

# Midland Metro

## 7.3 Traffic and Transport Impacts

### 7.3.1 Introduction

This section addresses the potential impacts arising from generated construction traffic and construction works on users of the local road network and those living and working adjacent to it.

Impacts may arise from works traffic on the road network and disruption due to temporary road or lane closures required to accommodate the works. Construction traffic is likely to be generated by the following activities:

- construction workers accessing and egressing work sites;
- the supply of construction materials;
- the removal of waste;
- the mobilisation of plant; and
- other activities, including the movement of visitors and service vehicles.

Generated construction traffic can lead to impacts in terms of:

- changes in traffic conditions (in particular, where works require temporary road/lane closures);
- changes in traffic related noise levels and air quality; and
- changes in conditions for pedestrians and cyclists.

### 7.3.2 Assessment Methodology

The overall objective of the assessment is to estimate the impact of changes in traffic resulting from the construction of the scheme. The maintenance of public transport reliability and the potential for re-routeing during construction has also been assessed.

The assessment criteria used to identify significant impacts arising from changes in traffic is provided in *Section 6.3.2*. In carrying out this assessment, reference has been made to the Construction Strategy Report prepared for the proposed scheme by Babbie Group <sup>(4)</sup>.

### 7.3.3

### Generated Construction Traffic

#### General Construction Traffic and Access Routes

*Tables 7.3, 7.4 and 7.5* below show the number of vehicles generated during construction of the scheme on specific access routes and the period over which these vehicles will be generated. *Table 7.3* describes the number of vehicles for works associated with the existing rail corridor (ie Wednesbury to Tipton Road and Blower's Green Road to the Pensnett Canal). Traffic generated by works in Dudley are described in *Table 7.4*. Traffic generated by works in Merry Hill are described in *Table 7.5*. At the time of the assessment, the proportion of HGVs to vans and private vehicles is not known for this section of the proposed alignment.

The phasing of construction works is described in *Section 2.7.4*.

The access routes are defined routes, via public highway and private estate roads, for transportation of materials and plant from the primary road network or other principal roads, onto the main sites. These routes are not intended as general haul routes for site based vehicles, though occasional usage by such vehicles may be necessary where they relocate from one site to another. The suggested access routes have been identified in the Construction Strategy but will be subject to approval by the local highway authorities and owners of private estate roads. The Construction Strategy has also identified routes for traffic that is specific to certain construction works.

The location of work areas referred to in *Tables 7.3, 7.4 and 7.5* are illustrated in *Figure 2.3* and described in *Section 2.7.5*.

During the peak construction phase it is expected that 200 personnel will be required to construct the scheme. It is not known at this stage in the project how personnel will arrive at the sites (eg public transport, private car etc) or how these personnel will be distributed over the 14 temporary work sites. The way that this has been dealt with for the purpose of the assessment is explained in *Section 7.3.4*.

*Table 7.3* below illustrates the number of vehicles generated during construction of the scheme through the existing rail corridor, on specific access routes, and the period over which these vehicles will be generated. Construction works in this section of the proposed scheme are programmed to continue for a period of around 30 months in total.

Table 7.3 Vehicle Generation for Construction in the Existing Rail Corridor

Access Route	Purpose	Timescale (months)	Generated Vehicles
<i>Existing Rail Corridor – Wednesbury to Tipton Road</i>			
A461 Dudley Road/Potters Lane/Line 1 depot access road.	Works Area 1 and general access between Line 1 connection and Tame Valley canal	For the duration of the works	8 500

