
Strategic Theme E: Climate Change, Environment and Disasters

The goal of Strategic Theme E is to 'increase resiliency and protect investments in transportation infrastructure from impacts of climate change events while lessening the impact of road transportation on the environment'. This Strategic Theme consists of three Technical Committees (TCs).

Technical Committee E.2 'Environment Considerations in Road Projects and Operations'

TC E.2 'Environment Considerations in Road Projects and Operations' has an emphasis on road transport-related air quality and noise mitigation matters.

Overview

The sixth meeting of the PIARC Technical Committee (TC) E.2 was held between 8th and 10th October 2018 in Madrid, Spain at the Ministry of Development – Directorate of Roads. The meeting was followed by a field trip to the Calle 30 road tunnels project.

Australroads are represented on the TC by Helen Murphy - Chair (Helen is Principal Advisor - Major Transport Projects, Department of Environment, Land, Water and Planning, Victoria) and Rob Hannaby - English Speaking Secretary (Rob is Lead Advisor – Environment at NZ Transport Agency).

Additional Australia and NZ representatives on the TC include:

- **Air Quality** - Frank Fleer (Helix Environmental, Victoria) and Andrew Mattes (NSW Roads and Maritime Services)
- **Noise** - James McIntosh (Transport for Victoria), Stephen Chiles (Chiles Ltd, NZ) and Marc Buret (EPA Victoria)

The focus of discussion at the sixth TC meeting was to review, refine and discuss progress against the committee's air quality and noise work programmes, in particular the two best practice guides that the TC are preparing.

All of the deliverables the TC are working on will be presented at the PIARC World Congress in Abu Dhabi in October 2019 and include:

1. National road authority air quality assessment and management best practice guide
2. National road authority noise management best practice guide
3. International road traffic noise criteria database
4. Auralisations to raise awareness about the impact of road traffic noise

General Matters

The TC has an air quality and noise working group both of which are working on two best practice guides for national road agencies. Each guide will include a large range of recent international case studies covering a wide range matters that link theory to practice. Examples include:

- The Stockholm congestion charge scheme and the impact on traffic emissions
- Strategic noise impact assessment in Mexico using roadside noise monitoring between 2000 and 2012

The noise group is also working on two additional initiatives:

- Auralisations and a dedicated web page to raise awareness as to why national road agencies should take action to address the public health impacts of road traffic noise. (Currently, estimates place the cost of sleep disturbance and annoyance from road traffic noise around 40 € billion in the EU, equating to 1.0-1.6 million healthy life years every year in Western Europe alone. There is very little data to put a cost on such impacts in Australia and NZ)
- A database that collates international road traffic criteria used by Road Agencies throughout the world

Air Quality Working Group

The air quality working group is led by Stephen Thomson from Transport Scotland. The working draft of the guide is being finalised and covers a broad range of road traffic-related air quality matters, including: public health effects, impact assessment, stakeholder and public engagement and air quality management measures available to road agencies.

As noted above, the group is collating an extensive range of international case studies in order to provide practical and real examples of how Road Agencies can effectively address the impact road traffic-related air pollution. Examples include the use of:

- Vegetation barriers in the Czech Republic to reduce roadside air pollution
- Photocatalytic pavements and barriers to reduce levels of nitrogen dioxide in various parts of the world

The guide discusses a range of technical and topical matters including; the merits of Low Emission Zones and urban access controls to improve air quality. A range of conclusions and recommendations are made, in particular the importance of adopting an integrated approach to land use and transport planning is highlighted as well as working collaboratively with key stakeholders to achieve optimal outcomes.

Noise Working Group

The work of the noise working group is focussing effort on three deliverables for practitioners:

1. Road traffic noise best practice management guide
2. Auralisations to support community engagement as a result of new projects or network improvements
3. International road traffic noise criteria database

Development of the guide is being led by Jakob Fryd a noise specialist from the Danish Road Directorate. There has been considerable progress over the last 6 months drafting the guide to the point that it is now close to completion. The guide provides comprehensive information on the basics of road traffic noise management, including a review of all common road traffic noise models as well as providing the latest insight on road surface acoustics.

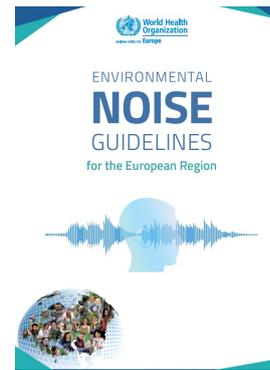
The noise guide will include around 30 international case studies that provide practical examples of the work that road agencies and others have undertaken to address the impact of road traffic noise. Examples include:

- The use of low cost noise sensors to inform road traffic noise mapping in Italy
- A comparison of road surface noise from different road surfaces in the US and Europe

Work on the auralisations is currently on hold whilst work on the guide is completed and the international road traffic noise criteria database continuing as more information becomes available. The database currently includes information from over 25 jurisdictions including; Denmark, Tunisia, Chile, South Korea as well as all Australia states, all Canadian provinces and New Zealand.

WHO Press Conference – New European Environmental Noise Guidelines

On Tuesday 9th October, the TC joined a live internet press conference held by the World Health Organisation in Europe who were launching their new environmental noise guidelines for Europe. The guidelines include criteria for road traffic noise and railway noise. The WHO has invested significant effort and engaged internationally recognised experts to review a vast library of recent research and evidence (much generated as a result of the EU Environmental Noise Directive) in order to recommend the criteria included in the Guidelines.



James McIntosh from Victoria took up the opportunity to ask the panel at the press conference a question about the new guidelines which recommends that road traffic noise should not exceed 53 dB L_{dn} (which is approximately equivalent to 49 L_{Aeq(24h)} and 52 L_{A10(18h)}). The WHO recognises that jurisdictions, including national road authorities, will need to work through the implications of applying the new guidelines in a manner that reflects their particular circumstances.

More information on the new guidelines is available at:

<http://www.euro.who.int/en/media-centre/sections/press-releases/2018/press-information-note-on-the-launch-of-the-who-environmental-noise-guidelines-for-the-european-region>

Field Visit – Calle 30 Road Tunnels, Madrid

The TC visited the Calle 30 tunnel project in Madrid which was started in 2004 and completed in the first quarter of 2007. The project is 99 km long and forms part of the Madrid ring-road with an impressive 56 km of the project being road tunnel. The project involved enclosing existing roads near the city centre into tunnels. This allowed a significant area of land that was previously road to be returned to public open space with a linear park along the Manzanares River near the City Centre being created virtually free of traffic noise and vehicle emissions.



Linear park adjacent to Manzanares River above Calle 30 road tunnel near Palacio Real de Madrid, Spain

The field trip included a tour of the tunnel operations centre as well as an inspection of the tunnel infrastructure including the ventilation system and the air pollution control system (which is designed to remove fine particulates and nitrogen oxides from vehicles using the tunnels before being emitted to the atmosphere). The tunnels include a vast array of monitoring sensors which provide real-time data to the control centre and includes data on the level of visibility, carbon monoxide and nitrogen dioxide inside the tunnel.



PIARC Technical Committee E.2 Visit to Calle 30 Tunnels and Operations Centre, Madrid, Spain



PIARC Technical Committee E.2 Meeting
Ministry of Development – Directorate of Roads, Madrid, Spain

Helen Murphy: TC E.2 Chair

Principal Advisor - Major Transport Projects, Department of Environment, Land, Water and Planning, Victoria

Rob Hannaby: TC E.2 English Speaking Secretary

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