

# Midland Metro

## 7.5

## Air Quality and Dust Impacts

### 7.5.1 Introduction

This section of the ES considers the potential effects on air quality arising from the construction of the Wednesbury to Brierley Hill scheme. Long term and permanent impacts are considered in *Section 6.5*.

### 7.5.2 Scope of the Assessment

The construction of the scheme is expected to give rise to:

- the emission of dust from excavation works and the movement, storage and deposition of materials;
- exhaust gases from construction vehicles and plant; and
- a small increase in exhaust gases from vehicles in congested traffic due to road closures.

Dust emissions have the potential to cause annoyance at nearby properties, although the duration of the construction activity in any one particular area is expected to be limited. Exhaust emissions can also cause a local deterioration in air quality, although these are likely to be insignificant in the context of the air quality within urban areas such as Sandwell and Dudley. Therefore, for the purposes of the assessment, only emissions associated with dust generation are considered further.

### 7.5.3 Assessment Methodology

#### Introduction

The quantity of dust released during construction depends on a number of factors. These include the type of construction activities occurring (crushing, grinding etc), the volumes of material transported and the moisture and silt content of the materials, the distance travelled on unpaved roads, the mitigation measures employed and the area of exposed materials.

The ability of a particle to remain suspended in the air depends on its size, shape and density. Larger particles tend to be deposited close to the source, the majority being deposited within 100 m. Fine, light particles remain suspended for longer and hence travel further than the large heavy particles.

The primary consideration with respect to emissions of dust is one of soiling at nearby residential properties. There are, however, no legal standards relating to acceptable levels of deposited dust. Studies <sup>(13)</sup> into the effects of dust from construction sites have shown that at least half the people living within 50 m of the site boundary of a road scheme were seriously bothered by construction nuisance due to dust (in addition to impacts associated with noise, vibration or loss of amenity due to the presence of heavy construction traffic), but that beyond 100 m less than 20 percent of the people were seriously bothered.

Methodologies for predicting dust impacts are not straightforward. As a result, both a qualitative and a quantitative approach to the assessment has been used, as described below.

#### Qualitative Assessment

Dust becomes airborne due to the action of wind on material stockpiles and other dusty surfaces, or when thrown up by mechanical action, for example the movement of tyres on a dusty road or activities such as cutting or drilling.

There are many types of particulate matter that are included in the definition of dust, including variations in terms of size and chemical composition. The dust emitted from the construction areas will have a broad size distribution but less chemical compositional range. Dust will be emitted from a range of locations and activities, as detailed below.

The size of dust particles affects their distribution. Large particles (100 µm diameter) are likely to settle within 6-10 m of their source under a typical mean wind speed of 4 m s<sup>-1</sup>, and particles between 30-100 µm diameter are likely to settle within 100 m of the source. Smaller particles, particularly those below 10 µm in diameter, are more likely to have their settling rate retarded by atmospheric turbulence and to be transported further from their source. Dust emissions are exacerbated by dry weather and high wind speeds. The impact of dust therefore also depends on the wind direction and the relative location of the dust source and receptor.

#### Quantitative Assessment

The methodology outlined in the Design Manual for Roads and Bridges (DMRB) <sup>(14)</sup> for the assessment of disruption due to construction requires the number of properties within 100 m of the alignment to be estimated and any particularly sensitive properties highlighted. These properties could potentially be affected by dust during construction. This approach has been carried out for each section of the route alignment, as described below.

### 7.5.4 Predicted Impacts

#### Overview

The construction of the scheme will involve a number of key activities, which have the potential to generate dust. These include:

- earthworks associated with track laying and widening of cuttings and embankments which generate quantities of spoil;

- sheet and bored piling operations;
- demolition and reconstruction of bridge structures;
- brick-cutting activities associated with landscaping works; and
- concreting operations.

The construction methods for each of these activities and the programming and phasing of construction works are described in *Section 2.7.4*.

For the purpose of this assessment, receptors that may be sensitive to dust nuisance, including residential dwellings, schools, areas of public amenity, commercial and retail units and listed buildings, have been identified for each section of the route, as described below.

### Existing Rail Corridor – Wednesbury to Tipton Road

Works in this section of the alignment which may give rise to dust include the removal of existing track and ballast (where this cannot be reused), the widening of the railway corridor, construction of retaining walls and reinforced earth structures (eg the viaduct at Wednesbury), works to bridge structures (including demolition) and stop construction. In addition, there are a number of work areas located adjacent to the alignment corridor. A number of sensitive properties are located within this section of the alignment, including the following.

- Between Wednesbury and the Walsall Canal, there are approximately 20 residential properties and 50 industrial properties within 100 m of the track and work areas.
- From the Walsall Canal to Horseley Road, there are approximately 300 residential properties and four industrial/commercial properties within 100 m of the alignment, in addition to the Great Bridge County Junior and Infant School.
- From Horseley Road to Coneygre Road, there are approximately 500 residential properties and five other (non-residential) properties within 100 m of the track.
- From Coneygre Road to Birmingham New Road there are approximately 130 residential properties, five industrial/commercial properties, a Mosque, a Methodist Church, a Doctor's surgery, the Coneygre Youth Centre and a sports ground within 100 m of the track and work area.