	underbridge		
A41 Black Country New Road/George Henry Road/Bagnall Street/Shaw Street.	To provide access to a temporary work site.	1	100
A41 Black Country New Road/George Henry Road/Bagnall Street/Eagle Lane.	Works Area 2	For the duration of the works	1 900
A41 Black Country New Road/George Henry Road/Chimney Road/Bagnall Street, with exit via Bagnall Street/George Henry Road due to existing entry restrictions at Bagnall Street/George Henry Road junction.	Works Area 3	For the duration of the works	7 900
A41 Black Country New Road/Leabrook Road/Toll End Road/New Road and the A461 Great Bridge Relief Road/New Road.	New Road Overbridge	10.5	1 200
A461 Horseley Heath/Horseley Road and New Road.	Work Area 4	10	1 700
A461 Horseley Heath/Lower Church Lane and New Road.	Lower Church lane overbridge	10.5	900
A461 Horseley Heath/Lower Church Lane/Park Lane East.	Work Area 5	For the duration of the works	5 100
A461 Horseley Heath/Station Drive/car park to West Coast Main Line railway station.	Interface works between Dudley Port tram stop and station car park	0.5	50
A461 Horseley Heath/Sedgley Road East.	Sedgley Road East underbridge	13.5	900
A461 Horseley Heath/Sedgley Road East/Coneygre playing fields access.	Works Area 6	For the duration of the works	5 400
A461 Horseley Heath/Sedgley Road East/Mayfair Gardens/Coneygre Road, with exit via Coneygre Road/Sedgley Road East.	Remediation of Coneygre Road underbridge.  Demolition of Sedgley Road East underbridge will result in temporary closure of route.	1	100
A461 Horseley Heath/Sedgley Road East/Mayfair Gardens/Coneygre Road/Binfield Street.	Sedgley Road East tram stop.  Demolition of Sedgley Road East underbridge will result in temporary closure of route.	3	100
A4123 Birmingham New Road.	Birmingham New Road overbridge.	2	150
A4123 Birmingham New Road southbound carriageway.	Pedestrian link to Lindley Avenue/Madin Road.	6	30

<i>Existing Rail Corridor - Blower's Green Road to Pensnett Canal</i>			
A461 Dudley Southern Bypass/Cinder Bank/access road to Thornleigh trading estate.	Works Area 10	For the duration of the works	5 100
A461 Dudley Southern Bypass/Cinder Bank/access road to Thornleigh trading estate.	Construction of track paralleling huts and installation of apparatus	2	100
A461 Dudley Southern Bypass/Holly Hall Road/Parkhead Locks Conservation Area.	Remediation of viaduct	18	1 700
A461 Dudley Southern Bypass/Peartree Lane/Crackley Way/existing Industrial premises	Works Area 11	18	1600
A4036 Highgate Road/Crossgate Road/Wood Street/Buxton Road.	Access arrangements to Pedmore Road tram stop and substation	7	300
A4036 Highgate Road	General works between Parkhead viaduct and Canal Street underbridge	For the duration of the works	4 000

Table 7.4 below illustrates the number of vehicles generated during construction of the scheme through Dudley town centre on specific access routes, and the period over which these vehicles will be generated. Construction works through Dudley Centre are programmed to continue for a period of 26 months in total.

Table 7.4 Vehicle Generation for Construction in Dudley Centre

Access Route	Purpose	Timescale (months)	Generated Vehicles
<i>Dudley Centre – Tipton Road to Blower's Green Road</i>			
A4037 Tipton Road	Tipton Road at grade crossing and tram stop	6.5	500
A4037 Tipton Road	Site clearance, earthworks and retaining walls	7.5	5 200
A461 Castlegate Roundabout/Castle Hill/Station Drive/Dudley Zoo car park.	Work Area 7	For the duration of the works	4 300
A461 Castlegate roundabout/Castle Hill	Works associated with on street running on Castle Hill, including highway realignment	7	Part of 4 300 above
A461 Castlegate roundabout/Castle Hill/Trindle Road/Bourne Street	Highway works in connection with re-opening Bourne St to traffic	1	50
A461 Castlegate roundabout/Castle Hill/Trindle Road/Porter's Field.	Entry to main site for works between Dudley bus station and Flood St	For the duration of the works	2 100

A461 Dudley Southern Bypass/Flood Street.	Work Area 8	For the duration of the works	3 400
A461 Dudley Southern Bypass/Cinder Bank/Shaw Road/New Road.	Work Area 9	6	1 000

Access routes to construction works required on the Merry Hill section are described in *Table 7.5*. Construction works are programmed over 29 months. This programme assumes that all works in the area owned by Chelsfield plc, which is subject to redevelopment proposals, are to be completed by the Concessionaire. At the time of writing, the number of generated vehicles for this section of the proposed alignment is not known.

