



Black Country Rapid  
Transit Study

Final Report  
October 2015

Black Country Rapid Transit  
Network Review Officer Group

Our ref: 22802901  
Client ref:







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Prepared by:

Steer Davies Gleave  
28-32 Upper Ground  
London SE1 9PD

+44 20 7910 5000  
[www.steerdaviesgleave.com](http://www.steerdaviesgleave.com)

Prepared for:

Black Country Rapid Transit Network  
Review Officer Group

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## Executive Summary

### Overview

1. The Black Country Joint Core Strategy (BCJCS) has the aim of developing the case for a rapid transit network connecting the Black Country Strategic Centres of Walsall, Wolverhampton, West Bromwich and Brierley Hill to each other and to/from Birmingham city centre. This network can be comprised of any combination of light rail, bus rapid transit, tram-train or heavy rail.
2. The Black Country Rapid Transit Study reviewed the various rapid transit studies undertaken to date and has identified those schemes that best meet current objectives for the region. Four rapid transit networks were developed from these schemes providing connectivity in the corridors between economic and population centres in the Black Country and to Birmingham City Centre. An assessment of demand and benefits of each package was carried in order to establish the rapid transit transport priorities for the region.

### Study Approach

3. The study is divided into five stages:
  - Corridors Review: Review of the economic, social, development and transport context of the Black Country
  - Schemes Review: A literature review of all rapid transit schemes developed in the Black Country over the last decade
  - Sift: A comparative assessment of the performance of these schemes undertaken against sift criteria and consequent shortlisting of schemes.
  - Network Scenario Development: Development of a series of network scenarios for assessment.
  - Option Assessment: Assessment of network scenarios in terms of demand and benefits.

### Corridors Review

4. From the corridors review we developed a set of strategic transport objectives:
  - Connecting Brierley Hill to Birmingham City Centre
  - Improving other Strategic Centre connections to Birmingham City Centre
  - New/improved connections between Strategic Centres:
    - Wolverhampton to Walsall
    - Walsall to Wednesbury and Brierley Hill

### Conclusions

5. A set of priority schemes and future aspirations have emerged from the analysis carried out.

#### *Priority schemes*

- Wednesbury to Brierley Hill Extension from Midland Metro Line 1.
- Walsall to Birmingham City Centre (A34) Sprint scheme.
- Heavy rail link between Walsall and Wolverhampton.

#### *Future aspirations*

- Walsall to Stourbridge tram-train/Very Light Rapid Transit (VLRT).
- Walsall to Wolverhampton tram-train via New Cross Hospital.
- Sprint services linking areas such as Willenhall and Wednesfield with Walsall and Wolverhampton.
- A Sprint spur from Dudley Centre to Russells Hall Hospital.

# 1 Introduction

## Overview

- 1.1 The Black Country Joint Core Strategy (BCJCS) has the aim of developing the case for a rapid transit network connecting the Black Country Strategic Centres of Walsall, Wolverhampton, West Bromwich and Brierley Hill to each other and to/from Birmingham city centre. This network could be comprised of any combination of light rail, bus rapid transit, tram-train or heavy rail.
- 1.2 Over the years many schemes for the Black Country have been proposed. Some have used existing infrastructure, others require the construction of new infrastructure. For a number of reasons including high capital costs, moderate demand and the need for on street priority it has been difficult to obtain funding for rapid transit in the region despite having a TWA order for the Wednesbury to Brierley Hill corridor.
- 1.3 Nevertheless, the authorities in the region are determined to deliver further rapid transit in the Black Country, providing high quality public transport access to areas not well served at present and connectivity with national transport hubs. Public transport journey times will improve and the provision of a fixed, direct links will reduce uncertainty for business travellers and commuters. For unemployed people living in the Black Country and Birmingham, it will become easier to access jobs, allowing new people to enter the labour market.
- 1.4 The Black Country Rapid Transit Study reviewed the various rapid transit studies undertaken to date and has identified those schemes that best meet current objectives for the region and have the best chance of being funded and delivered. Four rapid transit networks were developed from these schemes providing connectivity in the corridors between economic and population centres in the Black Country and to Birmingham City Centre. An assessment of demand and benefits of each package was carried in order to establish the rapid transit transport priorities for the region.
- 1.5 In this report light rail is referred to as Metro and Bus Rapid Transit (BRT) on highway or segregated alignment is referred to as Sprint. This is to maintain consistency with the way that these modes of transport are branded throughout the West Midlands.
- 1.6 There are also two types of rapid transit referred to in the report which are not yet approved for operation so require some explanation.
- 1.7 Tram-train is a rapid transit mode which is yet to receive the support of Network Rail, but is a long term aspiration for the Black Country. A tram-train network would involve vehicles which could operate both on a light rail network and the national rail network.
- 1.8 Very light rapid transit (VLRT) involves a vehicle which is currently being prototyped by a consortium led by Warwick Manufacturing Group and which is planned to be further

