PROGRESS REPORT TO
JUNE 2004

Implementing the Perth Air Quality Management Plan

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Progress Report to June 2004

Printed in
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Government of Western Australia
Department of Environment

Air Quality Coordinating Committee

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Foreword

On behalf of the Air Quality Coordinating Committee (AQCC), I am pleased to present the third annual progress report on implementation of the *Perth Air Quality Management Plan* (AQMP), the *Progress Report to June 2004*.

The Committee acknowledges the increase in funding from the State Government. This has allowed a greater emphasis on the priority area of reducing the contribution of domestic wood heaters to haze formation.

The Committee acknowledges the contribution of several outgoing members including Margaret Stephens (Department of Health), Nicole Workum (Sustainable Energy Development Office), Rachel Siewert (Conservation Council of WA) and Nathan Malin (WA Local Government Association).

New members to the Committee include Jim Dodds (Department of Health), Tanya Carpenter (Sustainable Energy Development Office), Philip Jennings (Conservation Council of WA) and Dale Newsome (WA Local Government Association). We welcome them and look forward to their contribution.

I also thank the multi-stakeholder AQCC for overseeing the implementation of the Plan and ensuring that progress continues in a consultative, effective and efficient way. I would also like to thank the community, industry and local government groups who have contributed to implementing the Perth AQMP in conjunction with the lead government agencies, and look forward to ongoing support as this important initiative is progressed.

Fred Tromp

CHAIR, AIR QUALITY COORDINATING COMMITTEE

Executive Summary

Hope for the Future: The Western Australian State Sustainability Strategy has identified preserving air quality as essential to a healthy population and healthy environment. The Perth AQMP is a key program for fulfilling these aims.

Review of public concerns on environmental issues continues to indicate that the community rates air quality as one of its main environmental concerns. The State Government continues to provide leadership on this important subject through continued support of the ongoing implementation of this 30-year Plan.

There has been significant progress over the past 12 months with implementing key aspects of the Plan including:

- Changing commuter behaviour to reduce the reliance on private vehicle use;
- Increasing public awareness on the health impacts of unflued gas heaters;
- Reducing emissions from domestic sources including wood heaters;
- Introducing energy efficiency requirements into the Building Code of Australia; and
- Managing smoke from planned burning activities.

Progress has been made in reducing vehicle emissions, managing industrial emissions and enhancing community education on the impacts of air quality as well as ongoing monitoring of air quality. Progress has also been made on the reduction of industrial emissions with the completion of modelling work to allow a targeted reduction in smog precursor emissions.

An important output of the Perth AQMP over the past 12 months has been the winter haze campaign *Halt the Haze 2004*. This includes the pilot *Wood Heater Replacement Program*, the pilot *Home Heating Survey* and supporting *AirWatch Schools Network for Air Quality (SNAQ) on Haze* air monitoring.

In the year ahead several keys programs are scheduled including:

- A pilot *Petrol Vehicle Emissions Testing* program aimed at developing a future policy for reducing emissions from petrol vehicles through testing and maintenance;
- Completion of a peer reviewed Technical Report on air quality modelling which will assist in further targeted reduction in smog precursor emissions;
- Establishment of the Air Monitoring Steering Group to guide and provide community participation in a number of monitoring programs; and
- A continued winter haze campaign incorporating an expanded *Wood Heater Replacement Program*, additional local government training to assist in domestic smoke nuisance resolution, review of legislation for the sale of wood heaters and firewood and expanded public education on the correct operation of wood heaters.

Contents

1.0 Introduction

The Perth AQMP was launched in December 2000 and details 126 actions to ensure that clean air is achieved and maintained throughout the Perth metropolitan region over the next 30 years. The actions within the Perth AQMP seek to achieve this by reducing the emission of those air pollutants that are causing occasional episodes of unacceptable air quality now, and by preventing the development of future air quality problems. The aim of the AQMP is to steadily improve Perth's air quality so that we have cleaner air to a level that is acceptable to the community.

A whole of government initiative, the Perth AQMP was developed via a consultative process that included key government agencies with lead roles in implementation and a range of stakeholders. The AQCC was established by the Government of Western Australia to oversee the development of the Perth AQMP, to monitor implementation of the Plan and to review progress towards achieving the aims of the Plan.

While membership of the AQCC has changed during the development and implementation of the AQMP, the government, industry and community groups represented have remained essentially unchanged. Membership of the AQCC for the reporting period up until June 2004 is listed in Appendix 2.

A Strategy for implementing the Perth AQMP was developed by involved stakeholders and endorsed by the AQCC. The *Implementation Strategy*, released in June 2002, was developed to provide a framework for how the actions within the Perth AQMP would be carried out by State government agencies and other involved organisations.

There is a requirement for the AQCC to report annually to the Government via the Minister for the Environment on implementation of the Perth AQMP, as established in the AQCC's Terms of Reference:

The Committee will, after commencement of implementation of the AQMP, report annually to the Government through the Minister for the Environment on the degree of implementation of the AQMP and progress in achieving the performance targets set in the AQMP.

This Progress Report forms the basis of the AQCC's advice to the Minister for the Environment in accordance with the above requirement.

The previous *Progress Reports to June 2002 and June 2003* were released in April 2003 and March 2004 respectively, and are available from the Department of Environment (DoE) web page at www.environment.wa.gov.au.

Documents published as part of the development of the Perth Air Quality Management Plan: the Perth Photochemical Smog Study, Perth Haze Study, Parliamentary Select Committee's Report and the Government's Response to the Select Committee's report.

The format of this year's Progress Report has changed slightly from last year to reflect comments received. The *Progress Report to June 2004* includes:

- A table providing the status of each program as either not commenced or commenced;
- A summary providing progress on actions to the end of June 2004 and comments from each lead agency outlining major achievements or changes; and
- A table showing the staff time and operational budget for each program.

A summary table similar to the one in the Implementation Strategy to provide an easy-to-read progress report on each of the programs in the AQMP at Appendix 1.

A copy of all reporting templates from lead agencies is available as a separate document (*Progress Report to June 2004 – Completed Reporting Templates*).

2.0 Reporting Process

The DoE's Project Team undertakes the review of progress made and develops the annual Progress Report. The Project Team is also responsible for the organisation and running of AQCC meetings.

Based on discussions with the AQCC, the DoE Project Team has developed a reporting format. The AQCC suggested that reporting of the implementation of the initiatives should allow

tracking against the original AQMP actions and should also reflect the whole of government approach.

The *Implementation Strategy* restructured the 126 original AQMP actions into 12 Initiatives covering a total of 43 programs. In order to accurately report the progress of actions, programs being undertaken by more than one agency have been split into sub-programs. There are a total of 89 sub-programs within the Perth AQMP.

A reporting template for each program was produced, containing the information provided in the *Implementation Strategy* and previous years reporting, with space for additional comments. The reporting templates were distributed to the AQCC member from each of the lead agencies for all AQMP programs having already commenced or commencing prior to June 2004. Using the reporting template allowed the consistent reporting of progress of AQMP programs. This was especially useful for programs operating across more than one agency.

Reporting templates were also produced and distributed to the non-government organisations represented if identified as supporting agencies to programs.

All completed reporting forms were then collated and used as the basis for the *Progress Report to June 2004*.

3.0 Progress to June 2004

This section of the report highlights the major achievements of the Perth AQMP up until 30 June 2004. Key actions identified by the AQCC during finalisation of the Perth AQMP as being likely to have the largest impact on air quality in the short term were:

- Changing commuter behaviour to reduce the reliance on private vehicle use;
- Reducing vehicle emissions; and
- Managing industrial emissions.

While these actions will provide significant improvements in Perth's air quality, information on how to reduce all sources of air pollutants need to be provided to the community if generally acceptable air quality is to be achieved. Accordingly, it is essential that the key sectors of land use and transport planning, vehicle, domestic, burning and industrial emissions be addressed. It is also essential to continue with direct emissions reduction, research, prevention, minimisation and education/ partnership programs.

The *Implementation Strategy* for the Perth AQMP includes 43 programs in 12 initiatives. Of these, 39 programs have commenced and will continue in 2004-05. During the reporting period from 1 July 2003 to 30 June 2004, one additional program commenced implementation. Of the four programs yet to commence, one is scheduled to commence in the second half of 2004. The remaining three are contingent on the completion of other programs.

Table 3.1 shows the status of each program as either not commenced or commenced as at June 2004. This table also indicates where implementing programs have been delayed from the date within the *Implementation Strategy* and programs where limited progress has occurred during the period to June 2004.

Section 4 includes a more detailed table showing progress to June 2004 with timelines, reasons for delays to programs and highlights major achievements under each initiative.

Appendix 1 provides a summary report similar to the one in the *Implementation Strategy*, and has been produced to provide an easy-to-read progress report on each of the programs in the AQMP.

Table 3.1: Program Overview

	Not Commenced / Commenced	Program Delayed	No Progress in 2003-2004
Initiative 1: Community Education			
Program 1: Review existing education and behaviour change programs and establish a strategy and framework for developing and implementing supporting programs in future	✓	🕒	
Program 2: Improve everyone's access to air quality information and programs via the Internet	✓		
Program 3: Influence the community's travel behaviour through implementing *TravelSmart*, teleworking and other travel alternatives	✓		
Initiative 2: Vehicle Emissions Reduction			
Program 1: Develop policy and regulations for automotive fuel quality in WA, promote national fuel quality regulation in line with international standards and co-ordinate fuel quality standards with improved vehicle emission standards	✓		
Program 2: Evaluate LPG and CNG as fuel sources for the passenger and freight sectors	✓	🕒	🕒
Program 3: Evaluate various emissions testing options for introduction to Perth and implement the committed outcomes to reduce in-service emissions from motor vehicles	✓	🕒	
Program 4: On-road enforcement of controls on excessive vehicle emissions	✓	🕒	
Program 5: Evaluate and introduce appropriate measures to remove older vehicles from the Perth fleet	✓		🕒
Program 6: Emissions testing training and equipment and technology review	×		
Program 7: Investigate the cost effectiveness of Stage II vapour recovery and promote at national level if cost effective	✓		
Program 8: Investigate the use of electric, alternative fuel vehicles and ultra-light vehicles	✓		
Initiative 3: Reduction of Industrial Emissions of NO_x and ROCs			
Program 1: Assess contribution of industrial NO_x and ROC emissions to smog formation in the Perth airshed	✓	🕒	
Program 2: Assess cost effective NO_x emission reduction options, and implement agreed options to reduce emissions from significant industrial sources	×	🕒	
Program 3: Identify and assist the major emitters of ROCs to reduce industrial contributions, and encourage continuous improvement in ROC reduction measures already introduced	×	🕒	
Initiative 4: Health Research			
Program 1: Investigating the public health impacts of air pollution	✓		
Program 2: Investigating sources of air pollutants and their impact on residents by determining the potential health impacts of variations in Perth's daily air quality	✓	🕒	
Program 3: Development of an Air Pollution and Health Network	✓		
Initiative 5: Modelling Improvements			
Program 1: Update and consolidate air emissions databases	✓		
Program 2: Validate / improve emissions estimates for key emission sources	✓		
Program 3: Improve modelling capability and accuracy	✓		
Initiative 6: Air Quality Monitoring			
Program 1: Establish an Air Monitoring Steering Group to review air quality monitoring issues in the Perth metropolitan region	×	🕒	
Program 2 Review air quality monitoring practices and procedures in the Perth metropolitan region	✓		
Program 3: Develop future monitoring programs	✓		
Program 4: Support community information and education programs on air quality monitoring	✓		

[1] Programs with a tick (✓) have commenced and those with a cross (×) have not commenced. Shaded programs have been completed.
[2] Indicates that a program has been delayed from the commencement date in the Implementation Strategy (June 2002). Further details are provided in Section 4 of the report.
[3] Indicates that although a program has commenced, there has been little or no progress in the period 1 July 2003 to 30 June 2004.

	Not Commenced / Commenced	Program Delayed	No Progress in 2003-2004
Initiative 7: Indoor Air Quality			
Program 1: Development of an Indoor Air Quality Network	✓	◷	
Program 2: Investigate indoor air quality and the contribution of indoor air exposure to personal exposure	✓		◷
Program 3: Increase community indoor air quality awareness	✓	◷	
Initiative 8: Land Use and Transport Planning			
Program 1: Include regional and local air quality considerations in the strategic planning and implementation of *Network City: Community Planning Strategy for Perth and Peel*	✓		
Program 2: Include regional and local air quality considerations in the planning and implementation of development proposals	✓		
Program 3: Monitor and review the effectiveness of land use and transport planning decisions in influencing Perth's air quality	✓		
Program 4: Assist local government in influencing the community's travel behaviour to bring about positive change	✓		
Initiative 9: Haze Reduction			
Program 1: Increase community awareness of the impacts of domestic wood heaters on air quality	✓		
Program 2: Increase awareness among wood suppliers and wood heater installers of the impacts of wood heaters on air quality	✓		
Program 3: Domestic smoke nuisance resolution	✓		
Program 4: Manage green waste disposal and recycling to reduce local haze creation	✓		◷
Initiative 10: Energy Efficient Buildings			
Program 1: Adoption of energy efficiency principles through building codes	✓		
Program 2: Encourage energy efficient building design and planning	✓		
Initiative 11: Cleaner Production			
Program 1: Encourage cleaner production	✓	◷	◷
Program 2: Ensure proper airshed planning for future industrial development and power generation in the Perth metropolitan region	✓		
Initiative 12: Smoke Management			
Program 1: Establish a Smoke Management Awareness Group to facilitate community education and information about smoke impacts from planned burns	✓		
Program 2: Smoke Management Liaison Group	✓		◷
Program 3: Smoke management policy and regulation	✓		
Program 4: Smoke management research	✓	◷	

[1] Programs with a tick (✓) have commenced and those with a cross (×) have not commenced. Shaded programs have been completed.
[2] Indicates that a program has been delayed from the commencement date in the Implementation Strategy (June 2002). Further details are provided in Section 4 of the report.
[3] Indicates that although a program has commenced, there has been little or no progress in the period 1 July 2003 to 30 June 2004.

4.0 Achievements to June 2004

4.1 INITIATIVE 1: COMMUNITY EDUCATION

The objective is to inform the community about air quality issues aiming at behaviour change that will bring about a reduction in emissions of air pollutants. The following three programs have been identified to achieve these aims:

1 Review existing education and behaviour change programs and establish a strategy and, framework for developing and implementing supporting programs in the future;

2 Improve access to air quality information and programs via the internet; and

3 Influence the community's travel behaviour through implementing *TravelSmart*, teleworking and other travel behaviour change programs.

Table 4.1 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. The key points this table shows are:

- There has been substantial progress with the majority of programs that were scheduled to commence. Particularly the priority programs of influencing the community's travel behaviour through programs such as *TravelSmart*.
- The review of existing education and behaviour change programs was rescheduled to January 2003 due to delays in staff recruitment to undertake the review and develop the *Community Education Strategy*.
- The current funding arrangement for the Sustainable Transport Officer (STO) position undertaking activities under Program 3a will end on 31 January 2005. Activities under this program will only continue if funding for the STO position is maintained.
- A program to scope opportunities to reinstate the *Cycle 100* program has been scheduled for 2004-05.

Details of progress on key issues up until June 2004

1 The Community Education working group (see Appendix 2 for membership) has been formed and meetings held to develop the draft *Community Education Strategy*. The release of the *Community Education Strategy* has been delayed whilst the draft *Communications Framework* is developed. The draft *Communications Framework* was submitted to the AQCC for comment in May 2004. It is expected to be finalised in late 2004.

The review of existing education and behaviour change programs commenced in 2004 in parallel to the development of the *Communications Framework*. Gap analysis has commenced at a tertiary and community level with meetings conducted. A review of existing programs is to be undertaken commencing with an evaluation of *AirWatch* primary and secondary school programs. A Memorandum of Understanding (MoU) with *AirWatch* is being developed to facilitate delivery of AQMP outcomes within schools.

An Honours project to develop a module for secondary, tertiary and community based passive sampling will be conducted in 2005.

Many non-Government organisations have expressed interest at further participation in the delivery of this program:

- Conservation Council of WA (CCWA) is keen to take a major role in this area dependent upon accessing funding support for staff to carry out this work. There is enormous potential for CCWA to assist by providing information and training to the public. CCWA also provides information and advice to the public on air quality issues through its office.
- Royal Automobile Club of WA (RAC WA) will provide input and assist with the production of articles for their member's magazine '*Road Patrol*'.
- Pollution Action Network (PAN) will continue to contribute directly to the AQMP via the State of Environment process and State Sustainability Strategy. PAN continues to provide information on air quality issues to the community and intends to organise a community forum on air quality later in 2004.

Students participating in the DoE's award winning AirWatch program.

Table 4.1: Progress to June 2004 – Community Education

Community Education Program	2000		2001				2002				2003				2004				2005			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1: Review existing education and behaviour change programs and establish a strategy and framework for developing and implementing supporting programs in the future																						
2a: Establish links between existing information centres																						
2b: Establish an air quality web page																						
3a: Influence the community's travel behaviour through implementing *Smogbusters* and similar programs																						
3b: Influence the community's travel behaviour through implementing *TravelSmart Household (Individualised Marketing)* program																						
3c: Influence the community's travel behaviour through implementing *TravelSmart to School*																						
3d: Influence the community's travel behaviour through implementing *TravelSmart Local Government*																						
3e: Influence the community's travel behaviour through implementing *TravelSmart Workplace*																						
3f: Influence the community's travel behaviour through implementing *Cycle 100*																						
3g: Influence the community's travel behaviour through implementing *Cycle Instead*																						
3h: Influence the community's travel behaviour through implementing *Walk There Today*																						
3i: Influence the community's travel behaviour through encouraging teleworking in Government agencies																						

Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

In *Hope for the Future*: *The Western Australian State Sustainability Strategy* the section on air quality ensures that the Perth AQMP, *Community Education Strategy* and *Communications Framework* objectives are reflected.

The *Community Education Strategy* is a component of the draft *Environmental Education Strategy* and was developed to ensure that the messages about air quality are communicated to the public in a consistent manner.

2 An air quality web site was developed and has been on-line since the launch of the *Implementation Strategy* in June 2002. The web site has received a steady number of 'hits' since its launch in June 2002, with the air quality web site serving an average of between 300 and 600 pages on any given day. The web site has run smoothly and reliably with reported faults corrected in a timely manner.

DoE is currently developing a new agency website which will be launched in July 2004 (www.environment.wa.gov.au). The content from the air quality web site will be incorporated into the new web site.

The major features of the web site include:

- Access to daily air quality data from monitoring sites (the most heavily used feature of the web site);
- Access to information about air pollutants, Perth's air quality, studies and programs;
- Access to air quality publications; and
- Links to related sites.

The web site provides for feedback from users, which will assist in ongoing maintenance and development of the site. The *Community Education Strategy* will also provide feedback on new materials and links, including greater use and cross promotion of the *AirWatch* web site which is funded through the AQMP, are planned.

Identifying and evaluating web sites with an air quality component has facilitated the establishment of links between existing information centres. In addition, information has been provided for inclusion on Asthma WA and Western Power Corporation web sites. CCWA has indicated they would also be willing to provide a link to the air quality site from their homepage. All links will be updated following the establishment of the new DoE agency web site.

A new display for air quality management and the AQMP was developed and used for *World Environment Day* in June 2003. This display will be evaluated for ongoing involvement in *World Environment Day* displays and utilised at other public forums and events held throughout the year. The *World Environment Day* display was not repeated in June 2004, as activities focussed on the launch of the pilot *Wood Heater Replacement Program*.

3 Influencing the community's travel behaviour has been identified by the AQCC as one of the key programs for the Perth AQMP. There have been a number of developments in this program since commencing implementation of the Perth AQMP.

- *Smogbusters* was a Commonwealth program established under the Natural Heritage Trust (NHT) and operated locally by CCWA. Working with local communities, schools, non government organisations, local governments, State government agencies and business; Smogbusters promoted the use of walking, cycling and public transport as a means of improving the air quality of Perth. Actions to achieve this involved holding public forums and speaking tours, providing media statements and community information on urban transport issues to foster local community action. CCWA also worked to promote and develop Green Transport Plans (GTPs) for several organisations under the *TravelSmart Workplace* program.