### Dudley Centre – Tipton Road to Blower's Green Road

Works which may give rise to dust in this section of the route include earthworks associated with track-laying, the diversion of services, highway works, track-laying, construction of a retained earth embankment at Tipton Road and stop construction. A number of sensitive properties/uses are located within this section of the alignment, including the following.

- Between Tipton Road and Flood Street there are approximately 160 residential/commercial properties and 10 industrial properties, in addition to Dudley Zoo and Castle, a Mosque, a Kingdom of Jehovah's Witnesses facility and a Church within 100 m of the alignment and work areas.
- Between Flood Street and Cinder Bank there some 80 residential properties, 14 industrial properties and allotments within 100 m of the alignment and work areas.
- Car parking at the Castle Gate development and at Dudley Zoo are also located within 100 m of the alignment.

### Existing Rail Corridor – Blower's Green Road to Pensnett Canal

Works in this section of the alignment which may give rise to dust include the removal of existing track and ballast (where this cannot be reused), the widening of the railway corridor, construction of retaining walls (including the piled retaining wall at Merry Hill), works to bridge structures (including part demolition and substantial renovation works to the Parkhead Viaduct) and stop construction. In addition, there are a number of work areas located adjacent to the alignment corridor.

Sensitive properties include approximately 130 residential properties and 50 industrial properties, in addition to a Primary School playing fields and a nursery, which are located within 100m of the alignment and work areas. In addition, the Parkhead Locks Conservation Area is located within this section of the alignment.

### Merry Hill – Pensnett Canal to Brierley Hill

Within 100 m of the alignment and work areas, there are a number of large commercial properties which form part of the Waterfront Development. In addition, there are eight industrial properties, a health practice, a leisure centre, a Buddhist Temple, Norish Foods, the Brierley Hill Hearing Centre, a sports field and approximately seven residential properties. The site of the former Brier School is also located within 100 m of the alignment, although this is subject to redevelopment proposals for a mixed use development, including residential dwellings. These properties are likely to be sensitive to dust generated by the construction of the scheme.

Two major areas of car parking are also adjacent to the alignment, at the Waterfront and at Merry Hill, in addition to that at Brierley Hill town centre. Both will be sensitive to dust deposition during construction works in this area.

## 7.5.5 Summary of Mitigation Measures and Residual Impacts

It is not possible to eliminate emissions of dust from the construction activities completely. However, in order to minimise the impacts of construction, a draft CoCP has been developed for the scheme (see [Appendix D](#)).

The draft CoCP sets out the measures that will be undertaken by the Concessionaire to ensure site safety and environmental best practice. This encapsulates relevant statutory codes of practice, standards and Acts applicable to the regulation of construction practice and its effects on health and safety and the environment. The CoCP will be included in the contractual arrangements between Centro and its selected Concessionaire, and adherence will therefore be compulsory. It should be noted that compliance with the CoCP will not discharge the Concessionaire, or its agents, from complying with any statutory requirements in force at the time.

A summary of the mitigation measures is provided below in *Box 7.1*.

**Box 7.1** Summary of Dust Control Measures

The following mitigation measures will be implemented during the construction of the project in order to avoid creating a dust nuisance, during both construction and demolition works:

- easily-cleaned hard standing will be provided for vehicles;
- material stockpiles will be enclosed at all times and dusty materials will be dampened using water sprays and/or sheeted during dry weather;
- hard surfacing of heavily-used areas will be kept clean by brushing and regular water spraying;
- dust control will be applied during cutting or grinding of material on site to minimise or mitigate dust;
- the sides and tops of all vehicles carrying spoil and other dusty material will be sheeted;
- unpaved surfaces and roads will be watered to reduction the generation of dust;
- precautions will be taken to limit smoke emissions or fumes from site plant or stored fuel;
- plant will be well maintained and measures will be taken to ensure that plant is not left running for long periods when not directly in use; and
- vehicle speeds on unpaved surfaces will be limited to 20kph.

As part of the CoCP the Concessionaire will also be required to monitor the level of dust

pollution using an objective method of measurement. For each of the working sites, the Concessionaire will submit to Sandwell MBC and/or Dudley MBC, as appropriate, the proposed method, frequency and location of dust monitoring prior to any construction works taking place.

Providing the mitigation measures outlined above and described in the draft CoCP are properly implemented, emissions of dust, and consequential nuisance impact (including soiling of buildings) will be kept to a minimum.

Under the provisions of the draft CoCP, the Concessionaire will also be required to comply with the provisions of the Environment Act 1995, the Clean Air Act 1993 and the Health and Safety at Work etc Act 1974, in addition to the Substances Hazardous to Health Regulations 1999 and Health and Safety Executive Guidance Notes EH 40/90 and EH 40/97 on Occupational Exposure Limits. The Concessionaire shall also comply with the Control of Lead at Work Regulations 1998.

The Department for the Environment, Food and Rural Affairs (DEFRA) has funded a four year project to produce guidance <sup>(15)</sup> on the control of dust from construction and demolition activities. The document was due to be formally released in July 2002, but at the time of writing has not been issued.