Technical Report No. 6

Air Emissions Inventory for the Greater Metropolitan Region in New South Wales

Industrial Emissions Module: Results

Prepared jointly by

Department of Environment and Climate Change NSW
Pacific Air & Environment Pty Ltd

ACKNOWLEDGEMENTS

This study was carried out with the assistance of organisations and individuals who should be recognised for their efforts.

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The contribution made by the 1,037 individual company premises that participated in the industrial survey and returned questionnaires is much appreciated. Without their involvement, the depth and completeness of this inventory would not have been possible.

DECC would also like to thank a number of individuals for their efforts in either project scoping/management, developing emission estimation methodologies, collecting activity data, developing databases, estimating emissions and/or preparing this report, including: Mr. Nick Agapides (DECC); Mr. Kelsey Bawden (Pacific Air & Environment Pty Ltd); Ms. Yvonne Hong (Pacific Air & Environment); and Ms. Elaine Tam (Pacific Air & Environment).

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EXECUTIVE SUMMARY

The Department of Environment and Climate Change NSW (DECC), in collaboration with Pacific Air & Environment (Bawden et. al., 2006) has completed a three year air emissions inventory project for industrial sources. The base year of the industrial inventory represents activities that took place during the 2003 calendar year and is accompanied by emission projections in yearly increments up to the 2031 calendar year. The area included in the study covers greater Sydney, Newcastle and Wollongong regions, known collectively as the Greater Metropolitan Region (GMR).

The study region defined as the GMR measures 210 km (east-west) by 273 km (north-south). The study region is defined in Table ES1.1 and shown in Figure ES1.1.

Table ES1.1: Definition of Greater Metropolitan, Sydney, Newcastle and Wollongong Regions

Region	South-west corner MGA [1] co-ordinates		North-east corner MGA [1] co-ordinates	
	Easting (km)	Northing (km)	Easting (km)	Northing (km)
Greater Metropolitan	210	6159	420	6432
Sydney	261	6201	360	6300
Newcastle	360	6348	408	6372
Wollongong	279	6174	318	6201

[1] MGA = Map Grid of Australia based on the Geocentric Datum of Australia 1994 (GDA94) (ICSM, 2002).

Industrial facilities include all NSW Activity Types that hold a licence to operate under the Protection of the Environment Operations Act 1997. The inventory includes emissions from 1,037 facilities. A total of 6,869 emission sources have been included in the industrial emissions inventory, consisting of 1,364 point sources[1] and 5,504 fugitive sources[2]. Table ES1.2 presents the number and type of emission sources included in the industrial emissions inventory for each area considered.

Table ES1.2: Emission Source Summary

Area	Point Sources	Fugitive Sources	Total Sources
Sydney	915	3,012	3,927
Newcastle	193	533	726
Wollongong	130	250	380
Non Urban [a]	124	1,712	1,836
GMR	1,364	5,505	6,869

[a] Non-urban area is defined as the area within the GMR that does not include the areas bounded by Sydney, Newcastle or Wollongong

The pollutants inventoried include criteria pollutants specified in the Air NEPM, air toxics associated with the National Pollutant Inventory and the Air Toxics NEPMs and any other pollutants associated with state specific programs, i.e. Load Based Licensing (Protection of the Environment Operations (General) Regulation 1998 (DEC, 2002 & PCO, 1998)) and Protection of the Environment Operations (Clean Air) Regulation 2002 (PCO, 2005).

[1] Point source means air pollutant emissions, which are released via a stack or vent and are generally controlled (i.e. captured, treated and reduced in mass using control equipment and/or captured and discharged through a vent, chimney, stack, or other equivalent emission point).

[2] Fugitive source means air pollutant emissions that are not released via a stack or vent and are generally not controlled emissions

Figure ES1.1 shows the location of all industrial emission sources that are included in the emissions inventory.

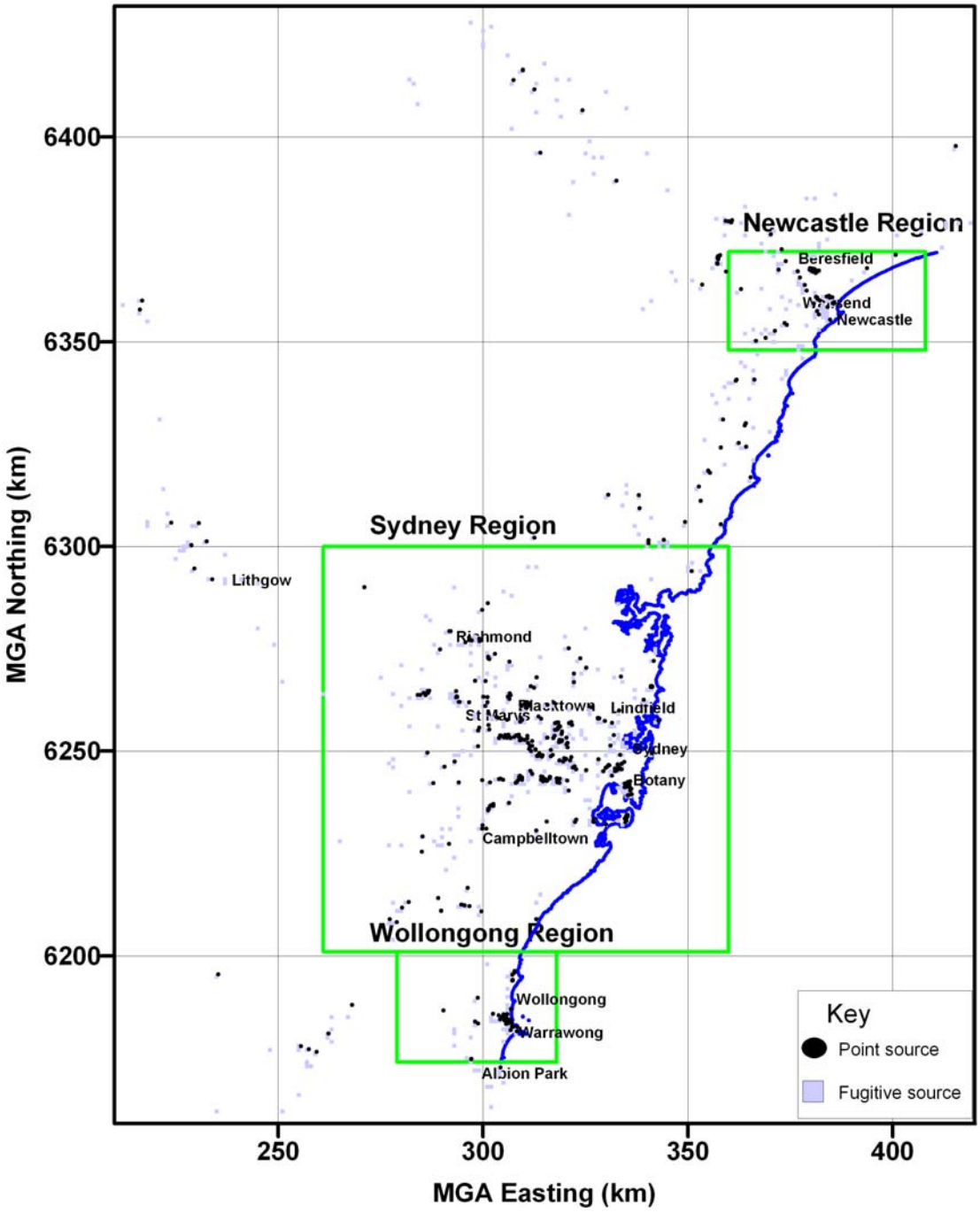

Figure ES1.1: Location of all Industrial Emission Sources

Table ES1.3 shows total estimated emissions for selected substances from industrial facilities in the study region (the GMR), Sydney, Newcastle and Wollongong. These substances have been selected since they are:

- The most common air pollutants found in airsheds according to the National Pollutant Inventory NEPM (NEPC, 2000);
- Referred to in National Environment Protection Measures (NEPMs) for criteria pollutants (NEPC, 2003) and air toxics (NEPC, 2004); and
- They have been classified as priority air pollutants (NEPC, 2005)

Total estimated emissions are also presented for the region defined as "Non-Urban". This region is the area of the GMR minus the combined areas of the Sydney, Newcastle and Wollongong regions.

Table ES1.3: Total Estimated Emissions from Industrial Facilities

Substance	Estimated Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0.11	0.09	0.002	6.54	6.73
ACETALDEHYDE	5.9	5.35	0.08	0.75	12.1
BENZENE	92.1	58.3	232	12.4	395
CARBON MONOXIDE	8,000	47,800	522,000	25,600	603,000
FORMALDEHYDE	411	39.6	53.8	13.4	517
ISOMERS OF XYLENE	380	27.5	17.1	370	795
LEAD & COMPOUNDS	4.7	0.25	4.13	2.89	12
OXIDES OF NITROGEN	14,000	1,730	7,930	152,000	175,500
PARTICULATE MATTER 10µm	7,890	1,710	2,070	34,900	46,500
PARTICULATE MATTER 2.5µm	3,370	826	1,560	7,380	13,100
PERCHLOROETHYLENE	32.6	6.0	1.43	2.48	42.5
POLYCYCLIC AROMATIC HYDROCARBONS	2.2	5.82	39	8.39	55.5
SULFUR DIOXIDE	11,000	9,300	10,300	265,000	296,000
TOLUENE	1,220	101	71.4	156	1,550
TOTAL SUSPENDED PARTICULATES (TSP)	20,400	4,040	2,810	83,500	111,000
TOTAL VOCS	14,000	1,270	788	1,710	17,700
TRICHLOROETHYLENE (TCE)	101	0.67	0.50	0.13	102

[a] Totals may not appear additive due to rounding

Table ES1.4 shows the proportion of estimated emissions released in each region considered in the study.

Table ES1.4: Proportion of Estimated Releases in Each Region Considered in the Study

Substance	Proportion of Estimated Emissions				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	2%	1%	0%	97%	100%
ACETALDEHYDE	49%	44%	1%	6%	100%
BENZENE	23%	15%	59%	3%	100%
CARBON MONOXIDE	1%	8%	87%	4%	100%
FORMALDEHYDE	79%	8%	10%	3%	100%
ISOMERS OF XYLENE	48%	3%	2%	47%	100%
LEAD & COMPOUNDS	39%	2%	35%	24%	100%
OXIDES OF NITROGEN	8%	1%	5%	87%	100%
PARTICULATE MATTER 10µm	17%	4%	4%	75%	100%
PARTICULATE MATTER 2.5µm	26%	6%	12%	56%	100%
PERCHLOROETHYLENE	77%	14%	3%	6%	100%
POLYCYCLIC AROMATIC HYDROCARBONS	4%	11%	70%	15%	100%
SULFUR DIOXIDE	4%	3%	3%	90%	100%
TOLUENE	79%	7%	5%	10%	100%
TOTAL SUSPENDED PARTICULATES (TSP)	18%	4%	3%	75%	100%
TOTAL VOCS	79%	7%	4%	10%	100%
TRICHLOROETHYLENE (TCE)	99%	1%	0%	0%	100%

[a] Totals may not appear additive due to rounding

Table ES1.5 shows the average emissions from industrial sources for a summer weekday (January weekday), summer weekend day (January weekend day), winter weekday (July week day) and winter weekend day (July weekend day).

Table ES1.5: Typical Seasonal Day Type Emissions from Industrial Facilities

Substance	Average Estimated Emissions (kg/day)			
	Summer week day	Summer weekend day	Winter week day	Winter weekend day
1,3 BUTADIENE	19.4	14.9	19.4	14.9
ACETALDEHYDE	34.4	28.5	33.4	28.0
BENZENE	1,080	980	1,090	970
CARBON MONOXIDE	1,620,000	1,613,300	1,625,300	1,613,900
FORMALDEHYDE	1,380	1,280	1,440	1,280
ISOMERS OF XYLENE	2,220	1,810	2,280	1,830
LEAD & COMPOUNDS	31.6	30.1	32.3	30.6
OXIDES OF NITROGEN	475,200	473,200	484,170	481,930
PARTICULATE MATTER 10µm	122,540	114,710	128,650	118,050
PARTICULATE MATTER 2.5µm	34,850	32,820	36,090	33,500
PERCHLOROETHYLENE	113	107	121	111
POLYCYCLIC AROMATIC HYDROCARBONS	150	148	150	147
SULFUR DIOXIDE	801,700	801,080	822,130	821,560
TOLUENE	4,190	3,140	4,620	3,200
TOTAL SUSPENDED PARTICULATES (TSP)	288,650	254,860	312,240	268,300
TOTAL VOCS	48,710	40,560	50,690	40,990
TRICHLOROETHYLENE (TCE)	324	141	332	145

Figure ES1.2 shows the proportion of total emissions in the GMR emitted in each defined region for each criteria pollutant (NO_x (oxides of nitrogen), Total VOCs (volatile organic compounds), PM_{10} (particulate matter with an aerodynamic diameter of less than 10 µm), CO (carbon monoxide), SO_2 (sulfur dioxide)).

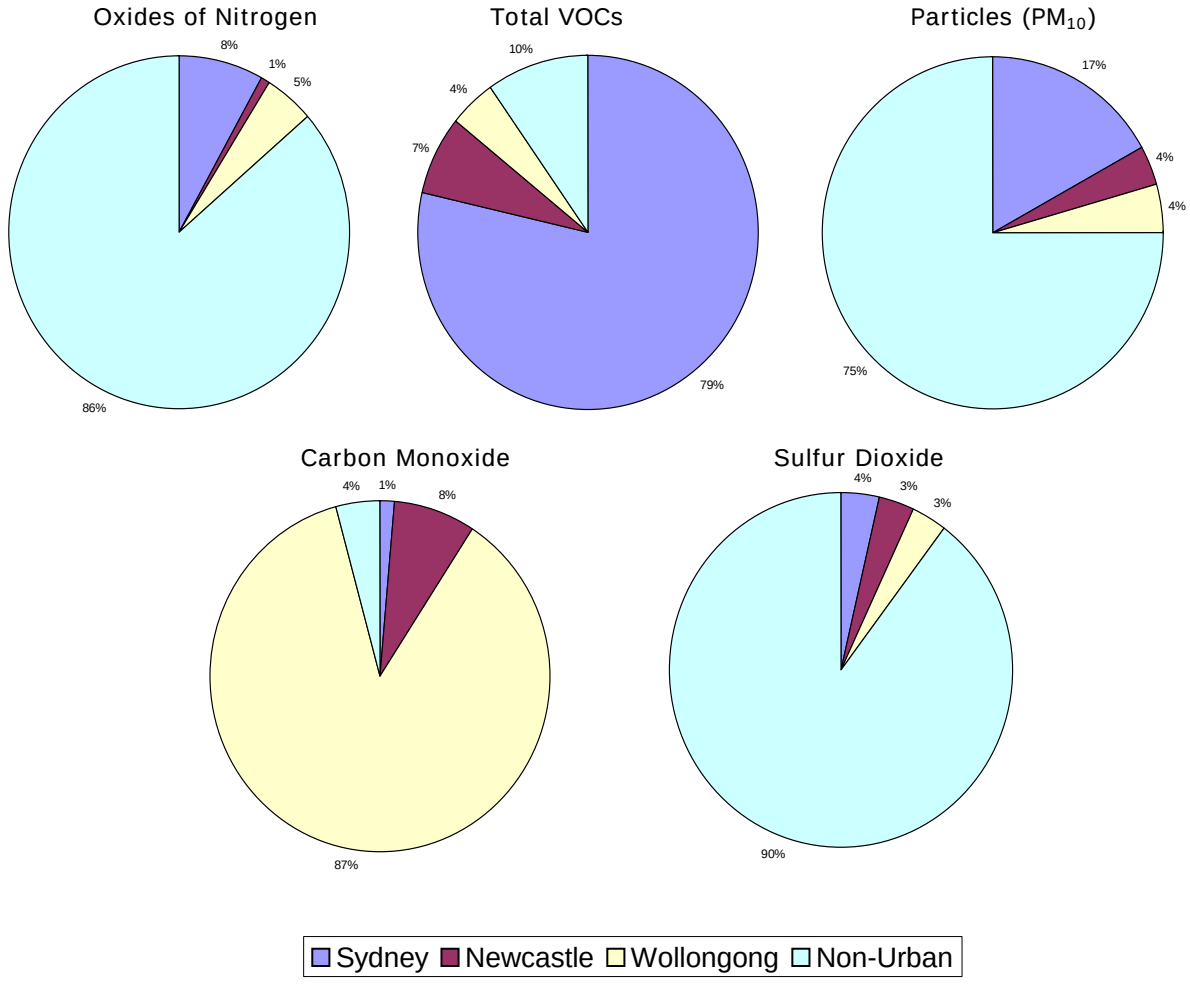

Figure ES1.2: Proportion of Total Industrial Emissions in Each Defined Region

Total industrial emissions for each NSW Activity type (NSW Activity type is defined in Schedule 1 of the Protection of the Environment Operations Act 1997) for each criteria pollutant in each region (i.e. the GMR, Sydney, Newcastle and Wollongong) are presented graphically as follows:

- Figure ES1.3 to Figure ES1.7 present industrial emissions by NSW Activity Type for the entire GMR.
- Figure ES1.8 to Figure ES1.12 present industrial emissions by NSW Activity Type for the Sydney region.
- Figure ES1.13 to Figure ES1.17 present industrial emissions by NSW Activity Type for the Newcastle region
- Figure ES1.18 to Figure ES1.22 present industrial emissions by NSW Activity Type for the Wollongong region.

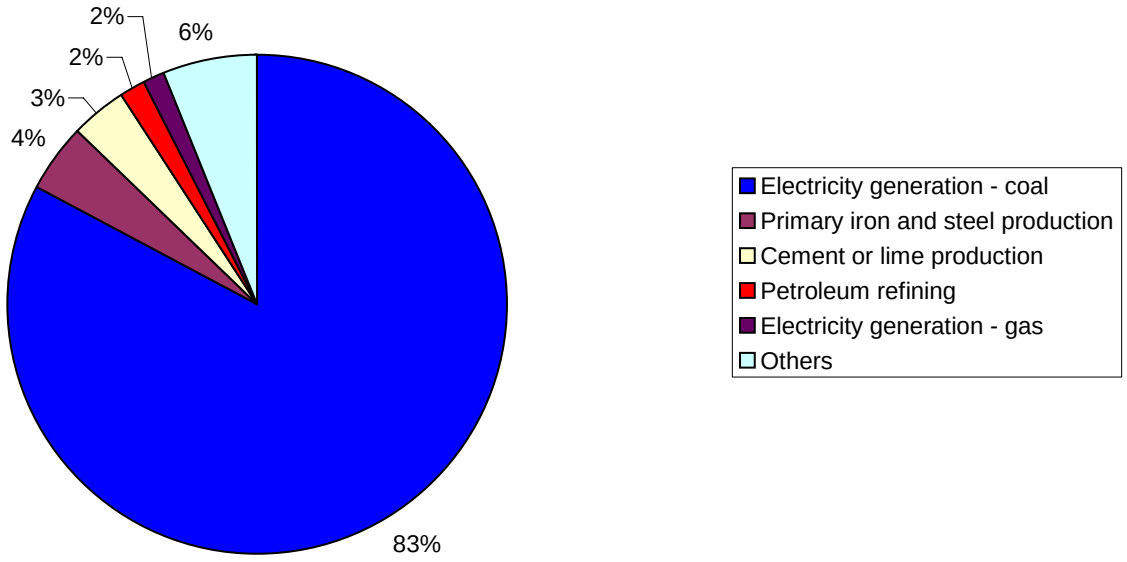

Figure ES1.3: Industrial Emissions of Oxides of Nitrogen (NO_x) by NSW Activity Type in the GMR (Total Emissions = 175,500 tonnes/year)

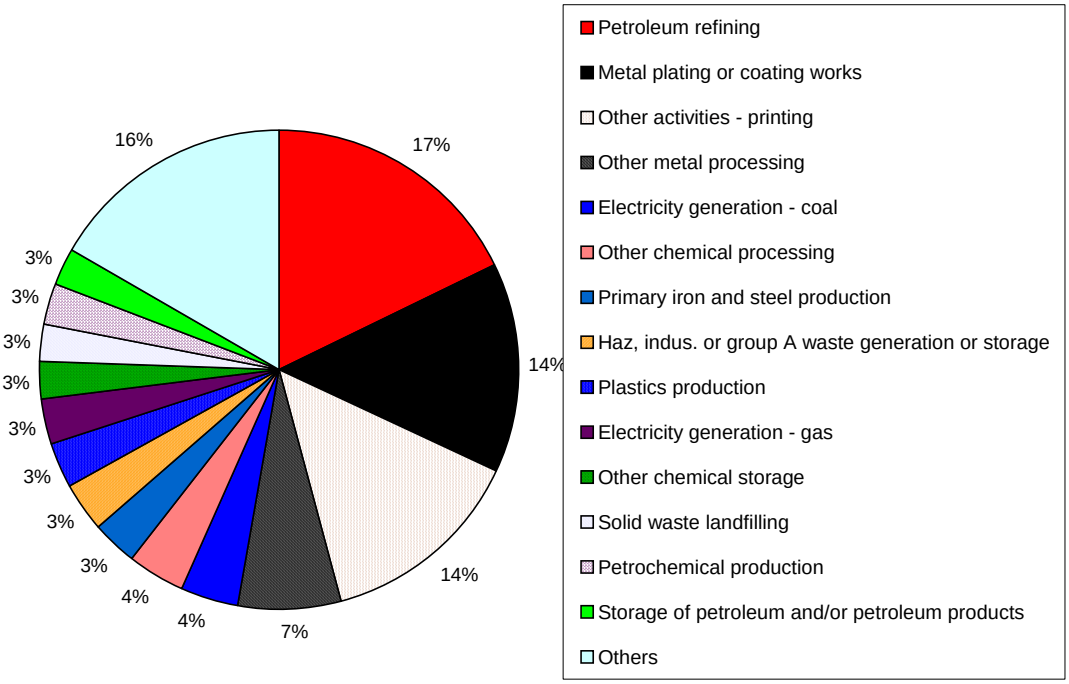

Figure ES1.4: Industrial Emissions of Total VOCs by NSW Activity Type in the GMR (Total Emissions = 17,700 tonnes/year)

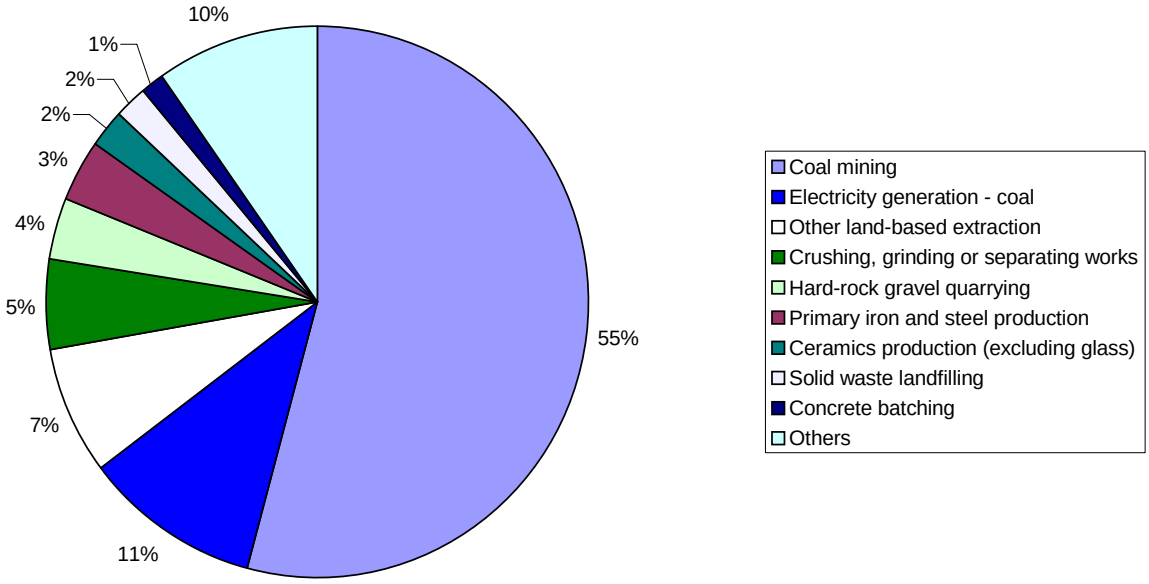

Figure ES1.5: Industrial Emissions of Particles (PM_{10}) by NSW Activity Type in the GMR (Total Emissions = 46,500 tonnes/year)

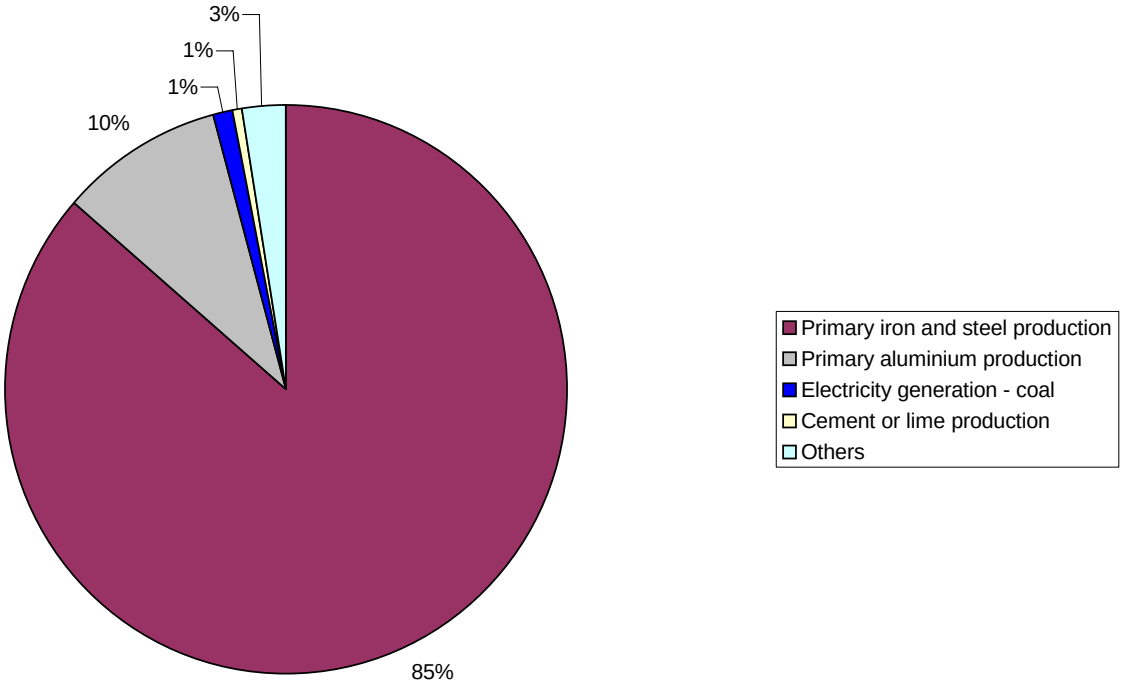

Figure ES1.6: Industrial Emissions of Carbon Monoxide (CO) by NSW Activity Type in the GMR (Total Emissions = 603,000 tonnes/year)

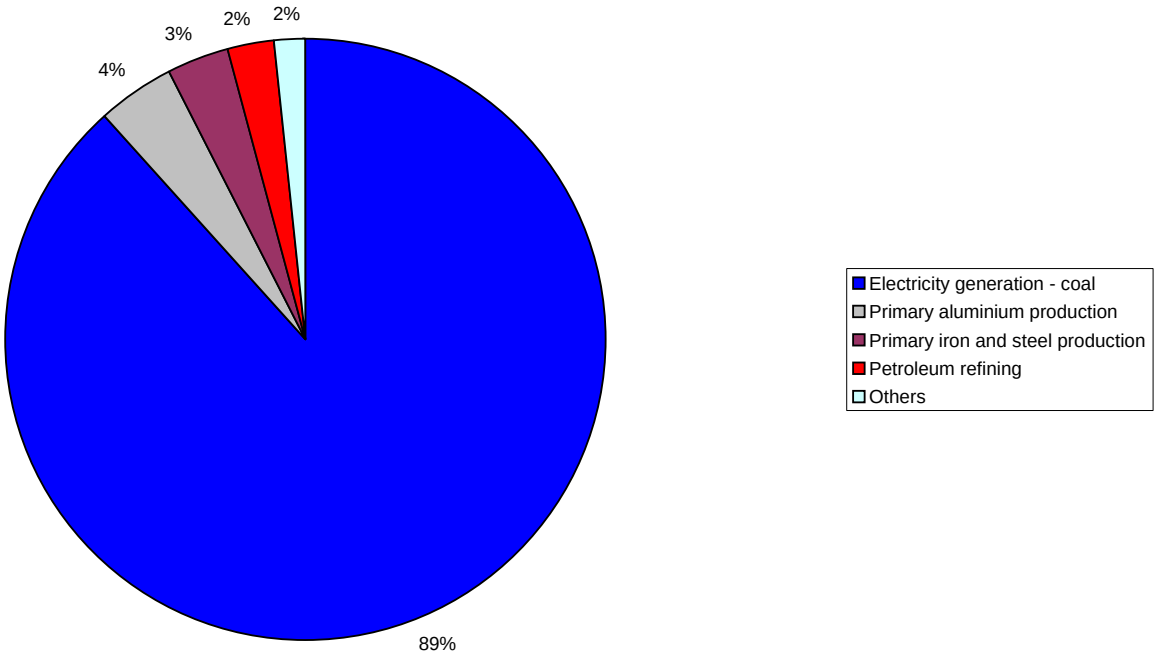

Figure ES1.7: Industrial Emissions of Sulfur Dioxide (SO_2) by NSW Activity Type in the GMR (Total Emissions = 296,000 tonnes/year)

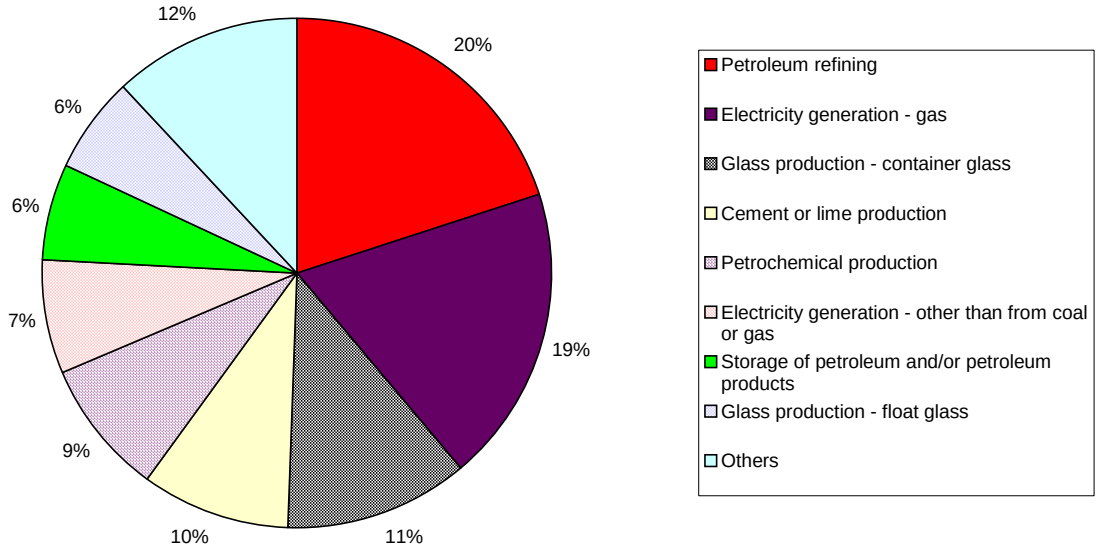

Figure ES1.8: Industrial Emissions of Oxides of Nitrogen (NO_x) by NSW Activity Type in Sydney (Total Emissions = 14,000 tonnes/year)

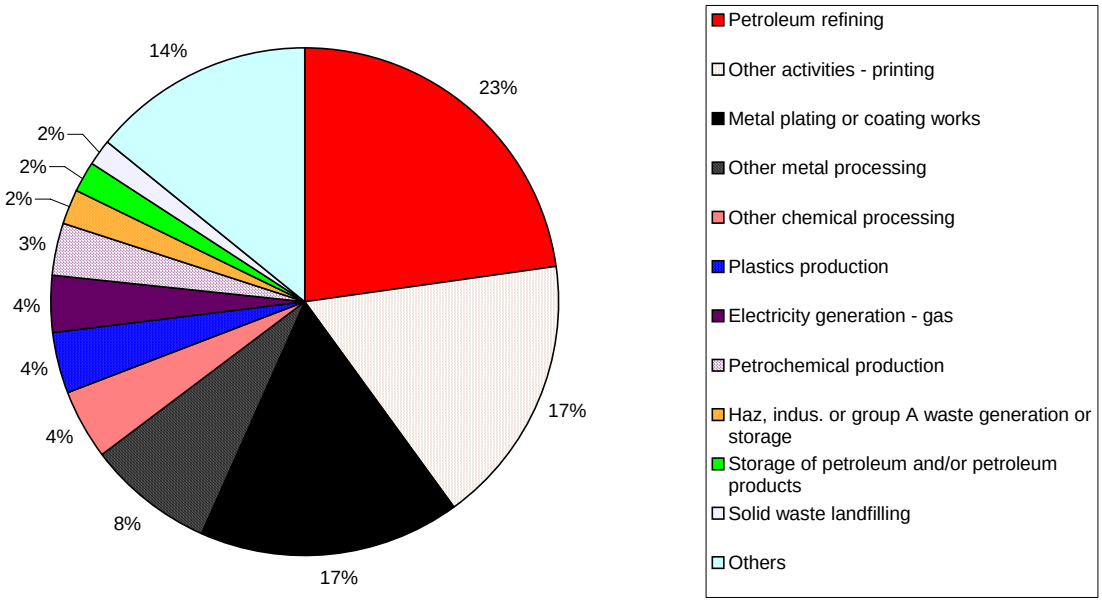

Figure ES1.9: Industrial Emissions of Total VOCs by NSW Activity Type in Sydney (Total Emissions = 14,000 tonnes/year)

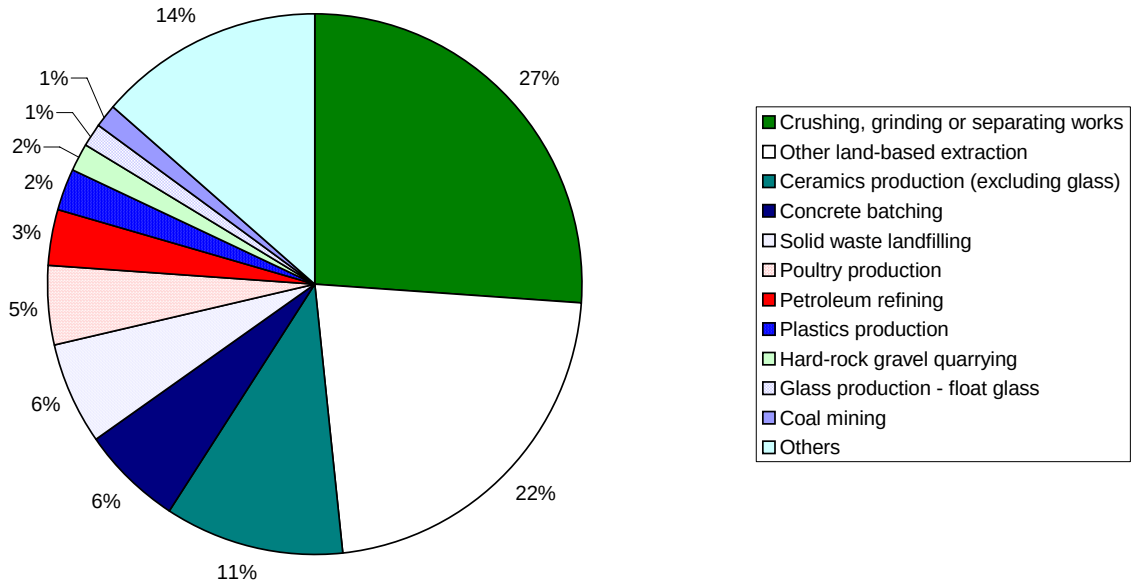

Figure ES1.10: Industrial Emissions of Particles (PM_{10}) by NSW Activity Type in Sydney (Total Emissions = 7,980 tonnes/year)

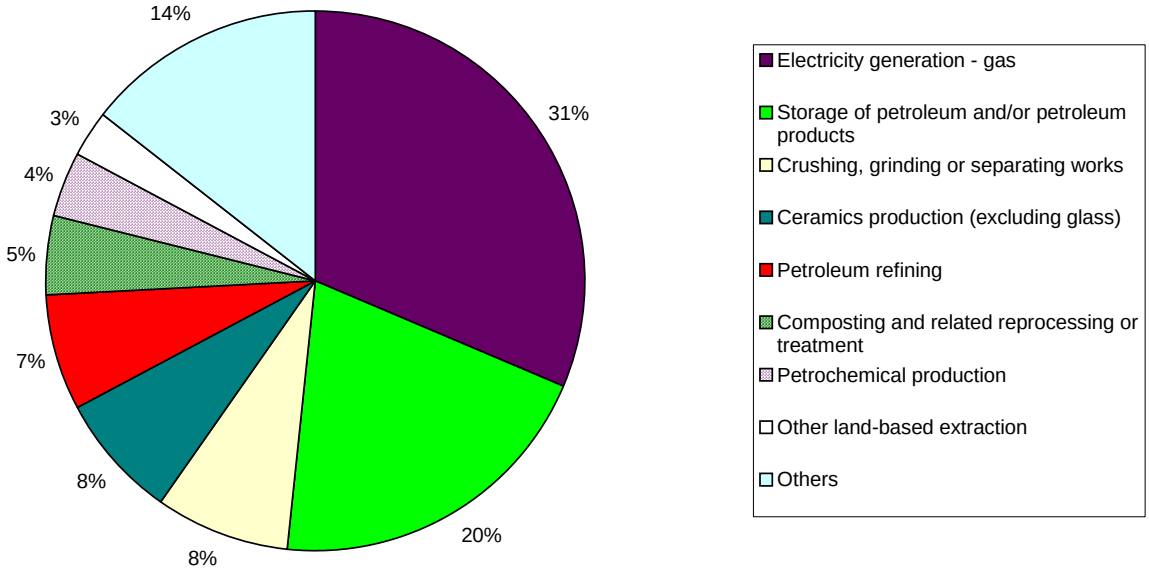

Figure ES1.11: Industrial Emissions of Carbon Monoxide (CO) by NSW Activity Type in Sydney (Total Emissions = 8,000 tonnes/year)

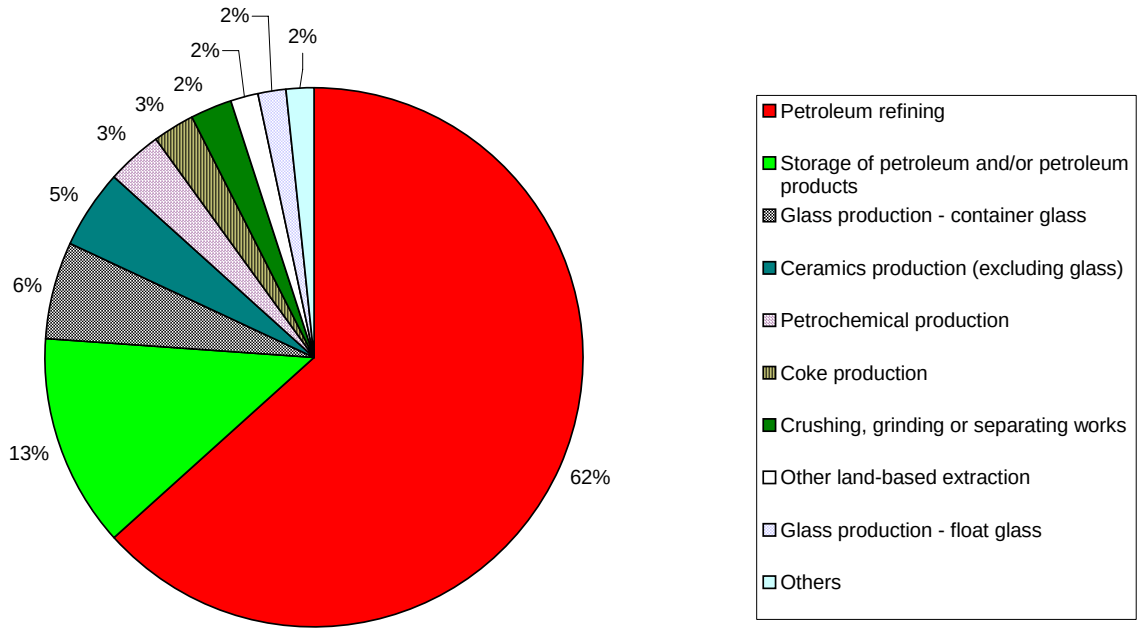

Figure ES1.12: Industrial Emissions of Sulfur Dioxide (SO_2) by NSW Activity Type in Sydney (Total Emissions = 11,000 tonnes/year)

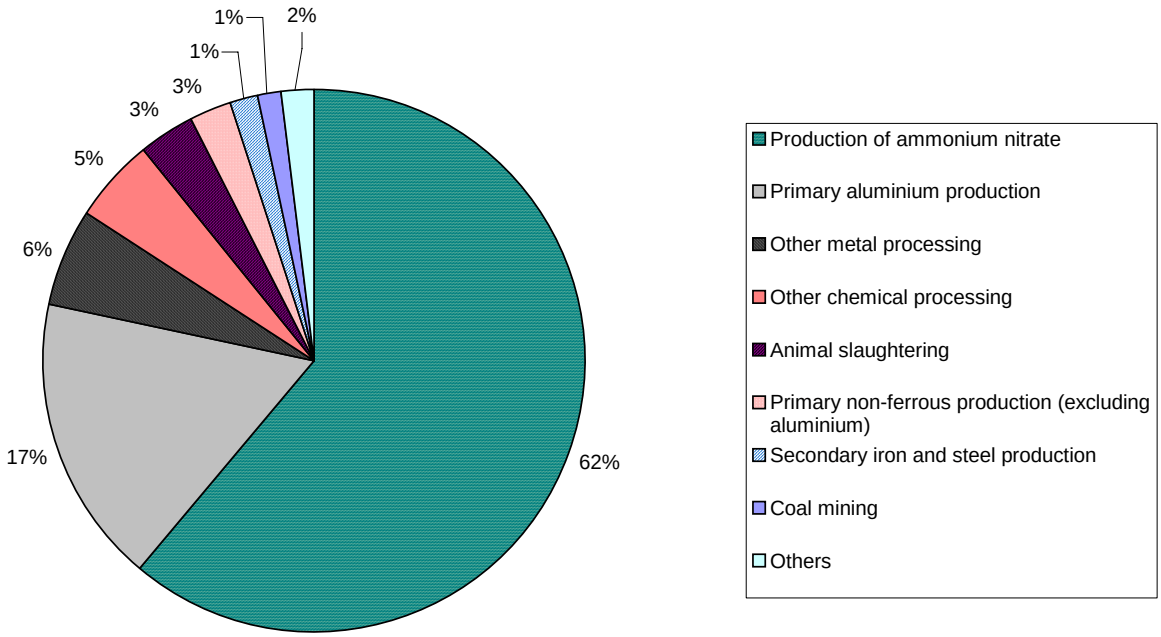

Figure ES1.13: Industrial Emissions of Oxides of Nitrogen (NO_x) by NSW Activity Type in Newcastle (Total Emissions = 1,730 tonnes/year)

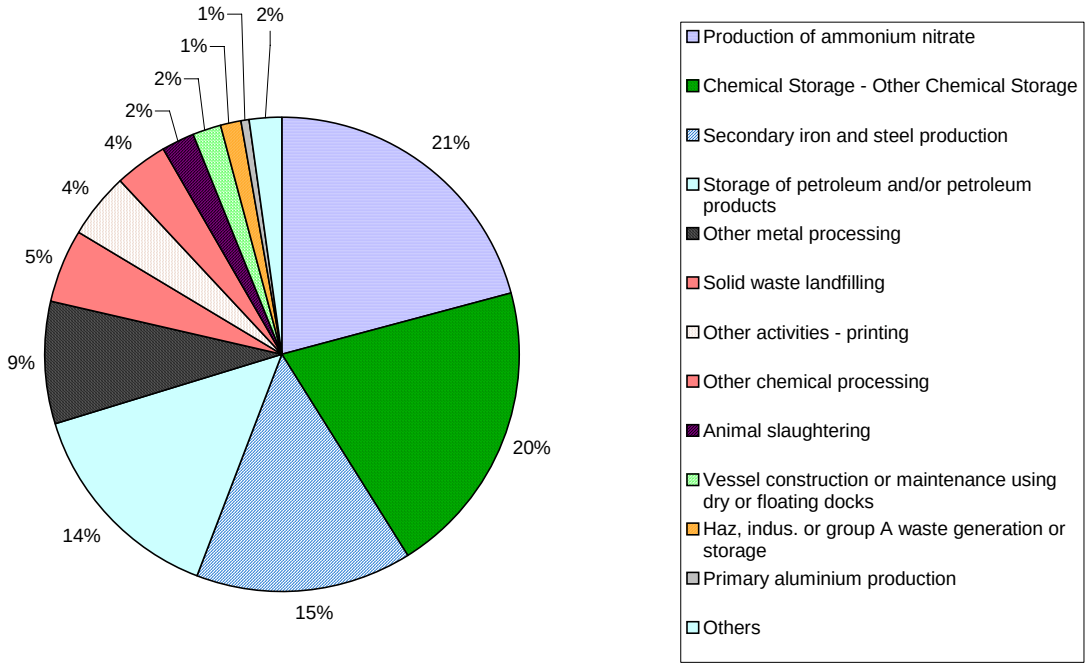

Figure ES1.14: Industrial Emissions of Total VOCs by NSW Activity Type in Newcastle (Total Emissions = 1,270 tonnes/year)

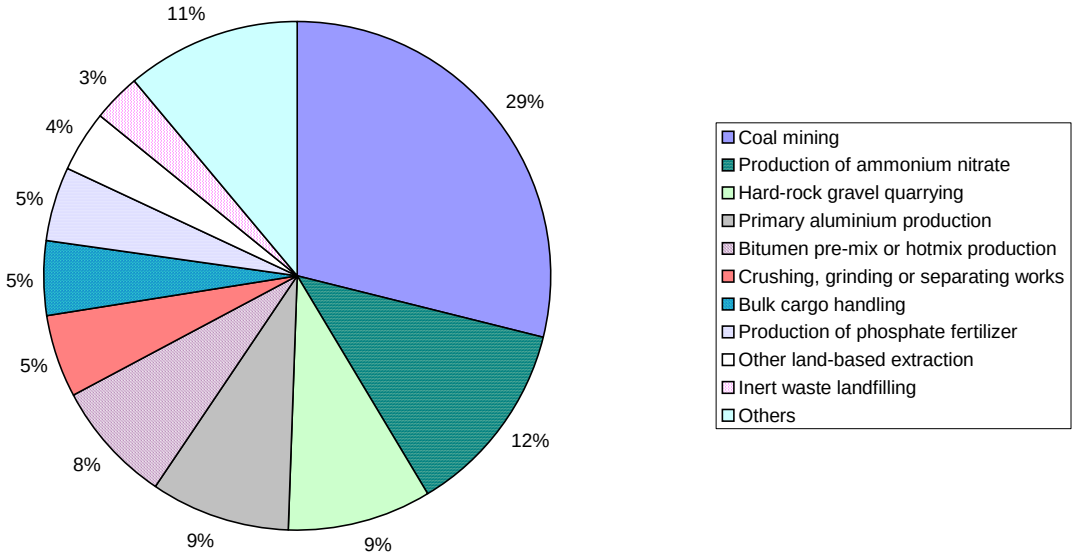

Figure ES1.15: Industrial Emissions of Particles (PM_{10}) by NSW Activity Type in Newcastle (Total Emissions = 1,710 tonnes/year)