  Unfortunately, the program ceased in April 2002 due to the withdrawal of NHT funding. The Federal Government provided funding for a school debating project and *Smogbusters* speaking tour in March-April 2003, however there is no ongoing activity.

  CCWA now has a STO position responsible for advocacy of sustainable transport such as cycling, walking and public transport. Several workshops, conferences and seminars have been held successfully on these issues.

  The present funding arrangement for the STO position will end on 31 January 2005. Funding is being sought to continue the STO position beyond that date. This work will continue provided funding is obtained for the STO.

- The South Perth large scale demonstration project, Stage 1 of the *TravelSmart Household (Individualised Marketing)* program, was evaluated by a third survey after completion of the trial. The results indicated travel behaviour change has been sustained. *TravelSmart* (Stage 2) has been delivered to the Town of Cambridge, City of Subiaco, suburb of Marangaroo in the City of Wanneroo and parts of the City of Melville, City of Fremantle,

Town of Vincent, City of Armadale and City of Belmont. Projects are planned for the City of Gosnells in early 2005 to complete Stage 2.

Five projects fully evaluated to date indicate the achievement of a 10% reduction in car-as-driver trips and a 13% reduction in car kilometres travelled.

- The *TravelSmart to School* program has developed a partnership with Millennium Kids to assist with the engagement of primary and secondary schools in the program. The applicability of the program for secondary schools was reviewed with the funding for the secondary schools program being reallocated to further expand the Primary School Program in 2003 and 2004. A reduction in car trips to school of up to 23% has been achieved in 119 classes (3472 students) in 25 metropolitan and 17 regional primary schools participating in the *TravelSmart to School Week*.

  A *Walking School Bus Program* has been established in 16 primary schools, consisting of 24 routes (cumulative) to promote and support increased walking to primary schools.

- The *TravelSmart Local Government* program provided funding, training and support for eight local governments to employ *TravelSmart* Officers during 2001-02 to work on travel behaviour programs. This program has been extended to the end of the 2004-05 financial year with funding support from the Australian Greenhouse Office. Additional funding will be required to continue and expand the program beyond June 2005.

  All participating local governments (Cities of South Perth, Melville, Subiaco, Nedlands, Fremantle and Towns of Victoria Park, Cottesloe and Claremont) have produced Local Action Plans, with plans reviewed and actions updated as required. Program focus may expand to include broader sustainability issues.

- The *TravelSmart Workplace* program has resulted in GTPs being developed and implemented for a number of workplaces including:

  - Prior to 2002: Woodside, Water Corporation, Department of Health, City of Perth, Ove Arup and Partners, Clough Engineering, HomesWest, MarketForce, Hartley Poynton, Institute for Child Health Research;
  - 2002: Four metropolitan DPI offices, Schlumberger Oil Fields Australia and Pharmacia Pty Ltd;
  - 2003: Department of Environment and City of South Perth (Depot and Civic Centre); and
  - 2004: Fremantle Hospital, Hollywood Private Hospital, Department of Industry and Resources, Department of Agriculture and Technip-Coflexip Oceania, representing a total of approximately 4,000 employees. All organisations involved in the 2004 program have developed their GTPs and are due to launch these in October 2004.

  Follow-up surveys from workplaces have indicated that travel behaviour changes away from single occupant vehicles are being sustained over time and the GTPs are being updated where necessary.

  For workplaces participating in 2003, DoE recorded a reduction in overall kilometres travelled by car and the City of South Perth recorded mixed results across its two sites, with no net change. The Civic Centre recorded a reduction of 20% in overall kilometres travelled.

  Schlumberger Oil Fields Australia conducted another survey in 2004 to determine if there was sustained change following the development of their GTP in 2001. They recorded a reduction of 14% from the baseline survey of travel behaviour, better than the initial target of 10%.

  12 articles appeared in local printed media covering the activities of participating organisations.

  In 2005 over 6,000 employees will be recruited to participate in the program. Six workplaces including QE2 Medical Centre, City of Joondalup, Transfield, Department of Premier and Cabinet, Disability Services Commission and Sinclair Knight Mertz will participate.

- The *Cycle 100* program did not continue into 2003-04. A program is scheduled in 2004-05 to scope opportunities to reinstate the program for 2005-06.

- The *Cycle Instead* program has continued to promote cycling as a viable transport choice by running an electronic and print media campaign to position cycling as the solution to a series of health, environmental and road congestion problems. The campaign provides a series of role models for cyclists and promotes cycling for short trips, supported with community bike rides and events. The *Cycle Instead* radio and media campaign was cancelled in 2003-04 because of lack of funds to sustain such an expensive program. *Cycle Instead Bikeweek* was held in March 2004 as part of the ongoing promotion of cycling. A number of events, including the well attended *Bike to Work Breakfast* were held during *Bikeweek*.

The program is having the positive effect of maintaining cycling activities among adults in the face of a drop-off in children cycling.

- The *Walk There Today* program has been developed and implementation has commenced. The '*Walk There Today to Find Thirty*' message icon was developed and launched each October as a collaborative project with the '*Find Thirty*' program.

  Activities during *Walk Week*, held from 3 to 9 November 2003, included Community Walks, Walk to School Day and Walk There to Find Thirty for Corporate Workers. During *Walk Week* 25,000 school children walked to school, 2,300 adults participated in community walks, 16,000 copies of walking guidebooks were distributed and 300 corporate workers participated in lunchtime walks. During *Walk Week* 85% of the people in metropolitan area were exposed to the promotional message of '*Walk There Today to Find Thirty*'.

- The program to support teleworking in government agencies commenced, with preliminary research and information gathering being completed.

  Following the review of the telework pilot results the project has not progressed due to insufficient resources. The program is not expected to progress any further due to a continued lack of resources.

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.2.

4.2 INITIATIVE 2: VEHICLE EMISSIONS REDUCTION

Motor vehicles are the largest single source of air pollution in the Perth airshed and contribute significantly to the development of smog. Reduction of vehicle emissions can be achieved by implementing a range of programs including:

1 Developing policy and regulations for automotive fuel quality in WA, promoting national fuel quality regulation in line with international standards and coordinating fuel quality standards with improved vehicle emission standards;

2 Evaluating liquefied petroleum gas (LPG) and compressed natural gas (CNG) as fuel sources for the passenger and freight sectors;

3 Evaluating various emissions testing options for introduction to Perth and implementing the committed outcomes to reduce in-service emissions from motor vehicles;

4 On-road enforcement of controls on excessive vehicle emissions;

5 Evaluating appropriate measures to remove older vehicles from the Perth fleet;

6 Emissions testing training, equipment and technology review;

7 Investigating the cost effectiveness of Stage II vapour recovery and promoting at national level if cost effective; and

8 Investigating the use of electric, alternative fuel vehicles and ultra-light vehicles.

Table 4.2: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 1: Community Education		
Program 1: Review existing education and behaviour change programs and establish a strategy and framework for developing and implementing supporting programs in future	0.6 FTE	
Program 2: Improve everyone's access to air quality information and programs via the Internet	0.1 FTE	
Program 3: Influence the community's travel behaviour through implementing *TravelSmart*, teleworking and other travel alternatives	10.9 FTE	$1,328,000

Table 4.3: Progress to June 2004 – Vehicle Emissions Reduction

Vehicle Emissions Reduction Program	2000		2001				2002				2003				2004				2005			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1a: Develop policy and regulations for automotive fuel quality in WA and promote national fuel quality regulation in line with international standards																						
1b: Coordinate fuel quality standards with improved vehicle emission standards																						
2: Evaluate LPG and CNG as fuel sources for the passenger and freight sectors																						
3a Evaluate emissions testing options for introduction to Perth																						
3b: Undertake a pilot trial of an emissions testing system																						
3c: Implement the committed outcomes to reduce in-service emissions from motor vehicles																						
4a: On-road enforcement of controls on excessive vehicle emissions (ten second regulations																						
4b: Smoky Vehicle Reporting program																						
5: Evaluate and introduce appropriate measures to remove older vehicles from the Perth fleet																						
6: Emissions testing training and equipment and technology review																						
7: Investigate the cost effectiveness of Stage II vapour recovery and promote at national level if cost effective																						
8: Investigate the use of electric, alternative fuel vehicles and ultra-light vehicles																						

Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

Table 4.3 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. This table shows:

- There has been substantial progress with most programs having commenced including the priority programs of maintaining clean fuel regulations and introducing an emissions testing program.
- The review of LPG and CNG as fuel sources for passenger and freight sectors has not progressed as the research project was not taken up in January 2004. This will be re-offered for commencement in January 2005.

Details of progress on key issues up until June 2004

1 The original AQMP actions predate a number of significant national developments including the Commonwealth's *Fuel Quality Standards Act 2000* and associated *Fuel Quality Standards Regulations 2001*. These developments have meant that a different approach to the implementation of this program was required. For example, the coordination of future *Euro* vehicle emission standards as Australian Design Rules (ADRs) and fuel quality requirements is part of the Commonwealth's *Fuel Quality Standards Act 2000*. Therefore, the target of continuous improvements in fuel quality will be met by the adoption of the national standards.

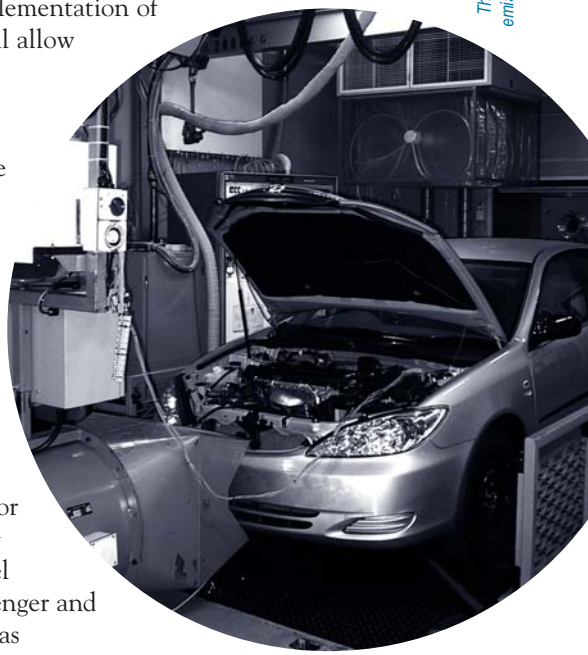
The *Environmental Protection (Diesel and Petrol) Regulations 1999* were introduced in January 2000 to reduce vehicle emissions by improving fuel quality in WA. The Commonwealth introduced less stringent national fuel standards in January 2002. Following the introduction of the less stringent Commonwealth standards, WA fuel standards have been a highly contentious issue and there has been continued pressure to revert to the Commonwealth standards due to perceived pricing and competition impacts of the State regulations. However, the WA fuel standards have been maintained with Commonwealth monitoring indicating no recorded breaches to date.

A national study for exposure to benzene, toluene, ethyl benzene and xylene in Sydney, Melbourne, Adelaide and Perth, released in May 2003, found that participants in Perth had significantly lower exposure to benzene than participants in the other cities. The Perth participant's lower exposure to carcinogenic benzene may be linked to WA's more stringent fuel quality regulations. The WA regulations limit benzene to a maximum of 1% by volume.

Future fuel policy in WA is aimed at maintaining standards and alignment with future Commonwealth fuel standards in 2006. Up until 1 January 2006, when the Commonwealth and WA regulations fully align, the Commonwealth standards become increasingly more stringent reducing the likely price difference between WA and the rest of Australia.

WA provides input into proposed future Commonwealth standards as required. WA also participates in the Fuel Standards Consultative Committee (FSCC) and the review of future fuel and emissions standards through the Land Transport Environment Committee (LTEC) (previously known as the Motor Vehicle Environment Committee). Participation in these forums ensures future national fuel and emissions standards are inline with *Euro* emissions standards established through ADR development.

It is considered that the approaches adopted for implementation of this program will allow continuous improvement. However, if relaxation of the WA fuel standards was to occur, there is some risk that continuous improvement in fuel quality will not oocur.



The testing of the exhaust emissions from a family car.

2 Initial scoping for a review of LPG and CNG as fuel sources for passenger and freight sectors has commenced. The evaluation was to be completed as a funded university research project commencing January 2004. However this research project was not taken up in 2004 and will be re-offered in early 2005.

Following completion of the student project a report with recommendations will be presented to the AQCC.

It should be noted that this is an area of constant change, with rapid development of improved emissions control technology for vehicles operating on alternative fuels and petroleum based fuels. In addition, there is no clear consensus on the preferred method for conducting life cycle analysis for fuel production. These issues make the assessment of different fuels problematic.

3 The evaluation of emissions testing options for introduction to Perth was initially planned as a desktop review. The Program phases were reviewed in September 2002 due to the availability of Commonwealth funding under the National Environment Protection (Diesel Vehicle Emissions) Measure (Diesel NEPM). Evaluation has now been included as a 'real world' assessment as part of the vehicle emissions testing program. Scenario and air quality impact modelling will be considered, once the emissions testing pilot programs have been completed.

Commonwealth funding under *Measures for a Better Environment* for emissions testing capabilities was made available for contracting emissions testing services to undertake a pilot program as part of Diesel NEPM implementation. The funds were available for the capital costs of vehicle testing stations, human resources, training and promotion, with ongoing operational costs being the responsibility of the State.

A proposal for a pilot *Diesel Vehicle Emissions Testing* program was prepared and submitted to the Commonwealth in late 2002 in an attempt to secure funding available for implementing the Diesel NEPM in WA. In early 2003, the Commonwealth indicated the amount of funding available had been significantly reduced with WA likely to receive less than required to undertake the proposed pilot program. Negotiation between the Commonwealth and State has resulted in a revised pilot *Diesel Vehicle Emissions Testing* program being submitted based on available Commonwealth funding.

It is expected the Commonwealth Environment Minister will review the proposal and make a funding decision by July 2004. If the proposal is successful, the contract details will be finalised and initial stages of the pilot *Diesel Vehicle Emissions Testing* program will commence in late 2004 with input from the Vehicle Emissions Reduction working group.

The revised program consists of four main components: vehicle testing and repair, communications and education strategy, in-service and apprenticeship training and program evaluation. It is proposed that these components will be implemented over a three year period in conjunction with a range of stakeholders.

A State funded pilot *Petrol Vehicle Emissions Testing* program commenced in 2003-04. This program is aimed at developing a future policy for reducing emissions from petrol vehicles through testing and maintenance, including the replacement of three way catalytic converters. Mid-aged petrol passenger vehicles have been identified as the test fleet for this program. The reason they primarily rely on 'active' systems (catalytic converters, on-board computers and sensors) to significantly reduce their emissions. These systems become less efficient as total vehicle kilometres travelled increases.

To determine the significance of properly operating 'active' systems, it is proposed a sample of vehicles will have their exhaust emissions tested. Subsequent to this testing, the worst emitting vehicles will have either a new catalytic converter fitted and/or a service undertaken. These vehicles will then be re-tested to measure the emissions improvements.

Petrol vehicle evaporative emissions are also critically important in Perth in terms of ozone formation. For this reason, evaporative testing is considered to be an important component of the program. It is proposed a number of the sample vehicles are tested for evaporative emissions. After this initial test, the fuel caps would be replaced and the vehicle retested. This exercise will provide valuable cost benefit data regarding the replacement of fuel caps to reduce evaporative emissions, and allow comparison with catalytic converter replacement to reduce tailpipe emissions. This work is also of national importance because there is little data available on evaporative emissions from the Australian fleet, and these emissions can be more important than exhaust emissions under the summer time conditions typically experienced in Perth.

Project scoping documents were developed and released for public tender to identify a suitable service provider. Limited expression of interest was shown through the tender process and the submitted tender was significantly higher than budgeted for. Negotiations with the preferred tender are continuing in order to progress the program within budget.

A cost benefit analysis will be conducted after both the petrol and diesel pilot emissions testing programs are completed. Detailed timing and resourcing for the introduction of vehicle emissions testing will be developed once the recommendations of the cost benefit analysis have been finalised.

It should be noted that without external funding of some kind (including cost recovery options), widespread vehicle emissions testing is unlikely to be introduced in WA. It is considered that the proposed testing program will provide a good understanding of the costs of testing, the emission reduction benefits and the likely costs/requirements of a vehicle maintenance regime.

4 In November 2002, the introduction of the *Road Traffic (Vehicle Standards) Rules 2002* placed limits on the visible exhaust emissions from vehicles.

Known as the '10 second rule', it makes it illegal for a vehicle to produce continuous visible smoke for more than 10 seconds. Legislative amendments were subsequently introduced to minimise complications with the enforcement of the '10 second rule'.

A brochure entitled 'Clear the Air' was released to promote the requirements of the new 10 second regulations. Training resources and documentation have also been produced. However, agreements need to be finalised for the enforcement of the '10 second rule' and funding obtained before further public education campaigns are launched and officer training is instigated.

There is a need to refine the *Smoky Vehicle Reporting* program as a primary enforcement tool. A review of the *Smoky Vehicle Reporting* program for effectiveness and incorporation with the '10 second rule' was scheduled for completion by June 2004. Initial review indicated that the program needed improvement at an operational level in order to facilitate the review proceeding. This involves improving the administrative operation of the program planned for July 2004. The review is scheduled to commence in November 2004.

Owners of vehicles who receive multiple reports to the *Smoky Vehicle Reporting* program are notified and advised that failure to rectify their vehicle may lead to further enforcement under the 10 second regulations. Negotiations are continuing to develop a process for active enforcement for vehicles reported more than five times. Preliminary discussions have occurred, with a final enforcement procedure to be developed in 2005.

5 The evaluation of appropriate measures to remove older vehicles from the Perth vehicle fleet will be undertaken as a funded research project. Initial scoping of the research project has been completed and will be offered for commencement in early 2005.

6 The emissions testing training, equipment and technology review will commence if an emissions testing regime for Perth is introduced. Initial scoping of course content and structure will occur as part of the pilot *Diesel Vehicle Emissions Testing* program.

7 International experience has shown that if Stage I vapour recovery is in place and the volatility of petrol has been reduced (as is the case in Perth), the cost effective emissions reduction benefit of Stage II vapour recovery is limited. LTEC has indicated there is currently no plans to introduce Stage II vapour recovery at a national level. An ongoing watching brief will be kept and input provided to LTEC where required. NSW Department of Environment and Conservation (DEC) is conducting a trial of Stage II vapour recovery, and the results of trial will be used to aid in the evaluation of the appropriateness of stage II vapour recovery for Perth.

8 The Transport Energy Strategy Committee undertook investigation of the use of electric, alternative fuel vehicles and ultra light vehicles, and submitted it's report to the Minister for Planning and Infrastructure for consideration. An ongoing watching brief will be kept. Representation on an advisory group to this Committee has ensured the *Transport Energy Strategy* is consistent with and builds upon actions within the Perth AQMP.

The uptake of LPG vehicles has been supported by a Government fleet policy that requires 25% of all eligible 6 cylinder vehicles to be LPG fuelled (either bi fuel or dedicated). The makeup of the State Government fleet is shown in Table 8.1. The total number of vehicles in the State Government fleet is 9635, made up of 6327 passenger vehicles and 3308 commercial vehicles. Of these 692 (11%) are passenger LPG vehicles and 135 (4%) are commercial LPG vehicles.

Table 8.1: Makeup of the State Government fleet
(from Department of Treasury and Finance)

Passenger						Commercial			
No. of Cylinders	Petrol	Diesel	Bi Fuel LPG	Dedicated LPG	Hybrid Petrol / Electric	Petrol	Diesel	Bi Fuel LPG	Dedicated LPG
4	1943	0	0	0	24	544	1027	0	0
5	0	0	0	0	0	0	4	0	0
6	3658	0	255	437	0	952	636	18	118
8	10	0	0	0	0	9	0	0	0
Total	5611	0	255	437	24	1505	1667	18	118

The increased use of 4 cylinder, hybrid petrol / electric and LPG vehicles has resulted in reductions in both greenhouse and noxious vehicle emissions. The current vehicle fleet policy is under review to include a requirement to purchase 4 cylinder vehicles in preference to 6 cylinder vehicles, resulting in a further reduction in greenhouse emissions from the State Government vehicle fleet. This review is expected to be completed late in 2004. An evaluation of emissions performance information has been provided where requested during this process.

