightly beneficial air quality impact**.

[17] https://uk-air.defra.gov.uk/data/gis-mapping [accessed 10/02/2019]

[18] https://uk-air.defra.gov.uk/aqma/list [accessed 18/02/2019]

Figure 2.2. Plan showing AQMA locations relative to the scheme.



2.7.3 Greenhouse Gases

On average, according to the National Atmospheric Emissions Inventory[19] the carbon emissions for the City of Bristol and South Gloucestershire in 2016 were, respectively, approximately 6.2 kilotonnes (kt) and 19.5kt for diesel railways and 539kt and 938.8kt for road transport[20]. Rail transport is considered to be more energy-efficient than road transport and gives rise to less pollution per passenger kilometre than road transport; hence, with the forecast modal shift to rail, there should be a reduction in day-to-day carbon emissions from transport. This is supported by results from GBATS4 and TUBA; Table 2.10 shows the results for the scheme.

Table 2.10: Carbon assessment (highway impacts only)

Assessment	tonnes
Change in non-traded carbon over 60 year (CO2)	-18,100
Change in traded carbon over 60 year (CO2)	-222

The carbon impacts of construction will be principally associated with the materials used for the construction of new railway stations. On balance, it is envisaged that the scheme will have a **moderate beneficial greenhouse gases impact**.

[19] http://naei.beis.gov.uk/laco2app/ [accessed 26/02/2019]

[20] Road transport: made up of data for Motorways, A Roads and Minor Roads

2.7.4 Landscape and Townscape

Given that the MetroWest Phase 2 scheme involves the use of existing operational railway lines, the main landscape impacts will arise from the three proposed stations and the Yate turn-back. A high-level environmental appraisal of the station locations has been undertaken at this stage, which has confirmed that:

- The stations are located within the National Landscape Character Area (NCA) 118 (Bristol, Avon Valleys and Ridges).
- Vegetation will need to be cleared at all the station locations and the Yate turnback and hedgerows will need to be removed at the Henbury station location.
- Currently, agricultural land will be affected by the Henbury Station, however the area surrounding the station is subject to an outline planning permission that is 'pending determination', which would develop the wider area into mixed-use residential and commercial development.
- Both the Henbury and North Filton stations will be located in areas where wider redevelopment is proposed. When constructed these developments will transform the area and current open space. Both developments have made passive provision for the stations within their masterplans. Nevertheless, both stations will result in new infrastructure into the current landscape.
- In relation to the Yate turnback, there are mature trees present on both sides of the alignment. The removal of these trees will be required to make way for the new turnback facility and this will have an effect on the views of the houses and the industrial units.
- In relation to Ashley Down station, Ashley Down Conservation Area abuts the western side of the line and trees within a conservation area are afforded protected status. There will be unavoidable loss of vegetation close to Station Road. This will impact upon the visual screening, particularly for lineside neighbours with views onto the track.
- For all station locations, consideration will be given to incorporating screening plants into the design where feasible, to mitigate the visual impact of railway operations. In relation to the Ashley Down station, where tree planting is not possible a species rich grassland mix that is the basis for the local Site of Nature Conservation Interest (SNCI) designations within this area will be incorporated, if appropriate.

The high level appraisal of the scheme also identified that surveys to identify tree preservation orders (TPOs), investigate the potential for contaminated land and whether the scheme will open up pathways from contaminated areas to environmental receptors (e.g.SSSIs) will be required. As part of the environmental works to support the planning applications for the station sites, a phase 1 geo-environmental assessment will be undertaken, the reports will be suitable for use to inform a preliminary risk assessment, develop a Conceptual Site Model; and inform the design of the subsequent intrusive ground investigation (required to inform the earth works and drainage strategies for the site).

Pending more detailed assessment, given the likely number of designations and receptors, on balance the scheme is envisaged to have a slight adverse to **moderate adverse landscape impact**.

2.7.4.1 Townscape:

At this stage, a broad assessment of the impacts of the station developments on townscape has been undertaken. Table 2.11 summarises the likely townscape impacts for the station locations.

Table 2.11: Townscape assessment

Station	Assessment
Ashley Down	Moderate adverse impact – A footbridge will be required at this site which will have a direct impact on neighbouring properties. In addition, existing cycleway may need to be diverted and this may have an impact on neighbouring properties.
North Filton	Neutral impact – the introduction of a footbridge will be required at this site, and the infrastructure may be visible for the users of the nearby main roads, however there are no existing residential properties nearby
Henbury	Slight adverse impact – Although a footbridge is not required for the station design planned, the new station will be located close to and be visible from existing residential properties and users of the nearby main road. New properties are also proposed within the adjacent development site

On the basis of the above, it is envisaged that the design of the stations and surrounding public realm would have a **slightly adverse impact on the townscape**.

2.7.5 Heritage and Historic Resources

This section looks at both statutory and non-statutory designations in addition to non-designated cultural heritage assets. Both direct and indirect impacts (such as issues related to visual and historic settings) and effects to both resources are considered.

The construction phase of the scheme will result in impacts to the buried environment, which has the potential to result in the loss or degradation of buried archaeological features (if present). Assuming buried archaeology existed within the footprint of the proposed station buildings or their access infrastructure, a medium value of assets is assumed. Equally, the removal of extant railway architecture, including redundant trackside structures, tracks and sleepers, may have an impact on the cultural heritage. In addition, there is a potential setting issue to designated buildings.

At this stage, high level heritage assessments have been made of the scheme components and it is envisaged that the scheme options are likely to have a slight adverse to neutral heritage impact on:

- A listed building, structure or scheduled ancient monument;
- A local planning Conservation Area, historic landscape features and similar designated area; and
- Any other historical or man-made feature likely to be of value.

Following further assessment of the Ashley Down station site since the PBC, it has been identified that Ashley Down Conservation Area is located adjacent to the track and the proposed footbridge will be within the edge of this area. The design and use of materials will be considered in the development of the detailed design to minimise any impact on the wider Conservation Area. The use of lifts for step-free access to the footbridge minimises the impact. In addition, the site was formally used as a railway station and the proposed station will not be substantially different from that of the former use in relation to scale and massing and the site is located within an urban and rail setting.

The construction impact across the scheme constitutes a slight adverse impact due to the possible disturbance of buried archaeology (if present) as a consequence of the new stations and potential earthworks and the removal of railway architecture.

For each of the three station sites, a Statement of Heritage Significance will be prepared to support the planning applications this will provide detail on the historic environment relevant to the scheme

and consideration of the potential for the proposals to impact on the historic environment and confirm any mitigation required.

On balance, it is currently envisaged that the scheme will have a **slight adverse to neutral heritage impact**, however detailed assessment of the scheme has yet to be completed.

2.7.6 Biodiversity

As well as adhering to national and local policy, national and local action plans have also been used to inform this business case. Biodiversity 2020: A strategy for England's wildlife and ecosystem services, published in 2011, is the most recent biodiversity strategy for England. Bristol Biodiversity Action Plan (BBAP) and South Gloucestershire Biodiversity Action Plan (SGBAP) identify priority habitats and species and set targets for their conservation (this includes species and habitats of relevance to the proposed scheme, such as woodland, standing open water, rivers and streams, greater horseshoe bat, water vole and hedgehog).

It is noted that the scheme is not sited on or adjacent to any statutory designated sites. There are a number of Sites of Nature Conservation Importance (SNCIs) within the vicinity of the scheme.

For the three station sites, a Preliminary Ecological Appraisal (PEA) has been undertaken in 2017 which included an extended Phase 1 Habitat survey. For all sites, further survey works were identified to be required across the scheme to confirm the presence of protected species, including reptiles, bats, badger, great crested newts hedgerow and dormouse surveys. These surveys have commenced and have been progressed throughout 2018. Where statutorily protected species are found to be present following the surveys and analysis of the results, mitigation strategies (and applications for licences to Natural England, where relevant) will be prepared to protect them in advance of construction works, including vegetation clearance.

The proposed environmental assessments to support the planning applications for each of the three station sites will include an ecological assessment. This will provide a summary of the ecological baseline of each of the sites and surrounding areas and an assessment of the impacts of the proposed scheme on the habitats and fauna recorded within the site. To inform this chapter, the results of the extended Phase 1 Habitat Survey (2017) and protected species surveys undertaken in 2018 will be utilised. The chapters would also outline the mitigation measures aimed at minimising any significant adverse impacts on the ecology of the application sites and would highlight any effects remaining after the implementation of mitigation measures.

Overall, at this stage, the scheme is considered likely to have a **slight adverse biodiversity impact.**

2.7.7 Water Environment

A review of the Environment Agency flood mapping[21] has been undertaken for each of the three station sites, to ascertain which flood zone the developments are located in.

As part of the development of the scheme design and associated assessment works and through this review, it has been identified that the Henbury Station site is located within the Flood Zone 3 (which has been assessed by the Environment Agency as having a 1 in 100 or greater chance of river flooding), as shown in Figure 2.3. A site-specific Flood Risk Assessment will be required to be undertaken, in consultation with the Environment Agency to support the planning application. This will assess the impact of the Henbury station and associated infrastructure on flood flows and determine both the potential flood risk to the station and its users and any reduction in flood storage. It will also include identification of the mitigation requirements (for example, the provision of flood compensation storage) in order to ensure that flood risk is not made worse elsewhere due to the introduction of the station within the floodplain. This detailed assessment has not yet been completed.

Environment Agency mapping indicates that both the Ashley down station and North Filton station sites fall within Flood Zone 1 (low risk of flooding), as shown in Figure 2.4 and 2.5. To the north of the

[21] https://flood-map-for-planning.service.gov.uk/ [accessed 19/02/2019]

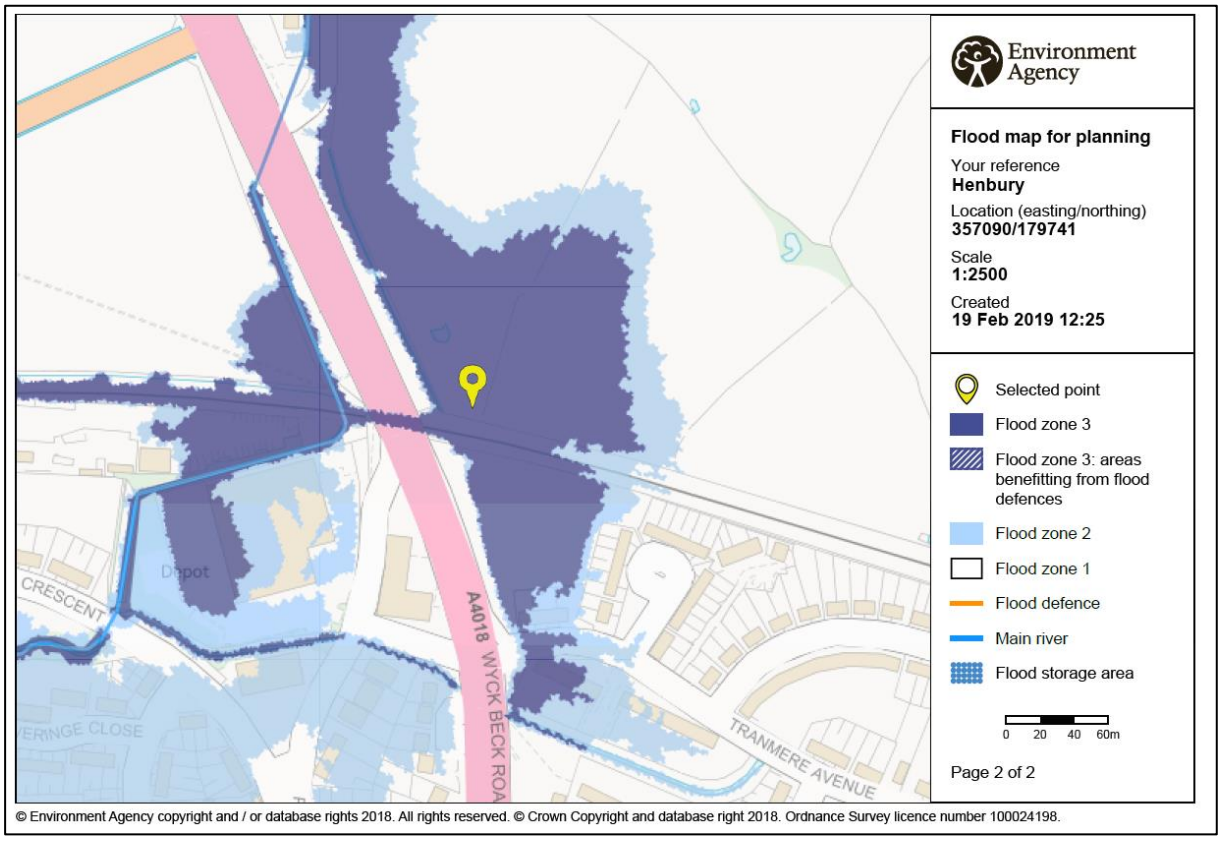
proposed Ashely Down station there is an area of land that does fall within Flood Zone 3, however, from the information currently available the area of the proposed station works does not fall within this land. Sustainable drainage systems (SuDS) will be incorporated into station designs as appropriate.

