

**REPORT AGAINST THE
NATIONAL
ENVIRONMENT
PROTECTION MEASURE**

**FOR AMBIENT AIR
QUALITY FOR 2005**

BY TASMANIA

30 June 2006

SECTION A – MONITORING SUMMARY

INTRODUCTION

Significant changes to the air monitoring program have occurred in 2005 and early 2006.

The Environment Division has monitored PM₁₀ in accordance with the requirements of the Measure at Launceston and Hobart since 2001, using High Volume Air Samplers and TEOM instrumentation. However, much of the original equipment is very old and has reached the end of its serviceable life.

Recognising the need to meet its national obligations, in 2004 the Tasmanian Government approved \$816,000 of capital funding over the next four years to upgrade the Tasmanian Air Quality Monitoring System. *The Tasmanian Air Quality Monitoring System Development Project, 2004-2008*, comprises a program to purchase new low volume sequential air samplers, to develop a PM_{2.5} monitoring capability, in accordance with requirements of the amended Measure and to replace old PM₁₀ high volume air samplers. To support the new program, a new micro-weighing facility was completed and commissioned in July 2005.

As part of the project, the primary Hobart air monitoring station has been re-located to a new site considered to be more representative of population exposure. This is discussed in more detail below. In addition, carbon monoxide monitoring ceased in 2004, and the Plan indicates that a peak site within the Hobart CBD will be established in the near future.

In view of the significant changes to the monitoring program, the Environment Division also undertook a comprehensive review of the Tasmanian Air Monitoring Plan in 2005.

Accordingly, the Plan has been amended to reflect the new configuration, and updated to include more recent contextual information that is relevant to current air quality management programs in Tasmania. The Peer Review Committee approved the amended Plan at its 29th meeting on 19 September 2005, concurring with the proposal for a 12-month equivalence study for the PM₁₀ low volume samplers against existing methodologies.

The initial Plan also argued that nitrogen dioxide concentrations in Tasmanian airsheds did not meet the screening criteria and therefore monitoring for this indicator was unnecessary. However, Tasmania is aware that the screening procedures for nitrogen dioxide are under review and intends to undertake a re-assessment of nitrogen dioxide against the revised criteria when these become available.

OVERVIEW OF REGIONS

1 HOBART

1.1 REGION BOUNDARIES

The extent to which pollutants emitted in a given area can impact on air quality elsewhere depends on a number of factors. These factors include topography, meteorology and the chemical and physical properties of pollutants. The term airshed is commonly used to refer to an area that is defined by natural or topographic features affecting air quality.

In the case of a secondary pollutant (ie. one that is formed by chemical reactions in the atmosphere, rather than being directly emitted, eg. O₃), the airshed may extend relatively large distances from the city centre. However, for a pollutant such as PM₁₀ in winter, the extent of influence may be more localised and perhaps confined to areas sharing common nocturnal-drainage airflows.

In the past the availability of meteorological data for Hobart has been limited. Moreover, development of complex atmospheric dispersion models for the region has only recently commenced, so the extent of the Hobart airshed is not yet fully characterised.

For the purpose of the Measure, the Hobart Region boundaries are defined as presented in Figure 1. Although there is no functional purpose served in exactly defining the boundary AMG co-ordinates, these may be taken to be defined by the south-west corner (Easting 500,000; Northing 521,000) and the north-east corner (Easting 550,000; Northing 5290,000).

1.2 POPULATION AND TOPOGRAPHY

The population density and topography for the Hobart Region is presented in Figure 1-1. The majority of the population resides within approximately a 10 kilometres radius of the Central Business District (CBD). Moreover, significant satellite urban centres are located within a 30 kilometres radius of the CBD. These include Kingston-Blackmans Bay to the south (population 13,746), and Bridgewater-Gagebrook (population 7,451) and New Norfolk (population 5,286) to the north.

1.3 HOBART, PERFORMANCE AND TREND MONITORING STATION:

1.3.1 Prince of Wales Bay

Up to recently, two indicators were monitored at Prince of Wales Bay:

- Carbon monoxide according to AS3580.7.1-1992, using a Monitor Labs 9830B analyser. Carbon monoxide monitoring was terminated at this site in August 2004, due to recorded levels being consistently well below the National Environment Protection Standard.
- PM₁₀ using:
 - a High Volume Air sampler (HVAS), according to AS3580.9.6-1990, sampled every second day, and
 - a collocated TEOM direct-reading instrument with a PM₁₀ head.

The TEOM was re-located to New Town in May 2006, as discussed below, while the HVAS has been retained and will be operated at the POW Bay site for at least 12 months, to maintain continuity of comparative data.

In 2004, monitoring surveys were undertaken in Greater Hobart on the basis of increasing concerns about the representativeness of data from Prince of Wales Bay. The concerns were based partly on direct observations and partly on studies commissioned by Hobart City Council in 2003 that showed elevated levels of particles from wood smoke and inferred significant concentrations of polycyclic aromatic hydrocarbons in some areas (Todd, 2004).

The Environment Division also performed short term measurements during winter 2004, using Dustrak monitors simultaneously at Prince of Wales Bay and various other areas around Greater Hobart on nights when inversion conditions were current, especially those areas where smoke was considered likely to accumulate. In at least one area, readings were greater than those at Prince of Wales Bay by a factor of close to 4, and greater than 2 in several other areas.

These results showed that data from Prince of Wales Bay were unlikely to provide useful information on performance and trends of particle pollution in Greater Hobart and were certainly not representative of broader upper bound population exposure. Also our observations of ponding in the area suggested that a station in New Town would measure elevated concentrations of PM₁₀ typical of surrounding residential suburbs, when favourable meteorological conditions prevail within the valley. The choice of this site is also supported by recent preliminary TAPM modelling of the greater Hobart airshed, which predicts elevated smoke concentrations in the area (Figure 1-2).

