15. Air Quality

The Air Quality Assessment examined the potential effects of the Project on air quality considering the requirements of and compliance with the State Environment Protection Policy (Air Quality Management) and identified strategies for management of effects of dust on sensitive receptors during construction.

The Project would result in generation of dust from construction activities and gaseous pollutants due to traffic movements during operation. Air quality impacts from construction are expected to extend beyond the construction corridor with slightly greater effects noted to the west of the road than to the east due to meteorological behaviour. Construction dust has a predicted maximum impact zone of approximately 520 metres (m) from the western edge of the construction zone and approximately 470m from the eastern edge of the construction zone. In order to reduce impacts associated with dust on sensitive receptors, dust suppression management measures, such as keeping construction vehicles to well defined haulage routes, and additional dust management controls such as scheduling construction works around bud burst season (late spring) are proposed.

As there are already vehicles travelling along the existing Western Highway, there are already vehicle emissions in the study area. It is expected that the increase in operational emissions from the Project would be negligible. As such, the impacts from vehicle emissions during operation of the Project are expected to be insignificant.

In addition, the assessment found that operational emissions and construction dust are not expected to affect domestic water supplies and all of the assessed air pollutants from vehicles using the road are predicted to be below the Intervention Level for Air Quality Management used in Victoria.

15.1 EES Objectives

The EES objective relevant to the Air Quality Assessment is:

- *To minimise air emissions, noise, visual, landscape and other adverse amenity effects, during the development and operation of the proposed duplicated highway to the extent practicable.*

This chapter discusses the air quality of the study area, the potential impacts from the Project on this aspect of the environment, and the management measures recommended for implementation to minimise these impacts. More specifically, this chapter:

- Characterises ambient air quality (in terms of dust) and identifies sensitive receptors in the study area.
- Identifies and assesses potential effects of road construction and operation activities on sensitive receptors due to an increase in dust or other emissions.
- Identifies proposed measures to avoid, mitigate and manage any potential effects, including any relevant techniques or methods to be used during construction to manage dust and any residual effects.
- Addresses relevant requirements of the State Environment Protection Policy (Air Quality Management) and State Environment Protection Policy (Ambient Air Quality) and any implications for the Project.

This chapter is based on an Air Quality Impact Assessment Report completed by GHD Pty Ltd (2012f), which is included in Technical Appendix L.

15.2 Study Area

The air quality assessment study area is the same as the Project area, which encompasses a corridor extending up to 1500m to the east and west of the existing Western Highway, except around Great Western where it extends to 1800m either side (refer Figure 15-1).