developed in a purpose built Innovation Centre in Dudley. Whilst the initial vehicle prototype is very much a rail vehicle, not capable of street running and unable to negotiate curves of less than 50 metres radius, or the steepest gradients that can be achieved by trams, future developments may extend the range of its capabilities to enable a tram-train type of operation. This possibility has been taken into account in the study by assuming a tram like characteristic in terms of benefits with a reduced infrastructure cost.

## Study Approach

1.9 The study is divided into five stages:

- **Corridors Review:** As the development of the Black Country schemes has taken place over a period of many years, the first step was to review the economic, social, development and transport context of the Black Country to confirm the strategic rationale for rapid transit in the area and the corridors considered.
- **Schemes Review:** A literature review of all rapid transit schemes developed in the Black Country over the last decade including: the 5Ws; Wednesbury to Brierley Hill Metro extension; Walsall Town Centre with Birmingham City Centre via the A34; and Birmingham City Centre to Quinton/Halesowen. This review produced a long list of schemes for consideration.
- **Sift:** For each of the identified corridors, a comparative assessment of the performance of each of the long list of schemes was undertaken against the current situation, resulting in a shorter list of schemes that best met the objectives of the region. The sift criteria was developed with the Black Country Rapid Network Review Officer Group and the resulting short list agreed with them.
- **Network Scenario Development:** The results from the sift were then used to develop a series of network scenarios for assessment. The scenarios have been designed to understand the potential benefits that a network in the Black Country could be expected to deliver and also allows comparison of different schemes on the same corridor.
- **Option Assessment:** The resulting network scenarios were then assessed to identify the demand and benefits of each.

1.10 Two previous reports have been prepared: *Black Country Rapid Transit Study - Corridors Review, July 2015* which sets out the findings from stage one; and *Black Country Rapid Transit Study – Building Network Scenarios* which details the outcome of stages two to four.

1.11 This report summarises the findings of the complete study (stages one to five).

## 2 Strategic Review of the Black Country

### Black Country Context

- 2.1 The Black Country is a sub-region (with a coterminous Local Enterprise Partnership) located in the West Midlands. It is situated to the north and west of Birmingham and is comprised of four local authority areas: Dudley, Sandwell, Walsall and the City of Wolverhampton. There are 25 towns and four major strategic centres. It has a population of approximately 1.14m, which is becoming increasingly diverse. In 2011 23% of the residents were of an ethnic minority, compared to 15% in 2001<sup>1</sup>.
- 2.2 During the Industrial Revolution it became one of the most industrialised parts of Britain with coal mines, coking, iron foundries and steel mills dominating the landscape. This heavy industry has now largely gone. Much of the area now suffers from high unemployment and parts of it are amongst the most economically deprived communities in the UK.
- 2.3 The total Gross Value Added (GVA) is £20bn for the Black Country. GVA per head is £6,814 lower than the national average<sup>2</sup>. Low productivity from the Black Country contributes significantly to the West Midlands' output gap. The low productivity of the sub-region must be addressed in order for the Black Country, and the West Midlands, to achieve their aspirations. For the West Midlands region as a whole to achieve its growth and regeneration targets, the Black Country must be viewed as a priority.
- 2.4 The Black Country currently has one enterprise zone split over two sites – one in Darlaston and one near junction 2 of the M54. In addition to this there are several new mixed use developments spread across the four metropolitan areas with a particular focus for developers being Wolverhampton and Walsall.
- 2.5 The Black Country is home to several large general hospitals: New Cross Hospital in Wolverhampton, Manor Hospital in Walsall, Russells Hall in Dudley and Sandwell General in Sandwell. Additionally, a new super hospital – the Midland Metropolitan Hospital is planned at Smethwick for 2018/19.
- 2.6 Transport provision in the area is a mix of light rail, heavy rail and local bus. While there are heavy rail and rapid transit links from Birmingham to three out of four strategic centres of the Black Country, there are significant transport gaps between the strategic centres and the strategic centre of Brierley Hill does not have access to high quality transport provision.

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<sup>1</sup> Black Country Strategic Economic Plan, 2014

<sup>2</sup> The Black Country Annual Economic Review, 2015

2.7 Wolverhampton and West Bromwich are already well connected to Birmingham, and to each other by Midland Metro. However, Walsall has a 15 min service and Brierley Hill, no direct service at all. Both Walsall and Brierley Hill also have no rapid transit connection to each other or the rest of the strategic centres.

