vicroads

memo

Date:	24 June 2013		
To:	Helen Murphy, Director Environmental Strategy		
From:	Cameron Mattingley, Project Manager Planning Services	Ext:	4760
Business area:	Technical Services – Planning Services	File no:	SP-800-29000389-011-003
Our ref:	n1990282		
Subject:	**Air Quality Assessments – Palmers Road Corridor (Western Freeway, Ravenhall to Calder Freeway, Calder Park)**		

PURPOSE

1. To seek agreement from the Director Environmental Strategy that there is no need for further detailed air quality assessments in the Palmers Road Corridor (Western Freeway, Ravenhall to Calder Freeway, Calder Park) since the worst possible scenarios have been tested.

BACKGROUND

2. The VicRoads Air Quality Screening Assessment Tool (AQST) has been developed in consultation with the Environment Protection Authority to assess road projects for compliance against the State Environment Protection Policy (Air Quality Management) (SEPP(AQM)) using a worst case approach. The tool is used to determine whether the air quality component of the project is satisfied or alternatively whether further evaluation in the form of a detailed air quality impact assessment is warranted.

3. The AQST is based on the Austroads model. The following two worst case locations were assessed:
   - Calder Park Drive near Taylors Road (Location 1) – the highest trafficked section of road along the corridor in the study area
   - Robinsons Road under Ballarat rail line (Location 2) – the location with the road in the only cutting along the corridor in the study area

4. None of the general limitations of the Austroads model (e.g. road in cutting over 10 metres, winding road) apply to either locations.

5. In conjunction with the EPA, nitrogen dioxide and PM10 have been selected from the suite of vehicle exhaust contaminants to be assessed in the Tool as these two contaminants are the most likely to exceed criteria detailed in the SEPP(AQM). Compliance with these two contaminants will ensure compliance with all other vehicle emissions. Background contaminant concentrations have been built into the AQST.

6. Air quality assessments are generally based on a period of 10 years after construction and typically consider the years 2016 and 2012. This is a long term project and initial staged construction may not occur until well after this period. For the purposes of this assessment, ultimate forecast traffic volumes for 2046 have been assumed for a worst case scenario.

INPUTS TO THE TOOL

7. Estimates have been obtained for the main inputs into the Air Quality Screening Assessment Tool. The main inputs into the screening tool are as follows:

   - Peak hourly traffic volumes in the future
   - Daily traffic volumes in the future
   - Road type
   - Distance to sensitive receptor
   - Proportion of heavy vehicles in the future
   - Road gradients
   - Cutting depth

8. The locations tested are circled on the maps in Attachments A, B and C. Land use has been interpreted from the aerial photos as shown in Attachment A and the zoning in Council Planning Schemes as shown in Attachment B. The southern section of the Palmers Road Corridor study area (Western Freeway, Ravenhall to Western Highway, Deer Park) and the northern parts of the Palmers Road Corridor (the Bendigo rail line to the Calder Freeway, Calder Park) are existing industrial or proposed industrial land. The majority of the land from the Western Highway to the Bendigo rail line is residential land with some commercial development and community facilities along the route.

9. The sensitive receptors nearest the road along the length of the Corridor are the proposed shared paths which are located approximately a metre from the edge of both sides of the proposed outer through traffic lane.

10. The topography is generally flat along the Palmers Road Corridor. For Calder Park Drive at Taylors Road the road is flat. The grade for Robinsons Road at the cutting for the Ballarat rail line is 4% based on the design concept.

11. Attachment C shows traffic volumes from transport modelling undertaken by AECOM (March 2013) for the Palmers Road Corridor (Western Freeway, Ravenhall to Calder Freeway, Calder Park). This transport modelling was based on modelling done for the Growth Areas Authority in 2012.

12. The future duplication of the Palmers Road Corridor is expected to occur beyond 2021. However for the purposes of this assessment, the traffic volumes are modelled on a duplicated carriageway with 4 lanes at 2016 and 6 lanes at 2021 using data from 2046 as the worst scenario (see Attachment C). Traffic volumes for two locations considered to represent the two worst case locations are shown in Table 1. AECOM provided estimates for truck volumes and peak hour traffic at these two locations. These are included in Table 1.