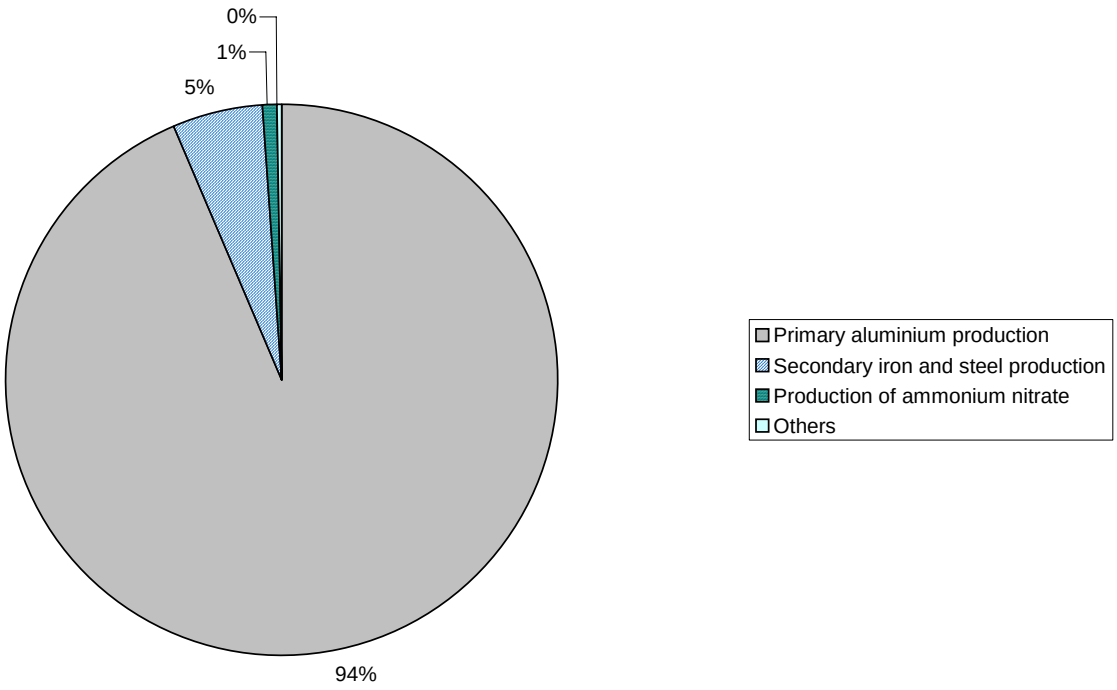

Figure ES1.16: Industrial Emissions of Carbon Monoxide (CO) by NSW Activity Type in Newcastle (Total Emissions = 47,800 tonnes/year)

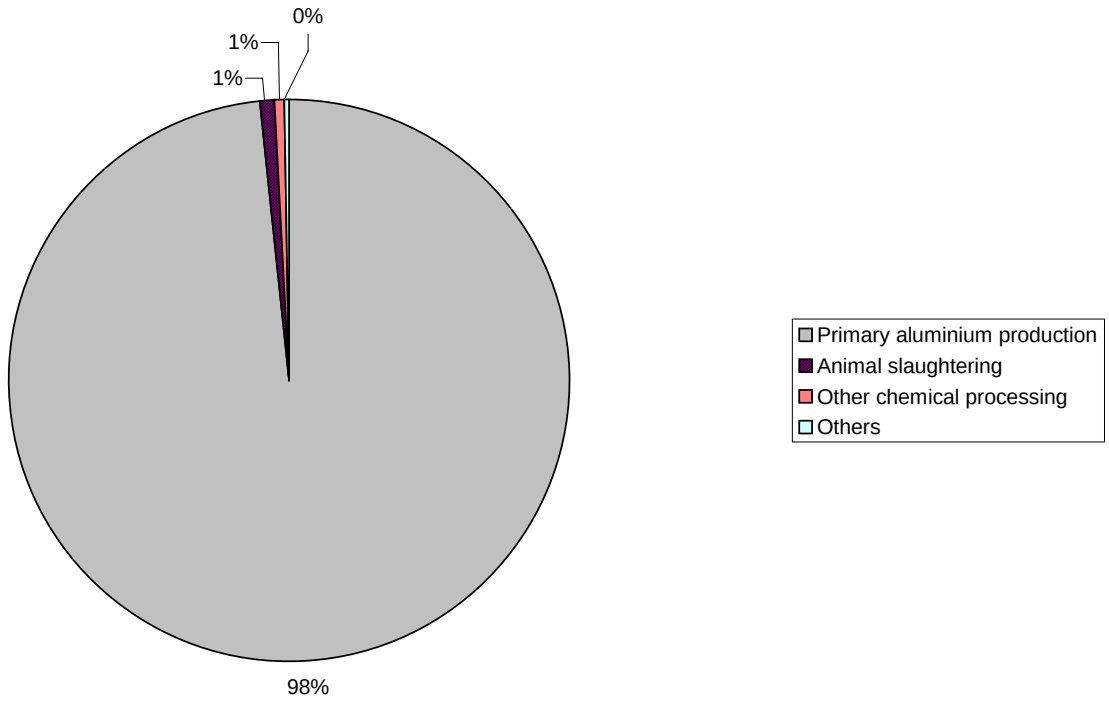

Figure ES1.17: Industrial Emissions of Sulfur Dioxide (SO_2) by NSW Activity Type in Newcastle (Total Emissions = 9,300 tonnes/year)

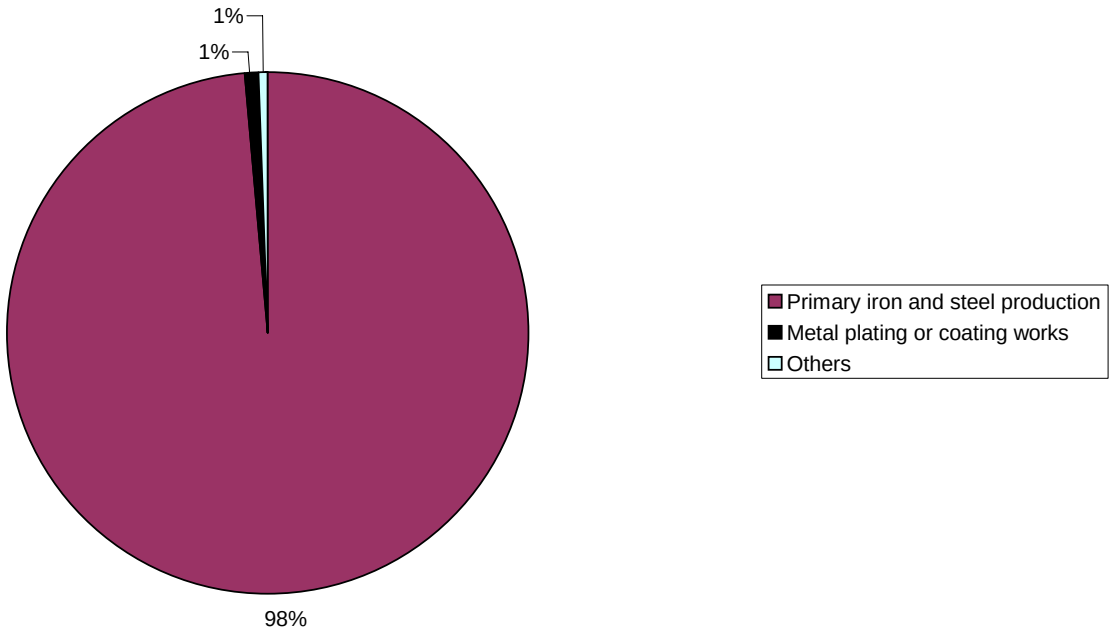

Figure ES1.18: Industrial Emissions of Oxides of Nitrogen (NO_x) by NSW Activity Type in Wollongong
(Total Emissions = 7,930 tonnes/year)

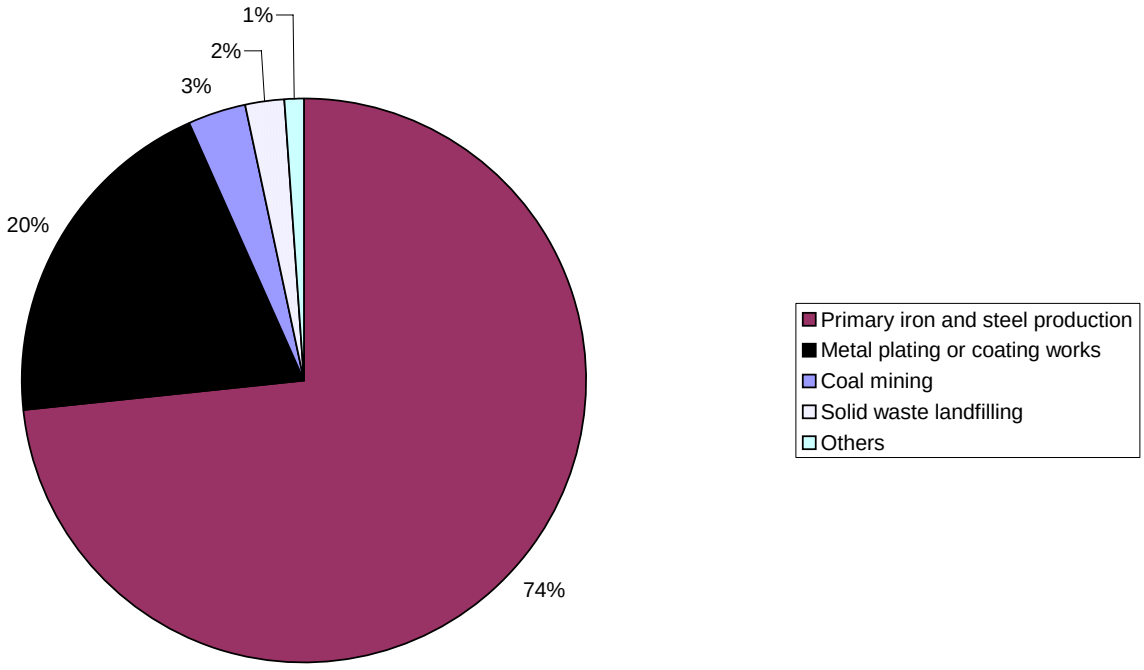

Figure ES1.19: Industrial Emissions of Total VOCs by NSW Activity Type in Wollongong
(Total Emissions = 788 tonnes/year)

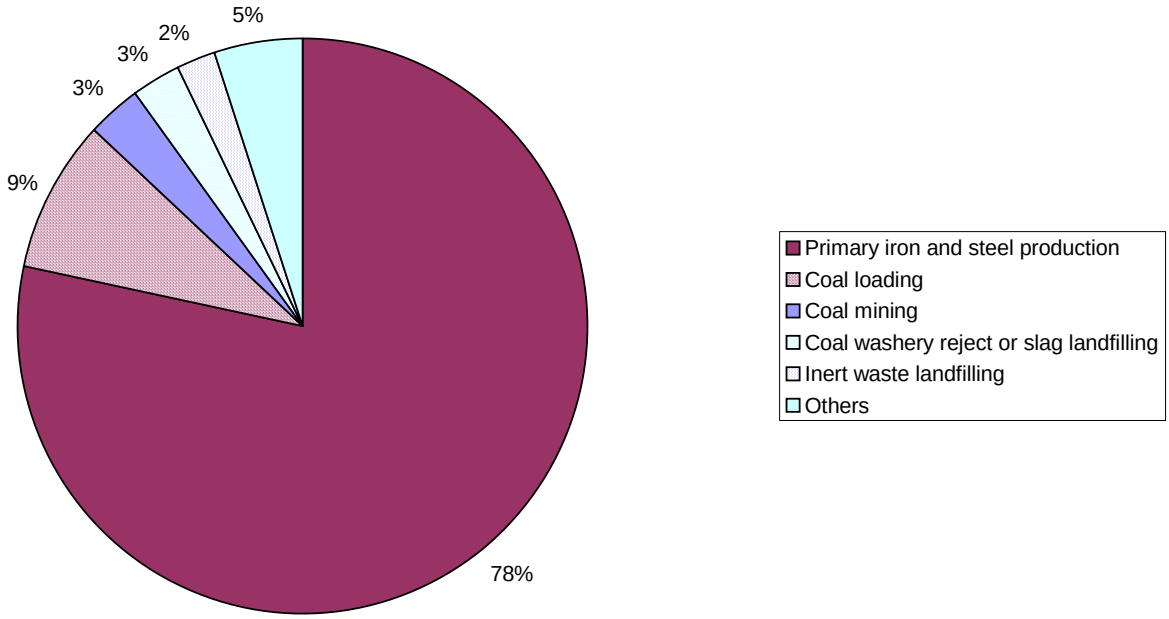

Figure ES1.20: Industrial Emissions of Particles (PM_{10}) by NSW Activity Type in Wollongong (Total Emissions = 2,070 tonnes/year)

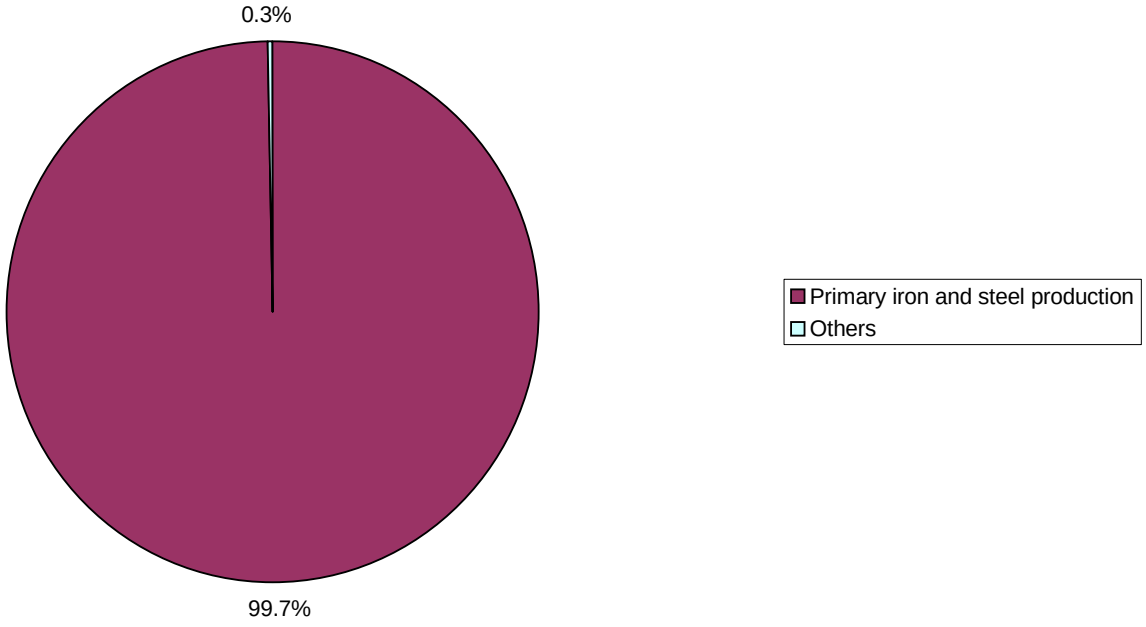

Figure ES1.21: Industrial Emissions of Carbon Monoxide (CO) by NSW Activity Type in Wollongong (Total Emissions = 522,000 tonnes/year)

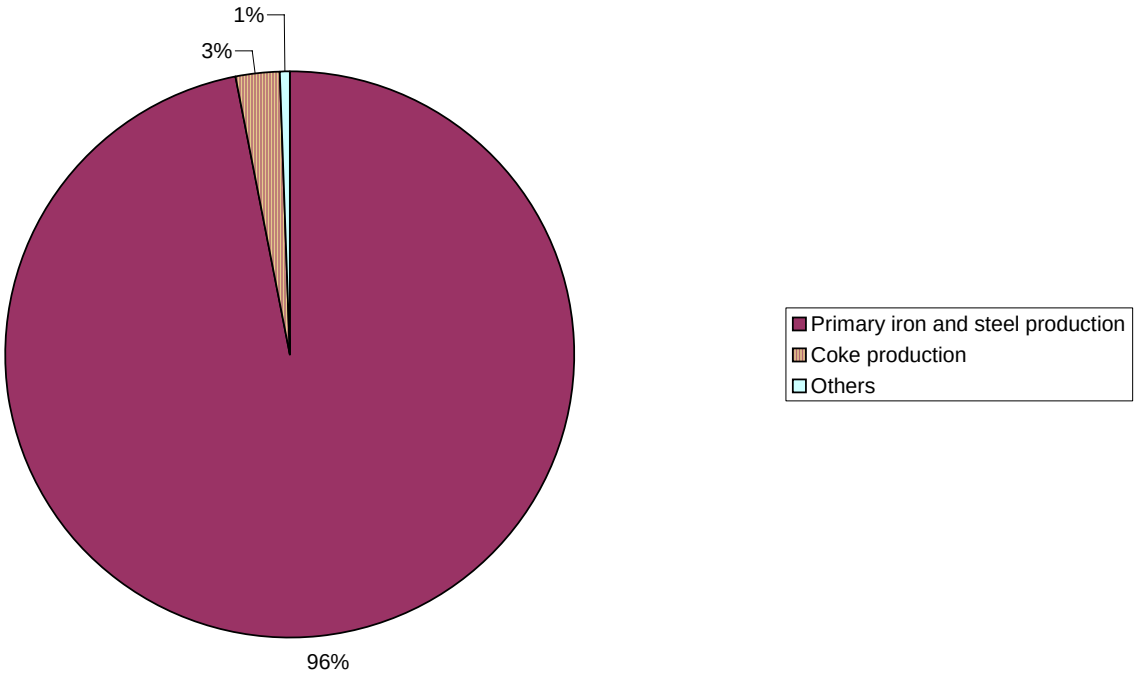

Figure ES1.22: Industrial Emissions of Sulfur Dioxide (SO_2) by NSW Activity Type in Wollongong (Total Emissions = 10,300 tonnes/year)

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1 INTRODUCTION

The Department of Environment and Climate Change NSW (DECC), in collaboration with Pacific Air & Environment (Bawden et. al., 2006) has completed a three year air emissions inventory project for industrial sources. The base year of the industrial inventory represents activities that took place during the 2003 calendar year and is accompanied by emission projections in yearly increments up to the 2031 calendar year. The area included in the study covers greater Sydney, Newcastle and Wollongong regions, known collectively as the Greater Metropolitan Region (GMR).

Bawden et. al. (2004) describes the emission estimation methodologies used for this project. This report is intended to be used in conjunction with the methodology report (Bawden et. al., 2004).

The purpose of this reference document is to focus on the results of the industrial emissions inventory. The information is structured as follows:

- A description of the inventory specifications (Section 2) including:
  - A description of the study region (Section 2.1);
  - A description of emission sources considered (Section 2.2)
  - A description of the pollutants evaluated (Section 2.3).
  - A broad discussion of the methodology (Section 2.4).
- A description of each source type considered, including all facilities included in each source type and total emissions estimated from each source type (Section 3)
- An emissions summary for selected substances presented by NSW Activity Type and ANZSIC class for the GMR, Sydney, Newcastle and Wollongong areas (Section 4)
- A description of the emissions inventory software developed for this project to compile the industrial emissions inventory (Section 5)
- A complete list of references (Section 6)
- Sample industrial questionnaire used to collect data (Appendix A)
- Total industrial emissions of all substances emitted in the GMR, Sydney, Newcastle and Wollongong areas and the percentage contribution from each area to total emissions in the GMR (Appendix B)
- A list of default organic speciation profiles used to speciate organic emissions (Appendix C)

2 INVENTORY SPECIFICATIONS

2.1 The Study Region

The study region defined as the Greater Metropolitan Region measures 210 km (east-west) by 273 km (north-south). The study region is defined in Table 2.1 and shown in Figure 2.1.

Table 2.1: Definition of Greater Metropolitan, Sydney, Newcastle and Wollongong Regions

Region	South-west corner MGA [1] co-ordinates		North-east corner MGA [1] co-ordinates	
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[1] MGA = Map Grid of Australia based on the Geocentric Datum of Australia 1994 (GDA94) (ICSM, 2002).

Figure 2.1: Greater Metropolitan Region of NSW

2.2 Emission Sources Considered

Industrial facilities include all NSW Activity Types with the potential for air emissions in the GMR that hold a licence to operate under the Protection of the Environment Operations Act 1997. The industrial emissions inventory includes sources from 1,037 facilities.

The industrial categories[3] include:

- Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate (14a)
- Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer(14b)
- Aircraft (helicopter) Facilities (4)
- Animal Slaughtering (45)
- Battery Production (15)
- Beer or Distilled Alcohol Production (9)
- Biomedical Waste Incineration (74)
- Bitumen Pre-Mix or Hot-Mix Production (8)
- Bulk Cargo Handling (72)
- Cement or Lime Handling (11)
- Cement or Lime Production (10)
- Ceramics Production (excluding Glass) (13)
- Chemical Storage - Other Chemical Storage (25)
- Chemical Storage - Storage of Petroleum and/or Petroleum Products (25)
- Coal Loading (28)
- Coal Mining (26)
- Coal Washery Reject or Slag Landfilling (78)
- Coke Production (27)
- Concrete Batching (30)
- Contaminated Soil Treatment (31)
- Composting and Related Reprocessing or Treatment
- Crushing, Grinding or Separating Works (32)
- Drum or Container Reconditioning (33)
- Electricity Generation - Generation of electrical power from coal (34[a])
- Electricity Generation - Generation of electrical power from gas (34[b])
- Electricity Generation - Generation of electrical power other than from coal or gas (34[c])
- Explosive or Pyrotechnics Production (16)
- Freeway or Tollway Construction (38)
- Glass Production - Production of container glass (12[a])

[3] Schedule 1 of the Protection of the Environment Operations Act 1997 is used to identify industrial facility groups

- Glass Production - Production of float glass (12[b])
- Hard-Rock Gravel Quarrying (36)
- Hazardous, Industrial or Group A or Group B Waste Processing (75)
- Landfills
- Metal Plating or Coating Works (61)
- Milk Processing (1)
- Mining (Other than Coal) (64)
- Mooring and Boat Storage (52)
- Other Activities – Bread Manufacturing (94)
- Other Activities – Cake and Pastry Manufacturing (94)
- Other Activities – Confectionary Manufacturing (94)
- Other Activities – Dry Cleaning (94)
- Other Activities – Oil and Fat Manufacturing (94)
- Other Activities – Printing (94)
- Other Activities – Services to Air Transport (94)
- Other Activities – Soft Drink Manufacturing (94)
- Other Agricultural Crop Processing (3)
- Other Chemical Processing (24)
- Other Land-Based Extraction (37)
- Other Livestock Processing (50)
- Other Metals Processing (63)
- Other Paper Production (67)
- Other Vessel Construction or Maintenance (54)
- Paint Production (17)
- Paper Production using Recycled Materials (66)
- Pesticides Production (19)
- Petroleum Refining (68)
- Pharmaceutical or Veterinary Products Production (20)
- Plastics Production (21)
- Poultry Production (43)
- Primary Aluminium Production (57)
- Primary Iron and Steel Production (55)
- Primary Non-Ferrous Production (excluding Aluminium) (59)
- Railway Activities (70)
- Rendering or Fat Extraction (47)
- Scrap Metal Recovery (62)
- Secondary Aluminium Production (58)
- Secondary Iron and Steel Production (56)
- Secondary Non-Ferrous Production (excluding Aluminium) (60)
- Sewage, Water and Wastewater Treatment

- Soap or Detergent Production (23)
- Unaccounted industrial gaseous, liquid and solid fuel burning
- Used Tyre Processing or Disposal (76)
- Vessel Construction or Maintenance Using Dry or Floating Docks (53)
- Waste Oil Recovery (69)
- Waste Storage, Transfer, Separating or Processing (84)
- Wood or Timber Milling (86)
- Wood Preservation (87)

Exhaust emissions from industrial off-road vehicles and emissions of wheel generated have been included in the off-road mobile emissions inventory (DECC, 2007a), while emissions from off-road vehicle specific processes (e.g. material loading by a front-end loader) have been included in the industrial emissions inventory. Emissions from wind erosion on unpaved roads have been included in the biogenic emissions inventory (DECC, 2007b).

2.3 Pollutants Evaluated

The following pollutants have been considered:

- Substances included in the National Pollutant Inventory (NPI) National Environment Protection Measure (NEPM) (NEPC, 2000);
- Pollutants included in the Air Quality National Environment Protection Measure (NEPM) (NEPC, 2003);
- Pollutants included in the Air Toxics National Environment Protection Measure (NEPM) (NEPC, 2004);
- Pollutants associated with the Protection of the Environment Operations (Clean Air) Regulation 2002 (PCO, 2005);
- Air pollutants associated with Load Based Licensing (Protection of the Environment Operations (General) Regulation 1998 (DEC, 2002 & PCO, 1998));
- Speciation of oxides of nitrogen for photochemical modelling (i.e. NO and NO_2) [4];
- Speciated organic compounds for photochemical modelling sourced from Carter (2003);
- Speciated particulate emissions (i.e. TSP (total suspended particulate), PM_{10} (particulate matter with an aerodynamic diameter < 10 μm) and $PM_{2.5}$ (particulate matter with an aerodynamic diameter < 2.5 μm)) [5];

[4] The default NO_x speciation profile used in the inventory is 5% NO_2 (USEPA, 2002)

[5] TSP includes airborne dust of all size ranges including PM_{10} and $PM_{2.5}$. PM_{10} is a subclass of TSP and is defined as particles with an aerodynamic diameter of 10 μm or less. $PM_{2.5}$ is also a subclass of TSP and PM_{10} and is defined as particles with an aerodynamic diameter of 2.5 μm or less. Total Suspended Particulate (TSP) is normally associated with impacts on visibility and amenity values, whereas the fraction of particulate up to 10 microns in diameter (PM_{10}) has commonly been used as a measure of the potential for adverse human health impacts. Recently, however, focus has also been directed towards the $PM_{2.5}$ fraction due to its ability to penetrate deeper into the lungs.

- Environment Protection Authority of Victoria air toxic pollutants sourced from *Hazardous Air Pollutants - A Review of Studies Performed in Australia and New Zealand* (EPAV, 1999);
- Commonwealth Government Air Toxics Program Technical Advisory Group (13 March 2000) priority air pollutants (DEH, 2001);
- U.S. Environmental Protection Agency list of 189 Hazardous Air Pollutants (USEPA, 2004a);
- Air pollutants included in the Office of Environmental Human Health Assessment (OEHHA)/Air Resources Board (ARB) 'hot spots' list (CARB, 2005);
- NSW DEC regulated pollutants with design ground level concentrations (DEC, 2005);
- USEPA priority PAHs (Keith et. al., 1979); and
- WHO97 dioxin and furans and PCBs (Van den Berg et. al., 1998).

2.4 Methodology Overview

This section contains a broad overview of the methodology used to build the industrial emissions inventory. For more detailed information please refer to the industrial methodology report (Bawden et. al., 2004).

The methodology used to build the industrial emissions inventory involves the following steps:

1. Industrial Facility Identification

Industrial facilities in this project include all facilities with the potential for air emissions in the GMR that hold a licence to operate under the Protection of the Environment Operations Act 1997. Facility addresses have been geocoded to obtain a spatial location for each facility. The geocoding process queried calibrated street map layers to search for the postcode, suburb, street name and street number in order to return the most accurate MGA (Map Grid of Australia) coordinates for the facility (the datum used is GDA94). Where the street number could not be located the street centroid coordinate was returned. Where the street name could not be found the suburb centroid was returned. The statistics from the geocoding process are presented in Table 2.2.

Table 2.2: Results from Geocoding Process

Geocoding Accuracy	Number of facilities
Accurate to facility street number	546
Accurate to facility street	356
Accurate to facility suburb	134
Total	**1037**

The coordinates have been used to spatially allocate facility emission sources unless more accurate data have been. Where industrial facilities provided specific coordinates for emission sources, the default coordinates generated from geocoding have been overwritten.

2. Industry Type Specific Emission Source Identification

Once all facilities were located, all possible emission sources from each industry type (separated into NSW licence activities) and the substances emitted from each emission source were identified.

3. Emission Estimation Technique Design

Emission estimation techniques have been designed in line with methodologies approved for National Pollutant Inventory (NPI) reporting. In this project, source emission test data have been used to estimate emissions to air in preference to default methodologies that utilise emission factors.

4. Identification of Required Data to Estimate Emissions

Based on the designed emission estimation techniques the required data to estimate emissions from each source have been identified.

5. Data Acquisition

Industrial questionnaires have been designed for each industrial category to obtain detailed information on manufacturing processes, speciated emissions from stacks and fugitive sources and temporal operational details. Each industrial facility received one questionnaire for each Schedule 1 activity listed on the licence.

A total of 1,090 facilities were mailed questionnaires on 17 November 2004. The industrial questionnaires were sent out under a NSW EPA notice to provide information and/or records under section 191 of the Protection of the Environment Operations Act 1997. Questionnaires were requested to be returned to the NSW EPA by 30 December 2004, after which follow up emails and phone calls were made to premises that had failed to return questionnaires. A further 71 facilities were identified and mailed questionnaires between 10 January 2005 and 14 February 2005. These were also issued under a section 191 notice and the same follow up process was used to ensure accurate and timely responses. In total, 1,161 facilities were mailed a questionnaire, although emissions have only been provided for 1,037 facilities. Emissions from 124 facilities were not estimated as they either surrendered their licence, ceased operations or were subsequently found to be outside the GMR.

All industrial facilities responded to the inventory questionnaire.

The general objective for industrial source surveys was to obtain as much site-specific information as possible. To this end, source test data and site specific emission factors (often derived for regulatory reporting) were requested in the surveys for each type of emission source at the facility. All surveyed facilities were requested to identify every unit process with releases to air and provide site specific source test data, emissions estimates and a basis for these estimates using activity data (e.g. fuel consumed by the process unit).

Facilities were asked a number of questions in the surveys in order to characterise variation in operating hours. Production has been assumed to vary with operating hours for most facilities. This was to simplify the survey (i.e. by not requesting variation of emissions for each source at each facility). Generic temporal profiles have been developed for emission sources where it is clear that emissions are not related to production or operating hours (e.g. tank breathing loss).

Facilities were requested to provide unit process specific emission estimates and data used to estimate emissions. If facility specific, unit process specific emission estimates were not available, or were unreliable, other data, such as production data collected in the survey have been used to estimate emissions. Facilities that submitted insufficient data in the survey were contacted separately to the survey in order to collect the required information.

Sample questionnaires are presented in Appendix A.

6. Data Analysis & Validation

Survey results have been validated with known realistic values (based on experience) and cross-checked with calculations based on responses from other facilities. Emissions from facilities that report to the NPI have been cross-checked with inventory estimates as a validation step.

7. Deriving Industry Type Specific Projection Factors

Projection factors for each industry type have been developed using published industry data and population growth statistics. The projection methodology used for each industrial sector is presented in Section 3. Projection factors have been derived based on either ABARE (Australian Bureau of Agricultural and Resource Economics) national or state projection data (e.g. *Australian Energy, National and State Projections to 2029/2030*, ABARE, 2005b) or national or state population growth data (ABS, 2001; TPDC, 2004).

Projection factors have been developed for every year from 2004 to 2031 (emissions for the base year 2003 are based on responses to the inventory questionnaire and emission estimation techniques).

The projection factors for each source are used to estimate emissions in future annual periods using the following formula:

$$E_{i,j,k,n} = E_{i,j,k,2003} \times PF_{j,k,n}$$

where:

$E_{i,j,k,n}$	=	Emission of substance i from location j for source type k for year n	(kg/year)
$E_{i,j,k,2003}$	=	Emission of substance i from location j for source type for the base year, 2003	(kg/year)
$PF_{j,k,n}$	=	Projection factor for location j for source type k for year n (relative to the base year)	(tonnes/year)

The projection methodology for each industrial sector is presented in Section 3.

8. Emissions Estimation

Emissions have been estimated using data supplied in the industrial questionnaires. Where available, source test data has been used in preference to default emission estimation techniques. Generally emissions have been estimated using emission factors sourced from manuals published for NPI or from USEPA AP-42 documents. Specific details can be found in the methodology report (Bawden et. al., 2004).

3 RESULTS

Emissions have been calculated based on information supplied in the returned questionnaires, other data available from industry personnel, USEPA, CARB and NPI emission factors for various engineering and combustion processes. Where monitoring data or stack test data were available, this was used in preference to literature emission rates. All emissions are calculated by a specifically designed database which stores facility details and emission sources and uses NPI and USEPA emission factors to estimate emission loads.

In this section the term "combustion products" is intended to include TSP, PM_{10}, $PM_{2.5}$, SO_2, CO, NO_x and VOCs (total and speciated). The term "particulate matter" refers to TSP, PM_{10} and $PM_{2.5}$.

In this section total emissions are presented for each NSW Activity Type for the GMR, Sydney, Newcastle and Wollongong regions in all cases and emissions released in the "Non-Urban" region for Activity types where emissions in this area are significant. The "Non-Urban" region is defined as the area within the GMR that is not bounded by Sydney, Newcastle or Wollongong. Emissions are presented for the following pollutants only:

- 1,3 butadiene (1,3-BUT)
- Acetaldehyde (ACET)
- Benzene (BENZ)
- Carbon monoxide (CO)
- Formaldehyde (HCHO)
- Isomers of xylene (XYLE)
- Lead & compounds (Pb)
- Oxides of nitrogen (NO_x)
- Particulate matter < 10 µm (PM_{10})
- Particulate matter < 2.5 µm ($PM_{2.5}$)
- Perchloroethylene (PERC)
- Polycyclic aromatic hydrocarbons (PAHs)
- Sulfur dioxide (SO_2)
- Toluene (TOLU)
- Total suspended particulates (TSP)
- Total VOCS (VOCs)
- Trichloroethylene (TCE)

These substances have been selected since they are: the most common air pollutants found in airsheds according to the National Pollutant Inventory NEPM (NEPC, 2000); referred to in National Environment Protection Measures (NEPMs) for criteria pollutants (NEPC, 2003) and air toxics (NEPC, 2004); and have been classified as priority air pollutants (NEPC, 2005).

Emissions from all sources and substances considered in this study are presented in Appendix B.

Aspects common to all sectors are described here:

Emission Sources

Many industrial facilities include combustion, wastewater treatment, fuel and organic liquid storage and handling operations, process fugitives, wastewater treatment, fuel/solvent storage and surface coating operations. All surveys have been designed to collect this information and where indicated in returned surveys, emissions have been included in the inventory for each facility.

Activity Data and Assumptions

Data provided in the returned questionnaires allowed for the estimation of emissions from all sources. Default speciation profiles used to estimate speciated emissions of organics are provided in Appendix C. NPI emission factors have been used to estimate emissions of metals. All emission factors are stored and referenced within the database.

If stack parameters have not been provided and could not be determined in consultation with each facility the following assumptions have been made:

- Stack emissions of combustion products:
  - Diameter = 0.5 m
  - Temperature = 423 K
  - Velocity = 10 m/s
- Stack emissions of non-combustion products:
  - Diameter = 0.5 m
  - Temperature = 298 K
  - Velocity = 10 m/s

Where stack height has not been provided, each facility was contacted and requested to provide an estimate.

Temporal Variation

Process emissions have been assumed to vary in direct proportion to the change in production rates over a typical year which was supplied in returned questionnaires. The temporal variation in emissions includes hourly, weekday, weekend day and monthly temporal factors. These data are stored in the industrial inventory database.

Temporal variations of evaporative emissions from fuel tanks have been calculated using the USEPA TANKS program.

3.1 Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate (14a)

3.1.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.1.

Table 3.1: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No [a]	Facility Street	Facility Suburb	Facility Post Code
ORICA AUSTRALIA PTY LTD	828	GREENLEAF ROAD	KOORAGANG	2304

[a] Environment Protection Licence Number

The emission sources and associated releases to air considered from the production of ammonium nitrate are outlined in Table 3.2.

Table 3.2: Production of Ammonium Nitrate - Emission Sources

Process	Emissions to Air
Solutions formation process (neutraliser)	PM, NH_3, nitric acid
Solutions formation process (evaporator/concentrator)	NH_3, PM
Solids formation process (prill towers)	NH_3, PM
Coolers and dryers	NH_3, PM
Bulk loading operations	PM
Combustion	Combustion products
Fuel storage	VOCs
Process fugitives	NH_3

3.1.2 Emissions Estimation Methodology

Emissions from each source have been estimated using techniques provided in the *NPI Emission Estimation Technique (EET) Manual for Explosives Manufacturing* (Environment Australia, 1999a) and data supplied in the industrial questionnaire. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.1.3 Emissions Estimation

Estimated emissions from the production of ammonium nitrate within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.3.

Table 3.3: Estimated Emissions from the Production of Ammonium Nitrate

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	4,980	0	4,980
BENZENE	0	23,900	0	23,900
CARBON MONOXIDE	0	302,900	0	302,900
FORMALDEHYDE	0	2,380	0	2,380
ISOMERS OF XYLENE	0	1,310	0	1,310
LEAD & COMPOUNDS	0	1.15	0	1.15
OXIDES OF NITROGEN	0	1,056,000	0	1,056,000
PARTICULATE MATTER 10µm	0	210,300	0	210,300
PARTICULATE MATTER 2.5µm	0	207,000	0	207,000
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	1.58	0	1.58
SULFUR DIOXIDE	0	1,200	0	1,200
TOLUENE	0	5,570	0	5,570
TOTAL SUSPENDED PARTICULATES (TSP)	0	240,800	0	240,800
TOTAL VOCS	0	265,500	0	265,500
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.1.4 Projection Factors

Projection factors for production of ammonium nitrate have been derived based on population projections provided by the Transport and Population Data Centre (TPDC) (ABS, 2001; TPDC, 2004), NSW Department of Planning. TPDC provided population data on a 1 km by 1 km resolution for the entire GMR for the years 2001, 2006, 2011, 2016, 2021, 2026 and 2031. This methodology assumes that growth in the production of ammonium nitrate is proportional to population growth. Projection factors have been derived for each year by interpolating the population data for the GMR between each year provided.

The total population for the GMR provided by TPDC and the interpolated population for every year is shown in Figure 3.1.

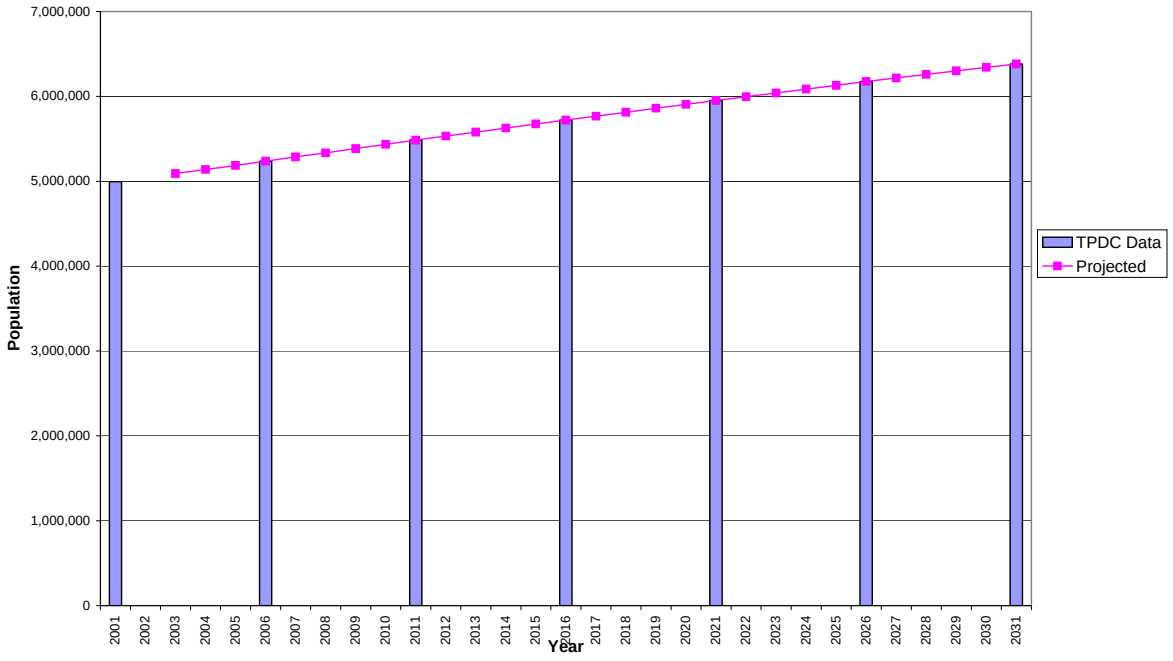

Figure 3.1: Total Population Data and Derived Projected Population for the GMR

The projection factors for the production of ammonium nitrate for every year from 2004 to 2031 are provided in Table 3.4.

Table 3.4: Projection Factors Based on Population Growth in the GMR

Year	Population	Projection Factor
2003	5,091,366	1.0000
2004	5,139,643	1.0095
2005	5,187,921	1.0190
2006	5,236,198	1.0284
2007	5,286,032	1.0382
2008	5,335,865	1.0480
2009	5,385,699	1.0578
2010	5,435,532	1.0676
2011	5,485,366	1.0774
2012	5,532,565	1.0867
2013	5,579,765	1.0959
2014	5,626,964	1.1052
2015	5,674,164	1.1145
2016	5,721,363	1.1237
2017	5,767,510	1.1328
2018	5,813,657	1.1419
2019	5,859,804	1.1509
2020	5,905,950	1.1600
2021	5,952,097	1.1691
2022	5,996,685	1.1778
2023	6,041,272	1.1866
2024	6,085,860	1.1953
2025	6,130,448	1.2041
2026	6,175,035	1.2128
2027	6,216,713	1.2210
2028	6,258,391	1.2292
2029	6,300,068	1.2374
2030	6,341,746	1.2456
2031	6,383,424	1.2538

[a] Source: Transport and Population Data Centre, NSW Department of Planning (ABS, 2001; TPDC, 2004)

3.2 Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer (14b)

3.2.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.5.

Table 3.5: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
INCITEC COCKLE CREEK WORKS	208	MAIN ROAD	BOOLAROO	2284
ORICA CHEMNET	549	DARCY ROAD	PORT KEMBLA	2505
INCITEC PIVOT	11781	HERON ROAD	KOORAGANG	2304

The emission sources and associated releases to air from the production of phosphate fertilizer are outlined in Table 3.6.

Table 3.6: Production of Phosphate Fertilizer - Emission Sources

Process	Emissions to Air
Phosphate rock loading	PM
Rock feeding	PM
Mixer and den	PM, fluoride
Curing building	PM, fluoride
Combustion	Combustion products
Fuel storage	VOCs
Wind erosion of stockpiles	PM

3.2.2 Emissions Estimation Methodology

Emissions from each source have been estimated using techniques provided in the *NPI EET Manual for Phosphate Manufacturing v2.0* (Environment Australia, 2004a) and data supplied in the industrial questionnaire. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.2.3 Emissions Estimation

Estimated emissions from the production of phosphate fertilisers within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.7.

Table 3.7: Estimated Emissions from the Production of Phosphate Fertilizer

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	0	27.5	72.1	100
CARBON MONOXIDE	0	5,320	1,420	6,740
FORMALDEHYDE	0	55.0	144	199
ISOMERS OF XYLENE	0	0.13	0.09	0.22
LEAD & COMPOUNDS	0	0.028	0.01	0.04
OXIDES OF NITROGEN	0	5,504	8,250	13,754
PARTICULATE MATTER 10µm	0	79,300	2,920	82,220
PARTICULATE MATTER 2.5µm	0	77,600	2,420	80,020
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0.04	0.01	0.05
SULFUR DIOXIDE	0	44.6	20,720	20,765
TOLUENE	0	13.8	36.1	50
TOTAL SUSPENDED PARTICULATES (TSP)	0	83,000	3,540	86,540
TOTAL VOCS	0	304	794	1,098
TRICHLOROETHYLENE (TCE)	0	0	0	0

[a] Totals may not appear additive due to rounding

3.2.4 Projection Factors

Projection factors for production of phosphate fertilizer have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that growth in the production of phosphate fertiliser is proportional to population growth. The projection factors are described in Section 3.1.4.

3.3 Aircraft (helicopter) Facilities (4)

3.3.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.8.

Table 3.8: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
CHANNEL SEVEN SYDNEY	2915	MOBBS LANE	EPPING	2121
TCN CHANNEL NINE PTY LIMITED	2989	24 ARTARMON ROAD	WILLOUGHBY	2068
PARRAMATTA - GRANVILLE SPORTSGROUND	3906	25 WENTWORTH STREET	GRANVILLE	2142
NEWCASTLE PORT CORPORATION	10772	LOT 30 DP 871235 - DYKE POINT	CARRINGTON	2294

The emission sources and associated releases to air from aircraft (helicopter) facilities are outlined in Table 3.9.

Table 3.9: Aircraft (Helicopter) Facilities – Emission Sources

Process	Emissions to Air
Fuel storage	VOCs

3.3.2 Emissions Estimation Methodology

Emissions from aircraft (helicopter) facilities have been estimated using techniques provided in the *NPI EET Manual for Fuel and Organic Liquid Storage, Version 2.4* (Environment Australia, 2004b) and data supplied in the industrial questionnaire. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.3.3 Emissions Estimation

Estimated emissions from aircraft (helicopter) facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.10.

Table 3.10: Estimated Emissions from Aircraft (Helicopter) Facilities

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	0	0	0	0
CARBON MONOXIDE	0	0	0	0
FORMALDEHYDE	0	0	0	0
ISOMERS OF XYLENE	0	0	0	0
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	0	0	0	0
PARTICULATE MATTER 10µm	0	0	0	0
PARTICULATE MATTER 2.5µm	0	0	0	0
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	0	0	0	0
TOLUENE	0	0	0	0
TOTAL SUSPENDED PARTICULATES (TSP)	0	0	0	0
TOTAL VOCS	1,540	129	0	1,670
TRICHLOROETHYLENE (TCE)	0	0	0	0

[a] Totals may not appear additive due to rounding

3.3.4 Projection Factors

Projection factors for aircraft (helicopter) facilities have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that the growth in activity at aircraft (helicopter) facilities is proportional to population growth. The projection factors are described in Section 3.1.4.

3.4 Animal Slaughtering (45)

3.4.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.11.

Table 3.11: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
WOLLONDILLY ABATTOIRS PTY LTD	422	48 KOORANA ROAD	PICTON	2571
HOXTON PARK PROCESSING PLANT	949	KURRAJONG ROAD	HOXTON PARK	2171
BARTTER ENTERPRISES PTY LTD	1329	HAWTHORN STREET	BERESFIELD	2322
TAHMOOR PLANT	1699	ROCKFORD ROAD	TAHMOOR	2573
DPS ABATTOIRS	2656	52-62 KING ROAD	WILBERFORCE	2756
CORDINA CHICKEN FARMS	2880	55 MANDOON RD	GIRRAWEEN	2145
SUMMERTIME CHICKEN PTY LIMITED	3844	26-28 CROSSLANDS ROAD	GALSTON	2159
RED LEA CHICKENS PTY LTD	5069	421-427 FLUSHCOMBE ROAD	BLACKTOWN	2148
SALIM; ALI	5228	26 BELLFIELD AVENUE	ROSSMORE	2171
J.R. BURNETT PTY LTD	7667	MAIN ROAD	KURRI KURRI	2327
BAIADA POULTRY PTY LIMITED	10869	642 GREAT WESTERN HIGHWAY	PENDLE HILL	2145
INGHAMS ENTERPRISES PTY LTD	11401	42 PENDLEBURY ROAD	CARDIFF	2285

The emission sources and associated releases to air for Animal Slaughtering are outlined in Table 3.12.

Table 3.12: Animal Slaughtering - Emission Sources

Process	Emissions to Air
Combustion	Combustion products
Wastewater treatment	VOCs

3.4.2 Emissions Estimation Methodology

Emissions from animal slaughtering facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Combustion in Boilers Version 1.2* (Environment Australia, 2003c)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.4.3 Emissions Estimation

Estimated emissions from animal slaughtering facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.13.

Table 3.13: Estimated Emissions from Animal Slaughtering

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	11.9	77.4	0	0	89.4
BENZENE	61.9	236	0	0.36	299
CARBON MONOXIDE	3,740	2,770	0	60.2	6,580
FORMALDEHYDE	117	440	0	0.72	557
ISOMERS OF XYLENE	543	3,890	0	0	4,434
LEAD & COMPOUNDS	0.03	1.67	0	0	1.70
OXIDES OF NITROGEN	4,980	57,500	0	71.7	62,600
PARTICULATE MATTER 10µm	352	1,870	0	5.45	2,232
PARTICULATE MATTER 2.5µm	352	751	0	5.45	1,109
PERCHLOROETHYLENE	789	5,120	0	0	5,904
POLYCYCLIC AROMATIC HYDROCARBONS	0.03	0.12	0	0	0.15
SULFUR DIOXIDE	59.8	75,900	0	0.37	75,900
TOLUENE	463	2,950	0	0.18	3,420
TOTAL SUSPENDED PARTICULATES (TSP)	353	4,580	0	5.45	4,940
TOTAL VOCS	4,981	30,500	0	3.94	35,500
TRICHLOROETHYLENE (TCE)	96.4	625	0	0	722

[a] Totals may not appear additive due to rounding

3.4.4 Projection Factors

Projection factors for animal slaughtering have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that growth in activity at animal slaughtering facilities is proportional to population growth. The projection factors are described in Section 3.1.4.

3.5 Battery Production (15)

3.5.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.14.

Table 3.14: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
EXIDE TECHNOLOGIES	2088	55 BRYANT STREET	PADSTOW	2211
APOLLO BATTERIES	5050	9/66 ASHFORD AVENUE	MILPERRA	2214
BATTERY ENERGY POWER SOLUTIONS PTY LTD	5803	92-96 FAIRFIELD STREET	FAIRFIELD	2165
CENTURY YUASA BATTERIES PTY. LIMITED	11746	82 VORE STREET	SILVERWATER	2128
CENTURY YUASA BATTERIES	11850	6 BOND CRESCENT	WETHERILL PARK	2164
SAFT	11896	UNIT 18, 167 PROSPECT HIGHWAY	SEVEN HILLS	2147

The emission sources and associated releases to air for battery manufacturing are summarised in Table 3.15.

