



MetroWest+

Phase 2 Preliminary Business Case Appendix C - Socio-economic Appraisal Report, Network Rail

July 2015



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

MetroWest Phase 2

Socio-economic appraisal report

At GRIP Stage 2

Draft/Issue No 0.3

June 2015



Executive Summary

This socio-economic appraisal has been prepared by Network Rail to identify the benefits and costs of the proposed MetroWest Phase 2 scheme. The appraisal was carried out at GRIP stage two.

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 principal aim of the MetroWest project is to facilitate regular interval train services on local lines radiating from Bristol Temple Meads, enhancing linkages across the West of England area as a whole. There are two phases in the project overall:

- Phase 1 aims to re-introduce train services on the Portishead to Bristol line, and implement half hourly service patterns on the Severn Beach line and the Bath Spa to Bristol Temple Meads line, serving local stations. The main infrastructure in Phase 1 is reinstatement of the line to Portishead and upgrade of the Portbury freight line for passenger services (plus new stations at Pill and Portishead); and
- Phase 2 adds half-hourly train services at Yate and hourly services on a reopened Henbury line, with new stations serving the Henbury catchment areas and the Filton Bank areas.

A strategic and a socio-economic business case for Phase 1 were undertaken at GRIP Stage two in the summer of 2014, and the scheme is now progressing to GRIP Stage three. This report outlines the socio-economic appraisal, assessing the case for Phase 2. It assumes Phase 1 is in the baseline (Do-Minimum) and therefore the benefits (and costs) presented in this report represent the benefits (and costs) over and above Phase 1.

The main elements of MetroWest Phase 2 are the operation of a half-hourly train services to Yate from Bristol Temple Meads and hourly services on a reopened Henbury line (with up to two new stations), plus serving new station(s) on Filton Bank. Infrastructure enhancements are required including the upgrade of the Henbury line for use by passenger trains and the operation of new railway stations. Further infrastructure enhancement at Yate is required for some of the options, depending where the Yate services are terminated. The programme for Phase 2 is following a similar process to Phase 1, though running 1 to 2-years later with scheme opening planned for 2021.

The following options were assessed in this report:

Option 1a: Henbury Spur, Yate Extension

- Bristol Temple Meads to Henbury: 1 train per hour (tph) all day
- Extension of existing Weston-Super-Mare to Bristol Parkway service to Yate
- New stations on Filton Bank (Ashley Down and Constable Road)
- New stations at North Filton, Henbury
- Turnback at Yate

Option 1b: Henbury Spur, Gloucester Extension

- Bristol Temple Meads to Henbury: 1 train per hour (tph) all day
- Extension of existing Weston-Super-Mare to Bristol Parkway service to Gloucester
- New stations on Filton Bank (Ashley Down and Constable Road)
- New stations at North Filton, Henbury

Option 2a: Henbury Loop, Yate Extension

- Bristol Temple Meads to Henbury: 1 train per hour (tph) all day via Filton Bank and Avonmouth (clockwise and anti-clockwise directions)
- Extension of existing Weston-Super-Mare to Bristol Parkway service to Yate
- New stations on Filton Bank (Ashley Down and Constable Road)
- New stations at North Filton, Henbury
- Turnback at Yate

Option 2b: Henbury Loop, Gloucester Extension

- Bristol Temple Meads to Henbury: 1 train per hour (tph) all day via Filton Bank and Avonmouth (clockwise and anti-clockwise directions)
- Extension of existing Weston-Super-Mare to Bristol Parkway service to Gloucester
- New stations on Filton Bank (Ashley Down and Constable Road)
- New stations at North Filton, Henbury
- For all options, the location of a new station at Henbury could be on either a new site east of the A4018 or the old site west of the A4018.
- Figure 1. Option 2a Loop services on the Henbury Line (with MetroWest Phase 1 Option 6b Enhanced in the base)



This appraisal assesses the impact of improving capacity and connectivity on the Henbury line and between Yate/Gloucester and Bristol Temple Meads. New stations at Henbury, Filton North, Ashley Hill and Constable Road are proposed to open in 2021 encouraging modal shift from road to rail, the monetised benefits of which are included in the appraisal. The appraisal also includes the capital expenditure associated with the new stations on the Henbury line and near Filton Bank, as well as the increased operating costs resulting from the additional services and vehicle mileage.

A socio-economic appraisal for each option was carried out in accordance with the Department for Transport's appraisal guidance. The appraisal assumes the capital cost of the scheme would be funded by the local authorities and therefore is not RAB funded. The main benefits are the journey time benefits, non-user benefits and revenue increase.

Table 4.1 summarises the appraisal results for each option, outlining the BCRs, NPVs and the PVs of costs and benefits. The option of building the Henbury (spur option) station at either a new or old site has been considered.

	Henbury Spu	r 1A New	Henbury Spu	r 2A OLD		
	Static	on	Statio	on		
Table 4.1: Results of socio-economic appraisal	Option 1a	Option 1b	Option 1a	Option 1b	Option 2a	Option 2b
	£m PV	£m PV	£m PV	£m PV	£m PV	£m PV
Net benefits to consumers and private sector (plus						
tax impacts)						
Rail user reliability benefits						
Rail user journey time benefits	74.74	93.13	74.74	93.13	73.70	92.08
Journey ambiance inc. station amenity and crowding						
benefits	0.00	0.00	0.00	0.00	0.00	0.00
Non user benefits - road decongestion	4.88	6.63	4.88	6.63	5.01	6.76
Non user benefits - noise, air quality, greenhouse gases						
& accident benefits	1.34	1.82	1.34	1.82	1.38	1.86
Rail user and non user disruption disbenefits during						
possessions	-1.42	-1.33	-1.34	-1.25	-1.56	-1.47
Current TOC revenue benefits	0.00	0.00	0.00	0.00	0.00	0.00
Current TOC operating costs	0.00	0.00	0.00	0.00	0.00	0.00
Indirect taxation impact on government	-10.33	-12.42	-10.33	-12.42	-10.48	-12.57
sub-total (a)	69.21	87.82	69.29	87.90	68.04	86.65
Costs to government (broad transport budget)						
Capital costs	38.81	36.38	36.59	34.16	42.63	40.20
Non user benefits - road infrastructure cost changes	-0.07	-0.10	-0.07	-0.10	-0.07	-0.10
Revenue transfer	-56.41	-67.11	-56.41	-67.11	-57.20	-67.89
Operating costs transfer	71.89	109.68	71.89	109.68	127.08	164.87
sub-total (b)	54.23	78.85	52.01	76.63	112.44	137.07
Net Present Value (NPV) (a-b)	14.98	8.97	17.28	11.27	-44.40	-50.42
Benefit Cost Ratio to Government (BCR) (a/b)	1.28	1.11	1.33	1.15	0.61	0.63

Note: Present Values (PVs) are in 2010 market prices and are discounted to 2010 using Social Time Preference discount rates: see Table A.2. The appraisal is in accordance with the DfT's WebTAG appraisal guidance. Results are shown for the relevant option etc relative to the Base Case. For net benefits etc, benefits are shown as positive. For costs to government etc, costs are shown as positive.

1. Introduction and objectives

This section includes an introduction to the appraisal, a summary of scheme objectives and a description of the contents of this report; these are addressed in turn.

1.1 Introduction

This appraisal has been prepared by Network Rail to identify the socio-economic costs and benefits of the proposed MetroWest Phase 2 scheme.

This appraisal was carried out at GRIP stage two.

The proposed MetroWest Phase 2 scheme improves capacity and service frequency on the Yate corridor and reopened Henbury line, providing rail access to the Bristol and the regions of West of England and beyond.

The socio-economic appraisal was carried out in accordance with the Department for Transport's (DfT) appraisal guidance, in particular the web-based transport analysis guidance or WebTAG, available at dft.gov.uk.

The appraisal assumptions are discussed in more detail in Sections 3 and in the Appendix (Table A.2).

The appraisal compares the costs and benefits of each option relative to the Do Minimum (see Section 2), in accordance with WebTAG.

In this report, all years refer to financial years (i.e. 2014 = 2014/15) unless stated otherwise.

1.2 Scheme objectives

The MetroWest Phase 2 principal business objectives are:

- To support economic growth, through enhancing the transport links to the enterprise zones and into and across Bristol city centre, from Henbury, Filton Bank catchment areas and the Yate corridor
- To deliver a more resilient transport offer, providing more attractive and guaranteed (future-proofed) journey times for commuters, business and residents into and across Bristol, through better utilisation of strategic rail corridors from Henbury and Filton Bank catchment area and to Yate
- To improve accessibility to the rail network with new and reopened rail stations and reduce the cost (generalised cost) of travel for commuters, business and residents; and
- To make a positive contribution to social well being, life opportunities and improving quality of life.

The MetroWest Phase 2 supporting objectives are:

- To contribute to reducing traffic congestion on the Henbury, and Yate corridors;
- To contribute to enhancing the capacity of the local rail network, increasing the number of seats in the morning and evening peak ;and
- To contribute to reducing the overall environmental impact of the transport network.

The MetroWest programme will address the core issue of transport network resilience, through targeted investment to increase both the capacity and accessibility of the local rail network. The MetroWest concept is to deliver an enhanced local rail offer for the sub-region comprising:

- Existing and disused rail corridors feeding into Bristol;
- Broadly half hourly service frequency (but some variations possible pending the business case);
- Cross Bristol service patterns i.e. Yate to Weston-super-Mare etc; and
- Providing a Metro type service appropriate for a City Region of 1 million population.

This appraisal assesses the impact of improving capacity and connectivity on the Yate corridor by providing half hourly local services through extending the existing Bristol Parkway terminating services. It also assesses the benefits to new rail users associated with improving connectivity to Henbury and Filton Bank areas, encouraging modal shift from road to rail.

1.3 Structure of the report

This report includes the following sections:

- Section 2 describes the scheme options and Do Minimum;
- Section 3 explains how the costs and benefits were estimated;
- Section 4 presents appraisal results and conclusions of the main options;
- Section 5 presents analysis of an additional option which was developed following the appraisals of the main options; and
- Appendix, includes version control (see Table A.1) and further information on assumptions (see Table A.2).

2. Scheme options tests and Do Minimum

This section defines the scheme options and the do-minimum in turn.

2.1 Options assessed

Four main options of service specification are proposed for business case assessment, which are Option 1a, 1b, 2a and 2b.

Option 1a: Henbury Spur, Yate Extension

- Bristol Temple Meads to Henbury: 1 train per hour (tph) all day
- Extension of existing Weston-Super-Mare to Bristol Parkway service to Yate
- New stations on Filton Bank (Ashley Down and Constable Road)
- New stations at North Filton, Henbury
- Turnback at Yate

Option 1b: Henbury Spur, Gloucester Extension

- Bristol Temple Meads to Henbury: 1 train per hour (tph) all day
- Extension of existing Weston-Super-Mare to Bristol Parkway service to Gloucester
- New stations on Filton Bank (Ashley Down and Constable Road)
- New stations at North Filton, Henbury

Option 2a: Henbury Loop, Yate Extension

- Bristol Temple Meads to Henbury: 1 train per hour (tph) all day via Filton Bank and Avonmouth (clockwise and anti-clockwise directions)
- Extension of existing Weston-Super-Mare to Bristol Parkway service to Yate
- New stations on Filton Bank (Ashley Down and Constable Road)
- New stations at North Filton, Henbury
- Turnback at Yate

Option 2b: Henbury Loop, Gloucester Extension

- Bristol Temple Meads to Henbury: 1 train per hour (tph) all day via Filton Bank and Avonmouth (clockwise and anti-clockwise directions)
- Extension of existing Weston-Super-Mare to Bristol Parkway service to Gloucester
- New stations on Filton Bank (Ashley Down and Constable Road)
- New stations at North Filton, Henbury
- For all options, the location of a new station at Henbury could be on either a new site east of the A4018 or the old site west of the A4018.