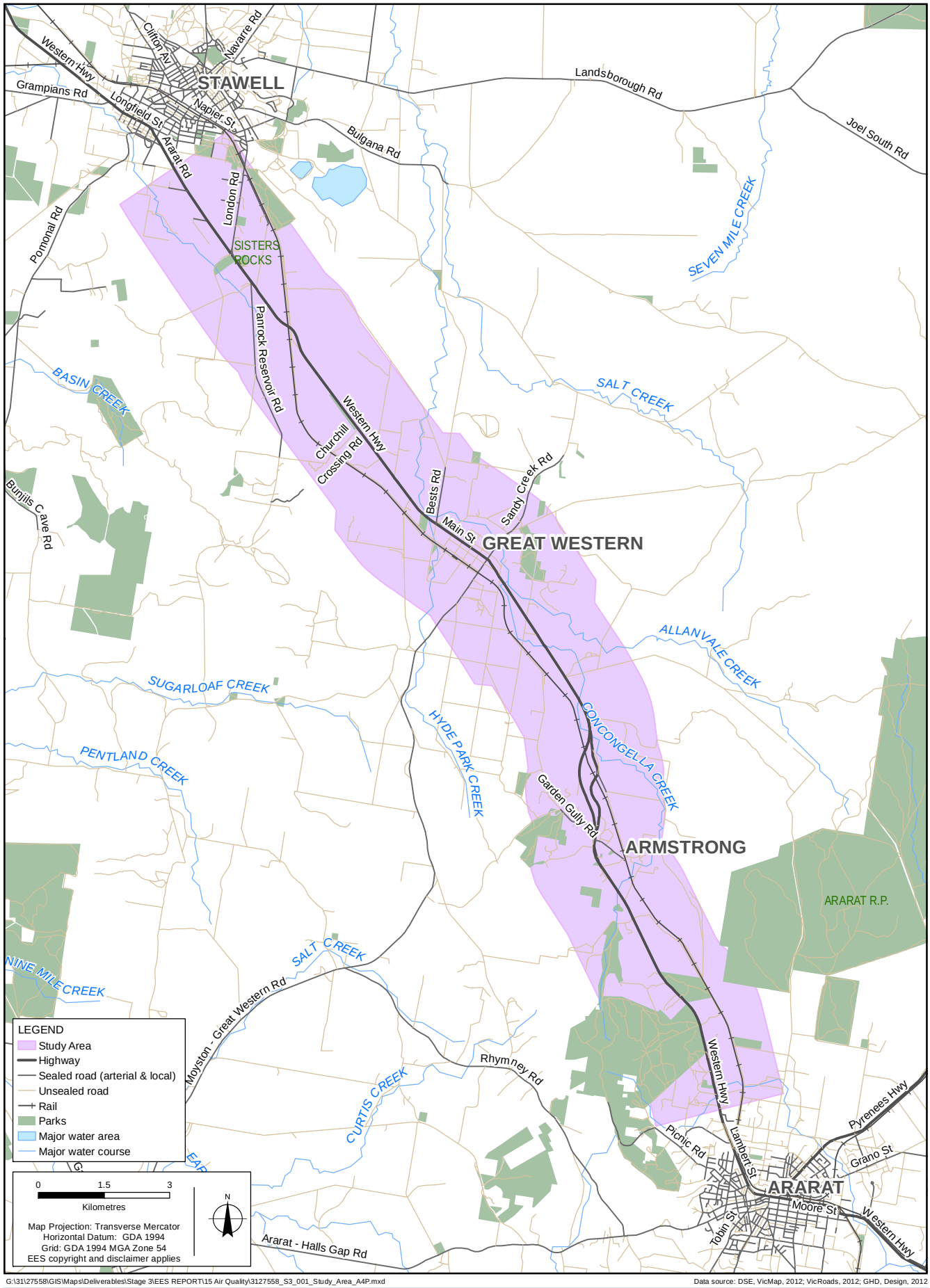

Figure 15-1 Air Quality Study Area

15.3 Methodology

The State Environment Protection Policy for Air Quality Management (SEPP (AQM)) requires road projects to be assessed under Part D of Schedule C, which includes modelling of emissions to air from proposed transport corridors. These models require definition of the emissions (including physical characteristics), dispersion meteorology and levels of background (ambient) pollutants of the Class-1 indicators and so-called 'air-toxics'.

Therefore, to assess the air quality environment within the study area, the following tasks were completed:

- A review of existing climatic data (temperature, wind and rainfall) and ambient air quality.
- Modelling of both construction and operation emissions to determine the impact of dust and vehicle emissions on the local environment. Construction activity emissions were modelled using the Environment Protection Authority (EPA) approved model AUSPLUME V6.0, while predicted line source emissions from vehicle emissions were modelled using AUSROADS.
- Consideration of potential impacts upon air quality during construction and operation of the Project.

A detailed description of the assessment methodology is included in Technical Appendix L

15.4 Legislation and Policy

The legislation and government policies relevant to air quality are shown in Table 15-1.