The Commonwealth has a program of investigating the use of biofuels and other alternative fuels, and WA will continue to provide input where required.

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.4.

4.3 Initiative 3: Reduction of Industrial Emissions of NO_x and ROCS

Heavy industry can emit significant quantities of oxides of nitrogen (NO_x) and reactive organic compounds (ROCs) that are precursors to photochemical smog. Provisions within the *Environmental Protection Act 1986* require industry to meet emissions limits as prescribed in licences. An ongoing review of emissions limits prescribed in licences as they are assessed and issued will ensure that emissions limits comply with agreed international and national standards. This may result in further reduction in emissions in some instances. The Government is also engaged in stakeholder consultation process to implement an Environmental Improvement Plan (EIP) model for WA as recommended by the Welker Review of licences. Licensee's that implement EIPs will aim to reduce or minimise emissions through a process of continuous improvement.

Reduction of these emissions can be further achieved through the following programs:

Table 4.4: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 2: Vehicle Emissions Reduction		
Program 1: Develop policy and regulations for automotive fuel quality in WA, promote national fuel quality regulation in line with international standards and co-ordinate fuel quality standards with improved vehicle emission standards	0.3 FTE	
Program 2: Evaluate LPG and CNG as fuel sources for the passenger and freight sectors	0 FTE	
Program 3: Evaluate various emissions testing options for introduction to Perth and implement the committed outcomes to reduce in-service emissions from motor vehicles	0.6 FTE	
Program 4: On-road enforcement of controls on excessive vehicle emissions	0.1 FTE	
Program 5: Evaluate and introduce appropriate measures to remove older vehicles from the Perth fleet	0 FTE	
Program 6: Emissions testing training and equipment and technology review	0 FTE	
Program 7: Investigate the cost effectiveness of Stage II vapour recovery and promote at national level if cost effective	< 0.1 FTE	
Program 8: Investigate the use of electric, alternative fuel vehicles and ultra-light vehicles	1.0 FTE	

1 Assessing contribution of industrial NO_x and ROC emissions to smog formation in the Perth airshed;

2 Assessing cost effective NO_x emissions reduction options, and implementing agreed options to reduce emissions from significant industrial sources; and

3 Identifying and assisting the major emitters of ROCs to reduce industrial contributions, and encourage continuous improvement in ROC reduction measures already introduced.

Table 4.5 shows the progress of implementation to June 2004 and future timing to December 2005 for each program within this initiative. This table shows:

- Delays in undertaking the modelling due to resolution of inventory data taking longer than expected. This has now been resolved and preliminary modelling has been completed.
- Minor delays in the program to assess cost effective NO_x emissions reduction options and implement agreed options to reduce emissions from significant industrial sources, due to the delay in modelling.

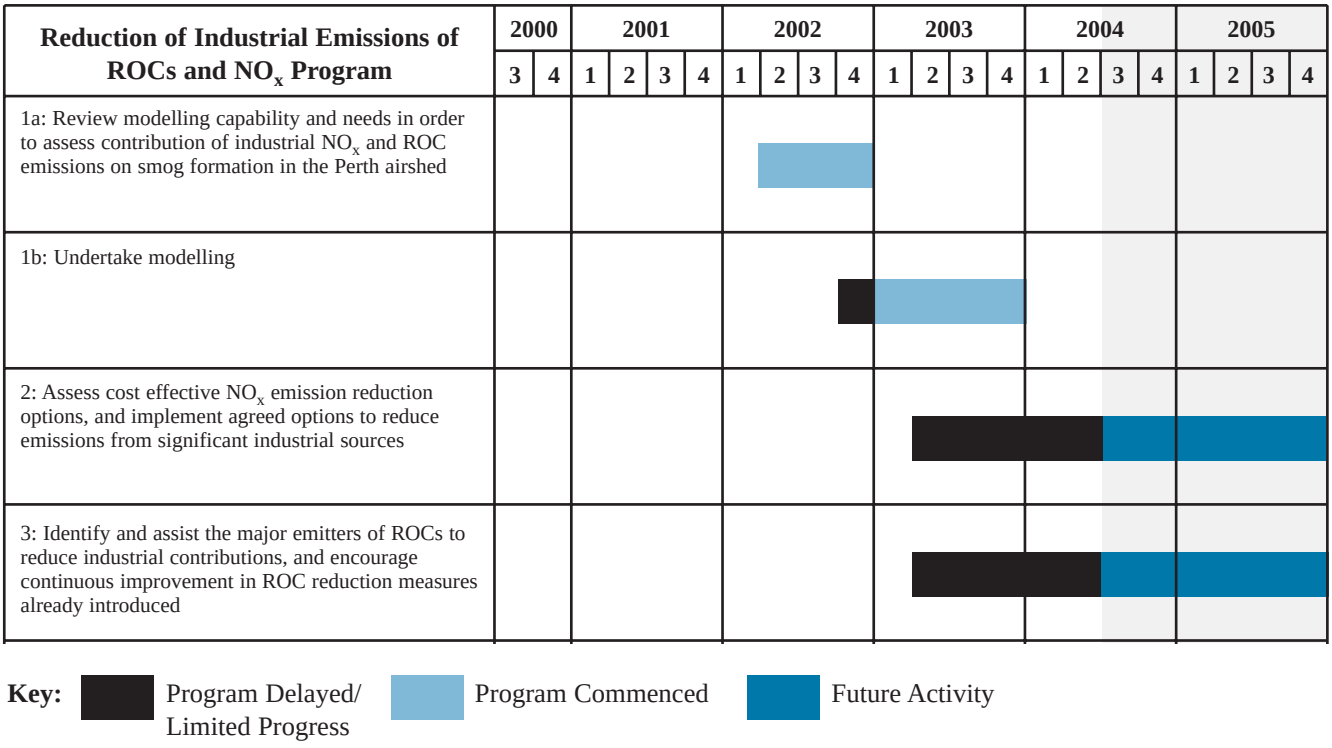
Details of progress on key issues up until June 2004

1 The *Perth Photochemical Smog Study* (1996) included modelling of emissions sources such as industrial, domestic and area sources. A more detailed assessment of the contribution of industrial sources of NO_x and ROCs to photochemical smog formation in Perth was considered by the AQCC as a priority.

A review of modelling capabilities has been completed and the model has been configured to enable seasonal runs. In addition, real time emissions data is now available to assist with seasonal modelling. The reliability of inventory data was found to be an issue, as modelled concentrations were significantly higher than measured concentrations. The NO_x inventory data was found to have over-estimated emissions and estimates have since been refined in response. This has resulted in a more representative emissions inventory and improved accuracy in model outputs.

Preliminary modelling has been completed and will help inform decisions on priorities for industrial emissions management. A draft technical report is under going peer review. The final report incorporating results of reviewers will be made available for stakeholder comment.

Table 4.5: Progress to June 2004 – Reduction of Industrial Emissions of ROCs and NO_x



2 Assessment of cost effective emissions reduction options and implementation of agreed options to reduce NO_x emissions from significant industrial sources has not commenced, pending outcomes of Program 1. Program 2 is scheduled to commence following the release of the final technical report on the results of the modelling. At this time, the Industrial Emissions Reduction working group will be convened to progress development of cost effective emissions reduction strategies.

3 Assessment of cost-effective emissions reduction options and implementation of agreed options to reduce ROC emissions from significant industrial sources has not commenced, pending outcomes of Program 1. Program 3 is scheduled to commence following the release of the final technical report on the results of the modelling. At this time, the Industrial Emissions Reduction working group will be convened to progress development of cost effective emissions reduction strategies.

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.6.

Aerial view of the Kwinana Industrial Area.

Table 4.6: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 3: Reduction of Industrial Emissions of NO_x and ROCs		
Program 1: Assess contribution of industrial NO_x and ROC emissions to smog formation in the Perth airshed	0.2 FTE	
Program 2: Assess cost effective NO_x emission reduction options, and implement agreed options to reduce emissions from significant industrial sources	< 0.1 FTE	
Program 3: Identify and assist the major emitters of ROCs to reduce industrial contributions, and encourage continuous improvement in ROC reduction measures already introduced	< 0.1 FTE	

4.4 Initiative 4: Health Research

There are now numerous studies which have demonstrated a significant relationship between air pollutants and population level health outcomes. The new emerging areas of research are the impacts of air pollutants on children and long term health impacts of exposure to air pollutants. Aspects relating to the application of standards for the protection of public health also require further attention. The following programs envelop these issues:

1 Investigating the public health impacts of air pollution;

2 Investigating sources of air pollutants and their impact on residents by determining the potential health impacts of variations in Perth's daily air quality; and

3 Developing an Air Pollution and Health Network (APHN).

Table 4.7 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. This table shows that program 2 was delayed, but has now commenced as it was dependent on the results from the Commonwealth's *BTEX Personal Exposure Monitoring in Four Australian Cities* which was finalised in May 2003.

Details of progress on key issues up until June 2004

1 Investigation of the relationship between changes in daily air quality, hospitalisation and mortality, has been a long term priority. Initial delays occurred due to re-analyses of data and changes resulting from comments during peer review.

The study used a case-crossover study design, which is an alternative to the traditional time series analysis. It took into consideration the effects of transient risk factors such as changes in air pollutant concentrations on acute events such as mortality and hospitalisation. The study also used a time series analysis protocol previously recommended by the Air Pollution and Health European Approach.

The completed report, *Research on Health and Air Pollution in Perth – Morbidity and Mortality – A Case-Crossover Analysis 1992-1997*, was released in June 2003. Results of the study support those reported in Sydney, Melbourne and Brisbane, as well as numerous international studies and indicate that air quality is impacting on the health of Western Australians. Key findings of the report included:

- An association between changes in daily ozone concentrations and cardiovascular mortality;
- Significant associations for daily changes in ozone and particle concentrations and

Table 4.7: Progress to June 2004 – Health Research

Health Research Program	2000		2001				2002				2003				2004				2005			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1: Investigating the public health impacts of air pollution																						
2: Investigating sources of air pollutants and their impact on residents by determining the potential health impacts of variations in Perth's daily air quality																						
3: Development of an Air Pollution and Health Network																						

Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

hospitalisation for asthma, chronic obstructive pulmonary disease (COPD), pneumonia and respiratory disease for all ages;

- Significant associations for changes in daily ozone and particle concentrations and cardiovascular disease, COPD, pneumonia and respiratory disease for people aged over 65 years; and
- Significant associations for changes in daily ozone and particle concentrations and asthma hospitalisation for children aged less than 15 years.

These findings have influenced future priorities for air quality and health research. A discussion paper on future health research priorities in relation to ambient air quality in WA is under development by the Health Research working group and was due for release in February 2004. However, the Health Research and Indoor Air Quality working groups were merged to form the APHN in early 2004. As a result of this merger, the APHN decided that publication of the discussion paper should be delayed so that an indoor air quality component could be added. A series of APHN workshops starting in August 2004 will develop the indoor air quality component of the discussion paper and scope collaborative research projects that will address the priority research areas outlined in the Paper. The discussion paper is planned for release in 2005.

A series of research projects have been identified including:

- Pilot study to determine health impacts of domestic wood smoke will be conducted as a university student project investigating the number of General Practice (GP) visits for respiratory illness in relation to air quality. This study is scheduled to commence in March 2005.
- Project to investigate the contribution of outdoor air to indoor air quality involving the determination of baseline personal exposure to NO_x is almost complete. Data from an earlier study was re-analysed to determine the effect of heating on personal exposure to NO_x. A draft paper has been prepared for submission to a scientific journal. Submission of research paper outlining the results to scientific journal and subsequent publication of paper is expected in early 2005.
- Project to conduct a health risk assessment studies of air contaminants not covered by the Ambient Air Quality National Environment Protection Measure (NEPM) has commenced. This project involves developing ambient air quality guidelines via health risk assessment process for draft list of air pollutants. Once agreed to via community consultation, the five pollutants of priority will trial the risk assessment approach and methodology. The initial stage of development of the ambient air quality guidelines is due to commence in January 2005.
- An AQMP-funded Edith Cowan University (ECU) study has commenced to 'Investigate the use of methoxyphenol and levoglucosan as biomarkers for wood smoke exposure'. Phase 1 of the study involving validation of the wood smoke characterisation technique has commenced, after initial delays in receiving ethics approval. Phase 2 of the study involving the testing of biomarkers on volunteer firefighters has yet to commence. Results from this study will be submitted to scientific journals upon completion of Phase 2.
- An AQMP-funded ECU study has commenced to 'Investigate the relationship between health outcomes in children and measures of air pollution'. Phase 1 of the study involving the linking of children's cohort database with ambient air quality data has been completed. Phase 2 involving the analysis of data from linked database with health endpoints has not commenced. Data availability and potential to link this data to air quality information has been thoroughly investigated. A number of health endpoints have been proposed for Phase 2 of the study. Completion of the final progress report for Phase 1 with recommendations for Phase 2 is expected in early 2005.
- An AQMP-funded University of WA (UWA) / Institute of Child Health Research study to investigate the 'Daily exposure to indoor air pollution and asthma in children' has been delayed due to extensive delays in receiving ethics approval. Recruitment of children for study is scheduled to commence in August 2004, followed by collection of data and its analysis. Initial drafts of research papers outlining the results are expected by late 2005.
- Discussions regarding the type of air quality data available and its potential use for health research in the context of an exposure database being developed under the 'UWA Spatially-Defined Exposure Database' project. Ambient air quality monitoring data for the UWA database will be provided on request.
- Several future projects have been scheduled to commence in January 2007 including to:

- Investigate relationship between Perth's daily air quality and hospital emergency department visits;
- Develop a project trialing routine recording of GP health data in standardised way;
- Investigate relationship between re-admission of patients and air quality;
- Investigate potential of local variations in Perth's daily air quality to have any health impact;
- Develop program to investigate exposure of Perth's residents' to air toxics; and
- Investigate relationship between personal exposure, ambient air quality and defined health outcomes.

Contribute funding and resources for the expansion of the Cooperative Research Centre (CRC) for Asthma in an application to the Australian Research Council. The results of the CRC application will be known by late 2004. If the application for the new CRC for Asthma is successful, various projects will be scoped that address the priority areas of health and air quality in WA.

In addition, there are a number of health research programs at the Commonwealth level that WA participates in:

- The Environment Protection and Heritage Council (EPHC) Cooperative Health Research working group. This working group prepared a paper of priority research areas for health and air quality after consultation with health experts. This paper was submitted to EPHC for the Ministerial Council's endorsement. The working group scoped various projects and investigated funding opportunities for such research. The working group will seek funding for studies investigating the impacts of air quality on children and the elderly as well as a study looking at particles to determine what sources they come from.
- The ARC SPIRT multi-city health and air pollution study entitled 'Comparative Study between Major Cities in Australia of the Association between Air Pollution Exposure and Human Health' which examined the short-term health effects of air pollution in four Australian cities, and preparation and acceptance of papers for the International Society for Environmental Epidemiology conference held in September 2003.
- Participation in production of scientific publications of ARC SPIRT multi-city morbidity and mortality study. Several research papers outlining the results for all of the cities were prepared and submitted by the researchers to scientific journals.
- Participation in EPHC Air Pollution and Health Project (a national multi-city morbidity and mortality study). The study has now been completed, with progress reports provided to EPHC in December 2003 and June 2004. The final progress report is scheduled for March 2005. Results of study will be presented at conferences by the researchers and submitted to scientific journals.
- The EPHC Jurisdictonal Reference Network for the NEPM Ozone and Sulfur Dioxide Review by providing data for the reports and continued participation in workshops and teleconferences on the upcoming review of the Ambient Air Quality NEPM for Ozone and Sulfur Dioxide standards.
- The EPHC Air Quality Standard Setting working group has been established to develop a risk assessment framework for the development of national air quality standards. The working group will have developed a detailed work program and begun the initial phase of assessing current risk assessment methods for air quality standard setting that are used internationally.

2 The investigation of the sources of air pollutants and their impact on residents by determining the potential health impacts of variations in Perth's daily air quality has commenced. The report for BTEX PEM study, *BTEX Personal Exposure Monitoring in Four Australian Cities*, was released May 2003 and the results of this study are being reviewed. Results from SPIRT project have not been publicly released and review will commence upon official release. Upon completion of this review, studies will be scoped to study local variations in relation to these pollutants.

3 The APHN comprises members of both the Health Research and Indoor Air working groups and is chaired by the Department of Health (DoH). The Terms of Reference were drafted and endorsed at the inaugural meeting of the APHN held in June 2004.

The APHN will be given the task of ensuring that the information base in health research issues as a result of ambient air quality and indoor air quality is maintained via a review process. This includes identifying priorities, recommending and supporting research programs and identifying appropriate funding sources. The proposed composition of these networks would enable current information on funding organisations and grant processes to be available.

Table 4.8: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 4: Health Research		
Program 1: Investigating the public health impacts of air pollution	0.4 FTE	$80,000
Program 2: Investigating sources of air pollutants and their impact on residents by determining the potential health impacts of variations in Perth's daily air quality	1.7 FTE	
Program 3: Development of an Air Pollution and Health Network	0.4 FTE	

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.8.

4.5 Initiative 5: Modelling Improvements

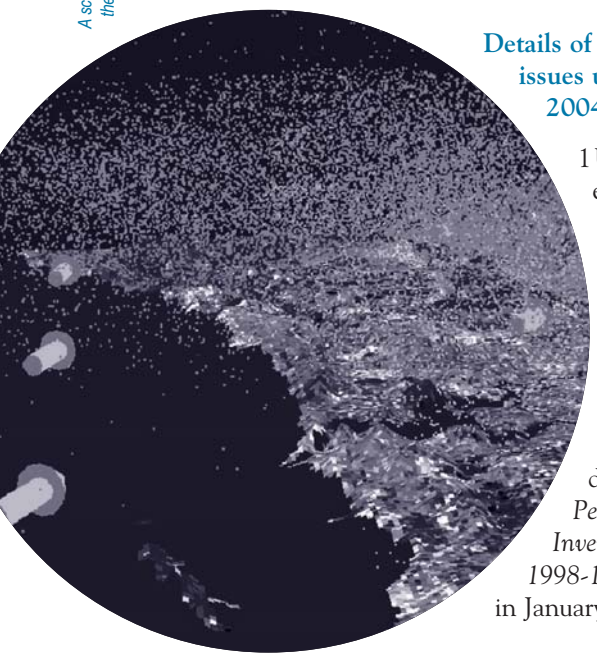
Modelling can provide information on the likely effects of various emission control strategies and is an important tool used in the management of Perth's air quality. Modelling of air quality in Perth focuses on two significant air quality problems: photochemical smog (in summer) and particulate haze (in winter). The following programs have been established as part of the AQMP:

1 Updating and consolidating air emissions databases;

2 Validating/improving emissions estimates for key emission sources; and

3 Improving modelling capability and accuracy.

Table 4.9 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. This table shows all programs within this initiative have commenced on schedule.



A screen shot from Smog Show, the DoE's Photochemical Smog Display software, showing the movement of a photochemical smog plume over Perth.

Details of progress on key issues up until June 2004

1 Up-to-date emissions inventories, databases and estimates are an essential input for air quality models. The latest update of air emissions databases, the *Perth Airshed Inventory Update 1998-1999*, was released in January 2002.

The Perth Airshed Inventory Update and the National Pollutant Inventory (NPI) will be updated on a five yearly basis to align with the national timeframe. The inventory year 1 July 2004 to 30 June 2005 will be the focus of the project. Projects scope will be completed by end of November 2004. As the timetable for completion of the Perth Airshed Inventory Update has been revised, the linked database program has been rescheduled to commence post-2006.