2.2 Do Minimum – Base case scenario

The do-minimum is defined as the situation with Great Western Main line electrification and Intercity Express Programme (IEP) delivered in the end of Network Rail's Control Period Five (CP5). The service specification of these programmes includes providing two additional trains per hour (each way) from London Paddington to Bristol Temple Meads via Bristol Parkway. The Do Minimum includes CP5 committed schemes. It should be noted that the Do Minimum also includes MetroWest Phase 1 and the proposed service specification associated with Option 6b Enhanced of Phase 1 business case. This appraisal therefore assesses the benefits and costs over and above MetroWest Phase 1.

3. Costs and benefits

This section of the report defines how the costs and benefits in the appraisal were estimated. The results of the appraisal are shown in Section 4. The costs and benefits comprise the following elements, which are addressed in turn:

- Capital costs;
- Operating costs;
- Generalised journey time benefits (frequency and connectivity); and
- Non-user benefits.

3.1 Capital costs

Capital costs consist of initial capital and renewal costs, which are addressed in turn.

Initial capital costs

Initial capital costs are shown in Table 3.1. These costs are the point estimates (i.e. without risks and contingency) at GRIP stage two.

Table 3.1: Capital costs		
Option	Proposed funding source	£m
Option 1a (Henbury 1A new station)	Public funds - local government	32.95
Option 1b (Henbury 1A new station)	Public funds - local government	30.88
Option 1a (Henbury 2A old station)	Public funds - local government	31.06
Option 1b (Henbury 2A old station)	Public funds - local government	29.00
Option 2a	Public funds - local government	36.19
Option 2b	Public funds - local government	34.12

Note

The capital cost used for the appraisal, as quoted above, includes the point estimate but excludes any QRA-based risk allowance and excludes general contingency/generalised risk allowance etc.

Note that the capital costs for appraisal purposes do not include the QRA-based risk allowance even though a QRA has been carried out.

The above capital costs include Schedule 4 possession costs: see Table A.2. User and non-user disbenefits associated with possessions are based on these costs: for assumptions see Table A.2; these disbenefits are shown in Table 4.1.

40% of the above total costs are assumed to be incurred in 2019, 50% are assumed to be incurred in 2020 and 10% are assumed to be incurred in 2021. These are yet to be confirmed by the project team.

The above costs are in 2014 factor prices, at GRIP stage 2, are undiscounted and exclude optimism bias.

No real terms changes in costs are applied to the above costs during the appraisal period, leaving aside the issue of optimism bias.

The PVs for total capital costs are shown in Table 4.1. These include optimism bias (of 50% at GRIP 2) and are discounted (using the discount rates shown in Table A.2).

The above costs are assumed to be funded by the local government. The PVs in Table 4.1 therefore exclude RAB finance costs.

Costs are relative to the Base Case. Initial capital costs only (renewal costs are excluded). Costs are shown as positive.

Source: Project Team.

- Option 1 a (Henbury 1A new station) includes the costs (point estimates) of building the new stations of Henbury (£6.1m) on a new site, North Filton (£4.7m), Ashley Down (£7.3m) and Constable Road (£12.7m). It also includes the costs of a new Yate turnback siding (£2.1m).
- Option 1b (Henbury 1A new station), is the same as Option 1a, except it does not require a new Yate turnback siding.
- Option 1a (Henbury 2A old station), is the same as Option 1a (Henbury 1A new station, except the cost of the Henbury station is £4.2m and is built at an old site.
- Option 1b (Henbury 2A old station), is the same as Option 1b (Henbury 1A new station except the cost of the Henbury station is £4.2m. and is built at an old site.
- Option 2a, also includes the costs of building the new stations of Henbury and the infrastructures required for the "loop" including Hallen Marsh (£7.8m). A Yate turnback is also assumed.
- Option 2b, is the same as Option 2a, except the Yate turnback is excluded.

Renewal costs and / or cost savings

Renewal costs have not been estimated in this appraisal. It is recommended that this is included in the next GRIP stage appraisal.

3.2 Operating costs

This scheme requires ongoing operating and maintenance costs and the key cost components are summarised as follows:

- Train Operating Company (TOC) staff costs: additional drivers and train managers are required to operate the new and enhanced rail services;
- TOC vehicle leasing costs for the additional rolling stock;
- TOC vehicle mileage related operating costs: includes increased track access charges, fuel costs and vehicle maintenance costs as a result of the additional vehicle mileages; and
- TOC operating costs (new stations): operating and maintenance costs associated with the new stations at Henbury, North Filton, Ashley Down and Constable Road.

Table 3.3 summarises the annual operating costs for each option. These costs are high level estimates and need to be refined further should the scheme progress to the next GRIP stage.

Table 3.2 Operating costs	Option 1a	Option 1b	Option 2a	Option 2b
NR operating costs	-	-	-	-
TOC staff costs	880,000	1,320,000	1,760,000	2,200,000
TOC vehicle leasing costs	629,000	943,000	1,259,000	1,573,000
TOC vehicle operating costs	353,548	876,272	475,112	997,836
TOC operating costs (other)	552,000	552,000	580,000	580,000

Notes:

Costs are shown as positive.

Costs are in 2012 factor prices, at GRIP stage 2, are undiscounted and exclude optimism bias.

The PVs are shown in Table 4.1 and include optimism bias as shown in Table A.2. Costs are relative to the Base Case.

The appraisal compares the operating costs of each option with those in the dominimum, as defined in Section 2.2. The appraisal therefore considers and monetises the incremental operating costs (and benefits) over and above the base. The assumptions of each cost component are discussed in turn.

TOC staff costs and TOC vehicle leasing costs

Table 3.3 Number of unit required	Do minimum (Phase 1 Option 6b)	Option 1a	Option 1b	Option 2a	Option 2b
Total number of unit requirement	6	6 8	3 9	10	11
Incremental (compared to the Base Case)		2	2 3	4	5

Table 3.3 summarises the assumed number of unit requirement for each option. It compares the unit requirement between each option and the Do-Minimum Scenario (MetroWest Phase 1 Option 6b enhanced). These assumptions are sourced from the Capability Analysis report undertaken by Network Rail.

The appraisal assumes each unit requires six train drivers and four train managers per day to operate. This is based on the assumptions provided by the train operator, assuming three turns per Diesel Multiple Unit (DMU) unit, working all day, where each turn requires two drivers. This assumption was also used in the MetroWest Phase 1 appraisal at GRIP Stage two. In terms of train managers, the Phase One business case assumed six train managers per unit, while in this appraisal four has been assumed. This assumption reflects a higher pool of resources is likely to be available when combining Phase 1 and Phase 2, and hence less spare resources are required for train managers. The average salaries of a driver and a train manager are assumed to be £50,000 and £35,000 per annum respectively (in 2012 factor prices).

Each train is assumed to be formed of 2-car DMU. Standard unit rates of leasing cost, track access charges and fuels costs for 2-car DMU (diesel multiple unit) are applied. The leasing cost for each vehicle is assumed to be £157,000 in 2012 factor prices.

TOC vehicle operating costs

The vehicle operating costs are related to the total vehicle mileage. This is calculated based on the assumption 12 services are extended to Yate/Gloucester (each way) per day. It is assumed the new services on the Henbury line runs at hourly frequency throughout the day. Services are assumed to run 363 days per year.

The unit rates for the vehicle operating costs are as follow:

- Vehicle maintenance cost of £0.6 per vehicle mile;
- Variable track access charges of £0.1 per vehicle mile; and
- Fuel cost of £0.46 per vehicle mile.

These prices are in 2012 factor prices.

TOC other operating costs

This includes the costs of operating the new stations of Henbury, North Filton, Constable Road and Ashley Hill. It is assumed that all stations are two platforms, except in Option 1a and 1b, Henbury station is of single platform. The cost of operating a new station is estimated as £117,000 per annum (in 2014 factor prices) for a single platform and £145,000 per annum (in 2014 prices) for a two platform station. Both are assumed to be unmanned with no staff. This cost assumption is taken from the MetroWest Phase 1 business case assumption for the new station of Pill.

3.3 Journey time benefits

This section addresses value of time improvement to new and existing passengers. It also discusses revenue benefits and non-user benefits, as well as tax costs. These benefits and costs are addressed in turn.

Journey time saving /value of time benefits

Improving frequency and connectivity on the Yate corridor and Henbury line as outlined in Section 2.1, will improve the generalised journey time for existing rail passengers. It also encourages modal shift from road and other public transport to rail. Generalised Journey Time (GJT) defined in Passenger Demand Forecasting Handbook 5.1 (PDFH 5.1) comprises the following components:

- rail in-vehicle journey time;
- frequency (which is converted into equivalent minutes);and
- interchange penalty (which is converted into equivalent minutes).

The service specification provided by the project team¹ for each option is modelled in MOIRA – a rail industry demand forecasting model that assesses the impact of timetable changes on rail demand and revenue. In the model, WebTAG and PDFH5.1 values and parameters are used to estimate the journey time improvement to passengers on the existing lines. A baseline timetable, based on MetroWest Phase 1 Option 6b enhanced is modelled in MOIRA. The option timetables are then assessed against the baseline. An indicative timetable for the Henbury line services is found in the Appendix Tables A4 and A5.

Outputs from MOIRA are used for the appraisal. These outputs include the value of time improvement to existing rail users, and new rail users (at existing stations). Revenue impact, as a result of increased demand at existing rail stations are also modelled by MOIRA, using the PDFH 5.1 parameters.

The demand forecasting approach used in MOIRA is based on an elasticity approach as outlined in PDFH 5.1 and it is not capable of predicting demand to and from new stations. To estimate the value of time improvement to the new passengers at the new stations of Henbury, North Filton, Ashley Down and Constable Road, the new station forecasts provided by the consultants working on behalf of the project team are used.

Table 3.4: New station forecasts, rail journeys in 2021 (first year of opening)							
	Option 1a	Option 1b	Option 2a	Option 2b			
Henbury	98,872	98,872	100,020	100,020			
Filton North	92,287	92,287	93,202	93,202			
Ashley Hill	89,389	89,389	89,445	89,445			
Constable Road	37,717	37,717	37,745	37,745			

Demand forecasts for the new stations, for each option, are presented in Table 3.4.

Forecasts include CPNN growth.

A ramp up of demand is assumed, with 80% in the first year, 85% in the second year, 90% in the third year and 100% in the year after.

The journey time improvement to the new rail passengers at the new stations are estimated by comparing the generalised costs of travel by car and by rail. The

¹ Capacity Analysis Report produced by Network Rail December 2014.

generalised cost of travel by rail is calculated by working out the generalised journey time (in minutes), which include the following components

- In vehicle time (in minutes)
- Frequency penalty (in minutes), from PDFH 5.1
- Interchange penalty (in minutes), from PDFH 5.1
- Average rail fare per single trip in minutes (by converting fares to equivalent minutes, using the weighted value of time for rail passengers from WebTAG. It is weighted by the proportion of commuters, business and leisure users. These values are extracted from MOIRA).

The generalised cost of travel by car includes in-vehicle journey time in the peak and road costs such as parking cost in Bristol city centre. It also includes the costs of operating cost per vehicle mile such as petro and maintenance of vehicles. This is assumed to be £0.3 per vehicle mile and sourced from AA website. The generalised costs of travel by road are then converted to the equivalent journey time, using WebTAG value of time.

The generalised journey times (and costs) of travel between the two modes are then compared. The value of time improvement to new rail users are halved; applying "the rule of half", as described by WebTAG.

The value of time improvement to passengers using the new rail stations are shown in Table 3.5. The PVs of these benefits over the appraisal period is shown in Table 4.1. 2

Table 3.5. Total valu	e of time improveme	ent to the new sta	ations passenger	rs in 2021
	Option 1a	Option 1b	Option 2a	Option 2b
Henbury	£236,267	£236,267	£212,005	£212,005
Filton North	£256,970	£256,970	£237,149	£237,149
Ashley Hill	£159,122	£159,122	£153,856	£153,856
Constable Road	£87,907	£87,907	£87,973	£87,973
Total	£740,266	£740,266	£690,983	£690,983

Note: In 2010 value of time, factor prices and undiscounted.

The values of time improvement for both new and existing passengers on the existing lines are shown in Table 3.6. The PVs of these benefits over the appraisal period is shown in Table 4.1.