Whilst there have been a number of small watercourses identified within the vicinity of the scheme, no other significant impacts on the water environment have been identified. The proposed works associated with the scheme are not located within a designated Source Protection Zone.

For each site, station and track drainage is being developed as part of the Network Rail GRIP process.

Based on the information available to date, due to the location of Henbury Station within Flood Zone 3, the scheme will have a **moderate adverse to large adverse water environment impact**.

Figure 2.3. Environment Agency Flooding from Rivers & the Sea Map, Henbury



Sources:

- Figure 2.3: https://flood-map-for-planning.service.gov.uk/confirm-location?easting=360870&northing=179959&placeOrPostcode=BS34%207QD [accessed 19/02/2019]
- Figure 2.4: https://flood-map-for-planning.service.gov.uk/confirm-location?easting=359630.718&northing=175427.022&placeOrPostcode=ashley%20down%20bristol [accessed 22/02/2019]
- Figure 2.5: https://flood-map-for-planning.service.gov.uk/confirm-location?easting=360870&northing=179959&placeOrPostcode=BS34%207QD [accessed 22/02/2019]

Figure 2.4. Environment Agency Flooding from Rivers & the Sea Map, Ashley Down

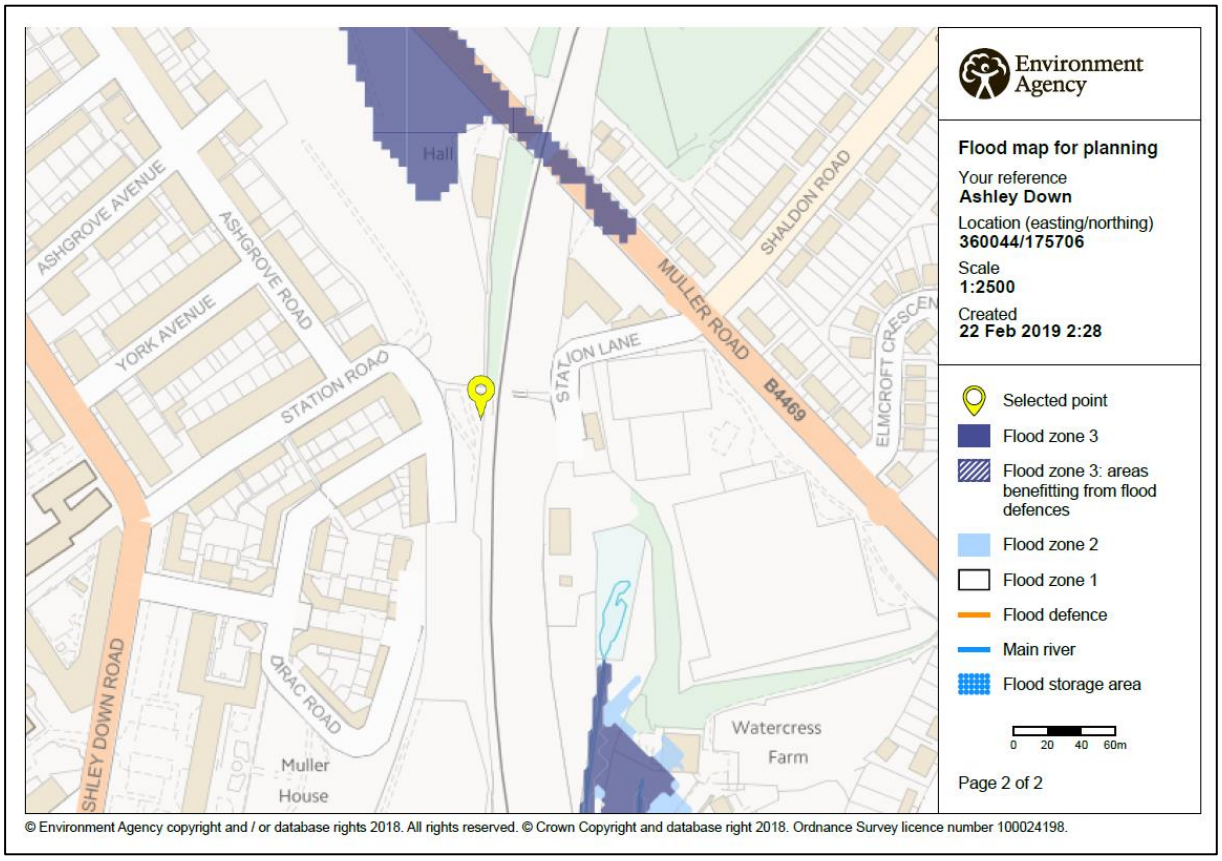
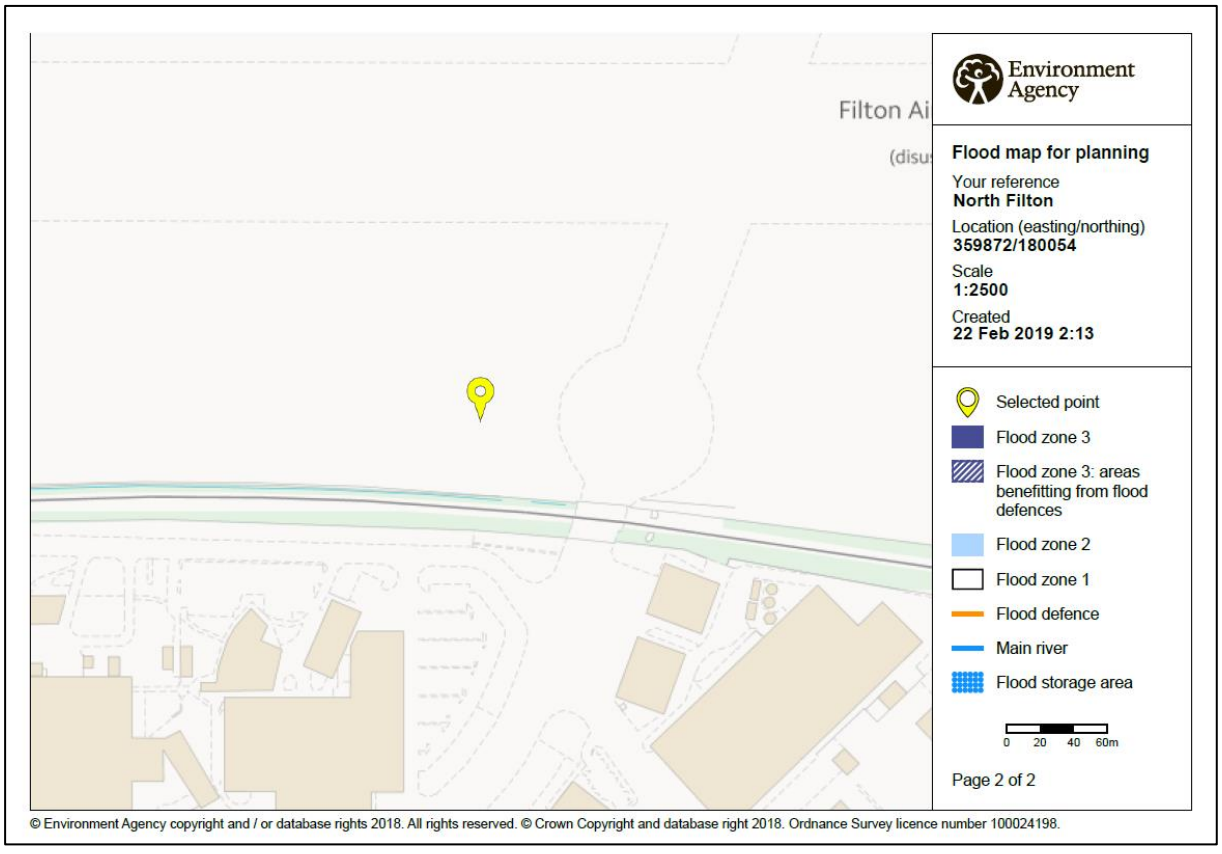


Figure 2.5. Environment Agency Flooding from Rivers & the Sea Map, North Filton



2.8 Social impacts

Social assessments have been undertaken to support the development of the scheme. A summary of the assessment outcomes is provided in the following sections:

- Commuting and other users
- Reliability impacts on commuting and other users
- Physical activity
- Journey quality
- Accidents
- Affordability
- Security
- Access to Services
- Severance
- Option values
- Distributional impacts

Further details of the economic assessment process and results are set out in the MetroWest Phase 2 Social Impact Appraisal Report contained in Appendix 2.3, as well as in the WebTAG workbooks included in Appendix 2.5.

2.8.1 Commuting and other users (TEE)

See section 2.6.1

The Economic Efficiency of the Transport System (TEE table) for the MetroWest Phase 2 OBC scheme is shown in Table 2.7. This TEE table shows impacts for commuting and other users, in addition to business users.

2.8.2 Reliability impacts on commuting and other users

See section 2.6.2

Assessment of highway reliability impacts have been carried out. This does not distinguish between business users and commuting or other users.

2.8.3 Physical activity

There is increasing recognition of the interrelation between transport, the environment and health. Transport can affect levels of physical activity, which has an important role to play in preventing weight gain and obesity and improving mental health.

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

Given that MetroWest Phase 2 is not an active transport scheme and therefore it is not expected to have a large impact on active modes, the assessment has been reported qualitatively in the first instance. The assessment considered the number of active mode users affected by the scheme

(number of persons, based on data from the National Rail Travel Survey and WoE rail survey). It was judged that only moderate journey time changes as a result of the scheme. Using this information and WebTAG guidance, an assessment of the impacts of the scheme on pedestrians and cyclists was made. In addition, limited assessments were made of the potential monetised impacts of increased walking and cycling for access to the new stations (section 2.8.11).

Based on the work undertaken, the assessment suggests that the scheme will have an overall **slightly beneficial impact on physical activity.**

2.8.4 Journey quality

TAG Unit A4.1 'Social Impact Appraisal' defines journey quality as "a measure of the real and perceived physical and social environment experienced while travelling", noting that this includes various factors related to peoples' experience on journeys such as information provision and the perception of safety. Note though that 'journey quality' considered in this assessment do not include those covered elsewhere in the appraisal (such as severance, security, accidents, journey times, journey reliability, etc).

There are three key elements to journey quality impacts:

- Traveller care – such as cleanliness, facilities, information and the general environment related to public transport
- Travellers' views – pleasantness of surroundings, such as views of both the townscape and landscape during the journey
- Traveller stress – convenience of the journey, including the ease of using the route and frustration

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

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

Based on the evidence, it is concluded in the AST that MetroWest Phase 2 will result in a **slight beneficial impact in respect of journey quality.**

2.8.5 Highway accidents

The highway accident assessment has been carried out using the DfT's Cost and Benefit to Accidents – Light Touch (COBA-LT) software, which compares the accidents and costs associated with them between the Do-Minimum (DM) and Do-Something (DS) scenarios, based on road network details (road type, speed limit etc.), forecasted traffic volume, accident rates and economical parameters, which monetise and discount the accidents' costs.

As foundation for extracting the forecast traffic volume for different scenarios, as well as road characteristics, the strategic transport model representing road traffic movement around the West of England Area (WoE) – GBATS4 – was utilised. Additionally, observed accident data (STATS 19) for the area covered by the GBATS4 model was obtained from the DfT. The STATS 19 data, provides information on location, date and severity of each accident. It was mapped onto the base network to provide the number of accidents on each COBALT link, by year, for the five years from 2012 to 2016 inclusive.

The assessment of likely road traffic accident impacts of the MetroWest Phase 2 scheme indicates there are minimal differences in the numbers of accidents, casualties and costs resulting from accidents with and without the scheme in place. Based on this, the scheme has been assessed as having a **slight beneficial impact on accidents in the area**.

2.8.6 Affordability

Relative affordability has been assessed by looking at the Index of Multiple Deprivation (IMD). The most recent measure of IMD across England was undertaken in 2015. The area 1km around each of the stations within the Lawrence Hill to Yate are and also the Henbury line area will be examined.