2.8 This review highlights the importance of connecting the labour force of the Black Country to areas of significant employment, specifically Birmingham City Centre and the stations and surrounding development proposed for HS2 Curzon Street and HS2 interchange.

**Table 1: Strategic Centres to Birmingham City Centre: Rail and Rapid Transit Connections**

Strategic Centre	Birmingham Station	Mode	Peak tph	Off-Peak tph	Journey time
Walsall	New Street	Rail	5	4	22-28 mins
Wolverhampton	New Street	Rail	12	9	17-25 mins
	Snow Hill	Metro	10	7.5	35 min
	New Street				39 min
West Bromwich	Snow Hill	Metro	10	7.5	22 min
	New Street				26 min
Brierley Hill	<i>No existing rail connection</i>				

2.9 In order to meet the strategic goals for new industry and employment in the region, access to higher education to up-skill the population will be needed. As well as access to enterprise zones across the West Midlands Metropolitan Area.

2.10 In addition to economic development, the population of the Black Country requires access to services, so connections to the four major hospitals in the Black Country should be considered as well as connections to the retail and leisure facilities in the area.

2.11 Providing new, high quality connections to the strategic centres of Wolverhampton, Walsall and Brierley Hill will deliver this access to services. Although not a strategic centre, Dudley is also an important town centre to connect to the wider network due to the employment transport and education services and opportunities it provides.

2.12 There have been a number of rapid transit proposals developed in the Black Country over the years. These include:

- The 5Ws scheme connecting Wolverhampton, Wednesfield, Willenhall, Walsall and Wednesbury via Darlaston
- A number of proposals for the Wednesbury to Brierley Hill corridor. These would connect Dudley and Brierley Hill to both the national rail network at Dudley Port and to Midland Metro Line 1
- A route connecting Walsall town centre with Birmingham City Centre via the A34
- A route connecting Birmingham City Centre with a terminus in the Quinton or Halesowen area

2.13 Overall, the review confirms that the corridors identified previously still have strategic significance. Of particular importance is the provision of new or improved connectivity to Birmingham City Centre, between Wolverhampton and Walsall and linking Walsall, Wednesbury, Dudley and Brierley Hill.

2.14 Interchange with Midland Metro Line 1 and national rail services will be important to provide fast connections to Birmingham City Centre.

## Strategic Priorities

2.15 From the review of the strategic case for investment and the above corridors it is apparent that the following are strategic priorities:

1. Connecting Brierley Hill to Birmingham City Centre
2. Improving other Strategic Centre connections to Birmingham City Centre
3. New/improved connections between Strategic Centres:
  - Wolverhampton to Walsall
  - Walsall to Wednesbury and Brierley Hill

## 3 Schemes

3.1 A long list of schemes was identified through a review of previous in-scope studies and agreed with the scheme sponsors. In order to determine the comparative performance of each of the identified 'long list' Black Country Rapid Transit schemes against the current situation, the schemes were sifted against a set of criteria.

3.2 The sift considered the differences between the schemes in terms of:

- **Suitability**, of the proposed 'end state' scheme meeting the transport needs of the area
- **Feasibility**, of implementing and operating the proposed scheme
- **Deliverability**, of gaining approval and funding for the proposed scheme

3.3 The criteria were designed to determine those schemes that could deliver the objectives of the Black Country and were most likely to be delivered and funded. The best performing schemes are outlined below.

### Walsall to Stourbridge

3.4 There were 17 schemes identified along this corridor, covering Sprint, Metro, VLRT and heavy rail. The Wednesbury to Brierley Hill via Dudley LRT and VLRT options performed best. This is largely because they:

- serve three strategic centres: Brierley Hill and Wolverhampton and West Bromwich (via Line 1);
- connect to Line 1 (either interchange or Line 1 through-running) and National Rail at Dudley Port for Birmingham City Centre and HS2;
- have a TWA in place on the corridor and the schemes use known technology (LRT only) which reduces deliverability risk.

3.5 Comparatively, the Sprint schemes performed worse due to long journey times, the lower public perception and likely highway impacts. However, the on-highway BRT scheme from Wednesbury to Stourbridge provided good connectivity to Line 1 and national rail services.

3.6 The heavy rail schemes provide a direct and fast link to key interchanges in the region. However, they were originally designed to operate on the reinstated Walsall to Stourbridge freight line which does not feature in Network Rail's plans for the next five control periods (25 years) as further studies have demonstrated that the scheme is not required to release additional capacity for passenger services. Any heavy rail option would need Network Rail buy-in and cooperation and this adds significant risk to delivery. However, a tram-train scheme making use of the rail corridor between Walsall and Wednesday would be more affordable and allow through running on to Line 1 and any Metro between Wednesbury and Brierley Hill.