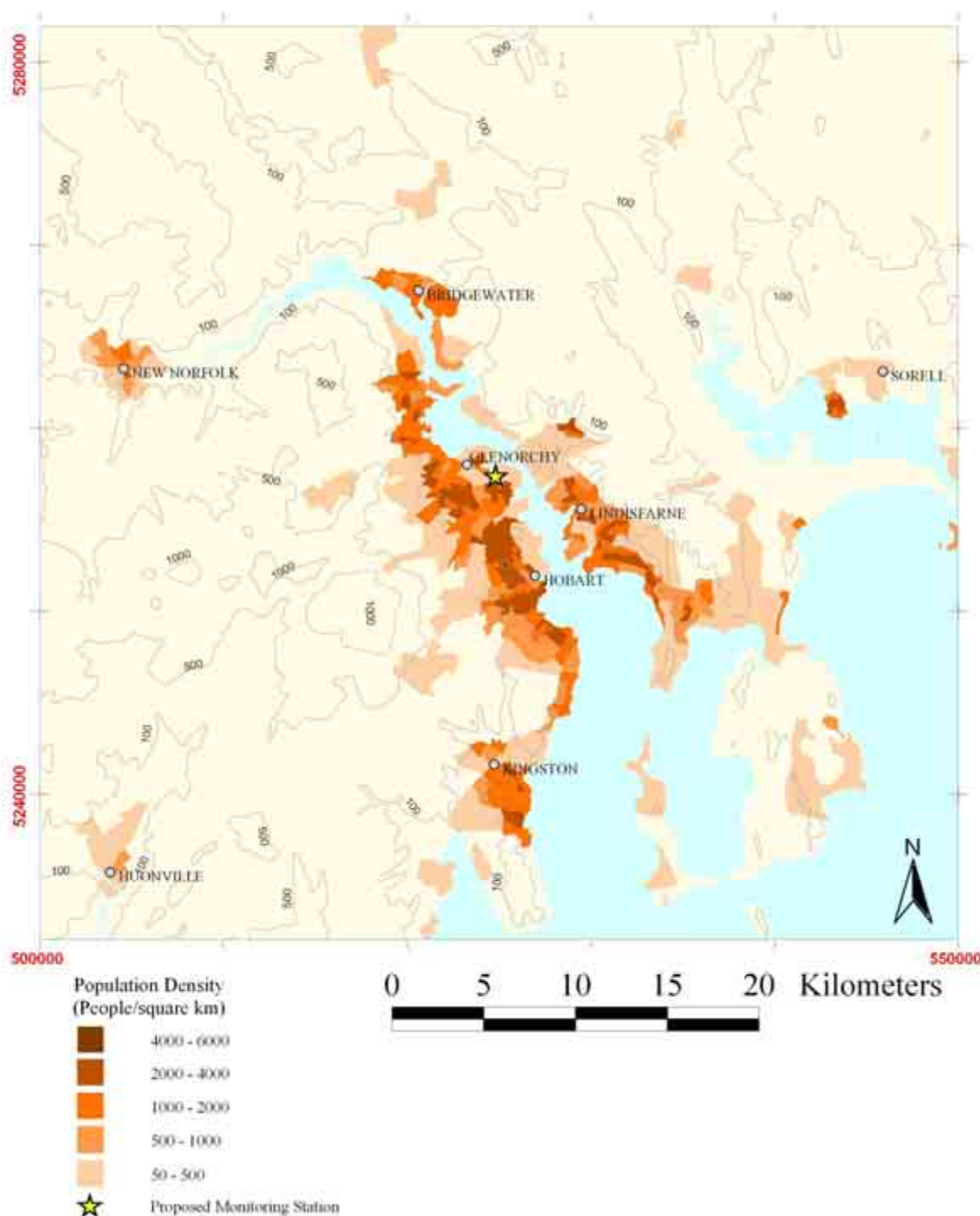


Figure 1-1: Map Of Hobart Region Including Population Density And Topography

1.3.2 New Town

In the light of this, in May 2006, the Division relocated the primary *Hobart Performance and Trend Monitoring Station* to New Town, on property leased by the Hockey Association of Tasmania, some 2km SSE from the original station. A high volume air sampler remains in operation at the Prince of Wales Bay station to provide comparative data for the next 12 months.

The new station incorporates the original TEOM, plus an Andersen RAAS low volume sampler for each of PM₁₀ and PM_{2.5}, and provision for installing an integrating nephelometer.

As noted above, the choice of this site is also supported by recent preliminary TAPM modelling of the greater Hobart airshed, which predicts elevated smoke concentrations in the areas as presented in Figure 1-2.

In order to maintain a certain level of continuity between the old and new stations, Tasmania intends to retain a high volume air sampler at Prince of Wales Bay for a period of at least 12 months. Further, as knowledge of spatial patterns of pollution movement in Hobart is still not well-characterised, a long term study of particulates using a network of nephelometers will be undertaken in strategic areas of the Derwent Valley. As nephelometry is not an equivalent method under the NEPM, this data will not be reported for compliance purposes.

As noted above, a nephelometer will be installed in the New Town station, and in addition, nephelometers will be installed in three schools across greater Hobart in 2007. These will also contribute to a pilot school curriculum program on air quality issues and are projected to be operating by the end of 2007.