The assessment against several factors indicates there will be beneficial affordability impacts from car fuel and non-fuel costs, and with regards to active travel modes.

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

Based on the evidence, it is concluded in the AST that MetroWest Phase 2 will result in a **neutral impact in respect of personal affordability.**

2.8.7 Security

TAG unit A4.1 notes that changes brought about in the implementation of a transport scheme may affect the security of users. This is especially so in the case of public transport schemes, where guidelines exist in relation to bus and rail operations, especially at stops and stations.

The security assessment has been undertaken in accordance with WebTAG guidance and assesses how the Scheme will impact the level of security for transport users. The impacts on the security of road users, public transport passengers and freight has been assessed. For public transport passengers, guidelines for railway stations and public transport operators (DETR, 1998) raises key security issues and gives guidance on design and management practices. These are broad ranging and those relevant to the Scheme have been included in the security indicator list, which has formed the basis of the assessment.

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

The new stations would provide features such as CCTV, fencing and lighting to increase security. Although the addition of rail stations can enhance security of an area by providing formal and natural surveillance, these benefits are tempered by the reality that rail stations can also attract criminality regardless of the measures to prevent this.

Overall, the analysis indicates that the security impacts of MetroWest Phase 2 will be **neutral**. The new rail stations will enhance the security of both locations by providing additional footfall, CCTV, emergency contact points and improved lighting. However, while there will be a general improvement in security of the area, rail stations can also provide conditions conducive to crime. The scheme is therefore envisaged to have a **neutral impact on security.**

2.8.8 Access to services

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

The MetroWest Phase 2 scheme predominantly covers the North Fringe area of Bristol and Yate, but also enhances links to the wider WoE area. The scheme would improve rail services frequency between Yate and Bristol and introduce three new stations to the rail network. The rail network provides linkages to key facilities across the WoE, including employment (in particular Bristol and Bath city centres, Temple Quarter Enterprise Zone and Filton Enterprise Area), education (South

Gloucester & Stroud and City of Bristol Colleges) and retail areas (e.g. central Bristol). However, access to the major health centres and the Mall will remain largely unaffected by the scheme, because of their distance to the nearest station(s).

MetroWest Phase 2 is expected to improve the public transport offer in the area it serves, particularly the areas surrounding the three new stations and is therefore expected to improve links to key services across the WoE. Overall, the MetroWest Phase 2 scheme is expected to have a **moderate beneficial impact on access to services.**

More information on access to service assessments can be found in the MetroWest Phase 2 'Social Impact Appraisal Report', provided in Appendix 2.3.

2.8.9 Severance

Community severance is defined in TAG Unit A4.1 as the separation of residents from facilities and services they use within their community, caused by substantial changes in transport infrastructure or by changes in traffic flows. Severance will be an issue where either vehicle flows significantly impede pedestrian movement, or where infrastructure presents a physical barrier to movement.

Overall the scheme has a **neutral impact** on severance. Any new connections installed at Henbury and North Filton stations will be benefiting developments that were not present prior to the scheme. Both stations will not have an impact on their respective ProWs. With regards to Ashley Down, it is likely to be a neutral impact as the station is being reopened at its former location. Therefore, no new severance should be created.

2.8.10 Option values

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

An assessment of option values has been undertaken as the scheme includes new rail stations and the reopening of a disused passenger rail line. This will change the availability of transport services in the West of England area, by adding a new mode (local rail) to the existing public transport offer and supplementing existing bus services. Option values are particularly apposite in the appraisal of new services and infrastructure, especially if the scheme being appraised is introducing services where there were none before. In the context of MetroWest Phase 2, option values are relevant through the Henbury line's reopening introducing a new mode.

Calculation of monetised option values is based on WebTAG Unit A4.1 section 7, using parameters from Table A4.1.8 from the WebTAG databook (November 2018), based on monetising the reopening of a local rail station, in a location with an existing bus service. This uses the difference between the 'train' and 'bus' values excluding non-use. The total MetroWest Phase 2 option value calculated is £24.58m over a 60-year appraisal period. This is not included in the AMCB table for the scheme, but is reflected in the adjusted BCR. More information about the assessment of option values is discussed in the MetroWest Phase 2 OBC Social Impact Appraisal Report.

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

2.8.11 Monetised health and journey benefits

The DfT's Active Mode Appraisal Toolkit has been used to carry out an appraisal of the cycling and walking elements of the three new stations associated in MetroWest Phase 2, as these are the most significant generators of new rail users, who will in turn use active modes to access the railway, where previously they would not have used such modes. This toolkit has been used to calculate the impact and benefits that could be generated as a result of increased physical activity, reduced absenteeism and enhanced journey quality, for each of the three new stations. Benefits totaling £4.58m were

calculated; the MetroWest Phase 2 OBC Economic Assessment Report (Appendix 2.2) has further details of this analysis.

2.8.12 Distributional impacts

The distributional impacts of the scheme have been assessed and are reported in the MetroWest Phase 2 OBC Distributional Impact Assessment Report provided in Appendix 2.4. The results of this assessment are shown in the Appraisal Summary Table.

2.9 Public accounts

2.9.1 Broad transport budget

Table 2.12 shows the Public Accounts (PA) table for the MetroWest Phase 2 OBC scheme.

Table 2.12: MetroWest Phase 2 OBC, Public Accounts (PA)

Local Government Funding	**ALL MODES**	**Road**	**Rail**
Revenue	0	0	0
Operating Costs	-50	-50	0
Investment Costs	0	0	0
Developer Contributions	0	0	0
Grant/Subsidy Payments	34,297	0	34,297
NET IMPACT	**34,248**	**-50**	**34,297**
Central Government Funding: Transport	**ALL MODES**	**Road**	**Rail**
Revenue	-61,202	0	-61,202
Operating costs	101,451	0	101,451
Investment costs	34,297	0	34,297
Developer Contributions	0	0	0
Grant/Subsidy Payments	-34,297	0	-34,297
NET IMPACT	**40,249**	**0**	**40,249**
Central Government Funding: Non-Transport			
Indirect Tax Revenues	2,264	2,264	0
TOTALS			
Broad Transport Budget	74,496	-50	74,546
Wider Public Finances	2,264	2,264	0

Notes:

Costs appear as positive numbers, while revenues and developer contributions appear as negative numbers.

All entries are £'000s present values discounted to 2010, in 2010 prices

2.9.2 Indirect tax revenue

The additional rail journeys generated by MetroWest Phase 2 result in a reduction in tax costs associated with the commensurate reduction in the number of cars on the roads. These tax costs, both fuel duty and VAT, were estimated along with highway benefits, as described in the MetroWest Phase 2 OBC Forecasting Report and Economic Assessment Report, and are presented in the Public Accounts.

2.10 Performance of option variants

Sensitivity testing has been carried out to consider the socio-economic performance of MetroWest Phase 2 in the event that some of the key assumptions vary from the core scenario that has been identified. In particular, this has considered potential changes to the MetroWest scheme itself or to related assumptions about costs, and to address recommendations in WebTAG relating to alternative future growth scenarios to the core profile of rail demand growth. While no changes to the scope of MetroWest Phase 2 are specifically anticipated, there is some potential for elements to be amended as the scheme proceeds through its development.

In the first instance, changes to elements of MetroWest Phase 2 or key assumptions are considered, as follows:

- Sensitivity 1: Hybrid approach – where the additional Yate service is provided through GWR/DfT initiatives, thus removing the need for turnback facilities at Yate, but the operating cost of is still allocated to the MetroWest Phase 2 project;
- Sensitivity 2: Gloucester service – the additional Yate services runs to Gloucester (thus removing the need for turnback facilities at Yate); in this instance, the full operating costs to Gloucester are allocated to the MetroWest Phase 2 project;
- Sensitivity 3: Henbury only – where the additional Yate service is removed from MetroWest Phase 2 project (and could be provided independently or not at all); [22] and
- Sensitivity 4: Operating cost risk – add in operating cost risk elements.[23]

Secondly, sensitivity tests cover scenarios varying future year rail demand growth, and include:

- Sensitivity 5: High demand – increase growth profile assumptions in line with WebTAG unit M4;
- Sensitivity 6: Low demand – decrease growth profile assumptions in line with WebTAG (methodology as per footnote alongside 'high demand');
- Sensitivity 7: Fare/demand growth cap at 10 years (instead of WebTAG default of 20 years);
- Sensitivity 8: Fare/demand growth cap at 30 years (instead of 20 years); and
- Sensitivity 9: Growth profile derived from the DfT's EDGE model, based on the PDFH6.

Table 2.13 sets out summary socio-economic appraisal results for the nine sensitivity tests, alongside the core MetroWest Phase 2 OBC scheme. More details of TEE, PA and AMCB tables for all of the sensitivity tests (as well as the OBC scheme) can be found in the MetroWest Phase 2 OBC Economic Assessment Report in Appendix 2.2.

Table 2.13: Results of socio-economic appraisal – sensitivity tests

Scheme scenario		**Present Values**			**BCR**
	Benefits & BCR	Costs (PVC)	Benefits (PVB)	Net Present Value (NPV)	benefit/ cost ratio
OBC scheme	main	£74.496	£88.621	£14.124	1.190
	adjusted	£74.496	£140.392	£65.896	1.885
Sensitivity 1	main	£72.707	£88.456	£15.748	1.217
(hybrid)	adjusted	£72.707	£140.227	£67.520	1.929
Sensitivity 2	main	£123.352	£117.177	-£6.176	0.950
(Gloucester)	adjusted	£123.352	£177.710	£54.358	1.441
Sensitivity 3	main	£34.875	£79.038	£44.162	2.266
(Henbury only)	adjusted	£34.875	£127.868	£92.993	3.666

[22] Potential service changes are being considered to the GWR franchise through its next direct award (DA3). This could result in a new Bristol-Gloucester service being implemented through this mechanism, though could still; remain part of MetroWest Phase 2 (meaning the 'hybrid approach' sensitivity 1 becomes the new core scheme); alternatively, if this service is provided completely separately to MetroWest Phase 2, the scheme would then most closely resemble sensitivity 3 (Henbury only).

[23] Operating cost risks are based on higher than anticipated requirements for some elements, which include increases in fuel costs, additional track access charges and additional staff requirements.

Table 2.13: Results of socio-economic appraisal – sensitivity tests

Scheme scenario		Present Values			BCR
	Benefits & BCR	Costs (PVC)	Benefits (PVB)	Net Present Value (NPV)	benefit/ cost ratio
Sensitivity 4	main	£82.911	£88.621	£5.709	1.069
(op.cost risk)	adjusted	£82.911	£140.392	£57.481	1.693
Sensitivity 5	main	£69.472	£95.641	£26.169	1.377
(high growth)	adjusted	£69.472	£149.566	£80.094	2.153
Sensitivity 6	main	£79.540	£80.892	£1.351	1.017
(low growth)	adjusted	£79.540	£130.291	£50.751	1.638
Sensitivity 7	main	£67.036	£95.744	£28.709	1.428
(30yr cap)	adjusted	£67.036	£149.701	£82.666	2.233
Sensitivity 8	main	£82.188	£73.062	-£9.126	0.889
(10yr cap)	adjusted	£82.188	£120.059	£37.871	1.461
Sensitivity 9	main	£88.733	£67.443	-£21.291	0.760
(EDGE growth)	adjusted	£88.733	£112.716	£23.982	1.270

Costs and benefits are £m; present values discounted to 2010, in 2010 prices

'Adjusted' benefits and BCR includes monetised wider economic impacts and option values

A further high-level sensitivity test has been carried out to illustrate the impact of a change to scheme implementation dates, to align with development build-out of CPNN. As the new station catchments at North Filton and Henbury contain areas of CPNN development, it may be prudent to consider a adjusting opening dates should CPNN development be different to that currently forecast. For instance, the amount of CPNN development currently built, and the on-going trajectory anticipated, is less than anticipated at the time the MetroWest Phase 2 Preliminary Business Case was prepared, but the opening year remains the same. High-level assessment of this eventuality indicates that, in the situation that opening is delayed until 2024, the (adjusted) BCR rises to 2.07 (and initial to 1.31).

2.11 Summary of impacts

2.11.1 Value for money statement

Table 2.14 sets out the Value for Money Statement for the MetroWest Phase 2 OBC scheme.