2 The validation / improvement of emissions estimates for key emission sources has been rescheduled to commence in January 2007. (Since the timetable for completion of the Perth Airshed Inventory Update has been revised)

3 Improvement of modelling capability has commenced with the development of a Haze Model. The Haze Model is used to assess particle impacts by providing estimates of particle concentrations in the Perth airshed. A peer reviewed paper discussing model development was prepared and presented at the Clean Air Society of Australia and New Zealand 2002 Conference. The final report resulting from this work will be peer reviewed in October 2004 and published as a Technical Series in early 2005. A 'Haze Movie' (fly-through of a Perth haze event) educational tool is under development.

Visualisation software for the Perth Photochemical Smog Model, which provides a simulation of typical photochemical smog episodes in Perth, has been made available via the air quality web site. This allows improved access to the simulation enabling feedback for future development. Further refinement of the graphical user interface of the model will be assessed from this user feedback.

The project to investigate the use of output from the Bureau of Meteorology mesoscale model as input to the Perth Photochemical Smog Model has commenced. The assessment of the results of recent studies using the Limited Area Prediction Scheme (LAPS), the Ambient Air Quality Forcasting System (AAQFS) and The Air Pollution Model (TAPM) has shown none of these to be applicable.

Table 4.9: Progress to June 2004 – Modelling Improvements

Modelling Improvements Program	2000		2001				2002				2003				2004				2005			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1a: Update and consolidate air emissions databases (Perth Air Emissions Inventory) using best available information from a range of sources including National Pollutant Inventory (NPI), local industry and overseas authorities																						
1b: Develop a database management system to integrate data from the Perth Air Emissions Inventory, NPI and licensed premises																						
2: Validate / improve emissions estimates for key emission sources																						
3a: Improve modelling capability and accuracy by refining the Perth Haze Model																						
3b: Improve modelling capability by enhancing the graphical display of the Perth Photochemical Smog Model																						
3c: Use output from the BoM mesoscale model as input into the Perth Photochemical Smog Model																						
3d: Review modelling development and maintenance requirements																						

Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

The review of meteorological data for a wider range of smog events has lead to the modelling of a full season for the first time. A draft report has been completed and will undergo peer review in September 2004. It will be published as a Technical Series in early 2005.

A review of in-house modelling development and maintenance requirements has commenced, including an assessment of the suitability of use of alternative models, including advanced Gaussian 'puff' models. The Gaussian puff model is an enhancement of the traditional Gaussian plume type. The traditional Gaussian plume models presume that emissions from a source travel directly downwind, dispersing in the horizontal and vertical directions, with concentration profiles following a Gaussian form. The Gaussian puff model represents the emissions as a sequence of puffs released from the source, each puff dispersing in directions both across and along the current wind direction, as well as vertically. Such a model can handle much more complicated meteorological conditions, including the effects of topography and near-coastal variations of stability and mixing depth resulting in a more accurate model output.

Further progress on this Program has been delayed due to insufficient resources. The completion of the assessment of various modelling methods for suitability in regards to use in WA and recommendations regarding the most suitable methods will occur in 2004-05. Investigations of the hardware requirements for modified or new software for these modelling methods and assessment of funding implications will then commence.

Table 4.10: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 5: Modelling Improvements		
Program 1: Update and consolidate air emissions databases	< 0.1 FTE	
Program 2: Validate / improve emissions estimates for key emission sources	< 0.1 FTE	
Program 3: Improve modelling capability and accuracy	< 0.1 FTE	

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.10.

4.6 Initiative 6: Air Quality Monitoring

Monitoring of ambient air quality is undertaken for a number of reasons: to aid in identifying areas which may have higher than desirable levels of some pollutants and to better understand how some pollutants impact on the environment and human health. This information can be used in design of management programs.

Air monitoring programs were conducted during 2003 at Wagerup, Brookdale and Bellevue. Monitoring during 2004 has continued at Wagerup in response to community concerns. Campaign monitoring has also been under taken at Kalgoorlie.

The Air Monitoring Steering Group (AMSG) will be formed in order to identify and oversee future monitoring programs in response to new information, increased knowledge and community concerns.

The *Kwinana Gap Emissions Study Stage 1: Significant Emissions in the Kwinana Industrial Airshed* involved a review of air emissions associated with industrial activities in the Kwinana Industrial Area. The aim being to assess the appropriateness and effectiveness of current facility specific monitoring programs. The completed study was released in 2004 and is available from the DoE web site.

The following programs assist in achieving the aims of the Perth AQMP:

1 Establishing an AMSG to review air quality monitoring issues in the Perth metropolitan region;

2 Reviewing air quality monitoring practices and procedures in the Perth metropolitan region;

3 Developing future monitoring programs; and

4 Supporting community information and education programs on air quality monitoring.

Table 4.11 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. The establishment of an AMSG to review air quality monitoring issues in the Perth metropolitan region has been delayed. The AMSG will be based on the membership of the Air Quality Monitoring working group, and is scheduled to first meet in December 2004. All other programs have commenced on schedule.

Details of progress on key issues up until June 2004

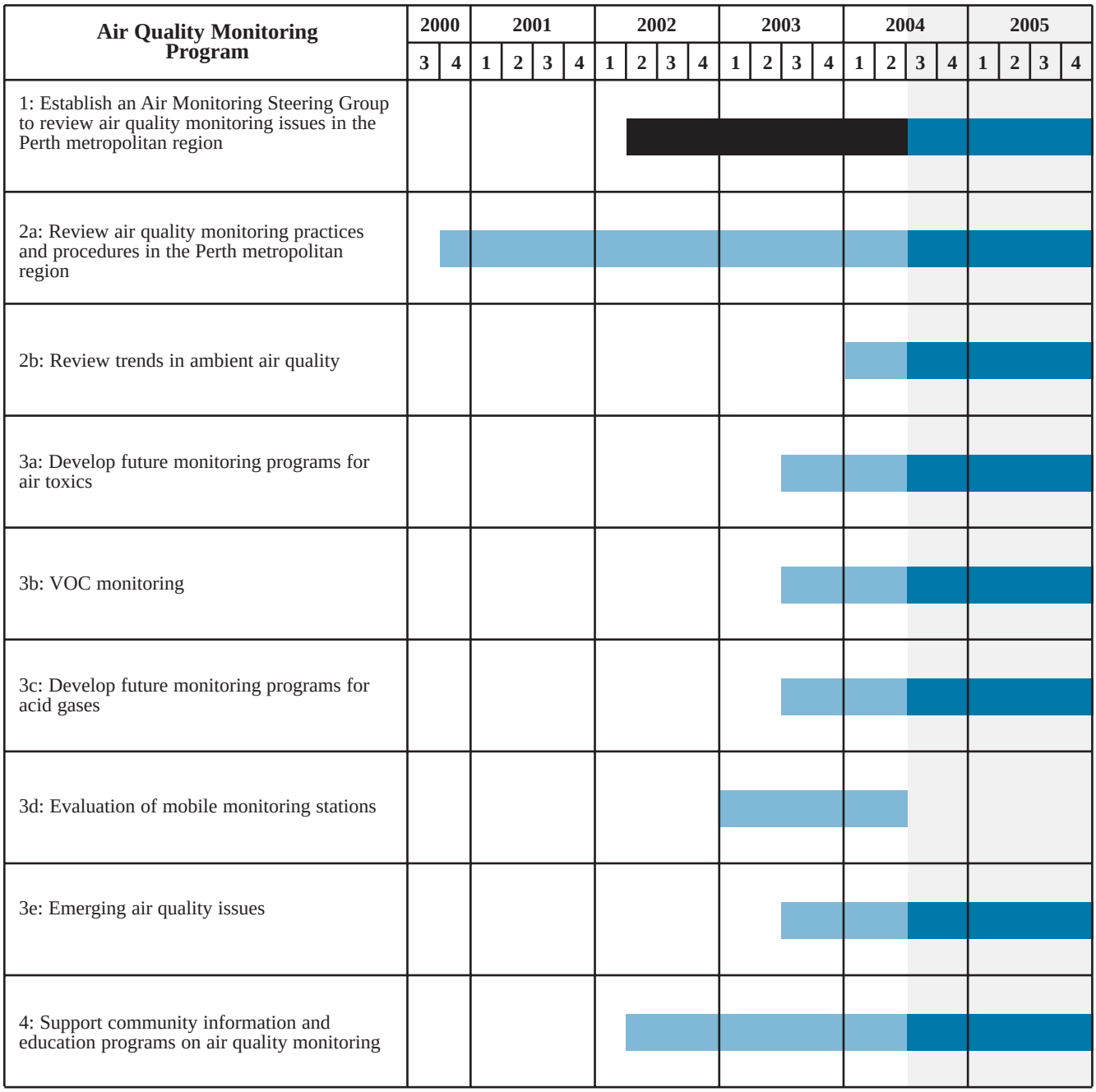
1 The AMSG will be established to maintain communication between relevant government agencies, research bodies, industry and the APHN on air quality monitoring needs in the Perth metropolitan region and to oversee the implementation of programs within this initiative. Terms of Reference are being drafted accordingly. The AMSG is now scheduled to meet in early 2005 and a work program will be developed. CCWA has indicated they are willing to participate through membership of the AMSG.

2 Air quality trends identified through monitoring will also monitor the long-term effectiveness of the Perth AQMP. Trend analysis was undertaken in 2000 using data for the data period 1992-1999 and again in 2003 for the data period 1992-2002. The results of this study were presented at the Clean Air Society of Australia and New Zealand Conference in November 2003.

Key findings for the study period of 1992 to 2002 were:

- Ambient carbon monoxide concentrations have decreased in the Perth airshed;
- Ambient NO_x concentrations have shown little improvement;
- Ambient ozone concentrations have increased slightly, with an increase in the number of days above the background level of ozone;
- Ambient concentrations of particulate matter with size less than 10 micrometres (PM_{10}) have shown little improvement, with regular exceedences of standards;

Table 4.11: Progress to June 2004 – Air Quality Monitoring



Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

- Ambient concentrations of particulate matter with size less than 2.5 micrometres ($PM_{2.5}$) have fluctuated; and
- Additional data is needed for analysis to confirm the trends observed.

This latest analysis used 10 years of data and allowed improved detection of significant trends in Perth's air quality. The final draft of report was completed January 2004. The report was subsequently peer reviewed and the final report is to be released in late 2004. The findings of this trends review will be used to refine / direct future program development. The trends analysis will be undertaken and reported for each additional four years of data. The next report target date is June 2008.

Air quality data was also provided for the *National Ambient Air Quality Status and Trends Report, 1991-2001* released in April 2004.

The review of air quality monitoring procedures involves meeting the requirements for National Association of Testing Authorities (NATA) accreditation of the monitoring network. Equipment, such as multi-gas calibrators and zero

air generators, has been purchased and is undergoing testing prior to installation. Installation to change to fully automated calibration system for the entire monitoring network has commenced.

An evaluation of data logging systems with a view to purchase in 2004-05 has commenced and the monitoring network has been enhanced with the replacement and upgrade of all HiVol monitors. The amendment of the Quality Assurance program for HiVol monitors and new automated calibration system to comply with NATA Accreditation has commenced.

In addition to NATA accreditation there are monitoring requirements under the Ambient Air Quality NEPM. The *National Environment Protection Measure for Ambient Air Quality - Monitoring Plan for Western Australia* (DEP, 2001) has been produced to describe monitoring which will be undertaken in the State of Western Australia to determine compliance with the Standards and Goal of the Ambient Air Quality NEPM. The Plan identifies five regions within which monitoring is (or may be) required, namely:

- Perth (including Kwinana and Rockingham);
- Mandurah;
- Bunbury;
- Geraldton; and
- Kalgoorlie.

The plan presents details of the monitoring program identifying for each of the regions in turn:

- Those pollutants for which monitoring is clearly necessary;
- Those pollutants which are unlikely to be significant but which warrant a short 'campaign' of measurements for certainty; and
- Those pollutants which can be demonstrated by means other than monitoring to be clearly complying with their NEPM standard and therefore do not warrant the expense of monitoring.

Further details are available by referring to the *National Environment Protection Measure for Ambient Air Quality - Monitoring Plan for Western Australia*. In response to requirements under the NEPM, the $PM_{2.5}$ monitor installed at Caversham was converted to monitor PM_{10} from January 2004.

3 Ambient air toxics are an emerging concern with the Air Toxics NEPM being finalised in early 2004, although its introduction is awaiting legislative requirements. The Air Toxics NEPM sets monitoring investigation levels for five air toxics; benzene, toluene, xylene, formaldehyde and benzo-a-pyrene. Air toxics monitoring will be conducted under the guidelines for implementation of the Air Toxics NEPM in WA. Project scoping has commenced for street side personal exposure monitoring of air toxics along entertainment districts (including Fremantle, Northbridge and Leederville), with the project to commence in late 2004.

In addition, a project to monitor for volatile organic compounds (VOCs) at selected locations is under development, with specifications currently being reviewed by external agencies. Commercial / industrial partners are being sought for funding VOC monitoring and the final scope of project will depend on the funding available. Scoping for field trials has been completed, with the draft report from the field trials to be provided to the newly formed AMSG for their comment and suggestions regarding future work.

A six-month review of the environmental impacts of brickworks in the Swan Valley and an assessment of the adequacy of current regulatory arrangements was completed in October 2003. Significant strengthening of emission limits, monitoring and air quality control measures outlined in the report will be implemented to improve air quality in the Swan Valley.

The *Brickworks Licensing Policy* was released in October 2003. This policy outlines a *Brickworks Review Implementation* program aimed at reducing emissions from brickwork facilities. The status of this implementation program is as follows:

- Brickworks in the Swan Valley have been required to reduce emissions and improve monitoring. Companies concerned have been looking at technologies and considering options.
- Midland Brick has decided on a system for its new kiln that should achieve 90% reduction in acid gas emissions. The new kiln will be tested to determine if such a reduction in emissions is truly achieved before incorporating the technology into the remainder of their kilns.
- Midland Brick is also investigating the use of monitoring equipment capable of continuous stack and ambient monitoring.

Table 4.12: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 6: Air Quality Monitoring		
Program 1: Establish a Air Monitoring Steering Group to review air quality monitoring issues in the Perth metropolitan region	0 FTE	
Program 2 Review air quality monitoring practices and procedures in the Perth metropolitan region	0.1 FTE	
Program 3: Develop future monitoring programs	< 0.1 FTE	
Program 4: Support community information and education programs on air quality monitoring	0 FTE	$12,000

- Austral Brick is still considering the technological options available.

A scoping document for the development of a comprehensive mobile monitoring station was completed and infrastructure requirements costed. Due to cost, the mobile monitoring station was not deemed a viable option.

Mobile monitoring capacity is to be integrated with emergency response functions. A portable instrument (Gas Chromatography Mass Spectrometer (GCMS)) for measurement of VOCs has been purchased. Field trials using the portable instrument are to be conducted collaboratively with the Chemistry Centre WA. In addition, results of field trials of a Photo Ionisation Detector (PID) are being incorporated into a report on the potential use of the PID in areas with air quality issues.

The ASMG and the AQCC will consider emerging air quality issues. WA is represented on the national EPHC Air Quality working group, dealing with air quality priorities on a national scale. Outputs from field investigations and community consultation will also guide priorities in emerging air quality issues.

4 There are several projects aimed at supporting community information and education programs on air quality monitoring, including:

- The air quality web site provides monitoring data 'live', with the Haze Movie and Smog Movie simulations also available for viewing. Further update of graphics for Haze Movie and Smog Movie will occur based on feedback received. There is also a project to explore additional learning aids which may supplement those already available on the web site.
- The scoping and implementation of pilot *SNAQ (Students Network for Air Quality) on Haze* program in conjunction with *AirWatch* during winter 2004 will be reviewed and expanded to additional schools in Winter 2005.
- Initial scoping has been scheduled for a project to develop an *AirWatch Community* program in line with the schools program. This will involve a pilot trial of various projects under the auspices of *AirWatch Community*.
- Continued support and encouragement of the development of local air quality management plans through regional strategies and local government.

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.12.

4.7 Initiative 7: Indoor Air Quality

The potential impact of indoor air quality on human health is an important issue which requires ongoing research and community awareness. In recent years there has been increasing concern about indoor air quality and personal exposure. The following programs address some of these concerns:

1 Developing an Indoor Air Quality Network;

2 Investigating indoor air quality and the contribution of indoor air exposure to personal exposure; and

3 Increasing community indoor air quality awareness.

Table 4.13 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. This table shows:

- A preliminary review of studies to evaluate the presence and concentration of indoor air pollutants and personal exposure measurements for the Perth metropolitan population has commenced.
- A preliminary review of indoor air quality resources and community education programs that have been conducted in Australia and overseas has commenced.

Details of progress on key issues up until June 2004

1 The Indoor Air Quality Network (IAQN) to be formed under Program 1 was integrated into the APHN (see Initiative 4).

A series of APHN workshops starting in August 2004 will develop the indoor air quality component of the discussion paper (Initiative 4) and scope collaborative research projects that address the priority research areas. Appropriate areas of study will be determined by the APHN.

2 The collation and review of indoor air quality monitoring, exposure and health outcome exposure studies (Program 2a) has commenced. The APHN will hold several workshops to utilise the collective strength of indoor air quality specialists to direct health research priorities at the State level.

Table 4.13: Progress to June 2004 – Indoor Air Quality

Indoor Air Quality Program	2000		2001				2002				2003				2004				2005			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1: Development of an Indoor Air Quality Network																						
2a: Collate and review indoor air quality monitoring, exposure and health outcome exposure studies																						
2b: Develop indoor air personal exposure and monitoring programs																						
2c: Indoor air quality database development																						
3a: Collate and review indoor air quality awareness programs and resources.																						
3b: Develop community awareness materials and campaigns to limit indoor air exposures. Incorporate findings from the source and personal exposure research into community awareness materials as required																						

Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

The development of indoor air quality monitoring, exposure and health outcome exposure studies (Program 2b) has commenced. The APHN has identified domestic unflued gas heaters as a high priority current key issue.

The development of an indoor air quality database (Program 2c) has not commenced and appropriate areas of study will be determined by the APHN.

3 The collation and review of indoor air quality awareness program and resources (Program 3a) has seen existing brochures updated where needed. Involvement with the Asthma Foundation is ongoing, with brochures on effects of indoor air quality and asthma being published and are accessible to the public.

The development of community awareness materials and campaigns to limit indoor air exposures (Program 3b) has largely been focused on domestic unflued gas heaters. A leaflet on unflued gas heaters has been published which is accessible to the public through the Environmental Health Directorate and the DoH web site. The Minister for Health released media and press statements on the implications from operation of domestic unflued gas heaters.

Delegates from the national enHealth Council (including WA representatives) were involved in deliberations with the gas industry at the national level. A leaflet on unflued gas heaters will be published by the national enHealth Council.

A brochure on managing the risks from operation of unflued gas heaters will be produced under the Environmental Health Guide Series.

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.14.

Table 4.14: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 7: Indoor Air Quality		
Program 1: Development of an Indoor Air Quality Network	< 0.1 FTE	
Program 2: Investigate indoor air quality and the contribution of indoor air exposure to personal exposure	0.1 FTE	
Program 3: Increase community indoor air quality awareness	< 0.1 FTE	

4.8 Initiative 8: Land Use and Transport Planning

Land use and transport planning decision making directly influences the way in which the community undertakes daily activities. These activities have implications for air quality at local and regional levels. For example, extensions to the existing rail network, including the South West Metropolitan Rail and the Clarkson extension in the northern suburbs, will reduce car usage and consequently result in reduced vehicle emissions.

The following programs seek to ensure that air quality considerations are incorporated into the existing mechanisms for decision making related to land use and transport planning:

1 Including regional and local air quality considerations in the strategic planning and implementation of *Network City: Community Planning Strategy for Perth and Peel*;

2 Including regional and local air quality considerations in the planning and implementation of development proposals;

3 Monitoring and reviewing the effectiveness of land use and transport planning decisions in influencing Perth's air quality; and

4 Assisting local government in influencing the community's travel behaviour to bring about positive change.

Table 4.15 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. This table shows all programs within this initiative have commenced on schedule.