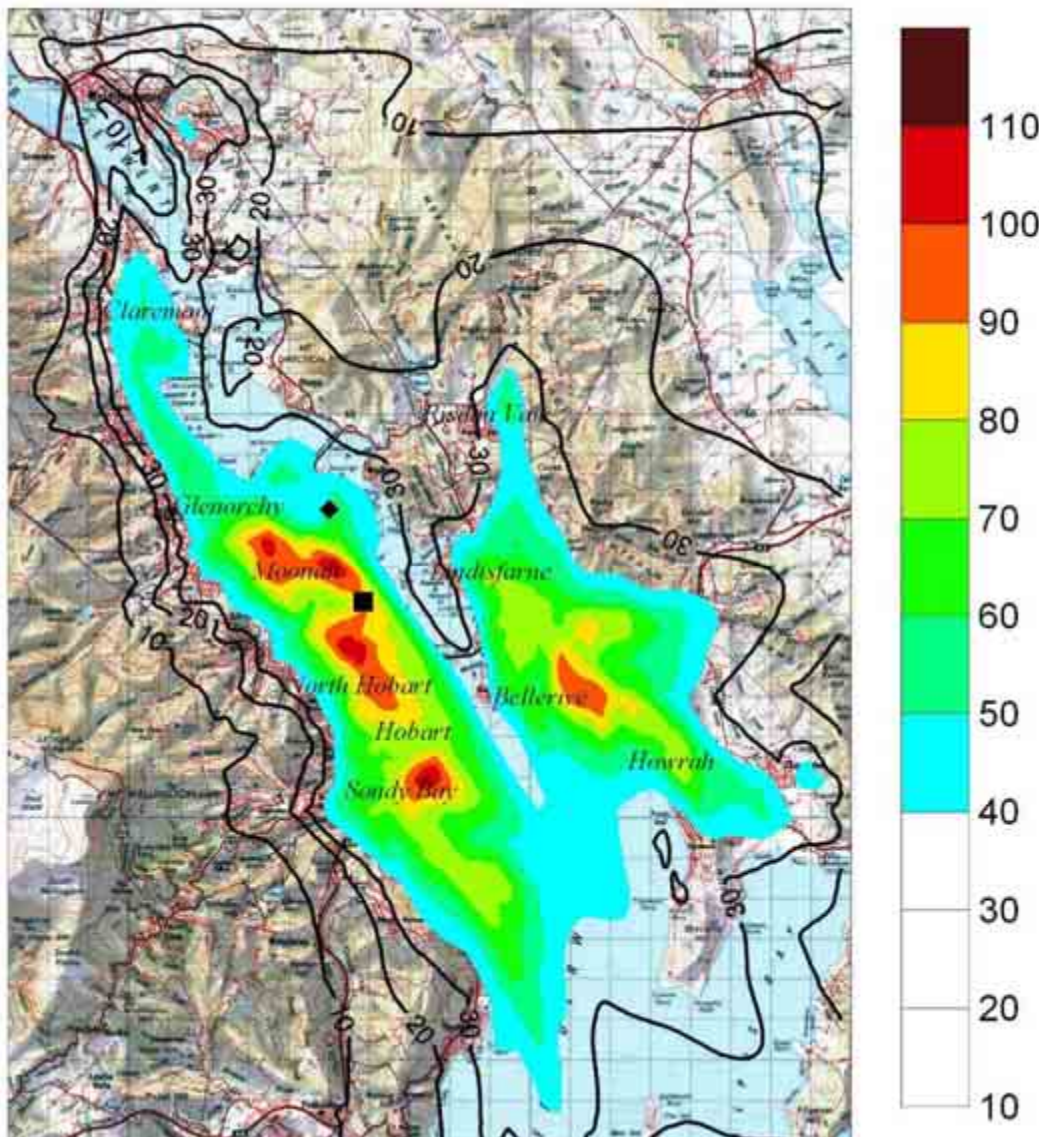


Figure 1-2: Results of preliminary modelling of maximum daily-mean PM₁₀ concentrations (µg/m³) for July 2003 in the Hobart region, showing indicative “hot-spots” (in red) for particulates.

2 LAUNCESTON

2.1 REGION BOUNDARIES

Launceston and the Tamar Valley as a whole have been well studied in terms of the meteorology and atmospheric dispersion of the region. Results of three-dimensional atmospheric dispersion modelling have indicated that emissions from heavy industry at Bell Bay, some 40 kilometres north-west of Launceston, may in cases impact on air quality in Launceston (DPIWE, 1997).

For the purpose of the Measure, the Launceston Region boundaries are defined as presented in Figure 2 and cover an area approximately 40 kilometres wide and 60 kilometres long. This area has been selected for consistency with the Tamar Valley Airshed Study (DELM, 1995). Although there is no functional purpose served in exactly defining the boundary AMG co-ordinates, these may be taken to be defined by the south-most corner (Easting 501,250; Northing 5,389,750) and the north-most corner (Easting 498,750; Northing 5,467,250).

2.2 POPULATION AND TOPOGRAPHY

The population density and topography of the Launceston Region is presented in Figure 2-1.

Launceston has a population of 67 700 with the second largest urban centre in the region, George Town, having a population of 4 500. The majority of Launceston's population is located within approximately 5 kilometres of the city centre, with the highest densities located south-east of the city centre and significant densities on the banks of the Tamar River to the north and north-west of the city.

In total, the population of the Launceston Region defined in this Plan is approximately 95,000. Launceston is located on the upper reaches of the Tamar River, in a well defined valley that extends some 50 kilometres to Bass Strait. The valley axis is mostly aligned in a north-west to south-east orientation and is flanked by hills that reach heights of up to 400 m.

2.3 METEOROLOGY

Northerly winds tend to prevail all year round in Launceston, with atmospheric calm conditions reported to be most frequent in the winter and autumn months (Power, 2000).

Available data for the Region clearly indicate that high concentrations of particles are frequently associated with light winds and highly stable atmospheric conditions. Moreover, because of night-time ground cooling and the formation of drainage flows, relatively high pollutant concentrations are likely to be found in topographic hollows and basins, and on low-lying land.

2.4 LAUNCESTON, TI TREE BEND PERFORMANCE AND TREND MONITORING STATION.

- PM₁₀ is measured by High Volume Air sampler (HVAS), according to AS 3580.9.6-1990, sampled every day.
- TEOM direct-reading instrument with a PM₁₀ head is collocated with the HVAS and data is being accumulated to develop site specific temperature-dependent correlation factors.
- In addition, comparative studies have been undertaken of DustTrak particle counters against both of the above methods, as part of the Launceston Woodheater Program.
- As part of the *Tasmanian Air Quality Monitoring System Development Project, 2004-2008*, an Andersen RAAS low volume air sampler was installed at Ti Tree Bend to sample PM₁₀ particulates. This has been operating since August 2005. The existing daily HVAS regime has also been maintained at this site for at least 12 months to provide continuing comparative data for equivalence testing, as required under the *Amended Tasmanian Air Monitoring Plan*.