Table 7.5 Merry Hill Construction Works Access Routes

Route	Purpose	Timescale (months)
A461 Stourbridge Road/Canal Street	Work Area 12	For the duration of the works
A4036 Pedmore Road/access road to Round Oak Rail (ROR) premises.	Work Area 13	For the duration of the works
A4036 Pedmore Road/access road to ROR premises.	Realignment and establishment of at grade crossing of access road to Round Oak Rail premises.	2
A461 roundabout/Waterfront Way	Realignment of Waterfront (N&S) and associated development/car park accesses.	5.5
A4036 Pedmore Road/Level Street.	Works to Level Street.	5
A4036 Pedmore Road/The Boulevard/Central Way/The Embankment.	Retaining wall and access to Merry Hill tram stop	4.5
A4036 Pedmore Road/The Boulevard/Central Way.	Merry Hill tram stop.	3
A4036 Pedmore Road/The Boulevard/Mill Street/Little Cottage Street	Work Area 14	Duration of works to Merry Hill section
A4036 Pedmore Road/The Boulevard/Mill St/Cottage St/Little Cottage St	Realignment of Little Cottage St	2

### Abnormal Loads

The delivery of bridge beams to the construction works is likely to constitute a need for abnormal load movements. However, at this stage in the project, it has not been possible to define the number and frequency of movements of abnormal loads, or the routes that these loads will take to access temporary work areas. All routes for abnormal loads will be agreed in advance with West Midlands Police and Sandwell MBC/Dudley MBC as appropriate.

### 7.3.4 Potential Road and Junction Capacity Impacts

#### Increase in Traffic Levels

The following assessment has focused on assessing changes in traffic flow around work sites with the highest generated traffic flows.

Baseline traffic flows are available for a limited number of roads to be used by construction traffic. Construction traffic on these roads has been added to the baseline flows to calculate percentage increases in the AM peak period. At this stage in the project, only the number of HGVs are known (as detailed in *Tables 7.3, 7.4, and 7.5*).

Despite the current lack of information on the number of personnel movements, the following assessment is considered to be robust. This is because personnel construction traffic would be on the network prior to the AM peak at a time when spare capacity is expected to occur (the normal working hours will be 0700 to 1900 hours Monday to Friday and 0700 to 1300 hours on Saturday). The assessment focuses on the more critical AM peak (0730 to 0930). For the following calculations it has been assumed that there is an even spread of generated traffic over each day of the six day week, and that there will be an even spread of traffic over the 12 hour working day (Monday to Friday). The baseline data has been provided by Faber Maunsell and the most up to date data available at the time of writing has been used.

For construction in the existing railway corridor traffic generated for Work Area 1 has been applied to the A461 Dudley Road, north of John Street/Waterfront Way junction during the AM peak period. The baseline flow is 3 668 vehicles. Assuming an even spread of vehicles as described above, 8 500 vehicles will be generated over around 30 months, resulting in 70 vehicles per week or 14 vehicles per day. This results in around two vehicles (or four movements) arriving in the AM peak period, an increase of 0.1%. If all 28 vehicle movements predicted to occur in one day occur in the peak period an increase of 0.5% would take place.

