

5. VEHICLE FLEET EMISSIONS CONTROL STRATEGY – FINAL REPORT

RR 9412

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The purpose of this report is to report to the Committee on the Ministry of Transport's discussion document "Local Air Quality Management: Impacts from the road transport sector, Vehicle Fleet Emissions Control Strategy, Final Report", November 1998, released in mid- December 1998. The (VFECS) document is relatively technical in content and is some 140 pages long. Submissions have been invited on this document, to be submitted by 12 March 1999. Interestingly, this is one of the very few Governmental policy investigations in the transport arena to be progressing during the Road Reforms debate.

BACKGROUND

This document is a stage 2 (final) report for VFECS, and builds on the stage 1 report which dealt principally with carbon monoxide (CO) emissions from petrol powered vehicles. The purpose of the strategy is to determine the directions for policy to control the impacts of vehicle emissions on local air quality. It presents analysis of the key indicator pollutants associated with motor vehicles (CO, Oxides of Nitrogen (NO_x), Particulate Matter (PM) and Volatile Organic Compounds (VOC)) and develops appropriate initiatives for tackling these pollutants based on the air pollution levels as they exist in New Zealand cities.

It is the culmination of four years complex scientific and technical work, addressing an area of needed research identified in the Land Transport Pricing Study. The VFECS exercise undertook to establish the relationships between vehicle emissions and local air quality, to determine the appropriate means for control of the impacts specific to New Zealand's needs, in a rational and consistent analytical process.¹

The Council made a submission on the stage 1 report in February 1998, generally supporting the work undertaken and the policy recommendations promoted at that point.

CLIMATE CHANGE, GREENHOUSE GASES AND FUEL EFFICIENCY

As with the basis of the stage one report, this report does not deal explicitly with CO₂ or other greenhouse gases, and states that they are not a primary focus of VFECS. Policy initiatives addressing these are being addressed

¹ Page 1, section 1, paragraph 1

through the Government's work programme on climate change. There is a discussion document also out on this matter, for which a report will be presented to Council next month. The document also comments that:

“Nevertheless, this VFECS study has identified that in addition to managing local air quality transport effects, the above policy mix will also lead to CO₂ savings and energy efficiency improvements from road transport.”²

This may true but the document does not demonstrate how, and it would be very easy to overestimate the real savings, as there has been little recognition of matters such as induced traffic in the analyses presented. However, the main issue here is that CO₂ is considered to be a global problem, with a focus on the total emissions levels. Simply adjusting emissions levels from the vehicle fleet to meet air quality guidelines in local situations does not necessarily reduce the total vehicle fleet emissions output. Meeting all local corridor guideline levels could occur whilst at the same time more travel occurring across the road network (with higher total emission output).

The document also comments that fuel economy and consumption should be spin-off benefits from this strategy policy mix, through improved vehicle fleet emissions performance/combustion efficiency and traffic management measures to reduce congestion. The same comment from the previous paragraph applies to this assertion.

RECOMMENDATIONS OF THE “VFECS” DISCUSSION DOCUMENT

The one and a half pages of recommendations presented for the strategy are broken down into national level and local/regional level initiatives, and each are related to air quality assessment, vehicle fleet performance and traffic network performance.

It is relevant to note that the discussion document recognises that to be successful and enduring, the VFECS cannot be a one-off analysis and response, but needs to be an ongoing dynamic analysis. This has some promise in that it will be regularly reviewed to assess the success of the policies and policy balance.

The document also is influenced in its recommendations by a conclusion that “as a broad generalisation, the city air in New Zealand is comparable with or better than a number of OECD countries, where vehicle emissions control policies have been in effect for many years already.”³ It does also go on to note: “We do not currently have regional or urban wide air quality exceedances, although it is recognised that the potential exists for this should the underlying causes be allowed to continue unchecked.”⁴

² Page 106, section 7.4, 1st paragraph

³ Page 25, section 2.13, 5th paragraph.