Table 3.6. Total value of time improvement to passengers on the existing lines and stations in 2021						
	Option 1a	Option 1b	Option 2a	Option 2b		
Total	£789,929	£1,174,815	£830,684	£1,215,546		

Note: In 2010 value of time, factor prices and undiscounted.

Revenue benefits

Revenue benefits are based on an estimation of the additional passengers generated by the scheme and are presented in Tables 3.3 and 3.4. The total revenue predicted in 2021 is presented in Table 3.7. The PVs of these benefits are shown in Table 4.1.

 $^{^{2}}$ ~Additional calculations have also been carried out, as a sensitivity test, using comparator journeys by bus to calculate rail journey time benefits from new stations. These calculations resulted in a slightly lower level of benefits, than the car comparator calculations, but the effect on overall project benefit cost ratios was negligible.

Table 3.7: Revenue benefits (£ per annum) assoicated with journey time savings in 2021					
	Option 1a	Option 1b	Option 2a	Option 2b	
Existing rail stations	389,135	652,428	403,278	666,241	
New rail stations	813,767	813,767	817,947	817,947	
Total	1,202,902	1,466,195	1,221,225	1,484,188	

Note: In 2014 factor prices and undiscounted.

Revenue for the new stations excludes abstraction from other existing stations.

Revenue forecasts for existing rail stations are modelled in MOIRA, and include background demand growth to 2021.

Revenue forecasts for new stations are provided by CH2MHill.

Non user benefits

The additional rail journeys result in non-user benefits associated with a reduction in the number of cars on the roads. The PVs of these benefits are shown in Table 4.1.

The assumed benefits per car mile are shown in Table 3.8.

Table 3.8: Non user benefits per mile				
Benefit type	£ per car mile			
Congestion	£0.07			
Infrastructure	£0.00			
Accident	£0.02			
Air pollution	£0.00			
Noise	£0.00			
Climate change	£0.01			
Total	£0.11			

Note: Benefits are based on the marginal costs (MEC) of car use from WebTAG (Unit A5.4).

Tax costs

The additional rail journeys result in tax costs associated with a reduction in the number of cars on the roads. These tax costs, both fuel duty and VAT, were estimated in accordance with WebTAG. The PVs of the costs is shown in Table 4.1.

4. Appraisal results and conclusions

This section of the report presents socio-economic appraisal results, for each option. A financial analysis comparing the revenue and operating cost (OPEX) is also presented.

4.1 Appraisal results

The socio-economic appraisal includes the following costs and socio-economic benefits:

- Capital costs (see Section 3.1);
- Operating costs or cost savings (Section 3.2); and
- Journey time benefits, comprising value of time benefits and associated revenue and non-user benefits and tax costs (Section 3.3);

The results for each central option are shown in Table 4.1. The Transport Economic Efficiency (TEE) table(s) and Appraisal Summary Table (AST) are shown in the appendix.

4.2 Conclusions

A socio-economic appraisal for each option was carried out in accordance with the Department for Transport's appraisal guidance. The appraisal assumes the capital cost of the scheme would be funded by the local authorities and therefore is not RAB funded. The main benefits are the journey time benefits, non-user benefits and revenue increase.

Table 4.1 summarises the appraisal results for each option, outlining the BCRs, NPVs and the PVs of costs and benefits.

	Henbury Spu Statio	r 1A New on	Henbury Spu Statio	r 2A OLD		
Table 4.1: Results of socio-economic appraisal	Option 1a	Option 1b	Option 1a	Option 1b	Option 2a	Option 2b
	£m PV	£m PV	£m PV	£m PV	£m PV	£m PV
Net benefits to consumers and private sector (plus						
tax impacts)						
Rail user reliability benefits						
Rail user journey time benefits	74.74	93.13	74.74	93.13	73.70	92.08
Journey ambiance inc. station amenity and crowding						
benefits	0.00	0.00	0.00	0.00	0.00	0.00
Non user benefits - road decongestion	4.88	6.63	4.88	6.63	5.01	6.76
Non user benefits - noise, air quality, greenhouse gases						
& accident benefits	1.34	1.82	1.34	1.82	1.38	1.86
Rail user and non user disruption disbenefits during						
possessions	-1.42	-1.33	-1.34	-1.25	-1.56	-1.47
Current TOC revenue benefits	0.00	0.00	0.00	0.00	0.00	0.00
Current TOC operating costs	0.00	0.00	0.00	0.00	0.00	0.00
Indirect taxation impact on government	-10.33	-12.42	-10.33	-12.42	-10.48	-12.57
sub-total (a)	69.21	87.82	69.29	87.90	68.04	86.65
Costs to government (broad transport budget)						
Capital costs	38.81	36.38	36.59	34.16	42.63	40.20
Non user benefits - road infrastructure cost changes	-0.07	-0.10	-0.07	-0.10	-0.07	-0.10
Revenue transfer	-56.41	-67.11	-56.41	-67.11	-57.20	-67.89
Operating costs transfer	71.89	109.68	71.89	109.68	127.08	164.87
sub-total (b)	54.23	78.85	52.01	76.63	112.44	137.07
Net Present Value (NPV) (a-b)	14.98	8.97	17.28	11.27	-44.40	-50.42
Benefit Cost Ratio to Government (BCR) (a/b)	1.28	1.11	1.33	1.15	0.61	0.63

Note: Present Values (PVs) are in 2010 market prices and are discounted to 2010 using Social Time Preference discount rates: see Table A.2. The appraisal is in accordance with the DfT's WebTAG appraisal guidance. Results are shown for the relevant option etc relative to the Base Case. For net benefits etc, benefits are shown as positive. For costs to government etc, costs are shown as positive.

4.3 Financial analysis and subsidy requirement

A financial analysis has been undertaken to compare the ongoing operating costs against the revenue forecasts during the appraisal period, as requested by the local authorities. The calculation is different to how values are treated under a socio-economic appraisal. Table 4.2 summarises the subsidy requirement for each option. Values are presented in outturn prices and use the following assumptions:

- Prices are undiscounted, in factor prices and in nominal term³ (grown by Retail Price Index to reflect inflation growth);
- Revenue is assumed to increase by RPI+1% until 2034, in nominal term;
- Demand is capped in 2034 (20 years after the appraisal year per DfT guidance);
- Staff related operating costs are assumed to grow by Average Earning Index (which is above RPI). Vehicle operating costs are assumed to grow by RPI;
- Costs are assumed to grow until the end of the appraisal period; and
- The subsidy requirement does not include capital expenditure or renewal cost.

Option 1a requires subsidy until year 2033. All other options require subsidy throughout the appraisal period.

Table 4.2: Subsidy requirement					
Summary (Reve	enue - OPEX)				
	total 2021-2030	total 2031-2040	In 2021		
Option 1a	(7,523,422)	1,147,919	(1,348,669)		
Option 1b	(21,474,659)	(16,235,902)	(2,621,967)		
Option 2a	(31,701,928)	(33,445,601)	(3,404,937)		
Option 2b	(45,659,255)	(50,839,912)	(4,678,685)		

Note: Negative represents subsidy requirement i.e. costs.

Prices are presented in outturn prices (in factor prices, in nominal terms with inflation, undiscounted).

³ While in economic appraisal in accordance to WebTAG, prices are presented in 2010 market values, are discounted and in real terms.

5. Additional Option

Analysis of the costs and benefits of the four scheme options considered (Option 1a, 1b, 2a and 2b) have indicated that there may be a need to consider further options, principally to understand whether the benefits of MetroWest Phase 2 could be achieved with an option that would cost less to deliver.

To this end, an additional option has been devised, based on option 1a. This option is very similar to option 1a, but with only one station on the Filton Bank between Stapleton Road and Filton Abbey Wood instead of two, located at Ashley Down. Option '1a_x' can therefore be briefly described as follows:

<u>Option 1a_x – additional option</u>

- Re-opened Henbury line with hourly service operating as a spur from Bristol Temple Meads;
- New stations at Henbury, North Filton and Ashley Down; and
- Extension of existing service terminating at Bristol Parkway to Yate (providing a service of 2 trains per hour at Yate).

This section draws together the results of assessing this option, including new station demand forecasts and the socio-economic appraisal results.

Option 1a_x is appraised using the same framework and methodology per Option 1a.

5.2 Capital cost

Capital costs for the additional option (option $1a_x$) is shown in Table 5.1, and they consist of the following:

- Option 1a (Henbury 1A new station) includes the costs (point estimates) of building the new stations of Henbury (£6.1m) on a new site, North Filton (£4.7m) and Ashley Down (£7.3m). It also includes the costs of a new Yate turnback siding (£2.1m).
- Option 1a (Henbury 2A old station), is the same as Option 1a (Henbury 1A new station, except the cost of the Henbury station is £4.2m and is built at an old site.

Table 5.1: Capital costs		
Option	Proposed funding source	£m
Option 1a x (Henbury 1A new station)	Public funds - local government	20.22
Option 1a x (Henbury 1A Old station)	Public funds - local government	18.35

Note

The capital cost used for the appraisal, as quoted above, includes the point estimate but excludes any QRA-based risk allowance and excludes general contingency/generalised risk allowance etc.

Note that the capital costs for appraisal purposes do not include the QRA-based risk allowance even though a QRA has been carried out.

The above capital costs include Schedule 4 possession costs: see Table A.2. User and non-user disbenefits associated with possessions are based on these costs: for assumptions see Table A.2; these disbenefits are shown in Table 4.1.

40% of the above total costs are assumed to be incurred in 2019, 50% are assumed to be incurred in 2020 and 10% are assumed to be incurred in 2021. These are yet to be confirmed by the project team.

Table 5.1: Capital costs

The above costs are in 2014 factor prices, at GRIP stage 2, are undiscounted and exclude optimism bias.

No real terms changes in costs are applied to the above costs during the appraisal period, leaving aside the issue of optimism bias.

The PVs for total capital costs are shown in Table 4.1. These include optimism bias (of 50% at GRIP 2) and are discounted (using the discount rates shown in Table A.2).

The above costs are assumed to be funded by the local government. The PVs in Table 4.1 therefore exclude RAB finance costs.

Costs are relative to the Base Case. Initial capital costs only (renewal costs are excluded). Costs are shown as positive.

Source: Project Team.

5.2 Operating cost

The operating cost for Option 1a x is very similar to Option 1a, except it does not have the cost of operating and maintaining the new station Constable Road that is included in the Option 1a. In other words, it includes the costs of three new stations of Henbury, North Filton and Ashley Down.

5.3 New station forecast

Table 5.1 presents the new station forecasts for Option 1a x

Table 5.3 New station forecast: Rail journeys in 2021 (opening yea		
	Option 1a x	
Henbury	98,872	
Filton North	92,287	
Ashley Hill	100,874	

Forecasts include CPNN growth.

A ramp up of demand is assumed, with 80% in the first year, 85% in the second year, 90% in the third year and 100% in the year after.

5.4 Socio-economic appraisal results

Table 5.4 presents the socio-economic appraisal results for Option 1a x, along with the results for Option 1a for comparison. Option 1a x offers a medium value for money with a BCR of 1.71.

Table 5.4: Results of socio-economic appraisal	Option 1a	Option 1a x
	£m PV	£m PV
Net benefits to consumers and private sector		
(plus tax impacts)		
Rail user reliability benefits		
Rail user journey time benefits	74.74	71.31
Non user benefits - road decongestion	4.88	4.81
Non user benefits - noise, air quality, greenhouse gases & accident benefits	1.34	1.32
Rail user and non user disruption disbenefits during	-1 42	-0.87
Current TOC revenue benefits	0.00	0.00
Current TOC operating costs	0.00	0.00
Indirect taxation impact on government	-10.33	-9.81
sub-total (a)	69.21	66.75
Costs to government (broad transport budget)		
Capital costs	38.81	23.83
Non user benefits - road infrastructure cost changes		
	-0.07	-0.07
Revenue transfer	-56.41	-53.44
Operating costs transfer	71.89	68.73
sub-total (b)	54.23	39.04
Net Present Value (NPV) (a-b)	14.98	27.71
Benefit Cost Ratio to Government (BCR) (a/b)	1.28	1.71

Appendix

This section includes the following further information:

- Table A.1, version control;
- Table A.2, further information on appraisal assumptions;
- Transport Economic Efficiency (TEE) tables;
- Table A3, background growth demand assumptions; and
- Table A4 and A5, indicative timetables for the Henbury line services in Option 1a, 1b, 2a and 2b.

