

The green vine Special air quality issue

ENVIRONMENTAL MANAGEMENT & SOCIAL RESPONSIBILITY

Issue 13 December 2014



CLEARING THE AIR

Motor vehicles and road network activities are key contributors to road transport-related air pollution. Sources include exhaust emissions, brake and tyre wear, road dust from sealed and unsealed roads, dust and odour due to earthworks as well as spray drift from vegetation control.

Transport-related air pollution is of concern because many of the pollutants that are released are known to cause adverse health effects. The Transport Agency is committed to acting in an environmentally and socially responsible manner. This includes addressing the adverse air quality effects of vehicle emissions and state highway projects.

Over the last two years, the Environment and Urban Design team has produced a wide range of tools and information to promote a consistent and effective approach for better management of air quality issues across the state highway network.

This special issue of *the green vine* focuses on air quality and introduces some of the new tools and guidance now available.

Air quality assessment guide for state highway projects

Air quality is only one of many potential environmental impacts resulting from roads. However, for state highway projects, air quality can be a significant area of community concern. An assessment of the discharges to air from these projects must be undertaken to determine the impacts on air quality.

The **Air quality assessment guide** has been developed to encourage nationally consistent application of assessment methods within the context of Transport Agency business processes. It is based on the **Good practice guide for assessing discharges to air from land transport** developed by the Ministry for the Environment.

The guide sets out the minimum requirements for good practice but does not preclude higher standards being adopted for projects where the sensitivity of the environment or the scale of the project warrants greater attention.

The guide is aimed at project managers, planners and air quality specialists but will also be useful for environmental managers and contract managers. It can be downloaded from the Transport Agency Air Quality website (air.nzta.govt.nz).

TRANSPORT AND AIR QUALITY
INFORMATION, RESOURCES AND TOOLS

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Assessment processes Vehicle Emissions Prediction Model Meteorological datasets Air Quality Screening Model Background air quality

Assessment

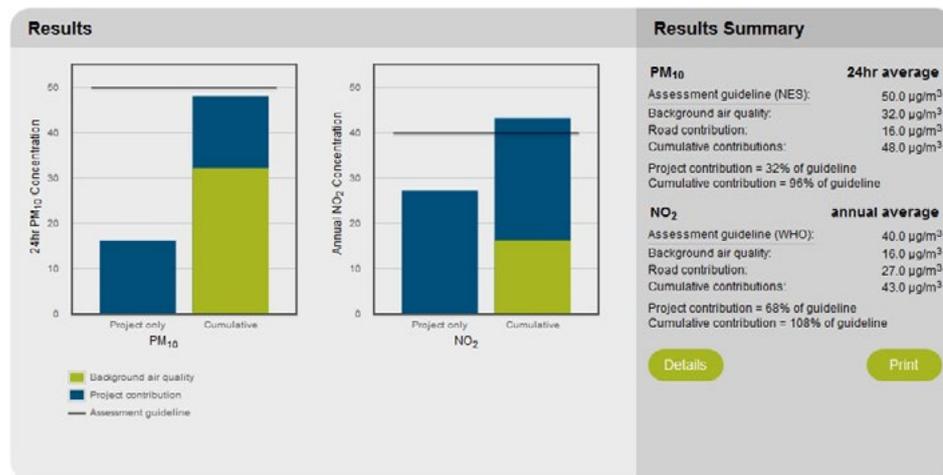
This section provides information on the assessment process for roading projects and Transport Agency's procedures and resources for assessment.

Assessment processes <p>The Transport Agency utilises a stage-wise approach for assessing environmental effects (including air quality) of roading projects.</p>	Vehicle Emissions Prediction Model Vehicle emissions prediction model (VEPM 5.1) <p>The Vehicle Emissions Prediction Model has been developed by the Transport Agency and Auckland Council to predict emissions from vehicles.</p>	Meteorological datasets <p>A number of meteorological datasets are available for use in assessing air impacts for roading and other projects.</p>
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Air quality screening model

The Transport Agency has updated its screening model for estimating air quality near roadways, which combines the contribution of the road together with the background air quality to arrive at a cumulative concentration.



