

# Research and investigative monitoring

The NZ Transport Agency invests in research and investigative monitoring to acquire new knowledge to support the activities of the state highway group and other road controlling authorities. This monitoring typically involves one-off studies that are designed to review the effectiveness of existing policy or highlight options for new policy development.

Research and investigative monitoring is usually undertaken by researchers at Crown Research Institutes, universities and/or specialist consultancies and may be funded by the NZ Transport Agency or a consortium of end-users (such as NZ Transport Agency, Auckland Council, Ministry of Transport and Ministry for the Environment).



Roadside remote sensing is useful for identifying and assessing the key trends that influence the emissions performance of the light vehicle fleet.



## Further information

NZ Transport Agency transport and air quality website  
[www.air.nzta.govt.nz](http://www.air.nzta.govt.nz)

NZ Transport Agency *Ambient air quality (nitrogen dioxide) monitoring programme: operating manual 2013/14.*  
[www.nzta.govt.nz/resources/air-quality-monitoring/](http://www.nzta.govt.nz/resources/air-quality-monitoring/)

Ministry for the Environment *Good practice guide to air quality monitoring and data management 2009.*  
[www.mfe.govt.nz/publications/air/#guides](http://www.mfe.govt.nz/publications/air/#guides)

Ministry for the Environment *Good practice guide for assessing and managing the environmental effects of dust emissions*  
[www.mfe.govt.nz/publications/air/#guides](http://www.mfe.govt.nz/publications/air/#guides)

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# Air quality monitoring

Why do we monitor air quality around state highways? What do we measure? Where, when and for how long should the monitoring be undertaken?



**Air quality monitoring is undertaken to inform decisions on how best to manage and improve the environment. Here are the key issues that need to be considered for any monitoring.**



### **WHY?**

What is the purpose? Evaluating trends? Assessing projects? Managing construction effects? Research and investigation?

### **WHAT?**

Which air pollutants? What about other parameters such as meteorology and traffic?

### **WHERE?**

Do you need to monitor where someone might be exposed to adverse effects or are you looking for a benchmark site for long term trends?

### **WHEN AND FOR HOW LONG?**

This will depend on the purpose eg pre-project monitoring is done early in a project's life but the NZ Transport Agency's national trend monitoring is ongoing.

## **Trend monitoring**

One of the key air quality objectives in the State Highway Environmental Plan is:

*A1: Understand the contribution of vehicle traffic to air quality.*

Air quality resulting from vehicles using the existing state highway network is assessed annually using diffusion tubes to measure nitrogen dioxide.

Monthly monitoring is undertaken at over 120 sites across the network. Measurements are made at a number of potentially sensitive locations near state highways, including residences and schools.

Data from these tubes allow air quality associated with vehicle emissions to be tracked over time and spatially. The objective is to monitor a decreasing trend in nitrogen dioxide concentrations.

## **Project monitoring**

All state highway projects need to consider the current air quality in the project area in order to evaluate the project's impacts on future air quality.

Suitable data may already be available from regional councils, NZ Transport Agency or research organisations. However, high risk, large projects may require a dedicated monitoring campaign.

The typical air pollutants monitored include nitrogen dioxide and fine particulate matter but others may be required. Data on meteorological and traffic conditions are also essential to understanding air quality and critical for dispersion modelling.

## **Construction effects monitoring**

Dust monitoring should be undertaken for high risk projects during construction to manage any potentially adverse effects. Occasionally, odour monitoring may also be required, eg if the project is being undertaken in a contaminated area. Monitoring of dust and odour is often required as part of a Construction Air Quality Management Plan.

Many monitoring programmes automatically send out SMS or email messages to the construction team so immediate action can be taken (eg to increase the frequency of water spraying to dampen dust emissions) but monitoring sometimes just involves recording whether dust emissions have been observed beyond the site boundary.

Monitoring should start as soon as works begin and continue for the duration of the construction. Total suspended particulates (TSP) – a measure of likely dust nuisance – is the critical pollutant to monitor.