TEE tables - MetroWest Phase 2						
Option 1a (Henbury Spur 1A New station) Table 1: Economic Efficiency of Transport System (All cos	sts & disbenefits a	re negative, all b	enefits & saving	s are positive)		
	Total in 2010	Cars, LGVs &			Rail infra- structure -	Rail passengers,
	price base £	goods vehicles	Bus & Coach	Rail Total	Network Rail	TOCs
Non-business commuting benefits Travel time saving	50 471 330	1 218 953		49 252 378		49 252 378
Vehicle operating costs	00,471,000	1,210,000		40,202,070		43,202,010
User charges	0			0		
During construction & maintenance	-355,770	-32,343	0	-323,427	0	-323,427
Non-business other benefits	50,115,560	1,100,010	0	46,926,950	0	40,920,950
Travel time saving	21,485,870	1,218,953		20,266,917		20,266,917
Vehicle operating costs	0			0		
User charges	0	22.242		0		202 427
Net (1b)	21.130.099	1.186.610	0	19.943.489	0	19.943.489
Business benefits		, ,				
Business user benefits						
Travel time saving	7,659,690	2,437,906		5,221,784		5,221,784
User charges	0			0		
During construction & maintenance	-711,540	-64,685		-646,855		-646,855
Net (2)	6,948,150	2,373,220	0	4,574,930	0	4,574,930
Private sector provider impacts	EG 407 E40			EG 407 E40		EG 407 540
Opcost	50,407,546 -71 804 230			50,407,546 -71 894 230	0	-71 894 230
Investment cost	-38,811,292			-38,811,292	-38,811,292	71,004,200
Grant/subsidy: Specific fund TBC (Public funds - central	0			0		
government) Cront/subsidu: Notwork Bail private funding	•			~	0	
Grant/subsidy: Network Rall private funding Grant/subsidy: Public funds - local government	38.811.292			38.811.292	38.811.292	
Revenue transfer (100% to government)	-56,407,546			-56,407,546	00,011,202	-56,407,546
Opcost transfer (100% to government)	71,894,230			71,894,230	0	71,894,230
Sub total (3)	0	0	0	0	0	0
Other business impacts				0		
Net business impact (5 = 2+3+4)	6.948.150	2.373.220	0	4.574.930		
Total, PV of transport econ eff. benefits (6 = 1a+1b+5)	78,193,810	1(a), 1(b) and (5)	flow into the AMC	B table, not (6)		
Table 2 Public Accounts (costs should be recorded as a po	sitive number, su	rpluses as a nega	ative one)			
	Total	Infrastructure	Bus & Coach	Rail		
Local Government funding						
Revenue	0					
Operating costs	0					
Grant/subsidy: Public funds - local government	38.811.292			38.811.292		
Revenue transfer	0			,,		
Net (7)	38,811,292	0	0	38,811,292		
General Government funding: transport	0					
Operating costs	0					
Investment costs*	0					
Grant/subsidy: Specific fund TBC (Public funds - central	0					
government)	E6 407 E46			0		
Opcost transfer (100% to government)	71.894.230			71.894.230		
Infrastructure cost savings	-72,065	-72,065				
Net (8)	15,414,619	-72,065	0	15,486,684		
General Government funding: non-transport	10 226 770	10 326 779		0		
Totals	10,320,778	10,320,778		0		
Broad transport budget (10=7+8)	54,225,911	* These costs exc	lude developer co	ntributions		
Wider public finances (11=9)	10,326,778					
Table 3: Analysis of Monetised Costs and Benefits (AMCB)						
Noise	57,135					
Greenhouse gases	416,792					
Rail environmental costs	0					
Journey ambience (inc. station amenity and crowding benefits)	0					
Consumer users (sub-total 1a+1b. Table 1)	71,245.660					
Business users and providers (sub-total 5, Table 1)	6,948,150					
Reliability (including performance)	0					
Uption values Wider public finances (indirect taxation revenues) (sub-total 11)	-10,326,778	Sign changed from	m Table 2			
PV of Ponofite (a - cum of all bonofite)	60 207 000					
Broad transport budget (sub-total 10)	54,225.911	From Table 2				
PV of Costs (b = 10)	54,225,911					
Overall impacts						
1 NIN (1-0)	14 982 057					

TEE tables - MetroWest Phase 2						
Option 1b (Henbury Spur 1A New station) Table 1: Economic Efficiency of Transport System (All cost	ts & disbenefits a	re negative, all b	enefits & saving	s are positive)		
	Total in 2010	Care I GV/s &		. /	Rail infra-	Rail passangers
	price base £	goods vehicles	Bus & Coach	Rail Total	Network Rail	TOCs
Non-business commuting benefits	50 500 040			50.045.070		50.045.070
Travel time saving	52,502,313	1,656,934		50,845,379		50,845,379
User charges	0			0		
During construction & maintenance	-333,445	-30,313		-303,132		-303,132
Net (1a)	52,168,868	1,626,621	0	50,542,247	0	50,542,247
Non-business other benefits						
Travel time saving	34,295,026	1,656,934		32,638,092		32,638,092
User charges	0			0		
During construction & maintenance	-333,445	-30,313		-303,132		-303,132
Net (1b)	33,961,581	1,626,621	0	32,334,960	0	32,334,960
Business benefits						
Business user benefits	12 056 020	2 212 060		0 642 052		0 642 052
Vehicle operating costs	12,950,920	3,313,000		9,043,032		9,043,032
User charges	0			0		
During construction & maintenance	-666,890	-60,626		-606,263		-606,263
Net (2)	12,290,030	3,253,242	0	9,036,788	0	9,036,788
Private sector provider impacts	67 407 999			67 407 000		67 407 922
Opcost	-109 678 810			-109 678 810	0	-109 678 810
Investment cost	-36,375,808			-36,375,808	-36,375,808	-103,070,010
Grant/subsidy: Specific fund TBC (Public funds - central	0			0		
government)					0	
Grant/subsidy: Network Rail private funding	0 36 375 808			36 375 808	0 36 375 808	
Revenue transfer (100% to government)	-67,107,832			-67,107,832	30,373,000	-67,107,832
Opcost transfer (100% to government)	109,678,810			109,678,810	0	109,678,810
Sub total (3)	0	0	0	0	0	0
Other business impacts						
Developer contribution (4) Not business impact ($5 = 2 \cdot 2 \cdot 4$)	12 200 020	2 252 242	0	0 026 799		
Total, PV of transport econ eff, benefits ($6 = 1a+1b+5$)	98 420 479	1(a), 1(b) and (5)	flow into the AMC	B table, not (6)		
	00,120,110	.(=), .(=) == (=)				
Table 2 Public Accounts (costs should be recorded as a pos	itive number, su	rpluses as a nega	ative one)			
	All Modes	Road				
Local Government funding	Iotal	Infrastructure	Bus & Coach	Rail		
Revenue	0					
Operating costs	0					
Investment costs*	0					
Grant/subsidy: Public funds - local government	36,375,808			36,375,808		
Revenue transfer	36 375 808	0	0	36 375 808		
General Government funding: transport	30,373,000	0	0	50,575,000		
Revenue	0					
Operating costs	0					
Investment costs*	0					
Grant/subsidy: Specific fund TBC (Public funds - central	0			0		
Revenue transfer (100% to government)	-67.107.832			-67.107.832		
Opcost transfer (100% to government)	109,678,810			109,678,810		
Infrastructure cost savings	-97,948	-97,948				
Net (8)	42,473,029	-97,948	0	42,570,977		
Indirect Tax Revenues (9)	12 /21 562	12 421 562		0		
Totals	12,421,502	12,421,302		0		
Broad transport budget (10=7+8)	78,848,837	* These costs exc	lude developer co	ntributions		
Wider public finances (11=9)	12,421,562					
Table 3: Analysis of Monetised Costs and Benefits (AMCB)	77 690					
Local air quality	000					
Greenhouse gases	566,777					
Rail environmental costs	0					
Journey ambience (inc. station amenity and crowding benefits)	0 1 178 949					
Consumer users (sub-total 1a+1b, Table 1)	86,130,449					
Business users and providers (sub-total 5, Table 1)	12,290,030					
Reliability (including performance)	0					
Uption values Wider public finances (indirect toyotion revenues) (sub total 11)	-12 /21 562	Sign changed free	m Table 2			
white public interices (interice taxation revenues) (sub-total 11)	-12,421,302	orgin changed ffor				
PV of Benefits (a = sum of all benefits)	87,822,324					
Broad transport budget (sub-total 10)	78,848,837	From Table 2				
PV of Costs (b = 10)	78,848,837					
NPV (a-b)	8,973 487					
BCR (a/b)	1.11					

TEE tables - MetroWest Phase 2						
Option 1a (Henbury Spur 2A Old station) Table 1: Economic Efficiency of Transport System (All cost	ts & disbenefits a	re negative, all b	enefits & saving	s are positive)		
	Total in 2010	Cars. LGVs &			Rail infra- structure -	Rail passengers.
	price base £	goods vehicles	Bus & Coach	Rail Total	Network Rail	TOCs
Non-business commuting benefits	50 471 330	1 218 953		49 252 378		49 252 378
Vehicle operating costs	0	1,210,333		43,232,370		43,232,370
User charges	0			0		
During construction & maintenance	-335,426	-30,493		-304,933		-304,933
Net (1a) Non-business other benefits	50,135,905	1,188,460	0	48,947,445	0	48,947,445
Travel time saving	21,485,870	1,218,953		20,266,917		20,266,917
Vehicle operating costs	0			0		
User charges	0			0		
During construction & maintenance	-335,426	-30,493	0	-304,933	0	-304,933
Business benefits	21,130,444	1,100,400	0	10,001,004	0	13,301,304
Business user benefits						
Travel time saving	7,659,690	2,437,906		5,221,784		5,221,784
Venicle operating costs	0			0		
During construction & maintenance	-670,852	-60,987		-609,865		-609,865
Net (2)	6,988,839	2,376,919	0	4,611,919	0	4,611,919
Private sector provider impacts						
Revenue	56,407,546			56,407,546	^	56,407,546
Investment cost	-71,894,230 -36,591.911			-71,094,230	-36,591.911	-71,894,230
Grant/subsidy: Specific fund TBC (Public funds - central	0			0		
government)					0	
Grant/subsidy: Network Rail private funding	0 36 501 011			36 501 011	0 36 501 011	
Revenue transfer (100% to government)	-56,407,546			-56,407,546	30,331,311	-56,407,546
Opcost transfer (100% to government)	71,894,230			71,894,230	0	71,894,230
Sub total (3)	0	0	0	0	0	0
Other business impacts						
Net business impact (5 = $2+3+4$)	6 988 839	2 376 919	0	4 611 919		
Total, PV of transport econ eff. benefits ($6 = 1a+1b+5$)	78,275,187	1(a), 1(b) and (5)	flow into the AMC	B table, not (6)		
Table 2 Public Accounts (costs should be recorded as a pos	sitive number, su	rpluses as a nega	tive one)			
	All Wodes Total	Infrastructure	Bus & Coach	Rail		
Local Government funding						
Revenue	0					
Operating costs	0					
Grant/subsidy: Public funds - local government	36.591.911			36.591.911		
Revenue transfer	0					
Net (7)	36,591,911	0	0	36,591,911		
General Government funding: transport	0					
Operating costs	0					
Investment costs*	0					
Grant/subsidy: Specific fund TBC (Public funds - central	0			0		
government) Revenue transfer (100% to government)	-56 407 546			-56 407 546		
Opcost transfer (100% to government)	71,894,230			71,894,230		
Infrastructure cost savings	-72,065	-72,065				
Net (8)	15,414,619	-72,065	0	15,486,684		
Indirect Tax Revenues (9)	10 326 770	10 326 779		0		
Totals	10,320,110	10,320,770		U		
Broad transport budget (10=7+8)	52,006,530	* These costs excl	ude developer co	ntributions		
Wider public finances (11=9)	10,326,778					
Table 3: Analysis of Monetised Costs and Renefits (AMCR)						
Noise	57,135					
Local air quality	0					
Greenhouse gases Rail environmental costs	416,792					
Journey ambience (inc. station amenity and crowding benefits)	Ő					
Accidents (incl. safety)	867,009					
Consumer users (sub-total 1a+1b, Table 1) Business users and providers (sub-total 5, Table 1)	71,286,348					
Reliability (including performance)	0,300,039					
Option values	0					
Wider public finances (indirect taxation revenues) (sub-total 11)	-10,326,778	Sign changed from	n Table 2			
PV of Benefits (a = sum of all benefits)	69,289,345					
Broad transport budget (sub-total 10)	52,006,530	From Table 2				
PV of Costs (b = 10)	52,006,530					
NPV (a-b)	17 292 915					
BCR (a/b)	1.33					