Table 3.15: Battery Manufacturing – Emission Sources

Source	Emissions to Air
Grid casting	PM
Paste mixing	PM
Lead oxide mill (baghouse outlet)	PM
Three process operation	PM
Lead reclaim furnace	PM
Dry formation	PM, sulfuric acid
Small parts casting	PM

3.5.2 Emissions Estimation Methodology

Emissions from each source have been estimated using techniques provided in the *NPI EET for Lead Acid Battery Manufacturing* (Environment Australia, 1999c) and data supplied in the industrial questionnaire. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.5.3 Emissions Estimation

Estimated emissions from battery manufacturing facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.16.

Table 3.16: Estimated Emissions from Battery Manufacturing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	0	0	0	0
CARBON MONOXIDE	0	0	0	0
FORMALDEHYDE	0	0	0	0
ISOMERS OF XYLENE	0	0	0	0
LEAD & COMPOUNDS	952	0	0	952
OXIDES OF NITROGEN	0	0	0	0
PARTICULATE MATTER 10µm	4,130	0	0	4,130
PARTICULATE MATTER 2.5µm	4,130	0	0	4,130
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	0	0	0	0
TOLUENE	0	0	0	0
TOTAL SUSPENDED PARTICULATES (TSP)	4,130	0	0	4,130
TOTAL VOCS	0	0	0	0
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.5.4 Projection Factors

Projection factors for battery production have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that growth in activity at battery production facilities is proportional to population growth. The projection factors are described in Section 3.1.4.

3.6 Beer or Distilled Alcohol Production (9)

3.6.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.17.

Table 3.17: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
TOOHEYS PTY LTD	1167	29 NYRANG STREET	LIDCOMBE	2141
CARLTON & UNITED BREWERIES (N S W) PTY LTD	1521	26-98 BROADWAY	SYDNEY	2000

The emission sources and associated releases to air for beer production processes are outlined in Table 3.18.

Table 3.18: Beer Production – Emission Sources

Process	Operation	Emissions to Air
Malting operations	Grain handling	PM
	Malt Kiln	PM, VOCs
	Malt mill & hopper loading	PM
Brewhouse operations	Cereal cooker	VOCs
	Starch breakdown in mash tun	VOCs
	Lauter tun	VOCs
	Brew kettle	PM, VOCs
	Hot wort settling tank	VOCs
	Trub vessel	VOCs
	Wort cooler	VOCs
	Wet scrubber	PM, VOCs, CO
Fermentation	Yeast propagation	VOCs
	Fermenters	VOCs, H_2S
	Activated carbon regenerator	VOCs
	Brewers yeast recovery	VOCs
	Beer maturation tanks	VOCs
Filling operations	Can, bottle & keg filling	VOCs
	Bottle soaker & cleaner	VOCs
	Spilled beer sump	VOCs
	Damaged bottles crushing	VOCs
	Waste beer recovery	VOCs
	Waste beer storage tanks	VOCs
	Can crushing & recycling conveyor	VOCs
	Ethanol recovery	VOCs
Wastewater treatment		VOCs
Combustion	Fuel burning activities	Combustion Products
Fuel storage		VOCs

3.6.2 Emissions Estimation Methodology

Emissions from each source have been estimated using techniques provided in USEPA AP-42, Chapter 9.12 *Malt Beverages* (USEPA, 1996) and data supplied in the industrial questionnaires. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.6.3 Emissions Estimation

Estimated emissions from beer or distilled alcohol production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.19.

Table 3.19: Estimated Emissions from Beer or Distilled Alcohol Production

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	89.5	0	0	89.5
CARBON MONOXIDE	15,040	0	0	15,040
FORMALDEHYDE	179	0	0	179
ISOMERS OF XYLENE	0	0	0	0
LEAD & COMPOUNDS	0.09	0	0	0.09
OXIDES OF NITROGEN	29,700	0	0	29,700
PARTICULATE MATTER 10µm	1,720	0	0	1,720
PARTICULATE MATTER 2.5µm	1,720	0	0	1,720
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0.12	0	0	0.12
SULFUR DIOXIDE	93.5	0	0	93.5
TOLUENE	44.8	0	0	44.8
TOTAL SUSPENDED PARTICULATES (TSP)	1,720	0	0	1,720
TOTAL VOCS	26,500	0	0	26,500
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.6.4 Projection Factors

Default projection factors for beer or distilled alcohol production have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that growth in activity at beer or distilled alcohol production facilities is proportional to population growth. The projection factors are described in Section 3.1.4. It was noted that Carlton and United Breweries ceased operations in 2005. Therefore, emissions for 2003 and a projection factor of 1.0 has been assigned for 2004. For all other years the projection factors have been set to zero indicating no emissions from the site from 2005 onwards.

3.7 Biomedical Waste Incineration (74)

3.7.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.20.

Table 3.20: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
STERICORP NSW PTY LTD	3245	2-16 WIBLEN STREET	SILVERWATER	2128

The emission sources and associated releases to air from biomedical waste incineration are outlined in Table 3.21.

Table 3.21: Biomedical Waste Incineration – Emission Sources

Operation	Emissions to Air
Biomedical Waste Incineration	Combustion products

3.7.2 Emissions Estimation Methodology

Emissions from each source have been estimated using techniques provided in the *NPI EET Manual Sewage Sludge and Biomedical Waste Incineration* (Environment Australia, 1999d) and data supplied in the industrial questionnaires. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.7.3 Emissions Estimation

Estimated emissions from biomedical waste incineration facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.22.

Table 3.22: Estimated Emissions from Biomedical Waste Incineration

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	218	0	0	218
CARBON MONOXIDE	5,488	0	0	5,488
FORMALDEHYDE	0.01	0	0	0.01
ISOMERS OF XYLENE	0.10	0	0	0.10
LEAD & COMPOUNDS	29.0	0	0	29.0
OXIDES OF NITROGEN	3,830	0	0	3,830
PARTICULATE MATTER 10µm	720	0	0	720
PARTICULATE MATTER 2.5µm	720	0	0	720
PERCHLOROETHYLENE	0.14	0	0	0.14
POLYCYCLIC AROMATIC HYDROCARBONS	258	0	0	258
SULFUR DIOXIDE	1,145	0	0	1,145
TOLUENE	0.08	0	0	0.08
TOTAL SUSPENDED PARTICULATES (TSP)	720	0	0	720
TOTAL VOCS	556	0	0	556
TRICHLOROETHYLENE (TCE)	0.02	0	0	0.02

3.7.4 Projection Factors

Default projection factors for biomedical waste incineration have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that growth in activity at biomedical waste incineration facilities is proportional to population growth. The projection factors are described in Section 3.1.4.

3.8 Bitumen Pre-Mix or Hot-Mix Production (8)

3.8.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.23.

Table 3.23: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
BORAL ASPHALT	7	1 GROSS STREET	CARRINGTON	2294
PIONEER ROAD SERVICES PTY LTD	494	OLD WALLGROVE ROAD	EASTERN CREEK	2766
EMOLEUM	499	GATE 1, UNWIN STREET	GRANVILLE	2142
PIONEER ROAD SERVICES	683	30 RIVULET CRES	ALBION PARK RAIL	2527
EMOLEUM	861	24 DAVIS STREET	WETHERILL PARK	2164
BORAL ASPHALT	952	LOT 1 COMSERV CLOSE	GOSFORD	2250
BORAL ASPHALT	1110	SPRINGHILL ROAD	PORT KEMBLA	2505
EMOLEUM	1321	RHONDDA ROAD	TERALBA	2284
RTA ILLAWARRA DISTRICT OFFICE	1530	YORK ROAD	BELLAMBI	2518
PIONEER ROAD SERVICES PTY LTD	2292	LOT 23 GARDINERS ROAD	RUTHERFORD	2320
BORAL ASPHALT	2566	LENAGHANS DRIVE	BLACK HILL	2322
ASTEC PTY LTD	3138	117 AIRDS ROAD	CAMPBELLTOWN	2560
PIONEER ROAD SERVICES	3140	40-42 BURROWS ROAD	ALEXANDRIA	2015
PIONEER ROAD SERVICES PTY LTD	5002	2-4 DAVID STREET	DOYALSON	2262
KYPTER PTY LTD	11235	50 Jedda Road	PRESTONS	2170
BORAL ASPHALT	11678	1-5 NORFOLK ROAD	GREENACRE	2190

The emission sources and associated releases to air for bitumen pre-mix or hot-mix production processes are outlined in Table 3.24.

Table 3.24: Bitumen Pre-Mix or Hot-Mix Production – Emission Sources

Operation	Emissions to Air
Material handling	PM
Fuel storage	VOCs
Crushing, grinding	PM
Combustion (dryer, generators)	Combustion products

3.8.2 Emissions Estimation Methodology

Emissions from bitumen pre-mix or hot-mix production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Combustion in Boilers Version 1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Hot-Mix Asphalt Manufacturing* (Environment Australia, 1999f)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.8.3 Emissions Estimation

Estimated emissions from bitumen pre-mix or hot-mix production facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.25.

Table 3.25: Estimated Emissions from Bitumen Pre-Mix or Hot-Mix Production

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0.05	0	0.08	0.05	0.17
BENZENE	2,490	189	144	221	3,044
CARBON MONOXIDE	91,000	23,020	24,500	9,400	148,000
FORMALDEHYDE	4,980	913	289	441	6,620
ISOMERS OF XYLENE	2.16	0.21	3.56	2.32	8.25
LEAD & COMPOUNDS	6.11	12.0	0.27	0.45	18.8
OXIDES OF NITROGEN	21,500	3,590	2,570	1,970	29,600
PARTICULATE MATTER 10µm	60,800	129,000	3,500	5,110	198,000
PARTICULATE MATTER 2.5µm	25,900	114,000	2,350	2,540	145,000
PERCHLOROETHYLENE	3.10	0	5.17	3.11	11.4
POLYCYCLIC AROMATIC HYDROCARBONS	93.2	8.02	10.3	8.61	120
SULFUR DIOXIDE	2,800	1,730	391	264	5,170
TOLUENE	1,250	94.1	75	112	1,530
TOTAL SUSPENDED PARTICULATES (TSP)	88,020	142,000	4,920	6,600	241,400
TOTAL VOCS	27,400	2,160	1,620	2,440	33,600
TRICHLOROETHYLENE (TCE)	0.38	0	0.63	0.38	1.39

[a] Totals may not appear additive due to rounding

3.8.4 Projection Factors

Default projection factors for bitumen pre-mix or hot-mix production have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that growth in bitumen pre-mix or hot-mix production is proportional to population growth. The projection factors are described in Section 3.1.4.

3.9 Bulk Cargo Handling (72)

3.9.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.26.

Table 3.26: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
NO 6 JETTY	702	CHRISTY DRIVE	PORT KEMBLA	2505
NEWCASTLE GRAIN TERMINAL	1296	DENISON STREET	CARRINGTON	2294
SAWMILLERS EXPORTS PTY LTD	1419	LOT 3, 16 HERON ROAD	KOORAGANG	2304
THE CARRINGTON SHIPLOADER	1431	NO 2 DYKE BERTH	CARRINGTON	2294
P & O PORTS; NO 2 BERTH- KOORAGANG ISLAND	1967	HERON ROAD	KOORAGANG	2304
KOORAGANG BULK FACILITIES PTY LTD	2367	48 HERON ROAD, KOORAGANG ISLAND	KOORAGANG	2304
PORT KEMBLA GATEWAY PTY LTD STORAGE SHEDS	3114	CHRISTY DRIVE	PORT KEMBLA	2505
MULTI PURPOSE BERTH	3578	FARRER ROAD INNER HARBOUR	PORT KEMBLA	2505
PORT KEMBLA GRAIN TERMINAL	3693	TOM THUMB ROAD	WOLLONGONG	2500
NO 3 BERTH KOORAGANG ISLAND	4687	HERON ROAD	KOORAGANG	2304
CARRINGTON BASIN BULK BERTHS: NO'S 3 & 4 WESTERN BASIN BERTHS & NO's 1 & 2 EASTERN BASIN BERTH	4688	COWPER STREET EXTENDED	CARRINGTON	2294
WHARF 7 GLEBE ISLAND	7093	SOMMERVILLE ROAD	GLEBE	2037
DARLING HARBOUR WHARVES 3-7	7180	GATE 5 HICKSON ROAD	SYDNEY	2000
GYPSUM RESOURCES AUSTRALIA PTY. LIMITED	11906	SOMMERVILLE ROAD	ROZELLE	2039

The emission sources and associated releases to air for bulk cargo handling are outlined in Table 3.27.

Table 3.27: Bulk Cargo Handling – Emission Sources

Process	Emissions to Air
Storage of fuel and organic liquids/solvents	VOCs
Material transfer (e.g. grain)	PM

3.9.2 Emissions Estimation Methodology

Emissions from bulk cargo handling facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.9.3 Emissions Estimation

Estimated emissions from bulk cargo handling facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.28.

Table 3.28: Estimated Emissions from Bulk Cargo Handling

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	0	0	72.1	72.1
CARBON MONOXIDE	0	0	1,420	1,420
FORMALDEHYDE	0	0	144	144
ISOMERS OF XYLENE	24.7	21.1	0.09	45.9
LEAD & COMPOUNDS	0	0	0.01	0.01
OXIDES OF NITROGEN	0	0	8,250	8,250
PARTICULATE MATTER 10µm	9,130	80,000	2,920	92,100
PARTICULATE MATTER 2.5µm	1,750	11,700	2,420	15,900
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0.01	0.01
SULFUR DIOXIDE	0	0	20,700	20,700
TOLUENE	79.8	77.0	36.1	193
TOTAL SUSPENDED PARTICULATES (TSP)	18,400	167,000	3,540	188,000
TOTAL VOCS	540	645	794	1,980
TRICHLOROETHYLENE (TCE)	0	0	0	0

[a] Totals may not appear additive due to rounding

3.9.4 Projection Factors

Default projection factors for bulk cargo handling have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that growth in activity at bulk handling facilities is proportional to population growth. The projection factors are described in Section 3.1.4.

3.10 Cement or Lime Handling (11)

3.10.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.29.

Table 3.29: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
JAMES HARDIE BUILDING PRODUCTS	602	10 COLQUHOUN STREET	ROSEHILL	2142
BLUE CIRCLE SOUTHERN CEMENT LTD	865	RAILWAY SIDING	VILLAWOOD	2163
BLUE CIRCLE SOUTHERN CEMENT LTD	947	PARRAMATTA ROAD	AUBURN	2144
EXCELSIOR QUARRY	953	EXCELSIOR ROAD VIA CASTLEREAGH HIGHWAY	CAPERTEE	2846
CEMENT AUSTRALIA PACKAGED PRODUCTS LIMITED	1069	Highgate Street	AUBURN	2144
BLUE CIRCLE SOUTHERN CEMENT	1094	100 Cormorant Road	KOORAGANG	2304
BLUE CIRCLE SOUTHERN CEMENT LTD	1550	LOTS1-7 POWERS ROAD	SEVEN HILLS	2147
MORGAN ASH	3528	LOT 201 MONIER SQUARE	VILLAWOOD	2163
AUSTRALIAN CEMENT HOLDINGS	3694	CNR RAWSON ROAD AND HIGHGATE STREET	AUBURN	2144
FLYASH AUSTRALIA PTY LIMITED	3780	CNR CROSS STREET AND CONTRACTORS ROAD	DORA CREEK	2264
KOORANGANG ISLAND CEMENT TERMINAL	4193	NO.2 BERTH, HERON ROAD	KOORAGANG	2304
GLEBE ISLAND CEMENT TERMINAL	4310	SOMMERVILLE ROAD	SYDNEY	2000
MORGAN ASH	5148	CONSTRUCTION ROAD	MANNERING PARK	2259
DAVCO CONSTRUCTION MATERIALS PTY LTD	6459	67 ELIZABETH STREET	WETHERILL PARK	2164
HYROCK CEMENT TERMINAL	11332	LOT 1 OLD PORT ROAD	PORT KEMBLA	2505

The emission sources and associated releases to air for cement or lime handling processes are outlined in Table 3.30.

Table 3.30: Cement or Lime Handling – Emission Sources

Operation	Emissions to Air
Wind erosion – stockpiles and exposed areas	PM
Material handling	PM
Combustion	Combustion products
Fuel storage	VOCs

3.10.2 Emissions Estimation Methodology

Emissions from cement or lime handling facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Combustion in Boilers Version 1.2* (Environment Australia, 2003c)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.10.3 Emissions Estimation

Estimated emissions from cement or lime handling facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.31.

Table 3.31: Estimated Emissions from Cement or Lime Handling

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0.19	0	0	0	0.19
BENZENE	13.1	2.21	0	0	15.3
CARBON MONOXIDE	1,840	369	0	0	2,210
FORMALDEHYDE	23.0	4.40	0	0	27.3
ISOMERS OF XYLENE	11,700	0.26	1.44	51.6	11,800
LEAD & COMPOUNDS	0.02	0	0	0.14	0.16
OXIDES OF NITROGEN	2,190	440	0	0	2,630
PARTICULATE MATTER 10µm	52,000	4,240	59.8	143,000	199,000
PARTICULATE MATTER 2.5µm	24,600	2,380	9.93	33,900	60,800
PERCHLOROETHYLENE	12.4	0	0	0	12.4
POLYCYCLIC AROMATIC HYDROCARBONS	0.01	0	0	0	0.01
SULFUR DIOXIDE	7.30	2.30	0	0	9.60
TOLUENE	41,800	1.21	5.86	35.4	41,900
TOTAL SUSPENDED PARTICULATES (TSP)	70,700	5,400	112	419,000	496,000
TOTAL VOCS	122,000	28.8	23.4	213	122,000
TRICHLOROETHYLENE (TCE)	1.52	0	0	0	1.52

[a] Totals may not appear additive due to rounding

3.10.4 Projection Factors

Projection factors for cement or lime handling facilities have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth for cement or lime handling facilities is proportional to population growth. The projection factors are described in Section 3.1.4.

3.11 Cement or Lime Production (10)

3.11.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.32.

Table 3.32: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
BLUE CIRCLE SOUTHERN CEMENT LTD	212	40 MALDON BRIDGE ROAD	MALDON	2571
BERRIMA CEMENT WORKS	1698	TAYLOR AVENUE	NEW BERRIMA	2577
AUSTRALIAN CEMENT HOLDINGS PTY LTD	2042	JAMIESON STREET	KANDOS	2848
HYROCK CHARBON WORKS	5412	CHARBON ROAD	CHARBON	2848

The emission sources and associated releases to air for Cement or Lime Production processes are outlined in Table 3.33.

Table 3.33: Cement or Lime Production – Emission Sources

Process	Emissions to Air
Raw material crushing	PM
Cement kiln	Combustion products
Clinker processing	PM
Finished cement grinding	PM
Bag filters	PM
Materials handling	PM
Materials storage	PM
Fuel storage	VOCs
Combustion	Combustion products

3.11.2 Emissions Estimation Methodology

Emissions from cement or lime production facilities have been estimated using data provided in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Cement Manufacturing v1.2* (Environment Australia, 2003a)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Combustion in Boilers Version 1.2* (Environment Australia, 2003c)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.11.3 Emissions Estimation

Estimated emissions from cement or lime production facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.34.

Table 3.34: Estimated Emissions from Cement or Lime Production

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	0	0	0	0	0
CARBON MONOXIDE	81,600	0	0	3,197,000	3,280,000
FORMALDEHYDE	0	0	0	0	0
ISOMERS OF XYLENE	1,210	0	0	38,500	39,700
LEAD & COMPOUNDS	70.9	0	0	428	499
OXIDES OF NITROGEN	1,340,000	0	0	4,780,000	6,120,000
PARTICULATE MATTER 10µm	71,500	0	0	211,000	282,000
PARTICULATE MATTER 2.5µm	47,300	0	0	128,000	175,000
PERCHLOROETHYLENE	0	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	217	0	0	1,310	1,524
SULFUR DIOXIDE	13,400	0	0	193,000	206,000
TOLUENE	209	0	0	4,770	4,980
TOTAL SUSPENDED PARTICULATES (TSP)	79,400	0	0	249,000	329,000
TOTAL VOCS	3,500	0	0	81,600	85,000
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

[a] Totals may not appear additive due to rounding

3.11.4 Projection Factors

Projection factors for cement or lime production facilities have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth for cement or lime production facilities is proportional to population growth. The projection factors are described in Section 3.1.4.

3.12 Ceramics Production (excluding Glass) (13)

3.12.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.35.

Table 3.35: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
BORAL BRICKS PTY LTD	684	235 MARTIN ROAD	BADGERYS CREEK	2171
CSR BUILDING PRODUCTS, CECIL PARK	1027	LOT 7 CECIL ROAD	CECIL PARK	2171
MONIER PGH HOLDINGS LTD	2007	10 GRAND AVE	ROSEHILL	2142
CSR BUILDING PRODUCTS, SCHOFIELDS	2014	TOWNSON ROAD	SCHOFIELDS	2762
THE AUSTRAL BRICK CO PTY LTD	2073	KIAMA STREET	BOWRAL	2576
CSR BUILDING PRODUCTS, METFORD	2189	METFORD ROAD	EAST MAITLAND	2323
AUSTRAL TILES	2240	62 BELMORE ROAD	PUNCHBOWL	2196
BORAL MONTORO PTY LTD	2702	TOOHEYS ROAD EAST	WYEE	2259
NATIONAL CERAMIC INDUSTRIES AUSTRALIA PTY LTD	11956	RACECOURSE ROAD	RUTHERFORD	2320

The emission sources and associated releases to air for Ceramics Production (excluding Glass) processes are outlined in Table 3.36.

Table 3.36: Ceramics Production (excluding Glass) – Emission Sources

Process	Emissions
Raw materials crushing and screening	PM
Dryer	PM
Cooler	PM
Granulation	PM
Ceramic glaze spray booth	PM, lead
Forming tape casters	VOCs
Combustion	Combustion products

3.12.2 Emissions Estimation Methodology

Emissions from ceramics production (excluding glass) facilities have been estimated using techniques provided the *NPI EET Manual for Bricks, Ceramics and Clay Product Manufacturing* (Environment Australia, 1998a) and data supplied in returned questionnaires. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.12.3 Emissions Estimation

Estimated emissions from ceramics production (excluding glass) facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.37.

Table 3.37: Estimated Emissions from Ceramics Production (excluding Glass)

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	2,080	0	0	1,150	3,240
CARBON MONOXIDE	605,100	0	0	203,000	808,250
FORMALDEHYDE	4,060	0	0	2,310	6,360
ISOMERS OF XYLENE	8,490	0	0	0.19	8,490
LEAD & COMPOUNDS	0.10	0	0	0.10	0.20
OXIDES OF NITROGEN	161,500	0	0	75,100	236,600
PARTICULATE MATTER 10µm	840,900	0	0	259,000	1,099,500
PARTICULATE MATTER 2.5µm	606,300	0	0	191,000	797,600
PERCHLOROETHYLENE	0.04	0	0	0	0.04
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	521,900	0	0	168,000	690,050
TOLUENE	1,820	0	0	577	2,400
TOTAL SUSPENDED PARTICULATES (TSP)	1,580,000	0	0	491,000	2,070,000
TOTAL VOCS	106,900	0	0	13,500	120,300
TRICHLOROETHYLENE (TCE)	0.01	0	0	0	0.01

[a] Totals may not appear additive due to rounding

3.12.4 Projection Factors

Projection factors for ceramics production facilities have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth for ceramics production facilities is proportional to population growth. The projection factors are described in Section 3.1.4.

3.13 Chemical Storage - Other Chemical Storage (25)

3.13.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.38.

Table 3.38: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
CLEVELAND CLEANING SUPPLIES PTY LIMITED	6165	23 FORRESTER STREET	KINGSGROVE	2208
MOOREBANK AEROSOL FILLERS	6382	11 CUNNINGHAM STREET	MOOREBANK	2170
SUPERIOR RADIATOR SERVICE PTY LTD	7281	2/12 SETON ROAD	MOOREBANK	2170
ALFRED JOHNS PTY LTD	11342	25 FITZROY STREET	MARRICKVILLE	2204
LUBRIZOL AUSTRALIA	134	28 RIVER STREET	SILVERWATER	2128
AIR LIQUIDE AUSTRALIA LIMITED	135	43 PINE ROAD	FAIRFIELD	2165
CALTEX NEWCASTLE TERMINAL	452	156 HANNELL STREET	WICKHAM	2293
BAYER CROPSCIENCE PTY LTD	472	16-18 LUCCA ROAD	WYONG	2259
GORE BAY TERMINAL	661	MANNS AVENUE	GREENWICH	2065
TERMINALS PTY LTD	1048	45 FRIENDSHIP ROAD	MATRAVILLE	2036
SYDNEY METROPOLITAN PIPELINE	1969	CNR HOLKER & NEWINGTON RD	SILVERWATER	2264
TRW STEERING & SUSPENSION AUSTRALIA LIMITED	1997	20-28 CARRINGTON ROAD	MARRICKVILLE	2204
CIBA SPECIALTY CHEMICALS PTY LIMITED	3553	6-8 DONALDSON STREET	WYONG	2259
HI-FERT PTY LTD	5430	LOT 107 GREENLEAF ROAD	KOORAGANG	2304
VOPAK TERMINALS AUSTRALIA	6007	20 FRIENDSHIP ROAD	PORT BOTANY	2036
PATRICK INTERMODAL	6152	616 GREAT WESTERN HIGHWAY	ARNDELL PARK	2148
VOPAK TERMINALS AUSTRALIA	6581	49 FRIENDSHIP ROAD	PORT BOTANY	2036
SYDNEY OPERATIONS CENTRE	6679	428-440 VICTORIA STREET	WETHERILL PARK	2164
BRONSON & JACOBS PTY LTD	6708	5 PARKVIEW DRIVE	HOMEBUSH BAY	2140
PATRICK PORT BOTANY CONTAINER TERMINAL	6962	PENRHYN ROAD	PORT BOTANY	2019
GOLDEN BROS. GROUP PTY LTD	10535	2 GREENFIELD STREET	BANKSMEADOW	2019

The emission sources and associated releases to air for chemical storage (inorganic) are outlined in Table 3.39.

Table 3.39: Other Chemical Storage - Emission Sources

Process	Emissions
Tank filling	Tank contents (typically acids – H_2SO_4, HNO_3, HCl)

3.13.2 Emissions Estimation Methodology

Emissions from chemical storage – other chemical storage facilities have been estimated using techniques provided the *NPI EET Manual for Alumina Refining* (Environment Australia, 1999e) and data supplied in returned questionnaires. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.13.3 Emissions Estimation

Estimated emissions from chemical storage – other chemical storage facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.40.

Table 3.40: Estimated Emissions from Chemical Storage (Other Chemical Storage)

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	144	0	0	0.25	144
BENZENE	1,930	2,090	0	267	4,320
CARBON MONOXIDE	4,270	0	0	17.3	4,280
FORMALDEHYDE	53.3	0	0	0.29	53.55
ISOMERS OF XYLENE	2,630	1,490	0	255	4,370
LEAD & COMPOUNDS	0.03	0	0	0	0.03
OXIDES OF NITROGEN	6,300	0	0	20.6	6,320
PARTICULATE MATTER 10µm	386	0	0	216	602
PARTICULATE MATTER 2.5µm	386	0	0	120	506
PERCHLOROETHYLENE	2,310	0	0	0.99	2,310
POLYCYCLIC AROMATIC HYDROCARBONS	115	0	0	0	115
SULFUR DIOXIDE	26.5	0	0	0.11	26.6
TOLUENE	4,870	5,090	0	669	10,630
TOTAL SUSPENDED PARTICULATES (TSP)	386	0	0	426	810
TOTAL VOCS	194,600	259,000	0	33,700	487,300
TRICHLOROETHYLENE (TCE)	2,480	0	0	0.12	2,480

[a] Totals may not appear additive due to rounding

3.13.4 Projection Factors

Projection factors for other chemical storage facilities have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth for other chemical storage facilities is proportional to population growth. The projection factors are described in Section 3.1.4.

3.14 Chemical Storage - Storage of Petroleum and/or Petroleum Products (25)

3.14.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.41.

Table 3.41: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
DULUX AUSTRALIA	131	15 GOW STREET	PADSTOW	2211
ORIGIN ENERGY LPG LIMITED	245	47 FRIENDSHIP ROAD	PORT BOTANY	2036
THE SHELL COMPANY OF AUSTRALIA LIMITED	369	5 CHATHAM RD	HAMILTON	2303
HYDROCARBON STORAGE TERMINAL	464	FRIENDSHIP ROAD	PORT BOTANY	2036
CONTINENTAL CARBON AUSTRALIA PTY LTD	516	145-161 SIR JOSEPH BANKS DRIVE	KURNELL	2231
BP AUSTRALIA LIMITED	527	CNR HANNELL & ELIZABETH STREETS	CARRINGTON	2294
PORT KEMBLA MARINE FUELS	654	LOT 2 FLINDERS STREET	PORT KEMBLA	2505
PARRAMATTA TERMINAL	660	DURHAM STREET	ROSEHILL	2142
CNH AUSTRALIA PTY LTD	3027	31-67 KURRAJONG AVE	ST MARYS	2760
LOCOMOTIVE SERVICE CENTRE	6104	SELWYN STREET	TIGHES HILL	2297
ILLAWARRA BULK TERMINAL	6141	TOM THUMB ROAD	PORT KEMBLA	2505
LOCOMOTIVE MAINTENANCE CENTRE	6144	OLD PORT ROAD	PORT KEMBLA	2505
SCHERING PTY LTD	6162	27-31 DOODY STREET	ALEXANDRIA	2015
MOBIL BOTANY TERMINAL	6457	STEPHEN ROAD	BOTANY	2019
CALTEX SYDNEY TERMINAL	6950	PENRHYN RD	BANKSMEADOW	2019
ELGAS LIMITED, SYDNEY LPG CAVERN	10698	30 FRIENDSHIP ROAD	PORT BOTANY	2036
MERCEDES-BENZ OF SYDNEY	11454	CNR JOYNTON & ELIZABETH STREETS	ZETLAND	2017
AUSTRALIAN PETROCHEMICAL STORAGE PTY LTD	11690	14 WILLIAMSON ROAD	INGLEBURN	2565
KOALA DEPOT	11914	166 INGLEBURN ROAD	LEPPINGTON	2171

The emission sources and associated releases to air for storage of petroleum and/or petrol products are outlined in Table 3.42.

Table 3.42: Petroleum and/or Petroleum Product Storage - Emission Sources

Process	Emissions
Standing loss	VOCs
Working loss	VOCs
Distribution loss	VOCs

3.14.2 Emissions Estimation Methodology

Emissions from storage of petroleum and/or petroleum products have been estimated using techniques provided in the *NPI EET Manual for Fuel and Organic Liquid Storage, Version 2.4* (Environment Australia, 2004b) and data supplied in the industrial questionnaire. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.14.3 Emissions Estimation

Estimated emissions from chemical storage (storage of petroleum and/or product) facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.43.

Table 3.43: Estimated Emissions from Chemical Storage (Storage of Petroleum and/or Petroleum Products)

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0.16	0	0	0.16
BENZENE	2,310	1,450	0	3,760
CARBON MONOXIDE	1,604,000	0	0	1,604,000
FORMALDEHYDE	1,320	0	0	1,320
ISOMERS OF XYLENE	1,380	1,140	16.32	2,540
LEAD & COMPOUNDS	8.84	0	0	8.84
OXIDES OF NITROGEN	864,040	0	0	864,040
PARTICULATE MATTER 10µm	67,900	0	0	67,900
PARTICULATE MATTER 2.5µm	67,700	0	0	67,700
PERCHLOROETHYLENE	10.5	0	0.01	10.5
POLYCYCLIC AROMATIC HYDROCARBONS	6.99	0	0	6.99
SULFUR DIOXIDE	1,400,000	0	0	1,400,000
TOLUENE	4,650	3,570	5.01	8,220
TOTAL SUSPENDED PARTICULATES (TSP)	99,200	0	0	99,200
TOTAL VOCS	264,700	180,900	369	446,000
TRICHLOROETHYLENE (TCE)	1.28	0	0	1.28

[a] Totals may not appear additive due to rounding

3.14.4 Projection Factors

Projection factors for storage of petroleum and/or petroleum products have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth for the storage of petroleum and/or petroleum products is proportional to population growth. The projection factors are described in Section 3.1.4.

3.15 Coal Loading (28)

3.15.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.44.

Table 3.44: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
MOUNT THORLEY COAL LOADING LTD	24	MOUNT THORLEY ROAD, MOUNT THORLEY VIA	SINGLETON	2330
PWCS CARRINGTON COAL TERMINAL	601	PORT WARATAH DRIVE	CARRINGTON	2294
PWCS - KOORAGANG COAL TERMINAL	1552	CURLEW STREET	KOORAGANG	2304
PORT KEMBLA COAL TERMINAL LIMITED	1625	PORT KEMBLA ROAD	WOLLONGONG	2500
DENDROBIUM MINE	3241	CORDEAUX ROAD	MOUNT KEMBLA	2526
ERARING COAL DELIVERY FACILITY, ERARING POWER STATION	4297	CONSTRUCTION ROAD	DORA CREEK	2264
PINE DALE MINE	4911	CASTLEREAGH HIGHWAY	LIDSDALE	2790
LIDSDALE COAL LOADING FACILITY	5129	MAIN STREET	WALLERAWANG	2845
RAVENSWORTH COAL TERMINAL	5585	LIDDELL STATION ROAD	RAVENSWORTH	2330

The emission sources and associated releases to air for coal loading are outlined in Table 3.45.

Table 3.45: Coal Loading - Emission Sources

Operation	Emissions to Air
Miscellaneous transfer points	PM
Fuel storage	VOCs
Wind erosion	PM

3.15.2 Emissions Estimation Methodology

Emissions from coal loading have been estimated using techniques provided in the *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a) and data supplied in the industrial questionnaire. More detailed information on the methodology is described in the methodology report (Bawden et. al., 2004).

3.15.3 Emissions Estimation

Estimated emissions from coal loading facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.46.

Table 3.46: Estimated Emissions from Coal Loading

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0.31	9.01	9.33
ACETALDEHYDE	0	2.45	12.2	0	14.6
BENZENE	0	12	3.63	10.2	25.8
CARBON MONOXIDE	0	0	530	335	865
FORMALDEHYDE	0	13.6	24.3	0	37.9
ISOMERS OF XYLENE	0	175	2.02	11.0	188.4
LEAD & COMPOUNDS	0	0.02	11.4	8.86	20.3
OXIDES OF NITROGEN	0	0	2,500	1,560	4,060
PARTICULATE MATTER 10µm	0	225	180,240	129,000	309,800
PARTICULATE MATTER 2.5µm	0	22.4	19,400	14,400	33,800
PERCHLOROETHYLENE	0	162	0	0	162
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0.06	0.06
SULFUR DIOXIDE	0	0	140	102	242
TOLUENE	0	718	3.22	3.39	725
TOTAL SUSPENDED PARTICULATES (TSP)	0	479	392,000	295,400	687,900
TOTAL VOCS	0	3,900	165	236	4,310
TRICHLOROETHYLENE (TCE)	0	19.8	0	0	19.8

[a] Totals may not appear additive due to rounding

3.15.4 Projection Factors

Projection factors for coal loading have been derived based on ABARE projected black coal production growth rates for Australia (ABARE; 2005a; ABARE 2005b; ABARE 2005c). This methodology assumes that growth in coal loading in the GMR is equivalent to the projected growth rate of black coal production in Australia.

The projection factors for coal loading are provided in Table 3.47.

Table 3.47: Projection Factors for Coal Loading from 2003 to 2031

Year	Annual Production [a,b] (PJ/year)	Projection Factor
2003	7614.0	1.0000
2004	7999.8	1.0507
2005	8267.5	1.0858
2006	8859.0	1.1635
2007	9191.2	1.2071
2008	9537.9	1.2527
2009	9702.1	1.2742
2010	9986.0	1.3115
2011	10263.8	1.3480
2012	10546.3	1.3851
2013	10832.4	1.4227
2014	11108.1	1.4589
2015	11379.4	1.4945
2016	11646.9	1.5297
2017	11909.1	1.5641
2018	12167.6	1.5981
2019	12422.7	1.6316
2020	12677.7	1.6651
2021	12926.1	1.6977
2022	13167.3	1.7294
2023	13402.3	1.7602
2024	13632.8	1.7905
2025	13860.0	1.8203
2026	14083.7	1.8497
2027	14301.3	1.8783
2028	14513.7	1.9062
2029	14720.3	1.9333
2030		1.9619
2031		1.9905

[a] Source: ABARE 2005a; ABARE 2005b; ABARE 2005c
[b] Annual growth rates for coal loading and coal washery reject or slag landfilling are assumed to be equivalent to the growth rate of coal mining

3.16 Coal Mining (26)

3.16.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.48.

Table 3.48: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
CUMNOCK NO. 1 COLLIERY	37	OFF OLD NEW ENGLAND HIGHWAY	RAVENSWORTH	2330
BAYSWATER COLLIERY	113	THOMAS MITCHELL DRIVE	MUSWELLBROOK	2333
WYEE COLLIERY	191	VALES ROAD	WYEE	2259
COORANBONG COLLIERY	365	GRADWELLS ROAD	DORA CREEK	2264
MYUNA COLLIERY	366	WANGI POINT ROAD	WANGI WANGI	2267
BLOOMFIELD COLLIERY	396	FOUR MILE CREEK ROAD	ASHTONFIELD	2323
DOUGLAS COLLIERY	398	DOUGLAS PARK DRIVE	DOUGLAS PARK	2569
AUSTAR COAL MINE	416	WOLLOMBI ROAD	PELTON	2325
AWABA COLLIERY	443	WILTON ROAD	AWABA	2283
ANGUS PLACE COLLIERY	467	WOLGAN ROAD	LIDSDALE	2790
CHARBON COAL PTY LIMITED	528	CHARBON ROAD	CHARBON	2848
WAMBO COAL PTY LTD	529	JERRYS PLAINS ROAD	WARKWORTH	2330
THE NEWCASTLE WALLSEND COAL CO PTY LTD	548	BULKARA ST	WALLSEND	2287
SAXONVALE COLLIERY HOLDING	563	BROKE ROAD	SINGLETON	2330
BERRIMA COLLIERY	608	MEDWAY ROAD	MEDWAY	2577
IVANHOE NO.2 COLLIERY	631	BOULDER ROAD	PORTLAND	2847
HUNTER VALLEY OPERATIONS	640	Lemington Rd	SINGLETON	2330
MUSWELLBROOK COLLIERY HOLDING	656	COAL ROAD	MUSWELLBROOK	2333
CLARENCE COLLIERY	726	OFF BELLS LINE OF ROAD	NEWNES JUNCTION	2790
APPIN COLLIERY	758	OFF APPIN ROAD	APPIN	2560
BAAL BONE COLLIERY	765	CASTLEREAGH HIGHWAY	LITHGOW	2790
METROPOLITAN COLLIERY	767	PARKES STREET	HELENSBURGH	2508
ELOUERA COLLIERY	1087	MAIN ROAD	WONGAWILLI	2530
DRAYTON COAL MINE	1323	THOMAS MITCHELL DRIVE	MUSWELLBROOK	2333
WEST WALLSEND COLLIERY	1360	THE BROADWAY	KILLINGWORTH	2278
WARKWORTH COAL MINE	1376	PUTTY ROAD	MOUNT THORLEY	2330
CHAIN VALLEY COLLIERY	1770	CONSTRUCTION ROAD	CHAIN VALLEY BAY	2259
MOUNT THORLEY OPERATIONS	1976	MOUNT THORLEY ROAD	MOUNT THORLEY	2330
LIDDELL COAL OPERATIONS	2094	OLD NEW ENGLAND HIGHWAY RAVENSWORTH VIA SINGLETON	RAVENSWORTH	2330
MUNMORAH COLLIERY	2316	SCENIC DRIVE	DOYALSON	2262
WESTCLIFF AND NORTHCLIFF COLLIERIES	2504	WEDDERBURN ROAD	APPIN	2560
RAVENSWORTH/NARAMA MINE	2652	OFF LEMINGTON ROAD	RAVENSWORTH	2330
UNITED COLLIERY	3141	134 JERRYS PLAINS ROAD	WARKWORTH	2330
CAMBERWELL COAL MINE	3390	BRIDGMAN ROAD	SINGLETON	2330
RIX'S CREEK COLLIERY	3391	RIX'S CREEK LANE	SINGLETON	2330
SPRINGVALE COLLIERY	3607	CASTLEREAGH HIGHWAY	LIDSDALE	2790
WESTSIDE MINE	4033	WAKEFIELD ROAD	KILLINGWORTH	2278
MT OWEN COAL MINE	4460	HEBDEN ROAD	RAVENSWORTH	2330
ENHANCE PLACE MINE	6312	1449 CASTLEREAGH HIGHWAY	LIDSDALE	2790
BENGALLA MINE	6538	BENGALLA ROAD VIA	MUSWELLBROOK	2333
GLENNIES CREEK COAL MANAGEMENT PTY LTD	7622	640 MIDDLE FALBROOK ROAD	SINGLETON	2330

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
NEWPAC NO.1 COLLIERY	10337	MINING LEASES CML 1348 & CML 1349 & PART OF CML 37	SINGLETON	2330
CULLEN VALLEY MINE	10341	Portland Road	CULLEN BULLEN	2790
RAVENSWORTH EAST MINE	10860	HEBDEN ROAD	RAVENSWORTH	2330
HUNTLEY COLLIERY	10997	LOT 2 AVONDALE ROAD	AVONDALE	2530
DONALDSON COAL PTY LTD	11080	John Renshaw Drive	MAITLAND	2320
MT ARTHUR NORTH COAL MINE	11457	Thomas Mitchell Drive	MUSWELLBROOK	2333
ASHTON COAL MINE	11879	GLENNIES CREEK ROAD AND NEW ENGLAND HIGHWAY	CAMBERWELL	2330
GUJARAT NRE AUSTRALIA P/L No. 1 COLLIERY	12040	BROKER STREET	RUSSELL VALE	2517
NEWSTAN COLLIERY	395	WAKEFIELD ROAD	FASSIFERN	2283
MACQUARIE COAL PREPARATION PLANT	1360	PITT ST	TERALBA	2284
TERALBA COLLIERY	1360	PITT ST	TERALBA	2284

The emission sources and associated releases to air for coal mining are outlined in Table 3.49.

Table 3.49: Coal Mining - Emission Sources

Operation	Emissions to Air
Dragline	PM
Loaders (overburden)	PM
Loaders (coal)	PM
Bulldozers (coal)	PM
Bulldozers (overburden)	PM
Trucks (dumping overburden)	PM
Trucks (dumping coal)	PM
Drilling	PM
Blasting	PM, combustion products
Scrapers	PM
Graders	PM
Miscellaneous transfer points	PM
Wind erosion	PM
Fuel storage	VOCs
On-site combustion	Combustion products
Conveyor transfer	PM

3.16.2 Emissions Estimation Methodology

Emissions from coal mining facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Combustion in Boilers Version 1.2* (Environment Australia, 2003c)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.16.3 Emissions Estimation

Estimated emissions from coal mining facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.50.

Table 3.50: Estimated Emissions from Coal Mining

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	4.9	19.6	1.18	6,280	6,300
ACETALDEHYDE	190	289	45.7	739	1,260
BENZENE	51.8	92.3	420	7,270	7,840
CARBON MONOXIDE	7,400	9,480	2,000	2,297,000	2,315,700
FORMALDEHYDE	380	578	91.5	1,490	2,540
ISOMERS OF XYLENE	29.8	41.4	618	1,700	2,390
LEAD & COMPOUNDS	7.68	32.6	1.09	1,370	1,420
OXIDES OF NITROGEN	31,300	23,500	9,400	1,336,000	1,400,500
PARTICULATE MATTER 10µm	109,000	494,450	65,100	24,590,000	25,260,000
PARTICULATE MATTER 2.5µm	14,000	71,000	13,600	4,056,000	4,150,000
PERCHLOROETHYLENE	3.90	0	204	196	404
POLYCYCLIC AROMATIC HYDROCARBONS	0	0.08	0	38.1	38.2
SULFUR DIOXIDE	1,690	1,000	520	75,500	78,800
TOLUENE	40.2	57.8	7,140	1,670	8,910
TOTAL SUSPENDED PARTICULATES (TSP)	238,400	1,156,000	143,700	54,650,000	56,190,000
TOTAL VOCS	1,970	3,130	26,200	97,400	128,600
TRICHLOROETHYLENE (TCE)	0.47	0	0.06	24.0	24.5

[a] Totals may not appear additive due to rounding

3.16.4 Projection Factors

Projection factors for coal mining have been derived based on ABARE projected black coal production growth rates for Australia (ABARE 2005a; ABARE 2005b; ABARE 2005c). This methodology assumes that growth in coal mining in the GMR is equivalent to the projected growth rate of black coal production in Australia.

The projection factors for coal mining are provided in Table 3.47.

3.17 Coal Washery Reject or Slag Landfilling (78)

3.17.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.51.

Table 3.51: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
KORRONGULLA	2509	PRIMBEE BY PASS	PRIMBEE	2502
NORTHERN (RHONDDA) COLLIERY	3139	RHONDDA ROAD	WAKEFIELD	2278
HAYWARDS BAY PROJECT	7324	PRINCES HIGHWAY	YALLAH	2530

The emission sources and associated releases to air for Coal Washery Reject or Slag Landfilling are outlined in Table 3.52.

Table 3.52: Coal Washery Reject or Slag Landfilling – Emission Sources

Process	Emissions to Air
Material transfer	PM
Fuel storage	VOCs
Wind erosion (stockpiles and exposed areas)	PM

3.17.2 Emissions Estimation Methodology

Emissions from coal washery and slag Landfilling have been estimated using techniques provided in the *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a) and data supplied in the industrial questionnaire. More detailed information on the methodology is described in the methodology report (Bawden et. al., 2004).

3.17.3 Emissions Estimation

Estimated emissions from coal washery reject or slag landfilling facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.53.

Table 3.53: Estimated Emissions from Coal Washery Reject or Slag Landfilling

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0.05	0.05
ACETALDEHYDE	0	0	0	0
BENZENE	0	0	0.06	0.06
CARBON MONOXIDE	0	0	7.28	7.28
FORMALDEHYDE	0	0	0	0
ISOMERS OF XYLENE	0	0	0	0
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	0	0	27.4	27.4
PARTICULATE MATTER 10µm	0	0	56,750	56,750
PARTICULATE MATTER 2.5µm	0	0	11,400	11,400
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	0	0	0.89	0.89
TOLUENE	0	0	0	0
TOTAL SUSPENDED PARTICULATES (TSP)	0	0	113,500	113,500
TOTAL VOCS	0	0	0.69	0.69
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.17.4 Projection Factors

Projection factors for coal washery reject or slag landfilling have been derived based on the ABARE projected black coal production growth rates for Australia (ABARE 2005a; ABARE 2005b; ABARE 2005c). This methodology assumes that growth in coal washery reject or slag landfilling in the GMR is equivalent to the projected growth rate of black coal production in Australia. The projection factors for coal washery reject or slag landfilling are provided in Table 3.47.

3.18 Coke Production (27)

3.18.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.54.

Table 3.54: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
CORRIMAL COKE WORKS	125	27 RAILWAY STREET	CORRIMAL	2518
ILLAWARRA COKE WORKS	2150	LAWRENCE HARGRAVE DRIVE	COALCLIFF	2508

The emission sources and associated releases to air for coke production are outlined in Table 3.55.

Table 3.55: Coke Production - Emission Sources

Operation	Process	Emissions to Air
Coal pretreatment	Coal crushing	PM
	Coal preheating	PM
Oven operations	Oven charging (larry car)	PM, SO_2, CO, VOCs, NO_x, NH_3
	Oven door leaks	PM, CO, VOCs, NO_x, NH_3
	Oven pushing	PM, CO, VOCs, NH_3
Quenching		PM
Coke handling		PM
Wind erosion		PM
Fuel storage		VOCs
Combustion		Combustion products

3.18.2 Emissions Estimation Methodology

Emissions from coke production facilities have been estimated using data supplied in the returned industrial questionnaires and estimation techniques provided in the following documents:

- USEPA AP-42, Chapter 12.2 *Coke Production* (USEPA, 2000)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Combustion in Boilers Version 1.2* (Environment Australia, 2003c)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.18.3 Emissions Estimation

Estimated emissions from coke production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.56.

Table 3.56: Estimated Emissions from Coke Production

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	189	0	175	364
CARBON MONOXIDE	3900	0	3,610	7,530
FORMALDEHYDE	0	0	0	0
ISOMERS OF XYLENE	2.73	0	0.25	2.99
LEAD & COMPOUNDS	252	0	232	484
OXIDES OF NITROGEN	15,800	0	14,600	30,400
PARTICULATE MATTER 10µm	36,000	0	33,400	69,400
PARTICULATE MATTER 2.5µm	36,000	0	33,400	69,400
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	24	0	7,780	7,810
SULFUR DIOXIDE	287,000	0	226,300	553,300
TOLUENE	33.4	0	3.02	36.4
TOTAL SUSPENDED PARTICULATES (TSP)	71,900	0	66,700	138,600
TOTAL VOCS	342	0	265	606
TRICHLOROETHYLENE (TCE)	0	0	0	0

[a] Totals may not appear additive due to rounding

3.18.4 Projection Factors

Projection factors for coke production have been derived based on ABARE projected black coal production growth rates for Australia (ABARE 2005a; ABARE 2005b; ABARE 2005c). This methodology assumes that growth in coke production facilities in the GMR is equivalent to the projected growth rate of black coal production in Australia. The projection factors for coke production are provided in Table 3.47.