Table 15-1 Relevant Air Quality Legislation and Policies

Legislation / Policy	Description
National	
National Environmental Protection (Air Quality) Measure (AQ NEPM)	AQ NEPM defines the Commonwealth requirements for national standards for criteria air pollutants in Australia. These aim to establish protection levels for exposure to selected air pollutants. The six key air pollutants relevant to a road project are: ▪ Carbon monoxide ▪ Ozone ▪ Sulphur dioxide ▪ Nitrogen dioxide ▪ Lead ▪ Particulate matter
National Environment Protection (Air Toxics) Measure (Air Toxics NEPM)	The Air Toxics NEPM establishes 'monitoring investigation levels' for five air toxics: ▪ Benzene ▪ Toluene ▪ Formaldehyde ▪ Xylenes ▪ Benzo(a)pyrene as a marker for Polycyclic Aromatic Hydrocarbons (PAH)
State	
Transport Integration Act 2010	Part 2, Division 2, Section 10 of the Act outlines the transport objectives relating to environmental sustainability. These are: 'The transport system should actively contribute to environmental sustainability by: ▪ Protecting, conserving and improving the natural environment; ▪ Avoiding, minimising and offsetting harm to the local and global environment, including transport-related emissions and pollutants and the loss of biodiversity; ▪ Promoting forms of transport and the use of forms of energy and transport technologies which have the least impact on the natural environment; ▪ Improving the environmental performance of all forms of transport and the forms of energy used in transport.
Environment Protection Act 1970	Air quality in Victoria is managed by the *Environment Protection Act 1970* (EP Act); and the relevant State environment protection policies created under Section 16 of the Act: ▪ State Environment Protection Policy (Air Quality Management) 2001 – SEPP (AQM); and ▪ State Environment Protection Policy (Ambient Air Quality) 1999 – SEPP (AAQ).
State Environment Protection Policy (Air Quality Management) 2001 SEPP (AQM)	Construction dust emissions and operational vehicle emissions (gases and particulates) would be managed by, and would need to comply with, the provisions of this policy which has been developed under the provisions of the EP Act (mentioned above). The criteria against which vehicle emissions from road corridors are to be assessed are referred to in Clause 40 of the policy – "Management of Large Line and Area-Based Sources of Emissions". Sub-clause (1) states that the Environment Protection Authority (EPA Victoria) 'will develop protocols for environmental management' (PEMs) for large line sources such as road projects. A PEM for road construction and operation has yet to be finalised. In the interim, EPA Victoria has adopted the Intervention Levels (defined by Schedule B of SEPP (AQM)) to apply to specific roadway projects. Background air pollutant levels are required by the SEPP (AQM) for use in modelling of emissions from the Project. These background values are used as a basis for existing air pollution levels along the Project area and are added to overall predicted values within the model to be compared against the SEPP (AQM) intervention levels.

State Environment Protection Policy (Ambient Air Quality) 1999 SEPP (AAQ)	SEPP (AAQ) (developed under the EP Act) adopts the requirements of the Air Quality NEPM and operates in conjunction with SEPP (AQM). The SEPP (AAQ) is concerned with ambient air quality in Victoria and outlines seven environmental indicators that require measurement and reporting for compliance against State objectives and goals (concentrations within the ambient air shed) and which must be taken into consideration when proposing any changes to the environment, such as this current Project.

15.5 Existing Conditions

For a road project, air quality considerations include potential emissions from both the construction phase and operational phase. The prevailing meteorology and climate affects both the generation of emissions and the dispersion of generated gases and particulates. Ambient air quality needs to be defined, as background levels are required in the modelling assessment of potential impacts (for both construction and operation).

15.5.1 Meteorology

Two weather monitoring stations were identified as having climate data relevant to the study area: Stawell Airport and Ararat Prison.

15.5.1.1 Climate

The entire study area from Ararat to Stawell can be classified as having a 'temperate' climate with 'no dry season (warm summer)'.

15.5.1.2 Rain

In the study area, the wettest months occur in late winter to early spring. There is a clear pattern of significantly higher rainfall and frequency in the Ararat region (594mm) decreasing north-westward to the Stawell region (503mm). This has implications for the Project as over an extended construction period (greater than the annual cycle) wet weather contingencies may be required, however less construction dust generation would be expected to the south-east as compared to the north-west.

15.5.1.3 Wind

Annual average wind directions for the study area are predominately from the south. The prevailing wind direction from the south switches to the north during winter. Winds are lightest during late autumn and winter. North east sector winds are rare in the study area.

15.5.1.4 Atmospheric Stability

Atmospheric stability describes the capacity of a pollutant such as gases, particulate matter, or odour to disperse into the surrounding atmosphere upon release, and is a function of the amount of turbulent energy in the atmosphere. For a road project, the two primary concerns are:

- Dust from construction activity; and
- Gases and particles from vehicle emissions.

The above points need to be assessed for their environmental impacts at sensitive receptors (such as dwellings), which are located away from the sources such as those associated with construction activity and vehicle emissions on an operating road.

The study area is represented by Stawell's atmospheric stability class (site representative) being predominately 'neutral' for well over half the time with 'stable' conditions for a little less than a third of the time. Neutral atmospheric conditions would be the most often occurring stability category during construction hours.

Stable atmospheric conditions occur in the absence of strong gradient winds, and mostly on nights with clear skies. They are often associated with ground-based radiation forced temperature inversions and are sometimes associated with frost, mist or fog. Mechanically generated dust emissions from road construction plant would have a larger extent of impact under these stable conditions.

15.5.2 Ambient Air Quality

There is no known Air Quality monitoring data encompassing the study area. Therefore, for a rural area remote from large urbanised and industrial sources, the background ambient air quality values are assumed to be zero, except for particulate matter (dust levels are generally elevated in a rural environment due to agricultural activities such as ploughing, vehicle travel on unsealed roads etc).