### 3.7 Schemes assessed as part of this study:

- Metro: Wednesbury to Brierley Hill via Dudley
- Sprint: Wednesbury to Stourbridge via Dudley and Brierley Hill
- Metro: 5Ws route section between Walsall and Wednesbury
- BRT: 5Ws route section between Walsall and Wednesbury
- Tram-train between Walsall and Wednesbury

### **Wolverhampton to Walsall**

3.8 The corridor between Wolverhampton and Walsall has a large variety of schemes, from a point to point heavy rail link providing a connection between the two strategic centres, to schemes serving the communities and hospitals located in the suburbs of Wolverhampton and Walsall. For this reason, a number of different schemes and modes were taken forward to understand how best to serve the corridor.

### 3.9 Schemes assessed as part of this study:

- Heavy rail: Wolverhampton to Walsall
- Tram-train: Wolverhampton to Walsall via New Cross Hospital and Darlaston
- Metro: 5Ws route section
- BRT: 5Ws route section

### **Walsall to Birmingham City Centre**

3.10 Walsall to Birmingham via the A34 is a corridor linking two areas (Walsall and Birmingham) already well connected by a heavy rail corridor. For this reason, a successful scheme on this corridor will serve local areas well in order to ensure adequate demand on the route.

3.11 Two schemes were considered along the A34 corridor, one Metro and one Sprint. The schemes are the same with respect to the areas they serve, the principal differentiator is the mode of travel. BRT and LRT bring their own advantages and disadvantages and these are reflected in several of the criteria scores.

### 3.12 Scheme assessed as part of this study:

- Sprint: Walsall to Birmingham along the A34 corridor.

### **Quinton to Birmingham City Centre**

3.13 A Sprint bus rapid transit scheme between Birmingham City Centre and Quinton is funded and will open in 2018 so was not assessed further in this study. In the longer term extensions of the route to Dudley or Russells Hall Hospital will be reviewed.

# 4 Network Options

4.1 In order to assess the potential benefits that a network in the Black Country could expect to generate, the above schemes were developed into four network options. These options were modelled using PRISM and Centro’s Public Transport Model. The Network Options and demand results are presented below. It should be noted that the demand figures have been developed using high-level route and service specifications and would need to be refined and optimised as a priority for further development work. Similarly the costs presented here have been developed to give an indication of the cost scale and should be used for comparison purposes only.

## Network Option 1

4.2 This Network Option aims to test schemes that have a lower deliverability risk and could be realised in the shortest timescales. The schemes use technology that is already in use in the West Midlands strategic transport network, have powers (a TWAO) in place (WBHE) and/or use existing rail corridors. The figure below illustrates this Network Option.

Figure 1: Network Option 1



4.3 The tables below present the scheme specification details and demand for Network Option 1.

**Table 2: Scheme Specification – Network Option 1**

Network Option 1	Mode	Distance (Km)	Run Time	Frequency	Outturn Cost (£m)
Midland Metro Line 1	Metro	23.4	46min 46s	10 tph	-
Wolverhampton to Walsall	Heavy Rail	10.5	13min 30s	2 tph	27.4
Walsall to Wednesbury	Tram-Train	5.3	10min 56s	4 tph	86
Wednesbury to Brierley Hill	Metro	12.3	18min 55s	6 tph	248

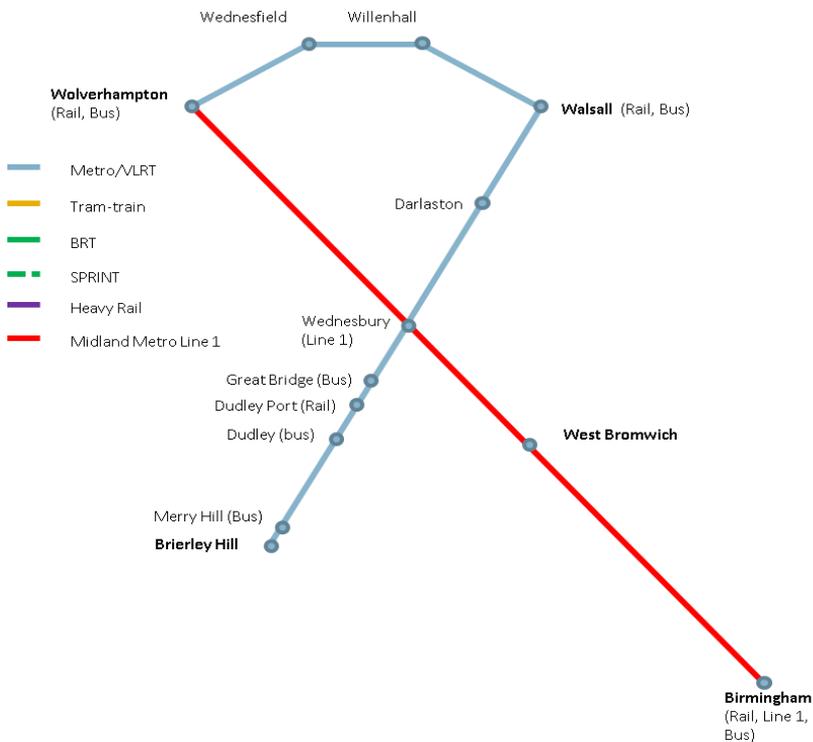
**Table 3: Network Option 1: Demand - 2021**