3.19 Composting and Related Reprocessing or Treatment (29)

3.19.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.57.

Table 3.57: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
HALLINAN'S PTY LTD	4849	306 RACECOURSE ROAD	SOUTH WINDSOR	2756
LUCAS HEIGHTS WASTE MANAGEMENT CENTRE	5065	NEW ILLAWARRA ROAD	LUCAS HEIGHTS	2234
EASTERN CREEK WASTE MANAGEMENT CENTRE	5272	WALLGROVE ROAD	EASTERN CREEK	2766
HAWKESBURY CITY WASTE MANAGEMENT FACILITY	5293	THE DRIFTWAY	SOUTH WINDSOR	2753
YATES GARDEN PRODUCTS FACTORY	11470	34 WYEE ROAD	WYEE	2259
HALLINAN'S PTY LTD	11233	761 THE NORTHERN ROAD	BRINGELLY	2171

The emission sources and associated releases to air for Composting and Related Reprocessing or Treatment are outlined in Table 3.58.

Table 3.58: Composting and Related Reprocessing or Treatment – Emission Sources

Process	Emissions to Air
Composting	NH_3, VOCs
Wind erosion (exposed areas and stockpiles)	PM
Fuel storage	VOCs
Combustion	Combustion products
Vehicle emissions	PM, Combustion products

3.19.2 Emissions Estimation Methodology

Emissions from composting and related reprocessing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *Estimating Ammonia Emissions from Non-Agricultural Sources – Draft Final Report* (Emission Inventory Improvement Program, April 2004)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Combustion in Boilers Version 1.2* (Environment Australia, 2003c)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.19.3 Emissions Estimation

Estimated emissions from composting and related reprocessing facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.59.

Table 3.59: Estimated Emissions from Composting and Related Reprocessing or Treatment

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0.01	0.01
BENZENE	2,790	0	0	529	3,316
CARBON MONOXIDE	395,700	0	0	506	396,200
FORMALDEHYDE	0	0	0	6.06	6.06
ISOMERS OF XYLENE	4,180	0	0	790	4,970
LEAD & COMPOUNDS	0	0	0	0	0
OXIDES OF NITROGEN	0	0	0	4,320	4,320
PARTICULATE MATTER 10µm	63,800	0	0	124	63,900
PARTICULATE MATTER 2.5µm	12,900	0	0	71.5	12,900
PERCHLOROETHYLENE	1,390	0	0	263	1,660
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	0	0	3.15	3.15
TOLUENE	48,800	0	0	9,210	58,000
TOTAL SUSPENDED PARTICULATES (TSP)	128,100	0	0	182	128,300
TOTAL VOCS	175,600	0	0	33,200	208,800
TRICHLOROETHYLENE (TCE)	0	0	0	0.05	0.05

[a] Totals may not appear additive due to rounding

3.19.4 Projection Factors

Projection factors for composting and related reprocessing or treatment have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth in composting and related reprocessing or treatment is proportional to population growth. The projection factors are described in Section 3.1.4.

3.20 Concrete Batching (30)

3.20.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.60.

Table 3.60: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
PREMIER CONCRETE (NSW) PTY LTD	10	5 CARBINE CLOSE	WALLSEND	2287
HEATHERBRAE CONCRETE	29	345 PACIFIC HIGHWAY	HEATHERBRAE	2324
PIONEER CONSTRUCTION MATERIALS PTY LTD	42	85 BRIDGE STREET	PICTON	2571

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
METROMIX WETHERILL PARK	81	136 HASSALL STREET	WETHERILL PARK	2164
METROMIX CONCRETE SILVERWATER	109	24 STANLEY ST	SILVERWATER	2141
HYMIX CONCRETE	111	CNR. TOURLE STREET & INDUSTRIAL DRIVE	MAYFIELD	2304
BORAL CONCRETE	121	7 - 11 ESSEX STREET	MINTO	2566
BAINES MASONRY BLOCKS PTY LTD	126	900 WILTON ROAD	APPIN	2560
NARELLAN CONCRETE PLANT	146	9 GRAHAMS HILL ROAD	NARELLAN	2567
BORAL CONCRETE	247	PEACHTREE ROAD	PENRITH	2750
PIONEER CONSTRUCTION MATERIALS PTY LTD	280	LOT 222 LAWSON ROAD	SPRINGWOOD	2777
CLEARY BROS (BOMBO) PTY LTD	299	LOT 3 PRINCES HIGHWAY	ALBION PARK RAIL	2527
LITHGOW CONCRETE	304	174 BELLS ROAD	LITHGOW	2790
BORAL ROOFING	315	MACKELLAR ST	EMU PLAINS	2750
BORAL CONCRETE	475	8 HEREFORD STREET	BERKELEY VALE	2261
CONCRITE PTY LIMITED	513	444 THE BOULEVARDE	KIRRAWEE	2232
RESCRETE INDUSTRIES	542	63 RAILWAY ROAD NORTH	MULGRAVE	2756
METROMIX CONCRETE	622	158 SOUTH CREEK ROAD	DEE WHY	2099
WINDSOR CONCRETE	623	LOT 10 (115) FAIREY ROAD	SOUTH WINDSOR	2756
PIONEER CONSTRUCTION MATERIALS PTY LTD	651	16-18 PORT STEPHENS STREET	RAYMOND TERRACE	2324
PIONEER CONSTRUCTION MATERIALS PTY LTD	678	230 MANDALONG ROAD	MORISSET	2264
PIONEER CONSTRUCTION MATERIALS PTY LTD	681	MAISON DIEU ROAD	SINGLETON	2330
SCE PREMIX - Wollongong Plant	686	101 MONTAGUE STREET	WOLLONGONG NORTH	2500
HYMIX CONCRETE	694	173-179 COWPASTURE ROAD	WETHERILL PARK	2164
PIONEER CONSTRUCTION MATERIALS PTY LIMITED	699	328 SOLDIERS POINT ROAD	SALAMANDER BAY	2317
SCE PREMIX - Dapto Plant	700	32 MARSHALL STREET	DAPTO	2530
BORAL CONCRETE	703	1-5 NORFOLK RD	CHULLORA	2190
HYMIX AUSTRALIA PTY LTD	714	34 KALAROO ROAD	REDHEAD	2290
PIONEER CONSTRUCTION MATERIALS PTY LTD	850	6 LANCELEY PLACE	ARTARMON	2064
PIONEER CONSTRUCTION MATERIALS PTY LIMITED	929	46 RIDGE STREET	LAWSON	2783
BORAL CONCRETE	954	WALLARAH ROAD	MUSWELLBROOK	2333
CITY CONCRETE	979	122-132 EUSTON ROAD	ALEXANDRIA	2015
CARINGBAH CONCRETE	981	LOT 5 PARRAWEENA ROAD	CARINGBAH	2229
HURSTVILLE CONCRETE	982	156 BELLEVUE PARADE	HURSTVILLE	2220
BLACKTOWN CONCRETE	983	LOT 7 TATTERSALL ROAD	KINGS PARK	2148
BORAL CONCRETE	994	65 SEVENTH ST	BOOLAROO	2284
BORAL (COUNTRY) CONCRETE	995	MORDUE PARADE	JESMOND	2299
METROMIX ALEXANDRIA	1005	169 EUSTON ROAD	ALEXANDRIA	2015
METROMIX SEVEN HILLS	1007	POWERS ROAD	SEVEN HILLS	2147
PENDLE HILL CONCRETE	1014	154A BUNGAREE ROAD	PENDLE HILL	2145
SALAMADER BAY CONCRETE	1015	334 SOLDIERS POINT ROAD	SALAMANDER BAY	2317
TIGHES HILL CONCRETE	1017	340 INDUSTRIAL DRIVE	TIGHES HILL	2297

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
CONCRITE PTY LTD	1065	NEW ILLAWARRA ROAD	LUCAS HEIGHTS	2234
LITHGOW CONCRETE PLANT	1081	144 INCH STREET	LITHGOW	2790
PIONEER CONSTRUCTION MATERIALS PTY LIMITED	1082	ANSTEY STREET	CESSNOCK	2325
PIONEER CONSTRUCTION MATERIALS PTY LTD	1083	59 PACIFIC HIGHWAY	BENNETTS GREEN	2290
HORNSBY CONCRETE	1084	12 CHILVERS ROAD	THORNLEIGH	2120
BROOKVALE CONCRETE	1085	18 WILLIAM STREET	BROOKVALE	2100
ABLE ALEXANDRIA	1107	131 WYNDHAM STREET	ALEXANDRIA	2015
HYMIX CONCRETE	1127	361 AWABA ROAD	TORONTO	2283
BORAL CONCRETE	1139	LONG ROAD	SMITHFIELD	2164
ROCLA PIPELINE PRODUCTS	1161	OLD BATHURST ROAD	EMU PLAINS	2750
BORAL CONCRETE	1176	136 CHRISTIE STREET	ST MARYS	2760
BORAL CONCRETE	1177	52 BAY ROAD	TAREN POINT	2229
BORAL CONCRETE	1178	MORT STREET	GRANVILLE	2142
BORAL CONCRETE	1179	5 GREENHILLS AVE	MOOREBANK	2170
BORAL CONCRETE	1180	CORNER BAKER AND ANDERSON STREETS	BOTANY	2019
BORAL CONCRETE	1182	FOURTH AVE	BLACKTOWN	2148
BORAL CONCRETE	1183	25 BURROWS ROAD SOUTH	ST PETERS	2044
ADELAIDE BRIGHTON MASONRY PRODUCTS PTY LTD	1199	20 KELSO CRES	MOOREBANK	2170
PIONEER CONSTRUCTION MATERIALS PTY LTD	1206	LOT 7 MARKLEA CLOSE	WYONG	2259
ICON INDUSTRIES PTY LTD	1207	2 FIELD CLOSE	MOOREBANK	2170
PIONEER CONSTRUCTION MATERIALS PTY LTD	1216	4 - 10 FISHER STREET	AUBURN	2144
PIONEER CONSTRUCTION MATERIALS PTY LTD	1217	LOT 48 MELBOURNE ROAD	RIVERSTONE	2765
BORAL CONCRETE	1232	40 WATERVIEW ST	CARLTON	2218
BORAL CONCRETE	1233	2-10 ADA AVE	BROOKVALE	2100
BORAL CONCRETE	1236	88 RESERVE ROAD	ARTARMON	2064
BORAL CONCRETE	1237	23 SEFTON ROAD	THORNLEIGH	2120
CMG SAND & GRAVEL PTY LIMITED	1245	JERDEN STREET	DENMAN	2328
HYMIX CONCRETE	1251	192 HARBORD ROAD	BROOKVALE	2100
HYMIX CONCRETE	1253	41-45 BANK STREET	PYRMONT	2009
PIONEER CONSTRUCTION MATERIALS PTY LTD	1259	23 CARBINE CLOSE	WALLSEND	2287
PIONEER CONSTRUCTION MATERIALS PTY LTD	1261	CNR FLETCHER & GOW STREETS	ADAMSTOWN	2289
UNANDERRA CONCRETE	1263	4-6 GLASTONBURY AVENUE	UNANDERRA	2526
BORAL MASONRY LTD	1303	231 WISEMANS FERRY ROAD	SOMERSBY	2250
HUMES BLACKTOWN	1310	LOT1 WOODSTOCK AVE	ROOTY HILL	2766
PIONEER CONSTRUCTION MATERIALS PTY LTD	1336	3 PIONEER AVE	THORNLEIGH	2120
PIONEER CONSTRUCTION MATERIALS PTY LTD	1337	225 WENTWORTH AVE	PENDLE HILL	2145
PIONEER CONSTRUCTION MATERIALS	1339	46 ORCHARD ROAD	BROOKVALE	2100
PIONEER CONSTRUCTION MATERIALS PTY LTD	1341	66 BLAXLAND ROAD	CAMPBELLTOWN	2560

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
PIONEER CONSTRUCTION MATERIALS PTY LTD	1342	10 DUNLOP STREET	ENFIELD	2136
PIONEER CONSTRUCTION MATERIALS PTY LTD	1344	3 ERSKINE ROAD	CARINGBAH	2229
HANDY-CRETE PTY LIMITED	1345	5 / 423 THE BOULEVARDE	KIRRAWEE	2232
MAITLAND READY MIXED CONCRETE	1348	LOT 91 NEW ENGLAND HIGHWAY	RUTHERFORD	2320
CLEARY BROS CONCRETE	1355	LOT 12 OLD SPRINGHILL ROAD	CONISTON	2500
BORAL CALSIL	1356	SIR JOSEPH BANKS DRIVE	KURNELL	2231
CONCRITE PTY LTD	1358	322 FIVE ISLAND ROAD	UNANDERRA	2526
BAINES CONCRETE	1381	YORK ROAD	WOONONA	2517
PIONEER CONSTRUCTION MATERIALS PTY LTD.	1428	7 KERTA ROAD	KINCUMBER	2251
METROMIX CONCRETE	1436	19 TWYNHAM STREET	KATOOMBA	2780
NEWCASTLE MINI-CRETE	1463	8 NEVIN CLOSE	GATESHEAD	2290
BORAL CONCRETE	1501	DARLINGTON ROAD	SINGLETON	2330
BORAL CONCRETE	1855	GRAHAM HILL ROAD	NARELLAN	2567
WESCO READY MIXED CONCRETE (NSW) PTY. LTD.	1881	70 SARGENTS ROAD	MINCHINBURY	2770
HYMIX CONCRETE	1905	19 TATHRA STREET	GOSFORD WEST	2250
CSR READYMIX	1909	24 BOWRAL STREET	BOWRAL	2576
BORAL CONCRETE	1917	LOT 9 GRIEVE CLOSE	GOSFORD WEST	2250
PIONEER CONSTRUCTION MATERIALS PTY LTD	1926	LOT 30 CARRAMERE ROAD	MUSWELLBROOK	2333
WYONG CONCRETE PLANT	1950	18 PAVITT CRESCENT	WYONG	2259
BORAL CONCRETE	2061	BUDGEWOI ROAD	DOYALSON	2262
BORAL CONCRETE	2063	35 OAKDALE ROAD	GATESHEAD	2290
BORAL CONCRETE	2070	71 ABERGLASSLYN ROAD	RUTHERFORD	2320
BORAL CONCRETE	2071	JOHNSON AVE	WESTON	2326
TERALBA CONCRETE	2103	CNR. PITT & WILLIAM STREETS	TERALBA	2284
BORAL CONCRETE	2141	14 MOTTO LANE	HEATHERBRAE	2324
HYMIX CONCRETE	2146	3 ARIZONA ROAD	CHARMHAVEN	2263
PIONEER CONSTRUCTION MATERIALS PTY LTD	2190	LOT 1 PACIFIC HIGHWAY	DOYALSON	2262
PIONEER CONSTRUCTION MATERIALS PTY LTD	2192	CNR KIRRAWEE ROAD & GLENNIE STREET	NORTH GOSFORD	2250
BORAL CONCRETE	2318	LOT 335 DARRAMBAL CLOSE	RATHMINES	2283
LIVERPOOL CONCRETE	2356	28 REGENT CRESCENT	MOOREBANK	2170
HY-TEC INDUSTRIES PTY LTD	2549	71 STEPHEN ROAD	BOTANY	2019
PIONEER CONSTRUCTION MATERIALS PTY LIMITED	2597	10 METFORD ROAD	EAST MAITLAND	2323
PEBBLECRETE INSITU PTY LTD	2630	238 WOODPARK ROAD	SMITHFIELD	2164
HYMIX CONCRETE	2658	9-10 COCHRANE STREET	KINCUMBER	2251
HYMIX CONCRETE	2701	55 MELBOURNE ROAD	RIVERSTONE	2765
CONCRITE PTY LTD	2712	26 SETON ROAD	MOOREBANK	2170
UNITED CONCRETE PTY LTD	2839	176 NEWTON ROAD	WETHERILL PARK	2164
ABLE HORNSBY	3156	11 SALISBURY ROAD	HORNSBY	2077
CONCRITE PTY LIMITED	3177	LOT 121 BERRIMA ROAD	MOSS VALE	2577
BORAL CONCRETE	3327	16-17 GEORGE ROAD	SALAMANDER BAY	2317
CONCRITE PTY LIMITED	3350	DRAPERS ROAD	MITTAGONG	2575

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
CSR BUILDING PRODUCTS - HEBEL, SOMERSBY	3427	112 WISEMANS FERRY ROAD	SOMERSBY	2250
CONCRITE PTY LIMITED	3428	25 MANDIBLE STREET	ALEXANDRIA	2015
HY-TEC INDUSTRIES PTY LTD	3445	12 LINKS ROAD	ST MARYS	2760
PF CONCRETE (NSW) PTY LTD	3498	KITE STREET	EMU PLAINS	2750
HY-TEC INDUSTRIES PTY LTD	3539	10 BEARING ROAD	SEVEN HILLS	2147
HY-TEC INDUSTRIES PTY LTD	3680	LOT8 HUDSON PLACE	MULGRAVE	2756
BORAL RESOURCES (COUNTRY) PTY LTD	3754	PRT LOTS 1 & 19 FIVE ISLANDS ROAD	PORT KEMBLA	2505
PIONEER CONSTRUCTION MATERIALS PTY	3801	BRIDGE ROAD	GLEBE	2037
CONCRITE PTY LTD	4076	169 HARTLEY ROAD	SMEATON GRANGE	2567
PENRITH QUARRY	4159	CNR SHEENS LANE & CASTLEREAGH ROAD	CASTLEREAGH	2749
PIONEER CONSTRUCTION MATERIALS PTY LTD	4185	SHELLHARBOUR ROAD	SHELLHARBOUR	2529
BORAL CONCRETE	4375	LOTS 19 + 20 SPEEDWELL PLACE	WINDSOR	2756
ROCLA PTY LIMITED	4455	LOT 5 DRAPERS ROAD	MITTAGONG	2575
BORAL MASONRY LIMITED	4664	CLUNIES ROSS STREET	PROSPECT	2148
BAINES TRANSPORT PTY LTD	4705	900 WILTON ROAD	APPIN	2560
CONCRITE PTY LIMITED	4933	CNR SHORT AND DUCK STREETS	AUBURN	2144
MITTAGONG CONCRETE PRODUCTS PTY LTD	4976	LOT3 CARDIGAN STREET	MITTAGONG	2575
HYMIX CONCRETE	5063	14 GRAND AVE	CAMELLIA	2142
PIONEER CONSTRUCTION MATERIALS PTY LTD	5073	OFF WALLGROVE ROAD	EASTERN CREEK	2766
TORNBOS HOLDINGS PTY LTD	5197	14 CULLEN PLACE	SMITHFIELD	2164
COASTWIDE READYMIX CONCRETE	5238	4 APOLLO CLOSE	GOSFORD	2250
WESCO READY MIXED CONCRETE PTY LTD	5415	22 VICTORIA ST	SMITHFIELD	2164
LIDCOMBE CONCRETE	5604	LOT 2 BIRNIE AVENUE	LIDCOMBE	2141
ARTARMON CONCRETE	5609	8 MARSDEN STREET	ARTARMON	2064
PIONEER CONSTRUCTION MATERIALS PTY LTD	5641	54 JEDDA ROAD	PRESTONS	2170
ERSKINE PARK	6377	MAMRE ROAD	ERSKINE PARK	2759
HUNTER READYMIXED CONCRETE PTY LTD	6587	54 GLENWOOD DRIVE	THORNTON	2322
HY-TEC INDUSTRIES PTY LTD	7271	155-157 ADDERLEY ST	AUBURN	2144
HYMIX CONCRETE	7559	12 APPRENTICE DRIVE	BERKELEY VALE	2261
HYMIX CONCRETE	7575	15 KYLE ST	RUTHERFORD	2320
CONCRITE PTY LTD	7588	LOT 11 REDBANK PLACE	PICTON	2571
HY-TEC CONCRETE	11000	202 POWER ROAD	PLUMPTON	2761
HYTEC	11112	100 JEDDA ROAD	PRESTONS	2170
TOTAL CONCRETE SOLUTIONS PTY LTD	11461	261 COOMBES DRIVE	PENRITH	2750
HY-TEC INDUSTRIES PTY LTD	11844	296 COWARD STREET	MASCOT	2020
BORAL CONCRETE	11578	2 KERTA ROAD	KINCUMBER	2251

The emission sources and associated releases to air for concrete batching are outlined in Table 3.61.

Table 3.61: Concrete Batching - Emission Sources

Operation	Process	Emissions to Air
Aggregate Transfer	Truck delivery to ground storage	PM
	Transfer to weigh bins	PM
	Transfer from bins to conveyor	PM
	Conveyor transfer to elevated storage	PM
Sand transfer	Truck delivery to ground storage	PM
	Transfer to weigh bins	PM
	Transfer from bins to conveyor	PM
	Conveyor transfer to elevated storage	PM
Cement transfer	Cement unloading to elevated storage (pneumatic or bucket elevator) silo	PM
Fly ash transfer	Fly ash transfer to elevated storage silo	PM
Mixer loading (central mix)		PM
Truck loading (truck mix)		PM
Fuel Storage		VOCs
Wind erosion of exposed areas		PM

3.20.2 Emissions Estimation Methodology

Emissions from concrete batching have been estimated using techniques provided in the USEPA AP-42, Chapter 11.12 *Concrete Batching* (USEPA, 2001) and data supplied in the industrial questionnaire. More detailed information on the methodology is described in the methodology report (Bawden et. al., 2004).

3.20.3 Activity Data and Assumptions

Data provided in the returned questionnaires allowed for the estimation of emissions from all sources. Default speciation profiles used to estimate speciated emissions of organics are provided in Appendix C. Some facilities provided only the amount of concrete produced and ratios of raw materials used to produce the concrete. The proportions provided have been used to estimate the amount of raw materials used. The proportions supplied are provided in Table 3.62.

Table 3.62: Proportions of Raw Materials Used for Emissions Estimation for Non-Respondent Facilities

Material Type	Proportions
Cement	0.24
Fly ash	0.75
Aggregate	1
Sand	0.78

It was further assumed that the facilities are equipped with standard emissions controls. Outlined in Table 3.63 are the emission sources, control methods utilised and estimation data used for estimating emissions for non-respondent facilities.

Table 3.63: Emission Sources and Estimation Data Used for Non–Respondent Concrete Product Manufacturing Facilities

Emission Source	Control Technologies Utilised	Particulate Control Efficiency
Cement unloading to elevated storage	Baghouse	98%
Conveyor transfer to elevated storage (aggregate)	Wind breaks equipped on conveyors	30%
Conveyor transfer to elevated storage (sand)	Wind breaks equipped on conveyor	30%
Fly ash transfer to elevated storage	Baghouse	98%
Mixer loading (central mix)	Enclosed bins	90%
Transfer from bins to conveyor (aggregate)	Enclosed bins	90%
Transfer from bins to conveyor (sand)	Enclosed bins	90%
Transfer to weigh bins (aggregate)	Enclosed bins	90%
Transfer to weigh bins (sand)	Enclosed bins	90%
Truck delivery to ground storage (aggregate)	No control	0%
Truck delivery to ground storage (sand)	No control	0%
Wind erosion (stockpiles)[a,b,c]	Stockpiles enclosed on three sides	75%

[a] Silt content was assumed to be 10%

[b] Number of rainfall days was assumed to be 138 days provided by the Bureau of Meteorology for Sydney

[c] Frequency of wind speed that exceeds 5.4 m/s was approximately 30%

3.20.4 Emissions Estimation

Estimated emissions from concrete batching facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.64.

Table 3.64: Estimated Emissions from Concrete Batching

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0.01	0	0	0.03	0.05
BENZENE	21.4	0.62	0.21	12.8	35
CARBON MONOXIDE	3,610	0	0	1,580	5,190
FORMALDEHYDE	42.7	0	0	23.9	67
ISOMERS OF XYLENE	21,700	0.49	0.24	23.8	21,700
LEAD & COMPOUNDS	2.91	0.10	0.03	0.23	3.28
OXIDES OF NITROGEN	4,440	0	0	3,070	7,510
PARTICULATE MATTER 10µm	487,200	31,250	12.330	74,900	605,740
PARTICULATE MATTER 2.5µm	113,600	4,700	1,860	13,700	133,900
PERCHLOROETHYLENE	0.78	0	0	2.23	3.01
POLYCYCLIC AROMATIC HYDROCARBONS	0.03	0	0	0.02	0.05
SULFUR DIOXIDE	22.3	0	0	9.73	32.0
TOLUENE	21,300	1.52	0.54	29.1	21,300
TOTAL SUSPENDED PARTICULATES (TSP)	2,266,000	74,100	27,800	225,000	2,592,000
TOTAL VOCS	153,050	77.2	27	1,750	154,900
TRICHLOROETHYLENE (TCE)	0.09	0	0	0.27	0.37

[a] Totals may not appear additive due to rounding

3.20.5 Projection Factors

Projection factors for concrete batching facilities have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth for the concrete product manufacturing sector is proportional to population growth. The projection factors are described in Section 3.1.4.

3.21 Contaminated Soil Treatment (31)

3.21.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.65.

Table 3.65: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
HALLINANS	10562	55 LEE HOLM ROAD	ST MARYS	2760

The emission sources and associated releases to air for contaminated soil treatment are outlined in Table 3.66.

Table 3.66: Contaminated Soil Treatment – Emission Sources

Process	Operation	Emissions to Air
Treatment process	Thermal desorption	VOCs
	Soil vapour extraction	VOCs
	In-situ bioremediation	VOCs
	Ex-situ bioremediation	PM, VOCs
	Incineration	PM, NO_x, CO, SO_2
	Soil washing	VOCs
	Solvent extraction	VOCs
	Soil flushing	VOCs
Excavation and removal		PM
Wind erosion (exposed areas and stockpiles)		PM
Fuel Storage		VOCs
Combustion		Combustion products

3.21.2 Emissions Estimation Methodology

Emissions from contaminated soil treatment facilities have been estimated using data supplied in returned questionnaire and techniques provided in the *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a). More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.21.3 Emissions Estimation

Estimated emissions from contaminated soil treatment facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.67.

Table 3.67: Estimated Emissions from Contaminated Soil Treatment

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	0	0	0	0
CARBON MONOXIDE	0	0	0	0
FORMALDEHYDE	0	0	0	0
ISOMERS OF XYLENE	0	0	0	0
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	0	0	0	0
PARTICULATE MATTER 10µm	0.25	0	0	0.25
PARTICULATE MATTER 2.5µm	0.02	0	0	0.02
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	0	0	0	0
TOLUENE	0	0	0	0
TOTAL SUSPENDED PARTICULATES (TSP)	0.53	0	0	0.53
TOTAL VOCS	0	0	0	0
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.21.4 Projection Factors

Projection factors for contaminated soil treatment have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth for contaminated soil treatment is proportional to population growth. The projection factors are described in Section 3.1.4.

3.22 Crushing, Grinding or Separating Works (32)

3.22.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.68.

Table 3.68: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
BORAL DUNMORE QUARRY	77	PRINCES HIGHWAY	DUNMORE	2529
EMOLEUM	306	12 GRAND AVENUE	CAMELLIA	2142
CSR BUILDING PRODUCTS, WETHERILL PARK	457	376 VICTORIA STREET	WETHERILL PARK	2164
AUSTRAL BRICK, PLANTS 1, 2	546	WALLGROVE ROAD	HORSLEY PARK	2164

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
& 3.				
WOLLONDILLY COAL PREPARATION PLANT	641	BURRAGORANG ROAD	NATTAI	2570
D & J QUARRIES PTY LTD	1246	LOT 1 PACIFIC HIGHWAY	FRAZER PARK	2259
SCE PROCESSING & SCE RECYCLING	1265	LOT1 SHELLHARBOUR ROAD	PORT KEMBLA	2505
UNIMIN AUSTRALIA LIMITED	1266	OLD MAITLAND ROAD	SANDGATE	2304
NOLAN'S QUARRY	1462	NORTONS BASIN ROAD	WARRAGAMBA	2752
GLENLEE COAL PREPARATION PLANT	1596	1 GLENLEE ROAD, CNR SPRINGS AND RICHARDSON ROADS	NARELLAN	2567
SANDY POINT QUARRY	1924	HEATHCOTE ROAD	SANDY POINT	2171
UNIMIN AUSTRALIA LIMITED	2000	CNR UNWIN & SHIRLEY STREETS	GRANVILLE	2142
SOUTHERN LIMESTONE PTY LTD	2008	LACKEY ROAD	MOSS VALE	2577
BORAL AUSTRALIAN GYPSUM	2039	3 THACKERAY STREET	CAMELLIA	2142
PIONEER CONSTRUCTION MATERIALS PTY LTD	2049	McCARTHY'S LANE	CRANEBROOK	2749
BORAL EMU PLAINS QUARRY	2062	RAILWAY STREET	EMU PLAINS	2750
BORAL RECYCLING PTY LIMITED	2091	NUWARRA ROAD	MOOREBANK	2170
PACSONS QUARRIES PTY LTD	2223	BOXVALE ROAD	WELBY	2575
ABEL METAL SERVICES PTY LTD	2639	16-18 KELSO CRESCENT	MOOREBANK	2170
KINCUMBER QUARRY	2807	LOT 7 KERNS RD	KINCUMBER	2251
MOUNT HUNTER QUARRY	3417	BURRAGORANG ROAD	MOUNT HUNTER	2570
KNIGHT'S SYNDICATE PTY LTD	3504	LOT 4, 105 SCHOFIELDS ROAD	ROUSE HILL	2153
LAFARGE PLASTERBOARD	3962	31 MILITARY ROAD	MATRAVILLE	2036
VISY RECYCLING	3984	CORNER MOORE & BAKER STREETS	BOTANY	2019
WOODGRAND	4093	110 SPRINGS ROAD	SPRING FARM	2570
HLEBAR; VINKO AND DRAGA	4578	NORTH STREET	SCHOFIELDS	2762
KARI & GHOSSAYN PTY LTD	4581	CLIFTON AVE	KEMPS CREEK	2171
NUMEVE PTY LTD	4584	50 MEATWORKS AVE	OXFORD FALLS	2100
DIXON SAND AGNES BANKS OPERATION	4939	2 CASTLEREAGH ROAD	CASTLEREAGH	2749
BLACKHILL QUARRY	4978	BLACKHILL ROAD	BLACK HILL	2322
BRANDOWN PTY LIMITED	5186	LOT 9 ELIZABETH DRIVE	KEMPS CREEK	2171
SPEERS POINT QUARRY	5225	HOPKINS STREET	SPEERS POINT	2284
FAIRFIELD CITY COUNCIL RECYCLING CENTRE	5713	HASSALL STREET	WETHERILL PARK	2164
BULK WASTE MANAGEMENT PTY LTD	5857	37 LEE HOLM STREET	ST MARYS	2760
MATERIALS RECYCLING DEPOT	5923	25 BURROWS ROAD	ST PETERS	2044
ONESTEEL SYDNEY STEEL MILL	6125	22 KELLOGG ROAD	ROOTY HILL	2766
BORAL RECYCLING	6266	GREYSTANES ROAD	SOUTH WENTWORTHVILLE	2145
CONCRETE RECYCLERS (GROUP) PTY LIMITED	6664	14 THACKERAY STREET	CAMELLIA	2142
RECYCLED RESOURCES PTY LTD	7481	134 CARNARVON STREET	SILVERWATER	2128

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
PEBBLECRETE INSITU PTY LTD	7567	LOT 1 & 2 PINTA ST	WALLERAWANG	2845
DUNMORE SAND MINE	7653	BUCKLEY ROAD	DUNMORE	2529
MJB WASTE MANAGEMENT PTY. LIMITED	10935	3-5 Duck Street	AUBURN	2144
TOLLBULKSANDS	11300	LAVIS LANE	WILLIAMTOWN	2318
METROPOLITAN DEMOLITIONS AND RECYCLING	11483	396 Princes Highway	ST PETERS	2044
TIPFAST	11673	5A CANAL ROAD	ST PETERS	2044
WESTERN SYDNEY RAIL FRIEGHT FACILITY	11688	OFF CHRISTIE STREET	ST MARYS	2760
N MOIT & SONS EARTHWORKS	11732	UNIT 6/36 CURTIS ROAD	MULGRAVE	2756
WIDEMERE WEST, PROSPECT QUARRY	11815	38 WIDEMERE ROAD	WETHERILL PARK	2164
BORAL COUNTRY CONCRETE AND QUARRIES	11968	100 CORMORANT ROAD	KOORAGANG	2304
VISY RECYCLING	5157	9 BESSEMER STREET	BLACKTOWN	2148

The emission sources and associated releases to air for crushing, grinding or separating works are outlined in Table 3.69.

Table 3.69: Crushing, Grinding or Separating Works - Emission Sources

Operation	Process	Emissions to Air
Drilling and blasting	Drilling	PM
	Blasting	PM
Miscellaneous transfers	Miscellaneous transfers	PM
Crushing	Primary	PM
	Secondary	PM
	Tertiary	PM
Grinding	Dry – fine	PM
Screening	Primary, secondary and tertiary screening	PM
	Fine screening	PM
Fuel Storage		VOCs
Wind erosion	Exposed areas & stockpiles	PM

3.22.2 Emissions Estimation Methodology

Emissions from crushing, grinding and separating facilities have been estimated using data supplied in returned questionnaires and techniques provided in the *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a). More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.22.3 Emissions Estimation

Estimated emissions from crushing, grinding and separating facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.70.

Table 3.70: Estimated Emissions from Crushing, Grinding or Separating Works

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	15	42	0	7.13	64
ACETALDEHYDE	0	0	0	0	0
BENZENE	2,170	47.4	0	8.05	2,230
CARBON MONOXIDE	647,200	3,000	0	265	650,400
FORMALDEHYDE	3,700	59.4	0	0	3,760
ISOMERS OF XYLENE	1,210	55.9	0	16.4	1,280
LEAD & COMPOUNDS	27	0.13	0.13	0.23	28
OXIDES OF NITROGEN	235,200	7,380	0	1,230	243,800
PARTICULATE MATTER 10µm	2,051,000	93,100	4,850	363,000	2,512,000
PARTICULATE MATTER 2.5µm	807,000	25,300	2,060	83,400	917,400
PERCHLOROETHYLENE	355	0	0	0	355
POLYCYCLIC AROMATIC HYDROCARBONS	19.2	0.33	0	0.05	19.6
SULFUR DIOXIDE	257,400	478	0	81.1	257,900
TOLUENE	13,700	258	0	184	14,200
TOTAL SUSPENDED PARTICULATES (TSP)	6,032,000	508,600	8,400	1,381,000	7,930,000
TOTAL VOCS	64,500	1,400	0	1,010	66,900
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

[a] Totals may not appear additive due to rounding

3.22.4 Projection Factors

Projection factors for crushing, grinding or separating works have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth in crushing, grinding or separating facilities in proportional to population growth. The projection factors are described in Section 3.1.4.

3.23 Drum or Container Reconditioning (33)

3.23.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.71.

Table 3.71: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
DRUM RECONDITIONERS (NSW)	124	30-32 POWERS ROAD	SEVEN HILLS	2147
MACQUARIE DRUMS	6835	12-14 BOX AVENUE	WILBERFORCE	2756
ALKEM DRUMS	7082	32 BENT STREET	ST MARYS	2760
DRUM MASTER WOLLONGONG PTY LTD	11788	UNIT 11, LOT 1 YORK ROAD	WOONONA	2517
TANK MANAGEMENT SERVICES	11877	89 REDFERN STREET	WETHERILL PARK	2164
BETTER DRUMS PTY LTD	11963	42 PLASSER CRESCENT	ST MARYS	2760
CROSSROAD DRUM COMPANY	11977	Unit 3 No. 13 York Road	INGLEBURN	2565

The emission sources and associated releases to air for drum and container reconditioning are outlined in Table 3.72.

Table 3.72: Drum and Container Reconditioning - Emission Sources

Operation	Emissions to Air
Surface preparation & abrasive blasting	PM
Painting	VOCs
Equipment cleaning (solvent usage)	VOCs
Fuel storage	VOCs
Drum burnout furnace	Combustion products

3.23.2 Emissions Estimation Methodology

Emissions from drum or container reconditioning facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.23.3 Emissions Estimation

Estimated emissions from drum or container reconditioning facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.73.

Table 3.73: Estimated Emissions from Drum and Container Reconditioning

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	8.67	0	0	8.67
CARBON MONOXIDE	676	0	2.10	678
FORMALDEHYDE	17.6	0	0.07	17.6
ISOMERS OF XYLENE	6,890	0	160	7,049
LEAD & COMPOUNDS	22.7	0	0	22.7
OXIDES OF NITROGEN	3,190	0	8.4	3,200
PARTICULATE MATTER 10µm	123	0	0.46	123
PARTICULATE MATTER 2.5µm	123	0	0.45	123
PERCHLOROETHYLENE	0.31	0	0	0.31
POLYCYCLIC AROMATIC HYDROCARBONS	0.01	0	0	0.01
SULFUR DIOXIDE	18.2	0	3.0	21.1
TOLUENE	21,400	0	790	22,209
TOTAL SUSPENDED PARTICULATES (TSP)	123	0	0.47	123
TOTAL VOCS	63,500	0	3,110	66,700
TRICHLOROETHYLENE (TCE)	0.04	0	0	0.04

[a] Totals may not appear additive due to rounding

3.23.4 Projection Factors

Projection factors for drum or container reconditioning have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of

Planning. This methodology assumes that activity growth for drum or container reconditioning facilities is proportional to population growth. The projection factors are described in Section 3.1.4.

3.24 Electricity Generation - Generation of electrical power from coal (34[a])

3.24.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.74.

Table 3.74: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
MUNMORAH POWER STATION	759	OFF SCENIC DRIVE	DOYALSON	2262
VALES POINT POWER STATION AND COAL UNLOADER	761	OFF VALES POINT ROAD	MANNERING PARK	2259
MOUNT PIPER POWER STATION	766	350 BOULDER ROAD	PORTLAND	2847
WALLERAWANG POWER STATION	766	350 BOULDER ROAD	PORTLAND	2847
BAYSWATER POWER STATION	779	NEW ENGLAND HIGHWAY	MUSWELLBROOK	2333
ERARING POWER STATION	1429	3 & 28 ROCKY POINT ROAD AND 45 POINT PIPER ROAD	ERARING	2264
LIDDELL POWER STATION	2122	NEW ENGLAND HIGHWAY	LIDDELL	2333
REDBANK POWER STATION	11262	112 LONGPOINT Road	WARKWORTH	2330

The emission sources and associated releases to air for generation of electrical power from coal are outlined in Table 3.75.

Table 3.75: Emission Sources - Electricity Generation from Coal

Operation	Emissions to Air
Coal transfer	PM
Coal stockpiles	PM
Fuel storage	VOCs
Combustion	Combustion products
Cooling towers	PM

3.24.2 Emissions Estimation Methodology

Emissions from coal fired electricity generation facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Fossil Fuel Electric Power Generation v2.4* (Environment Australia, 2005a)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.24.3 Emissions Estimation

Estimated emissions from coal fired electricity generation facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.76.

Table 3.76: Estimated Emissions from Generation of Electrical Power from Coal

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0.06	0.06
BENZENE	0	0	0	7.49	7.49
CARBON MONOXIDE	0	0	0	6,856,000	6,856,000
FORMALDEHYDE	0	0	0	0.34	0.34
ISOMERS OF XYLENE	0	0	0	243,800	243,800
LEAD & COMPOUNDS	0	0	0	1,033	1,033
OXIDES OF NITROGEN	0	0	0	145,400,000	145,400,000
PARTICULATE MATTER 10µm	0	0	0	4,816,000	4,816,000
PARTICULATE MATTER 2.5µm	0	0	0	1,708,000	1,708,000
PERCHLOROETHYLENE	0	0	0	4.01	4.01
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	292	292
SULFUR DIOXIDE	0	0	0	261,300,000	261,300,000
TOLUENE	0	0	0	28,600	28,600
TOTAL SUSPENDED PARTICULATES (TSP)	0	0	0	10,790,000	10,790,000
TOTAL VOCS	0	0	0	697,900	697,900
TRICHLOROETHYLENE (TCE)	0	0	0	0.49	0.49

[a] Totals may not appear additive due to rounding

3.24.4 Projection Factors

Projection factors for generation of electrical power from coal have been derived based on ABARE projected primary energy consumption of black coal for electricity generation in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c).

The projection factors for electricity generation from coal are provided in Table 3.77.

Table 3.77: Projection Factors for Electricity Generation from Coal

Year	Annual Black Coal Consumption (PJ/year) [a]	Projection Factor
2003	648.5	1.0000
2004	646.0	0.9961
2005	652.4	1.0060
2006	663.5	1.0232
2007	670.7	1.0341
2008	677.1	1.0441
2009	683.7	1.0543
2010	694.1	1.0702
2011	703.5	1.0847
2012	716.5	1.1049
2013	741.3	1.1431
2014	754.8	1.1639
2015	767.0	1.1826
2016	778.7	1.2007
2017	790.2	1.2184
2018	801.3	1.2356
2019	812.1	1.2523
2020	823.4	1.2697
2021	835.4	1.2881
2022	846.5	1.3052
2023	856.7	1.3210
2024	866.9	1.3367
2025	877.0	1.3523
2026	887.4	1.3684
2027	897.7	1.3842
2028	907.7	1.3997
2029	916.8	1.4137
2030		1.4277
2031		1.4416

[a] Source: ABARE, 2005a; ABARE 2005b; ABARE 2005c

3.25 Electricity Generation - Generation of electrical power from gas (34[b])

3.25.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.78.

Table 3.78: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
LUCAS HEIGHTS 1 LFG POWER STATION	4805	542 - 600 NEW ILLAWARRA ROAD	MENAI	2234
BELROSE LFG POWER STATION	5180	CROZIER RD	BELROSE	2085
TOWER COAL SEAM METHANE POWER STATION	5357	DOUGLAS PARK DRIVE	DOUGLAS PARK	2569
APPIN COAL SEAM METHANE POWER STATION	5482	NORTHHAMPTON DALE ROAD	APPIN	2560
SMITHFIELD ENERGY FACILITIES	5701	33 HERBERT PLACE	SMITHFIELD	2164
NEW LUCAS HEIGHTS LANDFILL	6345	LITTLE FOREST ROAD	LUCAS HEIGHTS	2234
JACKS GULLY WASTE MANAGEMENT CENTRE	10021	Richardson Road	MOUNT ANNAN	2567
EASTERN CREEK WASTE MANAGEMENT CENTRE	10042	WALLGROVE ROAD	EASTERN CREEK	2766
TAHMOOR POWER GENERATION PLANT	11768	REMEMBRANCE DRIVE	TAHMOOR	2573

The emission sources and associated releases to air for generation of electrical power from gas are outlined in Table 3.79.

Table 3.79: Electricity Generation from Gas - Emission Sources

Operation	Process	Emissions to Air
Combustion	Gas combustion in boilers	Combustion products
	Gas combustion in stationary gas turbines	Combustion products
	Gas combustion in internal combustion engines	Combustion products

3.25.2 Emissions Estimation Methodology

Emissions from gas fired electricity generation facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Fossil Fuel Electric Power Generation v2.4* (Environment Australia, 2005a)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Combustion in Boilers Version 1.2* (Environment Australia, 2003c)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.25.3 Emissions Estimation

Estimated emissions from gas fired electricity generation facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.80.

Table 3.80: Estimated Emissions from Generation of Electrical Power from Gas

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0.90	0	0	0.90
ACETALDEHYDE	522	0	0	522
BENZENE	1,920	0	0	1,920
CARBON MONOXIDE	2,520,000	0	0	2,520,000
FORMALDEHYDE	110,500	0	0	110,500
ISOMERS OF XYLENE	696	0	0	696
LEAD & COMPOUNDS	2.23	0	0	2.23
OXIDES OF NITROGEN	2,681,000	0	0	2,681,000
PARTICULATE MATTER 10µm	46,600	0	0	46,600
PARTICULATE MATTER 2.5µm	46,400	0	0	46,400
PERCHLOROETHYLENE	0.04	0	0	0.04
POLYCYCLIC AROMATIC HYDROCARBONS	76.8	0	0	76.8
SULFUR DIOXIDE	12,600	0	0	12,600
TOLUENE	696	0	0	696
TOTAL SUSPENDED PARTICULATES (TSP)	46,600	0	0	46,600
TOTAL VOCS	501,900	0	0	501,900
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.25.4 Projection Factors

Projection factors for electricity generation from gas have been derived based on ABARE projected primary energy consumption of natural gas and biogas for electricity generation in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c). Projection factors derived from projected electricity generation from natural gas have been used for EPL number 5701 (Smithfield Energy Facilities) while projection factors derived from projected electricity generation from biogas have been used for all other facilities.

The projection factors for electricity generation from gas and biogas are provided in Table 3.81 and Table 3.82.

Table 3.81: Projection Factors for Electricity Generation from Gas

Year	Annual Natural Gas Consumption[a] (PJ/year)	Projection Factor
2003	19.1	1.0000
2004	19.1	0.9981
2005	19.6	1.0250
2006	20.7	1.0821
2007	21.7	1.1358
2008	22.7	1.1853
2009	23.6	1.2333
2010	24.6	1.2860
2011	25.5	1.3342
2012	26.6	1.3898
2013	28.0	1.4603
2014	29.1	1.5211
2015	30.3	1.5814
2016	31.4	1.6421
2017	32.6	1.7026
2018	33.7	1.7622
2019	34.8	1.8205
2020	36.0	1.8832
2021	37.4	1.9524
2022	38.7	2.0240
2023	40.1	2.0973
2024	41.6	2.1724
2025	43.0	2.2488
2026	44.5	2.3268
2027	46.1	2.4066
2028	47.6	2.4889
2029	49.3	2.5757
2030		2.6625
2031		2.7493

[a] Source: ABARE 2005a; ABARE 2005b; ABARE 2005c

Table 3.82: Projection Factors for Electricity Generation from Biogas

Year	Annual Biogas Consumption[a] (PJ/year)	Projection Factor
2003	3.0	1.0000
2004	7.2	2.4247
2005	14.7	4.9450
2006	20.1	6.7424
2007	20.2	6.7887
2008	20.4	6.8501
2009	20.6	6.8994
2010	20.7	6.9510
2011	20.7	6.9463
2012	20.7	6.9594
2013	20.5	6.8903
2014	20.3	6.8222
2015	20.1	6.7548
2016	19.9	6.6877
2017	19.7	6.6216
2018	19.5	6.5562
2019	19.4	6.4911
2020	19.2	6.4267
2021	19.0	6.3633
2022	18.8	6.3002
2023	18.6	6.2378
2024	18.4	6.1761
2025	18.2	6.1151
2026	18.0	6.0543
2027	17.9	5.9943
2028	17.7	5.9353
2029	17.5	5.8762
2030		5.8172
2031		5.7581

[a] Source: ABARE 2005a; ABARE 2005b; ABARE 2005c

3.26 Electricity Generation - Generation of electrical power other than from coal or gas (34[c])

3.26.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.83.

Table 3.83: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
EARTHPOWER BIOMASS FACILITY	11797	35 GRAND AVENUE	CAMELLIA	2142

The emission sources and associated releases to air for generation of electrical power other from coal or gas are outlined in Table 3.84.

Table 3.84: Generation of Electricity other than from Coal or Gas - Emission Sources

Operation	Emissions to Air
Combustion	Combustion products
Composting	NH_3, VOCs
Wastewater vaporisation	VOCs

3.26.2 Emissions Estimation Methodology

Emissions from electricity generation from other than coal or gas facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for MSW Landfills* (Environment Australia, 2005b)
- *Estimating Ammonia Emissions from Non-Agricultural Sources – Draft Final Report* (EIIP, April 2004)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.26.3 Emissions Estimation

Estimated emissions from electricity generation from other than coal or gas facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.85.

Table 3.85: Estimated Emissions from Generation of Electrical Power other than from Coal or Gas

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	64.3	0	0	64.3
BENZENE	422	0	0	422
CARBON MONOXIDE	100,700	0	0	100,700
FORMALDEHYDE	2,040	0	0	2,040
ISOMERS OF XYLENE	1,540	0	0	1,540
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	1,026,000	0	0	1,026,000
PARTICULATE MATTER 10µm	492	0	0	492
PARTICULATE MATTER 2.5µm	492	0	0	492
PERCHLOROETHYLENE	1830	0	0	1830
POLYCYCLIC AROMATIC HYDROCARBONS	7.54	0	0	7.54
SULFUR DIOXIDE	165	0	0	165
TOLUENE	4,600	0	0	4,600
TOTAL SUSPENDED PARTICULATES (TSP)	492	0	0	492
TOTAL VOCS	56,000	0	0	56,000
TRICHLOROETHYLENE (TCE)	211	0	0	211

3.26.4 Projection Factors

Projection factors for electricity generation from other than coal and gas have been derived based on ABARE projected primary energy consumption of biogas for electricity generation in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c). The projection factors for electricity generation from other than from coal and gas are provided in Table 3.82.

3.27 Environmentally Sensitive Area Landfilling (81)

3.27.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.86.