15.5.2.1 Particulate Matter Less than 10 Microns (PM_{10})

Particulate matter as assessed in Schedule B of SEPP (AQM) is concerned with the respirable size fractions of less than 10 micron-PM_{10} (one micron equals one millionth of a metre). For background PM_{10} measurements, EPA Victoria had two monitoring data campaigns (2002/2003 and 2005/2006) at Ballarat which provided similar measurements. Considering Ballarat is the closest monitoring site to the study area, the 70th percentile of the background air pollutant level (16.9 micrograms per cubic metre ($\mu g/m^3$)) for particulate matter has been adopted.

15.5.2.2 Particulate Matter Less than 2.5 Microns ($PM_{2.5}$)

For the respirable particle fraction of $PM_{2.5}$, it is assumed that a background $PM_{2.5}$ level can be based on a ratio to the background PM_{10} level, which is discussed above. However, even with well documented studies involving co-located instruments, the ratio has been shown to vary 'depending on season and location, and can range from 0.3 to 0.9' (NPEC, 2002) across a range of conditions within Australia. Since the study area is remote from urban populations involving high emission contributions from vehicle and other

industrial uses, the ratio of $PM_{2.5}$ to PM_{10} used in this report is at the lower estimate of 30 per cent from the NEPC research. The adopted $PM_{2.5}$ background level for the Project is therefore set at 5.1µg/m^3.

15.5.3 Sensitive Receptors

The proposed alignment extends along the existing Western Highway corridor for the majority alignment aside from the bypass of Great Western. The area adjacent to the proposed alignment consists of agricultural land uses with scattered dwellings, and the more established settlement of Armstrong and town of Great Western.

There are approximately 117 potential sensitive receptors (dwellings) within study area. Of the 117 receptors, approximately two thirds are situated adjacent the alignment. The remaining third are situated within, or on the western side of Great Western, approximately 1km away from the proposed alignment.

There are approximately 24 potential farms growing primary produce such as olive groves and vineyards within the study area. Figure 15-2 illustrates the location of the sensitive receptors, comprising dwellings and primary produce farms (including vineyards) within the study area.

15.6 Impact Assessment

Modelling of both construction and operation emissions was carried out to determine the impact of dust and vehicle emissions on the local environment within the study area. Vehicle emissions were modelled using the line source model AUSROADS while predicted point source emissions from construction activities were modelled using AUSPLUME V6.0.

15.6.1 Key Issues

The construction and operation of the Project would result in generation of dust from construction activities and gaseous pollutants due to traffic movement. However, dust management protocols and environmental management measures would be required to minimise impact during construction. In addition, operational emissions are already present along the existing highway and any future increases in emissions are likely to be negligible. The Project is considered to have benefits of decreased vehicle emissions (including Greenhouse Gas emissions) per vehicle kilometre travelled due to:

- Lower travel times
- Improved gradients
- Less need for changing speeds.

15.6.2 Impact Pathways

Five pathways were chosen based on potential impacts from the construction and operation stages of the Project. Pathways are summarised as follows:

- Construction emissions impact on an individual sensitive receptor.
- Construction emissions impact on a local area (community).
- Construction/operational emissions deposit on dwellings that drain into domestic water supplies (i.e. tank water).
- Construction emissions deposit on agricultural/horticultural crops at an individual sensitive receptor location.
- Operation of the Western Highway generates air emissions from vehicular traffic.

15.6.2.1 Construction Emissions

An indication of the impact of dust downwind of a road construction project can be estimated by modelling dust sources along a linear construction site. Consideration needs to be given to a number of factors:

- Type of equipment
- Typical usage pattern
- Duration of construction activities
- Meteorological behaviour.

The modelling was carried out using the AUSPLUME V6.0 dispersion model to predict the PM_{10} dust impact on health. It is found that if this key element is used as the dominant indicator of downwind impact, then amenity issues due to dust fall out would also be controlled.

For a worst case scenario, the modelling was focused on the two ‘dustiest’ construction phases, which are:

- Set out and preparation stage of the road corridor (earthworks); and
- Surface preparation and compaction stage (pavement preparation).

Two models were run to give indicative dust impacts to the east and west side of the alignment. A single indicative alignment orientation was chosen as the bearing from the two ends of the Project.