Network Option 1 (2021)	Annual Demand (m)
Midland Metro Line 1 incremental demand	1.9
Wolverhampton to Walsall	0.6
Walsall to Wednesbury	1.0
Wednesbury to Brierley Hill	3.6
<b>Total excluding Line 1 incremental patronage</b>	<b>5.3</b>

## Network Option 2

4.4 This Network Option follows the 5Ws route and connects strategic centres and the strategic centres to Birmingham city centre. It connects smaller district centres with Wolverhampton and Walsall and provides through connections to Line 1 and Brierley Hill. This improvement in local connectivity is traded off against longer journey times and higher costs. The figure below illustrates this Network Option.

**Figure 2: Network Option 2**



4.5 The tables below present the scheme specification details and demand for Network Option 2.

**Table 4: Scheme Specification – Network Option 2**

Network Option 2	Mode	Distance (Km)	Run Time	Frequency	Outturn Cost (£m)
Midland Metro Line 1	Metro	23.4	46min 46s	10 tph	-
Wolverhampton to Wednesbury	Metro	18.9	37min 10s	6 tph	499
Wednesbury to Brierley Hill	Metro	12.5	18min 55s	6 tph	248

**Table 5: Network Option 2: Demand - 2021**

Network Option 2 (2021)	Annual Demand (m)
Midland Metro Line 1 incremental demand	1.8
Wolverhampton to Walsall	3.4
Walsall to Wednesbury	2.7
Wednesbury to Brierley Hill	3.6
<b>Total excluding Line 1 incremental patronage</b>	<b>9.7</b>

### Network Option 3

4.6 This Network Option follows the 5Ws route and connects strategic centres and the strategic centres to Birmingham city centre. It connects smaller district centres with Wolverhampton and Walsall and provides interchange with Line 1 and link to Brierley Hill. It is the same route as Network Option 2 between Wolverhampton and Wednesbury, but follows an on-highway route between Wednesbury and Stourbridge.

4.7 The figure below illustrates this Network Option.

**Figure 3: Network Option 3**



4.8 The tables below present the scheme specification details and demand for Network Option 3.

**Table 6: Scheme Specification – Network Option 3**

Network Option 3	Mode	Distance (Km)	Run Time	Frequency	Outturn Cost (£m)
Midland Metro Line 1	Metro	23.4	46min 46s	10 tph	-
Wolverhampton to Wednesbury	Segregated BRT	19.1	45min 0s	6 bph	441
Wednesbury to Stourbridge	On-highway BRT	17.5	51min 0s	6 bph	250

**Table 7: Network Option 3: Demand - 2021**

Network Option 3 (2021)	Annual Demand (m)
<i>Midland Metro Line 1 incremental demand</i>	2.0
Wolverhampton to Walsall	2.8
Walsall to Wednesbury	1.6
Wednesbury to Stourbridge	2.7
<b>Total excluding Line 1 incremental patronage</b>	<b>7.2</b>

### Network Option 4

4.9 This Network Option aims to introduce a mass transit network serving areas with inadequate public transport provision. The hospitals in the suburbs of Wolverhampton and Walsall are served by the tram-train. I54 Enterprise Zone is also served. The figure below illustrates this Network Option.