- In addition, an Andersen RAAS instrument configured for PM_{2.5} has also been installed at the station, utilising Australian Government funding provided under the *Launceston Woodheater Replacement Program*. This has also been in operation since August 2005, and monitoring data is included in this report.

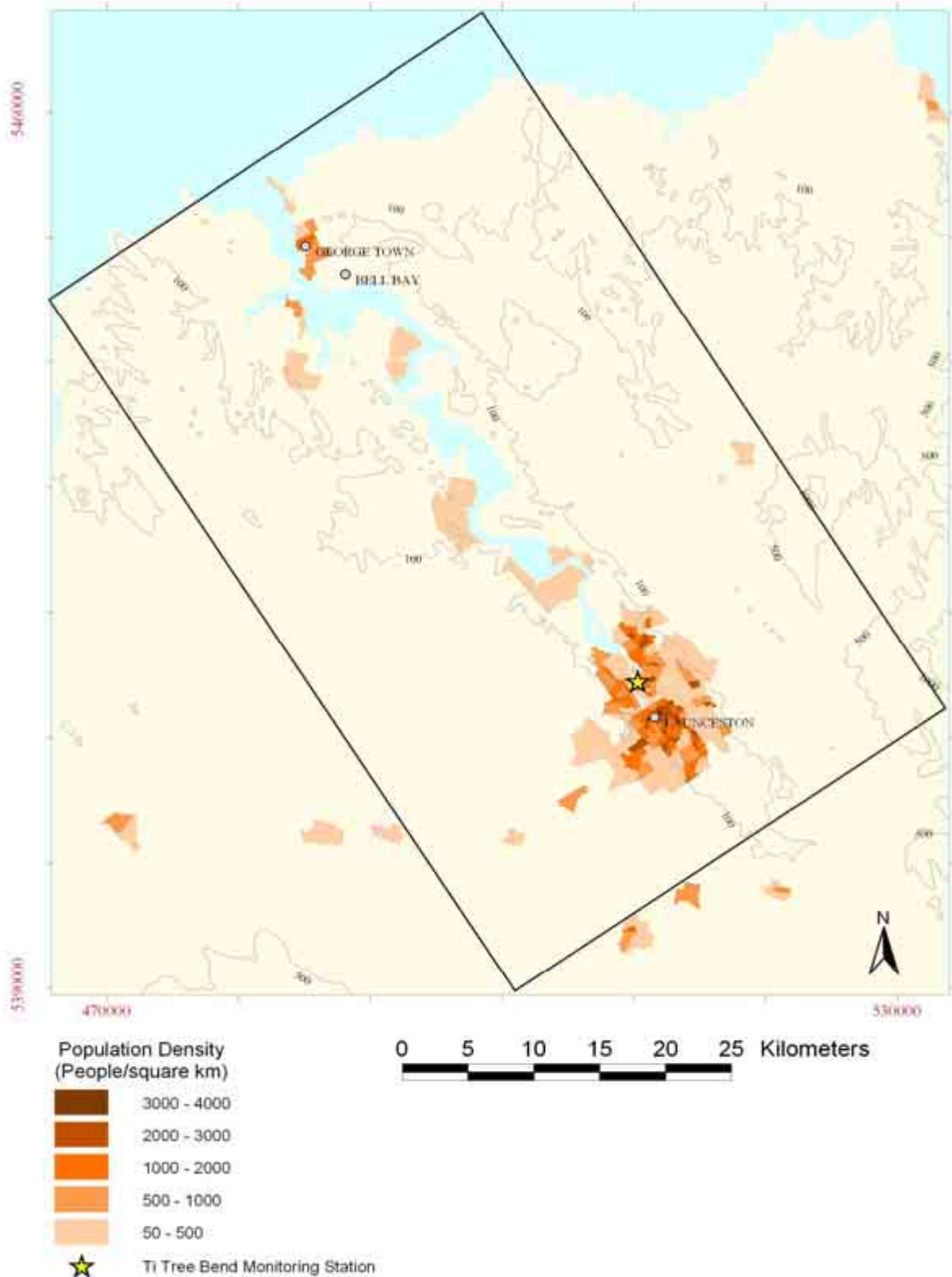


Figure 2-1: Map Of Launceston Region Including Population Density And Topography

3. DEVONPORT

3.1 REGION BOUNDARIES

For Devonport, the availability of meteorological data tends to be relatively low. Moreover, complex atmospheric dispersion models have not been developed for the Region. For these reasons, the extent of the Devonport airshed is unclear.

For the purpose of the Measure, the Devonport Region boundaries are defined as presented in Figure 3-12. Although there is no functional purpose served in exactly defining the boundary AMG co-ordinates, these may be taken to be defined by the south-west corner (Easting 441,000; Northing 5430,000) and the north-east corner (Easting 454,000; Northing 5444,000).

3.2 POPULATION AND TOPOGRAPHY

The population density and topography for the Devonport Region is presented in Figure 3-1. The majority of the population resides within approximately a 5 km radius of the CBD. In total, the population of the Devonport Region defined in this Plan is approximately 30,000.

Devonport is located in a shallow coastal plain on the banks of the Mersey River. The Mersey connects the town of Latrobe with Devonport.

3.3 METEOROLOGY

Westerly winds tend to prevail in the Devonport Region, with atmospheric calm conditions most frequent in winter and autumn.

Strongly stable atmospheric conditions in Devonport are normally associated with southerly, south-easterly or easterly winds draining out of the Valley. This is especially evident in winter.

3.4 DEVONPORT PERFORMANCE AND TREND MONITORING STATION

Campaign monitoring of particulates was completed at Devonport in 2003, to assess the need for a permanent station. Results confirmed that PM₁₀ air pollution in Devonport is significant, and in response, plans are well advanced to install a monitoring station at Devonport High School by August 2006, as part *The Tasmanian Air Quality Monitoring System Development Project, 2004-2008*.