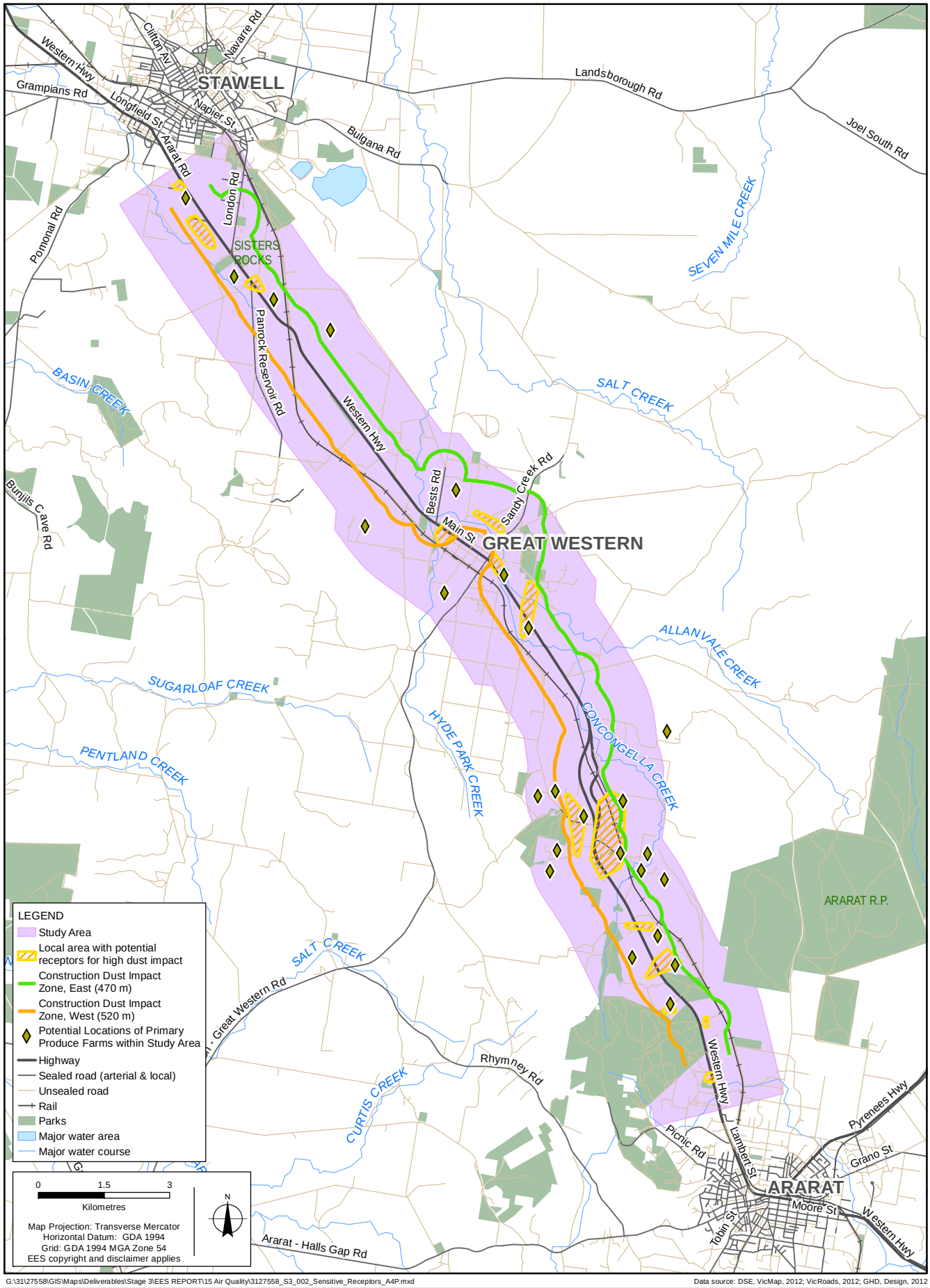

Figure 15-2 Sensitive Receptors

Construction impacts to air quality are expected to extend beyond the construction corridor with slightly greater effects noted to the west of the road than to the east due to meteorological behaviour. Construction dust has a predicted maximum impact zone of approximately 520m from the western edge of the construction zone and approximately 470m from the eastern edge of the construction zone. Any potential sensitive receptors (such as dwellings) located within the construction dust impact zone would require the specified additional dust management controls so as to minimise impacts on amenity to minor

Residential and commercial premises are considered to be sensitive locations with regard to health and amenity impacts due to dust. The alignment and maximum construction footprint comes close to a number of potential sensitive receptors. Technical Appendix L tabulates the potential sensitive receptors which may potentially be within the construction dust impact zone for the proposed alignment.