Table 1: Assumed traffic data 2016 (4 lanes) and 2021 (6 lanes) for AQST

Palmers Road Corridor	**2046 (2016 in AQST)**				**2046 (2021 in AQST)**			
Location	Lanes	Peak Hr volume	24 hr volume	% trucks	Lanes	Peak Hr volume	24 hr volume	% trucks
Robinsons Rd in cutting at Ballarat rail line	4	2,900	38,000	28	6	3,650	45,200	27
Calder Park Drive at Taylors Rd	4	3,100	43,800	13	6	3,950	51,400	14

Source: Traffic Volumes from AECOM "Palmers Road Corridor (Western Fwy-Calder Fwy) Transport Modelling" draft report for VicRoads (May 2013). Peak Hour volumes and % trucks were provided by AECOM using the Growth Areas Authority's (GAA) modelling data.

DISCUSSION

13. The AQST outputs are in Attachment D for the two scenarios (Taylors Road and Ballarat rail line underpass). The assessment indicates that the predicted concentrations of Nitrogen Dioxide and PM10 for the years 2016 and 2021 are well within the criteria specified in SEPP(AQM).

RECOMMENDATION

14. That no further detailed Air Quality Impact Assessment is required for the Palmers Road Corridor between the Western Freeway, Ravenhall and the Calder Freeway, Calder Park.

CAMERON MATTINGLEY
PROJECT MANAGER PLANNING SERVICES.....Date.....24/6/13

Endorsed by:
HELEN MURPHY
DIRECTOR ENVIRONMENTAL STRATEGY.....Date.....04.6.2013.

ATTACHMENT A: AERIAL PHOTOS PALMERS ROAD CORRIDOR

A1: Western Freeway, Ravenhall to Calder Freeway, Calder Park

Location 1:
Calder Park Dr/Taylors Rd

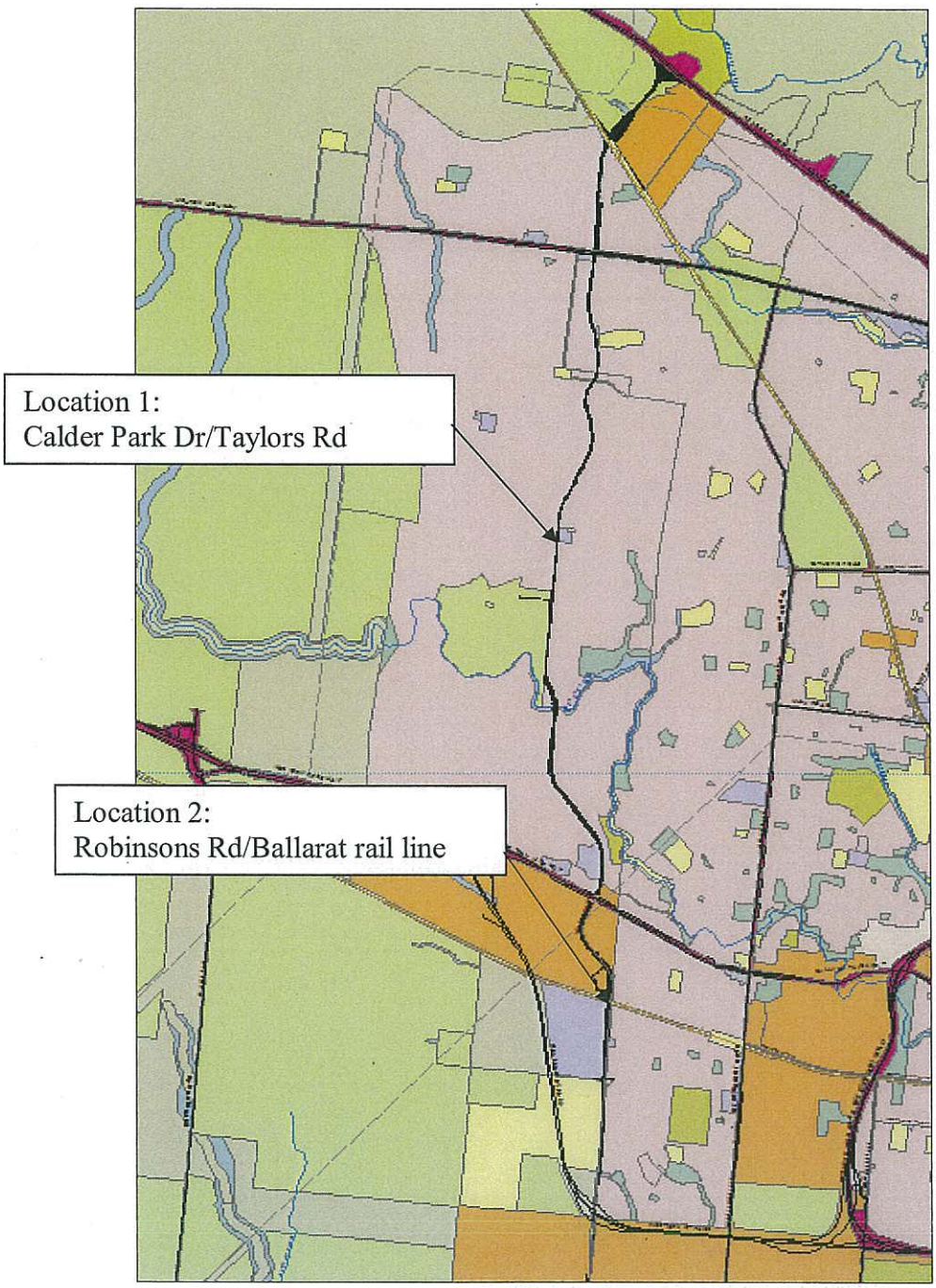
Location 2:
Robinsons Rd/Ballarat rail line