**Figure 4: Network Option 4**



4.10 The tables below present the scheme specification details and demand for Network Option 4.

**Table 8: Scheme Specification – Network Option 4**

Network Option 4	Mode	Distance (Km)	Run Time	Frequency	Outturn Cost (£m)
Midland Metro Line 1	Metro	23.4	46min 46s	10 tph	-
Wolverhampton to Walsall	Tram-Train	14.2	22min 45s	4 tph	134
Walsall to Wednesbury	Tram-Train	5.3	10min 56s	4 tph	86
Wednesbury to Brierley Hill	Metro	12.1	18min 55s	6 tph	248
Wolverhampton to i54	Metro	6.3	19min 0s	6 tph	250
BCC to Walsall (A34)	Sprint	14.0	34min 90s	6 bph	54

**Table 9: Network Option 4: Demand - 2021**

Network Option 4 (2021)	Annual Demand (m)
<i>Midland Metro Line 1 incremental demand</i>	1.7
Wolverhampton to Walsall	1.3
Walsall to Wednesbury	1.1
Wednesbury to Brierley Hill	3.7
Wolverhampton to i54	0.2
Birmingham to Walsall (A34)	2.6
<b>Total excluding Line 1 incremental patronage</b>	<b>8.9</b>

## Performance by Corridor

4.11 In order to allow a direct comparison between mode and route within each corridor, the incremental demand for the different analysed rapid transit schemes for the modelled forecast years of 2021 and 2031 are presented by corridor in the tables below.

### Wolverhampton to Walsall

**Table 10: Incremental Demand Results – Wolverhampton to Walsall**

Annual Demand (m)	Wolverhampton to Walsall			
	Option 1	Option 2	Option 3	Option 4
	Heavy Rail	LRT	BRT	Tram Train
2021	0.6	3.4	2.8	1.3
2031	0.5	3.2	2.5	1.2

## Walsall to Wednesbury

Table 11: Incremental Demand Results – Walsall to Wednesbury

Annual Demand (m)	Walsall to Wednesbury			
	Option 1	Option 2	Option 3	Option 4
	Tram Train	LRT	BRT	Tram Train
2021	1.0	2.7	1.6	1.1
2031	0.9	2.5	1.5	1.0

## Wednesbury to Brierley Hill/Stourbridge

Table 12: Incremental Demand Results – Wednesbury to Brierley Hill/Stourbridge

Annual Demand (m)	Wednesbury to Brierley Hill/Stourbridge			
	Option 1	Option 2	Option 3	Option 4
	LRT	LRT	BRT	LRT
2021	3.6	3.6	2.7	3.7
2031	3.3	3.3	2.5	3.4

## 5 Study Findings

5.1 The strategic priorities defined at the start of the study and the performance of each scheme against the sift criteria of suitability, feasibility and deliverability have been combined with the demand results to identify the best performing schemes overall.

5.2 The demand levels shown above are lower than would normally be expected to build a strong business case for rapid transit, especially rail based options. Therefore, as schemes are developed, it will be important that high levels of priority are provided, costs are controlled and innovative funding mechanisms are investigated.

### **Connecting Brierley Hill to Birmingham City Centre**

5.3 The Metro scheme between Wednesbury to Brierley Hill via Dudley performs best:

- **Suitability:** it would extend the current successful Metro system providing an east-west connection in the Black Country and ensuring the vital fast link into Birmingham. It will also link to the strategic centres of Wolverhampton and West Bromwich (via existing Metro Line 1)
- **Feasibility:** The design has been undertaken to a more advanced level of detail than other schemes in the Black Country and it is based on known technology
- **Deliverability:** The scheme already has a Transport and Works Act Order. It also generates sufficient demand to give the potential to develop a fundable business case through further optimisation.

5.4 The VLRT option would deliver slightly lower demand, but at a lower cost. It could run on much of the Metro infrastructure in this corridor, although not on-street or onto Line 1, but could also run onto rail infrastructure to deliver additional connections. This would require a more detailed study, working with the manufacturers, as the technology is unproven

5.5 Sprint will have a significant impact on the highway network in this corridor which is unlikely to be acceptable to highway users and stakeholders. These highway dis-benefits will also impact negatively upon the economic case.

### **Providing improved links to Birmingham City Centre from other Strategic Centres**

5.6 The Walsall to Birmingham City Centre (A34) Sprint scheme provides additional connectivity and performs well:

- **Suitability:** Walsall has a regular rail service, but is the second worst connected of the strategic centres. This scheme would provide additional connectivity, and also serve some residential areas currently not served by rail along the corridor.

- Feasibility: It is believed that a Sprint scheme could be delivered within the available highway space. Options for priority will need to be examined further.
- Deliverability: The scheme generates high demand, while remaining relatively low cost. A Sprint solution could be delivered with minimal planning consent required and therefore within shorter timescales than a Metro scheme.

## **Providing links between and to the strategic centres**

- 5.7 The existing heavy rail infrastructure between Wolverhampton, Walsall and Wednesbury offers a cost effective way of linking the strategic centres and connecting to Metro Line 1.