Table 2.14: MetroWest Phase 2 OBC Scheme, Value for Money Statement

Criteria	Description
Value for Money/Value for Money when wider impacts are included	Low/Medium
NPV/NPV when wider impacts are included	£14.12million / £65.87 million
Initial BCR	1.19
Adjusted BCR (With Wider Impacts)	1.88

Table 2.14: MetroWest Phase 2 OBC Scheme, Value for Money Statement

Criteria	Description
Summary of the benefits and costs	Rail transport user benefits (around 72% of the total benefits excluding wider impacts) Highway transport user benefits (25% of total excluding benefits excluding wider impacts) Wider Economic Impacts £27.2 million Option Values £24.6m Operating costs are much more significant than capital costs in the economic case (75% operating cost versus 25% capital cost).
Significant non-monetised impacts	No significant non-monetised impacts. The most significant non-monetised impact is a moderate beneficial impact on journey quality. Other impacts are either slight beneficial (physical activity, access to services), slight adverse (historic environment, biodiversity, severance) or neutral.
Key risks, sensitivities and uncertainties underlying the appraisal	Operating cost assumptions - potential scope for greater synergies with existing services to reduce staffing and maintenance costs Rail demand forecasts, in particular future year growth in demand at new and existing stations Future year fare assumptions
Significant social distributional impacts	Analysis indicates that scheme impacts are are generally evenly distributed across user groups, with the exception of Noise, where there is a potential slightly higher impact for Children and Younger people.

The assessment work presented in the economic case shows that there is a case for the MetroWest Phase 2 OBC scheme. However, the scheme only demonstrates **low value for money** in its initial BCR. When wider impacts and option values are included, the scheme offers **medium value for money**.

It should be noted that, while no specific changes to MetroWest Phase 2 are anticipated, there are surrounding issues that present potential opportunities for higher demand to be generated, and hence enhance the business case, in particular development in the vicinity of new stations (see the Strategic Case for more information).

The scheme has merit, in that it generates benefits that more than outweigh the costs, but it is worth considering that most of the benefits are generated by improving the journeys of rail users. Discussion of sensitivity tests highlighted that growth projections could be considered pessimistic, not least that potential JSP growth cannot yet be included in demand projections. Similarly, forecasts of demand at Yate could be pessimistic as a result of the model's structure. As such, higher demand growth could be considered a reasonably high probability. Wider economic assessments thus far carried out also do not consider Level 3 impacts, principally because land use changes are not anticipated through the scheme itself. However, it is considered that there is some potential for land value uplifts, and as such they should be assessed prior to or for the Full Business Case. In addition, potential external rail industry changes could result in changes to the scheme (such as delayed opening or alterations to the amount the scheme contributes to a service at Yate) that would in turn enhance the economic performance of the scheme.

2.11.2 Analysis of monetized costs and benefits (AMCB)

Table 2.15 shows the Analysis of Monetised Costs and Benefits (AMCB) Table for the MetroWest Phase 2 OBC scheme, as well as the adjusted figures including monetised wider economic impacts and option values.

Table 2.15: MetroWest Phase 2 OBC, Analysis of Monetised Costs and Benefits (AMCB) [24]

Noise, air quality & greenhouse gases	6,744
Economic Efficiency: Consumer Users (Commuting)	35,304
Economic Efficiency: Consumer Users (Other)	33,097
Economic Efficiency: Business Users and Providers	15,739
Wider Public Finances (Indirect Taxation Revenues)	-2,264
Present Value of Benefits (PVB)	**88,621**

Broad Transport Budget	74,496
Present Value of Costs (PVC)	**74,496**

OVERALL IMPACTS	
Net Present Value (NPV)	**14,124**
Benefit to Cost Ratio (BCR)	**1.190**

Noise	54
Local Air Quality	7
Greenhouse gases	792
Health & Journey Ambience	4,575
Accidents	1,316
Reliability	1,787
Wider Impacts	27,162
Option values	24,579
including Wider Impacts & Option Values	
PVB	140,362
PVC	74,496
NPV	65,865
BCR	**1.884**

Costs and benefits are £'000s, present values discounted to 2010, in 2010 prices

2.11.3 Appraisal summary table (AST)

The Appraisal Summary Table is set out in Table 2.16.

Table 2.16: MetroWest Phase 2 OBC, Appraisal Summary Table (AST)

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[24] The AMCB table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

MetroWest

MetroWest Phase 2
OUTLINE BUSINESS CASE

Chapter 3: Management Case

travelwest

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

March 2019

Chapter 3: Management Case

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CHAPTER 3
Management Case

3.1 Introduction

This section sets out how the West of England authorities propose to deliver MetroWest Phase 2. It explains:

- The capability and capacity of the four authorities to deliver the scheme, drawing on evidence from other similar projects
- How plans for MetroWest Phase 2 take account of dependencies on other projects, decisions and deliverables
- Arrangements for project governance, including organisational structure and allocation of roles and decision-making powers
- The project programme, which has been carefully planned to ensure that it is realistic and deliverable
- The process being used to ensure that all the necessary assurance and approvals are obtained in a timely and efficient manner, and associated reporting
- The strategy for effective communication and stakeholder management
- The strategy and approach adopted to ensure effective risk management

MetroWest is an exciting and ambitious project which will transform rail services across Bristol. The four authorities, as joint promoters of the scheme, are confident that they have the resource, capability and systems required to deliver this project successfully, to time and on budget.

The authorities have a track record of delivering major transport schemes, and will draw on this experience for this project. They have already developed strong working relationships with external stakeholders, notably Network Rail, who can help make this project a success.

3.2 Evidence of Similar Projects

The West of England authorities, both individually and collectively, have a proven track record of delivering major transport infrastructure including:

- MetroBus
- Stoke Gifford Transport Link
- Cycling City
- Greater Bristol Bus Network (GBBN)
- Local Sustainable Transport Fund (LSTF)
- Bath Package
- Weston Package

These projects were complex and demanding and required new ways of working across the authorities and with stakeholders.

MetroBus – the launch of three Metrobus rapid transport routes providing a significant increase in the quality and speed of public transport along over 50km of routes, linking central Bristol with areas of North Somerset and South Gloucestershire. The North Fringe to Hengrove Package (NFHP) is one of these routes. The other two schemes include the South Bristol Link and Ashton Vale to Temple Meads. NFHP links areas of housing and economic growth in the North and East Fringe of the Bristol urban area, with a major regeneration area in South Bristol via Bristol City Centre. It provides fast, frequent and reliable public transport services using bus priority measures and new infrastructure including a new bus-only junction onto the M32.

Stoke Gifford Transport Link - a mile-long route between Parkway North Roundabout at Stoke Gifford and the A4174 Ring Road at Harry Stoke near the M32 improves transport links between Bradley Stoke,

Stoke Gifford, A4174 and the motorway network alleviating pressure on the surrounding roads. The new link road includes bus stops and bus lanes for MetroBus as well as local bus services with two new bridges and a pedestrian / cycle path on its western side. The £14 million scheme was completed and opened to traffic in December 2017.

Through the Cycling City project, Bristol and South Gloucestershire Councils have delivered £11.4 million of government funding, along with £13.9 million of locally matched investment, on time and on budget. This delivery has included 102.5 miles of cycle paths and routes, either upgraded, improved or built from scratch as part of 35 different infrastructure projects. Similarly completion of the £70 million GBBN project which has provided step-change improvements to the Greater Bristol Bus Network, including vehicle quality, information, service frequency and fare structures.

Local Sustainable Transport Fund (LSTF) – WEST. Completion of cycling and walking infrastructure improvements, public consultation, marketing of sustainable transport including engagement with businesses.

Bath Transportation Package including expansion to the capacity of Park & Ride, improvements to the city's bus stop infrastructure and reconfiguration of parts of the city's road network.

Weston Package including improvements to M5 Junction 21 and the Worle Parkway station interchange

In summary, the West of England authorities have considerable experience of:

- Delivering major transport schemes
- Successfully obtaining consents for major infrastructure schemes
- Developing and maintaining good working relationship with key partners and stakeholders
- Internal resourcing and governance requirements for major schemes

The authorities have considerable internal knowledge, experience and capability of major transport schemes to bring the MetroWest Phase 2 project, combined with established working arrangements with its transport framework consultant. In particular South Gloucestershire Council has a proven track record of successful major project delivery including North Fringe to Hengrove Package and Stoke Gifford Transport Link which the authority led the delivery of.

3.3 Project Dependencies

The MetroWest Phase 2 project is dependent on strategic investments being made by the rail industry through Control Period 5 (2014 to 2019).

The CPNN SPD outlines the need to safeguard station sites to enable the provision of interchange facilities with walking, cycling, bus and cycle/car parking provision. The SPD also stresses the requirement that access routes to local centres by sustainable modes including the routing of bus services to enable interchange opportunities.

In terms of the CP5 schemes, MetroWest Phase 2 is dependent on the Bristol East junction enhancement.

MetroWest Phase 2 project programme takes account of all these project dependencies and complementary schemes, summarised in Table 3.1

Table 3.1 Dependencies / Interfaces with other projects

Project	Timescales	Detail
Bristol East Junction Enhanced Renewal	Autumn 2021 but dependent on funding	**Dependent – MW2 is dependent on delivery of this project.** This project is currently at GRIP 4 with a funding

		decision expected to be made by DfT in Autumn 2019.
Cribbs Patchway New Neighbourhood that will comprise approximately 5,700 new homes and 50ha of employment land together with associated community facilities and services.	2014 - 2027	**Related** – The new urban area will provide both the demand and access infrastructure (by all modes) for the new passenger rail services.
Electrification of Great Western main line and Intercity Express programme	2017/18 – currently on hold	**Related** - Electric trains will be quicker to accelerate and have higher top speed, allowing shorter journey times and releasing some network capacity. The IEP programme will facilitate the cascade of DMUs to the West of England.
Great Western Franchise replacement	2019 to 2022	**Related** - MetroWest is identified as a third party scheme in the November 2017 DfT franchise consultation. The councils are making the case for MetroWest to be included in the franchise specification.
MetroWest Phase 1	Currently at GRIP stage 4	**Related** – MW2 is not dependent on MetroWest Phase 1. The train services of the two schemes overlap for a short section of railway between Bristol Temple Meads and Narrows Ways Junction (taking in Lawrence Hill and Stapleton Road stations) but neither scheme is proposing infrastructure works on this section of railway.

Table 3.2 Route specific Constraints

Location	Issue	
Westerleigh Junction – impact on Yate service	Point at which the Yate service leaves the main London line. Currently have objections on the increased frequency to Yate from both Freight and Cross Country train operators.	Previously identified that MW2 would take the last path through this junction. NR confident that objections can be resolved but will need the new base timetable to be issued before working with freight and cross country operators.

Gloucester Station	Extension of services to Gloucester is an aspiration of this project. NR identified that infrastructure improvements to the station will be required to facilitate this.	Feasibility study to be undertaken to determine requirements. GCC considering funding options.

The Preliminary Business Case also reported dependency on the Filton Bank Four Tracking scheme which has now been delivered.

In addition to the changes to the rail network, the following committed schemes will deliver improvements to the local transport networks (highway, bus, cycle and pedestrian networks):

- MetroBus - Ashton Vale to Temple Meads – complete 2018
- MetroBus - South Bristol link scheme – complete 2017
- MetroBus - North Fringe to Hengrove Package – complete 2019
- Cribbs Patchway MetroBus Extension scheduled for completion in 2022
- Temple Gate- Highway, Public Transport, Pedestrian/ Cycle and Public Realm improvements, 2018

3.4 Governance, organisational structure and roles

MetroWest Phase 2 is one of a series of individual rail projects currently being developed as part of a broader programme of rail works by the West of England authorities. Therefore, governance arrangements are in place at both programme and project level.

3.4.1 Working with the rail industry

The success of the MetroWest Phase 2 scheme is dependent on successful relationships between the West of England authorities and the rail industry. The GRIP 3 workstream has involved high level technical interaction, particularly with Network Rail and the Train Operating Company (TOC), advancing established relationships and broadening collective understanding and intelligence. Key relationships have and continue to be developed with:

- DfT Rail
- Various teams at Network Rail
- Train operating companies
- Freight operating companies

This experience has influenced the development of the project governance arrangements. Working relationships with the rail industry have been embedded into the governance arrangements, and are not simply a 'bolt on' to a local authority structure (further details are provided in Figures 3.1 and 3.2).

The Authorities commissioned Network Rail to undertaken GRIP 3 & 4 via a Development Services Agreement (DSA). For GRIP 5 -8 an Implementation Agreement will be required and early discussions on that agreement have already commenced. Furthermore the Authorities have commissioned technical support and advice from Great Western Railways (the incumbent train operator) via a Development Agreement. Further details about the commercial arrangements are set out in chapter 4 the Commercial Case.