Farms growing primary produce are also considered to be sensitive locations, as construction dust emissions have the potential to settle and cause damage or reduced growth rates. Several vineyards and olive groves were identified to be within the construction dust impact zone. As 'bud burst' or flowering for both vineyards and olive groves occur in November to early December (late Spring), while harvesting takes place from February to March, additional dust management controls such as scheduling construction works around these times would be required to effectively reduce dust impacts at these locations to a minimum. During construction, up to seven primary production farms within 520m of the construction zone (to the west), and five primary production farms east of the construction zone would experience a temporary exceedance of air quality standards, resulting in a minor impact.

15.6.2.2 Operational Emissions

The predicted operational emissions were modelled based on the fleet emissions inventory provided by EPA Victoria, which comprised a matrix of emission data based on:

- Year (2011 and 2021)
- Vehicle type (car, truck, petrol, diesel, LPG etc)
- Speed (10 kilometres per hour (km/h) increments from 10 to 110km/h).

Operational emissions comprise of air contamination from the motor vehicle exhaust which could be expected to contribute to the local air shed in the near field, where isolated residential sensitive receptors are present. AUSROADS was used to model a line-source representative of the alignment options of the Project to predict the emission factors for each of the following constituents:

- Carbon monoxide
- Oxides of nitrogen
- PM_{10}
- $PM_{2.5}$
- Benzene
- 1,3 Butadiene
- Formaldehyde
- Toluene
- Xylenes
- PAH (particle bound).

These constituents are the relevant key air pollutants from the AQ NEPM and relevant air toxics from the Air Toxics NEPM, as outlined in Section 15.3.

These air quality indicators were modelled to provide an understanding of near field effects on sensitive receptors. NO_2 was the closest to the SEPP (AQM) intervention level, and PM_{10} and $PM_{2.5}$ are over the differing averaging period of 24 hours rather than over a 1-hour averaging period (see Table 15-2).

Based on the predicted per cent compliance of each constituent, with their associated intervention levels for both east and west of the proposed alignment, all pollutant levels were well below the intervention levels set out in SEPP (AQM) Schedule B, at 30m distance from the edge of the 'outer traffic lane'. Therefore, due to air quality standards being met most, if not all, of the time, operational air quality impacts are expected to be no more than minor at any nearby sensitive receptor. Modelling compliance with SEPP (AQM) revealed that overall, assessed air pollutants from vehicles are predicted to be below the Intervention Level at the edge of the outer road lane.

Vineyard north of Ararat

Table 15-2 Intervention Levels for year 2016, 2026 and 2040 – at 30m distance from the edge of the 'outer lane' of the road alignment.

Constituent	Percentage of Intervention Level (%)						
	Western Highway 2016		Western Highway 2026		Western Highway 2040		Intervention Level SEPP (AAQ)
	East of Alignment	West of Alignment	East of Alignment	West of Alignment	East of Alignment	West of Alignment	
CO	0.45	0.47	0.43	0.45	0.53	0.56	33222µg/m^3
NO_2	6.41	6.74	5.87	6.17	7.49	7.87	263µg/m^3
PM_{10}	29.48	29.86	28.87	29.07	29.05	29.31	60µg/m^3
$PM_{2.5}$	15.70	16.18	15.01	15.27	15.25	15.59	36µg/m^3
PAH (particle bound)	0.03	0.03	0.02	0.02	0.02	0.02	0.5µg/m^3
Benzene	0.49	0.52	0.38	0.40	0.47	0.50	75µg/m^3
1,3 Butadiene	0.04	0.04	0.03	0.03	0.04	0.04	110µg/m^3
Formaldehyde	0.76	0.80	0.67	0.71	0.85	0.89	15µg/m^3
Toluene	0.03	0.03	0.02	0.02	0.03	0.03	1880µg/m^3
Xylenes	0.02	0.02	0.01	0.01	0.02	0.02	2080µg/m^3

Note: Percentage Intervention Levels are the predicted values for each constituent plus the background pollution already present, divided by the associated SEPP AAQ intervention level multiplied by one hundred to give a percentage.
Note: The predicted values above were at 30m distance from the 'outer lane' of the road alignment.