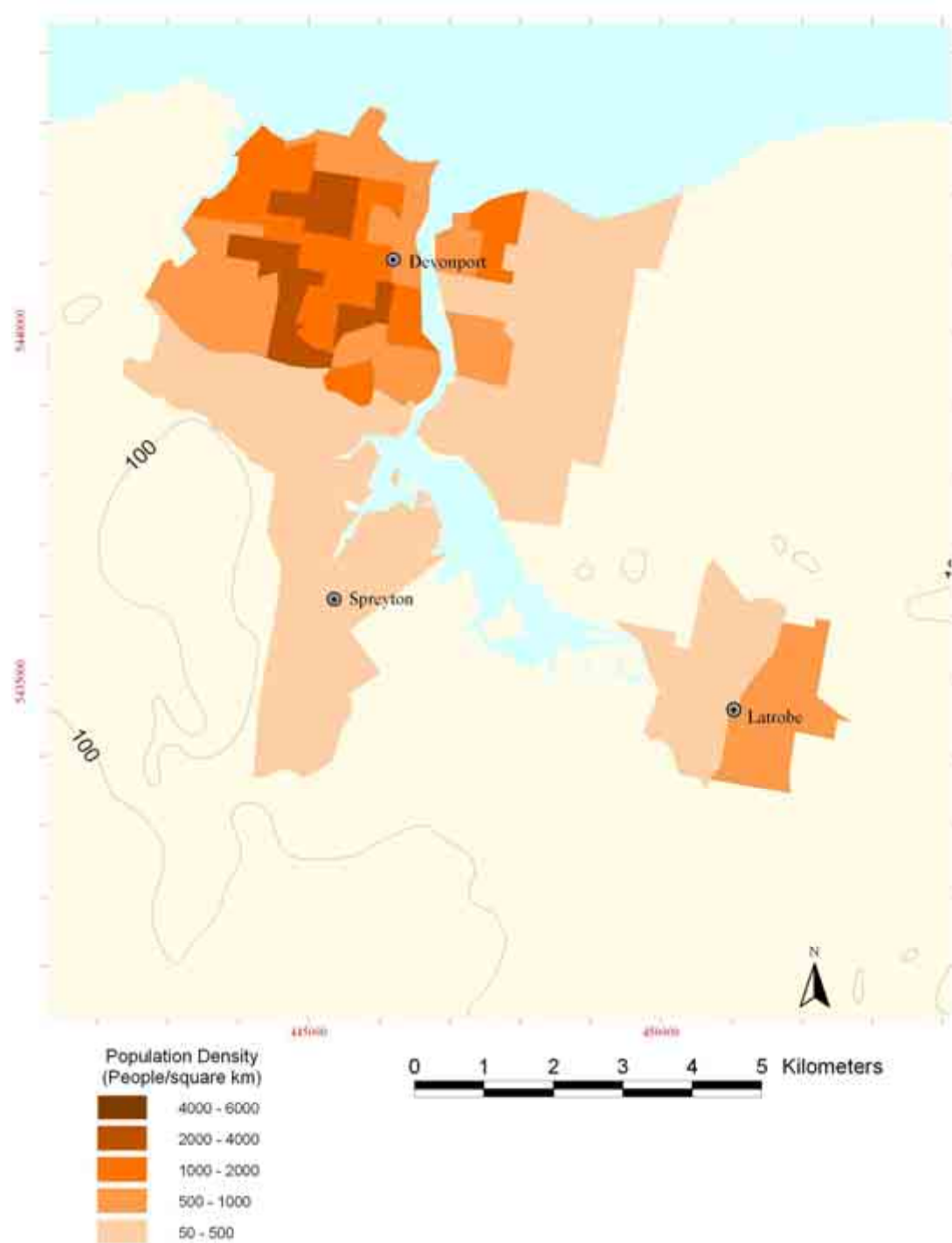


Figure 3-1: Map Of Devonport Region Including Population Density And Topography

4. SITING CRITERIA FOR AIR QUALITY MONITORING STATIONS

4.1 APPLICABLE AUSTRALIAN STANDARDS

1. AS2922 (Guide for siting of sampling)

Critical criteria for location of sampling site.

- (i) H_g = Height of sampling inlet above ground. (2 to 5 m)
- (ii) H_o = Height of nearby obstacle above sampling inlet
- (iii) D = Horizontal Distance to nearby obstruction - typically >20 m.
- (iv) 120° = Minimum clear sky angle above sampling inlet

2. AS2923 (Ambient Air- Guide for the Measurement of Wind).

Critical criteria for placement of 10 m meteorological tower

Recommended minimum distance from obstruction = $10H$

Where H = Height of obstruction

4.2 COMPLIANCE WITH APPLICABLE STANDARDS

(i) New Town Air Quality Monitoring Site

The Air Monitoring Station is located in a corner of an old brick factory site at 0 Bell St, New Town, which is currently used as a hockey complex. This air monitoring site has several obstructions within critical distances.

AS2922 (Guide for siting of sampling)

No.	Obstruction Description	Distance D (m)	H_o (m)	$2 H_o \leq D$	120° Sky Angle
1	Power Pole ¹	3	7.6	Does not comply	Does not comply
2	Met Mast ²	6	6.6	Does not comply	Does not comply
3	Brick Wall	15	-1	Complies	Complies
4	Chimney	50	22.6	Complies	Complies

AS2923 (Ambient Air- Guide for the Measurement of Wind).

No.	Obstruction Description	Distance (m)	Height (m)	$D > 20m$	$D > 10H$
1	Power Pole ¹	5	11	Does not comply	Does not comply
2	Brick Wall	13	2.4	Does not comply	Does not comply
3	Chimney	47	26	Complies	Does not comply

- Notes**
- 1. The power pole is an essential part of the Air monitoring station, and may have a small effect on the samplers and meteorological instruments.
 - 2. The meteorological mast may have a small but unavoidable interference with the air flow to the air samplers.