A2: Aerial photo Location 1- Calder Park Drive at Taylors Road

A3: Aerial photo - Robinsons Road at Ballarat rail line

ATTACHMENT B: PLANNING SCHEME ZONES IN PALMERS ROAD CORRIDOR (Western Freeway, Ravenhall to Calder Freeway, Calder Park)

Pink = Residential zone
Orange = Industrial zone
Purple = Commercial zone
Yellow = Public Use zone
Light Green = Comprehensive Development zone or Special Use zone
Fuscia = Road Zone Category 1 (Freeways & Highways)

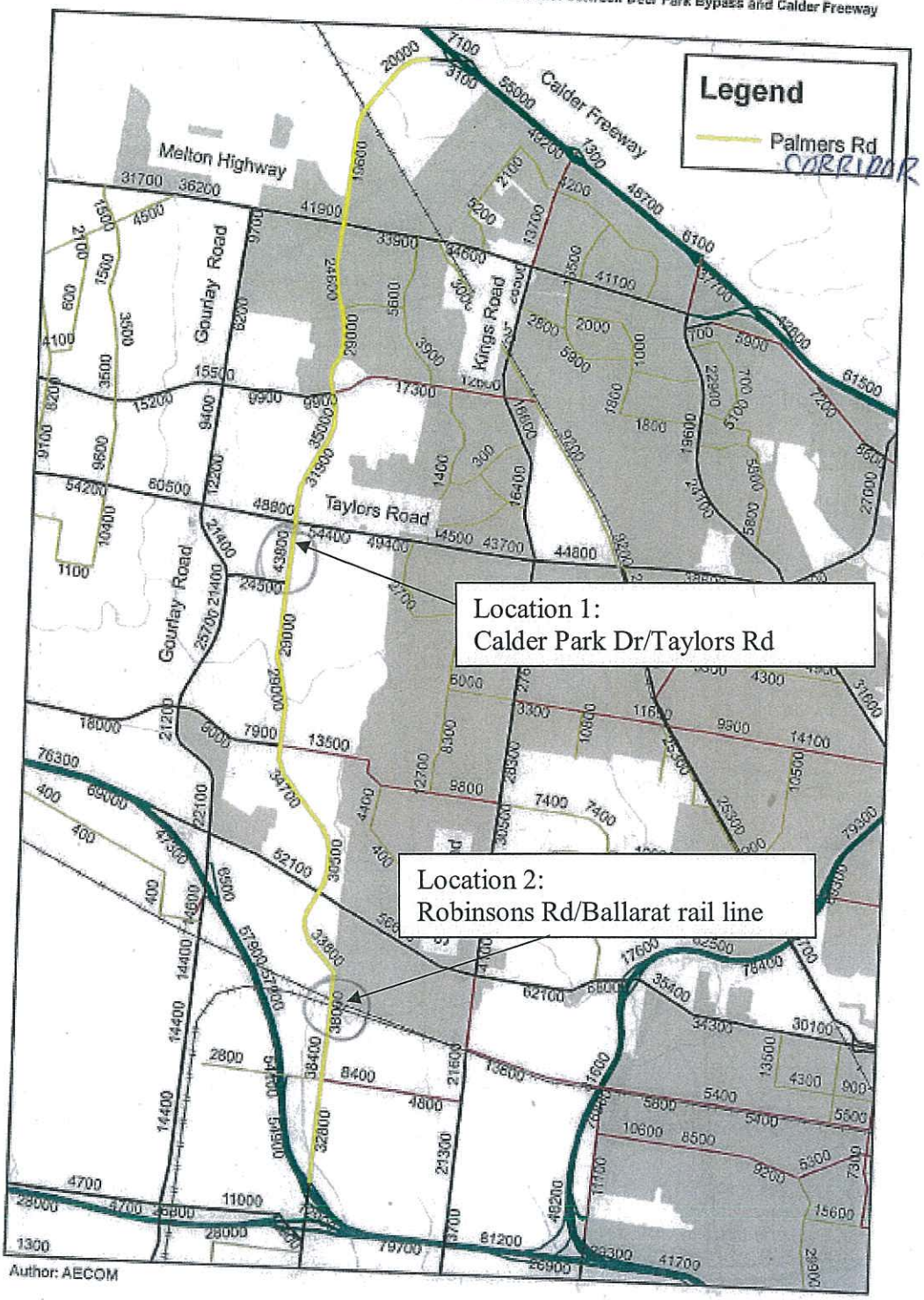


Source: Planning Scheme maps December 2012

ATTACHMENT C: FUTURE DAILY TRAFFIC VOLUMES FOR TWO SCENARIOS

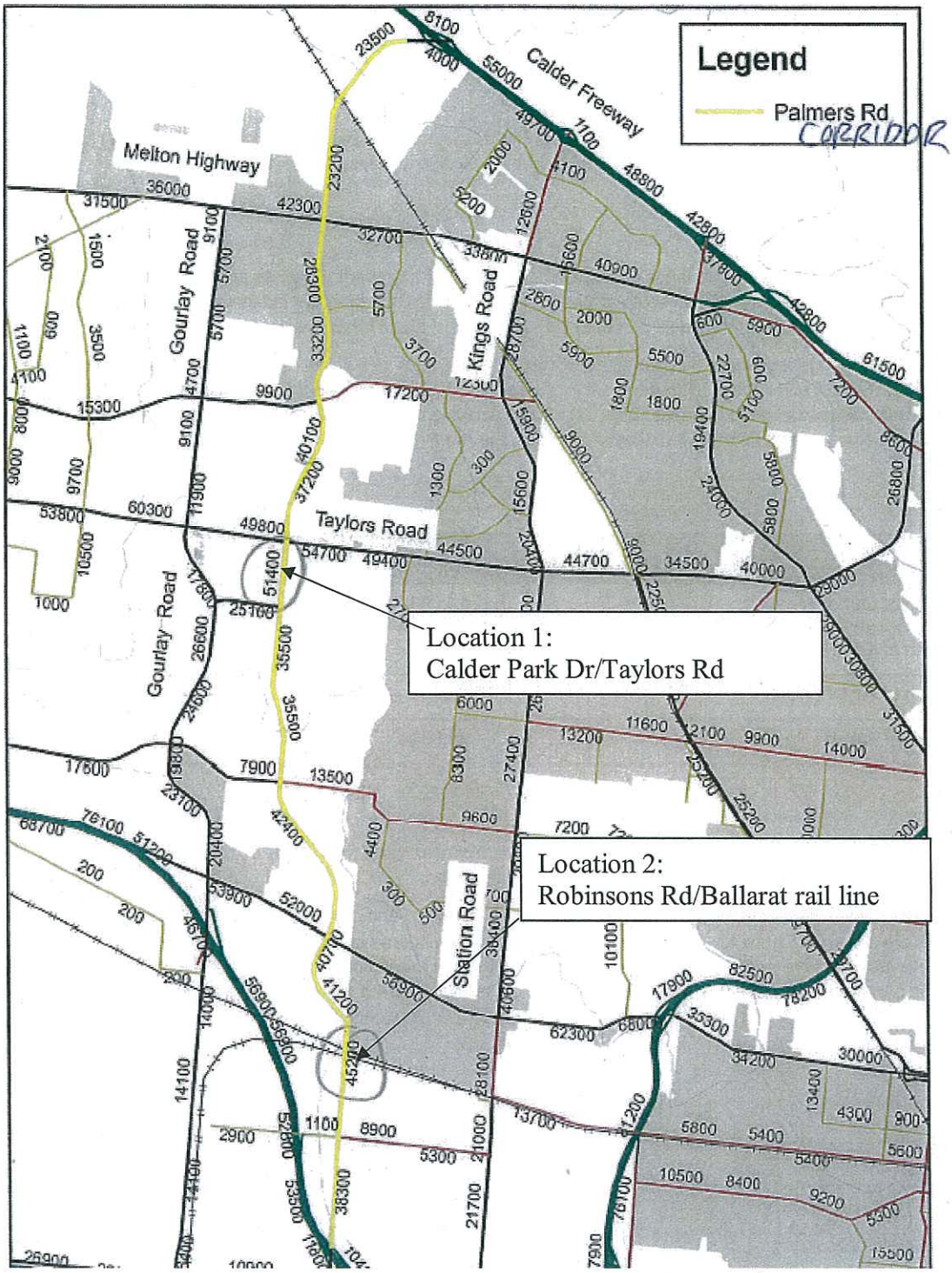
C1: 4 lanes in 2046 (AECOM 2013)

Figure 9 2046 Daily two way volumes – Four lanes on Palmers Road Corridor between Deer Park Bypass and Calder Freeway