The model is designed to provide a conservative (worst case) assessment of air quality risk from a single road for two key transport-related air pollutants - particulate matter (PM₁₀) and nitrogen dioxide (NO₂). For more complex situations, specialist advice may be required. The initial version of the model used qualitative indicators of the likely background. The latest version has been upgraded with detailed estimates of background air quality to provide more robust calculations of the cumulative air quality.

The road contribution to PM₁₀ concentrations is calculated using emission factors, which take into consideration the

assessment year, the average speed, the amount of traffic and the proportion of heavy vehicles. For NO₂ concentrations, the road contribution is based on a general dispersion algorithm, which is only dependent on the amount of traffic. Background air quality data (excluding nearby roads) are available for every location in New Zealand (by census area unit) and can be accessed via an interactive map or from a list.

Further information on the key assumptions and limitations of the screening model is available in the users' notes and other documentation at air.nzta.govt.nz.

Research news

The Transport Agency has recently awarded funds for two environmental effects research projects looking at air quality effects from road transport:

- ART 14/20: Understanding trends in vehicle emissions
- ART 14/49: The impacts of exposure to dust from unsealed roads

Both projects are being led by Golder Associates (NZ) Ltd and are due to be completed by October 2015.

For more information, contact Jeff Bluett at JBluett@golder.co.nz



www.air.nzta.govt.nz

One of the most effective strategies for ensuring consistency in air quality management is to provide tools and information that are readily available, as well as controlling the versions that are in use. To achieve this objective, the Transport Agency created the transport and air quality website, which acts as a portal for all relevant air quality-related information.

This site has been actively developed over the last 4 years and contains all air quality-related templates, guides and research, as well as links to relevant standards, regulations and other information sources. An important element of the website is the provision of tools for air quality calculations. So far, the website tools include:

- **Air quality screening model** - which estimates air quality coming from background sources and nearby roads to indicate whether or not relevant air quality guidelines and standards are going to be met or exceeded at a given location.
- **Background air quality interactive maps** - which provide default values of background air quality (ie from all sources excluding nearby roads) for key pollutants for each census area unit across New Zealand.
- **Vehicle Emissions Prediction Model (VEPM)** - which predicts emissions from vehicles in the New Zealand fleet under typical road, traffic and operating conditions.
- **Meteorological datasets inventory** - which lists available datasets from around the country that may be useful in air quality assessments for state highway projects.
- **Transport-related air quality monitoring system (TRAMS)** - which allows users to view and export summary air quality data and site metadata by region and pollutant using information collected by the Transport Agency and various regional councils.

TRAMS - the transport-related air quality monitoring system

The Transport Agency monitors monthly air quality at over 120 sites across New Zealand with its national nitrogen dioxide (NO₂) passive sampling network.

Transport-related air quality monitoring is also undertaken by many other agencies for the purpose of assessing air quality against national environmental standards and guidelines as part of routine or transport project monitoring.

TRAMS - the transport related air quality monitoring system - has been developed by the Transport Agency to collate data from all of these sources and to ensure this data is readily and easily available for staff, suppliers as well as the general public.

Users can access the TRAMS webpage on the air.nzta.govt.nz website and review the monitoring results available for their area of interest. The web page allows users to view and export the summary air quality data by region and air pollutant, as well as the site metadata.

TRAMS has results for the Transport Agency national network sites up to the end of 2013 and for most regional council sites up to the end of 2012. Project monitoring data are also available for some locations.

Highways Information Portal hip.nzta.govt.nz

While air.nzta.govt.nz provides information specific to transport air quality management, the Highways Information Portal is a central hub for information on the wider standards, processes, and procedures to be used by Transport Agency staff and our suppliers. The Environmental and Social Responsibility section provides information about the role of the Environment and Urban Design team, the Agency's Environmental and Social Responsibility Standard as well as other related information. Visit hip.nzta.govt.nz

