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**National Environment Protection Council  
Proposed Diesel Emissions  
National Environment Protection Measure  
Preparatory Work**

**DIESEL FLEET CHARACTERISTICS  
PROJECT 1**

**1. OBJECTIVES**

- 1.1** To provide a comprehensive description of the number, distribution, and use of diesel powered road vehicles in use in 1995 and their original emission design standards.
- 1.2** To provide year-by-year projections of (1.1) above out to 2015.
- 1.3** To estimate the emissions of controlled pollutants (particles, NO<sub>x</sub>, THC, and CO, by vehicle class and total fleet emissions from 1995 to 2015
- 1.4** To do 1.1, 1.2, and 1.3 above for Australia as a whole, each State and Territory, and separately for each of the urban areas of Brisbane, Sydney, Melbourne, Adelaide and Perth.

**2. BACKGROUND**

This project is one of a series of projects encompassing the preparatory work identified to be carried out prior to developing a draft Diesel Emissions National Environment Protection Measure (NEPM) for consideration by the National Environment Protection Council (NEPC).

The project is essentially a "desk top" study, which will make use of existing reports and data sets. It is expected that estimates of vehicle emissions will have to be drawn largely from vehicle manufacturers and data from other countries.

This preparatory project is intended to provide robust and comprehensive data on the Australian diesel vehicle fleet and the present and projected emissions characteristics. This information will assist in the establishment of a technical basis for scoping the development of a Diesel Emissions NEPM.

This project specifically aims to:

- provide a comprehensive current profile of the Australian diesel vehicle fleet;
- estimate the emissions at present from that fleet that contributes to degraded air quality in major urban regions; and
- make projections of those emissions.

This latter task will be based on the projections of the composition and use of the diesel vehicle fleet with projections of the emissions from projections per unit distance travelled.

### **3. SCOPE**

The successful tenderer is required to:

- 3.1** provide a comprehensive and detailed description of the diesel powered road vehicles in Australia for 1995 by number, age, vehicle type and size, engine size and origin, and use (distance travelled and areas of operation) for each of the Australian Design Rules (ADR) Category.

This description must include:

- the total number of diesel engined vehicles;
- the total distance travelled;
- a detailed breakdown by vehicle category in terms of distance travelled (VKT), age profile, and area of use; and
- ADR compliance requirements and the original emission design standards the vehicles were constructed to meet.

The data will be compiled to provide profiles for Australia as a whole, each State and Territory, and the nominated urban areas of Brisbane, Sydney, Melbourne, Adelaide and Perth. The geographical definition of these urban areas will be as defined by the boundaries assigned by the Australian Bureau of Statistics.

- 3.2** provide a spreadsheet model to estimate projections of the above year-by-year out to 2015, recognising that the road classes (ie type of roads and congestion levels) change with each city and that the duty or area of usage changes with vehicle age. A detailed description of the model used to develop the projections will also be provided. Estimates of uncertainty in these projections must be provided.
- 3.3** by means of a spreadsheet model, estimate total diesel vehicle mass emissions of vehicle particles (with particle size where possible), oxides of nitrogen (NO<sub>x</sub>), total hydrocarbons (THC), and carbon monoxide (CO) for the reference year 1995 and year-by-year to 2015. This estimation will use the fleet profile data and vehicle emissions estimated from the original construction standards compliance and emissions deterioration.

Calculations will estimate diesel vehicle emission data for Australia as a whole, each State and Territory, and the nominated urban areas as defined in 3.1. In assessing the individual airshed emissions, differences in road classes (ie freeway, arterial, highway, and local roads) and the degree of congestion is to be taken account of and the duty and area of usage changes with vehicle age. These emissions estimates will be considered as the business as usual (BAU) scenario in section 3.4.

**3.4** provide comparison of the results obtained in 3.3 with the following scenarios:

- (a) BAU but no deterioration in emissions performance with age;
- (b) BAU plus Euro 2/US94 emission standards in 2002 without diesel fuel characteristic changes;
- (c) BAU plus Euro 2/US94 emission standards commencing in 2002 plus reduction in sulfur content of diesel fuel to 0.05% commencing in 2002;
- (d) Scenario (a) plus scenario (b); and
- (e) Scenario (a) plus scenario (c).

Fuel sulfur is a significant contributor to particle formation and suppresses the operation of exhaust catalytic converters. The Australian diesel standard allows 0.5% sulfur. Contemporary European standards require 0.05% or less sulfur content. Emission estimates are therefore required to consider high and low sulfur scenarios.

**3.5** provide a copy of the spreadsheet model used, an explanation of the design of the model, and sufficient training and/or documentation to enable the model to be run with new data as it becomes available.

#### **4. OUTPUT**

The successful tenderer is to provide the following:

- 4.1** a Report providing a comprehensive and detailed description of the diesel engined road vehicles in Australia for 1995 by number, age, engine size and origin, and use (distance travelled and areas of operation) for each Australian Design Rules (ADR) Category and geographical area as defined in 3.1.
- 4.2** a Report detailing projected diesel vehicle fleet characteristics as in 4.1, year-by-year out to 2015 (as defined in 3.2). This must include an estimate of the confidence of the projections and a statement of all of the assumptions made.
- 4.3** a Report providing vehicle emissions for particles (with particle size where possible), NO<sub>x</sub>, THC and CO for the base year 1995 in total and by vehicle class and geographical area detailing the projections of diesel vehicle fleet emissions year by year out to 2015 (as defined in 3.3). This must include an estimate of the confidence of the projections and a statement of all of the assumptions made. **NOTE:** No change in the base year distribution of road classes or in congestion will be assumed for the purpose of developing projections.
- 4.4** a Report describing the projections of diesel vehicle fleet emissions from 1995 out to 2015 for individual and specific combinations of scenarios of emission reduction strategies as defined in 3.4. **NOTE:** No change in the base year distribution of road classes or in congestion will be assumed

for the purpose of developing comparative projections for the different scenarios described in section 3.4.