⁴ Page 58, section 5.1, paragraph 3

In summary, the recommendations of the discussion document are:

For national level initiatives:

- **Air Quality:** review, develop and promote air quality guidelines; implement targets; and set consistent methodologies for monitoring.
- **Vehicle Fleet Performance:** Ensure compliance with international emission standards for all new vehicles; review fuel specifications; introduce procedures to deal with smoky vehicles and encourage vehicle service industry to improve conversancy with new engine technologies.
- **Traffic Network Performance:** Promote and demonstrate environmental capacity analysis (ECA).

For local/regional level initiatives:

- **Air Quality:** Application of consistent monitoring procedures, especially at corridor level.
- **Traffic Network Performance:** Encourage the adoption of ECA as part of everyday road network management; and encourage dialogue between road controlling authorities, land use planners and air quality managers on air quality matters related to the traffic network.

Interestingly, the document comments that “looking ahead medium to long term, it is predicted that engine emissions will be developed out, with tailpipe rates at negligible levels, and that CO₂/energy efficiency goals will dominate future prime mover development.”⁵ Whilst the “medium to long term” time frames are not indicated here, this indicates that the real challenge for transport planning in the long term is a space related issue, not emissions related.

ISSUES FOR THE COUNCIL

There are essentially four matters of interest to the Council: City-wide pollution levels, application of the ECA and related funding issues, changes to the Resource Management Act and additional Council responsibilities. Each is discussed below.

These should all be viewed in the light of an underlying position of central Government to minimise their involvement in directly addressing the issue of vehicle emissions. The document supports this position with comments such as “vehicle technology solutions are not the answer in themselves. They require significant time to penetrate the fleet, and the potential benefits will be countered by an increase in demand.”⁶ It would appear that dealing with

⁵ Page 40, section 3.5, paragraph 4

⁶ page 3, section 1.1, paragraph 8

particular incidents or problem areas in the short term would be left to local measures (after the nominal national level measures have been shown to be inadequate). There is no suggestion that the national type of measures could be strengthened at local level (such as support for alternative fuels, or regional emissions standards and testing)

City-Wide Pollution Levels

The document consistently states in numerous locations that air quality monitoring for the pollutants associated with vehicles shows that New Zealand does not have nation-wide nor city-wide exceedances of the Ambient Air Quality Guidelines.⁷ In the overview section it comments that “contrary to popularly held perceptions, scientific air quality monitoring data shows that significant air pollution levels in our cities from motor vehicles are more potential than actual.”⁸ The incidence of pollution problems attributable to vehicle emissions appears to be very local, in certain areas of the urban road networks with high traffic densities combined with certain other factors. For Christchurch, there are identified problems on some corridors, but not at a metropolitan-wide level.

An issue of interest for Christchurch is that of particulate matter (such as PM₁₀). The document comments:

“Emissions of particulate matter (as PM₁₀), especially from diesel vehicles has often been proposed as a significant pollution problem. Scientific research has found that in some urban areas PM₁₀ levels exceed guidelines, but where this occurs the major source of emissions is domestic fossil fuel burning rather than vehicles. Research has found that vehicle emissions contribute no more than 20% of PM₁₀ during the highest pollution incidents and therefore do not require targeted control.”⁹

However, the document does not go on to explore the issue where peaks in vehicle related PM₁₀ do not coincide with the peaks identified in the report (winter, night-time). It is very likely that PM₁₀ would contribute significantly more than 20% during the Riccarton Road peak traffic hour of around midday on a Saturday. In any event, it could be argued that 20% is a significant proportion and one which may (or may not) be capable of easier reduction from vehicle sources than other sources. It is therefore of concern that targeted control of PM₁₀ emissions has been dismissed so lightly.

Application of ECA and Related Funding Issues

⁷ page ii, paragraphs 2-4

⁸ page ii, paragraph 2

⁹ page ii, paragraph 4

The Environmental Capacity Analysis proposed in the document is essentially an add-on component to certain types of computer based traffic models, wherein vehicles are assessed individually as they travel through their trip. The type of traffic conditions experienced on each section of the road network and the vehicle emissions characteristics are combined and added to all other vehicles on the section of the road network to produce the total emissions loading on the various lengths of road. It does not, however, carry on to calculate the pollution levels or the characteristics of the air sheds on each section of road (therefore, the title of “Environmental Capacity Analysis” is a misnomer).