Table 3.86: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
WONGAWILLI WASTE EMPLACEMENT	2575	JERSEY FARM ROAD	WONGAWILLI	2530
CHELTENHAM ROAD PARK DEVELOPMENT	4522	34 CHELTENHAM ROAD	CROYDON	2132
PORTERS CREEK DEPOT	4553	WICKS ROAD	NORTH RYDE	2113
FINES DISPOSAL FACILITY	5022	CURLEW STREET	KOORAGANG	2304
KATOOMBA WASTE MANAGEMENT FACILITY	5481	49-89 WOODLANDS ROAD	KATOOMBA	2780
BARGO WASTE MANAGEMENT CENTRE	6061	ANTHONY ROAD	BARGO	2574
WARRAGAMBA WASTE MANAGEMENT CENTRE	6062	PRODUCTION AVE	WARRAGAMBA	2752
CESSNOCK WASTE AND REUSE CENTRE	6121	OLD MAITLAND ROAD	CESSNOCK	2325
SALT PAN CREEK TIP	10636	KENTUCKY ROAD	RIVERWOOD	2210
PORTLAND GARBAGE DEPOT	10936	CULLEN BULLEN RD	PORTLAND	2847
MANGROVE MOUNTAIN MEMORAL GOLF CLUB	11395	LOT 584, DP 809570, HALLARDS ROAD	CENTRAL MANGROVE	2250

The emissions associated with landfill operations are summarised in Table 3.87.

Table 3.87: Landfills – Emission Sources

Source	Emissions to Air
Anaerobic digestion	CO, VOCs, H_2S
Fuel storage	VOCs
Landfill gas combustion	Combustion products
Wind erosion	PM
Material handling (i.e. soil)	PM

3.27.2 Emissions Estimation Methodology

Emissions from environmentally sensitive area landfilling facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for MSW Landfills* (Environment Australia, 2005b)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.27.3 Emissions Estimation

Estimated emissions from environmentally sensitive area landfilling facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.88.

Table 3.88: Estimated Emissions from Environmentally Sensitive Area Landfilling

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0		0
ACETALDEHYDE	0	0	0		0
BENZENE	200	0	0	100	300
CARBON MONOXIDE	1,110	0	0	2,860	3,970
FORMALDEHYDE	0	0	0	0	0
ISOMERS OF XYLENE	300	0	0	150	450
LEAD & COMPOUNDS	0	0	0.05	0	0.05
OXIDES OF NITROGEN	0	0	0	60.3	60.3
PARTICULATE MATTER 10µm	50,800	0	6,620	19,400	76,800
PARTICULATE MATTER 2.5µm	10,400	0	1,270	3,920	15,600
PERCHLOROETHYLENE	100	0	0	49.0	149
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	0	0	3.1	3.1
TOLUENE	3,500	0	0	1,720	5,220
TOTAL SUSPENDED PARTICULATES (TSP)	115,500	0	13,300	39,500	168,300
TOTAL VOCS	12,600	0	0	6,280	18,900
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

[a] Totals may not appear additive due to rounding

3.27.4 Projection Factors

Projection factors for environmentally sensitive landfilling have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from environmentally sensitive area landfilling is proportional to population growth. The projection factors are described in Section 3.1.4.

3.28 Explosive or Pyrotechnics Production (16)

3.28.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.89.

Table 3.89: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
ORICA AUSTRALIA TECHNICAL CENTRE	4121	GEORGE BOOTH DRIVE	KURRI KURRI	2327
HOWARD & SONS PYROTECHNICS (MANUFACTURING) PTY LTD	11640	581 PORTLAND ROAD	WALLERAWANG	2845

The emission sources and associated releases to air for explosive or pyrotechnics production processes are outlined in Table 3.90.

Table 3.90: Explosive or Pyrotechnics Production – Emission Sources

Emission Source	Emissions to Air
Combustion	Combustion products
Wastewater vaporisation	VOCs
Ammonium nitrate (test firing)	Combustion products
Solvent cleaning	VOCs
Fuel storage	VOCs

3.28.2 Emissions Estimation Methodology

Emissions from explosive or pyrotechnics production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers Version 1.2* (Environment Australia, 2003b)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.28.3 Emissions Estimation

Estimated emissions from explosive or pyrotechnics production facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.91.

Table 3.91: Estimated Emissions from Explosive or Pyrotechnics Production

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	0	0.01	0	0	0.01
CARBON MONOXIDE	0	1.2	0	0	1.2
FORMALDEHYDE	0	0.05	0	0	0.05
ISOMERS OF XYLENE	0	0.13	0	47.0	47.1
LEAD & COMPOUNDS	0	0	0	0	0
OXIDES OF NITROGEN	0	177	0	0	177.2
PARTICULATE MATTER 10µm	0	0.26	0	0	0.26
PARTICULATE MATTER 2.5µm	0	0.26	0	0	0.26
PERCHLOROETHYLENE	0	0.12	0	0	0.12
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	1.7	0	0	1.7
TOLUENE	0	0.08	0	230	231
TOTAL SUSPENDED PARTICULATES (TSP)	0	0.27	0	0	0.3
TOTAL VOCS	0	1.28	0	658	660
TRICHLOROETHYLENE (TCE)	0	0.01	0	0	0.01

[a] Totals may not appear additive due to rounding

3.28.4 Projection Factors

Projection factors for explosive or pyrotechnics production have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from explosive or pyrotechnics production is proportional to population growth. The projection factors are described in Section 3.1.4.

3.29 Freeway or Tollway Construction (38)

3.29.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.92.

Table 3.92: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
ROADS AND TRAFFIC AUTHORITY OF NSW	11647	F3 SYDNEY TO NEWCASTLE FREEWAY, JOLLS BRIDGE TO MO	GOSFORD	2250
CROSS CITY TUNNEL	11804	-	SYDNEY	2000
WESTLINK M7	11875	FROM CONNECTION WITH M5 AT CAMDEN VALLEY WAY TO CO	BLACKTOWN	2148

The emission sources and associated releases to air for Freeway or Tollway Construction are outlined in Table 3.93.

Table 3.93: Freeway or Tollway Construction - Emission Sources

Operation	Process	Emissions to Air
Site preparation	Earth moving equipment (bulldozers, scrapers, graders)	PM
Fuel storage		VOCs
Portable plants	Crushing	PM
	Screening	PM
	Material transfer	Combustion products
Wind erosion		PM

3.29.2 Emissions Estimation Methodology

Emissions from freeway or tollway construction facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.29.3 Emissions Estimation

Estimated emissions from freeway or tollway construction facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.94.

Table 3.94: Estimated Emissions from Freeway or Tollway Construction

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	0	0	0	0	0
CARBON MONOXIDE	0	0	0	0	0
FORMALDEHYDE	0	0	0	0	0
ISOMERS OF XYLENE	0	0	0	0	0
LEAD & COMPOUNDS	0.27	0	0	0	0.27
OXIDES OF NITROGEN	1.84	0	0	0	1.84
PARTICULATE MATTER 10µm	43,300	0	0	44,100	87,400
PARTICULATE MATTER 2.5µm	5,750	0	0	8,750	14,500
PERCHLOROETHYLENE	0.05	0	0	0	0.05
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	0	0	0	0
TOLUENE	0.1	0	0	0	0.1
TOTAL SUSPENDED PARTICULATES (TSP)	116,900	0	0	79,800	196,700
TOTAL VOCS	2.88	0	0	0	2.88
TRICHLOROETHYLENE (TCE)	0.01	0	0	0	0.01

[a] Totals may not appear additive due to rounding

3.29.4 Projection Factors

Projection factors for freeway or tollway construction have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth in freeway or tollway construction is proportional to population growth. The projection factors are described in Section 3.1.4.

3.30 Glass Production - Production of container glass (12[a])

3.30.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.95.

Table 3.95: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
ACI GLASS PACKAGING	6357	130-172 ANDREW ROAD	PENRITH	2750

The emission sources and associated releases to air for container glass production processes are outlined in Table 3.96.

Table 3.96: Glass Production – Production of Container Glass – Emission Sources

Operation	Emissions
Melting furnace	PM, SO_2, NO_x, CO, VOCs
Fuel storage	VOCs

3.30.2 Emissions Estimation Methodology

Emissions from container glass production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Glass and Glass Fibre Manufacturing* (Environment Australia, 1998b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.30.3 Emissions Estimation

Estimated emissions from container glass production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.97.

Table 3.97: Estimated Emissions from Production of Container Glass

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	1,340	0	0	1,340
CARBON MONOXIDE	18,700	0	0	18,700
FORMALDEHYDE	750	0	0	750
ISOMERS OF XYLENE	0.05	0	0	0.05
LEAD & COMPOUNDS	2,280	0	0	2,280
OXIDES OF NITROGEN	1,609,000	0	0	1,609,000
PARTICULATE MATTER 10µm	86,300	0	0	86,300
PARTICULATE MATTER 2.5µm	86,300	0	0	86,300
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	646,000	0	0	646,000
TOLUENE	364	0	0	364
TOTAL SUSPENDED PARTICULATES (TSP)	109,500	0	0	109,500
TOTAL VOCS	38,000	0	0	38,000
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.30.4 Projection Factors

Projection factors for glass production facilities have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth in the glass product manufacturing sector is proportional to population growth. The projection factors are described in Section 3.1.4.

3.31 Glass Production - Production of float glass (12[b])

3.31.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.98.

Table 3.98: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
PILKINGTON GLASS ALEXANDRIA	838	8-40 EUSTON ROAD	ALEXANDRIA	2015
PILKINGTON (AUSTRALIA) LIMITED	2692	8 WILLIAMSON ROAD	INGLEBURN	2565
PILKINGTON (AUSTRALIA) LIMITED	6138	133-145 NEWTON ROAD	WETHERILL PARK	2164

The emission sources and associated releases to air from float glass production processes are outlined in Table 3.99.

Table 3.99: Glass Production – Production of Float Glass – Emission Sources

Operation	Emissions
Melting furnace	PM, SO_2, NO_x, CO, VOCs
Combustion	Combustion products
Fuel storage	VOCs
Materials handling	PM

3.31.2 Emissions Estimation Methodology

Emissions from float glass production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Glass and Glass Fibre Manufacturing* (Environment Australia, 1998b)
- *NPI EET Manual for Combustion in Boilers Version 1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.31.3 Emissions Estimation

Estimated emissions from float glass production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.100.

Table 3.100: Estimated Emissions from Production of Float Glass

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	445	0	0	445
CARBON MONOXIDE	10,400	0	0	10,400
FORMALDEHYDE	257	0	0	257
ISOMERS OF XYLENE	0.85	0	0	0.85
LEAD & COMPOUNDS	0.29	0	0	0.29
OXIDES OF NITROGEN	839,200	0	0	839,200
PARTICULATE MATTER 10µm	112,800	0	0	112,800
PARTICULATE MATTER 2.5µm	111,200	0	0	111,200
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0.01	0	0	0.01
SULFUR DIOXIDE	178,900	0	0	178,900
TOLUENE	123	0	0	123
TOTAL SUSPENDED PARTICULATES (TSP)	114,900	0	0	114,900
TOTAL VOCS	12,600	0	0	12,600
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.31.4 Projection Factors

Projection factors for glass production facilities have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that activity growth in the glass product manufacturing sector is proportional to population growth. The projection factors are described in Section 3.1.4.

3.32 Hard-Rock Gravel Quarrying (36)

3.32.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.101.

Table 3.101: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
READYMIX ALBION PARK QUARRY	122	WOOLLYBUTT DRIVE	ALBION PARK RAIL	2527
METROMIX QUARRIES	536	RHONDDA ROAD	TERALBA	2284
ALLANDALE QUARRY	544	ALLANDALE ROAD	MAITLAND	2320
EXETER QUARRY	870	ROCKLEIGH ROAD	EXETER	2579
METROMIX QUARRIES	1464	138 OAKEY FOREST ROAD	MARRANGAROO	2790
BRANDY HILL QUARRY	1879	OFF SEAHAM ROAD	SEAHAM	2324
BORAL PEATS RIDGE QUARRY	2068	BUSHELLS ROAD	PEATS RIDGE	2250
KULNURA QUARRY	2147	61 GEORGE DOWNES DRIVE	KULNURA	2250
PIONEER CONSTRUCTION MATERIALS PTY LTD	2193	BOOLLWARROO PARADE	SHELLHARBOUR	2529
KURRAJONG QUARRY	2892	BULLRIDGE ROAD	EAST KURRAJONG	2758
SEAHAM QUARRY	3956	ITALIA ROAD	SEAHAM	2324
CLEARY BROS (BOMBO) PTY LTD	4025	MEDHURST ROAD	MENANGLE PARK	2563
STOCKRINGTON QUARRY	5108	DOGHOLE ROAD	STOCKRINGTON	2322
DARACON QUARRIES	5517	DIEMARS ROAD	SALAMANDER BAY	2317
HEBDEN QUARRY	7390	LOT 5 HEBDEN ROAD	HEBDEN	2330
MARSDEN PARK LANDFILL	11497	RICHMOND ROAD	MARSDEN PARK	2765
CATTAI SANDSTONE QUARRY	12023	Wisemans Ferry Road	CATTAI	2756

The emission sources and associated releases to air for Hard Rock Gravel Quarrying works are outlined in Table 3.102.

Table 3.102: Hard Rock Gravel Quarrying - Emission Sources

Operation	Process	Emissions to Air
Drilling and blasting	Drilling	PM
	Blasting	PM
Miscellaneous transfers	Miscellaneous transfers	PM
Crushing	Primary	PM
	Secondary	PM
	Tertiary	PM
Screening	Primary, secondary and tertiary screening	PM
Fuel storage		VOCs
Wind erosion	Exposed areas & stockpiles	PM

3.32.2 Emissions Estimation Methodology

Emissions from hard rock gravel quarrying facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.32.3 Emissions Estimation

Estimated emissions from hard rock gravel quarrying facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.103.

Table 3.103: Estimated Emissions from Hard Rock Gravel Quarrying

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	70.6	0	0	0	70.6
CARBON MONOXIDE	392	0	0	0	392
FORMALDEHYDE	0	0	0	0	0
ISOMERS OF XYLENE	107	0.38	0	5,410	5,520
LEAD & COMPOUNDS	0.2	1.47	0	3.61	5.23
OXIDES OF NITROGEN	0	0	0	0	0
PARTICULATE MATTER 10µm	125,100	158,300	0	1,404,000	1,687,500
PARTICULATE MATTER 2.5µm	34,200	40,800	0	359,800	434,700
PERCHLOROETHYLENE	35.3	0	0	0	35.3
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	0	0	0	0
TOLUENE	1,240	0.12	0	11,600	12,900
TOTAL SUSPENDED PARTICULATES (TSP)	740,600	868,460	0	7,175,000	8,780,600
TOTAL VOCS	4,460	5.2	0	165,600	170,100
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

[a] Totals may not appear additive due to rounding

3.32.4 Projection Factors

Projection factors for hard-rock gravel quarrying have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. Population was chosen as an ideal surrogate to estimate the growth in the hard-rock gravel quarrying sector as historical data show that over long periods (i.e. > 10 years), consumption of coarse aggregate and construction sand per capita in the Sydney region has remained relatively constant (DMR, 2000; DMR, 2001). The projection factors are described in Section 3.1.4.

3.33 Hazardous, Industrial or Group A Waste Generation or Storage (73)

3.33.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.104.

Table 3.104: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
BOC GASES	2090	73A ELIZABETH STREET	TIGHES HILL	2297
ORICA AUSTRALIA PTY LTD	2149	GATE 1, 2 CHRISTINA ROAD	VILLAWOOD	2163
PARKER HANNIFIN (AUSTRALIA) PTY LIMITED	2847	9 CARRINGTON ROAD	CASTLE HILL	2154
INSULATION SOLUTIONS	2862	161 ARTHUR STREET	HOMEBUSH	2140
PRECISION VALVE AUSTRALIA PTY LTD	2945	85 WILLIAMSON ROAD	INGLEBURN	2565
PIRELLI TELECOM CABLES & SYSTEMS AUSTRALIA PTY LIMITED	2972	1 THEW PARADE	DEE WHY	2099
M.S.A. (AUST) PTY LTD	3022	137 GILBA ROAD	GIRRAWEEN	2145
DRUM AND WASTE SOLUTIONS PTY LTD	3122	41 FRANK STREET	WETHERILL PARK	2164
HUHTAMAKI AUSTRALIA	3215	120 MILEHAM STREET	WINDSOR	2756
JAMES WALKER FACTORY	4190	32 CLAPHAM RD	REGENTS PARK	2143
DOWDING & MILLS (AUSTRALIA) PTY LIMITED	5934	14-16 CLYDE STREET	RYDALMERE	2116
KACKELL PTY. LTD.	5960	110 SUNNYHOLT ROAD	BLACKTOWN	2148
B. M. HIGGINBOTTOM PTY LTD	6069	15 ELIZABETH STREET	CAMPSIE	2194
AUST-TECH FURNITURE PTY LIMITED	6088	231 COWPASTURE ROAD	WETHERILL PARK	2164
ERS AUSTRALIA PTY LTD	6091	6-8 RAYBEN STREET	GLENDENNING	2761
ERS AUSTRALIA PTY LIMITED	6094	41 MUNIBUNG ROAD	CARDIFF	2285
CROWN EQUIPMENT PTY LTD	6275	129-131 LONG STREET	SMITHFIELD	2164
ALLIED SIGNAL GARRETT TURBOCHARGERS	6340	14 ALFRED RD	CHIPPING NORTON	2170
COCA-COLA AMATIL (AUST) PTY LTD	6355	1 STURT STREET	SMITHFIELD	2164
BRITISH AMERICAN TOBACCO AUSTRALIA SERVICES LIMITED	6449	WESTFIELD DRIVE	PAGEWOOD	2035
MORRIS MCMAHON & CO PTY LTD	6601	34 ARNCLIFFE ST	ARNCLIFFE	2205
VEMADELL PTY. LIMITED	6738	58 MEEKS ROAD	MARRICKVILLE	2204

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
MCILWRAITH-DAVEY PTY LTD	6747	194 MILPERRA RD	REVESBY	2212
SKIPPER AUSTRALIA PTY LIMITED	6805	199 MILLER ROAD	VILLAWOOD	2163
HEIDELBERG GRAPHIC EQUIPMENT LIMITED	6806	50 O'DEA AVE	WATERLOO	2017
GONINANS	6808	16 BROADMEADOW ROAD	BROADMEADOW	2292
FUJI XEROX AUSTRALIA PTY LIMITED	6941	546 GARDENERS ROAD	ALEXANDRIA	2015
STAHL AUSTRALIA PTY LTD	7011	15 SAMMUT STREET	SMITHFIELD	2164
DIGITAL AUDIO TECHNOLOGIES AUSTRALIA	7017	UNIT 28, SLOUGH BUSINESS PARK, SLOUGH AVENUE	SILVERWATER	2128
MTU AUSTRALIA PTY LTD	7036	11-13 GARLING ROAD	KINGS PARK	2148
HM GEM ENGINES	7113	24-28 ALFRED ROAD	CHIPPING NORTON	2170
PROQUALIX PTY	7137	59 LISBON STREET	FAIRFIELD	2165
CROWN EQUIPMENT PTY LTD	7380	CNR COOPER & LONG STREETS	SMITHFIELD	2164
PEREGRINE SEMICONDUCTOR AUSTRALIA PTY LIMITED	7509	8 HERB ELLIOTT AVE	HOMEBUSH	2140
CHEMSAL	7541	LOT 7 & 8 BUSHELLS PLACE	WETHERILL PARK	2164
TECRA INTERNATIONAL PTY. LTD.	7551	13 RODBOROUGH ROAD	FRENCHS FOREST	2086
DANA SPICER AXLE AUSTRALIA PTY LTD	7602	58 LISBON STREET	FAIRFIELD	2165
WIKA AUSTRALIA	7664	UNIT N, 10-16 SOUTH STREET	RYDALMERE	2116
DIAL-A-DUMP PTY. LIMITED	10350	33 BURROWS ROAD (ALSO KNOWN AS 53-57 CAMPBELL ROAD	ST PETERS	2044
BOSTIK FINDLEY AUSTRALIA PTY LTD	10631	21 TATTERSALL ROAD	BLACKTOWN	2148
REDOX CHEMICALS	10633	30-32 REDFERN STREET	WETHERILL PARK	2164
NATIONWIDE OIL PTY LTD	11234	47 WERMOL STREET	KURRI KURRI	2327
GRACE AUSTRALIA PTY LTD	11343	BLOCK M, 391 PARK ROAD	REGENTS PARK	2143
ENVIRONMENTAL WASTE MANAGERS (NSW) PTY LIMITED	11383	99 KYLE STREET	RUTHERFORD	2320
FIRMENICH LIMITED	11414	73 KENNETH ROAD	BALGOWLAH	2093
DUX MANUFACTURING LIMITED	11481	COLLINS ROAD	MOSS VALE	2577
GILBARCO AUSTRALIA LIMITED	11652	20 HIGHGATE STREET	AUBURN	2144
AIR FILTER DRY CLEANING SYSTEMS - NSW	11658	18 ENTERPRISE CRESCENT	SINGLETON	2330
PENFOLD BUSCOMBE	11790	16-20 BAKER STREET	BOTANY	2019
CAP-XX	11801	9-10/12 MARS ROAD	LANE COVE	2066
AMPCONTROL RES PTY LIMITED	11807	8 MARTIN DRIVE	TOMAGO	2322
CRC INDUSTRIES (AUST) PTY LIMITED	11895	9 GLADSTONE ROAD	CASTLE HILL	2154
HAZTECH INDUSTRIES PTY LTD	11903	LOT 423 HEATHER STREET	HEATHERBRAE	2324
MRI (AUST) PTY LTD	11948	93B MANDOON ROAD	GIRRAWEEN	2145
PENTARCH PTY LTD	11957	581 PORTLAND ROAD	WALLERAWANG	2845
CROWN EQUIPMENT PTY LTD	12048	123 Long Street	SMITHFIELD	2164

The emission sources and associated releases to air for Hazardous, Industrial or Group A Waste Generation or Storage are outlined in Table 3.105.

Table 3.105: Hazardous, Industrial or Group A Waste Generation or Storage - Emission Sources

Emission Source	Process	Emissions to Air
Fugitive sources	Surface coating (e.g. painting, degreasing, printing, solvent usage)	VOCs
	Acid storage	Acids
	Abrasive blasting	PM
	Welding	PM
Fuel storage		VOCs
Combustion		Combustion products
Wastewater vaporisation		VOCs

3.33.2 Emissions Estimation Methodology

Emissions from hazardous, industrial or group A waste generation or storage facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Fugitive Emissions* (Environment Australia, 1999n)
- *NPI EET Manual for Surface Coating*(Environment Australia, 1999m)
- *NPI EET Manual for Alumina Refining* (Environment Australia, 1999e)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.33.3 Emissions Estimation

Estimated emissions from hazardous industrial or Group A Waste Generation or Storage within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.106.

Table 3.106: Estimated Emissions from Hazardous Industrial or Group A Waste Generation or Storage

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	27.3	0	0	0	27.3
ACETALDEHYDE	2.16	0	0	0	2.16
BENZENE	676	0.04	0	88.8	765
CARBON MONOXIDE	9,640	6.13	0	2.55	9,650
FORMALDEHYDE	146	0.07	0	0.03	146
ISOMERS OF XYLENE	3,910	885	0	57,600	62,400
LEAD & COMPOUNDS	0.05	0	0	0	0.05
OXIDES OF NITROGEN	14,300	7.30	0	3.04	14,350
PARTICULATE MATTER 10µm	1,820	0.56	0	163	1,980
PARTICULATE MATTER 2.5µm	1,790	0.56	0	31.7	1,820
PERCHLOROETHYLENE	167	0	0	0	167
POLYCYCLIC AROMATIC HYDROCARBONS	0.25	0	0	0	0.25
SULFUR DIOXIDE	360	0.04	0	0.02	360
TOLUENE	9,960	3,640	0	40,300	53,900
TOTAL SUSPENDED PARTICULATES (TSP)	1,880	0.56	0	184	2,070
TOTAL VOCS	325,700	15,960	0	239,000	580,300
TRICHLOROETHYLENE (TCE)	134	0	0	0	134

[a] Totals may not appear additive due to rounding

3.33.4 Projection Factors

Projection factors for hazardous, industrial group A waste generation or storage have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth in the hazardous industrial group A waste generation or storage sector is proportional to population growth. The projection factors are described in Section 3.1.4.

3.34 Hazardous, Industrial Group A or Group B Waste Disposal (75 [a])

3.34.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.107.

Table 3.107: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
C & M EDWARDS- "MAIN OAK"	7056	ELDERSLIE RD	MITCHELLS FLAT	2330

The emission sources and associated releases to air for Hazardous, Industrial Group A or Group B Waste Disposal are outlined in Table 3.108.

Table 3.108: Hazardous, Industrial Group A or B Waste Disposal - Emission Sources

Process	Emissions to Air
Fuel storage	VOCs

3.34.2 Emissions Estimation Methodology

Emissions from hazardous, industrial group A or group B waste disposal facilities have been estimated using techniques provided in the *NPI EET Manual for Fuel and Organic Liquid Storage, Version 2.4* (Environment Australia, 2004b) and data supplied in the industrial questionnaire. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.34.3 Emissions Estimation

Estimated emissions from hazardous, industrial Group A or group B Waste disposal facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.109.

Table 3.109: Estimated Emissions from Hazardous, Industrial or Group A or Group B Waste Disposal

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	0	0	0	0	0
CARBON MONOXIDE	0	0	0	0	0
FORMALDEHYDE	0	0	0	0	0
ISOMERS OF XYLENE	0	0	0	0.039	0.039
LEAD & COMPOUNDS	0	0	0	0	0
OXIDES OF NITROGEN	0	0	0	0	0
PARTICULATE MATTER 10µm	0	0	0	0	0
PARTICULATE MATTER 2.5µm	0	0	0	0	0
PERCHLOROETHYLENE	0	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	0	0	0	0
TOLUENE	0	0	0	0.012	0.012
TOTAL SUSPENDED PARTICULATES (TSP)	0	0	0	0	0
TOTAL VOCS	0	0	0	0.43	0.43
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

3.34.4 Projection Factors

Projection factors for hazardous, industrial group A or group B waste disposal have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth in the hazardous, industrial group A or group B waste disposal sector is proportional to population growth. The projection factors are described in Section 3.1.4.

3.35 Hazardous, Industrial Group A or Group B Waste Processing (75)

3.35.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.110.

Table 3.110: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
NATIONWIDE OIL PTY LTD	854	6 DAVIS ROAD	WETHERILL PARK	2164
AUSCOL (NSW) PTY LTD	2550	148 RIVERSTONE PDE	RIVERSTONE	2765
CLEANAWAY	2977	12 STUART STREET	PADSTOW	2211
C.W.D.S. PTY LTD	4801	66 LINKS ROAD	ST MARYS	2760
COLLEX TREATMENT PLANT	4806	37 GRAND AVE	CAMELLIA	2142
STERICORP CLINICAL WASTE PTY LTD	4892	14-16 STANLEY STREET	SILVERWATER	2128
AUSTRALIAN WASTE RECYCLERS 1 PTY LIMITED	5661	38 LINKS ROAD	ST MARYS	2760
SOLVENTS AUSTRALIA PTY LTD	5790	77-79 BASSETT STREET	MONA VALE	2103
BRANDSTER SERVICES	5973	UNIT 6 & 7, 15 LEE HOLM ROAD	ST MARYS	2760
BELLAMBI TRADE CENTRE	6133	UNIT 6, BELLAMBI LANE	BELLAMBI	2518
SPECIALISED WASTE TREATMENT SERVICES PTY LTD	7434	25 SANDPIPER CLOSE	KOORAGANG	2304
DUMPEX WASTE DISPOSAL PTY LTD	7518	76 VIOLET ST	REVESBY	2212
COLLEX PTY LTD	10251	9 WAYNOTE PLACE	UNANDERRA	2526
CLEANAWAY	10771	LOT 3 BERKELEY ROAD	UNANDERRA	2526
METROPOLITAN GREASE TRAP SERVICE	10870	Units 23-24/20 Tucks Road	SEVEN HILLS	2147
ENVIROKING INVESTMENTS P/L	11180	843 John Renshaw Dr	BLACK HILL	2322
HOMEBUSH BAY LIQUID TREATMENT PLANT	4560	CORNER OF PNDAGE LINK AND HILL ROAD	HOMEBUSH BAY	2127

The emission sources and associated releases to air for Hazardous, Industrial Group A or Group B Waste Processing are outlined in Table 3.111.

Table 3.111: Hazardous, Industrial Group A or Group B Waste Processing - Emission Sources

Emission Source	Process	Emissions to Air
Fugitive sources	Surface coating (e.g. painting, degreasing, printing, solvent usage)	VOCs
	Acid storage	Acids
Fuel and organic liquid storage		VOCs
Material handling		PM
Wind erosion of stockpiles		PM
Combustion		Combustion products
Wastewater vaporisation		VOCs

3.35.2 Emissions Estimation Methodology

Emissions from hazardous, industrial Group A or group B waste processing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating*(Environment Australia, 1999m)
- *NPI EET Manual for Alumina Refining* (Environment Australia, 1999e)
- *NPI EET Manual for Mining, v2.3* (Environment Australia, 2001a)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.35.3 Emissions Estimation

Estimated emissions from hazardous, industrial Group A or Group B Waste Processing within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.112.

Table 3.112: Estimated Emissions from Hazardous, Industrial or Group A or Group B Waste Processing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	21.9	0	0.10	22
BENZENE	94.3	0.21	0.67	95.1
CARBON MONOXIDE	4,150	34.5	60.5	4,240
FORMALDEHYDE	171	0.41	1.28	173
ISOMERS OF XYLENE	1,007	0	4.71	1,012
LEAD & COMPOUNDS	0.03	0	0	0.03
OXIDES OF NITROGEN	5,020	41.1	72	5,130
PARTICULATE MATTER 10µm	5,140	3.13	173	5,320
PARTICULATE MATTER 2.5µm	5,140	3.13	38.2	5,180
PERCHLOROETHYLENE	1,450	0	6.72	1,450
POLYCYCLIC AROMATIC HYDROCARBONS	0.03	0	0	0.03
SULFUR DIOXIDE	68.1	0.21	0.38	68.7
TOLUENE	901	0.10	4.03	905
TOTAL SUSPENDED PARTICULATES (TSP)	9,993	3.13	342.67	10,340
TOTAL VOCS	9,460	2.26	44	9,500
TRICHLOROETHYLENE (TCE)	177	0	0.82	178

[a] Totals may not appear additive due to rounding

3.35.4 Projection Factors

Projection factors for hazardous, industrial group A or group B waste processing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth in the hazardous, industrial group A or group B waste processing sector is proportional to population growth. The projection factors are described in Section 3.1.4.

3.36 Inert Waste Landfilling (77)

3.36.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.113.

Table 3.113: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
HYLAND ROAD DEPOT	4537	HYLAND ROAD	GREYSTANES	2145
KURNELL LAND FILL COMPANY	4608	CAPTAIN COOK DRIVE	KURNELL	2231
PORT KEMBLA BUILDERS LANDFILL & RECYCLING CENTRE	5954	33 FIVE ISLANDS ROAD	PORT KEMBLA	2505
SALAMANDER BAY WASTE FACILITY	5982	360 SOLDIERS POINT ROAD	SALAMANDER BAY	2317
PORT STEPHENS WASTE MANAGEMENT GROUP PTY LTD	7628	LOT 3 NEWLINE ROAD	RAYMOND TERRACE	2324
KOORAGANG ISLAND WASTE FACILITY	7675	CORMORANT ROAD	KOORAGANG	2304
BORAL PROSPECT QUARRY	11769	CLUNIES ROSS STREET	PROSPECT	2148

The emissions associated with landfill operations are summarised in Table 3.114.

Table 3.114: Landfills – Emission Sources

Source	Emissions to Air
Fuel storage	VOCs
Wind erosion	PM
Material handling (i.e. soil)	PM

3.36.2 Emissions Estimation Methodology

Emissions from inert waste landfilling facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for MSW Landfills* (Environment Australia, 2005b)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.36.3 Emissions Estimation

Estimated emissions from inert waste landfilling facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.115.

Table 3.115: Estimated Emissions Inert Waste Landfilling

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0.004	0	0.004
BENZENE	0	0	0.011	71.8	71.8
CARBON MONOXIDE	0	0	0	399	399
FORMALDEHYDE	0	0	0.021	0	0.021
ISOMERS OF XYLENE	0.045	0	0.17	108	108
LEAD & COMPOUNDS	0	0	0.011	0.07	0.081
OXIDES OF NITROGEN	0	0	0	0	0
PARTICULATE MATTER 10µm	61,800	54,050	44,700	22,600	183,100
PARTICULATE MATTER 2.5µm	13,600	10,890	8,980	5,540	39,050
PERCHLOROETHYLENE	0	0	0.25	35.9	36.2
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	0	0	0	0
TOLUENE	0.014	0	0.14	1,260	1,260
TOTAL SUSPENDED PARTICULATES (TSP)	219,600	108,100	89,700	100,400	517,800
TOTAL VOCS	0.5	0	1.44	4,530	4,530
TRICHLOROETHYLENE (TCE)	0	0	0.03	0	0.03

[a] Totals may not appear additive due to rounding

3.36.4 Projection Factors

Projection factors for inert waste landfilling have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from inert waste landfilling is proportional to population growth. The projection factors are described in Section 3.1.4.

3.37 Landfilling in Designated Areas (80)

3.37.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.116.

Table 3.116: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
PENRITH WASTE SERVICES PTY LTD	3438	842 MULGOA ROAD	MULGOA	2745
WISEMANS FERRY LANDFILL	4580	OLD NORTHERN ROAD	WISEMANS FERRY	2775
WALLAROO WASTE FACILITY	6048	OLD SWAN BAY ROAD	WALLAROO	2324
SOUTH WINDSOR RESOURCE RECOVERY CENTRE	6675	723 - 727 GEORGE STREET	SOUTH WINDSOR	2756

The emissions associated with landfill operations are summarised in Table 3.117.

Table 3.117: Landfills – Emission Sources

Source	Emissions to Air
Anaerobic digestion	CO, VOCs, H_2S
Fuel storage	VOCs
Landfill gas combustion	Combustion products
Wind erosion	PM
Material handling (i.e. soil)	PM

3.37.2 Emissions Estimation Methodology

Emissions from landfilling (in designated areas) facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for MSW Landfills* (Environment Australia, 2005b)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.37.3 Emissions Estimation

Estimated emissions from landfilling (in designated areas) facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.118.

Table 3.118: Estimated Emissions from Landfilling in Designated Areas

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	641	0	0	4.63	646
CARBON MONOXIDE	3,560	0	0	26.00	3,590
FORMALDEHYDE	0	0	0	0.00	0
ISOMERS OF XYLENE	962	0	0	6.95	970
LEAD & COMPOUNDS	0	0	0	0.00	0
OXIDES OF NITROGEN	0	0	0	0.00	0
PARTICULATE MATTER 10µm	21,220	0	0	1,060	22,300
PARTICULATE MATTER 2.5µm	4,273	0	0	214	4490
PERCHLOROETHYLENE	320	0	0	2.32	320
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	0	0	0	0
TOLUENE	11,200	0	0	81.1	11,300
TOTAL SUSPENDED PARTICULATES (TSP)	42,400	0	0	2,120	44,600
TOTAL VOCS	40,400	0	0	292	40,700
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

[a] Totals may not appear additive due to rounding

3.37.4 Projection Factors

Projection factors for landfilling in designated areas have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from landfilling in designated areas is proportional to population growth . The projection factors are described in Section 3.1.4.

3.38 Metal Plating or Coating Works (61)

3.38.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.119.

Table 3.119: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
GALVANISING SERVICES PTY LTD	142	135 ROOKWOOD ROAD	YAGOONA	2199
MONROE SPRINGS (AUSTRALIA) PTY LTD	155	52 O'RIORDAN STREET	ALEXANDRIA	2015
DORF CLARK INDUSTRIES	308	2101 CASTLEREAGH ROAD	PENRITH	2750
CRM WORKS	397	OLD PORT ROAD	PORT KEMBLA	2505

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
INDUSTRIAL GALVANIZERS (NEWCASTLE)	505	312 PACIFIC HIGHWAY	HEXHAM	2322
BLUE SCOPE STEEL LIMITED - SPRINGHILL WORKS	571	SPRINGHILL ROAD	PORT KEMBLA	2505
INGAL CIVIL PRODUCTS	1145	127-141 BATH ROAD	KIRRAWEE	2232
INDUSTRIAL GALVANIZERS	1165	LOT 2 SHELLHARBOUR ROAD	PORT KEMBLA	2505
INDUSTRIAL GALVANIZERS CORPORATION PTY LTD	1895	22 AMAX AVE	GIRRAWEEN	2145
ANZPAC SERVICES	4915	32 BRITTON STREET	SMITHFIELD	2164
VULKAN INDUSTRIES	6015	3 GARNET STREET	ROCKDALE	2216
Du PONT PERFORMANCE COATINGS	6070	15-23 MELBOURNE ROAD	RIVERSTONE	2765
DIAMOND HARD CHROME PTY LTD	6136	27 COSGROVE ROAD	ENFIELD	2136
A1 HARD CHROME	6203	14 WETHERILL STREET	LIDCOMBE	2141
ELITE PLATING PTY LTD	6356	113 WOODPARK ROAD	SMITHFIELD	2164
CCA HARDCHROME	6656	36 TATERSALL ROAD	BLACKTOWN	2148
SERVICE ELECTROPLATING PTY LTD	6661	31-33 MARIGOLD STREET	REVESBY	2212
INDUSTRIAL & DECORATIVE GOLD PLATING	6687	79-81 MARS ROAD	LANE COVE	2066
GENERAL ENGRAVING PTY LTD	6688	1-5 ROSE CRESCENT	REGENTS PARK	2143
ALEXANDRIA PLATING PTY LTD	6691	74 PRINCESS AVE	ROSEBERRY	2018
SMC PNEUMATICS (AUSTRALIA) PTY LTD	6701	18 HUDSON AVE	CASTLE HILL	2154
SWIFT ELECTROPLATERS NSW PTY LIMITED	6741	53 VORE STREET	SILVERWATER	2141
VERTIKOTE CORP. LTD	6870	85 GOVERNOR MACQUARIE DRIVE	CHIPPING NORTON	2170
REGENTS PARK ELECTROPLATING PTY LTD	6871	41 CARLINGFORD STREET	REGENTS PARK	2143
METROPOLITAN ELECTROPLATERS PTY LTD	6924	123 RESERVOIR ROAD	SURRY HILLS	2010
BLU-CHROME PTY LIMITED	6929	137 ELDRIDGE ROAD	BANKSTOWN	2200
R.E. BATGER PTY LTD	6944	200 RAILWAY TERRACE	GUILDFORD	2161
MORRIS GRAPHICS	6973	4-10 HARP STREET	CAMPSIE	2194
WESTWOOD WINTER PLATING PTY LTD	7025	128 CARNARVON STREET	SILVERWATER	2128
GALVATECH PTY LTD	7029	49 GOW STREET	PADSTOW	2211
AUSTRALIAN ALUMINIUM FINISHING PTY LTD	7051	12-14 DAVIS ROAD	WETHERILL PARK	2164
SEC PLATING PTY LTD	7059	105 LAKEMBA STREET	BELMORE	2192
ADEPT HARDCHROME (AUSTRALIA) PTY LTD	7084	30 WHITAKER ST	YENNORA	2161
PERFECTION PLATE HOLDINGS PTY LTD	7116	19 SKINNER AVE	RIVERWOOD	2210
APPAREL FITTINGS AUSTRALASIA PTY LTD	7244	67 JOHN STREET	LEICHHARDT	2040
EATON ELECTRIC SYSTEMS PTY LTD	7473	10 KENT ROAD	MASCOT	2020
TASMAN AVIATION ENTERPRISES (RICHMOND) PTY LTD	7627	RAAF BASE	RICHMOND	2755
A & G PLATING PTY LTD	7660	29 HUGH STREET	BELMORE	2192
ENWARE CHROME FACTORY	7700	64-66 WOODFIELD BLVD	CARINGBAH	2229

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
ALL PAINT POWDER COATERS	10543	131 ELDRIDGE ROAD	CONDELL PARK	2200
BREDERO SHAW AUSTRALIA PTY LTD	10776	LOT 22, WEST DAPTO ROAD	KEMBLA GRANGE	2526
LACHLAN ELECTROPLATERS AND DIECASTERS	10994	39-41 FITZPATRICK STREET	REVESBY	2212
UNIVERSAL ANODISERS	11201	207-211 NEWTON ROAD	WETHERILL PARK	2164
ASTOR METAL FINISHERS	11533	93 - 95 MALTA STREET	VILLAWOOD	2163
CAPRAL ALUMINIUM LTD	11551	61 ASHFORD AVE	MILPERRA	2214
ASTOR BASE METALS	11585	512 PUNCHBOWL ROAD	LAKEMBA	2195
PIONEER PLATING	11637	1 MITCHELL ROAD	MOOREBANK	2170
TRIVAC METALS PTY LTD	11737	11 - 15 MOXON ROAD	PUNCHBOWL	2196
APC SOCOTHERM PTY LTD	11894	LOT 562 REDDALLS ROAD	DAPTO	2530
SYDNEY GALVANIZING PTY LTD	11945	2/12 ASH ROAD	PRESTONS	2170
ALL CHROME SHOP PTY LTD	10544	390 CANTERBURY ROAD	CANTERBURY	2193

The emission sources and associated releases to air from metal plating or coating works are outlined in Table 3.120.

Table 3.120: Metal Plating or Coating Works – Emission Sources

Operation	Process	Emissions to Air
Chromium electroplating	Electroplating	PM
Chromic acid anodising	Acid anodising	PM
Copper electroplating	Electroplating	PM
Cadmium electroplating	Electroplating	PM
Nickel electroplating	Electroplating	PM
Galvanising		PM
Combustion		Combustion products
Storage of fuel and organic liquids		VOCs
Welding and steel cutting		PM, Magnesium oxide fume
Painting and solvent usage		VOCs

3.38.2 Emissions Estimation Methodology

Emissions from metal plating or coating works facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Electroplating and Anodising* (Environment Australia, 1996)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating*(Environment Australia, 1999m)
- *NPI EET Manual for Alumina Refining* (Environment Australia, 1999e)
- *NPI EET Manual for Fugitive Emissions* (Environment Australia, 1999n)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.38.3 Emissions Estimation

Estimated emissions from metal plating or coating works facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.121.

Table 3.121: Estimated Emissions from Metal Plating or Coating Works

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0.21	0	0	0.21
ACETALDEHYDE	0.11	0	0.19	0.3
BENZENE	80	10.5	6,170	6,260
CARBON MONOXIDE	12,800	1760	1,182,200	1,196,800
FORMALDEHYDE	153	21	10,700	10,840
ISOMERS OF XYLENE	62,700	82	10,050	72,900
LEAD & COMPOUNDS	0.077	0.0105	58	57.7
OXIDES OF NITROGEN	16,300	2,100	54,100	72,500
PARTICULATE MATTER 10µm	29,700	2,470	10,300	42,500
PARTICULATE MATTER 2.5µm	29,200	2,470	9,500	41,200
PERCHLOROETHYLENE	7.37	0	430	440
POLYCYCLIC AROMATIC HYDROCARBONS	0.11	0.014	560	560
SULFUR DIOXIDE	80.7	11	30,120	30,200
TOLUENE	349,700	75	17,700	367,400
TOTAL SUSPENDED PARTICULATES (TSP)	29,600	2,470	11,600	43,640
TOTAL VOCS	2,327,000	520	156,800	2,484,000
TRICHLOROETHYLENE (TCE)	2,600	0	409	3,010

[a] Totals may not appear additive due to rounding

3.38.4 Projection Factors

Projection factors for metal plating or coating works have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from metal plating or coating works is proportional to population growth . The projection factors are described in Section 3.1.4.

3.39 Milk Processing (1)

3.39.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.122.

Table 3.122: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
DAIRY FARMERS HEXHAM	816	189 MAITLAND ROAD	HEXHAM	2322
DAIRY FARMERS	2108	LOT 1 BIRNIE AVE	LIDCOMBE	2141
DAIRY FARMERS WETHERILL PARK	2803	433 VICTORIA ST	WETHERILL PARK	2164
NATIONAL FOODS MILK LIMITED	2869	2257 - 2265 CASTLEREAGH ROAD	PENRITH	2740
STREETS ICE CREAM	5851	401 PEMBROKE ROAD	MINTO	2566
PERFECTION DAIRIES PTY LTD	6744	7 GIBBON ROAD	BAULKHAM HILLS	2153

The emission sources and associated releases to air for milk processing are outlined in Table 3.123.

Table 3.123: Milk Processing – Emission Sources

Process	Emissions to Air
Dryer	PM
Fuel storage	VOCs
Combustion	Combustion products
Surface coating (e.g. painting, printing)	VOCs
Wastewater vaporisation	VOCs

3.39.2 Emissions Estimation Methodology

Emissions from milk processing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Dairy Product Manufacturing* (Environment Australia, 1999o)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.39.3 Emissions Estimation

Estimated emissions from milk processing facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.124.

Table 3.124: Estimated Emissions from Milk Processing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	12.8	0.21	0	13
BENZENE	82.8	16.1	0	99
CARBON MONOXIDE	7,470	2,590	0	10,070
FORMALDEHYDE	160	32.1	0	190
ISOMERS OF XYLENE	743	13.9	0	760
LEAD & COMPOUNDS	0.04	0.02	0	0.06
OXIDES OF NITROGEN	9,780	3,100	0	12,900
PARTICULATE MATTER 10µm	680	260	0	940
PARTICULATE MATTER 2.5µm	680	260	0	940
PERCHLOROETHYLENE	840	13.8	0	860
POLYCYCLIC AROMATIC HYDROCARBONS	0.06	0.02	0	0.08
SULFUR DIOXIDE	46.5	16.2	0	63
TOLUENE	629	42.4	0	672
TOTAL SUSPENDED PARTICULATES (TSP)	676	260	0	937
TOTAL VOCS	6,300	346	0	6,650
TRICHLOROETHYLENE (TCE)	103	1.69	0	105

[a] Totals may not appear additive due to rounding

3.39.4 Projection Factors

Projection factors for milk processing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from milk processing is proportional to population growth. The projection factors are described in Section 3.1.4.

3.40 Mining (Other than Coal) (64)

3.40.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.125.

Table 3.125: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
AUSTRALIAN CEMENT LIMITED	314	QUARRY ROAD	KANDOS	2848
ROUSE HILL SHALE PIT	5800	SCHOFIELDS ROAD	ROUSE HILL	2155

The emission sources and associated releases to air for mining (other than coal mining) are outlined in Table 3.126.

Table 3.126: Mining (Other than Coal) - Emission Sources

Operation	Emissions to Air
Primary crushing	PM
Secondary crushing	PM
Tertiary crushing	PM
Handling, transferring & conveying	PM
Screening	PM
Loaders	PM
Fuel storage	VOCs
Wind erosion	PM

3.40.2 Emissions Estimation Methodology

Emissions from mining (other than coal) facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Mining, v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.40.3 Emissions Estimation

Estimated emissions from mining (other than coal) facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.127.

Table 3.127: Estimated Emissions from Mining (Other than Coal)

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	0	0	0	0	0
CARBON MONOXIDE	0	0	0	0	0
FORMALDEHYDE	0	0	0	0	0
ISOMERS OF XYLENE	0	0	0	0.29	0.29
LEAD & COMPOUNDS	0.03	0	0	0.38	0.41
OXIDES OF NITROGEN	0	0	0	0	0
PARTICULATE MATTER 10µm	12,600	0	0	359,000	371,000
PARTICULATE MATTER 2.5µm	2,530	0	0	75,447	78,000
PERCHLOROETHYLENE	0	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	0	0	0	0
TOLUENE	0	0	0	0.09	0.09
TOTAL SUSPENDED PARTICULATES (TSP)	25,500	0	0	846,000	872,000
TOTAL VOCS	0	0	0	3.2	3.2
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

[a] Totals may not appear additive due to rounding

3.40.4 Projection Factors

Projection factors for coal mining have been derived based on ABARE projected final energy consumption by the mining sector in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c).

The projection factors are provided in Table 3.128.

Table 3.128: Projection Factors for Mining

Year	Final Energy Consumption (PJ/year)[a,b]	Projection Factor
2003	30.1	1.0000
2004	30.8	1.0236
2005	31.9	1.0600
2006	33.4	1.1082
2007	34.9	1.1591
2008	36.5	1.2095
2009	38.1	1.2627
2010	39.7	1.3186
2011	41.4	1.3749
2012	43.2	1.4328
2013	45.1	1.4952
2014	47.0	1.5600
2015	49.0	1.6263
2016	51.1	1.6940
2017	53.2	1.7637
2018	55.3	1.8358
2019	57.6	1.9106
2020	59.9	1.9875
2021	62.3	2.0664
2022	64.7	2.1474
2023	67.2	2.2308
2024	69.8	2.3167
2025	72.5	2.4051
2026	75.2	2.4957
2027	78.0	2.5885
2028	80.9	2.6837
2029	83.8	2.7814
2030		2.8791
2031		2.9767

[a] Source: ABARE 2005a; ABARE 2005b; ABARE 2005c

3.41 Mooring and Boat Storage (52)

3.41.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.129.