The A461 will carry traffic from a number of different Works Areas (numbers 1, 8, 9 and 11). Construction at these sites is likely to commence and peak at different times throughout the overall construction period. However, using the assumptions for the working day and working week as outlined above and assuming that all works occur concurrently (ie such that the hourly flows from each Works Area travel on the A461 in the same hour) an increase of less than 1.5% is expected.

In Dudley, construction traffic for Works Area 7 has been applied to Castle Hill. Castle Hill has an AM Peak period baseline traffic flow of 2 625 vehicles. 4 300 generated vehicles are expected over the duration of construction works (26 months). This results in approximately 38 vehicles per week or six vehicles per day. This equates to one vehicle (two movements) in the AM peak period. This will cause an increase of less than 1% in traffic flows. If all six vehicles (12 movements) expected in one day arrived in the AM peak period an increase of 0.5% would occur.

Also in Dudley, construction traffic for the tram corridor enabling works (5 300 vehicles) and Tipton Road at grade crossing and tram stop (500 vehicles) has been applied to Tipton Road. It has been assumed at this stage that these works will occur concurrently for a robust assessment. Tipton Road has an AM peak period baseline traffic flow of 2 722 vehicles. A total of 5 800 vehicles are expected over a 7.5 month construction period. This results in approximately 178 vehicles per week or 30 per day. This equates to five vehicles (10 movements) occurring in the AM peak period. This will cause an increase of 0.2% in traffic flows. If all 30 vehicles (60 movements) expected in one day arrived in the AM peak period an increase of 2.2% would occur.

The increases in traffic flows described above do not exceed the criteria set out in *Section 6.3.2*. These increases result from the highest levels of construction vehicle generation currently predicted to occur as a result of the construction of the scheme. Where construction occurs simultaneously (demonstrated here on Tipton Road and Works Areas 1, 8, 9 and 11) requiring HGV movements along the same roads, the increases will become more significant although it is not envisaged that increases of the magnitude identified will be sufficient to cause significant impacts. Additionally, it should be noted that any increase is likely to occur for a short period of time only. Furthermore, existing flows are high on the local road network. Therefore, any increase from construction traffic generation of the levels predicted in *Tables 7.3, 7.4 and 7.5* are unlikely to add greatly to the overall traffic levels. Consequently, construction traffic is unlikely to give rise to any significant capacity impacts.

In addition, the magnitude of change in vehicle flows is not significant in terms of impacts on pedestrians and cyclists and traffic-related environmental impacts.

### Parking Requirements

It is estimated that approximately 200 personnel will be required during the peak construction phase, although it is not known how these will be spread over the 14 temporary work sites. A limited number of parking spaces will be available at work sites. Consequently, the Concessionaire will be required to encourage personnel to travel to and from the work sites via public transport wherever possible.

## 7.3.5 Temporary Transport Infrastructure Alterations

### Road Infrastructure

Temporary alterations to the transport infrastructure required during the construction of the scheme are described in the Construction Strategy and summarised below.

- New Road will be closed for a period of six and a half months;
- Horseley Road will be closed for a period of six months;
- Lower Church Lane will be closed for a period of six months;
- Park Lane East will be closed for a period of six and a half months;
- Sedgley Road East will be closed for separate periods of two and a half months and two weeks;
- one-way traffic flow will be maintained for a period of three months on Tipton Road;
- Bourne Street will be reopened to through traffic;
- Birmingham Street (North) will be closed for a period of four months;
- King Street will be closed for an isolated period of short duration (eg overnight/Sunday);
- Birmingham Street (South) will be closed for a period of four months;

- realignment of the Round Oak Rail access road to allow at-grade tram crossing is expected to continue for two months;
- realignment of Waterfront Way to incorporate an at-grade tram crossing is expected to continue for two months;
- realignment of Waterfront Way to incorporate an at-grade tram crossing is expected to continue for three and a half months;
- realignment of the Level Street Roundabout for closure of The Embankment to incorporate an at-grade tram crossing is expected to continue for five months;
- partial closure (North) of The Embankment to south of Central Way junction for four and a half months; and
- partial closure of The Embankment between Level Street and Central Way roundabout for nine and a half months.