C2: 6 lanes in 2046 (AECOM 2013)

Figure 10 2046 Daily two way volumes – Six lanes on Palmers Road Corridor between Deer Park Bypass and Calder Freeway



ATTACHMENT D: AIR QUALITY SCREENING TOOL RESULTS FOR TWO WORST SCENARIOS

Attachment D1: The AQST outputs for Calder Park Drive near Taylors Road – Location 1

Air Quality Screening Tool Workbook

Step 1 Define the Project

Project Description:

Palmers Road Corridor - Western Freeway to Calder Freeway at Calder Park Drive between Taylors Rd & Commercial Rd, Caroline Springs. This is expected to be the worst case scenario based on the highest daily traffic volume.
Future 6 lane duplicated carriageway with off-road shared bicycle paths.
Adopted 2046 daily traffic volume along route of 43,800 vpd for 2016 (4 lanes) and 51,400 vpd for 2021 (6 lanes) figures. Adopted 3,100 vehicles in peak hour for 2016 and 3,750 vehicles in peak hour for 2021..
Adopted truck volume of 13% (2016) and 14% (2021).
Road gradient of 0% adopted.

Number of project components	2
Aerial map attached	☑
Planning map attached	☑

Step 2 Calculate contaminant concentration

Peak hourly traffic volume	4,000	vehicles per hour 2016
Peak hourly traffic volume	4,000	vehicles per hour 2021
Peak daily traffic volume	40,000	vehicles per day 2016
Peak daily traffic volume	60,000	vehicles per day 2021
Road type	Arterial road	
Distance to sensitive receptor (m)	1	
Description of sensitive receptor	Adopted footpath as the sensitive receptor.	