Table 3.129: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
D'ALBORA MARINAS, CABARITA POINT	10818	CABARITA PARK	CABARITA	2137
THE QUAYS MARINA	10890	1856 PITTWATER ROAD	CHURCH POINT	2105
ST GEORGE MOTOR BOAT CLUB	11166	2 WELLINGTON STREET	SANS SOUCI	2219
D'ALBORA MARINAS, THE SPIT	11211	THE SPIT	MOSMAN	2088
D'ALBORA MARINAS, AKUNA BAY	11212	LIBERATOR GENERAL SAN MARTIN DRIVE	TERREY HILLS	2084
D'ALBORA MARINAS, NELSON BAY	11213	TERAMBY STREET	NELSON BAY	2315
D'ALBORA MARINAS, RUSHCUTTERS BAY	11214	NEW BEACH ROAD	RUSHCUTTERS BAY	2011
ANCHORAGE MARINA PORT STEPHENS	11228	CORLETTE POINT ROAD	CORLETTE	2315
LAKE MACQUARIE YACHT CLUB	11339	1 ADA STREET	BELMONT	2280
NEWCASTLE CRUISING YACHT CLUB LIMITED	11396	91 HANNELL STREET	WICKHAM	2293

The emission sources and associated releases to air for mooring and boat storage are outlined in Table 3.130.

Table 3.130: Mooring and Boat Storage - Emission Sources

Operation	Emissions to Air
Painting	PM, VOCs
Solvent cleaning	VOCs
Fuel storage	VOCs
Wastewater vaporisation	VOCs

3.41.2 Emissions Estimation Methodology

Emissions from mooring and boat storage facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.41.3 Emissions Estimation

Estimated emissions from mooring and boat storage facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.131.

Table 3.131: Estimated Emissions from Mooring and Boat Storage

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0.0006	0.0006
BENZENE	8.6	0.6	0	2.50	11.7
CARBON MONOXIDE	0	0	0	0	0
FORMALDEHYDE	0.00005	0	0	0.003	0.003
ISOMERS OF XYLENE	6.6	25.3	0	111	143
LEAD & COMPOUNDS	0	0	0	0	0
OXIDES OF NITROGEN	0	0	0	0	0
PARTICULATE MATTER 10µm	0	0	0	0	0
PARTICULATE MATTER 2.5µm	0	0	0	0	0
PERCHLOROETHYLENE	0.0006	0	0	0.04	0.04
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	0	0	0	0
TOLUENE	21	158	0	518	698
TOTAL SUSPENDED PARTICULATES (TSP)	0	0	0	0	0
TOTAL VOCS	1,070	713	0	1,750	3,530
TRICHLOROETHYLENE (TCE)	0.00008	0	0	0.005	0.005

[a] Totals may not appear additive due to rounding

3.41.4 Projection Factors

Projection factors for mooring or boat storage have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from mooring and boat storage is proportional to population growth . The projection factors are described in Section 3.1.4.

3.42 Other Activities – Bread Manufacturing (94)

3.42.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.132.

Table 3.132: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
TIP TOP BAKERIES	145	51 ALLEYNE STREET	CHATSWOOD	2067

The emission sources and associated releases to air for bread manufacturing are outlined in Table 3.133.

Table 3.133: Bread Manufacturing - Emission Sources

Operation	Emissions to Air
Material transfer	PM
Combustion (boilers and ovens)	Combustion products
Fuel storage	VOCs
Wastewater vaporisation	VOCs

3.42.2 Emission Estimation Methodology

Emissions from bread manufacturing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.42.3 Emissions Estimation

Estimated emissions from bread manufacturing facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.134.

Table 3.134: Estimated Emissions from Bread Manufacturing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0.06	0	0	0.06
BENZENE	10.7	0	0	10.7
CARBON MONOXIDE	1,680	0	0	1,680
FORMALDEHYDE	20.4	0	0	20.4
ISOMERS OF XYLENE	3.1	0	0	3.1
LEAD & COMPOUNDS	0.01	0	0	0.01
OXIDES OF NITROGEN	2,005	0	0	2,005
PARTICULATE MATTER 10µm	260	0	0	260
PARTICULATE MATTER 2.5µm	260	0	0	260
PERCHLOROETHYLENE	3.8	0	0	3.8
POLYCYCLIC AROMATIC HYDROCARBONS	0.01	0	0	0.01
SULFUR DIOXIDE	10.5	0	0	10.5
TOLUENE	8.4	0	0	8.4
TOTAL SUSPENDED PARTICULATES (TSP)	260	0	0	260
TOTAL VOCS	200	0	0	200
TRICHLOROETHYLENE (TCE)	0.5	0	0	0.5

3.42.4 Projection Factors

Projection factors for bread manufacturing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emission growth from bread manufacturing is proportional to population growth. The projection factors are described in Section 3.1.4.

3.43 Other Activities – Cake and Pastry Manufacturing (94)

3.43.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.135.

Table 3.135: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
TIP TOP BAKERIES (FAIRFIELD)	1026	311 THE HORSLEY DRIVE	FAIRFIELD	2165

The emission sources and associated releases to air for cake and pastry manufacturing are outlined in Table 3.136.

Table 3.136: Cake and Pastry Manufacturing - Emission Sources

Operation	Emissions to Air
Combustion	Combustion products
Wastewater vaporisation	VOCs

3.43.2 Emission Estimation Methodology

Emissions from cake and pastry manufacturing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003b)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.43.3 Emissions Estimation

Estimated emissions from cake and pastry manufacturing facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.137.

Table 3.137: Estimated Emissions from Cake and Pastry Manufacturing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	7.5	0	0	7.5
CARBON MONOXIDE	1,260	0	0	1,260
FORMALDEHYDE	15	0	0	15
ISOMERS OF XYLENE	0.05	0	0	0.05
LEAD & COMPOUNDS	0.01	0	0	0.01
OXIDES OF NITROGEN	1,504	0	0	1,504
PARTICULATE MATTER 10µm	114	0	0	114
PARTICULATE MATTER 2.5µm	114	0	0	114
PERCHLOROETHYLENE	0.07	0	0	0.07
POLYCYCLIC AROMATIC HYDROCARBONS	0.01	0	0	0.01
SULFUR DIOXIDE	7.9	0	0	7.9
TOLUENE	3.8	0	0	3.8
TOTAL SUSPENDED PARTICULATES (TSP)	114	0	0	114
TOTAL VOCS	83	0	0	83
TRICHLOROETHYLENE (TCE)	0.01	0	0	0.01

3.43.4 Projection Factors

Projection factors for cake and pastry manufacturing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from cake and pastry manufacturing is proportional to population growth. The projection factors are described in Section 3.1.4.

3.44 Other Activities – Confectionary Manufacturing (94)

3.44.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.138.

Table 3.138: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Street	Facility Suburb	Post Code
THE WRIGLEY COMPANY	7002	MICHIGAN AVE	ASQUITH	2077

The emission sources and associated releases to air for confectionary manufacturing are outlined in Table 3.139.

Table 3.139: Confectionary Manufacturing - Emission Sources

Operation	Emissions to Air
Combustion	Combustion products
Surface coating	VOCs

3.44.2 Emission Estimation Methodology

Emissions from cake and pastry manufacturing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.44.3 Emissions Estimation

Estimated emissions from confectionary manufacturing facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.140.

Table 3.140: Estimated Emissions from Confectionary Manufacturing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	3.5	0	0	3.5
CARBON MONOXIDE	168	0	0	168
FORMALDEHYDE	7.0	0	0	7.0
ISOMERS OF XYLENE	148	0	0	148
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	1,190	0	0	1,190
PARTICULATE MATTER 10µm	53	0	0	53
PARTICULATE MATTER 2.5µm	53	0	0	53
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	3.7	0	0	3.7
TOLUENE	136	0	0	136
TOTAL SUSPENDED PARTICULATES (TSP)	53	0	0	53
TOTAL VOCS	786	0	0	786
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.44.4 Projection Factors

Projection factors for confectionary manufacturing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. The projection factors are described in Section 3.1.4.

3.45 Other Activities – Dry Cleaning (94)

3.45.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.141.

Table 3.141: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
LAWRENCE DRY CLEANERS	500	887 BOURKE STREET	WATERLOO	2017

The emission sources and associated releases to air for dry cleaning are outlined in Table 3.142.

Table 3.142: Emission Sources - Dry Cleaning

Operation	Emissions to Air
Combustion	Combustion products
Dry cleaning	VOCs

3.45.2 Emission Estimation Methodology

Emissions from dry cleaning facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003b)
- *NPI EET Manual for Aggregated Emissions from Dry Cleaning* (Environment Australia, 1999p)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.45.3 Emissions Estimation

Estimated emissions from dry cleaning facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.143.

Table 3.143: Estimated Emissions from Dry Cleaning

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	7.9	0	0	7.9
CARBON MONOXIDE	1,250	0	0	1,250
FORMALDEHYDE	16	0	0	16
ISOMERS OF XYLENE	0	0	0	0
LEAD & COMPOUNDS	0.01	0	0	0.01
OXIDES OF NITROGEN	1,560	0	0	1,560
PARTICULATE MATTER 10µm	120	0	0	120
PARTICULATE MATTER 2.5µm	120	0	0	120
PERCHLOROETHYLENE	480	0	0	480
POLYCYCLIC AROMATIC HYDROCARBONS	0.01	0	0	0.01
SULFUR DIOXIDE	8.2	0	0	8.2
TOLUENE	3.9	0	0	3.9
TOTAL SUSPENDED PARTICULATES (TSP)	120	0	0	120
TOTAL VOCS	570	0	0	570
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.45.4 Projection Factors

Projection factors for dry cleaning have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from dry cleaning is proportional to population growth. The projection factors are described in Section 3.1.4.

3.46 Other Activities – Oil and Fat Manufacturing (94)

3.46.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.144.

Table 3.144: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
MEADOW LEA FOODS LIMITED	487	514 GARDENERS ROAD	MASCOT	2020

The emission sources and associated releases to air for oil and fat manufacturing are outlined in Table 3.145.

Table 3.145: Oil and Fat Manufacturing - Emission Sources

Operation	Emissions to Air
Combustion	Combustion products

3.46.2 Emission Estimation Methodology

Emissions from each source have been estimated using techniques provided in the *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c) and data supplied in the industrial questionnaire. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.46.3 Emissions Estimation

Estimated emissions from oil and fat manufacturing facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.146.

Table 3.146: Estimated Emissions from Oil and Fat Manufacturing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	32	0	0	32
CARBON MONOXIDE	5,320	0	0	5,320
FORMALDEHYDE	63	0	0	63
ISOMERS OF XYLENE	0	0	0	0
LEAD & COMPOUNDS	0.03	0	0	0.03
OXIDES OF NITROGEN	11,400	0	0	11,400
PARTICULATE MATTER 10µm	482	0	0	482
PARTICULATE MATTER 2.5µm	482	0	0	482
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0.04	0	0	0.04
SULFUR DIOXIDE	33	0	0	33
TOLUENE	16	0	0	16
TOTAL SUSPENDED PARTICULATES (TSP)	482	0	0	482
TOTAL VOCS	350	0	0	350
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.46.4 Projection Factors

Projection factors for oil and fat manufacturing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. The projection factors are described in Section 3.1.4.

3.47 Other Activities – Printing (94)

3.47.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.147.

Table 3.147: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
AMCOR CARTONS	1036	2-6 MOORE STREET	BOTANY	2019
OFFSET ALPINE PRINTING	1912	42 BOOREA STREET	LIDCOMBE	2141
AMCOR FLEXIBLES AUSTRALASIA	2810	40-62 BELLONA AVE	REGENTS PARK	2143
AMCOR CARTONS	3082	1 HOPE STREET	ENFIELD	2136
MATP CHULLORA PRINT CENTRE	3923	26-52 HUME HIGHWAY	CHULLORA	2190
FAIRFAX PRINTERS PTY LIMITED	5233	1 WORTH STREET	CHULLORA	2190
HANNANPRINT	5665	55 DOODY STREET	ALEXANDRIA	2015
ALLKOTES PTY LIMITED	6040	15 HENDERSON STREET	TURRELLA	2205
AEP INDUSTRIES (AUSTRALIA) PTY LTD	6191	149 ORCHARD ROAD	CHESTER HILL	2162
HANNA MATCH GROUP	6328	BELLS LINE OF ROAD	NORTH RICHMOND	2754
GLOBUS GROUP	6530	122 EDINBURGH ROAD	MARRICKVILLE	2204
SONY MUSIC ENTERTAINMENT (AUSTRALIA)	6565	60 HUNTINGWOOD DRIVE	HUNTINGWOOD	2148
PLANET PRESS	6705	8 ILMA STREET	BANKSTOWN	2200
FRED HOSKING PTY LTD	6839	STATION AVE	CONCORD WEST	2138
DALTON PACKAGING	6977	UNITS 7 &8, 350 EDGAR STREET	BANKSTOWN	2200
WADEPACK LIMITED	7010	4 SEVILLE ST	VILLAWOOD	2163
PEGASUS PRINTING - NATURE'S SELECTION	7030	1A BESSEMER STREET - BUILDING 'B'	BLACKTOWN	2148
THE GRAPHIC WORLD	7089	14 MCGILL STREET	LEWISHAM	2049
OBERTHUR GAMING TECHNOLOGIES PTY LTD	11078	4 Ford Street	HUNTINGWOOD	2148
FINE ART GRAPHICS	11323	UNIT 10/10 LYN PARADE	HOXTON PARK	2171
FAIRFAX REGIONAL PRINTERS PTY LTD	11422	7 ENTERPRISE DRIVE HOLMWOOD BUSINESS PARK	BERESFIELD	2322
VISY INDUSTRIAL PACKAGING	12013	11A FERNDELL STREET	GRANVILLE	2142

The emission sources and associated releases to air for oil and fat manufacturing are outlined in Table 3.148.

Table 3.148: Printing - Emission Sources

Operation	Emissions to Air
Printing	VOCs
Combustion	Combustion products
Surface coating (e.g. Solvent usage, adhesive usage)	VOCs
Wastewater vaporisation	VOCs

3.47.2 Emission Estimation Methodology

Emissions from printing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Aggregated Emissions from Printing and Graphical Arts* (Environment Australia, 1999q)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.47.3 Emissions Estimation

Estimated emissions from printing facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.149.

Table 3.149: Estimated Emissions from Printing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	1.1	0	0	1.1
ACETALDEHYDE	0.6	0	0	0.6
BENZENE	62	0	0	62
CARBON MONOXIDE	11,400	0	0	11,400
FORMALDEHYDE	131	0	0	131
ISOMERS OF XYLENE	20,040	0	0	20,040
LEAD & COMPOUNDS	0.06	0	0	0.06
OXIDES OF NITROGEN	22,250	0	0	22,250
PARTICULATE MATTER 10µm	1,180	0	0	1,180
PARTICULATE MATTER 2.5µm	1,180	0	0	1,180
PERCHLOROETHYLENE	4,970	0	0	4,970
POLYCYCLIC AROMATIC HYDROCARBONS	0.5	0	0	0.5
SULFUR DIOXIDE	83	0	0	83
TOLUENE	29,600	0	0	29,600
TOTAL SUSPENDED PARTICULATES (TSP)	1,180	0	0	1,180
TOTAL VOCS	2,418,000	56,000	0	2,474,000
TRICHLOROETHYLENE (TCE)	1.3	0	0	1.3

[a] Totals may not appear additive due to rounding

3.47.4 Projection Factors

Projection factors for printing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from printing is proportional to population growth. The projection factors are described in Section 3.1.4.

3.48 Other Activities – Services to Air Transport (94)

3.48.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.150.

Table 3.150: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
SYDNEY AIRPORT	7288	241 O'RIODAN STREET	MASCOT	1460

The emission sources and associated releases to air for services to air transport are outlined in Table 3.151.

Table 3.151: Services to Air Transport - Emission Sources

Operation	Emissions to Air
Combustion	Combustion products
Solvent and paint usage	VOCs
Aircraft refuelling	VOCs
Fuel storage	VOCs

3.48.2 Emission Estimation Methodology

Emissions from services to air transport facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Airports, v1.1* (Environment Australia, 2001b)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.48.3 Activity Data and Assumptions

Data provided in the returned questionnaires was used to estimate emissions from each source. Emissions from solvent usage and paint usage, aircraft refuelling and fuel storage have been estimated using the techniques outlined in the *NPI EET Manual for Airports, v1.1* (Environment Australia, 2001b) based on the number of landing-takeoff (LTO) cycles per year and emission factors derived from a site specific assessment at Melbourne airport in 1995.

3.48.4 Emissions Estimation

Estimated emissions from services to air transport within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.152.

Table 3.152: Estimated Emissions from Services to Air Transport

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	13	0	0	13
CARBON MONOXIDE	2,240	0	0	2,240
FORMALDEHYDE	27	0	0	27
ISOMERS OF XYLENE	12,800	0	0	12,800
LEAD & COMPOUNDS	0.01	0	0	0.01
OXIDES OF NITROGEN	2,670	0	0	2,670
PARTICULATE MATTER 10µm	203	0	0	203
PARTICULATE MATTER 2.5µm	203	0	0	203
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0.02	0	0	0.02
SULFUR DIOXIDE	14	0	0	14
TOLUENE	9,960	0	0	9,960
TOTAL SUSPENDED PARTICULATES (TSP)	203	0	0	203
TOTAL VOCS	101,300	0	0	101,300
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.48.5 Projection Factors

Projection factors for services to air transport have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emission growth from services to air transport is proportional to population growth. The projection factors are described in Section 3.1.4.

3.49 Other Activities – Soft Drink Manufacturing (94)

3.49.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.153.

Table 3.153: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
COCA-COLA AMATIL (AUST) PTY LTD	2911	128 BRIENS ROAD	NORTHMEAD	2152

The emission sources and associated releases to air from soft drink manufacturing are outlined in Table 3.154.

Table 3.154: Soft Drink Manufacturing - Emission Sources

Operation	Emissions to Air
Combustion	Combustion products
Wastewater treatment	VOCs

3.49.2 Emission Estimation Methodology

Emissions from soft drink manufacturing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.49.3 Emissions Estimation

Estimated emissions from soft drink manufacturing within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.155.

Table 3.155: Estimated Emissions from Soft Drink Manufacturing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	5.3	0	0	5.3
BENZENE	22	0	0	22
CARBON MONOXIDE	972	0	0	972
FORMALDEHYDE	41	0	0	41
ISOMERS OF XYLENE	240	0	0	240
LEAD & COMPOUNDS	0.01	0	0	0.01
OXIDES OF NITROGEN	1,160	0	0	1,160
PARTICULATE MATTER 10µm	88	0	0	88
PARTICULATE MATTER 2.5µm	88	0	0	88
PERCHLOROETHYLENE	347	0	0	347
POLYCYCLIC AROMATIC HYDROCARBONS	0.01	0	0	0.01
SULFUR DIOXIDE	6.0	0	0	6.0
TOLUENE	200	0	0	200
TOTAL SUSPENDED PARTICULATES (TSP)	88	0	0	88
TOTAL VOCS	2,080	0	0	2,080
TRICHLOROETHYLENE (TCE)	42	0	0	42

3.49.4 Projection Factors

Projection factors for soft drink manufacturing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from soft drink manufacturing is proportional to population growth. The projection factors are described in Section 3.1.4.

3.50 Other Agricultural Crop Processing (3)

3.50.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.156.

Table 3.156: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
PENFORD AUSTRALIA LIMITED	518	170 EPPING ROAD	LANE COVE	2066
INGHAMS ENTERPRISES PTY. LIMITED	692	16 NELSON ROAD	CARDIFF	2285
KELLOGG (AUST) PTY LTD	823	SWINBOURNE STREET	BOTANY	2019
ALLIED MILLS PTY LTD	2024	18 EDWARD STREET	SUMMER HILL	2130
GEORGE WESTON FOODS LIMITED T/A WEST0N MILLING, WESTON TECHNOLOGIES AND WESTON ANIMAL NUTRITION	2160	1 BRAIDWOOD STREET	ENFIELD	2136
PREMIER STOCKFEEDS	2619	21 CURTIS RD	MCGRATHS HILL	2756
VELLA'S STOCK FEEDS	2882	96 GLENDENNING ROAD	PLUMPTON	2761
ATLANTIC PACIFIC FOODS	3426	LOT 9 AND 10 GARDINER STREET	RUTHERFORD	2320
SUGAR AUSTRALIA GLEBE ISLAND TERMINAL	4790	LOT 1 SOMMERVILLE ROAD	ROZELLE	2039
CARGILL AUSTRALIA LIMITED	5810	51 RAVEN STREET	NEWCASTLE	2300
BERRIMA FEEDMILL	11261	DOUGLAS ROAD	NEW BERRIMA	2577
AUSTRALIAN FEED COMPANY	12185	9 PILE ROAD	SOMERSBY	2250

The emission sources and associated releases to air from other agricultural crop processing are outlined in Table 3.157.

Table 3.157: Other Agricultural Crop Processing - Emission Sources

Operation	Emissions to Air
Material transfer	PM
Grain milling	PM
Pelletising	PM
Dehulling	PM
Combustion	Combustion products
Wastewater treatment	VOCs
Fuel storage	VOCs

3.50.2 Emissions Estimation Methodology

Emissions from other agricultural crop processing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Animal and Bird Feed Manufacture* (Environment Australia, 1999r)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.50.3 Emissions Estimation

Estimated emissions from other agricultural crop processing within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.158.

Table 3.158: Estimated Emissions from Other Agriculture Crop Processing

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0.57	0.93	0	0.24	1.8
BENZENE	53.6	50	0	36.9	140
CARBON MONOXIDE	14,600	8,280	0	6,120	29,000
FORMALDEHYDE	117	99	0	73.8	289
ISOMERS OF XYLENE	402	0.79	0	11	414
LEAD & COMPOUNDS	0.09	0.05	0	0.04	0.17
OXIDES OF NITROGEN	17,300	9,860	0	7,240	34,400
PARTICULATE MATTER 10µm	44,160	9,870	0	17,000	71,060
PARTICULATE MATTER 2.5µm	14,960	3,440	0	5,200	23,600
PERCHLOROETHYLENE	38	0.13	0	15.9	54
POLYCYCLIC AROMATIC HYDROCARBONS	0.12	0.07	0	0.05	0.24
SULFUR DIOXIDE	93	128	0	37.8	259
TOLUENE	1,550	27	0	27.2	1,600
TOTAL SUSPENDED PARTICULATES (TSP)	86,630	19,210	0	34,400	140,200
TOTAL VOCS	6,200	3,930	0	492	10,600
TRICHLOROETHYLENE (TCE)	4.6	0.02	0	1.95	6.6

[a] Totals may not appear additive due to rounding

3.50.4 Projection Factors

Projection factors for other agricultural crop processing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from other agricultural crop processing is proportional to population growth . The projection factors are described in Section 3.1.4.

3.51 Other Chemical Processing (24)

3.51.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.159.

Table 3.159: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
HARDMAN AUSTRALIA PTY LIMITED	141	11 BODEN ROAD	SEVEN HILLS	2147
F.I.P. PTY L.IMITED	246	6 WENBAN PLACE	WETHERILL PARK	2164
ECOLAB	512	30-32 MARIGOLD STREET	REVESBY	2212
ABB AUSTRALIA PTY LIMITED	753	3 BAPAUME ROAD	MOOREBANK	2170
PIRELLI POWER CABLES & SYSTEMS AUSTRALIA PTY LIMITED	818	1 HEATHCOTE ROAD	LIVERPOOL	2170
THE LINCOLN ELECTRIC CO (AUSTRALIA) PTY LTD	866	35 BRYANT ST	PADSTOW	2211
NUPLEX INDUSTRIES (AUST) PTY LTD	993	49-61 STEPHEN ROAD	BOTANY	2019
SOLVAY INTEROX PTY LTD	1255	20-22 MCPHERSON ST	BANKSMEADOW	2019
UNILEVER FOODS	1269	74 EDINBURGH ROAD	MARRICKVILLE	2204
AUSTRALCHEM PTY LTD	2002	41 TOMAGO ROAD	TOMAGO	2322
NALCO AUSTRALIA PTY LTD	2086	3-5 ANDERSON STREET	BANKSMEADOW	2019
FOSECO PTY LIMITED	2130	7 STUART STREET	PADSTOW	2211
ORICA AUSTRALIA PTY LTD	2148	16-20 BEAUCHAMP ROAD	MATRAVILLE	2036
KOPPERS CARBON MATERIALS & CHEMICALS PTY LTD	2156	WOODSTOCK STREET	MAYFIELD	2304
RECKITT BENCKISER	2196	44 WHARF ROAD	WEST RYDE	2114
S.C.JOHNSON	2248	160 EPPING ROAD	LANE COVE	2066
CHEMPROD NOMINEES PROPRIETARY LIMITED	2491	109 ENTERPRISE DRIVE	TOMAGO	2322
MIROTONE PTY LTD	2586	21 MARIGOLD STREET	REVESBY	2212
TETRA PAK MANUFACTURING	2720	LOT 3 FORAY STREET	FAIRFIELD	2165
PROCTER & GAMBLE AUSTRALIA PTY LIMITED	2745	320 VICTORIA ROAD	RYDALMERE	2116
CAMPBELL BROTHERS LIMITED	2746	277-303 WOODPARK ROAD	SMITHFIELD	2164
CASTROL AUSTRALIA PTY LIMITED	2822	132 McCREDIE ROAD	GUILDFORD	2161
PIONEER ROAD SERVICES PTY LTD	3269	25 GROVES AVE	MCGRATHS HILL	2756
UNILEVER AUSTRALASIA	3740	219 NORTH ROCKS ROAD	NORTH ROCKS	2151
HYDROMET OPERATIONS (SOUTHERN) LIMITED	5874	LOT 3 FIVE ISLANDS ROAD	UNANDERRA	2526
MEMCOR AUSTRALIA PTY LTD	5961	1 MEMTEC	SOUTH	2756

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
		PARKWAY	WINDSOR	
GE BETZ PTY LTD	5966	69 - 77 WILLIAMSON ROAD	INGLEBURN	2565
MINMET OPERATIONS PTY LTD	5986	25 SCHOOL DRIVE	TOMAGO	2322
CPS COLOR	6155	33-35 REDFERN STREET	WETHERILL PARK	2164
MULTI-FILL PTY LTD	6254	14 GARLING ROAD	KINGS PARK	2148
CAMPBELL BROTHERS LIMITED	6700	144 GILBA ROAD	GIRRAWEEN	2145
PYLON COATINGS PTY LIMITED	6712	6 MARGATE STREET	BOTANY	2019
GREENCORP MAGNETICS PTY LTD	6772	80 PERRY STREET	MATRAVILLE	2036
QANTAS HEAVY MAINTENANCE BANKSTOWN	6855	361 MILPERRA ROAD	BANKSTOWN	2200
NUPLEX SPECIALTY PRODUCTS	6980	8 ABBOTT ROAD	SEVEN HILLS	2147
SELLEYS PTY LTD	7106	1 GOW STREET	PADSTOW	2211
HAWKER DE HAVILLAND	7127	361 MILPERRA ROAD	BANKSTOWN	2200
BOC LIMITED	10095	147 FIVE ISLANDS ROAD	CRINGILA	2502
FUCHS AUSTRALIA PTY LTD	10181	2 HOLLAND STREET	WICKHAM	2293
AARISTOCRAT TECHNOLOGIES	11207	85 - 113 DUNNING AVENUE	ROSEBERY	2018
ORICA AUSTRALIA PTY LTD	11220	PIKES GULLY ROAD	RAVENSWORTH	2330
MACDERMID AUSTRALIA	11664	299 CANTERBURY ROAD	REVESBY	2212

The emission sources and associated releases to air for other chemical processing are outlined in Table 3.160.

Table 3.160: Other Chemical Processing - Emission Sources

Process	Emissions to Air
Combustion	Combustion products
Fuel storage	VOCs
Process emissions (e.g. dust extraction, VOC emissions from process tanks)	VOCs
Fugitive emissions	VOCs
Wastewater vaporisation	VOCs

3.51.2 Emissions Estimation Methodology

Emissions from other chemical processing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET manual for Surface Coating* (Environment Australia, 1999m)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.51.3 Emissions Estimation

Estimated emissions from other chemical processing within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.161.

Table 3.161: Estimated Emissions from Other Chemical Processing

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	12.5	12.5
ACETALDEHYDE	530	0.04	0	0	528
BENZENE	7820	11,800	6.9	21.6	19,600
CARBON MONOXIDE	46,300	25,100	1150	1,680	74,300
FORMALDEHYDE	3,340	300	14	0	3,650
ISOMERS OF XYLENE	6820	7,920	0.05	5.32	14,700
LEAD & COMPOUNDS	0.2	0.3	0.007	0	0.5
OXIDES OF NITROGEN	44,100	83,000	1,370	6,312	134,600
PARTICULATE MATTER 10µm	3,850	34,400	980	597	39,800
PARTICULATE MATTER 2.5µm	3,840	34,400	281	590	39,100
PERCHLOROETHYLENE	116	2.8	0	0	119
POLYCYCLIC AROMATIC HYDROCARBONS	0.27	100	0.009	0	103
SULFUR DIOXIDE	264	52,800	7.2	205	53,300
TOLUENE	152,300	7,940	3.5	18.3	160,200
TOTAL SUSPENDED PARTICULATES (TSP)	3,950	34,600	1,860	618	41,000
TOTAL VOCS	625,200	46,300	76	1,100	672,700
TRICHLOROETHYLENE (TCE)	11,100	0.34	0	0	11,100

[a] Totals may not appear additive due to rounding

3.51.4 Projection Factors

Projection factors for other chemical processing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from other chemical processing is proportional to population growth . The projection factors are described in Section 3.1.4.

3.52 Other Land-Based Extraction (37)

3.52.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.162.

Table 3.162: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
CSR BUILDING PRODUCTS, HORSLEY PARK	123	OLD WALLGROVE ROAD	HORSLEY PARK	2164
BORAL BRICKS PTY LTD	1808	LOT 2 GREENDALE ROAD	BRINGELLY	2171
PIONEER CONSTRUCTION MATERIALS PTY LTD	1852	BELLS LINE OF ROAD	CLARENCE	2790
PROSPECT QUARRY	2200	GREYSTANES ROAD	PROSPECT	2148
P B WHITE MINERALS PTY LTD	2257	END OF TORKINGTON ROAD	LONDONDERRY	2753
M. COLLINS & SONS (CONTRACTORS) PTY LTD	2767	CUT HILL ROAD	COBBITTY	2570
PENRITH LAKE SCHEME	2956	1951 CASTLEREAGH ROAD	CRANEBROOK	2749
WUNDERLICH LONDONDERRY CLAY PIT	3058	WILSHIRE ROAD	LONDONDERRY	2753
MITTAGONG SANDS	3132	WOMBEYAN CAVES ROAD	MITTAGONG	2575
ROCLA LIMITED	3218	LOT 23 SANDHAM ROAD	NEWNES	2790
ETRA PTY LTD	3407	WISEMANS FERRY ROAD	MAROOTA	2756
ROCLA LIMITED	3629	CAPTAIN COOK DRIVE	KURNELL	2231
PIONEER, CENTRAL COAST SANDS	3751	RESERVOIR ROAD	SOMERSBY	2250
HORNSBY SITES	3829	OLD NORTHERN ROAD	MAROOTA	2756
DIXON SAND (PENRITH) PTY LTD	3916	LOT 196 OLD NORTHERN ROAD	MAROOTA	2756
MENANGLE SAND & SOIL PTY LTD	3991	MENANGLE ROAD	MENANGLE	2568
THE AUSTRAL BRICK CO PTY LTD	4249	BUNNYGALORE ROAD	BOWRAL	2576
WARRINGAH GRAVEL & STONE SUPPPLIES	4504	END OF CHALLENGER DRIVE	BELROSE	2085
BENEDICT RECLAMATIONS	4612	146 NEWBRIDGE ROAD	MOOREBANK	2170
PENROSE QUARRY	4720	LOT 5 HUME HIGHWAY	PADDYS RIVER	2577
QUARRY	4731	DALSWINTON ROAD	DENMAN	2328
HB MAROOTA PTY LTD	6535	CNR ROBERTS & OLD NORTHERN ROADS	MAROOTA	2756
ROCLA QUARRY PRODUCTS	7485	251 PACIFIC HIGHWAY	RAYMOND TERRACE	2324
WHITE LODGE	7630	RICHARDSON ROAD	NARELLAN	2567
STOCKTON SAND QUARRY	10132	18-20 COX'S LANE	FULLERTON COVE	2318
THE MAROOTA MINING TRUST	10357	Lot 2 Old Telegraph Road	MAROOTA	2756
GRANTS ROAD SAND	11240	270 GRANTS ROAD	SOMERSBY	2250
ROCLA PTY LIMITED	11295	RMB 1215 PEATS RIDGE ROAD	CALGA	2250
TANILBA NORTHERN DUNE	11633	OFF OYSTER COVE ROAD	OYSTER COVE	2318
SALT ASH PLANT	11685	NELSON BAY ROAD	SALT ASH	2318
ERSKINE PARK QUARRY	11706	123-179 PATONS LANE	ORCHARD	2748

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
			HILLS	
UNIMIN AUSTRALIA PTY LTD - ANNA BAY	11710	Nelson Bay Road	BOBS FARM	2316
NEPEAN QUARRIES PTY LTD	11787	149 MACARTHUR ROAD	ELDERSLIE	2570
ROSEBROOK SAND & GRAVEL	11933	88 CAMPBELLS ROAD	MAITLAND VALE	2320

The emission sources and associated releases to air for other land-based extraction are outlined in Table 3.163.

Table 3.163: Other Land-Based Extraction - Emission Sources

Process	Emissions to Air
Raw materials transferring, crushing and screening	PM
Draglines	PM
Loaders	PM
Bulldozers	PM
Trucks	PM
Scrapers	PM
Graders	PM
Forming and cutting	PM
Drying	PM
Fuel storage	VOCs
Combustion	Combustion products
Firing	VOCs, SO_2, NO_x, CO, PM
Storage and shipping	PM
Wind erosion	PM

3.52.2 Emissions Estimation Methodology

Emissions from other land based extraction facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Bricks, Ceramics and Clay Product Manufacturing* (Environment Australia, 1998a)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.52.3 Emissions Estimation

Estimated emissions from other land based extraction within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.164.

Table 3.164: Estimated Emissions from Other Land Based Extraction

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	232	232
ACETALDEHYDE	0.01	0	0	0	0.01
BENZENE	834	7.5	0	261	1,100
CARBON MONOXIDE	230,400	171	0	8,610	239,200
FORMALDEHYDE	1,670	15	0	0	1,680
ISOMERS OF XYLENE	15.4	1.4	0	1,820	1,800
LEAD & COMPOUNDS	4.08	0.36	0	1.85	6.3
OXIDES OF NITROGEN	37,700	1,240	0	40,000	79,000
PARTICULATE MATTER 10µm	1,767,600	65,300	0	1,639,000	3,470,000
PARTICULATE MATTER 2.5µm	417,800	12,500	0	368,000	799,000
PERCHLOROETHYLENE	0.74	0	0	0	0.74
POLYCYCLIC AROMATIC HYDROCARBONS	0.01	0	0	1.52	1.53
SULFUR DIOXIDE	201,700	0.006	0	2,630	204,300
TOLUENE	490	16	0	3,940	4,440
TOTAL SUSPENDED PARTICULATES (TSP)	4,960,000	114,200	0	5,314,000	10,390,000
TOTAL VOCS	9,420	79	0	58,400	67,900
TRICHLOROETHYLENE (TCE)	0.09	0	0	0	0.09

[a] Totals may not appear additive due to rounding

3.52.4 Projection Factors

Projection factors for other land-based extraction have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. Population was chosen as an ideal surrogate to estimate the growth in the other land based extraction sector as historical data show that over long periods (i.e. > 10 years), consumption of coarse aggregate and construction sand per capita in the Sydney region has remained relatively constant (DMR, 2000; DMR, 2001). The projection factors are described in Section 3.1.4.

3.53 Other Livestock Processing (50)

3.53.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.165.

Table 3.165: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
INGHAMS ENTERPRISES PTY LIMITED	1556	470 WISEMANS FERRY ROAD	MANGROVE MOUNTAIN	2250
MELOSI FINE FOODS	5031	213-217 NEWTON ROAD	WETHERILL PARK	2164
BUSHS PET FOODS PTY LTD	5061	12 WILLIAMSON ROAD	INGLEBURN	2565
PRIMO	6252	18 HUME HIGHWAY	CHULLORA	2190
BARTTER ENTERPRISES	6653	SOUTH STREET	MARSDEN PARK	2765
F J WALKER FOODS	7005	11 BESSEMER ST	BLACKTOWN	2148
HANS CONTINENTAL SMALL GOODS - BLACKTOWN	7404	25 BESSEMER STREET	BLACKTOWN	2148
INGLEBURN FURTHER PROCESSING PLANT	11525	6 Benson Road	INGLEBURN	2565
CHICKADEE FOODS PTY LIMITED	12009	LOT 1 CUTROCK ROAD	LISAROW	2250

The emission sources and associated releases to air for other livestock processing are outlined in Table 3.166.

Table 3.166: Other Livestock Processing - Emission Sources

Process	Emissions to Air
Combustion	Combustion products
Fuel storage	VOCs
Wastewater vaporisation	VOCs
Surface coating operations	VOCs
Fugitive emissions	NH_3

3.53.2 Emissions Estimation Methodology

Emissions from livestock processing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.53.3 Emissions Estimation

Estimated emissions from other livestock processing within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.167.

Table 3.167: Estimated Emissions from Other Livestock Processing

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	9.3	0	0	0.85	10.2
BENZENE	44	0	0	24.2	68
CARBON MONOXIDE	2,650	0	0	3,730	6,380
FORMALDEHYDE	86	0	0	47.9	134
ISOMERS OF XYLENE	430	0	0	38.4	470
LEAD & COMPOUNDS	0.02	0	0	0.02	0.04
OXIDES OF NITROGEN	3,070	0	0	5,020	8,090
PARTICULATE MATTER 10µm	240	0	0	350	590
PARTICULATE MATTER 2.5µm	240	0	0	350	590
PERCHLOROETHYLENE	620	0	0	55.9	671
POLYCYCLIC AROMATIC HYDROCARBONS	0.02	0	0	0.03	0.05
SULFUR DIOXIDE	16.5	0	0	22.6	39.1
TOLUENE	385	0	0	42.5	428
TOTAL SUSPENDED PARTICULATES (TSP)	240	0	0	351	591
TOTAL VOCS	4,450	0	0	579	5,024
TRICHLOROETHYLENE (TCE)	75	0	0	6.83	82

[a] Totals may not appear additive due to rounding

3.53.4 Projection Factors

Projection factors for other livestock processing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from the other livestock processing sector is proportional to population growth . The projection factors are described in Section 3.1.4.

3.54 Other Metals Processing (63)

3.54.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.168.

Table 3.168: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
MAINTRAIN SERVICE CENTRE	96	MANCHESTER ROAD	AUBURN	2144
GOYEN CONTROLS COMPANY PTY LTD	511	268 MILPERRA ROAD	MILPERRA	2214
LOCOMOTIVE MAINTENANCE CENTRE	556	COSGROVE ROAD	ENFIELD	2136
AMCOR CONTAINERS PACKAGING	643	146 CARRINGTON STREET	REVESBY	2212
CORINTHIAN INDUSTRIES (AUSTRALIA) PTY LTD	644	17-35 LEE HOLM ROAD	ST MARYS	2760
UNICAST DYECASTINGS	948	63-73 JEDDA ROAD	PRESTONS	2170
DEXION	974	23 TATTERSALL ROAD	BLACKTOWN	2148
CRANE ENFIELD METALS	1098	2115 CASTLEREAGH ROAD	PENRITH	2750
INTERCAST & FORGE PTY LIMITED	1268	18-24 ABBOTT ROAD	SEVEN HILLS	2147
SAINT GOBAIN ABRASIVES PTY LTD	2179	25 NYRANG STREET	LIDCOMBE	2141
EXPAMET Pty Ltd	2846	36-42 FITZPATRICK STREET	REVESBY	2212
HEATCRAFT AUSTRALIA PTY LTD	2852	286 HORSLEY ROAD	MILPERRA	2214
TORRESAN ENGINEEING	2995	61 ARGYLE STREET	SOUTH WINDSOR	2756
HOBAS Pipe Plant	3804	1 DEVON STREET	ROSEHILL	2142
TRANSFIELD RSA	3928	2 WORTH STREET	CHULLORA	2190
ONESTEEL STEEL AND TUBE	5135	374 VICTORIA STREET	WETHERILL PARK	2164
CAPRAL ALUMINIUM LIMITED	5475	24 PINE ROAD	YENNORA	2161
SMORGON STEEL METALS DISTRIBUTION	5550	MANCHESTER ROAD WEST	AUBURN	2144
VISYPAK	5680	102-122 GIPPS ROAD	SMITHFIELD	2164
HOBSON ENGINEERING CO PTY LTD	5968	14 VICTORIA AVE	CASTLE HILL	2154
AUSTRALIAN METAL CO PTY LTD	6086	15 BOURKE STREET	ALEXANDRIA	2015
MM KEMBLA PRODUCTS	6158	GLOUCESTER BOULEVARDE	PORT KEMBLA	2505
MARRICKVILLE METALS PTY LTD	6477	523A ILLAWARRA ROAD	MARRICKVILLE	2204
MCCARTNEY AND PAUL HEAT TREATMENT	6572	17 THE PROMENADE	YENNORA	2161
MACHIN & EWEN PTY LTD	6678	CNR MARS & SIRIUS ROADS	LANE COVE	2066
J.M. NICOL PTY LTD	6704	51-53 PLANTHURST ROAD	CARLTON	2218
BROWNBUILT PTY LIMITED	6807	3 BOX ROAD	CARINGBAH	2229
VISY INDUSTRIAL PACKAGING	6953	11-13 PERCY ST	AUBURN	2144

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
RHEEM AUSTRALIA PTY LIMITED	6990	BRODIE STREET	RYDALMERE	2116
MACKIES MANUFACTURING PTY LIMITED	6994	112-116 CANTERBURY ROAD	BANKSTOWN	2200
PALLOYS PTY LTD	7009	74-84 FOVEAUX STREET	SURRY HILLS	2010
ALLIED INDUSTRIAL SERVICES PTY LTD	7215	16 PRINCES HIGHWAY	FAIRY MEADOW	2519
ONESTEEL- NEWCASTLE MARKET MILLS	11149	INDUSTRIAL DRIVE	MAYFIELD	2304
SIMS GROUP LIMITED	11264	CORMORANT ROAD, KOORAGANG ISLAND	NEWCASTLE	2304
DENIS COOKE'S METAL INDUSTRIES PTY LTD	11491	162-164 Inch Street	LITHGOW	2790

The emission sources and associated releases to air from other metals processing are outlined in Table 3.169.

Table 3.169: Other Metals Processing – Emission Sources

Operation	Emissions to Air
Galvanising	PM
Casting	PM
Furnaces	PM
Combustion	Combustion products
Storage of fuel and organic liquids	VOCs
Welding and steel cutting	PM, Magnesium oxide fume, NOx
Painting and solvent usage	VOCs
Acid storage	Acids
Wastewater vaporisation	VOCs

3.54.2 Emissions Estimation Methodology

Emissions from other metals processing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Non-Ferrous Foundries, v1.01* (Environment Australia, 1999j)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *NPI EET Manual for Alumina Refining* (Environment Australia, 1999e)
- *NPI EET Manual for Fugitive Emissions* (Environment Australia, 1999n)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.54.3 Emissions Estimation

Estimated emissions from other metals processing facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.170.

Table 3.170: Estimated Emissions from Other Metals Processing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0.9	0	0.01	0.9
BENZENE	500	365	3.46	865
CARBON MONOXIDE	87,500	58,100	576	146,200
FORMALDEHYDE	449	692	6.91	1,150
ISOMERS OF XYLENE	144,800	7,230	17.2	152,100
LEAD & COMPOUNDS	5.5	0.4	0	5.9
OXIDES OF NITROGEN	44,100	103,600	686	148,400
PARTICULATE MATTER 10µm	32,500	15,400	240	48,100
PARTICULATE MATTER 2.5µm	32,500	15,400	208	48,100
PERCHLOROETHYLENE	57.7	0	0.54	58.2
POLYCYCLIC AROMATIC HYDROCARBONS	1.61	0.48	0	2.09
SULFUR DIOXIDE	3,580	392	3.59	3,980
TOLUENE	217,400	39,400	263	257,000
TOTAL SUSPENDED PARTICULATES (TSP)	33,800	15,400	313	49,500
TOTAL VOCS	1,118,200	108,500	1,320	1,228,100
TRICHLOROETHYLENE (TCE)	22,800	0	0.07	22,800

[a] Totals may not appear additive due to rounding

3.54.4 Projection Factors

Projection factors for other metals processing have been derived based on ABARE projected final energy consumption for the manufacturing and construction sector in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c).

The projection factors are provided in Table 3.171.

Table 3.171: Projection Factors for Other Metals Processing

Year	Final Energy Consumption (PJ/year) [a]	Projection Factor
2003	272.1	1.0000
2004	273.6	1.0053
2005	277.2	1.0186
2006	280.2	1.0297
2007	283.1	1.0403
2008	285.8	1.0503
2009	288.6	1.0604
2010	291.7	1.0718
2011	294.6	1.0826
2012	297.7	1.0939
2013	301.1	1.1064
2014	304.5	1.1190
2015	307.9	1.1316
2016	311.5	1.1445
2017	315.0	1.1576
2018	318.6	1.1709
2019	322.3	1.1844
2020	326.0	1.1980
2021	329.7	1.2117
2022	333.5	1.2255
2023	337.3	1.2394
2024	341.1	1.2536
2025	345.0	1.2678
2026	348.9	1.2821
2027	352.8	1.2965
2028	356.8	1.3110
2029	360.7	1.3256
2030		1.3403
2031		1.3549

[a] Source: ABARE 2005a; ABARE 2005b; ABARE 2005c

3.55 Other Vessel Construction or Maintenance (54)

3.55.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.172.

Table 3.172: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
HALVORSEN BOATS PTY LTD	1940	Bobbin Head Road	BOBBIN HEAD	2074
WOODLEYS (BERRYS BAY) PTY LIMITED	6322	1 BALLS HEAD ROAD	WAVERTON	2060
ADI LIMITED MINEHUNTER	6609	50 FITZROY ST	CARRINGTON	2294
SHELL POINT MARINE	10816	17-21 MANGROVE LANE	TAREN POINT	2229
ROYAL MOTOR YACHT CLUB	10820	46 PRINCE ALFRED PARADE	NEWPORT	2106
RIVER QUAYS MARINA	10889	140 TENNYSON ROAD	MORTLAKE	2137
MORTLAKE SLIPWAY	10892	HILLY STREET	MORTLAKE	2137
NOAKES BOATYARD	10893	6 JOHN STREET	NORTH SYDNEY	2060
FENWICKS MARINA	10894	31 BROOKLYN ROAD	BROOKLYN	2083
MARMONG COVE MARINA	11161	1 NANDA STREET	MARMONG POINT	2284
MARKS POINT MARINA	11162	19/21/23 EDITH STREET	MARKS POINT	2280
ROYAL PRINCE ALFRED YACHT CLUB	11202	16 MITALA STREET	NEWPORT	2106
LEWIS ANCHORAGE	11329	1 MANGROVE LANE	TAREN POINT	2229
SYDNEY SHIP REPAIR AND ENGINEERING PTY LTD	11517	GOAT ISLAND	SYDNEY	2000
ROYAL SYDNEY YACHT SQUADRON	11758	33 PEEL STREET	KIRRIBILLI	2061
WOLLONGONG SLIPWAY SERVICES	11847	BELMORE BASIN	WOLLONGONG	2500
WATERWAYS AUTHORITY	11919	JAMES CRAIG ROAD	ROZELLE	2039
ABSOLUTE SHIPWRIGHTS PTY LTD	12012	20 WATERVIEW STREET	PUTNEY	2112

The emission sources and associated releases to air for other vessel construction and maintenance are outlined in Table 3.173.

Table 3.173: Other Vessel Construction or Maintenance - Emission Sources

Process	Emissions to Air
Solvent cleaning	VOCs
Abrasive blasting	PM
Painting	PM, VOCs
Machining and metal working	PM, VOCs
Fuel storage	VOCs
Fibreglassing	VOCs
Wastewater vaporisation	VOCs

3.55.2 Emissions Estimation Methodology

Emissions from other vessel construction or maintenance facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Fibreglass Product Manufacturing* (Environment Australia, 1999s)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *NPI EET Manual for Fugitive Emissions* (Environment Australia, 1999n)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.55.3 Emissions Estimation

Estimated emissions from other vessel construction or maintenance facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.174.