### **Wolverhampton to Walsall**

- 5.8 A heavy rail link between Walsall and Wolverhampton is likely to require some additional rail network capacity, especially at Wolverhampton Station where an additional platform linked directly to the rail line to Darlaston and Walsall is likely to be required. This would add significant additional cost above that quoted in this report. This option generates demand of around 0.5m per annum, but offers fast journey times and is also a relatively low cost option. There could also be ongoing revenue issues if operating costs are not covered.
- 5.9 Tram-train offers an interesting combination of connectivity and fast journey times on the Wolverhampton to Walsall corridor. It could avoid the need to rebuild Wolverhampton Station throat and provide a new platform, while providing similar end to end journey times to a conventional train service if it operated largely on the existing heavy rail corridor. Additionally tram-train could also provide through services onto Midland Metro Line one at Wolverhampton to some of the larger towns. It could also, possibly as a later phase, serve the New Cross hospital (utilising the western part of the 5Ws route).

### **Walsall to Wednesbury**

- 5.10 The tram-train option in this corridor would require further investigation, but could provide a relatively low cost and fast connection between Walsall and other destinations via Line 1. The route would run on an existing corridor so would be less disruptive than other proposals between these centres. VLRT may provide future flexibility for options for tram-train style interworking between Walsall to Stourbridge rail corridor-based services and Metro services on the Wednesbury to Brierley Hill route, with interchange at key points where the tramway and rail corridors diverge.

### **Wider Connectivity**

- 5.11 Importantly, this study does not assess the likely demand from running the tram-trains on to the wider rail network which could have additional benefits, particularly on routes with relatively low demand.
- 5.12 The Wolverhampton to Walsall scheme considered would also likely be part of a wider rail service and franchise specification.

### **5Ws route**

- 5.13 Although the 5Ws route generates high levels of demand, the analysis shows its function is to bring people from surrounding areas into Wolverhampton and Walsall. The 5Ws route, both Metro and BRT, is a high cost option to connect the strategic centres and the connectivity with surrounding areas could be delivered in a more cost effective way, for example high-quality complementary bus networks. Given the presence of a disused rail alignment, studies should

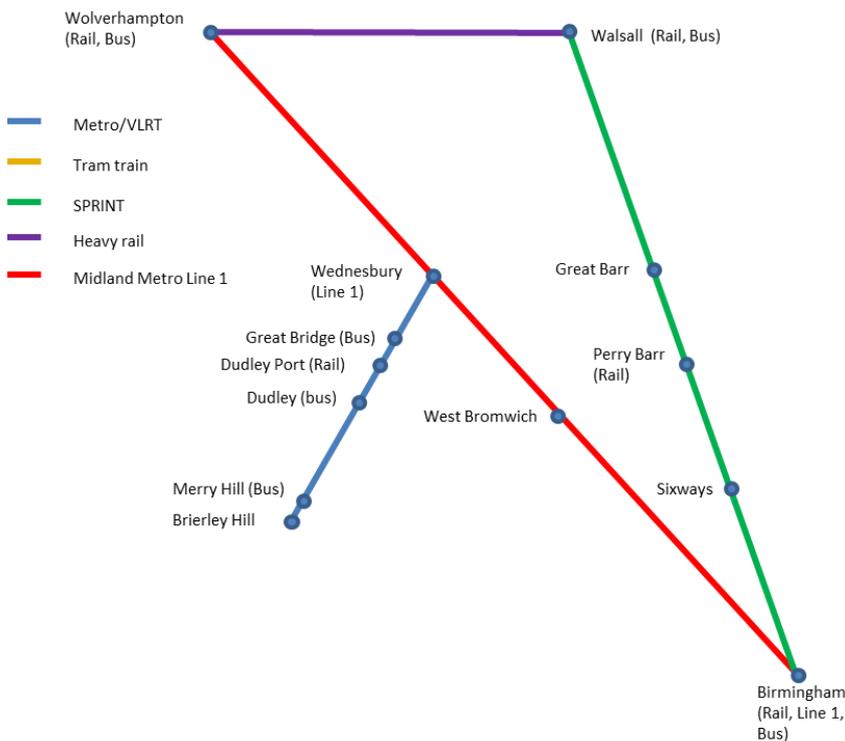
be undertaken to see if this could provide useful segregated priority for buses at moderate cost.

## Conclusions

5.14 From the analysis that has been carried out in the assessment of the Black Country rapid transit network options we can conclude that there are a group of schemes which can be recommended for priority delivery:

- **Wednesbury to Brierley Hill Extension from Midland Metro Line 1.** This provides connectivity between Brierley Hill and Birmingham. It also links Brierley Hill to two Black Country Strategic Centres - Wolverhampton and West Bromwich.
- **Walsall to Birmingham City Centre (A34) BRT scheme.** This increases connectivity and capacity between Walsall with Birmingham City Centre and also serves residential areas along the route which are not on the Walsall to Birmingham railway corridor.
- **Heavy rail link between Walsall and Wolverhampton.** This provides a fast link between the Black Country Strategic Centres of Walsall and Wolverhampton.