Details of progress on key issues up until June 2004

1 The banner under which most of these actions fall is called *Dialogue with the City*, which was initiated in June 2003. (The term '*Greater Perth*' is no longer used.) The community plan that has evolved from *Dialogue with the City - Network City: Community Planning Strategy for Perth and Peel -* outlines a change in direction for Perth, not only in how the city develops, but also how planning is carried out. The key is to plan through participative decision-making. *Network City* will be open for public comment from September to December 2004. Thereafter, comments will be reviewed changes made to the document if appropriate and the strategy finalised.

Network City addresses air quality issues in a variety of broad strategies, each of which has supporting actions. It is hoped that the following strategies will address Perth's air quality issues:

- 'Strategy 1-1: Foster land use and transport integration to form a network city', the objective of which is to reduce car dependency and increase the use of public and other transport modes.
- 'Strategy 2-2: Using land resources efficiently, make fuller use of existing urban land by supporting additional residential development within existing urban areas, so that 60% of all new dwellings are being constructed in this area as soon as possible.'
- 'Strategy 1-3: Manage urban growth to limit urban sprawl through a development staging strategy and other complimentary techniques.'
- 'Strategy 3-6: Adopt a 'place management' approach to major development projects and planning initiatives that allows for a focus on local issues and local solutions.'
- 'Strategy 3-16: Encourage the local mixing of uses, to reduce the overall need for people to travel between their places of residence, employment and recreation.'
- 'Strategy 3-17: Continue to promote an urban structure that enhances accessibility through legible and interconnected street networks and walkable neighbourhoods.'
- 'Strategy 6-1: Integrate local and longer distance transport needs to support Network City with a view to decreasing car dependency.'
- 'Strategy 6-2: Ensure that transport within activity corridors compliments and links activity centres and supports the corridor concept.'
- 'Strategy 6-6: Enhance accessibility to facilities and services, and to employment and recreational opportunities, through a balanced transport system that provides choice in transport modes, prioritises public transport, walking and cycling wherever possible, and does not inequitably limit accessibility based on location or access to a private car.'

Post public comment period an implementation plan is to be produced, which will give better guidance as to the timing of, and resources required, to implement strategies and actions in *Network City*.

2 The inclusion of air quality considerations in the planning and implementation of development proposals has begun and a data sharing agreement has been signed. Draft Transport Assessment guidelines were prepared in January 2003, with

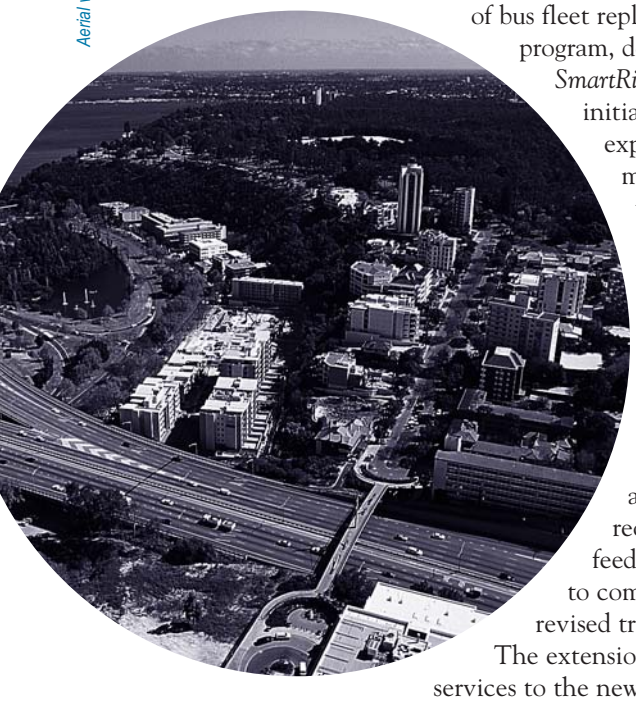
Table 4.15: Progress to June 2004 – Land Use and Transport Planning

Land Use and Transport Planning Program	2000		2001				2002				2003				2004				2005			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1a: Include regional and local air quality considerations in the strategic planning and implementation of *Network City: Community Planning Strategy for Perth and Peel*																						
1b: Assess the environmental impact of the various strategies contained within *Network City: Community Planning Strategy for Perth and Peel* and the *Metropolitan Transport Strategy*																						
2: Include regional and local air quality considerations in the planning and implementation of development proposals																						
3a: Monitor and review the effectiveness of land use and transport planning decisions in influencing Perth's air quality																						
3b: Review of DC 1.6 policy																						
3c: Assess the cost effectiveness of money spent on the transport network																						
4a: Assist local government in influencing the community's travel behaviour by developing ITPs																						
4b: Cyclist access																						
4c: Pedestrian access																						
4d: Parking																						
4e: Home-based employment and business																						

Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

internal stakeholder review completed in September 2003. The draft guidelines will be submitted to the WA Planning Commission (WAPC) for endorsement in November 2004. They will then be distributed to external stakeholders for comment and revised as appropriate. It is then proposed to introduce the guidelines into the development control / planning process on a voluntary trial basis for 12 months, to allow benefits to be evaluated.

3 Many long-term public transport initiatives, capital works and major infrastructure projects are progressing. These include improving passenger information services, increasing Park 'n' Ride capacity, improving bus stop and station facilities (including upgrading of train stations to meet accessibility standards), continuation of bus fleet replacement program, development of *SmartRider* ticketing initiative and expansion of metropolitan train system. The extension of train services to Clarkson will commence in October 2004 with an attendant reorganization of feeder bus services to compliment the revised train network. The extension of the train services to the new Thornlie Station is scheduled to commence in early 2005.



Aerial view of the freeway, looking south.

The Mandurah Bus Station opened in September 2003 with an improved feeder and main line bus network. The review of Bunbury regional town services has been conducted and the recommendations implemented. The bus fleet replacement program slowed while development continued on gas buses, with delivery and commissioning of new gas buses continuing. Work is progressing on the *SmartRider* ticketing initiative and is expected to roll out in April 2005.

Transperth's ongoing service improvement initiatives have resulted in strong patronage. Market share data from the Perth Travel Survey has shown bus patronage has increased again this year for the fourth consecutive year totaling over 18%. The service development plan has been progressed within the Transperth finite budget by improvement to bus services in one area being funded by the withdrawal of services from other areas, where services were under performing. 11 out of the 26 bus service improvement projects earmarked for 2003-04 were delivered.

Transperth's ongoing Bus Services Improvements Plan includes some 65 planned improvements to bus services that have been costed and prioritized to 2007 but they are as yet unfunded. These include the establishment of bus services to newly developing areas as well as the roll out of more of Transperth's successful 900 Series 'High Frequency' services, and general improvements to bus service frequencies. Also included is the proposed feeder bus network to augment the extensions to the suburban train system. The introduction of these bus services is critical to the continued success of an integrated network. Indications are that the recurrent budget will not increase for 2004-05. The exception may be for a possible injection of funds on a one off project basis. Such projects may not form part of our Services Improvement Plan.

The review of *Development Control Policy 1.6 – Planning to Enhance Public Transport Use* integrated with review of *Liveable Neighbourhoods* policy has commenced with a revised interim policy drafted in March 2004 but not released. An evaluation of policies against sustainability principles has also been completed. Consideration of revised *Liveable Neighbourhoods* policy by WAPC and advertising of revised *Liveable Neighbourhoods* policy for public comment is scheduled for 2005.

The assessment of the cost effectiveness of the transport network has not commenced, deferred whilst awaiting outcomes from *Dialogue with the City and Network City: Community Planning Strategy for Perth and Peel.* It is likely the timelines will require revising given the expansion of the Perth rail network.

4 Assistance for local government in influencing the community's travel behaviour by developing integrated transport plans has commenced. *Traveling Together - South West Metropolitan Integrated Transport Plan* which covers seven local government authorities has been developed and released. Implementation is expected to commence in late 2004. Development of the *Eastern Metropolitan Region Integrated Transport Strategy* in partnership with the Eastern Metropolitan Regional Council will also commence in late 2004.

Promotion of cyclist and pedestrian access has begun with a review of the existing network and facilities to investigate short comings of cyclist and pedestrian access. In addition, the strategies contained in *Bike Ahead* and *Perth Walking* have commenced. Policy development to progress

provision of cyclist access through and within train station precincts has been completed. Projects have also been developed to provide improved pedestrian infrastructure in local government areas. Monitoring of Perth Bicycle Network (PBN) Routes has shown that usage of the routes has doubled since 1999. A 'Cycling and Walking Behaviour and Attitudes Track' was done, the ninth such survey for cycling, with both surveys again being undertaken in 2004-05.

Terms of reference for the Western Australian Pedestrian Advisory Committee have been broadened to include walking for health, recreation and sustainability. The committee has been renamed the Walking WA Committee.

The *Perth Parking Policy* has been successfully used to reduce the amount of tenant parking provided and to increase the supply of bicycle parking and end of trip facilities throughout the Perth central business district. An initial review has been completed. Further progress is subject to the resolution of program priorities and associated resources. Draft strategy development and the *Stage 1 Review of Public Parking* have commenced. The *Stage 1 Review of the Public Parking* elements will be finalised in 2004-05. Ongoing work on the development of a "policy approach" to parking in the Perth Metropolitan Region is underway and is part of the Land Transport Branch work program.

The extent and characteristics of home-based employment were covered in section 5.6 of Greater Perth Economy and Employment (Discussion Paper 3). This paper concluded that there is only a very small proportion of people actually working at home (as opposed to being highly mobile and vehicle-dependent) within the "home-based employment category". Further review is required relating to whether increases in home business numbers and resultant traffic impacts will be of benefit to air quality.

An investigation of home-based employment is expected to be a component of the implementation plan for *Network City*.

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.16.

Table 4.16: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 8: Land Use and Transport Planning		
Program 1: Include regional and local air quality considerations in the strategic planning and implementation of *Network City: Community Planning Strategy for Perth and Peel*		
Program 2: Include regional and local air quality considerations in the planning and implementation of development proposals	0.1 FTE	
Program 3: Monitor and review the effectiveness of land use and transport planning decisions in influencing Perth's air quality	6.6 FTE	$115,000
Program 4: Assist local government in influencing the community's travel behaviour to bring about positive change	1.2 FTE	$47,000

4.9 Initiative 9: Haze Reduction

Haze is Perth's major winter air quality concern. Domestic wood heaters are the largest single source of particles contributing to haze formation. Four programs have been developed to reduce emissions contributing to haze including:

1 Increasing community awareness of the impacts of domestic wood heaters on air quality;

2 Increasing awareness among wood suppliers and wood heater installers of the impacts of wood heaters on air quality;

3 Resolving domestic smoke nuisance complaints; and

4 Managing green waste disposal and recycling to reduce local haze creation.

Table 4.17 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. This table shows all programs within this initiative have commenced on schedule.

The Haze Reduction working group was established with its current membership (as listed in Appendix 2) in July 2003 to oversee the implementation of programs within the Haze Reduction Initiative. To date 10 meetings of the working group have been held.

Table 4.17: Progress to June 2004 – Haze Reduction

Haze Reduction Program	2000		2001				2002				2003				2004				2005			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1a: Increase community awareness of the impacts of domestic wood heaters on air quality																						
1b: Incentive programs and *Halt the Haze* campaign																						
2a: Increase awareness among wood suppliers and wood heater installers of the impacts of wood heaters on air quality																						
2b: Wood heater installation course																						
3a: Domestic smoke nuisance resolution																						
3b: Mediating process for domestic smoke nuisance																						
4a: Backyard burning ban																						
4b: Manage green waste disposal and recycling to reduce local haze creation																						

Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

Details of progress on key issues up until June 2004

1 Increasing the community's awareness of the impacts of domestic wood heaters is very important in encouraging the correct operation of wood heaters or the use of alternative heating sources. A six page brochure 'Choosing a Heater' was released in November 2002. This brochure provides a guide to consumers on the types of heaters available including some information on air quality. These brochures are available through the Sustainable Energy Development Office (SEDO) Energy Smart Line (1300 658 158), local government authorities and other community and promotional activities. Up to 2,500 brochures are distributed each year.

The wood smoke brochure 'Store Right, Burn Bright, Breath Alright' was revised. 10,000 copies were produced for distribution to local government authorities and the public. Revision and updating of brochures will occur as required. Information packs on alternative heating, energy efficiency and correct wood heater use were distributed as part of the pilot *Home Heating Survey* conducted in City of Joondalup, City of Melville and Town of Kwinana. A total of 3,000 information packs were produced for distribution.

Winter Haze Alerts are issued by the Bureau of Meteorology from 1 June to 30 September each year on days likely to have haze formation. Media outlets are provided with these alerts and may broadcast them as part of the weather report. Messages broadcast include encouraging the community to ensure correct operation of wood heaters, avoid using their wood heater if it is a secondary heating source and avoid backyard burning. The Winter Haze Alert program was improved for the winter of 2003 and 2004 to include follow-up messages and message posting on air quality web site.

An information session was held for media / weather presenters in June 2003 prior to the commencement of issuing alerts, to provide an update on the enhanced program. The session had limited attendance and consequently was not repeated for the winter 2004 alerts season. Information for the Winter Haze Alert program for 2004 was disseminated through the Bureau of Meteorology.

Information on haze, haze alerts and the practices to minimise haze occurrence were distributed to other agencies via the InterSector magazine, provided to local Community newspapers and for the Department of Conservation and Land Management (CALM) information newsletter.

2 The Department of Housing and Works (DHW) has issued a Building Note recommending to all local government authorities that a Building License be required for all solid fuel burning appliances. This will assist in ensuring that the installation is carried out in accordance with *AS/NZ 2918 2001: Domestic Solid Fuel Burning Appliances – Installation* referenced by the Building Code of Australia.

The Environmental Protection (Domestic Solid Fuel Burning Appliances and Firewood Supply) Regulations 1998 set maximum moisture content for firewood for sale. Awareness amongst wood suppliers of the impacts of using unseasoned wood on air quality is increased by providing information during inspection of wood yards. Inspections were not undertaken during winter 2003. Wood yard inspections were conducted in December 2003 with a total of 21 wood yards inspected. This resulted in one breach of the regulations, pertaining to the failure to label green wood as 'Not for Sale'.

Rooftop monitoring of volatile organic compounds (VOCs) in domestic wood heater smoke emissions from residences in Perth's suburbs.

A handbook based on the Australian Standard for wood heater emissions *(AS4013 Domestic Solid Fuel Burning Appliances – Method for Determination of Fuel Gas Emission)* has been developed for the installation of wood heaters.

A wood heater installation Code of Practice has been developed and is in widespread use by installers. In addition, the Australian Home Heating Association (AHHA) and Victorian Sustainable Energy Association are seeking funding for running a training course, developed for wood heater installers. This is proving difficult with TAFE recently advising that they will require a training body to write up and formally approve the course before they can offer it.

3 Another important issue is how complaints involving domestic smoke nuisance are dealt with. The *Health Act 1911* currently excludes smoke from domestic chimneys from being subject to the nuisance provisions under the Act and limits the options available to local government Environmental Health Officers (EHOs) to resolve the complaint. *The Health Act Amendment Bill*

2004 (removing this exclusion) has been prepared and introduced to Parliament. The Bill was at its First Reading in the Legislative Council at 25 June 2004. It is expected the Bill will be passed prior to winter 2005.

The Haze Reduction working group is currently finalising a 'toolkit' for use by EHOs in resolving wood smoke complaints. A training session for EHOs in wood smoke issues and wood heater operation was held in April 2002. An expanded training program for local government EHOs and other local government officers was held in April 2004. The Wood Heater and Firewood Information Kit for Environmental Health Officers has been revised based on comments from local government officers who participated in the Wood Smoke Workshops and is being prepared for distribution prior to winter 2005

Four wood smoke workshops were held, three across the Perth metropolitan region and one in the South West. Dr John Todd, a wood heater expert from Tasmania, delivered the workshops. Future workshops will target other local government officers, such as rangers and security officers, wood heater installers, community groups and the community through train the trainer programs.

Town of Kwinana has commenced development of a Local Law under the *Local Government Act 1995* for the prevention of domestic smoke nuisance impacts. The intention of the working group is to use this Local Law as the basis for a Model Local Law for adoption by other local governments.

Following on from the 'Clean Air Melville' wood heater replacement program conducted in 2001, a pilot *Wood Heater Replacement Program* (WHRP) was launched on 2 June 2004 at Greenwood Senior High School. The pilot is a joint program between the State Government and the City of Joondalup, City of Melville and Town of Kwinana. The pilot Program aims to remove 300 wood heaters (100 in each local government area) by providing a rebate of $600 for the replacement of a wood heater with a flued or ducted gas heating system. The pilot Program will be reviewed, commencing September 2004, with the view to expanding into at least three more local government areas for the winter of 2005.

A pilot *Home Heating Survey* (HHS) also commenced in May 2004 in the same three local government areas. The information from the HHS will be used to guide the further expansion of both the WHRP and HHS.

The *Community Education Strategy* being developed under Initiative 1 will consider the form of future campaigns to reduce impacts on air quality from wood heaters.

A *Wood Heating Policy Options Paper* was initially developed to explore future policy options for reducing the impacts on air quality and health from domestic wood heaters. Due to concerns with the air quality, indoor air quality and health impacts of alternative heating sources, the *Home Heating Policy Options Paper* was revised to include all heating options.

A national wood heater audit was conducted in 2003. The audit was coordinated by the Commonwealth Department of Environment and Heritage and the AHHA, and undertaken in conjunction with a number of States, including WA. New wood heaters (show room floor models) were tested to audit compliance against the emission standard AS 4013, engineering design and labelling requirements. In general there was poor performance with less than 50% compliance. WA had input to the development of the joint industry/environment agency action plan for future audits to ensure that industry compliance is achieved.

The second round of national auditing for compliance to AS 4013 is due to commence on 1 September 2004. In addition, the Australian Standard is subject to periodic review, which WA is providing input to.

4 The voluntary response of local governments to the *Parliamentary Select Committee on Recycling and Waste Management* has resulted in separate green waste collections and less waste being burned, reducing emissions contributing to haze formation. The Town of Kwinana has developed a local law to prevent backyard burning in its urban areas, and other local governments are considering a similar local law where needed.

The Haze Reduction working group will examine this issue, however, it is rated a lower priority than wood heaters. A policy has yet to be developed, although the 'Towards Zero Waste' prepared by the WAste2020 Task Force considers the issue. 'Towards Zero Waste' has been followed by the 'Strategic Direction for Waste Management in WA' which considers green and organic waste as a priority issue. Various local governments are dealing with the issue of green waste disposal by providing green waste collection and/or banning backyard burning, although this is not being done in a consistent manner.

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.18.

Table 4.18: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 9: Haze Reduction		
Program 1: Increase community awareness of the impacts of domestic wood heaters on air quality	5.6 FTE	$210,000[1]
Program 2: Increase awareness among wood suppliers and wood heater installers of the impacts of wood heaters on air quality	0.1 FTE	
Program 3: Domestic smoke nuisance resolution	0.1 FTE	$17,000[1]
Program 4: Manage green waste disposal and recycling to reduce local haze creation	0 FTE	

4.10 Initiative 10: Energy Efficient Buildings

Energy requirements for heating and cooling are reduced with the incorporation of building energy efficiency design principles, resulting in reduced emissions of air pollutants and greenhouse gases. These objectives are achieved by implementing the following programs:

1 Adoption of energy efficiency measures into the Building Code of Australia (BCA); and

2 Encouraging energy efficient building design and planning.

Table 4.19 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. This table shows both programs within this initiative have commenced as scheduled.

Details of progress on key issues up until June 2003

1 Changing the BCA to incorporate energy efficiency measures ensures all new buildings, and alterations to existing buildings, will meet minimum standards for energy efficiency when built.