Table 3.174: Estimated Emissions from Other Vessel Construction or Maintenance

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	18.1	24.2	0	0	42.3
ACETALDEHYDE	0	0	0	0	0
BENZENE	5.21	4.23	0	0.25	9.69
CARBON MONOXIDE	0	0	0	0	0
FORMALDEHYDE	0	0	0	0	0
ISOMERS OF XYLENE	6,590	428	0.08	82.5	7,100
LEAD & COMPOUNDS	0.02	0.13	0	0	0.2
OXIDES OF NITROGEN	0	580	0	0	580
PARTICULATE MATTER 10µm	3,400	17,900	0	0	21,300
PARTICULATE MATTER 2.5µm	3,130	16,500	0	0	19,600
PERCHLOROETHYLENE	0.01	0	0	0	0.01
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0	0
SULFUR DIOXIDE	0	0	0	0	0
TOLUENE	31,300	2,170	0.03	435	33,900
TOTAL SUSPENDED PARTICULATES (TSP)	3,910	20,900	0	0	24,800
TOTAL VOCS	86,600	6,240	0.93	1,385	94,200
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

[a] Totals may not appear additive due to rounding

3.55.4 Projection Factors

Projection factors for other vessel construction or maintenance have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from the other vessel construction or maintenance sector is proportional to population growth . The projection factors are described in Section 3.1.4.

3.56 Paint Production (17)

3.56.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.175.

Table 3.175: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
NATIONAL STARCH AND CHEMICAL PTY LTD	258	7 STANTON ROAD	SEVEN HILLS	2147
WATTYL AUSTRALIA PTY LTD	1270	4 STEEL STREET	BLACKTOWN	2148
BARLOWORLD COATINGS	1996	9 BIRMINGHAM AVE	VILLAWOOD	2163
COATES PTY LTD	2095	323 CHISHOLM ROAD	AUBURN	2144
PCA HODGSON CHEMICALS	2131	19-25 ANNE STREET	ST MARYS	2760
SCHENECTADY	2494	72 CHRISTIE STREET	ST MARYS	2760
THE VALSPAR (AUSTRALIA) CORPORATION PTY LTD	2785	203 POWER STREET	GLENDENNING	2761
FLINT INK AUSTRALIA PTY LTD	5463	14A WILLIAMSON ROAD	INGLEBURN	2565
DU PONT (AUSTRALIA) LTD	6696	179 MAGOWAR ROAD	GIRRAWEEN	2145
HANNAH ZEV HOLDINGS PTY LIMITED	6810	44 ORCHARD ROAD	BROOKVALE	2100
HUNTER DOUGLAS LIMITED	7022	322 &338 VICTORIA ROAD	RYDALMERE	2116
ITW POLYMERS & FLUIDS PTY LTD	7366	100 HASSALL STREET	WETHERILL PARK	2164
ARCHITECTURAL & STRUCTURAL ADHESIVES	7382	106-108 REDFERN STREET	WETHERILL PARK	2164
SICPA AUSTRALIA PTY. LIMITED	11489	30 Chifley Street	SMITHFIELD	2164

The emission sources and associated releases to air from paint production are outlined in Table 3.176.

Table 3.176 Paint Production – Emission Sources

Process	Operation	Emissions to Air
Solvent reclamation	Storage tank vent	VOCs
	Condenser vent	VOCs
	Incinerator stack	PM, VOCs
	Spillage	VOCs
	Loading	VOCs
Grinding and mixing	Pigments grinding and mixing	PM
	Other grindings and mixings	VOCs
Filtering		VOCs
Combustion		Combustion products
Fuel storage		VOCs
Wastewater vaporisation		VOCs

3.56.2 Emissions Estimation Methodology

Emissions from paint production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Paint and Ink Manufacturing* (Environment Australia, 1998d)
- *NPI EET Manual for Combustion in Boilers, v2.3* (Environment Australia, 2003c)
- *NPI EET Manual for Structural and Fabricated Metal Product Manufacture* (Environment Australia, 1999t)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *NPI EET Manual for Fugitive Emissions* (Environment Australia, 1999n)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.56.3 Emissions Estimation

Estimated emissions from paint production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.177.

Table 3.177: Estimated Emissions from Paint Production

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	26	0	0	26
BENZENE	134	0	0	134
CARBON MONOXIDE	2,520	0	0	2,520
FORMALDEHYDE	73	0	0	73
ISOMERS OF XYLENE	860	0	0	860
LEAD & COMPOUNDS	0.07	0	0	0.07
OXIDES OF NITROGEN	3,070	0	0	3,070
PARTICULATE MATTER 10µm	10,300	0	0	10,300
PARTICULATE MATTER 2.5µm	10,200	0	0	10,200
PERCHLOROETHYLENE	82.5	0	0	82.5
POLYCYCLIC AROMATIC HYDROCARBONS	0.03	0	0	0.03
SULFUR DIOXIDE	29.3	0	0	29.3
TOLUENE	24,400	0	0	24,400
TOTAL SUSPENDED PARTICULATES (TSP)	11,400	0	0	11,400
TOTAL VOCS	94,200	0	0	94,200
TRICHLOROETHYLENE (TCE)	8.74	0	0	8.74

3.56.4 Projection Factors

Projection factors for paint manufacturing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from the paint production sector is proportional to population growth . The projection factors are described in Section 3.1.4.

3.57 Paper Production using Recycled Materials (66)

3.57.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.178.

Table 3.178: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
AMCOR PACKAGING - BOTANY MILL	1594	1891 BOTANY ROAD	MATRAVILLE	2036
VISY PAPER PTY LTD	4100	158-160 MCCREDIE STREET	SMITHFIELD	2164

The emission sources and associated releases to air for paper-manufacturing are outlined in Table 3.179.

Table 3.179: Paper and Paper Product Manufacture – Emission Sources

Source	Emissions to Air
Combustion	Combustion products
Surface coating	VOCs
Fuel storage	VOCs
Wastewater treatment	VOCs

3.57.2 Emissions Estimation Methodology

Emissions from paper production (using recycled materials) facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v2.3* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.57.3 Emissions Estimation

Estimated emissions from paper production (using recycled materials) facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.180.

Table 3.180: Estimated Emissions from Paper Production using Recycled Materials

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	4.33	0	0	4.33
BENZENE	22.7	0	0	22.7
CARBON MONOXIDE	47,000	0	0	47,000
FORMALDEHYDE	43.5	0	0	43.5
ISOMERS OF XYLENE	216	0	0	216
LEAD & COMPOUNDS	22	0	0	22
OXIDES OF NITROGEN	120,900	0	0	120,900
PARTICULATE MATTER 10µm	1,500	0	0	1,500
PARTICULATE MATTER 2.5µm	1,500	0	0	1,500
PERCHLOROETHYLENE	286	0	0	286
POLYCYCLIC AROMATIC HYDROCARBONS	0.56	0	0	0.56
SULFUR DIOXIDE	11,900	0	0	11,900
TOLUENE	294	0	0	294
TOTAL SUSPENDED PARTICULATES (TSP)	7,350	0	0	7,350
TOTAL VOCS	27,600	0	0	27,600
TRICHLOROETHYLENE (TCE)	35	0	0	35

3.57.4 Projection Factors

Projection factors for paper production using recycled materials have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from the paper production using recycled materials sector is proportional to population growth . The projection factors are described in Section 3.1.4.

3.58 Pesticides Production (19)

3.58.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.181.

Table 3.181: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
ALPHA CHEMICALS (AUSTRALIA) PTY LTD	531	18 INMAN ROAD	DEE WHY	2099
AUTOPAK FORMULATORS PTY LIMITED	1035	39 HARRIS STREET	ST MARYS	2760

The emission sources and associated releases to air for pesticide production are outlined in Table 3.182.

Table 3.182: Pesticide Production - Emission Sources

Operation	Emissions to Air
Combustion	Combustion products
Fuel storage	VOCs
Acid storage	Acids
Surface coating	VOCs
Wastewater vaporisation	VOCs

3.58.2 Emissions Estimation Methodology

Emissions from paper production (using recycled materials) facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v2.3* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *NPI EET Manual for Alumina Refining* (Environment Australia, 1999e)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.58.3 Emissions Estimation

Estimated emissions from pesticides production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.183.

Table 3.183: Estimated Emissions from Pesticides Production

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	0.96	0	0	0.96
CARBON MONOXIDE	143	0	0	143
FORMALDEHYDE	1.7	0	0	1.7
ISOMERS OF XYLENE	28.5	0	0	28.5
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	170	0	0	170
PARTICULATE MATTER 10µm	13	0	0	13
PARTICULATE MATTER 2.5µm	13	0	0	13
PERCHLOROETHYLENE	0.01	0	0	0.01
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	0.89	0	0	0.89
TOLUENE	0.46	0	0	0.46
TOTAL SUSPENDED PARTICULATES (TSP)	13	0	0	13
TOTAL VOCS	6,460	0	0	6,460
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.58.4 Projection Factors

Projection factors for pesticides production have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from the pesticides production sector is proportional to population growth . The projection factors are described in Section 3.1.4.

3.59 Petrochemical Production (18)

3.59.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.184.

Table 3.184: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
QENOS PTY LTD	10000	LOT 3 AND 5 OF BOTANY INDUSTRIAL PARK, 16-20 BEAUC	MATRAVILLE	2036

The emission sources and associated releases to air for petrochemical production are outlined in Table 3.185.

Table 3.185: Petrochemical Production - Emission Sources

Operation	Emissions to Air
Combustion	Combustion products
Fuel storage	VOCs
Process fugitives	VOCs

3.59.2 Emissions Estimation Methodology

Emissions from petrochemical production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v2.3* (Environment Australia, 2003c)
- *NPI EET Manual for Combustion Engines, v1.2* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.59.3 Emissions Estimation

Estimated emissions from petrochemical production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.186.

Table 3.186: Estimated Emissions from Petrochemical Production

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	4.0	0	0	4.0
ACETALDEHYDE	0	0	0	0
BENZENE	2,570	0	0	2,570
CARBON MONOXIDE	301,500	0	0	301,500
FORMALDEHYDE	42,200	0	0	42,200
ISOMERS OF XYLENE	1,930	0	0	1,930
LEAD & COMPOUNDS	181	0	0	181
OXIDES OF NITROGEN	1,200,000	0	0	1,200,000
PARTICULATE MATTER 10µm	45,300	0	0	45,300
PARTICULATE MATTER 2.5µm	45,300	0	0	45,300
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	2.56	0	0	2.56
SULFUR DIOXIDE	357,000	0	0	357,000
TOLUENE	2,820	0	0	2,820
TOTAL SUSPENDED PARTICULATES (TSP)	112,500	0	0	112,500
TOTAL VOCS	457,300	0	0	457,300
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.59.4 Projection Factors

Projection factors for petrochemical production have been derived based on ABARE projected primary energy consumption by the petroleum refining industry in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c).

The projection factors are provided in Table 3.187.

Table 3.187: Projection Factors for Petrochemical Production

Year	Energy Consumption (PJ/year)	Projection Factor
2003	27.016	1.0000
2004	26.62	0.9853
2005	26.482	0.9802
2006	26.726	0.9893
2007	27.054	1.0014
2008	27.43	1.0153
2009	27.875	1.0318
2010	28.306	1.0477
2011	28.659	1.0608
2012	28.985	1.0729
2013	29.315	1.0851
2014	29.67	1.0982
2015	29.983	1.1098
2016	30.288	1.1211
2017	30.591	1.1323
2018	30.891	1.1434
2019	31.193	1.1546
2020	31.484	1.1654
2021	31.777	1.1762
2022	32.074	1.1872
2023	32.373	1.1983
2024	32.675	1.2095
2025	32.98	1.2208
2026	33.288	1.2322
2027	33.599	1.2437
2028	33.913	1.2553
2029	34.229	1.2670
2030		1.2769
2031		1.2871

[a] Source: ABARE 2005a; ABARE 2005b; ABARE 2005c

3.60 Petroleum Refining (68)

3.60.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.188.

Table 3.188: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
HARRISON MANUFACTURING CO PTY LTD	139	75 OLD PITTWATER ROAD	BROOKVALE	2100
CLYDE REFINERY	570	DURHAM STREET	CAMELLIA	2142
CALTEX REFINERIES (NSW) PTY LTD & CALTEX LUBRICATING OIL REFINERY PTY LTD	837	2 SOLANDER STREET	KURNELL	2231
HC EXTRACTIONS PTY LTD	2695	LOT 1, CAPTAIN COOK DRIVE	KURNELL	2231
VALVOLINE (AUSTRALIA) PTY LIMITED	3182	30 DAVIS ROAD	WETHERILL PARK	2164
SYDNEY GAS OPERATIONS CAMDEN COALBED METHANE PROJECT	11713	WESTBROOK ROAD	CAMDEN	2570

The emission sources and associated releases to air for petroleum refining are outlined in Table 3.189.

Table 3.189: Petroleum Refining - Emission Sources

Operation	Process	Emissions to Air
Combustion	Combustion process in furnaces, boilers and engines	PM, combustion products
Refinery processes	Catalytic cracking units	Combustion products, ammonia
	Fluid coking	PM, VOCs
	Compressors	PM, ammonia
	Blowdown systems	VOCs
	Vacuum distillation unit condensers	VOCs
	Sulphur recovery units	SO_2
	Flares	Combustion products, ammonia
Process fugitives	Transfer of petroleum products through valves, flanges, pumps, connectors and drains	VOCs
Storage	Storage of products in tanks	VOCs
Loading/Unloading	Product loading to and from trucks, rail cars and ships	VOCs
Wastewater treatment	Refinery effluent treatment in wastewater treatment plants	VOCs

3.60.2 Emissions Estimation Methodology

Emissions from petroleum refining facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Petroleum Refining* (Environment Australia, 1999k)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.60.3 Emissions Estimation

Estimated emissions from petroleum refining facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.190.

Table 3.190: Estimated Emissions from Petroleum Refining

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	111	0	0	111
BENZENE	26,300	0	0	26,300
CARBON MONOXIDE	546,300	0	0	546,300
FORMALDEHYDE	203,600	0	0	203,600
ISOMERS OF XYLENE	24,000	0	0	24,000
LEAD & COMPOUNDS	58	0	0	58
OXIDES OF NITROGEN	2,789,400	0	0	2,789,400
PARTICULATE MATTER 10µm	265,400	0	0	265,400
PARTICULATE MATTER 2.5µm	236,600	0	0	236,600
PERCHLOROETHYLENE	7,340	0	0	7,340
POLYCYCLIC AROMATIC HYDROCARBONS	139	0	0	139
SULFUR DIOXIDE	6,953,500	0	0	6,953,500
TOLUENE	34,900	0	0	34,900
TOTAL SUSPENDED PARTICULATES (TSP)	443,000	0	0	443,000
TOTAL VOCS	3,164,700	0	0	3,164,700
TRICHLOROETHYLENE (TCE)	900	0	0	900

3.60.4 Projection Factors

Projection factors for petroleum refining have been derived based on ABARE projected primary energy consumption by the petroleum refining industry in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c). The projection factors are provided in Table 3.187.

3.61 Pharmaceutical or Veterinary Products Production (20)

3.61.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.191.

Table 3.191: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
ROCHE PRODUCTS PTY LTD	1020	4-10 INMAN ROAD	DEE WHY	2099
GLAXOSMITHKLINE AUSTRALIA PTY LTD	1024	82 HUGHES AVENUE	ERMINGTON	2115
MERCK SHARP & DOHME (AUSTRALIA) PTY LTD	2170	54-68 FERNDELL STREET (SOUTH GRANVILLE)	GRANVILLE	2142
PFIZER AUSTRALIA PTY LTD	2184	32 CAWARRA RD	CARINGBAH	2229
ELI LILLY AUSTRALIA PTY LTD	2762	112 WHARF ROAD	WEST RYDE	2114
3M HEALTH CARE	2773	9 CHILVERS ROAD	THORNLEIGH	2120
PFIZER PTY LIMITED	2838	38-42 WHARF RD	WEST RYDE	2114
VETLAB PTY LTD	4452	25 HARRIS STREET	ST MARYS	2760
WHITELEY INDUSTRIES PTY LTD	5007	19-23 LAVERICK AVE	TOMAGO	2322
SCHERING-PLOUGH PTY LIMITED	5026	11 GIBBON ROAD	BAULKHAM HILLS	2153
FORT DODGE AUSTRALIA	5269	2152 CASTLEREAGH ROAD	PENRITH	2750
MR MANUFACTURING & PACKAGING PTY LTD	6037	6 LENTON PLACE	NORTH ROCKS	2151
SIGMA PHARMACEUTICALS PTY LTD	6080	7 MAITLAND PLACE	BAULKHAM HILLS	2153
SPHERE HEALTHCARE PTY. LIMITED	6453	10-12 CHURCH ROAD	MOOREBANK	2170
NOVOGEN	6853	140 WICKS ROAD	NORTH RYDE	2113
THE CHILDRENS HOSPITAL AT WESTMEAD	6867	CNR HAWKESBURY ROAD & HAINSWORTH STREET	WESTMEAD	2145
ASTRA ZENECA PTY LTD	6891	10-14 KHARTOUM ROAD	NORTH RYDE	2113
ORICA AUSTRALIA	6964	GATE 3, 2 CHRISTINA ROAD	VILLAWOOD	2163
TROY LABORATORIES PTY LTD	6983	98 LONG STREET	SMITHFIELD	2164
VIRBAC (AUSTRALIA) PTY LTD	11464	15 PRITCHARD PLACE	PEAKHURST	2210

The emission sources and associated releases to air for pharmaceutical or veterinary products production are outlined in Table 3.192.

Table 3.192: Pharmaceutical or Veterinary Products Production - Emission Sources

Process	Emissions to Air
Combustion	Combustion products
Fuel storage	VOCs
Wastewater vaporisation	VOCs
Surface coating	VOCs
Mixing	VOCs
Extrusion	VOCs

3.61.2 Emissions Estimation Methodology

Emissions from pharmaceutical or veterinary products production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003b)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)
- *NPI EET Manual for Rubber Product Manufacture, v1.1* (Environment Australia, 2002a)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.61.3 Emissions Estimation

Estimated emissions from pharmaceutical or veterinary product production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.193.

Table 3.193: Estimated Emissions from Pharmaceutical or Veterinary Product Production

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	1.3	0	0	1.3
ACETALDEHYDE	1.5	0	0	1.5
BENZENE	45.3	0	0	45.3
CARBON MONOXIDE	5,780	0	0	5,780
FORMALDEHYDE	86	0	0	86
ISOMERS OF XYLENE	585	0	0	585
LEAD & COMPOUNDS	0.03	0	0	0.03
OXIDES OF NITROGEN	8,010	0	0	8,010
PARTICULATE MATTER 10µm	580	0	0	580
PARTICULATE MATTER 2.5µm	570	0	0	570
PERCHLOROETHYLENE	97	0	0	97
POLYCYCLIC AROMATIC HYDROCARBONS	0.05	0	0	0.05
SULFUR DIOXIDE	62	0	0	62
TOLUENE	586	0	0	586
TOTAL SUSPENDED PARTICULATES (TSP)	593	0	0	593
TOTAL VOCS	50,900	0	0	50,900
TRICHLOROETHYLENE (TCE)	12	0	0	12

3.61.4 Projection Factors

Projection factors for pharmaceutical or veterinary products production have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from pharmaceutical or veterinary products production is proportional to population growth . The projection factors are described in Section 3.1.4.

3.62 Plastics Production (21)

3.62.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.194.

Table 3.194: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
DUNLOP FLEXIBLE FOAMS	2732	LOT 103 FRANK STREET	WETHERILL PARK	2164
JOYCE FOAM PRODUCTS	3099	5-9 BRIDGES ROAD	MOOREBANK	2170
D & R HENDERSON PTY LTD	3185	104-106 HAM STREET	SOUTH WINDSOR	2756
FOAMCO INDUSTRIES PTY LTD	4244	27-29 Pembury Road	MINTO	2566
BASELL POLYOLEFINS	5104	DURHAM STREET	ROSEHILL	2142
SEALED AIR AUSTRALIA PTY LTD	5523	3 BURROWS ROAD	ALEXANDRIA	2015
VAN LEER AUSTRALIA PTY LIMITED	5652	29 FOUNDRY ROAD	SEVEN HILLS	2147
H.P.M. INDUSTRIES PTY LTD	6801	298 BOTANY ROAD	ALEXANDRIA	2015
MAINLINE PLASTICS	10825	35 Alfred Road	CHIPPING NORTON	2170
Yates	11115	9 Coventry Place	MOUNT DRUITT	2770
WAX CONVERTERS TEXTILES PTY LTD	11178	77 RACECOURSE ROAD	RUTHERFORD	2320

The emission sources and associated releases to air for plastics production are outlined in Table 3.195.

Table 3.195 Plastics Production – Emission Sources

Process	Emissions to Air
Polyvinyl chloride production	PM, VOCs
Polypropylene production	PM, VOCs
Combustion	Combustion products
Fuel storage	VOCs
Process emissions	VOCs
Process fugitives	VOCs
Surface coating	VOCs

3.62.2 Emissions Estimation Methodology

Emissions from plastics production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- USEPA AP-42, Chapter 6.6.4 *Polypropylene* (USEPA, 1995c)
- USEPA AP-42, Chapter 6.6.1 *Polyvinyl Chloride* (USEPA, 1995a)

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.62.3 Emissions Estimation

Estimated emissions from plastics production facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.196.

Table 3.196: Estimated Emissions from Plastics Production

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	2,360	0	0	0	2,360
BENZENE	10,900	0	0	3.3	10,900
CARBON MONOXIDE	3,000	0	0	554	3,550
FORMALDEHYDE	5,270	0	0	6.6	5,270
ISOMERS OF XYLENE	13,900	0	0	0	13,900
LEAD & COMPOUNDS	0.02	0	0	3.65	3.7
OXIDES OF NITROGEN	11,300	0	0	1,931	13,300
PARTICULATE MATTER 10µm	194,400	0	0	53.8	194,500
PARTICULATE MATTER 2.5µm	192,000	0	0	53.8	192,000
PERCHLOROETHYLENE	0	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0.02	0	0	0	0.03
SULFUR DIOXIDE	18	0	0	3.45	22
TOLUENE	11,800	0	0	1.65	11,800
TOTAL SUSPENDED PARTICULATES (TSP)	215,900	0	0	53.8	216,000
TOTAL VOCS	551,000	0	0	1,290	552,400
TRICHLOROETHYLENE (TCE)	27,000	0	0	0	27,000

[a] Totals may not appear additive due to rounding

3.62.4 Projection Factors

Projection factors for plastics production have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from plastics production is proportional to population growth . The projection factors are described in Section 3.1.4.

3.63 Poultry Production (43)

3.63.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.197.

Table 3.197: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
BREEDER FARMS AND PROTEIN RECOVERY UNIT	1254	LOT 23 BADGERYS CREEK ROAD	BADGERYS CREEK	2171
KARYATES ENTERPRISE PTY LIMITED	3275	108 DEEPFIELDS ROAD	CATHERINE FIELD	2171
LUDDENHAM BROILER FARM	10812	2907 THE NORTHERN ROAD	LUDDENHAM	2745
D & T SMITH	10888	RMB 1435, KILPA ROAD	PEATS RIDGE	2250
APPIN BROILER COMPLEX	11636	345 APPIN ROAD	APPIN	2560

The emission sources and associated releases to air from Poultry Production are outlined in Table 3.198.

Table 3.198: Poultry Production - Emission Sources

Process Group	Emissions to Air
Poultry raising	PM, NH_3
Wind erosion	PM
Fuel storage	VOCs
On-site combustion	Combustion products

3.63.2 Emissions Estimation Methodology

Emissions from poultry production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Intensive Livestock – Poultry Raising v1.0* (Environment Australia, 2002b)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.63.3 Emissions Estimation

Estimated emissions from poultry production facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.199.

Table 3.199: Estimated Emissions from Poultry Production

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	43	0	0	0	43
BENZENE	160	0	0	1.58	161
CARBON MONOXIDE	4,700	0	0	36	4,740
FORMALDEHYDE	300	0	0	3.15	303
ISOMERS OF XYLENE	1,930	0	0	0	1,930
LEAD & COMPOUNDS	0.03	0	0	0	0.03
OXIDES OF NITROGEN	6,270	0	0	261	6,530
PARTICULATE MATTER 10µm	383,200	0	0	61,200	444,400
PARTICULATE MATTER 2.5µm	105,600	0	0	14,500	120,000
PERCHLOROETHYLENE	2,810	0	0	0	2,810
POLYCYCLIC AROMATIC HYDROCARBONS	0.04	0	0	0	0.04
SULFUR DIOXIDE	28.6	0	0	0	28.6
TOLUENE	1,612	0	0	0.79	1,613
TOTAL SUSPENDED PARTICULATES (TSP)	779,500	0	0	123,500	903,000
TOTAL VOCS	16,600	0	0	6.3	16,600
TRICHLOROETHYLENE (TCE)	343	0	0	0	343

[a] Totals may not appear additive due to rounding

3.63.4 Projection Factors

Projection factors for poultry production have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from poultry production is proportional to population growth . The projection factors are described in Section 3.1.4.

3.64 Primary Aluminium Production (57)

3.64.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.200.

Table 3.200: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
HYDRO ALUMINIUM KURRI KURRI PTY LTD	1548	HART ROAD	LOXFORD	2327
TOMAGO ALUMINIUM COMPANY PTY LIMITED	6163	35 & 45 TOMAGO ROAD	TOMAGO	2322

The emission sources and associated releases to air from primary aluminium production are outlined in Table 3.201.

Table 3.201 Primary Aluminium Production – Emission Sources

Process	Operation	Emissions to Air
Anode set-up	Anode paste production	PM, fluoride, VOCs, PAHs
	Green anode production	
	Baking	
	Rodding	
Alumina reduction		PM, VOCs, PAHs, NO_x, SO_2, CO, HCl, Cl_2
Casting		PM, VOCs, PAHs, NO_x, SO_2, CO, HCl, Cl_2
Anode recycling		PM
Materials handling		PM
Bauxite grinding		PM
Fuel storage		VOCs
Wind erosion (stockpiles)		PM
Combustion		Combustion products

3.64.2 Emissions Estimation Methodology

Emissions from primary aluminium production have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Aluminium Smelting* (Environment Australia, 1999h)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.64.3 Activity Data and Assumptions

Data provided in the returned questionnaires allowed for the estimation of emissions from all sources. As the industrial emissions inventory database was only designed to store point and fugitive emission sources, the reduction lines for Tomago Aluminium Company Pty Ltd have been included as 11 separate point sources for each reduction line. The total emissions per reduction line have been distributed across the 11 stacks (6 reduction lines in total, therefore, a total of 66 stacks have been included in the inventory to simulate the reduction line emissions). Data detailing the location of the reduction lines for Hydro Aluminium Company Pty Ltd were not supplied. Therefore, the emissions from the reduction lines have been entered into the industrial emissions inventory as fugitive source emissions. Default speciation profiles used to estimate speciated emissions of organics are provided in Appendix C.

3.64.4 Emissions Estimation

Estimated emissions from primary aluminium production facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.202.

Table 3.202: Estimated Emissions from Primary Aluminium Production

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	0	16.6	0	76	92.6
CARBON MONOXIDE	0	44,700,000	0	12,700,000	57,400,000
FORMALDEHYDE	0	0	0	120	120
ISOMERS OF XYLENE	0	81.3	0	7.48	88.8
LEAD & COMPOUNDS	0	103	0	0.06	103
OXIDES OF NITROGEN	0	296,200	0	46,900	343,200
PARTICULATE MATTER 10µm	0	153,300	0	280,000	433,000
PARTICULATE MATTER 2.5µm	0	111,000	0	202,000	312,500
PERCHLOROETHYLENE	0	0	0	0.00	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	5,710	0	6,730	12,400
SULFUR DIOXIDE	0	9,160,000	0	3,433,000	12,600,000
TOLUENE	0	1,170	0	46.8	1,200
TOTAL SUSPENDED PARTICULATES (TSP)	0	339,500	0	446,600	786,000
TOTAL VOCS	0	8,600	0	3,680	12,300
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

[a] Totals may not appear additive due to rounding

3.64.5 Projection Factors

Projection factors for primary aluminium production have been derived based on ABARE projected final energy consumption for aluminium smelting in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c).

The projection factors for are provided Table 3.203.

Table 3.203: Projection Factors for Primary Aluminium Production

Year	Final Energy Consumption[a] (PJ/year)	Projection Factor
2003	41.2	1.0000
2004	41.5	1.0076
2005	42.4	1.0306
2006	42.5	1.0317
2007	42.5	1.0322
2008	42.5	1.0329
2009	42.6	1.0338
2010	42.6	1.0347
2011	42.6	1.0356
2012	42.7	1.0362
2013	42.8	1.0391
2014	42.9	1.0408
2015	42.9	1.0424
2016	43.0	1.0441
2017	43.1	1.0458
2018	43.1	1.0475
2019	43.2	1.0494
2020	43.3	1.0511
2021	43.4	1.0528
2022	43.4	1.0547
2023	43.5	1.0566
2024	43.6	1.0586
2025	43.7	1.0605
2026	43.7	1.0625
2027	43.8	1.0645
2028	43.9	1.0664
2029	44.0	1.0686
2030		1.0707
2031		1.0728

[a] Source: ABARE 2005a; ABARE 2005b; ABARE 2005c

3.65 Primary Iron and Steel Production (55)

3.65.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.204.

Table 3.204: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
JOHN HEINE & SON PTY LTD	2142	273 EDGAR STREET	BANKSTOWN	2200
BLUESCOPE STEEL (AIS) PTY LTD	6092	FIVE ISLANDS ROAD	CRINGILA	2505

The emission sources and associated releases to air from primary iron and steel production are outlined in Table 3.205.

Table 3.205 Primary Iron and Steel Production – Emission Sources

Source	Emissions to Air
Ore handling	PM
Coke making	Ammonia, SO_2, NO_x, PM, VOCs
Sinter/pellet making	Ammonia, SO_2, PM, Combustion products
Iron making	Ammonia, SO_2, PM, VOCs
Steel making	SO_2, PM
Casting rolling, lime kilns	Ammonia, SO_2, PM
Fuel storage	VOCs
Combustion	Combustion products
Wastewater treatment	Ammonia, VOCs

3.65.2 Emissions Estimation Methodology

Emissions from primary iron and steel production have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Iron and Steel Production* (Environment Australia, 1999i)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.65.3 Emissions Estimation

Estimated emissions from primary iron and steel production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.206.

Table 3.206: Estimated Emissions from Primary Iron and Steel Production

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	20	20
BENZENE	1.2	0	225,000	225,000
CARBON MONOXIDE	208	0	520,451,000	520,451,000
FORMALDEHYDE	2.5	0	39,500	39,500
ISOMERS OF XYLENE	113	0	5,920	6,030
LEAD & COMPOUNDS	27	0	3,830	3,850
OXIDES OF NITROGEN	247	0	7,826,000	7,827,000
PARTICULATE MATTER 10µm	2,220	0	1,618,000	1,620,000
PARTICULATE MATTER 2.5µm	1,600	0	1,442,000	1,444,000
PERCHLOROETHYLENE	0	0	530	530
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	30,700	30,700
SULFUR DIOXIDE	1.3	0	9,972,000	9,972,000
TOLUENE	384	0	43,900	44,300
TOTAL SUSPENDED PARTICULATES (TSP)	3,350	0	1,876,000	1,880,000
TOTAL VOCS	1,280	0	579,000	580,300
TRICHLOROETHYLENE (TCE)	0	0	62	62

[a] Totals may not appear additive due to rounding

3.65.4 Projection Factors

Projection factors for primary iron and steel production have been derived based on ABARE projected final energy consumption by the iron and steel sector in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c).

The projection factors are provided Table 3.207.

Table 3.207: Projection Factors for Primary Iron and Steel Production

Year	Final Energy Consumption[a] (PJ/year)	Projection Factor
2003	55.8	1.0000
2004	55.7	0.9969
2005	56.2	1.0064
2006	56.7	1.0152
2007	57.2	1.0237
2008	57.6	1.0321
2009	58.1	1.0404
2010	58.8	1.0532
2011	59.5	1.0659
2012	60.3	1.0791
2013	61.0	1.0924
2014	61.8	1.1062
2015	62.6	1.1201
2016	63.4	1.1344
2017	64.2	1.1489
2018	65.0	1.1636
2019	65.8	1.1784
2020	66.7	1.1935
2021	67.5	1.2088
2022	68.4	1.2242
2023	69.2	1.2399
2024	70.1	1.2557
2025	71.0	1.2718
2026	71.9	1.2881
2027	72.9	1.3046
2028	73.8	1.3213
2029	74.7	1.3382
2030		1.3551
2031		1.3720

[a] Source: ABARE 2005a; ABARE 2005b; ABARE 2005c

3.66 Primary Non-Ferrous Production (excluding Aluminium) (59)

3.66.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.208.

Table 3.208: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
PORT KEMBLA COPPER PTY LTD	1753	MILITARY ROAD	PORT KEMBLA	2505
DELTA EMD AUSTRALIA PTY LTD	3278	LOT 16 McINTOSH DRIVE	MAYFIELD	2304
PASMINCO COCKLE CREEK SMELTER PTY LIMITED	5042	MAIN ROAD	BOOLAROO	2284
RIVERSIDE METAL INDUSTRIES PTY LTD	11950	37-67 VIOLET STREET	REVESBY	2212

The emission sources and associated releases to air from primary non-ferrous production (excluding aluminium) facilities are outlined in Table 3.209.

Table 3.209 Primary Non-Ferrous Production (excluding Aluminium) – Emission Sources

Source	Emissions to Air
Combustion	Combustion products
Acid emissions	Acids (HCl, H_2SO_4)
H_2S scrubber stack	SO_2, H_2SO_4
Pouring and casting	NO_x, SO_2, PM
Brass and bronze furnace	PM
Fuel storage	VOCs
Wastewater vaporisation	VOCs

3.66.2 Emissions Estimation Methodology

Emissions from primary non-ferrous production (excluding aluminium) facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Non-Ferrous Foundries, v1.01* (Environment Australia, 1999j)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.66.3 Emissions Estimation

Estimated emissions from primary non ferrous production (excluding aluminium) within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.210.

Table 3.210: Estimated Emissions from Primary Non-Ferrous Production (excluding Aluminium)

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0.33	0	0.33
BENZENE	0	120	0	120
CARBON MONOXIDE	0	20,200	0	20,200
FORMALDEHYDE	0	250	0	250
ISOMERS OF XYLENE	0.04	15	0	15
LEAD & COMPOUNDS	0	0.14	0	0.14
OXIDES OF NITROGEN	6.3	46,900	0	46,900
PARTICULATE MATTER 10µm	321	14,800	0	15,200
PARTICULATE MATTER 2.5µm	264	11,900	0	12,200
PERCHLOROETHYLENE	0	22	0	22
POLYCYCLIC AROMATIC HYDROCARBONS	0	0.18	0	0.18
SULFUR DIOXIDE	23	8,440	0	8,500
TOLUENE	0.01	74	0	74
TOTAL SUSPENDED PARTICULATES (TSP)	520	18,200	0	18,700
TOTAL VOCS	0.45	1,480	0	1,480
TRICHLOROETHYLENE (TCE)	0	2.7	0	2.7

[a] Totals may not appear additive due to rounding

3.66.4 Projection Factors

Projection factors for primary non-ferrous production have been derived based on ABARE projected final energy consumption by the basic “other” non-ferrous metal industry in NSW (i.e. excluding aluminium) (ABARE 2005a; ABARE 2005b; ABARE 2006c).

The projection factors are provided Table 3.211.

Table 3.211: Projection Factors for Primary Non-Ferrous Production

Year	Final Energy Consumption[a] (PJ/year)	Projection Factor
2003	11.6	1.0000
2004	11.8	1.0149
2005	12.1	1.0404
2006	12.5	1.0716
2007	12.8	1.1026
2008	13.2	1.1329
2009	13.6	1.1640
2010	13.9	1.1964
2011	14.3	1.2290
2012	14.7	1.2616
2013	15.1	1.2987
2014	15.5	1.3349
2015	16.0	1.3714
2016	16.4	1.4083
2017	16.8	1.4458
2018	17.3	1.4841
2019	17.7	1.5233
2020	18.2	1.5630
2021	18.7	1.6030
2022	19.1	1.6438
2023	19.6	1.6853
2024	20.1	1.7275
2025	20.6	1.7703
2026	21.1	1.8135
2027	21.6	1.8573
2028	22.1	1.9016
2029	22.7	1.9467
2030		1.9918
2031		2.0369

[a] Source: ABARE 2005a; ABARE 2005b; ABARE 2005c

3.67 Railway Activities (70)

3.67.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.212.

Table 3.212: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
PARRAMATTA RAIL LINK BETWEEN EPPING AND CHATSWOOD AS DEFINED IN A2.2	11735	-	MACQUARIE PARK	2113

The emission sources and associated releases to air for railway activities are outlined in Table 3.213.

Table 3.213: Railway Activities - Emission Sources

Operation	Emissions to Air
Dust emissions	PM
Fuel storage	VOCs
Surface coating usage (degreaser)	VOCs

3.67.2 Emissions Estimation Methodology

Emissions from railway activity facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.67.3 Emissions Estimation

Estimated emissions from railway activity facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.214.

Table 3.214: Estimated Emissions from Railway Activities

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	1.02	0	0	1.02
BENZENE	3.05	0	0	3.05
CARBON MONOXIDE	0	0	0	0
FORMALDEHYDE	5.63	0	0	5.63
ISOMERS OF XYLENE	259	0	0	259
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	0	0	0	0
PARTICULATE MATTER 10µm	4,680	0	0	4,680
PARTICULATE MATTER 2.5µm	4,680	0	0	4,680
PERCHLOROETHYLENE	67.2	0	0	67.2
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	0	0	0	0
TOLUENE	3,38	0	0	3,38
TOTAL SUSPENDED PARTICULATES (TSP)	4,680	0	0	4,680
TOTAL VOCS	16,400	0	0	16,400
TRICHLOROETHYLENE (TCE)	8.22	0	0	8.22

3.67.4 Projection Factors

Projection factors for railway activities have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This

methodology assumes that emissions growth from railway activities is proportional to population growth . The projection factors are described in Section 3.1.4.

3.68 Rendering or Fat Extraction (47)

3.68.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.215.

Table 3.215: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
BIRD BROS PTY LIMITED	520	69-73 O'RIORDAN STREET	ALEXANDRIA	2015
A.J BUSH & SONS (MANUFACTURES) PTY LTD	1100	WINDSOR ROAD	RIVERSTONE	2765
CAMILLERI STOCKFEEDS PTY LTD	2421	OFF OLD NORTHERN ROAD	MAROOTA	2756
OLD HEBBURN NO 2 COLLIERY	7504	264 HEBBURN RD	ABERMAIN	2326
SINGLETON ABATTOIR	11279	OLD NORTHERN RD - CNR NEW ENGLAND AND GOLDEN HIGHW	WHITTINGHAM	2330

The emission sources and associated releases to air for rendering or fat extraction are outlined in Table 3.216.

Table 3.216: Rendering or Fat Extraction - Emission Sources

Operation	Emissions to Air
Combustion	Combustion products
Fuel storage	VOCs
Wastewater vaporisation	VOCs
Surface coating	VOCs

3.68.2 Emissions Estimation Methodology

Emissions from rendering or fat extraction facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.68.3 Emissions Estimation

Estimated emissions from rendering or fat extraction facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.217.

Table 3.217: Estimated Emissions from Rendering or Fat Extraction

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0.28	0	0	2.46	2.7
BENZENE	56.8	0	0	63.9	120
CARBON MONOXIDE	8,320	0	0	9,640	17,960
FORMALDEHYDE	64.4	0	0	127	190
ISOMERS OF XYLENE	44	0	0	113	160
LEAD & COMPOUNDS	0.24	0	0	0.06	0.3
OXIDES OF NITROGEN	10,100	0	0	11,500	21,560
PARTICULATE MATTER 10µm	3,520	0	0	871	4,390
PARTICULATE MATTER 2.5µm	1,620	0	0	859	2,480
PERCHLOROETHYLENE	19	0	0	162	180
POLYCYCLIC AROMATIC HYDROCARBONS	0.05	0	0	0.08	0.14
SULFUR DIOXIDE	8,910	0	0	92.9	9,010
TOLUENE	88	0	0	137.22	230
TOTAL SUSPENDED PARTICULATES (TSP)	8,090	0	0	859	8,950
TOTAL VOCS	3,540	0	0	1,640	5,180
TRICHLOROETHYLENE (TCE)	2.3	0	0	19.8	22

[a] Totals may not appear additive due to rounding

3.68.4 Projection Factors

Projection factors for rendering or fat extraction have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from rendering of fat extraction facilities is proportion to population growth . The projection factors are described in Section 3.1.4.

3.69 Scrap Metal Recovery (62)

3.69.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.218.

Table 3.218: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
METALCORP RECYCLERS PTY LTD	872	53-57 RIVERSIDE ROAD	CHIPPING NORTON	2170
SIMS GROUP LIMITED	2207	43 ASHFORD AVE	MILPERRA	2214
METALCORP RECYCLERS PTY LIMITED	2270	79 STEPHEN ROAD	BOTANY	2019
SIMS GROUP LIMITED	2950	35-37 FRANK STREET	WETHERILL PARK	2164
METALCORP RECYCLERS PTY LTD	4414	LOT 5/243 BERKELEY RD	UNANDERRA	2526
METALCORP RECYCLERS PTY LTD T/A SMORGON STEEL RECYCLING	5345	LOT 28, 29, 30 (NO. 107) SPARKE STREET	HEXHAM	2322
SIMS GROUP LIMITED	6934	76 - 100 CHRISTIE STREET	ST MARYS	2760
SELL AND PARKER PTY LTD	11555	45 TATTERSALL ROAD	BLACKTOWN	2148

The emission sources and associated releases to air for scrap metal recovery are outlined in Table 3.219.

Table 3.219: Scrap Metal Recovery - Emission Sources

Operation	Emissions to Air
Fuel storage	VOCs
Wastewater vaporisation	VOCs
Metal cutting	NO_x, Magnesium oxide fume, PM

3.69.2 Emissions Estimation Methodology

Emissions from scrap metal recovery facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Structural and Fabricated Metal Product Manufacture* (Environment Australia, 1999t)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.69.3 Emissions Estimation

Estimated emissions from scrap metal recovery facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.220.

Table 3.220: Estimated Emissions from Scrap Metal Recovery

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	0	0	0	0
CARBON MONOXIDE	0	0	0	0
FORMALDEHYDE	0	0	0	0
ISOMERS OF XYLENE	0.6	0.15	0.07	0.8
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	4,810	1,860	0	6,670
PARTICULATE MATTER 10µm	52,400	0	0	52,400
PARTICULATE MATTER 2.5µm	39,200	0	0	39,200
PERCHLOROETHYLENE	0.06	0	0	0.06
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	0	0	0	0
TOLUENE	0.2	0.05	0.02	0.3
TOTAL SUSPENDED PARTICULATES (TSP)	82,700	0	0	82,700
TOTAL VOCS	6.5	1.65	0.76	8.9
TRICHLOROETHYLENE (TCE)	0.01	0	0	0.01

[a] Totals may not appear additive due to rounding

3.69.4 Projection Factors

Projection factors for scrap metal recovery production have been derived based on ABARE projected final energy consumption by the basic other non-ferrous metal industry in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c)..

The projection factors are provided in Table 3.211.

3.70 Secondary Aluminium Production (58)

3.70.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.221.

Table 3.221: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
KAAL AUSTRALIA PTY LTD	642	KIORA CRESCENT	YENNORA	2161
METALCORP RECYCLERS PTY LIMITED	1977	23 DAVIS ROAD	WETHERILL PARK	2164
DINGA ENTERPRISES PTY LIMITED	5726	UNIT 4/29-31 HOBART STREET	RIVERSTONE	2765
WESTON ALUMINIUM PTY LTD	6423	MITCHELL AVENUE	WESTON	2326

The emission sources and associated releases to air from secondary aluminium production are outlined in Table 3.222.

Table 3.222: Secondary Aluminium Production – Emission Sources

Process	Emissions to Air
Scrap pretreatment	PM
Smelting	Combustion products
Fuel storage	VOCs
Combustion	Combustion products
Fugitive process emissions	VOCs
Surface coating	VOCs

3.70.2 Emissions Estimation Methodology

Emissions from secondary aluminium production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- USEPA AP-42, *Chapter 12.8 Secondary Aluminium Operations* (USEPA, 1995e)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.70.3 Emissions Estimation

Estimated emissions from secondary aluminium production facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.223.

Table 3.223: Estimated Emissions from Secondary Aluminium Production

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	9,920	0	0	27.6	9,950
CARBON MONOXIDE	47,400	0	0	29,500	76,900
FORMALDEHYDE	19,690	0	0	55.1	19,750
ISOMERS OF XYLENE	54	0	0	0.01	54
LEAD & COMPOUNDS	2.2	0	0	0.57	2.8
OXIDES OF NITROGEN	58,390	0	0	9,760	68,150
PARTICULATE MATTER 10µm	18,500	0	0	11,000	29,500
PARTICULATE MATTER 2.5µm	8,790	0	0	11,000	19,800
PERCHLOROETHYLENE	0	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0.34	0	0	0.01	0.35
SULFUR DIOXIDE	28,250	0	0	281	28,530
TOLUENE	5,140	0	0	13.8	5,150
TOTAL SUSPENDED PARTICULATES (TSP)	25,900	0	0	11,000	36,890
TOTAL VOCS	127,080	0	0	303	127,380
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

[a] Totals may not appear additive due to rounding

3.70.4 Projection Factors

Projection factors for secondary aluminium production have been derived based on ABARE projected final energy consumption for aluminium smelting in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c). The projection factors are provided Table 3.203.

3.71 Secondary Iron and Steel Production (56)

3.71.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.224.

Table 3.224: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
COMMONWEALTH STEEL COMPANY LTD	822	2 MAUD STREET	MAYFIELD WEST	2304
WEIR WARMAN LTD	957	1 MARDEN STREET	ARTARMON	2064
TYCO WATER	1990	DURSLEY ROAD	YENNORA	2161

The emission sources and associated releases to air from secondary iron and steel production are outlined in Table 3.225.

Table 3.225: Secondary Iron and Steel Production – Emission Sources

Operation	Process	Emissions to Air
Scrap preparation and handling		PM
Steel and iron making furnaces		PM, NO_x
Ancillary operations for iron steel production	Sand handling	PM
	Core ovens	PM
	Pouring and casting	PM
	Casting cleaning	PM
	Charge handling	PM
	Casting cooling	PM
	Core making	PM
Fuel storage		VOCs
Combustion		Combustion products
Surface coating usage		VOCs
Welding		PM

3.71.2 Emissions Estimation Methodology

Emissions from secondary iron and steel production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- USEPA AP42 *Chapter 12.13 Steel Foundries* (USEPA, 1995f)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)
- *NPI EET Manual for Fugitive Emissions* (Environment Australia, 1999n)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.71.3 Emissions Estimation

Estimated emissions from secondary iron and steel production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.226.

Table 3.226: Estimated Emissions from Secondary Iron and Steel Production

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	39	16,870	0	16,900
CARBON MONOXIDE	0	2,597,100	0	2,597,100
FORMALDEHYDE	48	33,740	0	33,790
ISOMERS OF XYLENE	2,940	130	0	3,070
LEAD & COMPOUNDS	8.9	92	0	100
OXIDES OF NITROGEN	740	25,390	0	26,130
PARTICULATE MATTER 10µm	6,910	28,260	0	35,170
PARTICULATE MATTER 2.5µm	7,180	25,170	0	32,350
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	1,230	0.3	0	1,230
SULFUR DIOXIDE	1,330	2,010	0	3,330
TOLUENE	71,270	8,710	0	79,980
TOTAL SUSPENDED PARTICULATES (TSP)	7,890	45,360	0	53,250
TOTAL VOCS	102,200	188,240	0	290,400
TRICHLOROETHYLENE (TCE)	0	0	0	0

[a] Totals may not appear additive due to rounding

3.71.4 Projection Factors

Projection factors for secondary iron and steel production have been derived based on ABARE projected final energy consumption by the iron and steel sector in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c). The projection factors are provided in Table 3.207.

3.72 Secondary Non-Ferrous Production (excluding Aluminium) (60)

3.72.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.227.

Table 3.227: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
AUSTRALIAN REFINED ALLOYS	1108	202-212 EUSTON ROAD	ALEXANDRIA	2015
CONSOLIDATED EXTRUSIONS PTY LTD	3489	10 WILLIAMSON ROAD	INGLEBURN	2565

The emission sources and associated releases to air from secondary non-ferrous production (excluding aluminium) are outlined in Table 3.228.

Table 3.228 Secondary Non-Ferrous Production (excluding Aluminium) – Emission Sources

Source	Emissions to Air
Combustion	Combustion products
Acid emissions	Acids (HCl, H_2SO_4)
Pouring and casting	NO_x, SO_2, PM
Fuel storage	VOCs
Fugitive emissions	PM

3.72.2 Emissions Estimation Methodology

Emissions from secondary non-ferrous production (excluding aluminium) facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Non-Ferrous Foundries, v1.01* (Environment Australia, 1999j)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Alumina Refining* (Environment Australia, 1999e)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.72.3 Emissions Estimation

Estimated emissions from secondary non-ferrous production (excluding aluminium) facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.229.