4.2 COMPLIANCE WITH APPLICABLE STANDARDS (continued)

(ii) Ti-Tree Bend Air Quality Monitoring Site

The Launceston Ambient Air Quality Monitoring Station is located within the grounds of the Launceston City Council Waste Water Treatment Plant at Ti-Tree Bend. The station building and instruments are located besides the 4 settling lagoons away from the built-up area of the sewage treatment plant.

AS2922 (*Guide for siting of sampling*)

No.	Obstruction Description	Distance D (m)	H _o (m)	2 H _o ≤ D	120° Sky Angle
1	Met Mast *	8	6.6	Does not comply	Does not comply
2	Tree 1	27	4	Complies	Complies
3	Shed 1	30	1.6	Complies	Complies
4	Shed 2	50	1.6	Complies	Complies

AS2923 (Ambient Air- Guide for the Measurement of Wind).

No.	Obstruction Description	Distance (m)	Height (m)	D > 20m	D > 10H
1	Tree 1	38	8	Complies	Does not comply
2	Shed 1	22	5	Complies	Does not comply
3	Shed 2	55	5	Complies	Complies

* **Note:** The meteorological mast will have a small but unavoidable interference with the air flow to the air samplers.

SECTION B – ASSESSMENT OF COMPLIANCE WITH STANDARDS AND GOALS

Results from monitoring at current Tasmanian Performance Monitoring stations are presented in Table 1.

Table 1: Summary of Performance Against Standards for PM₁₀ and PM_{2.5} at Tasmanian Monitoring stations.

Region/Performance Monitoring Station	Data Availability Rates (% of days for sampling regime)					No. of Exceedences		Performance Against Standard and Goal
	Q1	Q2	Q3	Q4	Annual	Period	Days	
Hobart: POW Bay ⁽¹⁾			See Note 4					NOT DEMONSTRATED
PM ₁₀ (Total)	97	98	65	98	89	24 hour	0	
- HVAS (alternate days)	49	51	48	42	47	24 hour		
- TEOM ⁽²⁾	92	95	34	94	79	24 hour		
PM _{2.5} [Reporting Standard only]	No Data-Monitoring commenced at New Town site from May 2006					24 hour Annual	N/A	
Launceston: Ti Tree bend								
PM ₁₀ (Total)	93	97	100	100	98	24 hour	13	NOT MET
- HVAS (every day)	88	84	89	83	86	24 hour		
- LVAS (every day)	0	19	67	23	27	24 hour		
- TEOM ⁽²⁾	93	91	88	95	92	24 hour		
PM _{2.5} [Reporting Standard only]								
- LVAS (every day)	0	24	58	100	46	24 hour ⁽³⁾	20	
	Average annual PM _{2.5} conc. = 11.0 µg/m ³					Annual		
Devonport: Devonport High School								NOT DEMONSTRATED
PM ₁₀	Monitoring scheduled to commence August 2006					24 hour		

Notes: (1) Site considered not representative of population exposure. Station moved in May 2006 (see text)

(2) Temperature corrected using local model according to Technical Guidance Paper 10

(3) Data collected for less than a full year

(4) Prince of Wales Bay station out of service from 16 August 2005 – 5 October 2005

SECTION C – ANALYSIS OF AIR QUALITY MONITORING

1. HOBART

Results of monitoring at Prince of Wales Bay are well within compliance with the Standards for PM₁₀, with no exceedences of the PM₁₀ Standard recorded during the year (Table 2). However, as noted previously, concentrations measured at Prince of Wales bay are considered to be un-representative of general population exposure and the primary station was re-located to New Town in May 2006.

Table 2: Exceedences of PM₁₀ Standard at Prince of Wales Bay, Hobart, with Attribution of Cause.

Date	HVAS (µg/m ³)	24 Hour TEOM (µg/m ³)	Mean Temp (°C)	Reason
NO EXCEEDENCES RECORDED				

2. LAUNCESTON

Results for Ti Tree Bend show that winter Air Quality does not comply with the Standard and Goal for PM₁₀ (see Table 3), with 13 days where the daily average PM₁₀ concentration exceeded 50 µg/m³. All of these exceedences have been attributed to winter woodsmoke built up under still atmospheric conditions.

PM_{2.5} monitoring data are not available for the full year, but that which is available show clearly that the 24 hour average Reporting Standard (25 µg/m³) was exceeded on 20 days over the six months of available data.

The average of PM_{2.5} concentrations for the period from July to December for which monitoring data is available is 11.0 µg/m³. Given this, it is likely that the average for a full year would have exceeded the annual standard (8 µg/m³).

Table 3: Exceedences of PM₁₀ standard at Ti Tree Bend, Launceston, with attribution of causes (In descending order of concentration).

National Environment Protection Standard: 50 µg/m³

Date	PM ₁₀ (µg/m ³)		TEOM (µg/m ³)		Temp (°C)	Reason
	HVAS	LVAS	Meas.	Corr.		
1. 12/07/2005	80	70	51	87	4.6	Temp. inversion with wood smoke
2. 02/06/2005	76		52	87	4.8	Temp. inversion with wood smoke
3. 13/07/2005	72	66	41	68	5.0	Temp. inversion with wood smoke
4. 09/06/2005	69	55	34	70	7.5	Temp. inversion with wood smoke
5. 29/06/2005	62	59	40	61	6.8	Temp. inversion with wood smoke
6. 15/05/2005	62		44	60	9.4	Temp. inversion with wood smoke
7. 14/05/2005	62		44	66	7.8	Temp. inversion with wood smoke
8. 03/06/2005	59	52	39	69	3.8	Temp. inversion with wood smoke
9. 07/06/2005	56	56	38	52	9.3	Calm weather with wood smoke
10. 11/07/2005	53	46	35	59	4.8	Temp. inversion with wood smoke
11. 01/06/2005	53		36	60	4.7	Temp. inversion with wood smoke
12. 06/06/2005	52	42	34	51	7.5	Calm weather with wood smoke
13. 21/05/2005	51		34	42	11.8	Calm weather with wood smoke

Table 4: Exceedences of PM_{2.5} 24-Hour Reporting Standard at Ti Tree Bend, Launceston, with attribution of causes (In descending order of concentration).