15.6.2.3 Domestic Water Supplies

Construction and operational emissions are not expected to affect domestic water supplies from roof water collection. Construction dust emissions are generally larger in size than PM_{10}, and as such would fall out of the air column much faster than smaller $PM_{2.5}$ particles. The management of the smaller size particles ensure that the larger particles are also managed. Operational emissions from roadways are principally gaseous and these are unlikely to deposit on roofs as the environmental fate of a gas being converted to an aerosol that then deposits on a roof is a slow atmospheric process, and therefore has a limited local impact. Particulate emissions from trucks (diesel engines) are in the very fine, below $PM_{2.5}$ range. Therefore, there are negligible sources of coarse particulates in the operational phase (road pavement dust and poorly tuned cars are the only probable sources) and to the extent that these types of operational emissions are present, they are unlikely to increase above the existing levels from traffic on the Western Highway. Therefore the impact of construction and operational emissions on domestic water supplies constitute a minor to insignificant impact, as air quality standards are unlikely to be exceeded, and if they are, it would be only temporary.

15.7 Risk Assessment

An environmental risk assessment was undertaken on the Projects to identify key environmental issues associated with the construction and operation of the Project. The methodology for this risk assessment has been described in Section 4.2 of Chapter 4 (EES Assessment Framework and Approach to Investigation). A risk assessment report that explains the process in detail and contains the complete Project risk register has also been included as Technical Appendix Q.Table 15-3 shows a summary for air quality of:

- The impact pathways identified
- A description of the consequence.

Western Highway at St Ethels Road, looking north

Table 15-3 Air Quality Risks

Risk No.	Impact Pathway	Consequence Description
A1	Construction emissions impact at an individual sensitive receptor.	Exceedance of State Environment Protection Policy (Air Quality Management) within a small localised area affecting a sensitive receptor, Aeolian transport and deposition potentially affecting human health, flora, fauna, visual and social aspects, and water quality. The impact zone for construction dust where an exceedance of the SEPP (AQM) may occur (and therefore the " recommended controls" should be carried out to reduce risk at individual sensitive receptors) can be described by the following areas around Great Western: ▪ East of the Project, a line 470 metres (m) from the construction boundary outer edge and running parallel to the boundary. ▪ West of the Project, a line 520m from the construction boundary outer edge and running parallel to the boundary.
A2	Construction emissions impact a local area (community) such as: ▪ Gilchrist Road - Commercial Properties, Stawell (Ch. 24,800) ▪ Robson Road Community, Stawell (Ch. 23,200 - 24,200) ▪ Stawell Park Caravan Park, Monaghan Road, Stawell (Ch. 22,200) ▪ Great Western Community, Great Western (Ch. 11,000 - 16,600) ▪ Garden Gully Road Community, Armstrong (Ch. 4,200 - 7,400) ▪ Morella/Kennel Road Community, Ararat (Ch. 0 - Ararat Township).	Exceedance of State Environment Protection Policy (Air Quality Management) within a local area, Aeolian transport and deposition potentially affecting human health, flora, fauna, visual and social aspects, and water quality. The impact zone for construction dust where an exceedance of the SEPP (AQM) may occur (and therefore the " recommended controls" should be carried out to reduce risk at sensitive receptors) can be described by the following quadrants surrounding Great Western: ▪ East of the Project, a line 470m from the construction boundary outer edge and running parallel to the boundary. ▪ West of the Project, a line 520m from the construction boundary outer edge and running parallel to the boundary.
A3	Construction/operational emissions deposit on residential housing that drain into domestic water supplies (i.e. tank water).	Exceedance of 2004 Australian Drinking Water Guideline (ADWG) for residential rainwater tanks along the alignment used for residential water supply.
A4	Construction emissions deposit on Agricultural/Horticultural crops at an individual sensitive receptor location such as: ▪ Parcel ID 2533 (Ch. 1600) ▪ Parcel ID 2544 (Ch. 2200-2500) ▪ Parcel ID 2584 (Ch. 2800-3000) ▪ Parcel ID 2546 (Ch. 3400-3700) ▪ Parcel ID 2710 and 2712 (Ch. 6000-6400) ▪ Parcel ID 2806 (Ch. 10500-11200) ▪ Parcel ID 2899-2904, 2923, 2928-2929 and 2934-2940 (Ch. 14700-16200) ▪ Parcel ID 2965 (Ch. 20900-21800) ▪ Parcel ID 3045 (Ch. 24200-25000)	Potential detrimental effects on agriculture/horticulture. In particular vineyards and olive groves nearby (properties with common boundary) the construction activity.
A5	Operation of the Western Highway generates air emissions from vehicular traffic.	Exceedance of State Environment Protection Policy (Air Quality Management).