Figure 5: Priority Delivery Network

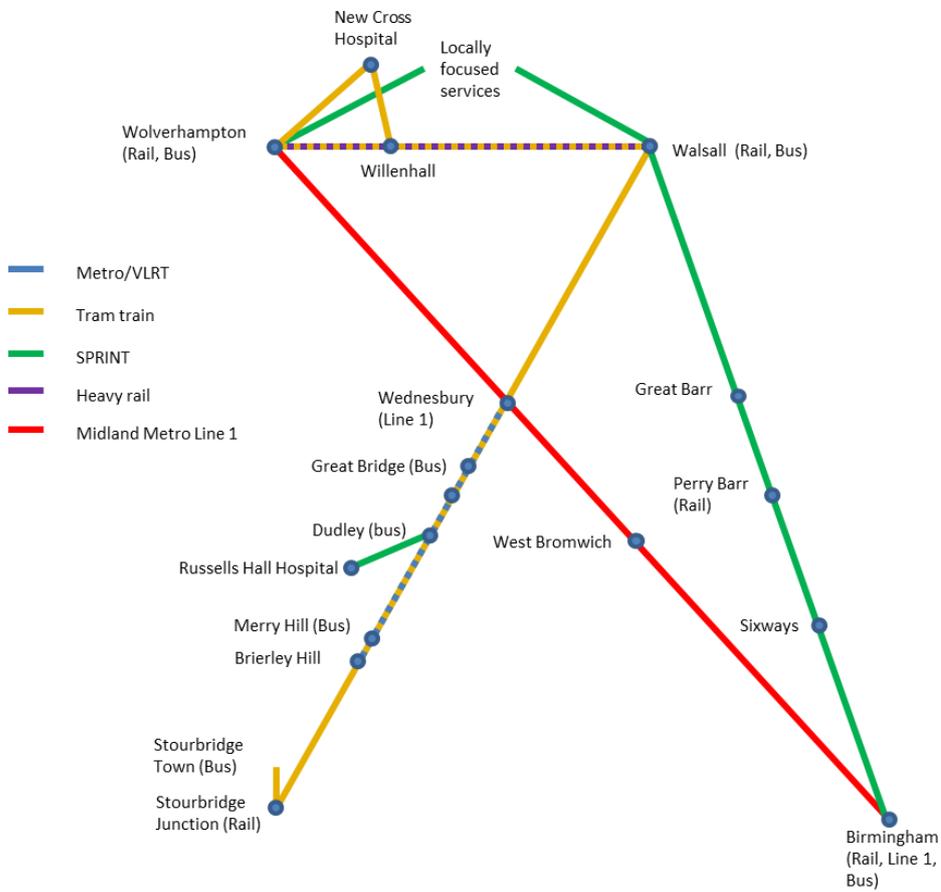


5.15 Additionally, there are further schemes that should be considered as future aspirations:

- **Walsall to Stourbridge tram-train/VLRT.** This would involve northern and southern extensions to the Wednesbury to Brierley Hill Extension and would be contingent upon the approval of the use of tram-train or VLRT technology. It would also need to be consistent with any plans to re-open the line for freight in the future.
- **Walsall to Wolverhampton tram-train via New Cross Hospital.** This is again contingent upon the approval of tram-train technology. This route would connect Wolverhampton Centre to New Cross Hospital and would then re-join the rail alignment.
- **High quality bus links serving areas such as Willenhall and Wednesfield with Walsall and Wolverhampton.** These services would, where feasible, use the 5Ws alignment.

- **A Sprint or other high quality bus link from Dudley Centre to Russells Hall Hospital.** This would connect with the Wednesbury to Brierley Hill Extension.

**Figure 6: Future Network**



## CONTROL INFORMATION

<b>Prepared by</b>	<b>Prepared for</b>
Steer Davies Gleave 28-32 Upper Ground London SE1 9PD +44 20 7910 5000 www.steerdaviesgleave.com	Black Country Rapid Transit Network Review Officer Group
<b>SDG project/proposal number</b>	<b>Client contract/project number</b>
22802901	
<b>Author/originator</b>	<b>Reviewer/approver</b>
Edmund Cassidy	Kate Inston
<b>Other contributors</b>	<b>Distribution</b>
Beatriz Roldao	<i>Client:</i> <i>SDG:</i>
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