The document notes that “ECA will enable road controlling authorities and air quality regulators to determine for the first time the real effect of different local traffic demand techniques such as bus lanes, parking policies, traffic calming and congestion pricing for managing the impacts of traffic emissions in local areas of concern. In this way both fleet performance and traffic management interventions can be evaluated to assess the most effective mix of policy responses...”¹⁰ This seems to overlook that the Government’s policies will have been fixed (likely to be from those above) and the only thing being tested is how the traffic management measures can fix the remaining problem. There is no information given testing this balancing issue in the document, but the remaining problem is likely to be similar to the original given the strategies desire to not effect unduly those vehicles not using the problem corridor/local area.

The Council does not operate the type of computer based traffic model considered in this discussion document. However, the merits of investing in such model types have been under discussion by staff for a short while prior to the developments in this strategy. It is a direction in which traffic modelling is moving and the Council is likely to develop in this direction also. It is also interesting to note that the Ministry of Transport’s consultants are intending to develop an appropriate model for north Christchurch as one of the test beds of the process.

The development of this type of model for the relevant parts of the city will involve funding which is not to date provided for and which is at this stage difficult to assess. Currently the recommendations merely “encourage the adoption of the ECA process by road controlling authorities, as part of their everyday management of roading networks.”¹¹ Nevertheless, it is certainly not beyond the bounds of possibility that such analysis will become a requirement of funding application analysis for Transfund funding of roading projects. This again is an additional cost to the road controlling authorities in their funding application processes, along with ongoing monitoring and updating data for the models. Ironically, this could benefit “Alternative to

¹⁰ page iv, paragraph 4

¹¹ page 105, section 7.3.2, third bullet point

roading” projects, which almost always will produce emissions levels reductions for the amount of travel being dealt with.

There are also unanswered questions relating to who holds or owns the modelling suites and resources, and the role of the regional authorities, given their brief to be responsible for other air quality issues within their areas. It would be of concern if regional authorities were able to veto or choose roading programmes based upon air quality criteria, when the road controlling authority should have constructed the programme with far more issues to balance.

Changes to the RMA and Support for Road Reforms

The discussion document comments (in a section entitled “Linkages to the Government’s Approach to Better Road Management”) that the proposed strategy complements the Government’s approach to Road Reform. In particular, it supports the proposed amendment to section 15 of the Resource Management Act, which proposes that road controlling authorities can be held accountable for managing the combined discharges to air from vehicles in road corridors.

This is a significant issue given that road controlling authorities do not control the vehicle fleet composition or the amount of travel, and the issue very quickly becomes a problem of how this is controlled (more at a political level than a practical level). Does the road controlling authority close a road when it reaches the air quality limits set for it each day or hour? And what would the role or powers of the Regional Council be given their brief for air quality in the Region?

The document also notes:

“In addition the VFECS approach supports the proposal to enable congestion charging to be introduced as an instrument to manage traffic flow densities, and the delegation to regional authorities of the control of planning and funding of passenger transport services.”¹²

There is no discussion in the discussion document supporting this issue which almost appears from nowhere in the concluding section; the support appears to be much more a matter of solidarity of Governmental policy positions than proof of fact in the document. It has been the Council’s position that whilst supportive of the concepts, Road Reforms as promoted by the Government are not needed to achieve congestion pricing or changes to the planning and funding of public transport.

Additional Council Responsibilities

¹² page 106, section 7.3, 1st paragraph

In addition to the above RMA related changes, the document supports the introduction of procedures to deal with smoky vehicles, similar to the “10-second rule” used in New South Wales and Victoria, Australia. The “10-second rule” is that when a vehicle is observed to emit smoke for more than 10 seconds, the vehicle is recorded and the owner contacted to remedy the fault or face legal action. This rule is implemented by public officials and the general public reporting vehicles.

The document comments that enforcement of such a rule could be by the police or designated council officers. Whilst there are not currently provisions to allow the Council’s involvement, this could place an additional staffing and administration requirement on the City Council. The document does however go on to note that comments on the way in which such a rule can be administered and enforced are welcomed and further analysis and consultation will be needed to determine the most appropriate implementation mechanisms.