Contaminant concentration

Indicator	Year	Concentration	Units
Nitrogen dioxide	2016	71	µg/m³
Nitrogen dioxide	2021	57	µg/m³
PM_{10}	2016	8	µg/m³
PM_{10}	2021	9	µg/m³

Step 3 Adjust contaminant concentration

Proportion of heavy vehicles in 2016 (%)	13	(no greater than 34%)
Proportion of heavy vehicles in 2021 (%)	14	(no greater than 34%)
Road gradient (%)	0	(no greater than 6%)
Cutting depth (m)	At grade or on fill	

Step 4 Account for existing air quality

Indicator	Year	Bkg. Conc.	Adj. Conc.	Predicted Conc.	Units
Nitrogen dioxide	2016	28	78	106	µg/m³
Nitrogen dioxide	2021	28	63	91	µg/m³
PM_{10}	2016	36	9	45	µg/m³
PM_{10}	2021	36	10	46	µg/m³

Step 5 Assessment

Indicator	Year	Avg. Period	Criteria	Predicted Conc.	Units	Status
Nitrogen dioxide	2016	1 hour	263	106	µg/m³	Pass
Nitrogen dioxide	2021	1 hour	263	91	µg/m³	Pass
PM_{10}	2016	1 hour	60	45	µg/m³	Pass
PM_{10}	2021	1 hour	60	46	µg/m³	Pass

Outcome

No further work required - proceed

D2: The AQST outputs for Robinsons Road under Ballarat rail line – Location 2

Air Quality Screening Tool Workbook

Step 1 Define the Project

Project Description:

Palmers Road Corridor - Western Freeway to Calder Freeway at Robinsons Road at Ballarat Rail Line
Future 6 lane duplicated carriageway with off-road shared bicycle paths
Adopted 2046 daily traffic volume of 38,000 vpd for 2016 (4 lanes) and 45,200 vpd for 2021 (6 lanes) figures. Adopted 2,900 vehicles in peak hour in 2016 (4 lanes) and 3,500 vehicles per hour in 2021.
Adopted truck volume as 28% in 2016 and 27% in 2021.
Road gradient of 4% adopted for underpass at Ballarat rail line crossing - worst case scenario.

Number of project components	2
Aerial map attached	☑
Planning map attached	☑

Step 2 Calculate contaminant concentration

Peak hourly traffic volume	4,000	vehicles per hour 2016
Peak hourly traffic volume	4,000	vehicles per hour 2021
Peak daily traffic volume	40,000	vehicles per day 2016
Peak daily traffic volume	60,000	vehicles per day 2021
Road type	Arterial road	
Distance to sensitive receptor (m)	1	
Description of sensitive receptor	Adopted footpath as the sensitive receptor.	

Contaminant concentration

Indicator	Year	Concentration	Units
Nitrogen dioxide	2016	71	µg/m³
Nitrogen dioxide	2021	57	µg/m³
PM_{10}	2016	8	µg/m³
PM_{10}	2021	9	µg/m³

Step 3 Adjust contaminant concentration

Proportion of heavy vehicles in 2016 (%)	28	(no greater than 34%)
Proportion of heavy vehicles in 2021 (%)	27	(no greater than 34%)
Road gradient (%)	4	(no greater than 6%)
Cutting depth (m)	-8	

Step 4 Account for existing air quality

Indicator	Year	Bkg. Conc.	Adj. Conc.	Predicted Conc.	Units
Nitrogen dioxide	2016	28	228	256	µg/m³
Nitrogen dioxide	2021	28	181	209	µg/m³
PM_{10}	2016	36	17	53	µg/m³
PM_{10}	2021	36	19	55	µg/m³

Step 5 Assessment

Indicator	Year	Avg. Period	Criteria	Predicted Conc.	Units	Status
Nitrogen dioxide	2016	1 hour	263	256	µg/m³	Pass
Nitrogen dioxide	2021	1 hour	263	209	µg/m³	Pass
PM_{10}	2016	1 hour	60	53	µg/m³	Pass
PM_{10}	2021	1 hour	60	55	µg/m³	Pass

Outcome

No further work required - proceed