The approach developed for the GRIP 3 workstream commenced with regular meetings, between the MetroWest Phase 2 Project Team and the NR Project Development Manager and Project Sponsor, during the scoping and authorisation process. As the GRIP 3 work stream was mobilised, the technical interface between the MetroWest project team and the Network Rail project team evolved, resulting in a genuinely collaborative Joint Project Team. Issues, problems, risks and constraints were shared and tackled through a combination of workshops, technical analysis and structured meetings. Monthly Client Group meetings are held between the MetroWest Project team and Network Rail.

This joined up and integrated approach has not only resulted in better technical understanding for the scheme promoter, but has also advanced relationships and working processes between all parties. The positive working relations developed during GRIP 3 are reflected in the comprehensiveness of the GRIP 3 deliverables produced for the scheme.

3.4.2 Project level governance

The overall rail programme is made up of a number of projects including MetroWest Phase 2. A **Rail Programme Board** directs, steers and oversees the direction of each project. The Rail Programme Board authorises project plans to be delivered by the project managers and authorise strategic decisions, or seeks authority for key strategic decisions from the Rail Programme Board, Programme Assurance Board or West of England Joint Committee.

Rail Programme Board meetings are linked to key milestones (at least quarterly). The board considers highlight and exception reports, changes to the project risk log and other key deliverables as defined in the project plan. It consists of authority officers with responsibility for transport who are able to act for their organisation, within the thresholds defined in the project initiation document.

The Rail Programme Board nominates an SRO who acts as the lead for individual projects representing the authorities and the Rail Programme Board. The **SRO** for MetroWest Phase 2 is Janet Kings from South Gloucestershire Council. Her role is to:

- Report to and receive feedback from the Rail Programme Board
- Ensure the appropriate resources, project management and technical expertise are in place for the project
- Liaise with nominated senior officers from neighbouring authorities
- Make decisions and approve changes within agreed tolerances or seek authorisation from the board, or the WoE Joint Committee, if required
- Monitor and evaluate project progress against milestones and assess outcomes
- Provide guidance, support and direction to the project manager and project team

The MetroWest Phase 2 **Project Manager**, Jackie Lower, is also from South Gloucestershire Council. Her role is to:

- Lead and coordinate the project team and its work-streams
- Procure consultants and contractors
- Prepare and report project budgets
- Manage project risks and issues
- Report to and receive feedback from the SRO
- Produce periodic progress reports for the WoE Joint Committee, directors, and the Local Enterprise Partnership

The **Core Project team** (see Figure 3.1) includes nominated representatives from the authorities, WECA, Network Rail, the train operating companies and technical advisors from the framework consultant.

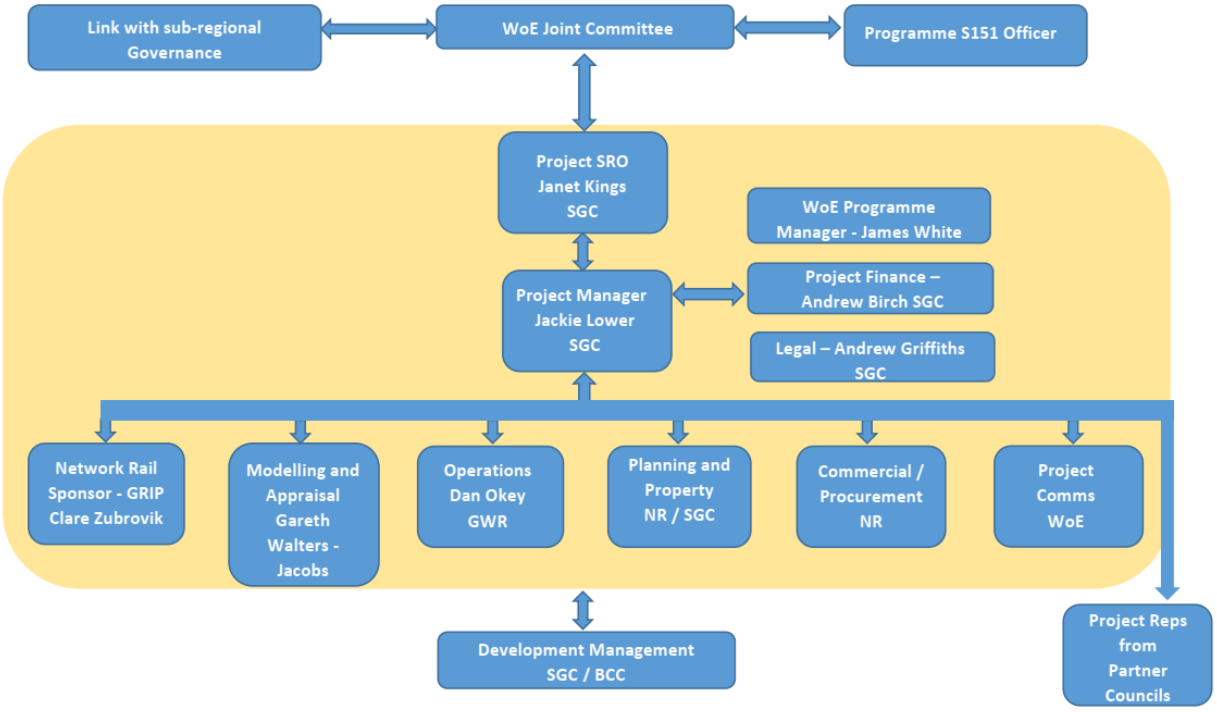
The Core Project team is the point of contact for information and liaison with colleagues within each particular organisation. Members are responsible for communications about the project within their

own organisations. It is also a source of experience and expertise and connection to expertise within their organisations.

The following organisations, consultants and contractors are assisting with delivery of the project:

- Network Rail (modelling and appraisal, GRIP, procurement, delivery)
- Incumbent operator Great Western Railways (operational advice)
- Jacobs the existing framework consultants (modelling and appraisal, technical support)
- Specialist planning, legal support and land agents (compulsory purchase order if required)

Figure 3.1 Project Organogram



3.4.3 Programme level governance

The West of England (WoE) **Joint Committee** brings together the Leaders / Mayors of Bath and North East Somerset, Bristol, North Somerset and South Gloucestershire Councils and the West of England Combined Authority. The LEP Board chair is a participant at this committee. This Committee replaces the previous Joint Transport Board that functioned before the West of England Combined Authority (WECA) was formed.

The WoE Joint Committee decides on the allocation of all Local Growth Fund funding and oversees the delivery of prioritised schemes. It receives and considers high-level quarterly reports and exception reports, via the Rail Programme Board (RPB) and Programme Assurance Board (PAB). The WoE Joint Committee is the ultimate decision-making body for changes escalated through the governance structure. The WoE Infrastructure Advisory Board provides strategic guidance and advice to the WoE Joint Committee.

The **Programme Assurance Board** (PAB) provide high-level challenge and independent assessment. It receives high-level reports on all rail schemes across the West of England. The PAB has a particular emphasis of overseeing the programme budget. The PAB is responsible for:

- Ensuring programme priorities are met and cross-scheme actions are delivered
- Providing critical review, monitoring of progress and performance, and oversight of joint actions
- Overseeing the integrated programme plan and Benefits Realisation Plan
- Ensuring strategic programme-level risks are effectively managed
- Overseeing strategic relationships with the Local Enterprise Partnership (LEP) and other key stakeholders
- Reporting high-level progress to the LEP

A Programme **Senior Responsible Owner (SRO)** is responsible for ensuring that the Rail Programme's objectives are met. The Programme SRO, Colin Medus, represents the West of England and is accountable to the PAB and WoE Joint Committee.

The responsibilities of the Programme SRO include:

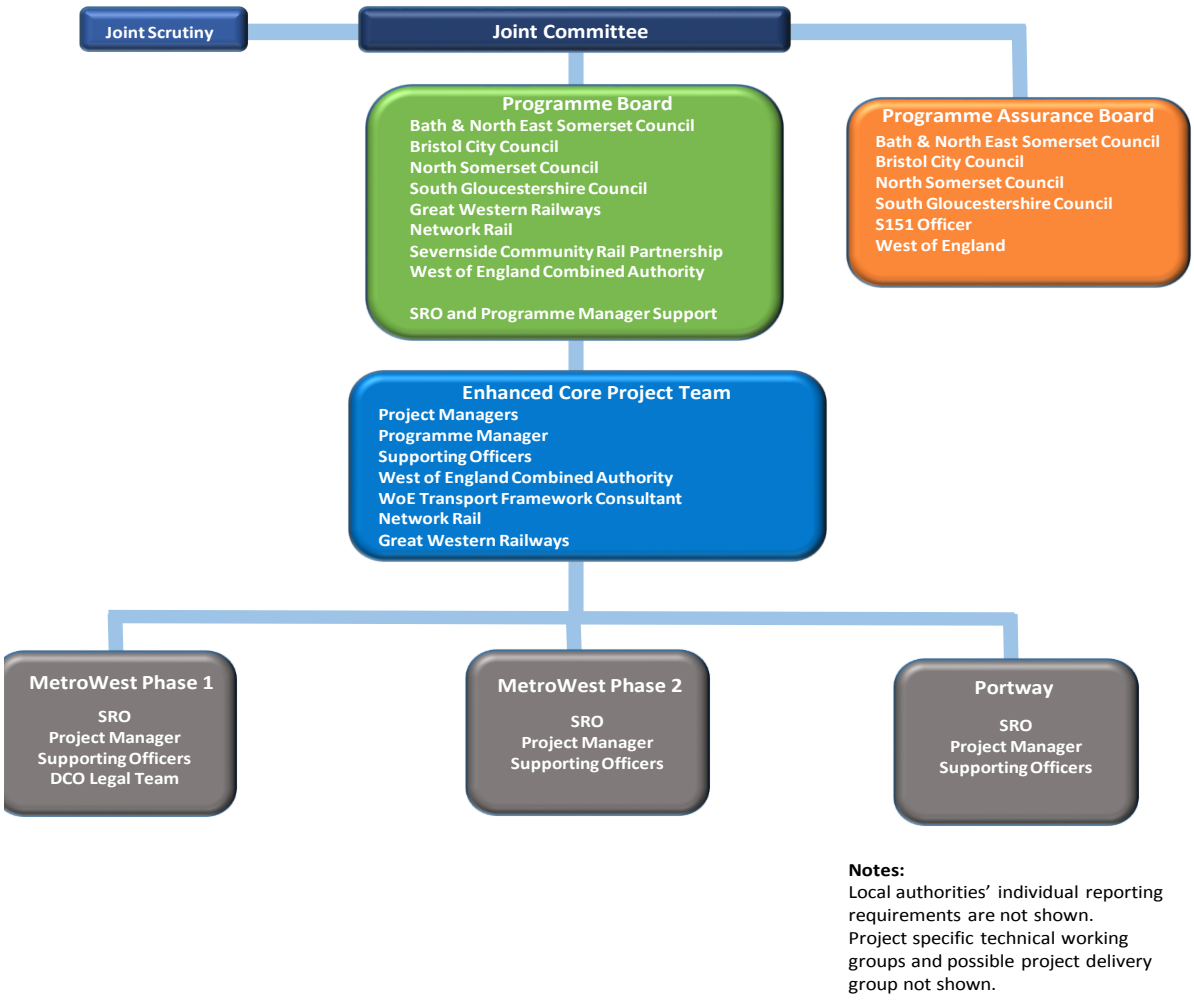
- Stakeholder engagement in the identification of the vision, objectives, options and policies for rail.
- Ensuring the appropriate programme and project management and governance structures and milestones are in place for each of the individual projects. The Programme SRO is accountable for overall programme management.
- Problem resolution and referral from the Rail Programme Board and Project SROs. The Programme SRO is empowered by the Rail Programme Board to make decisions and approve changes and to seek authorisation from the Rail Programme Board, PAB or the JTB, if required.
- Monitoring and evaluating project progress and final assessment of outcomes.
- Providing guidance and direction to the individual projects' managers.

The SRO is supported by the **Rail Programme Co-ordinator**, James White. The Rail Programme Co-ordinator will:

- Provide the West of England level overview for the Rail Programme
- Ensure coordination between projects
- Support the Programme SRO
- Report updates to the Rail Programme Board
- Set up and manage the high-level steering group
- Organise and support Rail Programme board meetings
- Manage communications and stakeholder involvement
- Manage programme correspondence
- Monitor budgets for the individual projects
- Manage the programme risk register
- Provide quality assurance for the individual projects
- Organise, support and chair Core Project Team meetings

The programme organogram is shown in Figure 3.2.