National Environment Protection (Reporting) Standard: 25 µg/m³

	Date	RAAS (µg/m³)	Mean Temp (°C)	Reason
1.	13/07/2005	56	5.0	Temp. inversion with wood smoke
2.	09/06/2005	51	7.3	Calm conditions with wood smoke
3.	17/07/2005	48	4.6	Temp. inversion with wood smoke
4.	07/06/2005	47	9.3	Calm conditions with wood smoke
5.	29/06/2005	46	6.8	Temp. inversion with wood smoke
6.	20/07/2005	39	7.0	Temp. inversion with wood smoke
7.	28/06/2005	35	6.1	Temp. inversion with wood smoke
8.	19/06/2005	35	7.5	Calm conditions with smoke
9.	18/06/2005	33	5.1	Calm conditions with smoke
10.	24/06/2005	32	4.8	Temp. inversion with wood smoke
11.	27/06/2005	31	4.0	Temp. inversion with wood smoke
12.	06/06/2005	30	7.5	Calm conditions with smoke
13.	30/06/2005	29	7.3	Temp. inversion with wood smoke
14.	23/08/2005	29	7.0	Temp. inversion with wood smoke
15.	08/07/2005	29	4.6	Temp. inversion with wood smoke
16.	21/07/2005	28	7.0	Temp. inversion with wood smoke
17.	26/06/2005	27	3.7	Temp. inversion with wood smoke
18.	19/07/2005	27	7.9	Temp. inversion with wood smoke
19.	24/08/2005	26	9.7	Temp. inversion with wood smoke
20.	25/06/2005	26	4.2	Temp. inversion with wood smoke

3. DEVONPORT

No data is available. A new PM₁₀ station is due to be established at Devonport High School by the end of 2006 in response to the results of monitoring undertaken there in 2003.

SECTION D – DATA ANALYSIS

TEOM and high volume air samplers were collocated at Hobart and Launceston stations for the whole year. The high volume sampler was taken as being the reference for determining compliance, this being the standard methodology cited in Schedule 3 of the Air NEPM. So where results from the two methods differed on individual days, high volume sampler data were used to determine exceedences.

1. HOBART:

In Hobart, where the high volume air sampler was operated on alternate days, assessment of compliance is based on data from both methods.

Data recorded at the Performance and Trend station indicated that air quality at Prince of Wales Bay complied with the standard for PM₁₀.

However, as foreshadowed in the 2003 report, the status of this site was reviewed during winter 2004, in order to assess future needs for representative monitoring in Hobart. As a result, the Performance and Trend station was relocated in May 2006 to a site in New Town. Details of the re-location are contained in an amended Tasmanian Air Monitoring Plan, submitted to the Peer review Committee in May 2005.

2. LAUNCESTON

Air Quality in Launceston, as measured at Ti Tree bend has consistently been out of compliance with the PM₁₀ Standard since commencement of monitoring in 1997. That said, air quality, as measured by the number of exceedences, has improved dramatically over recent years. There were 13 exceedences of the National Environment Protection Standard for PM₁₀, compared with 2004, when 10 exceedences were recorded (see Figure 3-2). This “increase” is assumed to be the product of normal inter-annual variability of meteorological conditions. There were no exceedences that could be directly attributed to bushfires or planned forestry burning, although it was observed that smoke from domestic urban vegetation burning was a significant contribution to the exceedence on 29/06/2005.

3. DEVONPORT

The winter monitoring campaign in Devonport during winter 2003 showed that the local air quality is adversely affected by particulate pollution and may not comply with the NEPM goal. It is planned to establish a PM₁₀ monitoring station at Devonport High School by the end of 2006.

Table 6: 2005 Summary Statistics for PM₁₀

National Environment Protection Standard: 50 µg/m³ (24 Hour Average)

Pollutant	Number of Valid days	Highest		6 th Highest		Percentiles [µg/m ³]		
		µg/m ³	Date	µg/m ³	Date	98 th	95 th	90 th
POW Bay, Hobart								
HV Air Sampler (alternate days)	171	56	20/06/2005	27	15/05/2005	29	26	24
TEOM - Measured	293	50	08/04/2005	29	18/01/2005	29	23	20
- Corrected ¹	293	60	08/04/2005	38	15/06/2005	38	30	24
New Town, Hobart								
RAAS Low Volume Air Sampler	0							
Ti Tree Bend, Launceston								
HV Air Sampler	312	80	12/07/2005	62	14/05/2005	60	44	38
TEOM - Measured	338	52	02/06/2005	44	15/05/2005	40	32	26
- Corrected ¹	338	88	02/06/2005	66	14/05/2005	62	47	35
RAAS Low Volume Air Sampler	188	70	12/07/2005	51	03/06/2005	55	43	36
Devonport High School, Devonport	Monitoring scheduled to commence by end 2006							

Note. The 24 hour average TEOM PM₁₀ value has been corrected for the evaporation of volatile particulates (primarily winter wood smoke) using an empirical Temperature Correction Factor [TCF], derived from the TEOM and HVAS data according to Technical Guidance Paper 10.