Overall, the building sector is one of the fastest growing sources of greenhouse gas emissions and therefore needs effective and speedy corrective action. Further environmental benefits of improving energy efficiency of houses include

Table 4.19: Progress to June 2004 – Energy Efficient Buildings

Energy Efficient Buildings Program	2000		2001				2002				2003				2004				2005			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1: Adoption of energy efficiency principles through building codes																						
2: Encourage energy efficient building design and planning																						

Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

[1] Operational is for the Winter Haze 2004 campaign (to September 2004).

potential reductions in air pollution from the use of solid fuel heaters. Energy efficient homes deliver cost savings to consumers through reduced electricity and gas bills. Inside houses, the quality of the internal environment is improved by reducing occupants' thermal stress.

Since buildings have very long lives compared to other energy consumers such as appliances or cars, and as much larger reductions in greenhouse gas emissions are expected to be necessary over coming decades, it is important that new buildings be compatible with a future of low greenhouse gas emission levels.

Staff from the SEDO promoting the Home Energy Line.

To address these issues, the Australian Building Codes Board (ABCB) agreed in principle to the recommendation by the Energy Efficiency Steering Committee that the revised energy efficiency measures for housing be included in BCA Amendment No 12 commencing 1 January 2003 at a national level. Western Australia adopted technical provisions, via the BCA, on 1 July 2003 at Amendment 13. Measures being developed for multi-residential (classes 2, 3 and 4 buildings) and commercial, public and institutional buildings are being developed with the view to adoption into the BCA on 1 May 2005 and 2006 respectively.

The objective of introducing energy provisions into the BCA is to reduce greenhouse gas emissions by first focussing on housing energy efficiency as a means of achieving this goal. Such mandatory measures are intended to eliminate poor practice within the industry, rather than to drive best practice.

The ABCB Project Team, in conjunction with the State and Territory building control jurisdictions and various committees, working groups and industry experts, developed the energy efficiency provisions for new housing. Several research projects were undertaken to develop the measures. As a result of public and industry comment, the technical details were revised and finalised at the ABCB National Technical Summit held in late September 2002.

Energy efficiency measures will vary from location to location. The measures described in this proposal are based on climate zones. The provisions include a map, which contains eight climate zones, and the measures proposed for each zone vary depending upon the severity of the climate. The zones in turn are based on climatic data, alignment with local government boundaries where practical, and other adjustment where considered appropriate.

The measures will include insulation for walls, ceiling and floor, improved glazing and shading, draught control, making use of air movement for cooling and the reduction of energy waste in services as appropriate for the proposed eight climate zones.

The range of measures being proposed for the BCA Housing Provisions will include new Performance Requirements and Deemed-to-Satisfy Provisions for the following aspects of houses:

- The thermal performance of walls, ceilings, floors, glazing and shading in order to avoid, or reduce, the use of artificial conditioning (heating and cooling);
- Natural ventilation and internal air movement, where appropriate, to avoid or reduce the use of artificial conditioning;
- Sealing houses in some climates to reduce energy loss through leakage;
- Insulation and piping arrangements to reduce heat loss from piping connected to storage hot water units;
- Insulation to reduce heat loss from water piping of central heating systems;
- Insulation to reduce energy loss through the walls of the ductwork associated with heating and air-conditioning systems.

The building fabric and glazing measures together are expected to reduce potential CO_2 emissions by nearly 200,000 tonnes nationwide each year. After 10 years the savings will have accumulated to around 3.7 million tonnes.

2 An education program was conducted during May 2003 on the BCA housing energy provisions to ensure that building practitioners were adequately prepared for these new requirements.

The BCA contains a complete package of performance requirements, approved solutions, and the means of assessing innovative alternative designs including the use of Nationwide House Energy Rating Scheme software, such as FirstRate and NatHers. A brochure was developed providing information on energy efficiency design principles for members of the public. A series of community seminars where the community could

bring in their plans for a quick rate assessment were also held.

Training in the use of the FirstRate scheme has commenced with approximately 750 people trained, 150 trained Accredited Assessors and 9% of dwelling applications rated using FirstRate to assess energy performance as of 30 June 2004. This represents a small but growing proportion of total dwelling applications.

Training was conducted on the introduction of Australian Building Greenhouse Rating Scheme (ABGR) with efforts focused on increasing industry awareness. 14 people have received training in 2004 and to date there are 11 accredited people to conduct ratings using ABGR. Five buildings have been rated using ABGR. The DHW is expected to release the latest version of its Office Accommodation Policies in September 2004. This document will set mandatory requirements for ABGR ratings for State Government office leases.

CCWA is involved in energy efficiency through the Cool Communities project funded by the Australian Greenhouse Office. CCWA will continue to advocate energy efficiency. The Commonwealth is terminating the Cool Communities project. CCWA is seeking funding to continue its involvement in this area.

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.20.

Table 4.20: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 10: Energy Efficient Buildings		
Program 1: Adoption of energy efficiency principles through the building code	2.5 FTE	
Program 2: Encourage energy efficient building design and planning	1.5 FTE	

4.11 Initiative 11: Cleaner Production

It is surmised that small to medium enterprises make a significant cumulative contribution to atmospheric emissions in Perth, and it is therefore important to minimise these emissions. The encouragement of cleaner production and waste minimisation will lead to a reduction in these emissions. Implementation of the following programs assist in achieving the above:

1 Encourage cleaner production; and

2 Ensure proper airshed planning for future industrial development and power generation in the Perth metropolitan region.

Table 4.21 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. This table shows most of the programs have commenced as scheduled. Development of a series of emission management guidelines has not commenced on schedule due to a diversion of resources into priority areas of vehicle emissions and haze reduction initiatives.

Details of progress on key issues up until June 2003

1 A Cleaner Production Directory for Small to Medium Businesses is under development, and has been reviewed during drafting to include air quality issues.

The principles of waste minimisation that were to be incorporated into the *Environmental Protection Act 1986* are now going to be incorporated into the new waste management legislation *(Resource Recovery and Waste Avoidance Bill)*. Drafting instructions for the Bill are being finalised and may be introduced to Parliament early in 2005.

Table 4.21: Progress to June 2004 – Cleaner Production

Cleaner Production Program	2000		2001				2002				2003				2004				2005			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1a: Promote cleaner production																						
1b: Develop a series of emission management guidelines																						
1c: Facilitate the provision and use of sustainable energy technologies and practices in the commercial and industry sectors																						
1d: Develop a discussion paper on the range of financial and economic mechanisms available for industrial emissions control																						
1e: Promote the awareness of industry achievements in atmospheric emission reduction through 'green industry' awards																						
1f: Amend the *Environmental Protection Act 1986* to include principles of waste minimisation																						
2: Ensure proper airshed planning for future industrial development and power generation in the Perth metropolitan region																						

Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

Promotion of activities to reduce emissions to the Perth airshed is occurring through the annual *WA Environment Awards*, with the addition of an air quality category. BP Refinery won the 2003 award for 90% reduction in volatile organic compounds emissions.

2 In December 2002 the Energy Smart Directory, an on-line directory of energy efficiency and renewable energy product and service providers, was launched by SEDO to enable easy access to sustainable energy solutions. An additional on-line web toolbox for business is under development to compliment existing tools. Since its launch in December 2002, the Directory has attracted an average of 1,500 visits per month, with 2,000 hits the maximum recorded in one month.

A range of five information brochures on energy efficient technologies for use by industry and commercial building operators were developed in December 2002 by SEDO and distributed commencing January 2003. Two energy efficiency seminars designed for industry were held in August and October. The seminars were held in conjunction with the WA Sustainable Industry Group, concluding a series of six seminars.

A seminar was conducted for government organisations on energy efficiency and office fit out. More than 30 government agency representatives attended. 41 government agencies achieved a reduction in their energy use of which 28 government agencies achieved their first year target of a 5% energy reduction. A business energy survey and energy use research is to be undertaken in 2004-05 to assist in the further development of Energy Smart Business strategies.

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.22.

Table 4.22: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 11: Cleaner Production		
Program 1: Encourage cleaner production	2.0 FTE	
Program 2: Ensure proper airshed planning for future industrial development and power generation in the Perth metropolitan region	0 FTE	

4.12 Initiative 12: Smoke Management

Unless properly considered as part of a burn-decision process, smoke from planned burning activities can impact on local and regional air quality. Several programs have been developed to ensure air quality is considered adequately, including:

1 Establishing a Smoke Management Awareness Group to facilitate community education and information about smoke impacts from planned burns;

2 Continued operation of the Smoke Management Liaison Group;

3 Development of smoke management policy and regulation; and

4 Continued smoke management research.

Table 4.23 shows the progress of implementation to June 2004 and future activities to December 2005 for each program within this initiative. This table shows the majority of programs have commenced as scheduled.

Table 4.23: Progress to June 2004 – Smoke Management

Smoke Management Program	2000		2001				2002				2003				2004				2005			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1: Establish a Smoke Management Awareness Group to facilitate community education and information about smoke impacts from planned burns																						
2: Smoke Management Liaison Group																						
3a: Support the development of consistent approaches and procedures for smoke management by FESA and local government authorities																						
3b: Promote the development of environmental management plans to incorporate fire hazard reduction strategies for significant remnant bushland in the Perth metropolitan region																						
3c: Develop environmental guidelines and codes of practice for use of fire in horticultural and agricultural practices within the Perth metropolitan region																						
4a: Undertake studies on weather and smoke modelling to improve burn decision processes																						
4b: Quantify significant emissions sources outside the Perth metropolitan region contributing to Perth's air quality																						
4c: Continue to promote and review risk assessment of wildfire impacts, taking into account air quality and other environmental impacts																						

Key: Program Delayed/ Limited Progress; Program Commenced; Future Activity

Details of progress on key issues up until June 2003

1 Through development of the implementation strategy for this Initiative, the Burning Emissions working group recognised that an additional Smoke Management Awareness Group was also needed. This group would assist in educating authorities and landholders undertaking burning activities to consider air quality impacts. Formation of the Smoke Management Awareness Group has been recognized as a priority and will occur during 2004. Discussions with FESA will occur to progress the development of this group.

A series of leaflets have been produced for all metropolitan local governments to distribute with burning permits each burning season. The leaflets provide basic information to land holders undertaking burning to consider when undertaking burns in order to minimise smoke impacts. These leaflets will be reviewed periodically.

2 The Smoke Management Liaison Group (SMLG) was established in the mid-1990s to improve communications between Government agencies and to reduce the impact of planned burns on air quality while recognising the need to reduce flammable vegetation. SMLG meets several times a year, both pre and post fire season.

The SMLG continues to meet as required, and has proven to be an effective forum for liaison between key agencies and personnel involved in various aspects of smoke prediction, management, monitoring and regulation.

This Initiative includes an action to review the operation of the SMLG protocol to assess its effectiveness. This review commenced in 2003, but was not progressed during 2004 due to reallocation of resources to progress haze reduction and vehicle emissions reduction programs.

3 A smoke management protocol for haze reduction in burning by local government authorities, volunteer brigades and land owners is also under development, including the *Rural / Urban Bush Fire Threat Analysis* which has been finalised for widespread distribution. The *Rural / Urban Bush Fire Threat Analysis* was trialed in the Shire of Gingin and Shire of Mundaring. A statewide bush fire threat analysis tool that will have the capability to be able to be applied across all land tenures is also under development. This tool offers a range of considerations for bush fire risk mitigation, including burning but not restricted solely to burning.

A number of staff have been consulted over the application of the draft smoke management guidelines for prescribed burning. The prescribed burning course has led to 18 participants having been familiarised with the guidelines. A number of volunteer fire fighters have also been referred to the smoke management requirements. The improvement and promotion of smoke management through guidelines and awareness information will continue.

An Environmental Protection Authority (EPA) review of the CALM *Fire Management Policy* has commenced. The EPA Review includes consideration of possible adverse health affects associated with smoke emissions from prescribed burns and wildfires. The EPA discussion paper was released for an eight week public comment period on the 23 June 2004. The EPA is likely to complete their review before the end of 2004 and the outcome will be used to guide future work areas and priorities.

Urban bushland fire response plans are being produced for regionally and locally significant remnant bushland in the Perth metropolitan region. These plans are reviewed annually and updated when appropriate.

The primary concern in Programs 3c relates to agricultural practices, such as the burning of wheat and other crop stubble. As there are no agricultural areas where this is likely to occur in the Perth metropolitan region, the Smoke Management Awareness Group will consider whether this action needs to include agricultural practices outside the metropolitan region.

4 Studies on weather and smoke modelling to improve burn decision processes were undertaken as a national project coordinated by the Australasian Fire Authorities Council (AFAC). The Bureau of Meteorology Research Centre smoke trajectory model has been used to assist in burn decision making. Information on smoke dispersion from a number of burns undertaken in spring 2001 and autumn 2002 was used to assist in model validation. The AFAC study was completed in June 2003, and the final report *Final Report – Smoke Trajectory Predictions for Prescribed Burns, Wildfires, and Hazardous Substances Incidents* is available. The AFAC study has resulted in the development of a prediction tool that assists fire managers in day-to-day decision making on the size, location and scheduling of prescribed burns and associated smoke emissions. The smoke trajectory model has increased the accuracy and reliability of predicting smoke plume movements and likely impacts on residential

areas. The model has been trialed and validated in the Spring 2003 and Autumn 2004 burning seasons.

More research is required in relation to the spread of smoke plumes under a wide range of synoptic and weather conditions. Further studies are planned for the next few years as part of the Bushfire CRC program on weather and smoke modelling, smoke impacts and smoke management.

An exploratory study to quantify significant emissions sources outside the Perth metropolitan region contributing to Perth's air quality was completed using current available data. An internal report was produced, which will guide future work.

Resource Use

The staff and operational resources used for the period 1 July 2003 to 30 June 2004 for programs within this initiative are shown in Table 4.24.

Smoke resulting from a controlled burn.

Table 4.24: Resource use for the period 1 July 2003 to 30 June 2004

	Staff	Operational
Initiative 12: Smoke Management		
Program 1: Establish a Smoke Management Awareness Group to facilitate community education and information about smoke impacts from planned burns	< 0.1 FTE	
Program 2: Smoke Management Liaison Group		
Program 3: Smoke management policy and regulation	< 0.1 FTE	
Program 4: Smoke management research	0.1 FTE	

5.0 Future Years Reporting

The reporting format used for next and subsequent years, like the *Implementation Strategy* itself, is expected to be dynamic. Comments regarding this year's process will be incorporated into the following year's reporting process.

The five year review of Perth AQMP is scheduled to commence in December 2005. This review will utilise the updated air emissions inventory, trends report and scenario modelling to evaluate effectiveness of the Perth AQMP in reducing emissions to the Perth airshed since finalisation of the Implementation Strategy in June 2002.

Publications related to the Perth AQMP including the previous year's progress reports are available from the DoE web site at www.environment.wa.gov.au.

APPENDIX 1: SUMMARY TABLE

This summary table is similar to the one in the *Implementation Strategy*, and has been produced to provide easy-to-read progress on each of the programs in the Perth AQMP.

Programs that have commenced prior to 1 July 2004 (shown in bold print) have been broken into sub-programs for reporting purposes. There are two types of programs, those of finite duration and those of an ongoing nature.

The **Agency Responsible** is the lead agency for the program.

The **Planned Start Date** is taken from the *Implementation Strategy*.

The **Actual Start Date** is provided for all commenced or ongoing programs.

The **Planned Completion Date** is provided (when available) to indicate when a program of finite duration is due for completion. Programs of an ongoing nature are shown by → in the planned completion date column.

Programs that have been completed are **shaded** in the table.

Program Constraints include reasons for delayed implementation and funding constraints.

Lead Agency Comments about the program include major achievements of the program and any proposed changes to phases of programs. A copy of the complete reporting templates from lead agencies is available in a separate document (*Progress Report to June 2004 – Completed Reporting Templates*).