Figure 3.2 Programme Organogram



Notes:
Local authorities' individual reporting requirements are not shown.
Project specific technical working groups and possible project delivery group not shown.

3.5 Project Plan

Key to the organisation of the MetroWest Phase 2 project is the overarching project plan / programme. This shows activities, durations, deadlines and critical paths for all activities up to completion of works. High-level programme is provided in Appendix 3.1

3.5.1 Key stages

The programme has four key stages as shown in Table 3.3

Table 3.3 Project Timetable

Project Stage	Stage Description	Timescales
Stage 1	Feasibility (GRIP 1-2)	Summer 2014 to Spring 2015
Stage 2	Option development and scheme case (GRIP 3)	Autumn 2015 to Summer 2018
Stage 3	Planning powers and procurement (GRIP 4-5)	Winter 2016/17 to Spring 2019/20
Stage 4	Construction and opening (GRIP 6-8)	Winter 2020 to Spring 2022 (service start Winter 2021)

3.5.2 Project milestones

Key milestones are outlined in Table 3.4.

Table 3.4 Project Milestones

Milestone Completion Dates	Current
GRIP 1 Output Definition	Jun 2014
GRIP 2 Feasibility (option development)	May 2015
Prelim Outline Business Case – Option Selection	Jul 2015
GRIP 3 Option Selection (single option outline design)	Aug 2018
Outline Business Case Approval	May 2019
GRIP4 Single Option Development	Apr 2019
Secure statutory powers	Oct 2019
Contract Prices Tender returns	Jan 2020
Full Business Case Approval	Jan 2020
GRIP5 Detail Design (final signalling design)	Feb 2021
GRIP 6 Construction Completion	Dec 2021
Operation	Dec 2021
GRIP 7-8 Project hand-over & close	Dec 2022

Key tasks on the critical path include:

- Completion of key dependent projects
- Completion of GRIP design work
- Completion of business cases
- Planning application
- Land acquisition and CPO if required

3.5.3 Completed Project Stages

Stage1- Feasibility
Stage 1 essentially comprised of strategic deliverables, GRIP 1-2 deliverables together with the Preliminary Business Case.

Stage 2 – Option Selection
This Outline Business Case confirms the conclusions of the scheme from stage 2 – Option Selection. Stage 2 essentially comprised of strategic deliverables, GRIP 3 deliverables and the Outline Business Case deliverable.

The Network Rail deliverables include:

- GRIP 3 Option Selection Report
- Construction Strategy
- Quantative Cost Risk Assessment
- Capacity Analysis (Railsys) Report
- Environmental Assessment

3.6 Assurance and Approvals Plan

This project is working within a number of wider processes which have their own assurance and approvals processes.

Internal and rail industry processes:

- The West of England Joint Committee Assurance Framework - providing an independent review of the business case including the economic case and value for money
- Network Rail's GRIP process – providing technical rail operational and engineering assurance
- Project management assurance and approvals

Statutory processes external to the project:

- Compulsory purchase order and documentation (if required)
- Planning consents and consultation assurance
- Other consents, habitats regulation, General Permitted Development prior approval

3.6.1 WoE Joint Committee Assurance Framework/DfT Business Case Process

The four authorities are working in accordance with the principles of the LEP Assurance Framework (October 2017) which sets out how schemes funded through the Local Growth Fund are identified, developed and approved. This requires schemes to go through the following approvals' process:

- Initial priority status. MetroWest Phase 2 was approved by the LTBB as a priority scheme for the devolved funding allocation at its meeting on 14 June 2013
- Preliminary Business Case – this was approved at the JTB in 2015
- Outline business case sufficient to support statutory processes
- Final approval to secure release of funds supported by a full business case.

This process incorporates as series of processes and procedures for quality assurance, approvals and reporting as shown in Figure 3.3

Figure 3.3 The Transport Business Cases' process (source: DfT publication)

In line with guidance for transport schemes <£5m, at each stage of the business case process, the WoE Joint committee will require an independent review of documentation. Business Cases will be developed in accordance with DfT's WebTAG.

3.6.2 Planning consent

Submission of planning applications is programmed for summer 2019 on the following basis:

The proposed Ashley Down station is to be constructed on the site of the previous station and as such Network Rail have permitted development rights. Network Rail will submit a Prior Approval planning

application to Bristol City Council under Part 11 Class A of the Town and Country Planning (General Permitted Development) Order 1995 (GDPO).

North Filton and Henbury stations are both new stations and will require full planning applications to be submitted by Network Rail to South Gloucestershire council. Where the acquisition of third party land is required, attempts will be made to purchase the land by negotiation, and if this fails a CPO process is likely to be undertaken by the local authority.

Environmental Impact Assessments have been undertaken on all three stations with the recommendation for all three being that MetroWest Phase 2 is not an EIA development

Traffic Regulation Orders and a Footpath Diversion Order will be required for the highway improvements to the access for Ashley Down station. Early discussions have been held in relation to this and consultation will take place as part of the planning process.

3.6.3 The GRIP process

The MetroWest Phase 2 project is being undertaken in accordance with Network Rail's Governance for Rail Investment Projects (GRIP) process with its built-in process of checking and assurance, including sign-offs and gateway reviews. The GRIP process is based on best practice within industries that undertake major infrastructure projects and practice recommended by the major professional bodies. These include the Office of Government Commerce (OGC), the Association of Project Management (APM) and the Chartered Institute of Building (CIOB).

GRIP divides a project into eight distinct stages. The overall approach is product rather than process driven and, within each stage, an agreed set of products are delivered:

1. Output definition
2. Feasibility
3. Option selection
4. Single option development
5. Detailed design
6. Construction test and commission
7. Scheme hand back
8. Project close-out

Formal stage gate reviews are held at varying points within the GRIP lifecycle. The stage gate review process examines a project at critical stages in its lifecycle to provide assurance that it can successfully progress to the next stage. The various stages of the GRIP process are aligned with development of the business case.

3.6.4 Project level approvals and assurance

At the project level, quality assurance is the responsibility of the SRO. Quality assurance will be managed through the following processes:

- Peer group reviews and benchmarking. The purpose of the group is to provide an internal 'challenge' role to support the Rail Programme Board when considering highlight and exception reports from the project manager. The group will not undertake any audits or reviews at this level but rather raise formal issues via the nominated Rail Programme Board member if concerns are identified. The Core Project as detailed in Figure 3.2 provides a regular peer review.
- Audit – annual audit reports are required in relation to the project spend.

- External quality reviews, including those required by the GRIP process will be undertaken at the relevant points in the programme throughout its duration. The approval for such a review will include a detailed proposal for: the reasons (linked to issues/risks, peer review reports or change controls); scope; timescale; and budgetary requirements for the review. All quality reviews will include the following minimum requirements:
  - Establishing a review team
  - Agreed scope and timescale
  - Agreed list of documentation for the Programme SRO to provide in advance
  - Formal report following conclusion of the review with, if necessary, an exception report for the Rail Programme Board to consider

At the programme level, quality assurance is the responsibility of the Programme Assurance Board. The PAB provide high level challenge and independent assessment to the Rail Programme Board and Project SROs, with particular emphasis of overseeing the programme budget. Notwithstanding the ultimate political decision making process provided by the WoE Joint Committee, the chair of the PAB will have overall accountability for the delivery of the programme

3.6.5 Reporting

The process for reporting is closely aligned with the process for approvals and assurances. The levels of reporting required are:

- Reporting to the Rail Programme Board and WoE Joint Committee, the business case deliverables including:
  - Preliminary business case
  - Outline business case
  - Full business case
  - Regular highlight reports
- Each business case stage will report the relevant technical stage the project has reached in respect of project design, GRIP, powers and consents, and procurement.
- Reporting to the Rail Programme Board and WoE progress and sign off of Network Rail, GRIP stages:
  - GRIP 1-2 Output definition/feasibility
  - GRIP 3 Option selection
  - GRIP 4 Single option development
  - GRIP 5 Detailed design
  - GRIP products developed and reported through the process include:

    - Estimating management
    - Risk and value management
    - Stakeholder management plan
    - Stage gate checklist
    - Consents and approvals
    - Environmental management
    - Project management plan
    - Project requirements' specification
    - Health and safety management
    - Contracts and procurement
    - Safety verification process
    - Change management
    - Delivering work within possessions

3.7 Communications and Stakeholder Management

Aspirations for rail are high and there is a clear need to explain what is happening, promote understanding and encourage support for proposals across the programme. The Communications Framework for MetroWest is based on the following principles:

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

MetroWest, either in its current or past guises, is incorporated in each of the authorities' Core Strategies as well as the Joint Local Transport Plan. As a result, the scheme has been subject to consultations at various stages in the plan preparation process.

The adopted South Gloucestershire Supplementary Planning Document (SPD) on the Cribbs Patchway New Neighbourhood (CPNN) states that the requirement of the Council is to identify and safeguard sites for railway stations (and associated interchange facilities) along the route of the Hallen line.

In addition specific consultations have been undertaken for MetroWest Phase 2 in relation to the location of Henbury station. Further consultation events will be held when planning applications are submitted.

A Stakeholder Management Plan has been produced for MetroWest Phase 2 and is provided in Appendix 3.2

3.8 Risk Management Strategy

3.8.1 Programme-level risk

Risks and mitigation measures are dealt with at the Rail Programme Board level because of the close inter-relationship between the rail projects. Programme and project SROs and managers regularly review the risk register and report to the Rail Programme Board. The most significant risks are reviewed at each board meeting, via the highlight report. A risk owner will be identified who will be the person best able to manage the risk.

The Rail Programme Co-ordinator is responsible for tracking and monitoring programme level-risks. This will include both risks which are common across the rail programme and those which are scheme-specific but could have a significant impact on the whole programme. The Programme SRO is responsible for approving actions to mitigate risks at the programme level. The key project level and the programme risks are reviewed at each Rail Programme Board meeting.

The top three risks will be reported to the quarterly meetings of the Rail Programme Board, PAB and JTB. This process will enable these strategic risks to be considered appropriately through the corporate risk management processes of the authorities.

3.8.2 Project-level risk

A full Quantified Cost Risk Assessment (QCRA) has been undertaken to assess risk exposure and inform the GRIP 3 cost estimate, see Appendix 3.3. As a third party scheme, the risks modelled were divided into the following categories:

- NR Project Risks – risks associated with Network Rail's execution of the project
- Client Risks – risks owned by the promoting authorities

The GRIP3 cost estimate was completed in August 2018 and included the QCRA modelling with a P80 output of £11.2m combined total. The £11.2m risk provision equates to 21% of the total preparation and construction costs. The QCRA was undertaken to support the GRIP 3 process. The risk register is reviewed and updated on a regular basis and the current top five risks are shown in Table 3.5. Risks at the project level are reported to the Rail Programme Board. Risk review meetings take place on a regular basis with Network Rail.

Table 3.5 Top five risks

Risk	RAG rating	Mitigation	Mitigated RAG rating
Upgrade of Bristol East Junction is delayed or funding is not available resulting in the inability to provide Henbury Line Services adding significant cost and delay to programme.	Red	Ensure the importance of the scheme is raised both locally and nationally.	Red / Amber
Delays in obtaining appropriate consents to progress the project.	Red	Appoint a Consents Manager	Amber
Issues which could impact on programme / cost particularly in relation to: a) Access / drainage issues in relation to Henbury b) Decision on location of Bristol Arena in relation to North Filton and potential access issues if build out rate for the development is slower than predicted	Red	a) Henbury – negotiation with developer. Early Flood Risk Assessment and discussions with Environment Agency. Consider alternative arrangements b) Ensure implications for MW2 understood by decision makers. Early discussion with planners and consideration of alternative access arrangements.	Red / Amber
Interface Management between NR / SGC and third parties	Red	Interface log with allocation of ownership. Regular client group meetings.	Amber
Increasing freight demand / train paths not being available may restrict capacity of passenger services	Red	Ongoing discussions between SGC / NR and freight operators	Amber

3.9 Benefits Realisation and Monitoring and Evaluation Plan

3.9.1 Benefits Realisation

MetroWest Phase 2's combined monitoring, evaluation and benefits realisation plan is provided in Appendix 3.4 and includes:

- Expected scheme outcomes
- Methods of quantifying the benefits
- Data and metric requirements
- Plan management details

3.9.2 Monitoring and Evaluation

Monitoring and evaluation, in line with DfT guidance, will be undertaken to assess the realisation of the benefits. The evaluation will inform performance improvement and will be disseminated to authorities, DfT and others.