Corrected PM₁₀ = Measured PM₁₀ x TCF

Where TCF = 1.00 when T₂₄ ≥ 15°C
1.00 + (15 - T₂₄) / 15 when 0°C < T₂₄ < 15°C
2.00 when T₂₄ ≤ 0°C

and T₂₄ = Average daily air temperature [°C]

Table 7: 2005 Summary Statistics for PM_{2.5}

National Environment Protection (Reporting) Standards: 25 µg/m³ (24 Hour Average);
8µg/m³ (Annual Average)

Pollutant	Number of Valid days	Highest		6 th Highest		Percentiles [µg/m ³]		
		µg/m ³	Date	µg/m ³	Date	98 th	95 th	90 th
New Town, Hobart	Monitoring commenced May 2006							
Ti Tree Bend, Launceston								
RAAS Low Volume Air Sampler	167	56	13/07/2005	39	20/07/2005	48	33	27

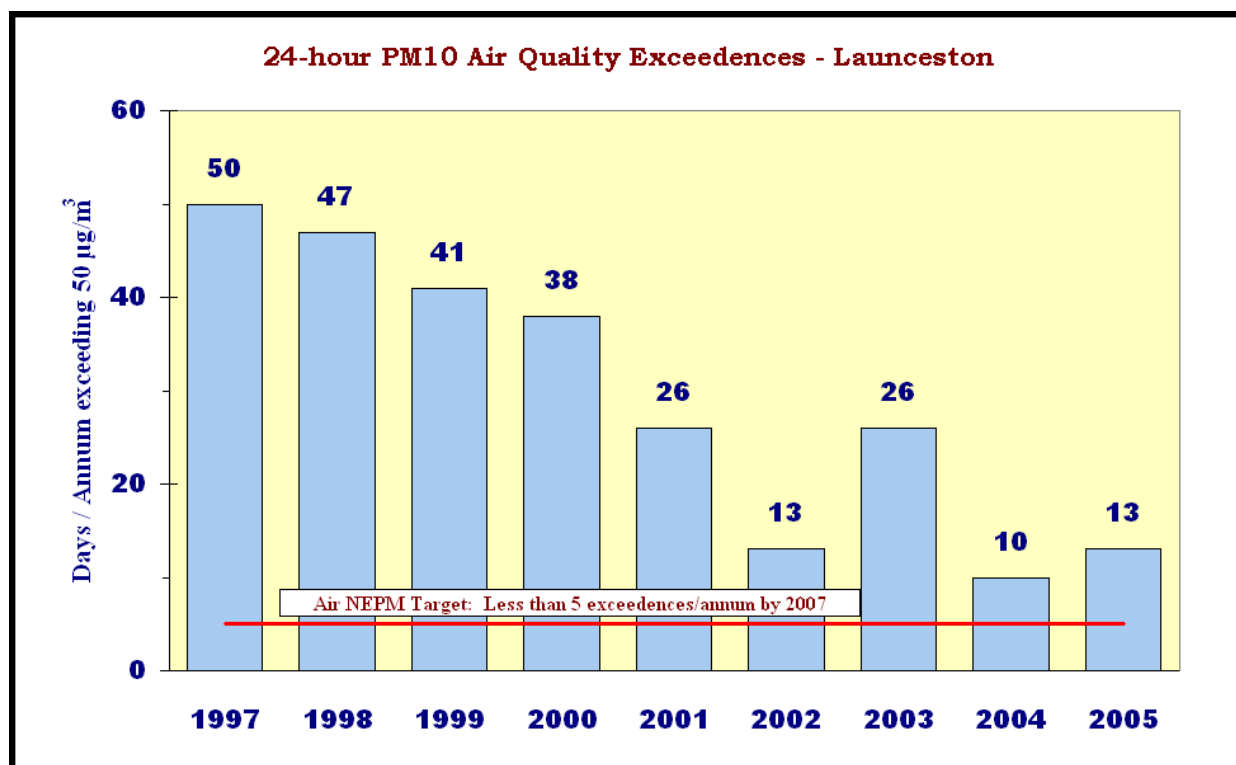


Figure 3-2: Annual exceedences of the PM₁₀ Standard at Launceston for 1997 to 2005

NOTE: The development of the Tasmanian Air Quality Database has allowed the air density corrections for the historical high volume air sampler data to be recalculated using the observed meteorological data for the measurement period. This has resulted in some revision of the historical PM₁₀ concentrations and the number of exceedences for past years.

SUMMARY OF ACHIEVEMENTS AND FUTURE DIRECTIONS

The Tasmanian Government has several programmes in place to assess compliance with the Air NEPM and to implement progressive improvement towards meeting the Air NEPM Goals.

These include:

- The Environment Protection Policy (Air Quality) 2004 came into force on 1 June 2005. The Policy includes specific reference to meeting the requirements of the Air NEPM through regulation of industry and management of diffuse sources and planned burning activities.
- New Regulations are also under development, aimed at controlling the import, sale and installation of domestic solid fuel heaters, creating an offence for emission of excessive smoke from domestic flues and in addition, restricting backyard burning in Tasmania. There have been some delays in bringing these regulations in, but it is expected that they will be made in late 2006.
- The *Tasmanian Air Quality Strategy* was released by the Minister for Tourism, the Arts and Environment, Hon Paula Wriedt on 5 June 2006. The five-year Strategy includes programs to further reduce domestic and industrial emissions of fine particles in critical regions of the State, while maintaining a balance with economic growth and social equity issues, particularly relating to home energy use and conservation.
- The Tasmanian Government has provided funding of \$816,000 over the period 2004 to 2008 to develop a monitoring capability for PM_{2.5} particles as required in the amendment to the Air NEPM (May 2003), and upgrade existing PM₁₀ monitoring. The new system is in operation at Hobart and Launceston and will be extended to Devonport in late 2006, in line with the *Amended Tasmanian Air Monitoring Plan 2005*.
- The Australian Government-funded Launceston Woodheater Replacement Program replacement Scheme ceased in May 2004. This was a joint project between local, State and national governments, managed through the Launceston City Council and directly resulting in removal of some 2200 woodheaters from the airshed. However, many more were also replaced during the three-year program and it is likely that some of these were an indirect result of the education component of the program. The education program is continuing in Launceston as part of the Tamar Valley Air Quality Strategy developed by councils in the Valley, with input from the Environment Division.
- The Department initiated a radio advertising campaign during winter 2006 to encourage woodheater users to improve the operation of their heaters.
- A monitoring program using nephelometers will be established in three school in Greater Hobart to support the main performance and trend station at New Town. These stations will also form part of the education program, with air quality issues being incorporated into school curricula.