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
INITIATIVE 1: COMMUNITY EDUCATION						
Program 1: Review existing education and behaviour change programs and establish a strategy and framework for developing and implementing supporting programs in the future	**DoE**	**Apr 2002**	**Jan 2003**			**Review of existing programs is to be undertaken with the evaluation of *AirWatch* primary and secondary programs conducted as an AQMP funded honours project.** **Review of existing education and behaviour change programs commenced in 2004 in parallel to the finalisation of the *Community Education Strategy*.** **Draft *Communications Framework* was submitted to the AQCC for comment in May 2004.** **Draft MoU with *AirWatch* has been developed to facilitate delivery of AQMP outcomes.**
Program 2a: Establish links between existing information centres	**DoE**	**Jan 2002**	**Jan 2002**	→		**Air quality relevant web sites have been identified and evaluated as outlets for AQMP information. Links to be updated following the establishment of the new DoE web site.**
Program 2b: Establish an air quality web page	**DoE**	**Jan 2002**	**Jan 2002**	→		**Air quality web site is serving between 300 and 600 pages on any given day - site has run smoothly and reliably since its launch in 2002. The 'live' air quality data are of key interest.** **New DoE web site to be launched in July 2004. All information from the existing site will be available on the new site.** **Maintenance and currency of information will continue based on comments received, new developments and needs as identified through regular review and development of the *Community Education Strategy*.** **New materials and links to be included, with greater use and cross promotion of *AirWatch* web site which is funded through the AQMP.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 3a: Influence the community's travel behaviour through implementing *Smogbusters* and similar programs	**DPI**	**Prior to Dec 2000**	**Prior to Dec 2000**	**→**	**Present funding arrangement will end on 31 January 2005 Funding is being sought to continue the STO position.**	**CCWA has a STO who advocates cycling, walking and public transport. Several workshops, conferences and seminars have been held on these issues.**
Program 3b: Influence the community's travel behaviour through implementing *TravelSmart Household (Individualised Marketing)* program	**DPI**	**Prior to Dec 2000**	**Prior to Dec 2000**	**→**		***TravelSmart* (Stage 2) delivered to Town of Cambridge, City of Subiaco, suburb of Marangaroo in the City of Wanneroo, and parts of the City of Fremantle, Town of Vincent, City of Armadale and City of Belmont.** **Projects planned for the City of Gosnells in early 2005 to complete Stage 2.** **Average results across five projects fully evaluated to date achieve a 10% reduction in car as driver trips and a 13% reduction in car kilometres.**
Program 3c: Influence the community's travel behaviour through implementing *TravelSmart to School*	**DPI**	**Prior to Dec 2000**	**Prior to Dec 2000**	**→**		**Partnership with Millennium Kids established to assist with engagement of primary and secondary schools in the program.** **Limited interest from secondary schools; hence funding reallocated to expanded Primary School Program.** **Walking School Bus Program established in 16 schools (24 routes (cumulative)) to support increased walking to primary schools.**
Program 3d: Influence the community's travel behaviour through implementing *TravelSmart Local Government*	**DPI**	**Prior to Dec 2000**	**Prior to Dec 2000**	**→**	**Funding from this program extended to end 2004-05 financial year has enabled maintenance of these positions.**	***TravelSmart to School* week achieved 23.2% reduction in 119 classes (3472 students) in 25 metro and 17 regional primary schools.** **During 2001-02 this program enabled 8 local government authorities to employ *TravelSmart* officers.** **All participating local governments Local Action Plans are updated as required.** **Program focus may expand to include broader sustainability issues.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 3e: Influence the community's travel behaviour through implementing *TravelSmart Workplace*	**DoE**	**Prior to Dec 2000**	**Prior to Dec 2000**	**→**		**Prior to 2002: GTPs have been produced and implemented for Woodside, Water Corporation, DoH, City of Perth, Ove Arup and Partners, Clough Engineering, HomesWest, MarketForce, Hartley Poynton and the Institute for Child Health Research.** **2002: GTPs have been produced and implemented for DPI (4 offices), Schlumberger Oil Fields Australia and Pharmacia Pty Ltd.** **2003: GTPs under development for DoE and City of South Perth (Depot and Civic Centre).** **2004: GTPs under development for Fremantle Hospital, Hollywood Private Hospital, Department of Industry and Resources, Department of Agriculture and Technip-Coflexip Oceania.** **2005: GTPs to be developed for QE2 Medical Centre, City of Joondalup, Transfield, Department of Premier and Cabinet, Disability Services Commission and Sinclair Knight Mertz.** **DoE recorded a reduction in overall kilometres travelled by car.** **City of South Perth recorded mixed results across its two sites, with no net change. The Civic Centre recorded a reduction of 20% in overall kilometers travelled.** **Schlumberger Oil Fields Australia conducted another survey in 2004 to determine if there was sustained change following the development of their GTP in 2001. They recorded a reduction of 14% from the baseline survey of travel behaviour, better than the initial target of 10%.**
Program 3f: Influence the community's travel behaviour through implementing *Cycle 100*	**DoE**	**Prior to Dec 2000**	**Prior to Dec 2000**	**→**	**Program not continued into 2003-04 due to lack of funding.**	**Project has been scheduled for 2004-05 to scope opportunities to reinstate program for 2005-06.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 3g: Influence the community's travel behaviour through implementing *Cycle Instead*	**DPI**	**Prior to Dec 2000**	**Prior to Dec 2000**	**→**	**The *Cycle Instead* radio and media campaign was cancelled in 2003-04 due to lack of funds to sustain such an expensive program.**	**Bikeweek was held in March 2004 to promote cycling.** **Radio advertising was utilised to support *Cycle Instead Bikeweek 2004* during which a number of community bike rides and events received funding support, in an effort to influence the community's travel behaviour.** **No significant change in travel behaviour has been noted. However the program is having the positive effect of maintaining cycling activities among adults in the face of a drop-off in children cycling.**
Program 3h: Influence the community's travel behaviour through implementing *Walk There Today*	**DPI**	**Jul 2001**	**Jul 2001**	**→**		**Implementation plan has been developed and walking program implementation has commenced.** **Message icon is now *'Walk There Today to Find Thirty'* in collaboration with health message of *'Find Thirty'*.** **During *Walk Week* from 3 to 9 November 2003, 25,000 walked to school, 2,300 participated in community walks, 16,000 copies of walking guide books were distributed and 300 corporate workers participated in lunchtime walks. 85% of the people in metro were exposed to the promotional message of *'Walk There Today to Find Thirty'*.**
Program 3i: Influence the community's travel behaviour through encouraging teleworking in Government agencies	**DPI**	**Apr 2002**	**Apr 2002**		**Following review of 'telework pilot results' the project has not progressed due to insufficient resources. It is not expected to be progressed due to continued lack of resources.**	**Preliminary research and information gathering is completed.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
INITIATIVE 2: VEHICLE EMISSIONS REDUCTION						
Program 1a: Develop policy and regulations for automotive fuel quality in WA and promote national fuel quality regulation in line with international standards	**DoE**	**Prior to Dec 2000**	**Prior to Dec 2000**		→	**WA Fuel policy is to maintain WA's standards until Commonwealth standards align in January 2006, then adopt future Commonwealth fuel standards.** ***Environmental Protection (Diesel and Petrol) Regulations 1999*** **implemented with Commonwealth monitoring indicating no breaches to date.** **Input into future fuel quality standards through participation in FSCC.**
Program 1b: Coordinate fuel quality standards with improved vehicle emission standards	**DoE**	**Prior to Dec 2000**	**Prior to Dec 2000**		→	**Participation in LTEC review of future fuel and emission standards ensures consistency.**
Program 2: Evaluate LPG and CNG as fuel sources for the passenger and freight sectors	**DoE**	**Apr 2002**	**Apr 2003**		**Research project was not taken up in 2004 and will be re-offered as a funded research project for commencement in early 2005.**	**Initial scoping has commenced with the evaluation to be completed as a funded research project.** **The evaluation of emissions performance has commenced for input into government's vehicle fleet purchasing.** **The Transport Energy Strategy Committee is examining the further promotion of LPG, CNG, LNG and smaller capacity vehicles, particularly in the Government fleet.**
Program 3a Evaluate emissions testing options for introduction to Perth	**DoE**	**Apr 2002**	**Apr 2003**			**Program integrated into Diesel NEPM activities. Previously desktop review, now 'real world' emissions testing trial.** **Scenario and air quality impact modelling to be considered once emissions testing pilot programs have been completed.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 3b: Undertake a pilot trial of an emissions testing system	**DoE**	**Jul 2002**	**Oct 2003**			**Negotiation between WA and Commonwealth resulted in funding being available for a revised testing program.** **Pilot *Diesel Vehicle Emissions Testing Program* revised and submitted based on available Commonwealth funding.** **The pilot *Petrol Vehicle Emissions Testing Program* scope was finalised and released for public tender to identify a suitable service provider.**
Program 3c: Implement the committed outcomes to reduce in-service emissions from motor vehicles	**DoE**	**Oct 2004**			**Scheduled to commence following the recommendations of a cost benefit analysis (Program 3b).**	
Program 4a: On-road enforcement of controls on excessive vehicle emissions (10 second regulations)	**DPI**	**Jul 2002**	**Oct 2002**			**Legislation was enacted in November 2002. Legislative amendments to minimise complications with enforcement in 2003-04.** ***'Clear the Air'* brochure produced and information for industry has been widely distributed.** **Training of DPI and Police officers in 2001, with additional training provided as required.** **Awaiting refinement of the *Smoky Vehicle Reporting* program as a primary enforcement tool.**
Program 4b: Smoky vehicle program	**DoE**	**Jul 2002**	**Apr 2003**			**Initial scoping of criteria for review commenced. The initial review indicated that the *Smoky Vehicle Reporting* program needed improvement at an operational level in order to allow review to occur. This involved improving the administrative operation of the program, commencing 1 July 2004. The review will commence following this.** **Multiple reports to the *Smoky Vehicle Reporting* hotline are notified and advised that failure to rectify their vehicle may lead to further enforcement under the 10 second regulations. Negotiations are continuing to develop a process for active enforcement by the Police for vehicles reported more than five times.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 5: Evaluate and introduce appropriate measures to remove older vehicles from the Perth fleet	DoE	Oct 2003	Oct 2003			Initial scoping has commenced, with the evaluation to be completed as a funded university research project commencing in early 2005.
Program 6: Emissions testing training and equipment and technology review	DoE	Jul 2004			Not scheduled to commence until emissions testing program is underway (Program 3b).	Vehicle emissions training and education has been incorporated into the pilot *Diesel Vehicle Emissions Testing* program proposal (Program 3b).
Program 7: Investigate the cost effectiveness of Stage II vapour recovery and promote at national level if cost effective	DoE	Jan 2003	Jan 2003			Regulations are in place for Stage I vapour recovery in WA. No plans for the introduction of Stage II vapour recovery at Commonwealth level. Continued watching brief and input to LTEC where required. NSW DEC is conducting a trial of Stage II vapour recovery, and a watching brief will be kept. Results of trial will be used to aid in the evaluation of the appropriateness of stage II vapour recovery.
Program 8: Investigate the use of electric, alternative fuel vehicles and ultra-light vehicles	DPI	Jan 2003	Jan 2003			This program includes investigation of biofuels. The Commonwealth has a number of programs, WA will continue to provide input into these. Review being undertaken by Transport Energy Strategy Committee. Transport Energy Strategy Committee delivered their report to the Minister for Planning and Infrastructure in March 2004.
INITIATIVE 3: REDUCTION OF INDUSTRIAL EMISSIONS OF NO_X AND ROCS						
Program 1a: Review modelling capability and needs in order to assess contribution of industrial NO_X and ROC emissions on smog formation in the Perth airshed	DoE	Apr 2002	Apr 2002	Jan 2003		Model configured to enable seasonal runs. Reliability of current NO_X inventory data was found to be an issue, and NO_X inventory data updated in response. Program completed January 2003.

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 1b: Undertake modelling	**DoE**	**Oct 2002**	**Jan 2003**			**Preliminary modelling was completed early 2004.** **A draft technical report has been prepared and circulated for peer review. The draft report, incorporating comments of peer review, will then be circulated for stakeholder comment.**
Program 2: Assess cost effective NO_x emission reduction options, and implement agreed options to reduce emissions from significant industrial sources	**DoE**	**Apr 2003**			**Discussion with major emitters to identify cost effective options will commence following finalisation of the modelling report (Program 1b).**	**The Industrial Emissions Reduction working group will be convened to progress this.**
Program 3: Identify and assist the major emitters of ROCs to reduce industrial contributions, and encourage continuous improvement in ROC reduction measures already introduced	**DoE**	**Apr 2003**			**Discussion with major emitters to identify cost effective options will commence following finalisation of the modelling report (Program 1b).**	
INITIATIVE 4: HEALTH RESEARCH						
Program 1: Investigating the public health impacts of air pollution	**DoE**	**Prior to Dec 2000**	**Prior to Dec 2000**			**Research on *Health and Air Pollution in Perth - Morbidity and Mortality: A Case-Crossover Analysis 1992-1997* report released June 2003.** **Continued participation in a number of Commonwealth health research programs.** **APHN decided that publication of the Discussion Paper should be delayed so that an indoor air quality component could be added.** **A number of AQMP-funded studies have commenced.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 2: Investigating sources of air pollutants and their impact on residents by determining the potential health impacts of variations in Perth's daily air quality	**DoE**	**Jan 2003**	**Jul 2003**			**Report for BTEX PEM study released May 2003 and the results of this study are being reviewed.** **Results from SPIRT project have not been publicly released. Commencement of review of SPIRT results upon official release of results. Upon completion of this review, studies will be scoped to study local variations in relation to these pollutants.**
Program 3: Development of an Air Pollution and Health Network	**DoE**	**Jan 2003**	**Jan 2003**			**The Health Research and Indoor Air Quality working groups merged to create the APHN.** **The Discussion Paper on research priorities for ambient air will incorporate an indoor air quality component.** **A series of APHN workshops will be held to develop the indoor air component of the Discussion Paper. Collaborative research projects between APHN members will also be scoped at these workshops.**
INITIATIVE 5: MODELLING IMPROVEMENTS						
Program 1a: Update and consolidate air emissions databases (Perth Air Emisions Inventory) using best available information from a range of sources including National Pollutant Inventory (NPI), local industry and overseas authorities	**DoE**	**Prior to Dec 2000**	**Prior to Dec 2000**	→		***Perth Airshed Inventory Update 1998-1999* released January 2002.** **The NPI and the *Perth Airshed Inventory Update* will be updated on a five yearly basis. The inventory year 1 July 2004 to 30 June 2005 will be the focus of the next update.**
Program 1b: Develop a database management system to integrate data from the Perth Air Emissions Inventory, NPI and licensed premises	**DoE**	**Jan 2004**	**Jan 2003**			**The timetable for completion of the *Perth Airshed Inventory Update* has been revised to commence in January 2007.**
Program 2: Validate / improve emissions estimates for key emission sources	**DoE**	**Apr 2004**	**Jan 2003**			**The timetable for completion of the *Perth Airshed Inventory Update* has been revised to commence in January 2007.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 3a: Improve modelling capability and accuracy by refining the Perth Haze Model	DoE	Apr 2002	Apr 2002	→		Peer reviewed paper prepared and presented at Clean Air Society of Australia and New Zealand 2002 conference. Draft final report to be sent out for peer review in October 2004 and revised to incorporate key comments of peer reviewers. Final report to be published in Technical Series in early 2005. Model used in the 'Haze Movie' educational tool under development to be peer reviewed prior to finalisation.
Program 3b: Improve modelling capability by enhancing the graphical display of the Perth Photochemical Smog Model	DoE	Apr 2002	Apr 2002	→		A version of the software is now available on the air quality web site. Further improvement in graphical user interface to be assessed from user feedback.
Program 3c: Use output from the BoM mesoscale model as input into the Perth Photochemical Smog Model	DoE	Apr 2003	Apr 2003			Appropriateness investigated, but found not suitable. Final draft report completed for peer review. Publication of report as part of Technical Series following peer review in early 2005.
Program 3d: Review modelling development and maintenance requirements	DoE	Jan 2003	Jan 2003			The assessment of various modelling methods for suitability in regards to use in WA has commenced and recommendations regarding most suitable methods will be made.
INITIATIVE 6: AIR QUALITY MONITORING						
Program 1: Establish an Air Monitoring Steering Group to review air quality monitoring issues in the Perth metropolitan region	DoE	Apr 2002				Due to the increasing number of programs under the AQMP Initiatives that involve an air monitoring component, the AMSG will be formed with the view of expanding its membership. The AMSG is scheduled to meet in December 2004 and a work program for the working group will be developed.
Program 2a: Review air quality monitoring practices and procedures in the Perth metropolitan region	DoE	Prior to Dec 2000	Prior to Dec 2000	→		Monitoring Plan for WA released in May 2001 as requirement under the Air NEPM. Purchase and installation of equipment to enable NATA accreditation is continuing.

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 2b: Review trends in ambient air quality	**DoE**	**Jan 2004**	**Jan 2004**			**Trends analysis was repeated for the data period 1992-2002. Final draft of report completed January 2004. Report was peer reviewed and final copy at publishers in May 2004.** **Significant trends identified (particles and ozone) are influencing program priorities and direction.** **Trends analysis and report to be completed for every additional four years of data, with next report target is June 2008.**
Program 3a: Develop future monitoring programs for air toxics	**DoE**	**As required**	**Jan 2003**	→		**Ambient air toxics monitoring will be conducted as required under the guidelines for implementation of the Air Toxics NEPM in WA.** **Project scoping for street side monitoring in entertainment districts has been completed.** **Draft report from field trials to be provided to newly formed AMSG for their comment and suggestions regarding future work.**
Program 3b: VOC monitoring	**DoE**	**As required**	**Jan 2003**	→		**A project to monitor for VOCs at selected locations is under development, with specifications currently being reviewed by external agencies.** **Commercial / industrial partners will be sought for funding VOC monitoring. Scope of project is dependent on final available funding.** **Awaiting recommendations of review of BTEX and SPIRT study. Recommendations of review to be provided to AMSG subject to its completion.**
Program 3c: Develop future monitoring programs for acid gases	**DoE**	**As required**	**Jul 2003**	→		**The *Brickworks Licensing Policy*, released in October 2003, outlines a *Brickworks Review Implementation* program aimed at reducing emissions from brickwork facilities.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 3d: Evaluation of mobile monitoring stations	**DoE**	**Jan 2003**	**Jan 2003**	→		**Scoping document of mobile monitoring options completed. Due to cost, the mobile monitoring station was not deemed a viable option.** **Portable instrument (GCMS) for measurement of VOCs has been purchased. Field trials using the portable GCMS are to be conducted collaboratively with the Chemistry Centre WA.** **Results of field trials of the PID are being incorporated into a report on the potential use of the PID in areas with air quality issues.**
Program 3e: Emerging air quality issues	**DoE**	**As required**	**Jul**	→		**Will be considered by the AMSG and the AQCC.** **WA engaged with national EPHC Air Quality working group.**
Program 4: Support community information and education programs on air quality monitoring	**DoE**	**Apr 2002**	**Apr 2002**			**Ambient air quality information and real-time monitoring data available on the air quality web page. Haze Movie and Smog Movie are available on web site.** **Scoping and implementation of pilot *SNAQ (Students Network for Air Quality) on Haze* program. Review of *SNAQ on Haze* and expansion of *SNAQ on Haze* to additional schools in Winter 2005.** **Initial scoping of an *AirWatch Community* program in line with the schools program.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
INITIATIVE 7: INDOOR AIR QUALITY						
Program 1: Development of an Indoor Air Quality Network	DoE	Jan 2003	Oct 2003			The Health Research and Indoor Air Quality working groups merged to create the APHN. A series of APHN workshops starting in August 2004 will be held to develop the indoor air quality component of the Discussion Paper and to scope collaborative research projects that will address the priority research areas outlined in the position paper. APHN is holding several workshops to utilize the collective strength of indoor air quality specialists to direct health research priorities at the State level. APHN identified domestic unflued gas heaters as a high priority current issue.
2a: Collate and review indoor air quality monitoring, exposure and health outcome exposure studies	DoH	Jul 2001	Jul 2001			A preliminary review of relevant indoor air quality studies completed. A more extensive review has not commenced.
2b: Develop indoor air personal exposure and monitoring programs	DoH	Apr 2003	Apr 2003			Project to commence in the second half of 2004 undertaking an analysis of nitrogen dioxide exposure.
2c: Indoor air quality database development	DoH	To be determined				
3a: Collate and review indoor air quality awareness programs and resources	DoH	Jul 2001	Jul 2001			A review of existing community education leaflets is completed. Leaflets are being reviewed and updated where required.

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
3b: Develop community awareness materials and campaigns to limit indoor air exposures. Incorporate findings from the source and personal exposure research into community awareness materials as required	**DoH**	**As required**	**Jul 2003**			**Community awareness on indoor air quality issues has largely been focused on domestic unflued gas heaters.** **Leaflet on unflued gas heaters has been published and is accessible to the public through the Environmental Health Directorate and from the DoH web site.** **The Minister for Health released media and press statements on the implications from operation of domestic unflued gas heaters.**
3c: Develop a protocol for a Perth indoor air quality community awareness program, trial and implement this program	**DoH**	**To be determined**				
INITIATIVE 8: LAND USE AND TRANSPORT PLANNING						
Program 1a: Include regional and local air quality considerations in the strategic planning and implementation of *Network City: Community Planning Strategy for Perth and Peel*	**DPI**	**Prior to Dec *2000***	**Prior to Dec *2000***			**The banner under which this program falls is called *Dialogue with the City*, which was initiated in June 2003. (The term 'Greater Perth' is no longer used.)** **The community plan that has evolved from Dialogue with the *City* - *Network City: Community Planning Strategy for Perth and Peel* - outlines a change in direction for Perth, not only in how the city develops, but also how planning is carried out. The key is to plan through participative decision-making.** ***Network City* addresses air quality issues in a variety of broad strategies, each of which has supporting actions. It is hoped that these strategies will address Perth's air quality issues.** ***Network City* will be open for public comment from September to December 2004. Thereafter comments will be reviewed, changes made to the document if appropriate and the strategy finalised.** **Post public comment period an implementation plan is to be produced, which will give better guidance as to the timing of, and resources required, to implement strategies and actions in *Network City*.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 1b: Assess the environmental impact of the various strategies contained within *Network City* and the *Metropolitan Transport Strategy*	**DoE**	**Jul 2002**	**Jul 2002**			**Review of *MTS / Future Perth / Greater Perth,* their linkages and objectives and findings of previous reviews undertaken by DEP/EPA has commenced.** **Modelling of air quality impacts dependent on outcome of *Dialogue with the City.***
Program 2: Include regional and local air quality considerations in the planning and implementation of development proposals	**DPI**	**Sep 2002**	**Apr 2002**	→		**Draft Transport Assessment guidelines were prepared in January 2003, with internal stakeholder review completed in September 2003.** **The draft guidelines will be submitted to the WAPC for endorsement in November 2004. They will then be distributed to external stakeholders for comment and revised as appropriate.** **It is then proposed to introduce the guidelines into the development control / planning process on a voluntary trial basis for 12 months to allow benefits to be evaluated.**
Program 3a: Monitor and review the effectiveness of land use and transport planning decisions in influencing Perth's air quality	**DPI**	**Prior to Dec 2003**	**Prior to Dec 2003**	→		**The capital works and major infrastructure projects detailed in the *Better Public Transport: Ten Year Plan for Transperth* are progressing. These include improving passenger information services, increasing Park n Ride capacity, improving bus stop and station facilities including upgrading of train stations to meet accessibility standards, continuation of bus fleet replacement program, development of *SmartRider* ticketing initiative and expansion of metropolitan train system.** **The extension of train services to Clarkson will commence in October 2004, with an attendant reorganisation of feeder bus services to compliment the revised train network. Extended train services to the new Thornlie Station will commence in early 2005.** **The service development plan has been progressed within the Transperth finite budget by improvement to bus services in one area being funded by the withdrawing services from other areas, where services were under performing. Indications are that the recurrent budget will not increase for 2004-05. The exception may be for a**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
						possible injection of funds on a one off project basis. Such projects may not form part of our Services Improvement Plan. 11 out of the 26 bus service improvement projects earmarked for 2003-04 were delivered. Bus patronage has increased again this year for the fourth consecutive year totaling over 18%.
Program 3b: Review of DC 1.6 policy	DPI	Jul 2003	Jul 2003	→		Review of *DC 1.6 – Planning to Enhance Public Transport Use*, commenced in August 2003. Revised interim policy drafted in March 2004 but not released. An evaluation of policies against sustainability principles completed.
Program 3c: Assess the cost effectiveness of money spent on the transport network	DoE	Apr 2003	Apr 2003			Initial program scoping may lead to the timelines being revised in view of current government policy and plans for the expansion of the Perth rail network. Awaiting scenario data from DPI as a result of *Dialogue with the City* and *Network City: Community Planning Strategy for Perth and Peel*.
Program 4a: Assist local government in influencing the community's travel behaviour by developing ITPs	DPI	Prior to Dec 2000	Prior to Dec 2000	→		*Travelling Together - South West Metropolitan Integrated Transport Plan* completed (covers 7 local authorities) and implementation has commenced. Commence *Eastern Metropolitan Region Integrated Transport Strategy* in partnership with EMRC.
Program 4b: Cyclist access	DPI	Prior to Dec 2000	Prior to Dec 2000			Implementation of strategies outlined in *Bike Ahead* is continuing. Monitoring of Perth Bicycle Network routes has shown that usage of the routes had doubled since 1999. *'Cycling and Walking Behaviour and Attitudes Track'* undertaken – the ninth such survey for cycling. Both surveys will be undertaken again in 2004-05.