Responsibility for monitoring and evaluation will sit within a nominated officer in South Gloucestershire Council who reports to the project manager. The project manager monitors and in turn reports to a Senior Responsible Officer. The Senior Responsible Officer reports to the MetroWest Programme Board which is accountable to the Joint Committee.

The principal approach to monitoring is to utilise existing and ongoing annual surveys, namely:

- Employer Travel Survey –used to identify the impact of the scheme on jobs and mode of travel to work
- West of England Rail Survey – used to quantify patronage at new and existing stations plus mode of travel to these stations
- Employment Land Survey – used to quantify the take-up of employment land and anticipated jobs and
- Residential Land Survey – used to quantify the completion of residential units.

The spatial extent of surveys will focus on areas within the catchment areas of new and existing stations which would see an improvement as a consequence of the scheme.

For this scheme, the baseline year for monitoring will be 2015. Annual progress reports will be published from 2022 to 2026.

Beyond reporting to the Joint Committee through annual output and outcome reports, internal reporting will be provided to the Programme Board and other stakeholders. Lessons generated from the monitoring and evaluation project will be disseminated to key stakeholders as above and through professional/academic networks/events.

3.10 Project Management

The West of England councils have a considerable wealth of experience in delivering major transport schemes. Each major scheme brings specific technical and organisational challenges and requires honed and adaptable project management and leadership skills for successful delivery. MetroWest Phase 2 is being led by south Gloucestershire Council on behalf of the West of England councils. South Gloucestershire Council have established and proven project management protocols which are aligned with PRINCE2 principles/Association of Project Managers.

Project management is the process of planning, delegating, monitoring and controlling a project or scheme. At the heart of this process, project management entails the management of costs, timescales, quality, scope, risk and benefits. The following project management principals provide a framework for successful project management:

- Continue business justification
- Learn from experience
- Defined roles and responsibilities
- Manage by stages
- Manage by exception
- Focus on products
- Tailor to suit the project environment

In summary the councils have deployed proven project management principals and have the capability and capacity to successfully deliver MetroWest Phase 2.

3.11 Summary of Management Case

In summary:

- The GRIP3 design has resulted in extensive deliverables that set out what is required to construct and deliver the scheme.
- The Councils have a proven track record in the delivery of major transport schemes and have the resource, capability and processes required to deliver MetroWest Phase 2 successfully, to time and budget
- South Gloucestershire Council led the delivery of the MetroBus - North Fringe to Hengrove Package Scheme and Stoke Gifford Transport Link.
- The Councils already have strong delivery partnerships with Network Rail and the train operating companies, developed over many years and resulting in mature relationships
- The Councils have developed collaborative working arrangements, particularly at the technical interface
- The project benefits from a strong governance structure and framework
- the scheme dependencies are fully understood which includes the delivery of the Bristol East Junction Enhanced Renewal which is programmed for delivery in Autumn 2021 but dependent on DfT funding.
- the Authorities have clear lines of reporting and Governance in place and wider Governance arrangements with industry partners.
- the scheme programme entails four clearly defined scheme stages, with stage one and two now complete. Detailed programming through to GRIP Stage 8 has been undertaken.
- Subject to Bristol East Junction improvements and funding a scheme opening date of December 2021 is achievable.
- Risk management is an important and integral part of the scheme development and project governance
- Good communications have been an important part of developing the MetroWest Phase 2 scheme from its inception
- There is considerable public support for the scheme
- the Authorities along with industry partners have the capability and capacity to deliver the MetroWest Phase 2 scheme.

3.12 Appendices

3.1 Programme

3.2 Stakeholders Management Plan

3.3 Quantified Cost Risk Assessment – Redacted as commercially sensitive

3.4 Monitoring, Evaluation and Benefits Realisation Plan

MetroWest

MetroWest Phase 2
OUTLINE BUSINESS CASE

Chapter 4: Commercial Case

travelwest

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

March 2019

Chapter 4: Commercial Case

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Appendices

Appendix 4.1: GRIP 3 Report – redacted as contains commercially sensitive information

CHAPTER 4

Commercial Case

4.1 Introduction

MetroWest Phase 2 has completed GRIP 3 with GRIP 4 programmed to be completed by Spring 2019. The GRIP 5 / 6 invitation to tender is programmed to be issued in autumn 2019 with the GRIP 5 / 6 contractor appointed in spring 2020. The authorities have been working closely with Network Rail, Great Western Railways and the Freight Operating Companies through the various GRIP stages which have included value management workshops, capability (timetable) analysis, risk workshops, analysis of technical outputs and formal reporting see Appendix 4.1. The wider context informing the scheme Commercial Case is the experience and lessons learnt from the delivery of current Network Rail schemes across the Western Route in Control Period 5. The Western Route has seen the largest investment to modernise the route since it was built 175 years ago. There have been many delivery successes with schemes delivered on time, on specification and on budget but there have also been challenges where the lessons learnt can be used to aid the delivery of MetroWest Phase 2. The result of this major work stream is confirmation by Network Rail of robust, viable train service options which carry an acceptable level of performance risk.

In developing the scope for MetroWest Phase 2 the councils approach has been to:

- Ensure new Phase 2 train services do not compromise train services that will be introduced at the end of this decade
- Only include new stations which have a very clear case, particularly in terms of passenger demand and deliverability
- Minimise rolling stock requirements (the number of train units) to maximise value for money

This approach not only reduces risk to the councils, but also has the following benefits:

- Increases the level of buy-in from the Train Operating Companies (TOCs) and increases the credibility of the MetroWest programme
- Minimises the level of revenue support needed in the early years after opening, to establish the new train services
- Has potential to be expanded and scaled up by TOCs as part of their overall business strategy for passenger growth over the medium to long term

This Commercial Case sets out the proposed procurement strategy and commercial viability of the scheme.

4.2 Output Based Specification

Table 4.1 sets out an overview of the project output specification from this stage of the project.

Table 4.1 Overview of Output Specification

Stage of scheme development	Work-stream	Output
Preparation	GRIP 3 (& 4) combined procurement, reported upon completion of each stage – direct procurement with Network Rail	Completion of GRIP 3 (& 4) deliverables feeding into completion of Outline Business Case
	Modelling & Appraisal – WoE Transport Term Consultant	Completion deliverables for TAG compliant Outline Business Case and Full Business Case
	Environmental assessment – WoE Transport Term Consultant	Completion of evidence base for any environmental assessments required
	Project Management Support – WoE Transport Term Consultant, on-going	Provision of sufficient project management capacity, reflecting the dimensions of the scheme
	Legal – in-house (supported by consultants) and/or Network Rail	Provision of legal support to acquire statutory consents (e.g. land / planning)
	Communications – Communications Team and Project Management Team led, on-going	Provision of support for Stakeholder management and in connection with the consents requirements
	Land & Property – in-house (supported by consultants) and / or Network Rail	Provision of support for land negotiation, referencing and assembly
	Rail Operations – Parallel dialogue between incumbent operator (GWR) and DfT Rail – Project Management Team led	All operational requirements
	Commercial – Project Management Team led, on-going. Direct Procurement with Network Rail GRIP 5.	Approach for procurement of construction and operation of scheme, is set out below
	Station accesses, parking, interchanges - in-house (supported by extant framework) and/or Network Rail	Non-trackside infrastructure design.
Construction	Rail Construction • New stations • Track & signalling Direct procurement with Network Rail GRIP 6.	New stations (track-side facilities), track and signalling to meet compliance requirements for acceptance into national rail network (i.e. GRIP 7 & 8 handover and project close, is contractors liability) Works completed in accordance with programme
	Non-trackside infrastructure • New station accesses and associated facilities Local Highway Authority / Direct procurement with Network Rail	New station accesses and associated facilities to meet compliance requirements for acceptance into national rail network (i.e. GRIP 7 & 8 handover and project close, is contractors liability).
Operations	Train Operator and Train Service	Train operator is procured and train service commences in accordance with programme

4.3 Procurement Strategy

The scheme essentially comprises of four main elements, procurement / delivery of:

- Professional services pre-construction
- Railway construction works
- Non-trackside construction works
- Train operator and service

4.3.1 Procurement / Delivery of Professional Services Pre-construction

Scheme preparation works are largely being undertaken using in-house resources, framework consultants and Network Rail. Commissioning of Network Rail has been undertaken via an exemption from Council Contract Standing Orders, on the basis that Network Rail are the system operator and need to have oversight of the work and furthermore that Network Rail are subject to competitive tendering as a publically owned and operated organisation. Additional legal and land and property support will be required for land assembly as resource for this is not available in-house. This will be procured through a standard procurement process led by SGC Legal and Property teams.

4.3.2 Rail Construction Works

The rail construction works entail a combination of civil and railway engineering and alterations to systems on an operational railway. The Henbury Line is currently a freight line and the Yate line serves both passengers and freight. Works would include:

- Creation of temporary construction compounds and construction haul routes
- Construction of three new railway stations including platforms, lifts and footbridges (North Filton and Ashley Down) and a car park at Henbury
- Installation of a turnback facility at Yate station (if required)
- Alterations to track layouts
- Alterations to the signalling system
- Utility diversions and drainage works
- Environmental mitigation works

Network Rail have advised that the works to the operational railway will need to be undertaken by suitable approved rail contractors managed by them (Network Rail). The works will require railway possessions.

4.3.2.1 Design & Construction Delivery Route

The Preliminary Business Case, identified a Design and Build delivery route as follows:

- Scheme feasibility (GRIP 1 & 2) through direct procurement of Network Rail via a Basic Services Agreement with the Authorities
- Scheme design (GRIP 3 & 4) through direct procurement of Network Rail via a Development Services Agreement with the Authorities
- Design & Build contract (GRIP 5 - 8) to be tendered and awarded by Network Rail, via an Implementation Agreement with the Authorities.

The Design & build package will be for GRIP 5 to 8 and is standard practice in the rail industry. This will be split into the following work packages with a Lead Design Organisation:

- Stations (Ashley Down, North Filton & Henbury) to include the Lead Design Organisation responsibility & SISS – This will be awarded under the new Civil's framework contract

- Track (Henbury Crossover & Turnout, North Filton track relay, Yate Turnback plus associated tamping works) – IP Track Framework

- Signalling (Ashley Down, Henbury & North Filton and Yate) – Alstom framework contract

- Operational Telecoms – This will be a competitive tender

The main advantages are that this approach brings a construction contractor on-board with the scheme at an early enough stage to have influence on the Detailed Design and drive construction efficiencies. It provides a lower delivery risk with procurement and construction being led by Network Rail, providing a simplified programme management interface. A construction contractor will often be able to identify alternative construction methodologies and also, where appropriate, challenge Network Rail standards, to aid the efficient delivery of the scheme.

The Implementation Agreement will be either a 'Fixed Price' or an 'Emerging Cost' agreement. A key aspect of this is agreement on the balance of risk between the promoter (the Authorities) and Network Rail. While a 'Fixed Price' agreement, entails a premium above an 'Emerging Cost' agreement, the Authorities preference is to achieve cost certainty and this suggests opting for a 'Fixed Price'.

The programme for Network Rail's procurement process is shown in table 4.2.

Table 4.2 Timeline for Procurement Process

TIMELINE- Actual dates			
Invitation to Tender	Issue date: November 2019 Return date: January 2020	Tender evaluation period	Start date: Feb 2020 Completion date: Apr 2020
Contract award / complete	Award date: Apr 2020 Completion date: Dec 2021		

4.3.3 Non-Trackside Construction Works

Non-trackside construction works include station access and associated facilities. Delivery of these elements is station specific as detailed in table 4.3.

Table 4.3 Delivery of Station Facilities

Station	Delivery Mechanism
Ashley Down – footway improvements, provision of 2 accessible parking bays and alterations to the adjacent cycle path.	BCC design and construct using in-house resources and / or framework contractors
Henbury – 30 space car park and access road	Car park being designed and delivered by NR as part of new station works. Access road – to be provided by developer. If this does not come forward in time SGC to design and construct using in-house resources and / or framework contractors. Provision made within scheme costs.
North Filton – car park and access road	To be provided by the developer / forms part of the S106 agreement

Works to the highway did not previously form part of the scheme as it had previously been assumed that access to Henbury Station would be from the adjacent development. However, this is not coming forward as quickly as anticipated and the new access road which was due to be provided by the developers is unlikely to be in place for construction or scheme opening. In addition, works are required to Ashley Down station to improve access to make it more Equality Act compliant.