Characterization (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (A) costs & disbandifis are negative, all benefits & savings are positive) Rall information (Participant Paymer (Paymer (A) costs & disbandifis (Participant Paymer (Paymer	TEE tables - MetroWest Phase 2						
Test in Sample Call Life / 2 Rel in Sample Rel interestion	Option 1b (Henbury Spur 2A Old station) Table 1: Economic Efficiency of Transport System (All cost	ts & disbenefits a	re negative, all be	enefits & saving	s are positive)		
Inter basis Costs whiteire But & Costs Rail Total Nences Rail Total Trave time standy takes charges 0,2,00,211 1,509,404 50,445.379 0,045.379 0,045.379 User charges 0 0 0,000,000 0,000,000 0,000,000 284.637 284.637 Welt (a) 0,000,000 0,000,000 0,000,000 0,000,000 284.637 284.637 284.637 284.637 284.637 284.637 284.637 284.637 284.637 284.637 284.64 -294.637 28		Total in 2010	Cars G\/s &	-		Rail infra-	Rail passengers
Non-Jossies commuting lendits 1,656,034 50,457,379 User charges 0 0 0 User charges 0 0 0 0 User charges 0 0 0 0 0 User charges 0		price base £	goods vehicles	Bus & Coach	Rail Total	Network Rail	TOCs
index charge	Non-business commuting benefits	52 502 313	1 656 934		50 845 379		50 845 379
Liser Anges 0 228,461 0 228,457 0 288,857 Non-ham control bandins 52,109,272 1,654,770 0 60,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,050,742 0 0,073,773 <t< td=""><td>Vehicle operating costs</td><td>02,502,515</td><td>1,030,334</td><td></td><td>0</td><td></td><td>30,043,373</td></t<>	Vehicle operating costs	02,502,515	1,030,334		0		30,043,373
During instruction & maintenance 3331301 2.8484 .284.87 .284.87 During instruction & maintenance 3331301 1.864.470 0 0.0506.74 Trave time saving costs 0 1.864.470 0 0.0506.74 0 Uper charges 1.864.470 0 2.834.092 2.834.697 2.848.897 Vehick operating costs 0 3.313.092 1.862.470 0 2.2353.455 Builness user benefits 0 0.66.97 0 9.643.002 0 9.643.002 User charges 0 0.66.97 0.66.97 0.66.97 0.66.97 0.93.778 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 9.077.78 0 0	User charges	0			0		
Interd image other benefits Interference Interference <t< td=""><td>During construction & maintenance</td><td>-313,101</td><td>-28,464</td><td>0</td><td>-284,637</td><td>0</td><td>-284,637</td></t<>	During construction & maintenance	-313,101	-28,464	0	-284,637	0	-284,637
Time taxing 34.25.028 1,656,034 32.253,092 32.638,092 User charges 313.0 28.64 28.65.07 28.65.07 Baliness towner 1,099,073,073 0 32.353,465 9.64.3,002 Baliness towner 0 3,313,868 9.64.3,002 9.64.3,002 Baliness towner 0 0 0 0 0 During construction & maintemance 40.8,271 456.927 456.927 0 9.677,76 0 9.677,776 0 9.677,776 0 9.677,776 0 9.777,76 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.677,776 0 9.676,777,778 0 9.676,777,778 0 9.676,777,778 0 9.676,777,778 0	Non-business other benefits	52,109,212	1,028,470	0	50,500,742	0	50,500,742
Vehice operating costs 0 -28,464 -28,4647 -28,4647 -28,4647 Net (h) 33,381,522] 1,628,470 0 32,335,465 0 32,335,465 Buinces benefits 0 -28,657 -28,657 -28,657 0 32,335,465 Buinces benefits 0 -28,641 0 9,643,002 -9,643,002 User charges 0 -28,641 0 9,073,778 0 9,073,778 Vehic governments 6,8027 -669,274 -669,274 -669,274 -669,274 Vering contructions of matcas -10,078,810 -110,078,81 -0,077,78 0 9,073,778 Vering contructions of modes -10,078,810 -110,078,810 -110,078,81 -110,078,810 -110,078,810 -110,078,810 -110,078,810 -110,078,810 -110,078,810 -110,078,810 -100,078,810 -100,078,810 -100,078,810 -0 0 0 0 -0 0 0 0 0 -0 0 0 0 0 0 <	Travel time saving	34,295,026	1,656,934		32,638,092		32,638,092
Juling procession 313.101 -28.464 -29.4677 0 32.434.55 0 32.435.455 Builness benefits 10.89.69.20 3.318.65 9.843.050 0 32.435.455 Builness benefits 12.956.920 3.313.017 20.857.455 0 9.9643.052 User charges 0 3.017.278 0 9.073.778 0 9.073.778 Water charges 0 109.678.810 - -565.274 -565.274 Water charges 0 109.678.810 0 9.073.778 0 9.073.778 Opcost -109.678.810 - -0.107.822 0 -109.678.810 0 -109.678.810 0 -0.107.822 0 -109.678.810 0 </td <td>Vehicle operating costs</td> <td>0</td> <td></td> <td></td> <td>0</td> <td></td> <td></td>	Vehicle operating costs	0			0		
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Business tomefits Trade time storing Trade	Net (1b)	33,981,925	1,628,470	0	32,353,455	0	32,353,455
International state ration in a state in a	Business benefits						
Vehicle operating costs Internation Internation Internation Internation During construction & maintenance 628_201 -66,927 -66,927 -66,927 -66,927 -66,927 -66,927 -66,927 -66,927 -66,927 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 9,073,778 0 10,9,678,810 0	Travel time saving	12,956,920	3.313.868		9.643.052		9.643.052
User charges 0 -56,927 -569,274 -569,274 Net (2) 12,330,719 3,226,941 0 9,073,778 0 9,073,778 Photas sector provider impacts -109,678,810 -109,678,810 -109,678,810 -341,56,428 -67,107,832<	Vehicle operating costs	0	0,010,000		0		0,010,002
Lumg construction 4 maintenance -268,27 -688,27 -688,27 -688,27 -688,27 -688,27 -688,27 0 9,073,778 0 </td <td>User charges</td> <td>0</td> <td></td> <td></td> <td>0</td> <td></td> <td></td>	User charges	0			0		
Private sector provider impacts	During construction & maintenance	-626,201	-56,927	0	-569,274	0	-569,274
Revenue 67.107.832 67.107.832 67.107.832 Opcost Investment cost Cantifubacity Specific fund TBC (Public kunds - central growmment) 34.156.428 -34.156.428 -34.156.428 Cantifubacity Specific fund TBC (Public kunds - central growmment) 0 0 0 0 Grantifubacity Public funds - foor government) 44.156.428 -34.156.428 -67.107.832 0 109.678.810 Grantifubacity Public funds - foor government) 457.107.832 -67.107.832 0 109.678.810 Opcost transfer (100% to government) 199.678.810 0 0 0 0 Other business impacts 0	Private sector provider impacts	12,330,719	0,200,341	0	5,015,110	0	5,515,116
Opcost Investment cost Grant/subsky -109.678.810 -34,156.428 -109.678.810 -34,156.428 -0 -00.678.810 -34,156.428 -0 -00.678.810 -34,156.428 0 <	Revenue	67,107,832			67,107,832		67,107,832
Controluctor Controluctor<	Opcost Investment cost	-109,678,810			-109,678,810	-34 156 429	-109,678,810
government) Grant/zbasidy: Network Rail private funding Grant/zbasidy: Network Rail private funding Distribution (10) 0 0 0 109,678,810 0 109,678,810 0 109,678,810 0 109,678,810 0 109,678,810 0 </td <td>Grant/subsidy: Specific fund TBC (Public funds - central</td> <td>-34,130,428</td> <td></td> <td></td> <td>-34,130,420</td> <td>-34,130,420</td> <td></td>	Grant/subsidy: Specific fund TBC (Public funds - central	-34,130,428			-34,130,420	-34,130,420	
Grantsbusky, Network Rall private funding 0 34,156,428 34,156,428 34,156,428 47,107,832	government)	-				0	
Barenue transfer (100% to government) -67, 107, 832 -67, 107, 832 0 0 -67, 107, 832 0 0 109, 678, 810 0	Grant/subsidy: Network Rail private funding	0 34 156 428			0 34 156 428	0 34 156 428	
Opcost transfer (100% to government) 109,678,810 0 109,678,810 0	Revenue transfer (100% to government)	-67,107,832			-67,107,832	34,130,420	-67,107,832
Sub total (3) 0 <	Opcost transfer (100% to government)	109,678,810			109,678,810	0	109,678,810
Dure Public P	Sub total (3)	0	0	0	0	0	0
Net toxiness impact (5 = 2x3-4) 12.320,719 3,256,941 0 9,73,778 Table 2Public Accounts (costs should be recorded as a positive number, surpluses as a negative one) All Modes Road Table 2 Public Accounts (costs should be recorded as a positive number, surpluses as a negative one) All Modes Road Local Government funding Net Nodes Road Raid Operating costs 0 0 34,156,428 Operating costs 0 0 34,156,428 Revenue 0 0 34,156,428 General Government funding: transport 0 0 0 34,156,428 General Government funding: non-transport 0 0 0 42,473,023 -97,948 0 42,570,977 Instatructure Gits alwigs 0 12,421,562 0 0 10 10 Reven	Developer contribution (4)	0			0		
Tatal, PV of transport econ eff. benefits (6 = 1a+1b+5) 98,501,857 1(a), 1(b) and (5) flow into the AMCB table, not (6) Table 2 Public Accounts (costs should be recorded as a positive number, surpluses as a negative one) Infrastructure Rait Local Government funding Note Rait Rait Revenue 0 Jat 156,428 At 156,428 Operating costs 0 34,156,428 At 156,428 Revenue transfer 0 34,156,428 At 156,428 Revenue transfer 0 34,156,428 At 156,428 Corantsubsidy: Specific fund TBC (Public funds - central optoment) 0 34,156,428 At 156,428 Opcost transfer (100% to government) 67,107,832 -67,107,832 -67,107,832 Opcost transfer (100% to government) 109,678,810 109,678,810 109,678,810 Infrastructure costs ''s angle of thome thording: non-transport -97,948 97,948 42,570,977 Total 76,629,457 ''These costs exclude developer contributions Total 109,678,810 Infrastructure cost s''nig of Monetised Costs and Benefits (AMCB) 0 42,570,977 12,421,562 0 Tabead transport budget (10-7+6) 76,529,457	Net business impact (5 = 2+3+4)	12,330,719	3,256,941	0	9,073,778		
Table 2 Public Accounts (costs should be recorded as a positive number, surpluses as a negative one) All Modes Read Total Read Infrastructure Read Bus & Coach Rail Cocal Government funding 0 0 0 0 Operating costs 0 0 0 0 0 Operating costs 0 0 0 34,156,428 0 0 34,156,428 Revenue tosts* 0 0 0 34,156,428 0 0 34,156,428 General Government funding: transport 0 0 0 34,156,428 0 0 0 34,156,428 General Government funding: transport 0 0 0 34,156,428 0	Total, PV of transport econ eff. benefits (6 = 1a+1b+5)	98,501,857	1(a), 1(b) and (5) f	flow into the AMC	B table, not (6)		
All Modes Road Local Government funding Total Revenue 0 Operating costs 0 Investment costs* 0 Grant/subsidy-bblic funds - local government 34,156,428 Revenue 0 Grant/subsidy-bblic funds - local government 34,156,428 Revenue transfer 0 Investment costs* 0 Operating costs 0 Investment costs* 0 Operating costs 0 Opcost transfer (100% to government) -57,107,832 Opcost transfer (100% to government) -97,948 Opcost transfer (100% to government) -97,948 Deta (100 evenues (9) 12,421,562 Total 76,629,457 Totals 77,680 Broad transport budget (10-7+8) 76,629,457 Mider public finances (11=9) 12,421,562 0 Table 3: Analysis of Monetised Costs and Benefits (AMCB) 0 42,671,078	Table 2 Public Accounts (costs should be recorded as a nos	sitive number su	nluses as a neca	tive one)			
Total Infrastructure Bus & Coach Rail Cacl Government funding 0 0 0 0 Operating costs 0 0 34,156,428 0 0 34,156,428 Revenue transfer 0 0 34,156,428 0 0 34,156,428 General Government funding: transport 0 0 34,156,428 0 0 34,156,428 General Government funding: transport 0 0 34,156,428 0 0 34,156,428 General Government funding: transport 0 0 34,156,428 0 0 34,156,428 General Government funding: transport 0 0 34,156,428 0 0 34,156,428 General Government funding: transport 0 0 0 34,156,428 0 0 34,156,428 Opcost transfer (100% to government) -67,107,832 -67,107,832 0 42,670,977 General Government funding: non-transport 108,678,810 108,678,810 0 42,670,977		All Modes	Road				
Local Government funding Revenue Trainsport budget (10–7+8) Bread transport budget (10–7+8) Bre		Total	Infrastructure	Bus & Coach	Rail		
Notestable 0 Operating costs 0 Investment costs* 0 Carafusbubity: Public funds - local government 34,156,428 Revenue transfer 0 Operating costs 0 Investment costs* 0 Operating costs 0 Grantsbubity: Specific fund TBC (Public funds - central government) -67,107,832 Opcost transfer (100% to government) 109,678,810 Infrastructure cost savings -97,948 Net (8) 42,473,029 Total 76,629,457 These costs exclude developer contributions Wider public finances (11=9) 12,421,562 Totals 76,629,457 These costs exclude developer contributions Uscal air quality 70 Greenhouse gases 566,777 Rail envinonmental costs <td< td=""><td>Local Government funding</td><td>0</td><td></td><td></td><td></td><td></td><td></td></td<>	Local Government funding	0					
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Grant/subsidy: Public funds - local government 34,156,428 34,156,428 Revenue transfer 0 0 Operating costs 0 0 Investment costs* 0 0 Operating costs 0 0 Investment costs* 0 0 Operating costs 0 0 Grant/subsidy: Specific fund TBC (Public funds - central operating costs 0 0 Grant/subsidy: Specific fund TBC (Public funds - central operating costs 0 0 Grant/subsidy: Specific fund TBC (Public funds - central operating costs 0 0 Grant/subsidy: Specific fund TBC (Public funds - central operating costs 0 0 Grant/subsidy: Specific fund TBC (Public funds - central operating costs 0 0 Grant/subsidy: Specific fund TBC (Public funds - central operating costs 0 0 Grant/subsidy: Specific fund TBC (Public funds - central operating costs 0 0 Grant/subsidy: Specific fund TBC (Public funds - central operating costs 0 0 Met (8) General Government (Inding: non-transport operating costs 0 0 Indirect Tax Revenues (9) 12,421,562 12,421,562 0 </td <td>Investment costs*</td> <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Investment costs*	0					
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General Government funding: transport 0 Revenue 0 Operating costs 0 Investment costs* 0 Gamers/US/Specific fund TBC (Public funds - central government) 0 Revenue transfer (100% to government) -67,107,832 Opcost transfer (100% to government) -97,948 Infrastructure cost savings -97,948 Vert (8) -97,948 Infrastructure cost savings -97,948 Net (8) -97,948 Infrastructure cost savings -97,948 Infrastructure cost savings -97,948 Vet (8) -97,948 Infrastructure cost savings -97,948 Net (8) -97,948 Vet (8) -97,948 Indirect Tax Revenues (9) -12,421,562 Totals	Net (7)	34,156,428	0	0	34,156,428		
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Grant/subsidy: Specific fund TBC (Public funds - central 0 government) 0 gavernment) -67,107,832 Opcost transfer (100% to government) 109,678,810 Infrastructure cost savings -97,948 Net (8) 42,473,029 Grant/subsidy: Specific fund TBC (Public funds - central 00 Infrastructure cost savings -97,948 Net (8) 42,473,029 Grant/subsidy: Specific fund TBC (Public funds - central spectrum) -97,948 Indirect Tax Revenues (9) 12,421,562 Totals 76,629,457 Broad transport budget (10=7+8) 76,629,457 Wider public finances (11=9) 12,421,562 Local air quality 0 Greenhouse gases 56,777 Rail environmental costs 0 Journer y ambience (inc. station amenity and crowding benefits) 0 Accidents (incl. safety) 12,330,719 Buisness users and providers (sub-total 5, Table 1) 12,330,719 Wider public finances (indirect taxation revenues) (sub-total 10) 76,629,457 PV of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Cos	Operating costs Investment costs*	0					
government) -67,107,832 -67,107,832 Opcost transfer (100% to government) 109,678,810 109,678,810 Infrastructure cost savings -97,948 -97,948 Net (8) 42,473,023 -97,948 0 42,570,977 General Government funding: non-transport 112,421,562 0 0 Totals Broad transport budget (10=7+8) 76,629,457 * These costs exclude developer contributions Wider public finances (11=9) 12,421,562 0 Table 3: Analysis of Monetised Costs and Benefits (AMCB) 77,680 0 42,570,977 Rail environmental costs 0 12,421,562 0 0 Journey ambience (inc. station amenity and crowding benefits) 0 42,570,977 40 Rail environmental costs 0 0 0 0 0 Journey ambience (inc. station amenity and crowding benefits) 0 42,171,138 0 42,2330,719 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <t< td=""><td>Grant/subsidy: Specific fund TBC (Public funds - central</td><td>0</td><td></td><td></td><td></td><td></td><td></td></t<>	Grant/subsidy: Specific fund TBC (Public funds - central	0					
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Infrastructure cost savings -97,948 -97,948 0 42,673,029 -97,948 0 42,670,977 General Government funding: non-transport Indirect Tax Revenues (9) 12,421,562 12,421,562 0 Totals Froad transport budget (10=7+8) 76,629,457 * These costs exclude developer contributions Wider public finances (11=9) 12,421,562 0 Table 3: Analysis of Monetised Costs and Benefits (AMCB) 0 Noise 77,680 0 Local air quality 0 0 Greenhouse gases 566,777 Rail environmental costs 0 Journey ambience (incl. station amenity and crowding benefits) 0 Accidents (incl. safety) 1,178,949 Consumer users (sub-total 1a+1b, Table 1) 86,171,138 Busineses users and providers (sub-total 5, Table 1) 12,230,719 Option values 0 Wider public finances (indirect taxation revenues) (sub-total 1) -12,421,562 V of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Costs (b = 10) 76,629,457 Overall impacts	Opcost transfer (100% to government)	-67,107,832			-67,107,832		
Net (8) 42,473,029 -97,948 0 42,570,977 General Government funding: non-transport Indirect Tax Revenues (9) 12,421,562 12,421,562 0 Totals 76,629,457 * These costs exclude developer contributions 0 Wider public finances (11=9) 12,421,562 0 Table 3: Analysis of Monetised Costs and Benefits (AMCE) 0 Noise Local air quality 0 0 Greenhouse gases 566,777 Rail environmental costs 0 Journey ambience (inc. station amenity and crowding benefits) 1,178,949 Rouisers and providers (sub-total 5, Table 1) 86,171,138 Business users and providers (sub-total 5, Table 1) 0 Option values 0 Wider public finances (indirect taxation revenues) (sub-total 1) -12,421,562 PV of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Costs (b = 10) 76,629,457 Overall impacts 11,274,245 NPV (a-b) 11,274,245	Infrastructure cost savings	-97,948	-97,948				
General Government running: non-transport Indirect Tax Revenues (9) 12,421,562 12,421,562 0 Totals These costs exclude developer contributions Broad transport budget (10=7+8) 76,629,457 * These costs exclude developer contributions Wider public finances (11=9) 12,421,562 12,421,562 0 Noise 77,680 0 Local air quality 0 0 Greenhouse gases 566,777 0 Rail environmental costs 0 0 Journey ambience (inc. station amenity and crowding benefits) 0 1,178,949 Consumer users (sub-total 1a+1b, Table 1) 86,171,138 Business users and providers (sub-total 5, Table 1) 12,230,719 Reliability (including performance) 0 0 0 0 Option values 0 0 0 0 Vider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 Sign changed from Table 2 PV of Osenefits (a = sum of all benefits) 87,993,702 From Table 2 From Table 2 PV of Oses (b = 10) 76,629,457 From Table 2 PV of Cosits (b = 10) 76,629,457	Net (8)	42,473,029	-97,948	0	42,570,977		
Totals Totals Totals Totals Broad transport budget (10=7+8) 76,629,457 * These costs exclude developer contributions Wider public finances (11=9) 12,421,562 * These costs exclude developer contributions Noise 12,421,562 * Local air quality 0 0 Greenhouse gases 566,777 Rail environmental costs 0 Journey ambience (inc. station amenity and crowding benefits) 0 Accidents (incl. safety) 11,78,949 Consumer users (sub-total 14=1b, Table 1) 86,171,138 Business users and providers (sub-total 5, Table 1) 12,330,719 Reliability (including performance) 0 Option values 0 Wider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 PV of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Costs (b = 10) 76,629,457 Overall impacts 11,274,245 NPV (a-b) 11,274,245 NPV (a-b) 11,274,245	Indirect Tax Revenues (9)	12 421 562	12 421 562		0		
Broad transport budget (10=7+8) 76,629,457 * These costs exclude developer contributions Wide public finances (11=9) 12,421,562 * These costs exclude developer contributions Table 3: Analysis of Monetised Costs and Benefits (AMCB) 77,680 Noise 77,680 0 Local air quality 0 0 Greenhouse gases 566,777 0 Rail environmental costs 0 0 Journey ambience (inc. station amenity and crowding benefits) 0 1.178,949 Consumer users (sub-total 14=1b, Table 1) 86,171,138 0 Business users and providers (sub-total 5, Table 1) 12,330,719 0 Option values 0 0 0 Wider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 Sign changed from Table 2 PV of Senefits (a = sum of all benefits) 87,903,702 From Table 2 PV of Costs (b = 10) 76,629,457 From Table 2 Overall impacts 11,274,245 Sign changed from Table 2 PV (a/b) 11,274,245 Sign changed from Table 2	Totals	12,421,002	12,421,002		Ū		
Wider public finances (11=9) 12,421,562 Table 3: Analysis of Monetised Costs and Benefits (AMCB) Noise 77,680 Local air quality 0 Greenhouse gases 566,777 Rail environmental costs 0 Journey ambience (inc. station amenity and crowding benefits) 0 Accidents (incl. safety) 61,717,138 Consumer users (sub-total 1a+1b, Table 1) 86,171,138 Business users and providers (sub-total 5, Table 1) 12,330,719 Option values 0 Wider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 V of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Costs (b = 10) 76,629,457 Overall impacts 11,274,245 NPV (a-b) 11,274,245 BCR (a/b) 11,5	Broad transport budget (10=7+8)	76,629,457	* These costs excl	ude developer co	ntributions		
Table 3: Analysis of Monetised Costs and Benefits (AMCB) Noise 77,680 Local air quality 0 Greenhouse gases 566,777 Rail environmental costs 0 Journey ambience (inc. station amenity and crowding benefits) 0 Accidents (incl. safety) 1,178,949 Consumer users (sub-total 1a+1b, Table 1) 86,171,138 Business users and providers (sub-total 5, Table 1) 12,330,719 Option values 0 Wider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 PV of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Costs (b = 10) 76,629,457 Overall impacts 11,274,245 NPV (a-b) 11,274,245	Wider public finances (11=9)	12,421,562					
Noise 77,680 Local air quality 0 Greenhouse gases 566,777 Rail environmental costs 0 Journey ambience (inc. station amenity and crowding benefits) 0 Accidents (incl. safety) 0 Consumer users (sub-total 1a+1b, Table 1) 86,171,138 Business users and providers (sub-total 5, Table 1) 12,330,719 Option values 0 Wider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 V of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Costs (b = 10) 76,629,457 Overall impacts 11,274,245 NPV (a-b) 11,274,245 NPV (a-b) 11,274,245	Table 3: Analysis of Monetised Costs and Benefits (AMCB)						
Local air quality 0 Greenhouse gases 566,777 Rail environmental costs 0 Journey ambience (inc. station amenity and crowding benefits) 0 Accidents (incl. safety) 1,178,949 Consumer users (sub-total 1a+1b, Table 1) 86,171,138 Business users and providers (sub-total 5, Table 1) 12,330,719 Reliability (including performance) 0 Option values 0 Vider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 PV of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Costs (b = 10) 76,629,457 Overall impacts 11,274,245 NPV (a-b) 11,274,245	Noise	77,680					
Orderminutes gases 000,717 Rail environmental costs 0 Journey ambience (inc. station amenity and crowding benefits) 0 Accidents (incl. safety) 1,178,949 Consumer users (sub-total 1a+1b, Table 1) 86,171,138 Business users and providers (sub-total 5, Table 1) 12,330,719 Reliability (including performance) 0 Option values 0 Wider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 PV of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Costs (b = 10) 76,629,457 Overall impacts 11,274,245 NPV (a-b) 11,274,245 BCR (a/b) 11,274,245	Local air quality Greenbouse gases	566 777					
Journey ambience (inc. station amenity and crowding benefits) Accidents (incl. safety) Consumer users (sub-total 1a+1b, Table 1) Business users and providers (sub-total 5, Table 1) Reliability (including performance) Option values Wider public finances (indirect taxation revenues) (sub-total 11) PV of Benefits (a = sum of all benefits) Broad transport budget (sub-total 10) PV of Costs (b = 10) Overall impacts NPV (a-b) BCR (a/b) D 0 0 0 0 0 0 0 0 0 0 0 0 0	Rail environmental costs	0					
Accidents (incl. satety) 1,176,949 Consumer users (sub-total 1a+1b, Table 1) 86,171,138 Business users and providers (sub-total 5, Table 1) 12,330,719 Reliability (including performance) 0 Option values 0 Wider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 PV of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Costs (b = 10) 76,629,457 Overall impacts 11,274,2245 NPV (a-b) 11,274,2245 BCR (a/b) 11,274,245	Journey ambience (inc. station amenity and crowding benefits)	0					
Business users and providers (sub-total 5, Table 1) 12,330,719 Reliability (including performance) 0 Wider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 Sign changed from Table 2 PV of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 PV of Costs (b = 10) 76,629,457 PV (a-b) 11,274,245 BCR (a/b) 115	Accidents (Incl. safety) Consumer users (sub-total 1a+1b, Table 1)	86,171,138					
Reliability (including performance) 0 Option values 0 Wider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 Sign changed from Table 2 PV of Benefits (a = sum of all benefits) 87,903,702 From Table 2 Broad transport budget (sub-total 10) 76,629,457 From Table 2 PV of Costs (b = 10) 76,629,457 From Table 2 Overall impacts 11,274,245 BCR (a/h)	Business users and providers (sub-total 5, Table 1)	12,330,719					
Option Values -12,421,562 Sign changed from Table 2 Vider public finances (indirect taxation revenues) (sub-total 11) -12,421,562 Sign changed from Table 2 PV of Benefits (a = sum of all benefits) 87,903,702 From Table 2 Broad transport budget (sub-total 10) 76,629,457 From Table 2 PV of Costs (b = 10) 76,629,457 From Table 2 Overall impacts 11,274,245 BCR (a/b)	Reliability (including performance)	0					
PV of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 From Table 2 PV of Costs (b = 10) 76,629,457 Overall impacts NPV (a-b) 11,274,245 BCR (a/b) 115	Wider public finances (indirect taxation revenues) (sub-total 11)	-12,421,562	Sign changed from	n Table 2			
PV of Benefits (a = sum of all benefits) 87,903,702 Broad transport budget (sub-total 10) 76,629,457 From Table 2 76,629,457 PV of Costs (b = 10) 76,629,457 Overall impacts 11,274,245 BCR (a/b) 115			5 5				
New Gates (b = 10) 76,629,457 Overall impacts 11,274,245 NPV (a-b) 11,274,245	PV of Benefits (a = sum of all benefits) Broad transport budget (sub-total 10)	87,903,702	From Table 2				
Overall impacts NPV (a-b) BCR (a/b)	PV of Costs (b = 10)	76,629,457	I JIII TAULE Z				
NPV (a-b) <u>11,274,245</u> BCR (a/b) 115	Overall impacts						
	NPV (a-b) BCR (a/b)	11,274,245					