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 4c: Pedestrian access	**DPI**	**Jan 2001**	**Jan 2001**			**Implementation of strategies outlined in *Perth Walking* is continuing.** **Projects developed to address better pedestrian infrastructure in local government.** **Terms of reference for Walking WA Committee have been broadened to include walking for health, recreation and sustainability.**
Program 4d: Parking	**DPI**	**Dec 2000**	**Dec 2000**			**Policy is being successfully used to reduce the amount of tenant parking provided and to increase the supply of bicycle parking and end of trip facilities.** **Initial review has been conducted in-house. Draft strategy development commenced. Stage 1 *Review of Public Parking* will be finalized in 2004-05.** **Ongoing work on the development of a "policy approach" to parking in the Perth metropolitan region is underway.**
Program 4e: Home based employment and business	**DPI**	**Apr 2003**	**Apr 2003**			**Extent and characteristics of home-based employment was covered in section 5.6 of *Greater Perth Economy and Employment* (Discussion Paper 3).** **An investigation of home-based employment is expected to be a component of the implementation plan for *Network City*.**
INITIATIVE 9: HAZE REDUCTION						
Program 1a: Increase community awareness of the impacts of domestic wood heaters on air quality	**SEDO / DoE**	**Apr 2002**	**Apr 2002**	→		**Approximately 2,500 *'Choosing a Heater'* brochures distributed through Energy Smart Line, local government authorities and other community and promotional activities each year.** **Wood Smoke brochure *'Store Right, Burn Bright, Breath Alright'* revised and 10,000 copies produced.** **3,000 information pack on alternative heating, energy efficiency and correct wood heater use in 3 local government authorities where the pilot *Wood Heater Replacement Program* is being trialled.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 1b: Incentive programs and *Halt the Haze* campaign	**DoE**	**Jan 2003**	**Jan 2003**			**Winter Haze Alert program enhanced to include posting on air quality web site. Information session held for media / weather presenters in June 2003. Not repeated in 2004.** **Haze Reduction working group formed and 10 meetings held.** **Pilot *Wood Heater Replacement Program* developed and launched in June 2004. Initially involves City of Joondalup, City of Melville and Town of Kwinana and offers a $600 rebate.** **Pilot *Home Heating Survey* commenced in May 2004 in the above local government areas.** ***Wood Heating Policy Options Paper* revised to include all heating options, now titled *Home Heating Policy Options Paper*.**
Program 2a: Increase awareness among wood suppliers and wood heater installers of the impacts of wood heaters on air quality	**DoE**	**Apr 2002**	**Apr 2002**	→		**Annual inspections of wood yards are undertaken to ensure compliance with moisture content regulations. 21 Wood yard inspections conducted in December 2003, with one breach for not labeling green wood as 'Not for Sale'.**
Program 2b: Wood heater installation course	**DoE**	**Apr 2002**	**Apr 2002**			**Course has been written and is awaiting a training body to write up formally and get approved. TAFE has stated that they will require $35,000 to do this. AHHA does not have the funds and is seeking an alternative training body.**
Program 3a: Domestic smoke nuisance resolution	**DoE**	**Apr 2002**	**Apr 2002**			**Health Act 1911 amendments to remove the exclusion of domestic chimneys from the nuisance provisions have been prepared and introduced to Parliament. At the First Reading in the Legislative Council at 25 June 2004.** **Haze Reduction working group has develop a 'toolkit' for use by local government in resolving wood smoke complaints.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 3b: Mediating process for domestic smoke nuisance	**DoE**	**Apr 2002**	**Apr 2002**			**EHO training in wood smoke issues and wood heater operation was held in April 2002 and April 2004.** **Revision of *Wood Heater and Firewood Information Kit for Environmental Health Officers* is complete and ready for distribution.**
Program 4a: Backyard burning ban	**DoE**	**Apr 2002**	**Apr 2002**	→		**Voluntary response of local governments to *Parliamentary Select Committee on Recycling* and Waste Management has resulted in separate green waste collections and less waste being burned.** **It is therefore not clear whether a regulation to ban backyard burning will be developed and phases for this action should be reviewed.** **Town of Kwinana has developed a local law to prevent backyard burning, and other local governments are looking at developing a similar local law.**
Program 4b: Manage green waste disposal and recycling to reduce local haze creation	**DoE**	**Jul 2002**	**Jul 2002**			**Voluntary response of local governments to *Parliamentary Select Committee on Recycling* and *Waste Management* has resulted in separate green waste collections and less waste being burned.** **Various local government authorities are dealing with the issue of green waste disposal by providing green waste collection and/or banning backyard burning.**
INITIATIVE 10: ENERGY EFFICIENT BUILDINGS						
Program 1: Adoption of energy efficiency principles through building codes	**DHW**	**Jan 2002**	**Jan 2002**			**Changes to the BCA came into effect in WA from 1 July 2003 to incorporate energy efficiency measures. These changes apply to single detached residential buildings and air-conditioned or heated outbuildings.** **The ABCB in conjunction with the States and Territories, are developing further provisions for application to multi-residential and commercial/industrial buildings. These are scheduled to come into effect from 1 May 2005 and 2006 respectively.**

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 2: Encourage energy efficient building design and planning	SEDO	Jul 2001	Jul 2001	→		About 7,500 copies of the *Energy Efficient Housing for the South West* brochure are published each year. Approximately 750 people were trained in the use of FirstRate by 1 July 2004. There were 150 Accredited Assessors using FirstRate to assess energy performance by 1 July 2004, with 9% of dwellings applications rated. SEDO held a series of seminars where community members could bring in their plans for a quick rate assessment.
INITIATIVE 11: CLEANER PRODUCTION						
Program 1a: Promote cleaner production	DoE	Jan 2003	Jan 2003	→		Cleaner Production Directory for Small to Medium Businesses guide being developed. Guide reviewed to include air quality issues during drafting.
Program 1b: Develop a series of emission management guidelines	DoE	Jan 2003				Initial evaluation of the contribution by small to medium enterprises to air emissions to commence late 2004.
Program 1c: Facilitate the provision and use of sustainable energy technologies and practices in the commercial and industry sectors	SEDO	Jan 2003	Jan 2003	→		Energy Smart Directory was launched to enable easy access to sustainable energy solutions. This on-line directory of energy efficiency and renewable energy product and service providers attracts an average of 1,500 visits per month. Additional on-line web toolbox for business planned to compliment existing tools. Information brochures on energy efficient technologies for use by industry and commercial building operators were completed in May 2003 and distribution commenced January 2004. A series of six energy efficiency seminars were conducted, concluding in October 2003. A seminar was conducted for government organisations on energy efficiency and office fit out. More than 30 government departments attended.

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
						41 government departments achieved a reduction in their energy use, of which 28 government departments achieved their target of a 5% energy reduction.
Program 1d: Develop a discussion paper on the range of financial and economic mechanisms available for industrial emissions control	DoE	Jan 2004			Project being scoped for commencement in 2004-05.	
Program 1e: Promote the awareness of industry achievements in atmospheric emission reduction through 'green industry' awards	DoE	Apr 2002	Apr 2002	→		An air quality category established within the annual WA Environment Awards, presented in October each year. BP Refinery won the 2003 award for 90% reduction in VOCs.
Program 1f: Amend the *Environmental Protection Act 1986* to include principles of waste minimisation	DoE	Jan 2002	Jan 2002			Principles of waste minimisation that were to be incorporated into the *Environmental Protection Act 1986* to be incorporated into the new waste management legislation (*Resource Recovery and Waste Avoidance Bill*). Instructions for drafting the Bill are still being finalised.
Program 2: Ensure proper airshed planning for future industrial development and power generation in the Perth metropolitan region	DoE 2002	Jan 2002	Jan			DoE have been involved in the strategic review of power procurement options. Further assessments will be required as realistic scenarios are developed.
INITIATIVE 12: SMOKE MANAGEMENT						
Program 1: Establish a Smoke Management Awareness Group to facilitate community education and information about smoke impacts from planned burns	FESA	Jan 2002	Jan 2002			Development of a smoke management protocol for haze reduction in burning by local governments, volunteer brigades and land-owners is continuing. Leaflets reviewed prior to distribution to all metropolitan local governments to be attached to burn permits. Leaflets will require ongoing review. A number of FESA staff consulted over the application of the draft smoke management guidelines for prescribed burning. The FESA prescribed burning course with 18 participants have been exposed to the guidelines. A number of volunteers fire fighters have also been exposed to the smoke management requirements.

Program/Sub Program	Agency Responsible	Planned Start Date	Actual Start Date	Planned Completion Date	Program Constraints	Lead Agency Comments
Program 2: Smoke Management Liaison Group	**DoE**	**Apr 2001**	**Apr 2001**	→	**A review of SMLG protocol to assess effectiveness has not commenced.**	**SMLG meets pre and post fire season.**
Program 3a: Support the development of consistent approaches and procedures for smoke management by FESA and local government authorities	**FESA**	**Jul 2002**	**Jul 2002**	→		***Rural/Urban Bushfire Threat Analysis* distributed and trialed in Shire of Gingin and Shire of Mundaring.** **FESA and CALM are working toward having a state-wide bush fire threat analysis tool that will have the capability to be able to be applied across all land tenures.**
Program 3b: Promote the development of environmental management plans to incorporate fire hazard reduction strategies for regionally and locally significant remnant bushland in the Perth metropolitan region	**FESA**	**Jul 2002**	**Jul 2002**	→		**Urban bushland fire response plans are developed and updated and improved each October.**
Program 3c: Develop environmental guidelines and codes of practice for use of fire in horticultural and agricultural practices within the Perth metropolitan region	**DoE**	**Jan 2002**	**Jan 2002**			**The Smoke Management Awareness Group will consider whether this action needs to include agricultural practices outside the metropolitan region.**
Program 4a: Undertake studies on weather and smoke modelling to improve burn decision processes	**CALM**	**Prior to Dec 2000**	**Prior to Dec 2000**			**Undertaken as a National project coordinated by AFAC. Final Report submitted August 2003. Trialed and validated in Spring 2003 and Autumn 2004 burning seasons. Smoke trajectory models now used daily.** **Extension of Smoke prediction research being incorporated in Bushfire CRC programs.**
Program 4b: Quantify significant emissions sources outside the Perth metropolitan region contributing to Perth's air quality	**DoE**	**Jan 2003**	**Jul 2003**			**An exploratory study was completed using current available data. An internal report was produced, which will guide future work.** **The outcome of the EPA review of CALM's *Fire Management Policy* will be used to guide future work areas and priorities.**
Program 4c: Continue to promote and review risk assessment of wildfire impacts, taking into account air quality and other environmental impacts	**DoE**	**Jan 2004**				**Risk assessment and modelling of the potential impact on populations from burn events.**

Appendix 2:

MEMBERSHIP AND MEETING SCHEDULES OF THE AQCC AND AQMP WORKING GROUPS

MEMBERSHIP OF THE AQCC

The AQCC membership consisted of the following representatives for the period July 2003 to June 2004:

State Government (6 Representatives)

Fred Tromp, Director Resource Science, Department of Environment (AQCC Chair)

Robert Griffiths, Department for Planning and Infrastructure

Kathy Macklin (Proxy), Department for Planning and Infrastructure

Rick Sneeuwjagt, Department of Conservation and Land Management

Margaret Stephens, Department of Health (July 2003 to December 2003)

Jim Dodds, Department of Health (January 2004 to June 2004)

Mark Feldwick (Proxy), Department of Health

Nicole Workum, Sustainable Energy Development Office (July 2003 to December 2003)

Tanya Carpenter, Sustainable Energy Development Office (January 2004 to June 2004)

Antony Mee, Department of Housing and Works

Non-Government (7 Representatives)

Local Government

Nathan Malin (Proxy), WA Local Government Association (July 2003 to December 2003)

Dale Newsome (Proxy), Local Government Association (January 2004 to June 2004)

Business and Industry

Mary Askey, Chamber of Commerce and Industry WA

Chad Bishop, Kwinana Industries Council

Community

Philip Jennings, Conservation Council of WA

Chris Tallentire (Proxy), Conservation Council of WA

Dr Sue Graham-Taylor, Pollution Action Network

Mike Upton, Royal Automobile Club of WA

Department of Environment Project Team (AQCC Support)

John Sutton, A/Manager, Air Quality Management Branch

Deanna Tuxford, Program Manager, Air Quality Management Branch

James Forrest, Environmental Officer, Air Quality Management Branch

Jenniffer Scott, Administrative Assistant, Air Quality Management Branch

SCHEDULE OF AQCC MEETINGS (JULY 2003 TO DECEMBER 2004)

Implementation Meeting 2:	11 August 2003
Implementation Meeting 3:	22 September 2003
Implementation Meeting 4:	3 November 2003
Implementation Meeting 5:	17 May 2004
Implementation Meeting 6:	26 July 2004
Implementation Meeting 7:	6 September 2004
Implementation Meeting 8:	25 October 2004
Implementation Meeting 9:	6 December 2004

MEMBERSHIP OF AQMP WORKING GROUPS

Several of the AQMP working groups have been active during this reporting period. Membership of these working groups has changed, and current membership is provided below.

Community Education

Melissa Patt, DoE (July 2003 to December 2003)
Peter Musk, DoE (January 2004 to June 2004)
Deanna Tuxford, DoE
Greg Allen, DoE
Richard Olive, DoE
Karin Stark, DoE
Gary John, DPI
Heide Newton, DPI
Rick Sneeuwjagt, CALM
Tanya Carpenter, SEDO
Mary Askey, CCIWA
David Wake, CCWA
Kylie Ashenbrenner, Alcoa Australia

Vehicle Emissions Reduction

John Sutton, DoE
Anthony Stuart, DoE
Drew Farrar, DoE
James Forrest, DoE
John Dombrose, DPI
Trevor McDonald, DPI
Ken Johnsen, Orbital Engine Company
Geoff Armstrong, Orbital Engine Company
Tom Baskovich, Orbital Engine Company
Don Rijavec, TAFE
John Hakesley, MechPlant Installations and Repairs
Howard Croxon, Transport Forum of WA
Mike Upton, RAC WA
David Wake, CCWA

Air Pollution and Health Network

Mark Feldwick, DoH
Jim Codde, DoH
Tina Runnion, DoE
Andrea Hinwood, ECU
Louis Landau, UWA
Nick de Klerk, UWA
Tom Lyons, Murdoch University
Jane Heyworth, UWA
Drew Farrar, DoE
Greg Allen, DoE
Jeffrey Spickett, Curtin University
Peter Dingle, Murdoch University
Peter Franklin, UWA
A/Professor Frank Murray, Murdoch University
Krassi Rumchev, Curtin University
Ian Tremain, QED Environmental Services

Haze Reduction

John Sutton, DoE
Deanna Tuxford, DoE
Melissa Patt, DoE (July 2003 to December 2003)
James Forrest, DoE
Constance Dewan, DoE
Peter Musk, DoE (January 2004 to June 2004)
Marko Pasalich, DoE
Llew Withers, DoH
Trevor Davies, DoH
Dave Peckitt, DoH
Nathan Malin, WALGA (July 2003 to December 2003)
Dale Newsome, WALGA (January 2004 to June 2004)
Alison Edmunds, City of Joondalup
Peter McKenzie, Town of Kwinana
Janet Armarego, City of Melville

SCHEDULE OF AQMP WORKING GROUP MEETINGS (JULY 2003 TO JUNE 2004)

Community Education

7 July 2003

Vehicle Emissions Reduction

29 October 2003

Air Pollution and Health Network

8 June 2004

Haze Reduction

5 August 2003
24 September 2003
28 October 2003
2 December 2003
14 January 2004
2 February 2004
17 February 2004
16 March 2004
11 May 2004
26 May 2004

APPENDIX 3: ACRONYMS

ABCB	Australian Building Codes Board
ABGR	Australian Building Greenhouse Rating Scheme
ADR	Australian Design Rule
AFAC	Australasian Fire Authorities Council
AQCC	Air Quality Coordinating Committee
AQMP	Air Quality Management Plan
APHN	Air Pollution and Health Network
BCA	Building Code of Australia
CALM	Department of Conservation and Land Management
CCIWA	Chamber of Commerce and Industry of WA
CCWA	Conservation Council of WA
GCMS	Gas Chromatography Mass Spectrometer
CNG	Compressed Natural Gas
COPD	Chronic Obstructive Pulmonary Disease
CRC	Cooperative Research Centre
DHW	Department of Housing and Works
DoE	Department of Environment
DoH	Department of Health
DPI	Department for Planning and Infrastructure
ECU	Edith Cowan University
EPHC	Environment Protection Heritage Council
FESA	Fire and Emergency Services Authority of WA
GP	General Practice
GTP	Green Transport Plan
HHS	Home Heating Survey
KIC	Kwinana Industries Council
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas

MoU	Memorandum of Understanding
NATA	National Association of Testing Authorities
NEPM	National Environment Protection Measure
NHT	National Heritage Trust
NOx	Oxides of Nitrogen
PAN	Pollution Action Network
PID	Photo Ionisation Detector
RACWA	Royal Automobile Club of WA
ROC	Reactive Organic Compounds
SEDO	Sustainable Energy Development Office
SNAQ	Schools Network for Air Quality
STO	Sustainable Transport Officer
UWA	University of WA
VOC	Volatile Organic Compound
WA	Western Australia
WALGA	WA Local Government Association
WAPC	WA Planning Commission
WHRP	Wood Heater Replacement Program

APPENDIX 4: AQMP PUBLICATIONS

Perth Air Quality Management Plan - Progress Report to June 2003 (March 2004)

2002 Annual Summary of Ambient Air Quality Monitoring in Western Australia (Technical Series 115) (October 2003)

Research on Health and Air Pollution in Perth Morbidity and Mortality: A Case-Crossover Analysis 1992-1997 (Technical Series 114) (May 2003)

Perth Air Quality Management Plan - Progress Report to June 2002 (April 2003)

2001 Annual Summary of Ambient Air Quality Monitoring in Western Australia (Technical Series 112) (July 2002)

Implementing the Perth Air Quality Management Plan - Summary Document (June 2002)

Implementing the Perth Air Quality Management Plan - Supporting Document (June 2002)

2000 Annual Summary of Ambient Air Quality Monitoring in Western Australia (Technical Series 111) (January 2002)

Perth Airshed Inventory Update 1998 - 1999 (Technical Series 110) (January 2002)

National Environment Protection Measure for Ambient Air Quality - Monitoring Plan for Western Australia (May 2001)

Air Quality in Perth 1992 - 1999 (Technical Series 109) (May 2001)

Perth Air Quality Management Plan (December 2000)

Perth Air Quality Management Plan - State of Knowledge Report (July 2000)

Volatile Organic Compounds Monitoring in Perth - Baseline Air Toxics Project (January 2000)