- 4.5** a Report that contains a printed and electronic copy of the spreadsheet model used to estimate the diesel fleet emissions as described in 4.4 in a form which allows ready adjustment of key variables and which is suitable for use in all jurisdictions. Adjustable variables will include:
- deterioration rates;
  - emission factors;
  - vehicle duty cycles;
  - vehicle kilometres travelled (VKT); and
  - urban road classes and road conditions (congestion)
- 4.6** a final Report presenting the results of the project with a detailed description of data (including a database in MS Access or MS Excel containing the raw data), calculations and assumptions. The report should present data and results in both tabular and graphical form.

## **5. MILESTONE DATES**

The Commencement Date for the Project is upon signing of the contract by all parties. The Date of Completion is within one month of receiving comments, from the Project Manager, on the draft final Report.

Milestones will be delivered by close of business on the date indicated below:

Output 4.1	(30 October 1998)
Output 4.2	(27 November 1998)
Output 4.3	(24 December 1998)
Output 4.4	(26 February 1999)
Output 4.5	(26 February 1999)
Output 4.6 (draft)	(26 February 1999)
Final Report & Model	within one month of receiving comments on the draft final report from the project manager.

## **6. REPORTING**

### **6.1 Progress Reports**

The successful tenderer shall provide fortnightly summary progress reports to the Project Manager.

Progress reports must be lodged with the Project Manager in writing (typed) by letter, fax or e-mail.

Each progress report will include a clear statement of whether or not the project is running on time and a brief summary of progress since the last progress report.

The successful tenderer will report to a meeting of the Project Team after completion of Output 4.1, and as required.

### **6.2 Project Report**

The Final Project Report and Model (in both printed and electronic form) should be prepared in a form suitable for publishing and meet the Project Manager's requirements in terms of style and format. All reports are to be supplied to the NEPC Service Corporation in a printed form and in an electronic format fully compatible with Microsoft Word for Windows, Microsoft Excel, and/or Microsoft Access, suitable for use by all jurisdictions.

### **6.3 Output Review**

A working group has been established to oversee the project design and implementation. The working group will review the progress reports and provide direction and recommendations to the Project Manager as required during the course of the project. The working group will also review all outputs including draft and final reports and may submit output findings and reports to outside experts for additional review.

## **7. PROJECT MANAGEMENT**

The NEPC Service Corporation Project Manager is Mr Marc Thompson.

Project proposals must specify a person from the proposer's organisation who will be responsible for the project. The nominated person will be required to report to the Project Manager and the Project Team on the progress of the project in accordance with Part 6.1 and on any difficulties envisaged which might affect the project outcome or timetable. The successful tenderer will notify the Project Manager of any proposed alteration to the personnel assigned to the completion of this project, prior to any such alteration.

## **8. SUBMISSION OF TENDERS**

## 8.1 Tender Requirements

Tenders must be submitted in writing as specified in 11, and must:

- demonstrate an understanding of the project brief and an appreciation of the scope of the task;
- state the name and position in the company of the person nominated to be responsible for the project and percentage of their working time to be devoted to the project;
- state the details of the qualifications and experience, including recent relevant projects, of all persons who would work on the project, the percentage of their working time committed to the completion of this project, and an indication of the role they would undertake, including details of any sub-contracting arrangements;
- outline the proposed methodology, in enough detail to establish that the tenderer understands the issues and requirements to ensure a successful outcome of the project; (including a strategy for addressing the lack of information in regard to pre ADR 70 vehicles when developing projections);
- state the total cost of the project, including outline estimates of costs other than fees (eg purchase of supporting data etc);
- propose dates for beginning and completing the project and a suggested schedule of output delivery and milestones, including identification of any constraints perceived by the tenderer;
- indicate a preferred schedule for progress payments through the course of the project;
- details of quality assurance and best practice principles applied by the tenderer;
- provide any other information the tenderer considers would facilitate evaluation of the tender or establish.

The proposal should be no longer than 15 pages (excluding CV's).

## 8.2 Criteria for Selection

The selection of the successful tenderer will be based on the following:

- demonstrated understanding of the project requirements;
- demonstrated knowledge and experience in data collation and analysis in the road vehicle, transport and emissions field;
- approach and methodology proposed;
- ability to complete the project within the project timeframe;
- evidence of demonstrated ability to access overseas information, including vehicle construction standards held by manufacturers;
- suitability of the organisation to undertake the work; and
- experience and demonstrated ability to analyse the results and present the findings by oral and written reports and presentations.

The proposal must be submitted to:

**Mr Marc Thompson**  
**Project Manager**  
**NEPC Service Corporation**  
**Level 5, 81 Flinders Street**  
**Adelaide SA 5000**  
**Phone: 08 8419 1202**  
**Fax: 08 8224 0912**  
**E-mail: mthompson@nepc.gov.au**

by the time and date specified in the covering letter. Tenders by facsimile or e-mail will be accepted provided the originals are mailed the same day.

## **9. PROJECT BUDGET**

The contract will be awarded on a fixed cost basis and progress payments made in accordance with an agreed schedule.

## **10. FURTHER INFORMATION**

Clarification of any issues relating to this project prior to the awarding of the contract may be obtained by contacting Mr Thompson.

## **11. TENDER FORMAT**

All tenders are to include a table of contents with relevant criteria grouped under the following headings:

1. Introduction
2. Appreciation of the study requirements
3. Approach and methodology
4. Experience and expertise applicable to the project
5. Key personnel: qualifications and experience
6. Capacity to complete the work on time
7. Timetable, budget and fee structure