TEE tables - MetroWest Phase 2						
Option 2a Table 1: Economic Efficiency of Transport System (All cost	Table 1: Economic Efficiency of Transport System (All costs & disbenefits are negative, all benefits & savings are positive)					
	Total in 2010	Care GV/c &	-		Rail infra-	Rail passengers
	price base £	goods vehicles	Bus & Coach	Rail Total	Network Rail	TOCs
Non-business commuting benefits	13 706 511	1 251 457		42 545 053		42 545 053
Vehicle operating costs	43,790,511	1,231,437		42,545,055		42,545,055
User charges	0			0		
During construction & maintenance	-390,789	-35,526	0	-355,263	0	-355,263 42,189,790
Non-business other benefits	43,403,721	1,213,331	0	42,103,730	0	42,103,730
Travel time saving	24,409,108	1,251,457		23,157,650		23,157,650
Vehicle operating costs	0			0		
During construction & maintenance	-390,789	-35.526		-355.263		-355,263
Net (1b)	24,018,318	1,215,931	0	22,802,387	0	22,802,387
Business benefits						
Travel time saving	10.500.653	2.502.914		7.997.739		7,997,739
Vehicle operating costs	0	2,002,011		0		1,001,100
User charges	0			0		
During construction & maintenance	-/81,5/9	-71,053	0	-/10,526	0	-/10,526
Private sector provider impacts	9,719,075	2,431,002	0	7,207,213	0	1,201,213
Revenue	57,201,841			57,201,841		57,201,841
Opcost	-127,081,167			-127,081,167	0	-127,081,167
Grant/subsidy: Specific fund TBC (Public funds - central	-42,031,555			-42,031,555	-42,031,000	
government)					0	
Grant/subsidy: Network Rail private funding	0 42 621 555			42 621 555	0	
Revenue transfer (100% to government)	-57.201.841			-57.201.841	42,031,000	-57.201.841
Opcost transfer (100% to government)	127,081,167			127,081,167	0	127,081,167
Sub total (3)	0	0	0	0	0	0
Developer contribution (4)	0			0		
Net business impact ($5 = 2+3+4$)	9,719,075	2,431,862	0	7,287,213		
Total, PV of transport econ eff. benefits (6 = 1a+1b+5)	77,143,115	1(a), 1(b) and (5) f	flow into the AMC	B table, not (6)		
Table 2 Public Accounts (costs should be recorded as a nos	itive number su	nluses as a nega	tive one)			
	All Modes	Road	lave oney			
	Total	Infrastructure	Bus & Coach	Rail		
Local Government funding	0					
Operating costs	0					
Investment costs*	0					
Grant/subsidy: Public funds - local government	42,631,555			42,631,555		
Net (7)	42,631,555	0	0	42,631,555		
General Government funding: transport						
Revenue Operating costs	0					
Investment costs*	0					
Grant/subsidy: Specific fund TBC (Public funds - central	0					
government)	57 201 941			0		
Opcost transfer (100% to government)	127,081,167			127,081,167		
Infrastructure cost savings	-73,987	-73,987				
Net (8) General Government funding: nen transport	69,805,339	-73,987	0	69,879,325		
Indirect Tax Revenues (9)	10,482.242	10,482.242		0		
Totals						
Broad transport budget (10=7+8)	112,436,894	* These costs excl	ude developer co	ntributions		
Wider public finances (11=9)	10,482,242					
Table 3: Analysis of Monetised Costs and Benefits (AMCB)						
Noise	58,659					
Greenhouse gases	427.918					
Rail environmental costs	0					
Journey ambience (inc. station amenity and crowding benefits)	0 890 150					
Consumer users (sub-total 1a+1b, Table 1)	67,424,040					
Business users and providers (sub-total 5, Table 1)	9,719,075					
Reliability (including performance)	0					
Wider public finances (indirect taxation revenues) (sub-total 11)	-10,482,242	Sign changed from	n Table 2			
P)/ of Popofito (a - cum of all herefite)	60 007 500					
Broad transport budget (sub-total 10)	112,436.894	From Table 2				
PV of Costs (b = 10)	112,436,894					
Overall impacts	44 000 000					
BCR (a/b)	-44,399,296					