15.8 Environmental Management Measures

VicRoads has a standard set of environmental management measures which are typically incorporated into its construction contracts for road works and bridge works. These measures have been used as the starting point for the assessment of construction related risks and described in detail in Chapter 21 (Environmental Management Framework). In some instances, additional Project specific environmental management measures have been recommended to reduce risks.

In addition to the management measures presented here, VicRoads wound ensure any air quality issues arising during operation of the Project would be determined through the existing complaints procedure. During construction, continuous dust sampling at several locations along the alignment, between the construction footprint and sensitive receptors, would help identify potential issues before they affect sensitive receptors.

Management measures specific to each identified air quality risk, and the residual risk rating after these environmental management measures have been applied, are outlined in Table 15-4.

Table 15-4 Air Quality Environmental Management Measures and Residual Risk

Risk No.	Environmental management measures	Residual risk
A1	Comply with section 1200.07 Air Quality of the VicRoads contract specification. In the impact zone for construction dust where an exceedence of the SEPP (AQM) may occur the following additional mitigation measures would be implemented: ▪ Implement methods and management systems (including continuous air monitoring) to maintain air quality during construction consistent with State Environmental Protection Policy (Air Quality Management) intervention levels for particulates and EPA Best Practice Environmental Management - Environmental Guidelines for Major Construction Sites (1996). ▪ Implement a dust management protocol as described in Technical Appendix L, including minimising land disturbance by using a staged approach and rehabilitating cleared areas promptly, applying dust suppression measures and keeping vehicles to well-defined haul roads, limiting vehicle speed and sealing haul roads and other exposed areas by means of concrete or paving where necessary.	Negligible
A2	As per A1 and dust deposition gauges would be used to judge effectiveness of the CEMP, and evaluate implementation of further controls such as halting works under certain conditions.	Low
A3	As per A1 and where concerns are raised by land owners and if warranted, sensitive receptors with rain water supplies would be encouraged to adopt the recommendations of the Australian Drinking Water Guidelines and install a 'first' flush device' between the water runoff and tank.	Negligible
A4	Implement a dust management protocol as described in Technical Appendix L, including minimising land disturbance by using a staged approach and rehabilitating cleared areas promptly, applying dust suppression measures and keeping vehicles to well-defined haul roads, limiting vehicle speed and sealing haul roads and other exposed areas by means of concrete or paving where necessary. Take additional dust mitigation steps, such as reduced activity or additional water application when adverse (hot, dry and/or gusty) winds result in visible dust heading towards fruit vines or olive trees near the construction activity.	Negligible
A5	Air quality issues during operation would be identified through public liaison and complaints received. Management measures would be implemented as required.	Negligible

15.8.1 Residual Risks

Following implementation of the recommended mitigation measures outlined in Table 15-4, there are not expected to be any significant impacts. The overall risk to air quality is negligible to low.

15.9 Conclusion

Construction of the Project would result in generation of dust and traffic movements would generate gaseous pollutants during operation.

Air quality impacts from construction are expected to extend beyond the construction corridor with slightly greater effects noted to the west of the road than to the east due to meteorological behaviour.

Construction dust has a predicted maximum impact zone of approximately 520m from the western edge of the construction zone and approximately 470m from the eastern edge of the construction zone. Impacts from construction dust are expected to be minor due to them being temporary air quality exceedances that can be further managed by the recommended management measures including: dust suppression techniques, construction scheduling and keeping construction vehicles to well defined haulage routes. During construction, ongoing dust sampling and monitoring at several locations along the alignment, between the construction footprint and sensitive receptors, would help identify potential issues before they affect sensitive receptors.

As there are already vehicles travelling along the existing Western Highway, there are already vehicle emissions in the study area. It is expected that the increase in operational emissions from the Project over those attributable to the current highway would be negligible.

The assessment found that operational emissions and construction dust are not likely to impact domestic water supplies and all of the assessed air pollutants from vehicles using the road are predicted to be below the Intervention Level for Air Quality Management used in Victoria. Therefore the impact of construction and operational emissions on domestic water supplies constitute a minor to insignificant impact.

Overall Section 3 of the Western Highway Project would provide the benefit of improving traffic flows which would lower travel times and may decrease vehicle emissions to the environment, resulting in an improvement in the air quality.