The highway works required are the type of works that the local authorities deliver across the local highway network on a routine basis. Access to Henbury station would need to be delivered at an early stage to provide access for construction vehicles. Improvements made to the access at Ashley Down will need to be delivered for scheme opening. The programme interface is a key consideration for determining the commercial and contractual approach for delivering these highway works. Access improvements to Henbury and Ashley Down will be undertaken by the joint authorities and can be co-ordinated as part of the routine joint working arrangements with Network Rail. North Filton station, where access and parking are being delivered by the developer, will require careful negotiation with the developer to ensure that access to the site is provided in time for construction.

4.3.4 Procurement / Delivery of the Train Operator and Service

The DfT Rail Executive has set out the key priorities for the Great Western Franchise in the Great Western Rail Franchise - Public Consultation, Nov 2017 document. Chapter 4, para 4.4 states:

"MetroWest: A scheme being promoted by the West of England, to provide half hourly services at most stations in the Bristol area, as well as restoring passenger services to Portishead and opening other new stations. Subject to the local promoters deciding to

proceed with this scheme, we will work with them to deliver the planned service enhancements. We are also examining the potential for the new MetroWest service to be extended beyond their currently planned termini, to serve Gloucester and Westbury. We will request proposals from the current franchisee to source the additional rolling stock that such extensions would require."

Train path modelling has confirmed that two additional train units are required to operate the MetroWest Phase 2 service. A Rail Demand Model has produced forecast passenger demand (see chapter 2 Economic Case) and this has informed the scheme operational revenue profile (see chapter 5 Finance Case).

There are three options for the procurement of the train services:

a) Procurement via DfT Rail and a base franchise specification

b) Priced option for subsequent franchise specification

c) Bilateral agreement with the TOC for new services with or without DfT input

The preferred option is (a), 'procurement via DfT Rail'; because the start of Phase 2 services would be in January 2022 , which would be in the early years of the next Great Western franchise and the specification for Phase 2 could be fed into the tender specification.

The MetroWest Phase 2 project team will continue to engage with DfT Rail and the TOC on the above options, as the project progresses to Full Business Case. It is noted that through the Direct Award GWR is committed to working with the West of England Partnership and other bodies to deliver MetroWest and secure suitable rolling stock for the new services. Appropriate co-operation provisions are included in the Direct Award. Inclusion of MetroWest Phase 2 in the base franchise specification for a future Great Western franchise will be dependent on a strong financial case.

Further detail on the operation of the service are provided in Chapters 2 Economic Case and 5 Financial Case.

4.4 Social Value Act

The Social Value Act requires the project team to "consider, prior to undertaking the procurement/commissioning process, how any services procured might improve economic, social and environmental well-being". The council is committed to the principles of the Act and has 10 priorities, available on the website, with the ones most relevant to this project being:

- Promote the local economy through optimising the use of local suppliers and the voluntary and community sector, and creating and sustaining new local jobs and apprenticeships.

- Contribute to carbon reduction targets to become carbon neutral and to help mitigate climate change, taking account of resilience to climate change and using resources wisely, including energy, land, water and materials.

- Conserve and enhance the environment, supporting biodiversity, minimising pollution and waste and making best use of the environmental opportunities of work undertaken by our suppliers.

- Support schools and colleges e.g. through new work placement schemes, providing mentors or assisting in mock interviews.

We have the opportunity to shape the procurement process to reflect the Social Value Act and will work with our partners to include within the specification / evaluation process as appropriate.

4.5 Summary of Commercial Case

A clear path for procurement has been identified which will be developed further as the scheme progresses to Full Business Case. The procurement strategy set out above specifies:

- That scheme preparation work streams will be largely undertaken using in-house resources, framework consultants and Network Rail
- Scheme track-side construction will be led by Network Rail and delivered through a Design and Build contract
- The delivery of non-trackside works will be station specific with works being undertaken by Network Rail, local developers and separate contracts using the council's in-house resources and/or framework contractors
- It is proposed that train services should be procured via DfT Rail, the TOC and the next base Great Western franchise specification. This is in preference to a 'priced option' and an open market approach.
- There are a number of interfaces which will need to be managed carefully
- The Social Value Act will be taken into account during the procurement process and we will work with partners to include within the specification / evaluation process as appropriate.

4.6 Appendices

4.1 GRIP 3 Report – Redacted as contains commercially sensitive information

MetroWest

MetroWest Phase 2
OUTLINE BUSINESS CASE

Chapter 5: Financial Case

travelwest

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

March 2019

Chapter 5: Financial Case

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CHAPTER 5
Financial Case

5.1 Introduction

This section details the scheme costs and the funding package for MetroWest Phase 2. The Chief Financial Officer for South Gloucestershire Council has signed-off this Outline Business Case and a letter from the Chief Financial Officer is provided in Appendix 5.1

5.2 Scheme Costs

The estimated scheme cost is **£54.163m.** The delivery and operation of the scheme entails a four stage cost lifecycle, as follows:

1. Preparation costs
2. Construction Costs
3. Operational costs
4. Long term asset renewal costs

5.2.1 Preparation Costs

This incorporates Network Rail GRIP stages 3-5 and includes the following workstreams:

- Design
- Securing train services
- Environmental assessment
- Securing requisite consents and licenses
- Land acquisition
- Business case development
- Project management of these work-streams

5.2.2 Construction Costs

Network Rail GRIP stages 6-8 which includes:

- Land Costs – Purchase of 3rd party land prior to construction.
- Rail Construction Costs (GRIP6), including track, signalling and trackside station infrastructure and Network Rail site supervision.
- Highway / Non-trackside Construction Costs, including station accesses, parking and associated infrastructure.
- Project Management Costs to oversee the construction phase and manage the council's interests.
- Network Rail project handover and close down GRIP 7 & 8. These costs include provision for NR supervision of the construction phase.
- Part 1 Claims – people making a claim of depreciation to the value of their property as a direct result of the environmental impact of the scheme.
- Monitoring & Evaluation Costs to assess the effectiveness of the project against KPI's and delivery of the project objectives.

5.2.3 Operational Costs

The cost of operating the service which the authority would need to subsidise for the first three years. Additional detail on what this includes is provided in 5.5 below.

5.2.4 Long Term Asset Renewal Costs

The long term asset renewal costs and any medium term train service subsidy costs would fall to Network Rail and DfT respectively; they are included in the calculation of the BCR over a 60-year appraisal period.

5.3 Cost Summary Tables

Table 5.1 Capital Costs

Table redacted as contains commercially sensitive information

Table 5.2 Revenue Costs

Table redacted as contains commercially sensitive information

5.4 Capital Costs

Table 5.1 shows the capital out-turn cost by cost heading. The cost estimate is based on GRIP stage 3 Option Selection design.

5.4.1 Project Management Costs

Includes staff costs covering a wide range of expertise including:

- Project Management
- Property Services
- Legal
- Project support
- Communications

5.4.2 External Consultants Costs

Includes specialist consultant support across a number of areas including:

- Business Case development
- Planning applications and discharging of conditions

5.4.3 Land and Public Inquiry

Includes the estimated cost of the permanent and temporary third party land required to develop the station sites. It also includes funding for a Public Inquiry if this is required.

5.4.4 Access

Supports the estimated cost of providing an access to Henbury Station if the wider development is delayed in coming forward. It would also provide improvements to Ashley Down Station to make the access arrangements more DDA compliant.

5.4.5 Network Rail Construction Costs

In line with the GRIP 3 Cost Estimate provided by Network Rail which includes:

- Staff costs for Network Rail Design Team and Project Team
- Rail possession costs
- Direct and Indirect Construction Works costs

5.4.6 Part 1 Claims

A budget allowance for any successful Part 1 Claims for the scheme and an allowance for loss of business claims. Part 1 claims are claims of depreciation to the value of property as a direct result of the environmental impact of the scheme.

5.4.7 Mobilisation

Prior to scheme opening there will be a period of mobilisation for the train operator. The estimated costs have been provided by GWR and support the recruitment and training of train drivers and train managers as well as training of additional staff (depot pool). It also supports the operational commissioning and testing cost of new rail infrastructure, stations, ticketing etc. A total of 12 addition train drivers will be required and 9 train managers to operate the MetroWest Phase 2 train services.

5.4.8 Monitoring and Evaluation

A budget allowance to assess the effectiveness of the project against Key Performance Indicators and delivery of the project objectives.

5.4.9 Inflation

In the GRIP 3 Cost Estimate provided by Network Rail inflation has been applied from the base date (Q2 2018/19) to the mid-point of each element of work. This amounts to a 7% inflation allowance on the Network Rail elements of the scheme. Inflation for the non-Network Rail element has been applied at 3.2% from 2019/20 onwards.

5.4.10 Risk

A full Quantified Cost Risk Assessment (QCRA) was undertaken in summer 2018 to assess risk exposure and inform the cost estimate. The QCRA is attached to Chapter 3 Management Case as Appendix 3.3. As a third party scheme, the risks modelled were divided into the following categories:

1. Network Rail Project Risks – risks associated with Network Rail's execution of the project

2. Client Risks – risks owned by the promoting authorities

The majority of risks that are programme level in nature are held by the promoting authorities. The GRIP3 cost estimate was completed in August 2018 and this included the QCRA modelling with a P80 output of £11.2M (combined output to take account of the 'Portfolio Effect'). The £11.2M risk provision equates to 21% of the total scheme costs.

5.5 Revenue Costs

Table 5.2 shows the Revenue Costs required to operate the services for the first 3 years after scheme opening. This includes:

- Lease costs for train units
- Drivers
- Train Managers
- Mileage (fuel costs etc)
- Station Costs (operation and maintenance)

Railsys modelling shows that 2 additional 3-car train units will be required to operate the services for MetroWest Phase 2, one unit to operate the hourly service on the Henbury line and one unit to operate the additional hourly service to Yate.

In terms of the train crew 12 Drivers and 9 Train Managers are required to cover an eighteen hour service with 3 shifts. Further detail on operating costs is provided in the Economic Case.

5.6 Spend Profile and Funding Sources

Funding allocated through the Preliminary Business Case based on a £43.1m scheme cost is as follows:

Devolved Major Scheme Funding: £36.5m	LGF: £3.2m	SGC / BCC £1.1m	S106: £2.3m & land

Estimated scheme costs have increased since the Preliminary Business Case was submitted due to the following:

i. Operating and Mobilisation costs coming in higher than previously estimated
ii. Risks to the project identified through the QCRA process which have not been included in the GRIP 3 Cost Estimate and currently 'sit' on the client side, the value of which is higher than previously allowed for.
iii. The potential need to secure and provide access to Henbury Station as well as additional drainage mitigation and land costs as a result of the wider site not coming forward within the required timescales.
iv. Access improvements to Ashley Down Station to aid Equality Act compliance.

There are some potential savings that may come forward as a result of the Yate turnback not being required if services are extended to Gloucester but a decision on this is not likely to be secured until at least summer 2019.

This is a joint scheme between South Gloucestershire Council and Bristol City Council with funding split 80/20 respectively. Funding to-date has been provided primarily from the West of England Local Growth Fund, South Gloucestershire Council and Bristol City Council with contributions being received from North Somerset Council. There is an estimated funding shortfall of **£11.063m** for which we are seeking additional funding from the WECA Investment Fund through submission of this Outline Business Case.

Table 5.3 Capital Spend Profile (£000's)

	Pre 2018/19	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
LGF	1,590	1,314	296	0	0	0	0	**£3,200**
SGC / BCC	805	142	153	0				**£1,100**
Devolved Major Scheme Funding				5,731	29,758	636	375	**£36,500**
Investment Fund			3,214	1,911				**£5,125**
S106				2,300				**£2,300**
Total	**£2,395**	**£1,456**	**£3,663**	**£9,942**	**£29,758**	**£636**	**£375**	**£48,225**

Table 5.4 Revenue Spend Profile (£000's)

	Pre 18/19	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
Investment Fund					£2,128	£1,999	£1,811	**£5,938**
Total					**£2,128**	**£1,999**	**£1,811**	**£5.938**

The Capital and Revenue spend profiles are shown in Tables 5.3 and 5.4. The **£11.063m** funding shortfall, for which **Investment Fund** is being sought, is made up of £5.125m Capital and £5.938m Revenue.

Devolved Major Scheme Funding, £36.5m via the 10 Year City Deal, will not be available until April 2021.

5.7 Summary of Financial Case

In summary:

- a robust approach has been taken to understanding and estimating the costs of the scheme
- a QCRA has been undertaken based on the GRIP3 design with a P80 output which has informed the risk element of the scheme costs
- the scheme operating costs have been informed by Great Western Railways

5.8 Appendices

5.1 S151 Officer Letter

5.2 Cost Breakdown – *redacted as contains commercially sensitive information*