TEE tables - MetroWest Phase 2						
Option 2b			<i>(</i>), 0, 1			
Table 1: Economic Efficiency of Transport System (All cost	ts & disbenefits a	re negative, all b	enetits & saving	s are positive)	Rail infra-	
	Total in 2010	Cars, LGVs &			structure -	Rail passengers,
Non business commuting bonofits	price base £	goods vehicles	Bus & Coach	Rail Total	Network Rail	TOCs
Travel time saving	52,721,546	1,689,391		51,032,155		51,032,155
Vehicle operating costs	0			0		
User charges	0	00.407		0		004.007
During construction & maintenance Net (1a)	-368,464	-33,497	0	-334,967 50,697,188	0	-334,967
Non-business other benefits	01,000,001	1,000,001	0	00,001,100	0	00,001,100
Travel time saving	33,447,321	1,689,391		31,757,930		31,757,930
Vehicle operating costs	0			0		
During construction & maintenance	-368.464	-33,497		-334.967		-334,967
Net (1b)	33,078,857	1,655,894	0	31,422,963	0	31,422,963
Business benefits						
Business user benefits	12 673 /30	3 378 782		0 204 648		0 204 648
Vehicle operating costs	12,073,430	3,370,702		3,234,040		3,234,040
User charges	0			0		
During construction & maintenance	-736,928	-66,993		-669,935		-669,935
Net (2) Private sector provider impacts	11,936,502	3,311,789	0	8,624,714	0	8,624,714
Revenue	67,888,678			67,888,678		67,888,678
Opcost	-164,865,746			-164,865,746	0	-164,865,746
Investment cost Grant/subsidy: Specific fund TBC (Public funds - central	-40,196,072			-40,196,072	-40,196,072	
government)	0			0	0	
Grant/subsidy: Network Rail private funding	0			0	0	
Grant/subsidy: Public funds - local government	40,196,072			40,196,072	40,196,072	
Revenue transfer (100% to government)	-67,888,678			-67,888,678	0	-67,888,678
Sub total (3)	104,005,740	0	0	164,665,746	0	104,000,740
Other business impacts	v			-		-
Developer contribution (4)	0			0		
Net business impact (5 = $2+3+4$) Total PV of transport econ eff. benefits (6 = $12+10+5$)	11,936,502	3,311,789	0 flow into the AMC	8,624,714 B table_pot (6)		
	37,300,442	(u), (b) and (b)				
Table 2 Public Accounts (costs should be recorded as a pos	sitive number, su	rpluses as a nega	ative one)			
	All Modes	Road	Due & Ceesh	Deil		
Local Government funding	TOTAL	mastructure	Dus & Coach	1 All		
Revenue	0					
Operating costs	0					
Investment costs [*] Grant/subsidy: Public funds - local government	40 196 072			40 196 072		
Revenue transfer	0			10,100,012		
Net (7)	40,196,072	0	0	40,196,072		
General Government funding: transport	0					
Operating costs	0					
Investment costs*	Ő					
Grant/subsidy: Specific fund TBC (Public funds - central	0					
government) Revenue transfer (100% to government)	-67 888 678			-67 888 678		
Opcost transfer (100% to government)	164,865,746			164,865,746		
Infrastructure cost savings	-99,867	-99,867				
Net (8)	96,877,202	-99,867	0	96,977,068		
Indirect Tax Revenues (9)	12,574 722	12.574 722		0		
Totals	,0,	12,01 1,122		Ŭ		
Broad transport budget (10=7+8)	137,073,273	* These costs exc	lude developer co	ntributions		
Wider public finances (11=9)	12,574,722					
Table 3: Analysis of Monetised Costs and Benefits (AMCB)						
Noise	79,203					
Local air quality	0 577 886					
Rail environmental costs	0					
Journey ambience (inc. station amenity and crowding benefits)	0					
Accidents (incl. safety)	1,202,056					
Business users and providers (sub-total 5, Table 1)	11,936,502					
Reliability (including performance)	0					
Option values Wider public finances (indirect toyotion royonyoo) (out total 11)	-12 574 700	Sign changed free	n Table 2			
wider public intances (indirect taxation revenues) (sub-total 11)	-12,3/4,/22	Sign changed ffor				
PV of Benefits (a = sum of all benefits)	86,652,865					
Broad transport budget (sub-total 10)	137,073,273	From Table 2				
Overall impacts	137,073,273					
NPV (a-b)	-50,420,409					
BCR (a/b)	0.63					

