

### 3.12 Air quality and greenhouse gases

This Section summarises the existing air quality and greenhouse gases emitted in the study area. Air quality and greenhouse gas impacts associated with the Project are discussed in Section 9.5.

The *Blacktown City State of the Environment Report 2006-2007* (Blacktown City Council 2007) reported that ambient air quality in the north-west region of Sydney is generally good. The regional pollution index for north-west Sydney was reported as generally low during the 2006-2007 financial year. The average annual regional pollution index within the Blacktown LGA was also low between 2003 and 2007.

Road transport and industrial activities within the Sydney Basin are a large source of greenhouse gas emissions. Greenhouse gases are responsible for the warming of the Earth's atmosphere. They include carbon dioxide, methane and water vapour. Greenhouse gases are primarily produced through the combustion of hydrocarbons, particularly petrol and diesel fuel by motor vehicles. The transport sector is accountable for approximately 12% of NSW's total greenhouse gas emissions (DECC 1998). Between 1990 and 2000, Australian greenhouse gas emissions from transport grew by 16% between and are expected to grow about seven times the overall rate up to 2020 (Australasian Railway Association 2006).

Local air quality within the Project area is predominantly influenced by nearby major traffic routes and regional pollution within the Sydney Basin. Air pollutants from these sources include carbon dioxide, carbon monoxide, nitrogen dioxide, sulfur dioxide and particulate matter, all of which can have an adverse effect on human health. There are few industrial sources of air emissions in the vicinity of the Project.

Road transport in the vicinity of the Project area is likely to have a large influence on local air quality. The road network surrounding the Project area is described in Section 3.2. Roads immediately surrounding the Project include Garfield Road, Railway Terrace and Riverstone Parade. Vehicular emissions from these sources vary with traffic volume and distance from the road. Peak emissions are expected to occur during the morning and afternoon peak hours.

An area that is particularly likely to experience temporarily reduced local air quality is the area surrounding the vehicle level crossing at Riverstone. During the morning and afternoon peak hours, traffic on Garfield Road, Railway Terrace and Riverstone Parade is frequently delayed during the operation of the level crossing. Intermittent vehicle movements associated with operation of this crossing results in traffic congestion and an associated increase in vehicular emissions. The cumulative impact of such increased emissions could significantly reduce local air quality.

Greenhouse gas emissions also result from the operation of rail services. The majority of RailCorp's greenhouse gas emissions results from the use of electricity (for the traction of electric trains) and diesel (used to power the diesel rail fleet). Other aspects of rail operations that use significant amounts of energy include: railway infrastructure, stations and train maintenance centres (Rail Corporation 2007). However, in comparison to other modes of transport, per passenger, rail is a much more efficient user of energy. For example, the Australian Railway Association (2006) reported that energy use per passenger kilometre is 0.4 megajoules for trams, 0.5 megajoules for trains, 1.7 megajoules for buses and 2.9 megajoules for cars (based on energy efficiency in urban areas).