### Public Transport Infrastructure

Bus services will generally be maintained during construction and construction traffic generated is unlikely to affect reliability. Road closures will cause a certain level of disruption. However, the temporary traffic diversions will minimise the potential impact on journey times.

During the construction of the scheme through Dudley, temporary bus stops will be provided at Dudley Bus Station to ensure that the existing level of services is maintained. The bus station will continue to operate with some temporary arrangements in place. Taxi ranks will be relocated temporarily.

### Public Footpaths and Rights of Way

During the construction of the scheme it will be necessary to divert a number of rights of way, particularly in relation to bridge works affecting the canal network, for a temporary period. Where footpaths and rights of way are affected by the scheme, temporary diversions for pedestrians, and where appropriate cyclists, will be established in agreement with Sandwell and/or Dudley MBC in advance of works.

### Other Infrastructure

During replacement/extension bridge decks where the alignment crosses a canal, some disruption to movement along the canal can be expected. Short term closure of the Dudley Canal in Merry Hill will be required during works associated with the construction of the underbridge and approach embankment. These works will necessitate closure of the towpath and the canal for isolated periods (eg overnight or over a weekend).

## 7.3.6 Mitigation Measures

In order to minimise the effects of the temporary transport infrastructure alterations outlined above in *Section 7.3.5*, a series of mitigation measures have been developed. These include the following:

- general traffic diversion routes where roads are closed will be agreed with the local highway authority prior to the implementation of the works;
- single lane signal controlled shuttle, although this will generally not be employed during peak periods;
- maintenance footways wherever possible, in agreement with the local highway authority prior to the implementation of the works;
- pedestrian and cyclist diversion routes when construction prevents access;
- maintaining local residential access at all times;
- employing 'rat running' deterrent measures where this may be a problem eg through Bramah Way housing estate for access to New Road;
- alternative signal controls at junctions;
- new temporary pedestrian crossing facilities;
- temporary parking restrictions; and
- consultation with Dudley MBC regarding the impacts of the scheme on loss of parking during construction works adjacent to the Merry Hill Centre and at Brierley Hill, particularly during the Christmas period.

Details of when and where these measures will be employed are given in the Construction Strategy that accompanies this Order application.

In addition, in the section of the alignment from Wednesbury to Tipton Road, it will be necessary to carry out works to five highway structures within a 2 km length of the alignment. This includes New Road, Horseley Road, Lower Church Lane and Park Lane East overbridges, and Sedgley Road East underbridge. The programming of temporary traffic diversions in this area has been designed in agreement with SMBC to ensure that the adjacent road crossings are not closed at the same time.

Standard good practice measures for construction sites will also be implemented, including for example, the sheeting of HGVs to minimise the generation of dust and the regular removal of mud from roads (see also *Section 7.5 Air Quality and Dust* and the draft CoCP *Appendix D*).

Although minimal impacts on bus services are predicted, some roads that will be temporarily closed are used as a bus routes. When this occurs bus stops will be moved to suitable alternative locations nearby, so that the service is accessible to users. These measures will be agreed in advance with Centro, Sandwell MBC and Dudley MBC, and the local bus service providers.

It is anticipated that access throughout the bridge works at Walsall Canal underbridge will be maintained.

All temporary traffic management measures will be agreed with the highway authorities in advance of works commencing.

## 7.3.7 Summary

Relatively low levels of construction traffic generation are expected. This is unlikely to have any significant effect on the capacity of the road network, congestion, parking capacity, pedestrians, cyclists and public transport services. In order to carry out construction works it will be necessary to close roads temporarily and to put in place temporary footway and cycleway diversions. This will inevitably give rise to a certain degree of disruption. However, through a combination of route diversions and traffic management measures, potential impacts will be minimised. However, some residual temporary disruption will take place.

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