GENERAL ISSUES

National Emissions Standards

The discussion document comments in many locations that the “average emissions performance of the fleet is improving all the time”¹³, and that “the NZ vehicle fleet performance is expected to improve in the future in line with global trends”¹⁴. This is based on New Zealand importing its vehicles (and vehicle technology) from overseas sources with increasingly stringent emissions standards. However, this is based upon the assumption that New Zealand will continue to source significant volumes of vehicles from the countries with these standards.

There is a danger of New Zealand becoming a dumping ground of cheap cars with poor emissions performance under this approach of relying upon source country standards (recall debates on the safety of Japanese imports). Officers consider that it is imperative that New Zealand adopts an emission standard for new and imported vehicles to provide the assurance that this assumption of improving fleet performance is realised. This is quite consistent with the statement in the report that “the New Zealand vehicle supply industry has volunteered, in principle, a willingness to observe formal compliance with an appropriate schedule of emissions standards through the future.”¹⁵ Unfortunately, the recommendations in the discussion document do not go this far; it simply recommends “implement systems that formalise vehicle importers current practice of complying with international emission standards...” (and does not even identify which “international” standards)

¹³ page iii, paragraph 3

¹⁴ page 80, first bullet point

¹⁵ page 60, first bullet point

Alternative Fuels and Modes

The matter of consideration of alternative fuels and modes of travel were raised on the Council's submission on the stage 1 document. Once again in this document, the matter is dismissed on grounds of the economic characteristics limiting their application, the minor proportion these vehicles would make of the general traffic flow and the diminishing advantage over time of these alternatives over traditional engines. This approach is consistent with the remainder of the strategy position to minimise the central Government involvement in directly addressing this issue. Central Government could give further advantages (either positively to these alternatives or against traditional engines – polluter pays!) in the short term until the benefits of the improvements of the emissions performance of the remainder of the fleet are achieved.

Economic Instruments

It is very interesting to note that the strategy has essentially ignored the policy tool of economic tools, so favoured in recent governmental transport policy work. This is in line with the Council's submission on stage 1, which discussed their use.

Cost-Effectiveness

Despite the document raising the issue of balancing the cost-effectiveness of any technological option for fleet wide improvements, this has been ignored in the discussion on network performance matters. The closest it gets is the conclusion that ECA will enable the assessment of the most effective policy mix of “different local traffic demand techniques”¹⁶. Certainly, the document does not cover the costs to the local authorities of model development and maintenance, on-going monitoring or enforcement roles.

Research

This whole area of science is research hungry at the moment. There is a huge amount of information that is still required, given the widely varying conditions geographically, meteorologically, etc. as well as the relative infancy of data acquisition, the differing traffic situations and the effects on those exposed. Three areas in particular that appear would benefit from more information are: the accumulation characteristics of emissions in an air shed, the “other” benefits of reductions in emissions even when below the guideline levels (and not receiving consideration in this report) and the health effects of exposure¹⁷.

¹⁶ page iv, paragraph 4

¹⁷ Page 21, section 2.8.2, 4th paragraph

Document Recommendations

Whilst the recommendations as promoted in the discussion document are hard to take exception to, that in itself is a problem – they lack bite. Use of language such as “Encourage the adoption of the ECA...” or “Encourage on-going dialogue...” is tentative, giving too many opportunities for finger pointing and opting out. The principle issue for the Council would be the situation of local solutions are being looked upon as the answer initially whilst the vehicles’ technology solve the problem long term by themselves with no NZ governmental intervention. It is clear that much of the possible infrastructure that could be introduced, as a result of this situation, will be around longer than it takes the vehicles fleet to improve sufficiently.

SUBMISSION

A draft submission has been formulated, and has been circulated with the Committee agenda. It is based on the above Council and general issues, as well as a number of comments of detail.

Generally, the submission expresses support for the work and recommendations in the report, with some restrictions, reservations and comments on a number of issues. Overall, the document could be summed up as generally another good step in the right direction but it is still a considerable distance from resolving the problem.

- Recommendation:**
1. For discussion.
 2. That the draft submission prepared for the Ministry of Transport, with amendments recommended by the Committee, be forwarded to the Ministry by 12 March 1999.

Chairman’s

- Recommendation:** For discussion.