Select a region



Canterbury

Choose contaminants

Benzene Annual (µg/m ³)	<input type="checkbox"/>
CO Max 1hr (mg/m ³)	<input type="checkbox"/>
CO Max 8hr (mg/m ³)	<input type="checkbox"/>
NO ₂ Annual (µg/m ³)	<input checked="" type="checkbox"/>
NO ₂ Max 1hr (µg/m ³)	<input type="checkbox"/>
NO ₂ Max 24hr (µg/m ³)	<input type="checkbox"/>
NO ₂ Summer (µg/m ³)	<input type="checkbox"/>
NO ₂ Winter (µg/m ³)	<input type="checkbox"/>
PM ₁₀ Annual (µg/m ³)	<input type="checkbox"/>
PM ₁₀ Max 24hr (µg/m ³)	<input checked="" type="checkbox"/>
PM _{2.5} Annual (µg/m ³)	<input type="checkbox"/>
PM _{2.5} Max 24hr (µg/m ³)	<input type="checkbox"/>

Select all

[Show site summary](#)

[Export detailed contaminant data](#)

Canterbury

Site ID	Site name	NO ₂ Annual	PM ₁₀ Max 24hr
CHR016	Buckleys Rd / Norwich St	Yes	No
CHR017	ECan Riccarton Rd	Yes	No
CHR018	ECan Riccarton Rd	Yes	No
CHR019	ECan Riccarton Rd	Yes	No
CHR020	ECan Coles Pl	Yes	No
CHR021	ECan Coles Pl	Yes	No
CHR022	ECan Coles Pl	Yes	No
CHR023	Queen Elizabeth II Dr	No	Yes
CRC001	Christchurch - Riccarton	Yes	Yes
CRC002	Christchurch - Burnside	Yes	Yes
CRC003	Christchurch - St Albans	Yes	Yes
CRC004	Christchurch - Woolston	No	Yes
CRC005	Kaiapoi	No	Yes
CRC006	Rangiora	No	Yes
CRC007	Ashburton	No	Yes
CRC008	Geraldine	No	Yes
CRC009	Waimate	No	Yes

[Choose a new region or contaminants](#)

[Export site summary](#)

Canterbury

CHR017 ECan Riccarton Rd

Contaminant	2013	2012	2011	2010	2009	2008	2007	2006
NO ₂ Annual (µg/m ³)	42.1	41.1	-	42.0				
PM ₁₀ Max 24hr (µg/m ³)								

[Choose a new region or contaminants](#)

[Choose a new site](#)

[Site metadata \(PDF\)](#)

[Export site summary](#)

WATCH THIS SPACE

Upcoming milestones to keep an eye out include:

December 2014

Ambient air quality (nitrogen dioxide) monitoring network

Annual report 2007 to 2013 published
See air.nzta.govt.nz for more details

December 2014

Guide to assessing air quality impacts from state highway projects

New guide published
See air.nzta.govt.nz for more details

11 December 2014

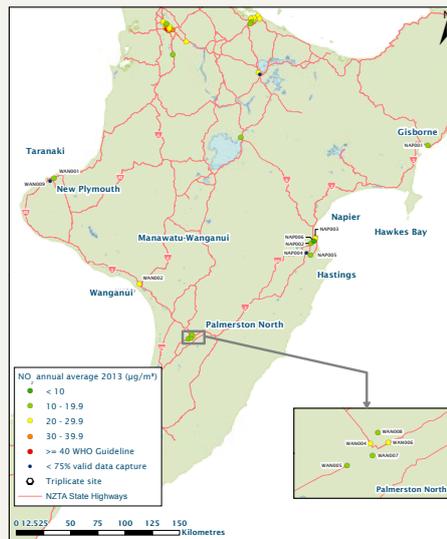
New Directions in Managing Transport-Related Air Quality in New Zealand

NZ Transport Agency/CASANZ
Workshop in Auckland
See air.nzta.govt.nz for more details

February 2015

Environmental and Social Management for Network Contractors

NZ Transport Agency e-Learning Module available
See www.nzta.govt.nz for more details



Team Contacts

The services of the Environment and Urban Design team are available to support NZ Transport Agency staff in transport air quality issues, including assistance for project managers in understanding all air quality requirements of a project (eg roading project air quality assessments, designation conditions, contractor obligations etc).

For further information about any of the initiatives detailed here or other air quality issues, please contact Rob Hannaby, rob.hannaby@nzta.govt.nz.

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For more information

Previous issues of the green vine are on the intranet at
OnRamp>News and Views>Newsletters