Table A.2: Further appraisal assump	tions		
Assumptions apply to central case unless star	ted. Further assumptions a	are in tables in main text.	
All years refer to financial years e.g. 2014 refe	rs to 2014/15 F/Y.	0	0
Assumption Conoral assumptions:	value	Source	Comment
Current year	2014	WebTAG	
Model base year	2014	WebTAG	
First year of benefits	2021	Project Team	100% of benefits realised
			from this year
Benefits profile by year	% of total	Destant Team	
2021	100%	Project Team	
Appraisal period (years)	100% 60	Project Team Project Team	The maximum is 60 years
		-,	under WebTAG
Price base year	2010	WebTAG (Unit A1.1, Para 2.6.3)	Values converted from model base year to price base year using GDP deflator
Base year for discounting	2010	WebTAG (Unit A1.1, Para 2.7.6)	
Discount rate (Social Time Preference Rate)	3.5% for 30 years from the current year and 3.0% thereafter	WebTAG (data-book-may- 2014, Table A1.1.1) & HM Treasury Green Book	
Unit of account	Market prices	WebTAG (Unit A1.1, Para 2.5.2)	19% added to convert factor prices to market prices
Capital and operating cost assumptions:		1	 I
Changes in capital costs in real terms during appraisal period	Not applied		
Changes in operating costs costs in real terms during appraisal period	Labour costs are assumed to increase in real terms (relative to GDP deflator) during appraisal period. Increases are c. 2% per annum between 2015 and end of appraisal	DſT	No other real terms changes in operating costs are assumed.
Cost of TOC profit as percentage of any	8%	DfT	
change in operating costs	070		
Optimism bias for:	1		
Capital costs	50% at GRIP stage 2	WebTAG (Unit A5.3, Table 2)	
Operating costs	2% al GRIF Slaye 2	Table 2)	
Passenger benefit-related assumptions		-	-
Passenger demand growth Passenger set or all services	See Table A.3 for the demand profile	Growth assumptions agreed with the funders. The long term growth is consistent with the forecasts from Network Rail's Market Studies, although higher growth is used for the earlier years to reflect the continuation of recent high demand growth.	
Year in which underlying demand growth is capped (20 years from current year)	2034	WebTAG (Unit A5.3, 3.3.1)	This cap year also applies to fare increases applied (see below) and any real terms cost increases applied (see above).

Table A.2: Appraisal assumptions (c	ontinued)		
Proportion of work time journeys:	11%	Based on above journey types and January 2011 PDFH assumptions relating ticket splits (from MOIRA) and above journey types to user type	Remaining passengers are all non-work time (commuters or leisure - see below).
Values of time (VoT) by user type: Business (work) users Commuters Others	£31.96 per hour in 2010 prices £6.81 per hour in 2010 prices £6.04 per hour in 2010 prices	WebTAG (data-book-may- 2014, Table A1.3.1)	All data are in market prices
"Rule of the half"	50%	WebTAG (Unit A.1.3 Para 2.1.6)	Time savings applied to new users at half the rate applied to existing users
VoT growth (per annum) by user type: Business (work) users Non-work	GDP (real terms) per person GDP (real terms) per	WebTAG (data-book-may- 2014, Annual Parameters)	
Weighting for delays relative to in-vehicle journey time for economic benefits by user type : Business (work) users Non-work	1.0 3.0	WebTAG (Unit A5.3, Table 3) WebTAG (Unit A5.3, Table 3) & PDFH (v5.0 Section 85.5)	Applied to economic i.e. VoT benefits only - see below for weighting for demand impacts
Average fare increases per annum (% per annum above RPI) except for specified years (see below). No increases applied after demand cap year (see above). Revenue growth also takes account of forecast increases in RPI relative to GDP deflator (until demand cap year), since appraisal uses GDP deflator to deflate prices to price base	1.0%	DfT advice	
Average fare increase in 2014 and 2015	0%	DfT advice	
Average elasticity of demand with respect to Generalised Journey Time (GJT)	-1.11	Weighted average elasticity with elasticities from PDFH 5.1 (except for airport flows: PDFH 5.0) as recommended by WebTAG (Unit M4, Table 1) and with weightings based on proportion of total journeys under each journey/area type.	
Reduction in car kms for 100% increase in rail passenger kms (diversion rate), for external costs of car use	26%	WebTAG (Unit A5.4, Table 1)	Same rate applied across GB

Table A.2: Appraisal assumptions (c	ontinued)		
MEC congestion benefits			These allocations are also
Proportion allocated to work time	50%	DfT	applied to disruption
Proportion allocated to commuting	25%	DfT	disbenefits
Proportion allocated to other	25%	DfT	
Other assumptions			
TOC revenue and operating cost transfer:			
After current franchise expires the following	100%	DfT	
proportion of revenue and operating costs is			
assumed to be transferred to government			
Network Rail operating cost transfer :			Overall operating cost
During current Control Period the following	0%	WebTAG (Unit A5.3,	transfer assumptions are
proportion of operating costs is assumed to		Section 3.4)	shown in the TEE tables.
be transferred to government			
After current Control Period expires the	100%	WebTAG (Unit A5.3	
following proportion of operating costs is	10070	Section 3 4)	
assumed to be transferred to government.			
Disruption during construction:			
Schedule 4 costs as a proportion of	5%	Project Team	
investment cost		-	
User disbenefits as a proportion of revenue	100%	Economic Analysis Team	User & non-user benefits
disbenefits (i.e. Schedule 4)		assumption	are increased to allow for
Non user disbenefits as a proportion of	10%	Economic Analysis Team	factor to market price
revenue disbenefits		assumption	adjustment.
Indirect tax costs	Various including current	WebTAG (Unit A5.3, 4.7	As a simplifying
	fuel duty rates, resource	and data-book-may-2014)	assumption, the share of
	costs of fuel and average		petrol and diesel in total
	fuel efficiency, and		car miles is assumed to
	forecast changes in these		be 50%/50% throughout
	parameters over the		the appraisal period. No
	appraisal period		electric car mileage is
			assumed.
Value of preventing a fatality (VPF)	£1.633m in 2010 prices	WebTAG (data-book-may-	Growth in line with GDP
		2014, A4.1.5)	(real terms) per person
			growth

Table A.3: Background of	demand growth assumptions
2014-2015	5.6%
2015-2016	4.7%
2016-2017	3.9%
2017-2018	3.0%
2018-2019	3.0%
2019-2020	2.9%
2020-2021	2.7%
2021-2022	2.5%
2022-2023	2.3%
2023-2024	2.2%
2024-2025	2.2%
2025-2026	2.1%
2026-2027	2.1%
2027-2028	2.0%
2028-2029	2.0%
2029-2030	1.9%
2030-2031	1.9%
2031-2032	1.8%
2032-2033	1.8%
2033-2034	1.7%

Source: CH2M

Loop Scenario (based on Option 6b)

clockwise	Origin	BTM	BTM
	Destination	Severn Beach	BTM
Bristol Temple Meads	arr		
	dep	xx:25½	xx:57½
Lawrence Hill	arr	xx:58	xx:59
	dep	xx:29	xx:00
Stapleton Road	arr	xx:30½	xx:01½
	dep	xx:31½	xx:02½
Montpellier	arr	xx:34½	xx:05
	dep	xx:35	xx:06
Redland	arr	xx:36½	xx:07
	dep	xx:37	xx:08
Clifton Down	arr	xx:39	xx:09½
	dep	xx:40	xx:11½
Sea Mills	arr	xx:43½	xx:15
	dep	xx:44	xx:16
Shirehampton	arr	xx:47	xx:19½
	dep	xx:47½	xx:20½
Portbury P&R	arr		xx:21
	dep		xx:22
Avonmouth	arr	xx:51	xx:24
	dep	xx:52	xx:25
St Andrews Road	arr	xx:55	xx:27
A	dep	xx:55½	xx:28
Severn Beach	arr	xx:02	
lle e bouer	dep		0.011
Henbury	arr		xx:34½
Cilica Marih	dep		XX:35½
Filton North	arr		XX:38½
Ellion Abboy Wood	dep		XX:40
Filton Abbey wood	arr		XX:4072
Constable Bood	dep		XX:49
Constable Road	don		XX:50
Achley Hill	dep arr		XX:3072
Asiney Hill	den		XX:0272 XX:53
Stapleton Road	dep		xx:55
Stapleton Road	den		xx:55%
Lawrence Hill	dep		xx:55/2
cawience mil	dan		xx:50½
Reistal Tample Moode	dep		XX:0772
pristor remple meads	den		AA.00
	uep		

Spur scenario (based on Option 6b)

clockwise	Origin	BTM	BTM	Henbury
	Destination	Severn Beach	Avonmouth	BTM
Bristol Temple Meads	arr			
	dep	xx:25%	xx:52½	
Lawrence Hill	arr	xx:58	xx:55	
	dep	xx:29	xx:55½	
Stapleton Road	arr	xx:30½	xx:57	
-	dep	xx:31½	xx:58	
Montpellier	arr	xx:34½	xx:01	
	dep	xx:35	xx:01½	
Redland	arr	xx:36½	xx:03	
	dep	xx:37	xx:03½	
Clifton Down	arr	xx:39	xx:05½	
	dep	xx:40	xx:09	
Sea Mills	arr	xx:43½	xx:12½	
	dep	xx:44	xx:13	
Shirehampton	arr	xx:47	xx:16	
	dep	xx:47½	xx:16½	
Portbury P&R	arr		xx:17	
	dep		xx:18	
Avonmouth	arr	xx:51	xx:20	
	dep	xx:52		
St Andrews Road	arr	xx:55		
	dep	xx:55½		
Severn Beach	arr	xx:02		
	dep			
Henbury	arr			
·····	dep			xx:59½
Filton North	arr			XX:02½
Files Abbas Marad	dep			xx:03
Fillon Abbey Wood	arr			XX:06%
Occurrent Decod	dep			XX:07
Constable Road	arr			XX:08
Ashley Hill	dep			XX:08 ½
Ashiey Hill	don			XX:1072
Stanleton Road	dep			xx:12%
Stapieton Roau	dan			xx:12/2
Lawrence Hill	060			xx:14
cawidice mil	dan			xx:15
Bristol Temple Meade	000			vy:17%
pristor remple weads	dan			XX.1772
	dep			