Table 3.229: Estimated Emissions from Secondary Non-Ferrous Production (excluding Aluminium)

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	790	0	0	790
CARBON MONOXIDE	157,900	0	0	157,900
FORMALDEHYDE	460	0	0	460
ISOMERS OF XYLENE	41	0	0	41
LEAD & COMPOUNDS	720	0	0	720
OXIDES OF NITROGEN	33,200	0	0	33,200
PARTICULATE MATTER 10µm	5,750	0	0	5,750
PARTICULATE MATTER 2.5µm	5,280	0	0	5,280
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0.02	0	0	0.02
SULFUR DIOXIDE	89,000	0	0	89,000
TOLUENE	206	0	0	206
TOTAL SUSPENDED PARTICULATES (TSP)	7,870	0	0	7,870
TOTAL VOCS	2,540	0	0	2,540
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.72.4 Projection Factors

Projection factors for secondary non-ferrous metal production have been derived based on ABARE projected final energy consumption by the basic other non-ferrous metal industry in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c). The projection factors are provided in Table 3.211.

3.73 Sewage Treatment - Processing by Large Plants (> 10000 ML per year) (71 [b])

3.73.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.230.

Table 3.230: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
GLENFIELD SEWAGE TREATMENT SYSTEM	372	VICTORIA ROAD	MACQUARIE FIELDS	2564
PENRITH SEWAGE TREATMENT SYSTEM	1409	CASTLEREAGH ROAD	PENRITH	2750
NEWCASTLE SEWERAGE SYSTEM including BURWOOD BEACH WASTEWATER TREATMENT PLANT	1683	OFF SCENIC DRIVE	MEREWETHER	2291
BONDI SEWAGE TREATMENT SYSTEM	1688	MILITARY ROAD	BONDI	2026
QUAKERS HILL SEWAGE TREATMENT SYSTEM	1724	QUAKERS ROAD (NEAR MELROSE AVENUE)	QUAKERS HILL	2763
CRONULLA SEWAGE TREATMENT SYSTEM	1728	CAPTAIN COOK DRIVE	KURNELL	2231
ST MARYS SEWAGE TREATMENT SYSTEM	1729	OFF LINKS ROAD	ST MARYS	2760
LAKE MACQUARIE SEWERAGE SYSTEM	1771	OFF OCEAN PARK ROAD	BELMONT	2280
BELLAMBI SEWAGE TREATMENT SYSTEM	1775	ARMOUR STREET	BELLAMBI	2518
KINCUMBER WATER QUALITY CONTROL CENTRE	1802	DOYLE STREET	KINCUMBER	2251
TOUKLEY SEWAGE TREATMENT WORKS	2647	WILFRED BARRETT DRIVE	NORAVILLE	2263
NORTHERN SUBURBS SEWAGE TREATMENT SYSTEM	372	VICTORIA ROAD	MACQUARIE FIELDS	2564
SOUTHERN SUBURBS SEWAGE TREATMENT SYSTEM	372	VICTORIA ROAD	MACQUARIE FIELDS	2564
FAIRFIELD SEWAGE TREATMENT SYSTEM	372	VICTORIA ROAD	MACQUARIE FIELDS	2564
LIVERPOOL SEWAGE TREATMENT SYSTEM	372	VICTORIA ROAD	MACQUARIE FIELDS	2564
MALABAR SEWAGE TREATMENT SYSTEM	372	VICTORIA ROAD	MACQUARIE FIELDS	2564
BELMONT WASTE WATER TREATMENT PLANT	1771	OFF OCEAN PARK ROAD	BELMONT	2280
NORTHERN SUBURBS SEWAGE TREATMENT SYSTEM	378	BLUE FISH ROAD	MANLY	1232

The emission sources and associated releases to air for sewage, water and wastewater treatment are outlined in Table 3.231.

Table 3.231: Sewage and Wastewater Treatment – Emission Sources

Process	Emissions to Air
VOC vaporisation	VOCs
Combustion	Combustion products

3.73.2 Emissions Estimation Methodology

Emissions from sewage treatment facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Combustion Engines, v2.3* (Environment Australia, 2003b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.73.3 Emissions Estimation

Estimated emissions from sewage treatment (> 10,000 ML/year) facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.232.

Table 3.232: Estimated Emissions from Sewage Treatment Facilities (> 10,000 ML/year)

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	8.4	0	0	0	8.4
ACETALDEHYDE	69	2.8	1.2	5.2	79
BENZENE	260	8.3	6.3	16.20	300
CARBON MONOXIDE	90,900	0	690	4,300	95,900
FORMALDEHYDE	2,530	15	12	203	2,760
ISOMERS OF XYLENE	2,180	126	55	236	2,600
LEAD & COMPOUNDS	0.03	0	0	0	0.04
OXIDES OF NITROGEN	601,300	0	2,340	505	604,200
PARTICULATE MATTER 10µm	1,490	0	96	104	1,680
PARTICULATE MATTER 2.5µm	1,490	0	96	104	1,690
PERCHLOROETHYLENE	3,130	183	78	344	3,740
POLYCYCLIC AROMATIC HYDROCARBONS	5.5	0	0	0.16	5.6
SULFUR DIOXIDE	260	0	2.8	4.1	260
TOLUENE	1,820	104	47	196	2,170
TOTAL SUSPENDED PARTICULATES (TSP)	1,490	0	98	104	1,690
TOTAL VOCS	42,170	1,060	535	2,690	46,460
TRICHLOROETHYLENE (TCE)	383	22	9.7	42.01	460

[a] Totals may not appear additive due to rounding

3.73.4 Projection Factors

Projection factors for sewage treatment have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from sewage treatment facilities is proportion to population growth . The projection factors are described in Section 3.1.4.

3.74 Sewage Treatment - Processing by Small Plants (< 10000 ML per year) (71 [a])

3.74.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.233

Table 3.233: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
BOMBO SEWAGE TREATMENT SYSTEM	2269	DARIEN AVENUE	BOMBO	2533
BEROWRA WATERS MARINA	177	199 BAY ROAD	BEROWRA WATERS	2082
NORTH RICHMOND SEWAGE TREATMENT SYSTEM	190	CNR BELLS LINE OF ROAD & CROOKED LANE	NORTH RICHMOND	2754
SHELLHARBOUR SEWAGE TREATMENT SYSTEM	211	JUNCTION ROAD	SHELLHARBOUR	2529
RAYMOND TERRACE WASTEWATER TREATMENT WORKS	217	Off Elizabeth Avenue	RAYMOND TERRACE	2324
WOLLONGONG SEWAGE TREATMENT SYSTEM	218	PORT KEMBLA ROAD	WOLLONGONG	2500
CESSNOCK WASTEWATER TREATMENT WORKS	227	OFF GOVERNMENT ROAD	CESSNOCK	2325
LITHGOW SEWAGE TREATMENT PLANT	236	GEORDIE STREET	LITHGOW	2790
MCDONALD'S HEXHAM	329	23 MAITLAND ROAD	HEXHAM	2322
BOULDER BAY WASTEWATER TREATMENT WORKS	358	OFF BOULDER BAY ROAD, BOULDER BAY	NEWCASTLE	2315
TXU (TALLAWARRA) PTY LTD	555	Princes Highway	YALLAH	2530
PORTLAND WASTEWATER TREATMENT PLANT	597	ALBION ROAD	PORTLAND	2847
WALLERAWANG SEWERAGE TREATMENT PLANT	598	107 BRAYS LANE	WALLERAWANG	2845
FARLEY WASTEWATER TREATMENT WORKS	733	Off Owl Pen Lane	FARLEY	2320
HORNSBY HEIGHTS SEWAGE TREATMENT SYSTEM	750	PIKE ROAD	HORNSBY HEIGHTS	2077
ABBOTT AUSTRALASIA PTY LTD	817	CAPTAIN COOK DRIVE	KURNELL	2231
TAHMOOR COLLIERY	1389	REMEMBRANCE DRIVE	TAHMOOR	2573
GLENBROOK SEWAGE TREATMENT SYSTEM	1407	MUSHROOM FARM ROAD (OFF BARNETT STREET)	GLENBROOK	2773

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
VISION VALLEY CONFERENCE & RECREATION CENTRE	1584	7 VISION VALLEY ROAD	ARCADIA	2159
HEXHAM BOWLING CLUB CO-OP LTD	1586	290 OLD MAITLAND ROAD	HEXHAM	2322
MUSWELLBROOK SEWAGE TREATMENT WORKS	1593	SKELLATOR STOCK ROUTE	MUSWELLBROOK	2333
THE RUGBY LEAGUE COUNTRY CLUB LTD	1617	810 CAMDEN VALLEY WAY	CATHERINE FIELD	2171
WEST CAMDEN SEWAGE TREATMENT SYSTEM including the STP at	1675	CORNER OF SHEATHERS AND FERGUSON LANES	GRASMERE	2570
HEXHAM ENGINERING PTY LTD	1676	230 OLD MAITLAND ROAD	HEXHAM	2322
TARONGA ZOO	1677	BRADLEYS HEAD ROAD	MOSMAN	2088
BRANXTON WASTEWATER TREATMENT WORKS	1680	OFF NEW ENGLAND HIGHWAY	BRANXTON	2335
MCGRATHS HILL SEWAGE TREATMENT PLANT	1684	10-38 MULGRAVE ROAD	MCGRATHS HILL	2756
WEST HORNSBY SEWAGE TREATMENT SYSTEM including the STP	1695	OFF VALLEY ROAD	HORNSBY	2077
PORT KEMBLA SEWAGE TREATMENT SYSTEM including STP at	1696	MILITARY ROAD	PORT KEMBLA	2505
BLACKHEATH SEWAGE TREATMENT SYSTEM including the STP at	1712	ROBB AVENUE AND BETTINGTON ROAD	BLACKHEATH	2785
MOUNT VICTORIA SEWAGE TREATMENT SYSTEM including the STP at	1716	WENTWORTH ST	MOUNT VICTORIA	2786
CASTLE HILL SEWAGE TREATMENT SYSTEM including the STP at	1725	WRIGHTS ROAD	KELLYVILLE	2155
RICHMOND SEWAGE TREATMENT SYSTEM including the STP	1726	OFF BOURKE STREET	RICHMOND	2753
MOSS VALE SEWAGE TREATMENT PLANT	1731	KENNEDY CLOSE	MOSS VALE	2577
BOWRAL SEWAGE TREATMENT PLANT	1749	BURRADOO ROAD	BOWRAL	2576
KURRI KURRI WASTEWATER TREATMENT WORKS	1767	OFF MCLEOD ROAD	KURRI KURRI	2327
WARRAGAMBA SEWAGE TREATMENT SYSTEM	1778	END OF WEIR ROAD	WARRAGAMBA	2752
WARRIEWOOD SEWAGE TREATMENT SYSTEM	1784	WARRIEWOOD ROAD	WARRIEWOOD	2102
RIVERSTONE SEWAGE TREATMENT SYSTEM	1796	BANDON ROAD	VINEYARD	2765
BATEAU BAY SEWAGE TREATMENT SYSTEM	1942	THE ENTRANCE ROAD	BATEAU BAY	2261
WINMALEE SEWAGE TREATMENT SYSTEM	1963	OFF HAWKESBURY ROAD	WINMALEE	2777
KENTGROVE RETIREMENT VILLAGE	2342	2C JONES ROAD	KENTHURST	2156
BAYER SITE	2425	260 CAPTAIN COOK DRIVE	KURNELL	2231
BUNDANOON SEWAGE	2436	FERNDALE ROAD	BUNDANOON	2578

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
TREATMENT PLANT				
DORA CREEK WASTEWATER TREATMENT WORKS	2541	MARCONI ROAD	DORA CREEK	2264
WATERCO LIMITED	2934	390 MARION STREET	BANKSTOWN	2200
SINGLETON SEWAGE TREATMENT PLANT	3088	ARMY CAMP ROAD	SINGLETON	2330
KEARSLEY WASTEWATER TREATMENT WORKS	3232	OFF NEATH ROAD	KEARSLEY	2325
SOUTH WINDSOR SEWAGE TREATMENT PLANT	3306	FAIREY ROAD	SOUTH WINDSOR	2756
PAX AUSTRALIA	3530	9 WILLIAMSON ROAD	INGLEBURN	2565
BERRIMA WASTEWATER TREATMENT PLANT	3575	TAYLOR AVE	NEW BERRIMA	2577
PAXTON WASTEWATER TREATMENT WORKS	3755	OFF MILLFIELD ROAD	PAXTON	2325
RIVERVIEW HOSTELS PTY LTD	4045	300 FREEMANS DRIVE	COORANBONG	2265
RIVERSIDE OAKS GOLF RESORT	4268	O'BRIENS ROAD	CATTAI	2756
TANILBA BAY WASTEWATER TREATMENT WORKS	4435	OFF LEMON TREE PASSAGE ROAD	MALLABULA	2319
ROUSE HILL SEWAGE TREATMENT SYSTEM including the STP at	4965	MILE END ROAD	ROUSE HILL	2155
DENMAN SEWAGE TREATMENT SYSTEM	5059	PALACE STREET	DENMAN	2328
TRANSGRID	7119	200 OLD WALLGROVE ROAD	EASTERN CREEK	2766
SYDNEY OLYMPIC PARK	10020	Edwin Flack Ave, Marjorie Jackson Parkway, Underwo	HOMEBUSH BAY	2127
KARUAH SEWAGE TREATMENT WORKS, SEWAGE TRANSPORT SYSTEM & KARUAH EFFLUENT REUSE ENTERPRISE.	10230	CLARENCE TOWN ROAD	KARUAH	2324
MITTAGONG SEWAGE TREATMENT PLANT	10362	Drapers Road	MITTAGONG	2575
PICTON SEWAGE TREATMENT SYSTEM including STP at	10555	REMEMBRANCE DRIVE	PICTON	2571
MORPETH WASTEWATER TREATMENT WORKS	10693	Butcher Lane	MORPETH	2321
THE OAKS, OAKDALE AND BELIMBLA PARK SEWERAGE SCHEME	11504	INCLUDING THE TOWNSHIP OF	THE OAKS	2570
MAYFIELD INDUSTRIAL ESTATE SEWAGE TREATMENT PLANT	11549	Closure Area of Former BHP Steelworks, off Selwyn	MAYFIELD	2304
TRANSFER PIPELINE	11716	BETWEEN GLENBROOK STP AND PENRITH STP	GLENBROOK	2773
COALCLIFF SEWERAGE SCHEME	11876	NORTHERN TOWNS, ILLAWARRA	STANWELL PARK	2508
STANWELL PARK SEWARAGE SCHEME	11876	NORTHERN TOWNS, ILLAWARRA	STANWELL PARK	2508
STANWELL TOPS SEWAGE SCHEME	11876	NORTHERN TOWNS, ILLAWARRA	STANWELL PARK	2508
OTFORD SEWERAGE SCHEME	11876	NORTHERN TOWNS, ILLAWARRA	STANWELL PARK	2508

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
G.A & L. HARRINGTON PTY LTD	2791	108 FAIRFORD ROAD	PADSTOW	2211
ITT FLYGT LIMITED	11590	UNIT 31, SLOUGH ESTATE, HOLKER STREET	SILVERWATER	2128

The emission sources and associated releases to air for sewage, water and wastewater treatment are outlined in Table 3.234.

Table 3.234: Sewage and Wastewater Treatment – Emission Sources

Process	Emissions to Air
VOC vaporisation	VOCs
Combustion	Combustion products

3.74.2 Emissions Estimation Methodology

Emissions from sewage treatment facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)
- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Combustion Engines, v2.3* (Environment Australia, 2003b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.74.3 Emissions Estimation

Estimated emissions from sewage treatment (< 10,000 ML/year) facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.235.

Table 3.235: Estimated Emissions from Sewage Treatment Facilities (< 10,000 ML/year)

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	7.4	0	0	0	7.4
ACETALDEHYDE	228	0.02	2	4.38	234
BENZENE	95	0.07	11	29.6	135
CARBON MONOXIDE	21,400	0	1,450	203,000	226,000
FORMALDEHYDE	1,150	0.1	47	8,320	9,520
ISOMERS OF XYLENE	322	1.04	91	199	613
LEAD & COMPOUNDS	5.9	0	0	0.02	5.9
OXIDES OF NITROGEN	21,800	0	1,020	20,800	43,640
PARTICULATE MATTER 10µm	66,900	0	88	4,760	71,770
PARTICULATE MATTER 2.5µm	12,900	0	88	4,760	17,740
PERCHLOROETHYLENE	414	1.5	132	289	840
POLYCYCLIC AROMATIC HYDROCARBONS	0.6	0	0.03	7.54	8.2
SULFUR DIOXIDE	1,050	0	5.6	182	1,230
TOLUENE	310	0.9	77.6	173	561
TOTAL SUSPENDED PARTICULATES (TSP)	203,800	0	88	4,760	208,700
TOTAL VOCS	40,660	8.8	930	34,900	76,520
TRICHLOROETHYLENE (TCE)	32,050	0.2	16.2	35.4	32,100

[a] Totals may not appear additive due to rounding

3.74.4 Projection Factors

Projection factors for sewage treatment have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from sewage treatment facilities is proportion to population growth . The projection factors are described in Section 3.1.4.

3.75 Soap or Detergent Production (23)

3.75.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.236.

Table 3.236: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
ALBRIGHT & WILSON (AUSTRALIA) LIMITED	1974	22 DAVIS ROAD	WETHERILL PARK	2164
COLGATE-PALMOLIVE PTY LTD	2096	50 MARPLE AVE	VILLAWOOD	2163
RECKITT BENCKISER (AUSTRALIA) PTY LIMITED	2758	27-33 FRANK STREET	WETHERILL PARK	2164
STERIC PTY LIMITED	7201	33-61 MALTA ST	VILLAWOOD	2163
HUNTSMAN SURFACTANTS PLANT	7494	16-20 BEAUCHAMP RD	MATRAVILLE	2036

The emission sources and associated releases to air for soap and detergent production are outlined in Table 3.237.

Table 3.237: Soap and Detergent Production - Emission Sources

Operation	Process	Emissions to Air
Production operations	Blending, mixing	PM, VOCs
	Spray drying	PM, VOCs
	Raw material and product storage, cutting and packaging	PM, VOCs
	Vent line, vacuum exhausts	VOCs
Combustion		Combustion products
Fuel and organic liquid storage		VOCs
Wastewater vaporisation		VOCs
Surface coating usage		VOCs

3.75.2 Emissions Estimation Methodology

Emissions from soap or detergent production facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Combustion Engines, v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Alumina Refining* (Environment Australia, 1999e)
- USEPA AP-42 Chapter 6.8 *Soap and Detergents* (USEPA, 1995b)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

- *NPI EET Manual for Surface Coating* (Environment Australia, 1999)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.75.3 Emissions Estimation

Estimated emissions from soap or detergent production facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.238.

Table 3.238: Estimated Emissions from Soap or Detergent Production

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0.17	0	0	0.17
ACETALDEHYDE	1,540	0	0	1,540
BENZENE	7,040	0	0	7,040
CARBON MONOXIDE	4,590	0	0	4,590
FORMALDEHYDE	85	0	0	85
ISOMERS OF XYLENE	440	0	0	440
LEAD & COMPOUNDS	0.03	0	0	0.03
OXIDES OF NITROGEN	4,780	0	0	4,780
PARTICULATE MATTER 10µm	417	0	0	417
PARTICULATE MATTER 2.5µm	417	0	0	417
PERCHLOROETHYLENE	69	0	0	69
POLYCYCLIC AROMATIC HYDROCARBONS	0.04	0	0	0.04
SULFUR DIOXIDE	2,500	0	0	2,500
TOLUENE	1,560	0	0	1,560
TOTAL SUSPENDED PARTICULATES (TSP)	420	0	0	420
TOTAL VOCS	83,410	0	0	83,410
TRICHLOROETHYLENE (TCE)	8.4	0	0	8.4

3.75.4 Projection Factors

Projection factors for soap and detergent production have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from soap or detergent \production facilities is proportional to population growth . The projection factors are described in Section 3.1.4.

3.76 Solid Waste Landfilling (79)

3.76.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.239.

Table 3.239: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
ELIZABETH DRIVE LANDFILL FACILITY	4068	1725 ELIZABETH DRIVE	KEMPS CREEK	2171
BLAXLAND WASTE MANAGEMENT FACILITY	4525	28-30 ATTUNGA ROAD	BLAXLAND	2774
Riverstone Landfill	4594	127 BURFITT ROAD	SCHOFIELDS	2762
KIMBRIKI RECYCLING & WASTE DISPOSAL CENTRE	4600	KIMBRIKI ROAD	TERREY HILLS	2084
KELSO TIP	4606	BRANSGROVE ROAD	MILPERRA	2214
GLENFIELD WASTE DISPOSALS	4614	CAMBRIDGE AVE	GLENFIELD	2167
ALEXANDRIA LANDFILL	4627	10 ALBERT STREET	ST PETERS	2044
GREENWOOD LANDFILL	4669	MONA VALE ROAD	ST IVES	2075
BELROSE WASTE MANAGEMENT CENTRE	4807	CROZIER ROAD	BELROSE	2085
ERSKINE PARK LANDFILL	4865	MAMRE ROAD	ERSKINE PARK	2759
JACKS GULLY WASTE MANAGEMENT CENTRE	5105	RICHARDSON ROAD	CAMDEN	2570
GRANGE AVENUE WASTE MANAGEMENT CENTRE	5273	GRANGE AVENUE (WEST)	MARSDEN PARK	2765
HELENSBURGH WASTE DISPOSAL DEPOT	5861	NIXON PLACE	HELENSBURGH	2508
WHYTE'S GULLY WASTE DISPOSAL FACILITY	5862	REDDALLS ROAD	KEMBLA GRANGE	2526
AWABA WASTE DISPOSAL FACILITY	5873	60 WILTON ROAD	AWABA	2283
SUMMERHILL WASTE MANAGEMENT FACILITY	5897	141 MINMI RD	WALLSEND	2287
SINGLETON WASTE DEPOT	5927	DYRRING ROAD	SINGLETON	2330
BUTTONDERRY WASTE MANAGEMENT FACILITY	5955	HUE HUE ROAD	WARNERVALE	2259
MUSWELLBROOK WASTE & RECYCLE FACILITY	5980	COAL ROAD	MUSWELLBROOK	2333
DUNMORE RECYCLING AND WASTE FACILITY	5984	DUNMORE WASTE DEPOT, BUCKLEYS ROAD	BLACKBUTT	2529
LITHGOW SOLID WASTE FACILITY	6004	GEORDIE ST	LITHGOW	2790
KINCUMBER LANDFILL FACILITY	6052	CULLENS RD	KINCUMBER	2251
WOY WOY LANDFILL	6053	NAGARI ROAD	WOY WOY	2256
MOUNT VINCENT ROAD WASTE LANDFILL FACILITY	6116	109 MOUNT VINCENT ROAD	EAST MAITLAND	2323
KOORAGANG ISLAND WASTE FACILITY	6437	CORMORANT DRIVE	KOORAGANG	2304
KATOOMBA WASTE MANAGEMENT FACILITY	10034	49-89 + 70-78 WOODLANDS ROAD	KATOOMBA	2780
BLAXLAND WASTE MANAGEMENT FACILITY	10039	28-30 ATTUNGA ROAD	BLAXLAND	2774
HORSLEY PARK WASTE MANAGEMENT FACILITY	11584	WALLGROVE ROAD	HORSLEY PARK	2164

3.76.2 Emissions Estimation Methodology

Emissions from solid waste landfilling facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for MSW Landfills* (Environment Australia, 2005b)
- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001)
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.76.3 Emissions Estimation

Estimated emissions from solid waste landfilling facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.240.

Table 3.240: Estimated Emissions from Solid Waste Landfilling

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0	0
BENZENE	4,000	983	80	2,080	7,140
CARBON MONOXIDE	135,700	5,460	125,400	5,890	272,500
FORMALDEHYDE	0	0	2,950	0	2,950
ISOMERS OF XYLENE	6,000	1,470	121	3,120	10,700
LEAD & COMPOUNDS	0.03	0.98	0	0	1.0
OXIDES OF NITROGEN	0	0	6,240	0	6,240
PARTICULATE MATTER 10µm	484,200	23,200	28,630	392,000	927,900
PARTICULATE MATTER 2.5µm	98,500	4,700	7,050	79,000	189,200
PERCHLOROETHYLENE	2,000	491	40	1,040	3,600
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	2.7	0	2.7
SULFUR DIOXIDE	0	0	0	0	0
TOLUENE	70,000	17,200	1,410	36,400	125,000
TOTAL SUSPENDED PARTICULATES (TSP)	1,053,000	60,700	55,660	787,900	1,957,000
TOTAL VOCS	251,800	61,900	16,860	131,000	461,700
TRICHLOROETHYLENE (TCE)	0	0	0	0	0

[a] Totals may not appear additive due to rounding

3.76.4 Projection Factors

Projection factors for solid waste landfilling have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from solid waste landfilling is proportional to population growth . The projection factors are described in Section 3.1.4.

3.77 Used Tyre Processing or Disposal (76)

3.77.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.241.

Table 3.241: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
DEVOTE PTY LTD T/A TYRECYCLE	5125	CNR ERSKINE PARK ROAD & MAMRE RD	ERSKINE PARK	2759
C & R TYRE RECYCLING PTY LTD	11686	36 STENHOUSE DRIVE	CAMERON PARK	2285

The emission sources and associated releases to air for used tyre processing and disposal are outlined in Table 3.242.

Table 3.242: Used Tyre Processing and Disposal - Emission Sources

Process	Emissions to Air
Fuel and organic liquid storage	VOCs

3.77.2 Emissions Estimation Methodology

Emissions from used tyre processing or disposal facilities have been estimated using techniques provided in the *NPI EET Manual for Fuel and Organic Liquid Storage, Version 2.4* (Environment Australia, 2004b) and data supplied in the industrial questionnaire. More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.77.3 Emissions Estimation

Estimated emissions from used tyre processing or disposal facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.243.

Table 3.243: Estimated Emissions from Used Tyre Processing and Disposal

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	0	0	0	0
CARBON MONOXIDE	0	0	0	0
FORMALDEHYDE	0	0	0	0
ISOMERS OF XYLENE	0	0.07	0	0.07
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	0	0	0	0
PARTICULATE MATTER 10µm	0	0	0	0
PARTICULATE MATTER 2.5µm	0	0	0	0
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	0	0	0	0
TOLUENE	0	0.02	0	0.02
TOTAL SUSPENDED PARTICULATES (TSP)	0	0	0	0
TOTAL VOCS	0	0.8	0	0.8
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.77.4 Projection Factors

Projection factors for used tyre processing or disposal have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from used tyre processing or disposal facilities is proportion to population growth . The projection factors are described in Section 3.1.4.

3.78 Vessel Construction or Maintenance Using Dry or Floating Docks (53)

3.78.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.244.

Table 3.244: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
ADI	4333	GARDEN ISLAND	POTTS POINT	2011
FORGACS DOCKYARD	6001	81 DENISON ST	CARRINGTON	2294
BALMAIN SHIPYARDS	6868	72 WATERVIEW ST	BALMAIN	2041

The emission sources and associated releases to air for vessel construction and maintenance are outlined in Table 3.245.

Table 3.245: Vessel Construction and Maintenance - Emission Sources

Process	Emissions to Air
Solvent cleaning	VOCs
Abrasive blasting	PM
Painting	PM, VOCs
Fuel storage	VOCs
Fibreglassing	VOCs

3.78.2 Emissions Estimation Methodology

Emissions from vessel construction or maintenance facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Fibreglass Product Manufacturing* (Environment Australia, 1999s)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.78.3 Activity Data and Assumptions

Data provided in the returned questionnaires allowed for the estimation of emissions from all sources. Default speciation profiles used to estimate speciated emissions of organics are provided in Appendix C.

3.78.4 Emissions Estimation

Estimated emissions from vessel construction or maintenance facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.246.

Table 3.246: Estimated Emissions from Vessel Construction and Maintenance

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	18	0	0	18
ACETALDEHYDE	0	0	0	0
BENZENE	4.7	0	0	4.7
CARBON MONOXIDE	0	0	0	0
FORMALDEHYDE	0	0	0	0
ISOMERS OF XYLENE	180	840	0	1,020
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	0	0	0	0
PARTICULATE MATTER 10µm	0	3,890	0	3,890
PARTICULATE MATTER 2.5µm	0	3,570	0	3,570
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	0	0	0	0
TOLUENE	860	1,800	0	2,660
TOTAL SUSPENDED PARTICULATES (TSP)	0	4,520	0	4,520
TOTAL VOCS	3,740	25,700	0	29,420
TRICHLOROETHYLENE (TCE)	0	0	0	0

[a] Totals may not appear additive due to rounding

3.78.5 Projection Factors

Projection factors for vessel construction or maintenance have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from vessel construction or maintenance using dry or floating docks is proportion to population growth . The projection factors are described in Section 3.1.4.

3.79 Waste Oil Recovery (69)

3.79.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.247.

Table 3.247: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
COASTAL RECYCLED COOKING OILS PTY LTD	4359	87 GAVENLOCK ROAD	TUGGERAH	2259
WORTH RECYCLING PTY LTD	4602	CNR BLACKMAN CRES & FAIREY ROAD	SOUTH WINDSOR	2756
BITUMINOUS PRODUCTS PTY LTD	5267	33 VIOLET ST	REVESBY	2212
TRUEGAIN PTY LTD	7638	62 KYLE STREET	RUTHERFORD	2320
COAST & VALLEY OIL DISTRIBUTORS	11289	15 APPRENTICE DRIVE	BERKELEY VALE	2261

The emission sources and associated releases to air for waste oil recovery are outlined in Table 3.248.

Table 3.248: Waste Oil Recovery - Emission Sources

Operation	Emissions to Air
Combustion	Combustion products
Surface coating	VOCs
Wastewater vaporisation	VOCs
Fuel and organic liquid storage	VOCs

3.79.2 Emissions Estimation Methodology

Emissions from waste oil recovery facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.79.3 Emissions Estimation

Estimated emissions from waste oil recovery facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.249.

Table 3.249: Estimated Emissions from Waste Oil Recovery

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0.3	0	0	0	0.3
BENZENE	1.0	0	0	11.6	13
CARBON MONOXIDE	92	0	0	2,660	2,750
FORMALDEHYDE	2.5	0	0	103	105
ISOMERS OF XYLENE	20	0	0	0	20
LEAD & COMPOUNDS	0	0	0	0.6	0.6
OXIDES OF NITROGEN	750	0	0	10,000	10,800
PARTICULATE MATTER 10µm	9	0	0	272	281
PARTICULATE MATTER 2.5µm	9	0	0	270	279
PERCHLOROETHYLENE	18	0	0	0	18
POLYCYCLIC AROMATIC HYDROCARBONS	0.03	0	0	0.57	0.6
SULFUR DIOXIDE	0.14	0	0	15,800	15,800
TOLUENE	12	0	0	5.8	18
TOTAL SUSPENDED PARTICULATES (TSP)	9	0	0	278	290
TOTAL VOCS	161	0	0	291	450
TRICHLOROETHYLENE (TCE)	2.2	0	0	0	2.2

[a] Totals may not appear additive due to rounding

3.79.4 Projection Factors

Projection factors for petroleum refining have been derived based on ABARE projected primary energy consumption by the petroleum refining industry in NSW (ABARE 2005a; ABARE 2005b; ABARE 2005c). The projection factors are provided in Table 3.187.

3.80 Wood or Timber Milling (86)

3.80.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.250.

Table 3.250: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
WEATHERTEX PTY LTD	1754	MASONITE ROAD	RAYMOND TERRACE	2324
NEWCASTLE WOODCHIPPING PTY LTD	2286	6 SANDPIPER CLOSE	KOORAGANG	2304

The emission sources and associated releases to air from wood or timber milling are outlined in Table 3.251

Table 3.251: Wood or Timber Milling – Emission Sources

Process	Emissions to Air
Wood chipping	PM
Painting	VOCs
Material transfer	PM
Fuel storage	VOCs
Combustion	Combustion products
Wastewater vaporisation	VOCs

3.80.2 Emissions Estimation Methodology

Emissions from wood or timber milling facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents:

- *NPI EET Manual for Combustion in Boilers, v1.2* (Environment Australia, 2003c)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *Australian Methodology for the Estimation of Greenhouse Gas Emissions and Sinks 2002 – Waste* (NGGIC, 2004)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.80.3 Emissions Estimation

Estimated emissions from wood or timber milling facilities within the GMR, Sydney, Newcastle, Wollongong and Non-Urban regions are provided in Table 3.252.

Table 3.252: Estimated Emissions from Wood or Timber Milling

Substance	Estimated Emissions (kg/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR [a]
1,3 BUTADIENE	0	0	0	0	0
ACETALDEHYDE	0	0	0	0.2	0.2
BENZENE	0	0	0	11.5	11.5
CARBON MONOXIDE	0	0	0	31,080	31,080
FORMALDEHYDE	0	0	0	32	32
ISOMERS OF XYLENE	0	0	0	16,130	16,130
LEAD & COMPOUNDS	0	0	0	32	32
OXIDES OF NITROGEN	0	0	0	44,700	44,700
PARTICULATE MATTER 10µm	0	272	0	18,400	18,700
PARTICULATE MATTER 2.5µm	0	100	0	7,420	7,520
PERCHLOROETHYLENE	0	0	0	13	13
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0.08	0.08
SULFUR DIOXIDE	0	0	0	42,000	42,000
TOLUENE	0	0	0	12,500	12,500
TOTAL SUSPENDED PARTICULATES (TSP)	0	2,630	0	45,200	47,800
TOTAL VOCS	0	0	0	90,000	90,000
TRICHLOROETHYLENE (TCE)	0	0	0	1.6	1.6

[a] Totals may not appear additive due to rounding

3.80.4 Projection Factors

Projection factors for wood or timber milling have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from wood or timber milling is proportional to population growth . The projection factors are described in Section 3.1.4.

3.81 Waste Storage, Transfer, Separating or Processing

3.81.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.253.

Table 3.253: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
COLLEX BUILDING RECYCLERS	5303	38 McPHERSON STREET	BANKSMEADOW	2019
BRAMBLES AUSTRALIA LTD	6124	19 EGRET STREET	KOORAGANG	2304
ECO CYCLE MATERIALS PTY LIMITED	10699	155 NEWTON ROAD	WETHERILL PARK	2164
UR-3R FACILITY	11798	WALLGROVE ROAD	EASTERN CREEK	2766
COLLEX PTY LTD	3070	75 ANZAC STREET	GREENACRE	2190
PORT BOTANY TRANSFER STATION PTY LIMITED	6179	LOT 21 MILITARY ROAD	MATRAVILE	2036
CLYDE TRANSFER TERMINAL	11763	PARRAMATTA ROAD	CLYDE	2142

The emission sources and associated releases to air for waste storage, transfer, separating or processing are outlined in Table 3.254.

Table 3.254: Waste Storage, Transfer, Separating or Processing - Emission Sources

Operation	Process	Emissions to Air
Crushing	Primary	PM
	Secondary	PM
	Tertiary	PM
Screening	Primary, secondary and tertiary screening	PM
	Fine screening	PM
Fuel Storage		VOCs
Wind erosion		PM
Material transfer		PM
Combustion		Combustion products

3.81.2 Emissions Estimation Methodology

Emissions from waste storage, transfer, separating or processing facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents

- *NPI EET Manual for Mining v2.3* (Environment Australia, 2001a).
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999)m
- *NPI EET Manual for Combustion Engines v2.3* (Environment Australia, 2003b)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.81.3 Emissions Estimation

Estimated emissions from waste storage, transfer, separating or processing facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.255.

Table 3.255: Estimated Emissions from Waste Storage, Transfer, Separating or Processing

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR [a]
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	1.7	0.03	0	1.7
BENZENE	6.1	0.13	0	6.2
CARBON MONOXIDE	54,000	4.2	0	54,000
FORMALDEHYDE	43	0.24	0	43
ISOMERS OF XYLENE	19	156	0	175
LEAD & COMPOUNDS	0.02	0	0	0.03
OXIDES OF NITROGEN	41,500	4.9	0	41,500
PARTICULATE MATTER 10µm	34,000	300	0	34,300
PARTICULATE MATTER 2.5µm	7,200	56	0	7,220
PERCHLOROETHYLENE	8.2	2.3	0	10
POLYCYCLIC AROMATIC HYDROCARBONS	0.3	0	0	0.3
SULFUR DIOXIDE	6.0	0.03	0	6.0
TOLUENE	10	110	0	120
TOTAL SUSPENDED PARTICULATES (TSP)	95,900	600	0	96,500
TOTAL VOCS	1,380	650	0	2,030
TRICHLOROETHYLENE (TCE)	1.0	0.3	0	1.3

[a] Totals may not appear additive due to rounding

3.81.4 Projection Factors

Projection factors for waste storage, transfer, separating or processing have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from waste storage, transfer, separating or processing is proportional to population growth . The projection factors are described in Section 3.1.4.

3.82 Wood Preservation (87)

3.82.1 Emission Sources and Associated Releases to Air

Industrial facilities within the GMR that are included in the emissions inventory under this category are outlined in Table 3.256.

Table 3.256: Industrial Facilities Included in the Emissions Inventory

Facility	EPL No	Facility Street	Facility Suburb	Facility Post Code
KOPPERS WOOD PRODUCTS PTY LTD	11246	53 WEAKLEYS DRIVE	BERESFIELD	2322

The emission sources and associated releases to air from wood preservation are outlined in Table 3.257

Table 3.257: Wood Preservation – Emission Sources

Process	Emissions to Air
Wood preservation processes	PM
Fuel storage	VOCs
Surface coating	VOCs

3.82.2 Emissions Estimation Methodology

Emissions from wood preservation facilities have been estimated using data supplied in returned questionnaires and techniques provided in the following documents

- *NPI EET Manual for Timber and Wood Product Manufacturing v1.1* (Environment Australia, 1999u)
- *NPI EET Manual for Fuel and Organic Liquid Storage, v2.4* (Environment Australia, 2004b)
- *NPI EET Manual for Surface Coating* (Environment Australia, 1999m)

More detailed information on the methodology employed is described in the methodology report (Bawden et. al., 2004).

3.82.3 Emissions Estimation

Estimated emissions from wood preservation facilities within the GMR, Sydney, Newcastle and Wollongong regions are provided in Table 3.258.

Table 3.258: Estimated Emissions from Wood Preservation

Substance	Estimated Emissions (kg/year)			
	Sydney	Newcastle	Wollongong	GMR
1,3 BUTADIENE	0	0	0	0
ACETALDEHYDE	0	0	0	0
BENZENE	0	0	0	0
CARBON MONOXIDE	0	0	0	0
FORMALDEHYDE	0	0	0	0
ISOMERS OF XYLENE	0	13	0	13
LEAD & COMPOUNDS	0	0	0	0
OXIDES OF NITROGEN	0	0	0	0
PARTICULATE MATTER 10µm	0	0	0	0
PARTICULATE MATTER 2.5µm	0	0	0	0
PERCHLOROETHYLENE	0	0	0	0
POLYCYCLIC AROMATIC HYDROCARBONS	0	0	0	0
SULFUR DIOXIDE	0	0	0	0
TOLUENE	0	0.4	0	0.4
TOTAL SUSPENDED PARTICULATES (TSP)	0	0	0	0
TOTAL VOCS	0	42	0	42
TRICHLOROETHYLENE (TCE)	0	0	0	0

3.82.4 Projection Factors

Projection factors for wood preservation have been derived based on population projections provided by the Transport and Population Data Centre (TPDC), NSW Department of Planning. This methodology assumes that emissions growth from wood preservation is proportional to population growth . The projection factors are described in Section 3.1.4.

4 EMISSIONS SUMMARY

The industrial emissions inventory includes emissions from 1,037 licensed facilities. A total of 6,869 emission sources have been included in the industrial emissions inventory, consisting of 1,364 point sources and 5,504 fugitive sources. Table 4.1 presents the number and type of emission sources included in the industrial emissions inventory for each area considered.

Table 4.1: Emission Source Summary

Area	Point Sources	Fugitive Sources	Total Sources
Sydney	915	3,012	3,927
Newcastle	193	533	726
Wollongong	130	250	380
Other	124	1,712	1,836
GMR	1,364	5,505	6,869

The pollutants inventoried include criteria pollutants specified in the Air NEPM, air toxics associated with the National Pollutant Inventory and the Air Toxics NEPM and any other pollutants associated with state specific programs, i.e. Load Based Licensing (Protection of the Environment Operations (General) Regulation 1998 (DEC, 2002 & PCO, 1998)) and Protection of the Environment Operations (Clean Air) Regulation 2002 (PCO, 2005).

Figure 4.1 shows the location of all industrial emission sources that are included in the emissions inventory.

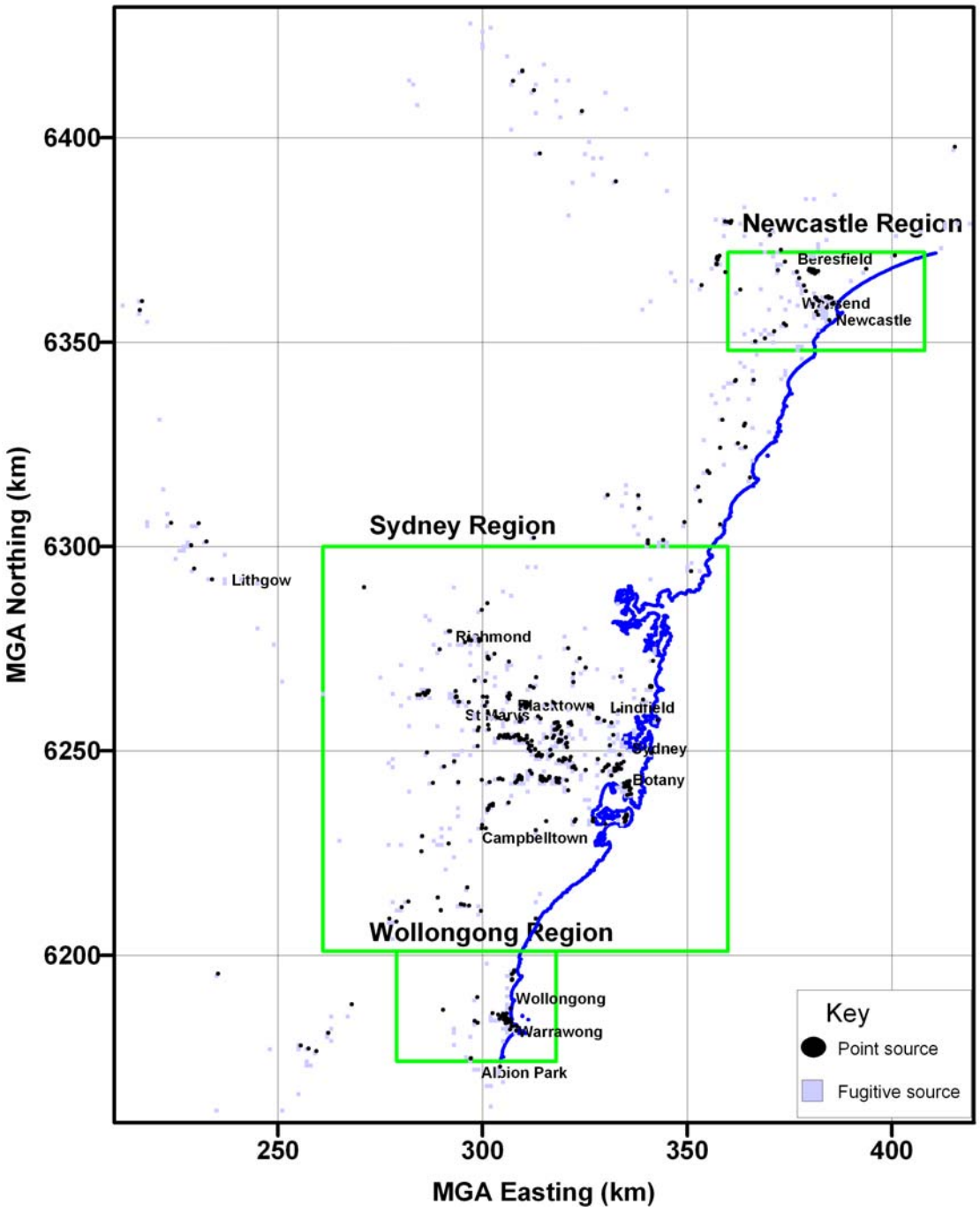

Figure 4.1: Location of all Industrial Emission Sources

Figure 4.2 shows the proportion of total emissions in the GMR emitted in each defined region for each criteria pollutant - NO_x (oxides of nitrogen), Total VOCs (volatile organic compounds), PM_{10} (particulate matter with an aerodynamic diameter of less than 10 µm), CO (carbon monoxide), SO_2 (sulfur dioxide)).

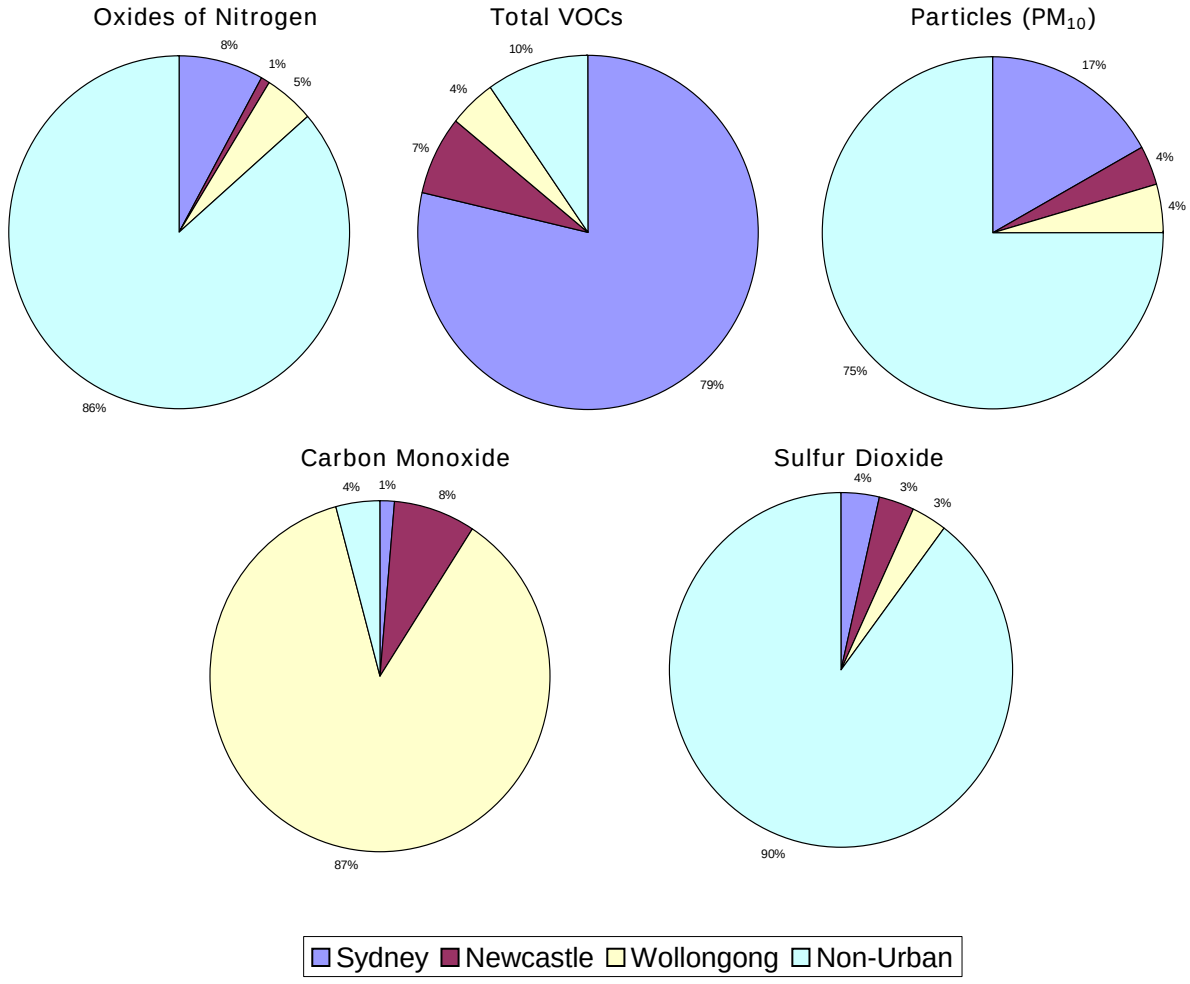

Figure 4.2: Proportion of Total Industrial Emissions in Each Defined Region

Total industrial emissions for each NSW Activity type (NSW Activity type is defined in Schedule 1 of the Protection of the Environment Operations Act 1997) for each criteria pollutant in each region (i.e. the GMR, Sydney, Newcastle and Wollongong) are presented graphically as follows:

- Figure 4.3 to Figure 4.7 present industrial emissions by NSW Activity Type for the entire GMR.
- Figure 4.8 to Figure 4.12 present industrial emissions by NSW Activity Type for the Sydney region.
- Figure 4.13 to Figure 4.17 present industrial emissions by NSW Activity Type for the Newcastle region
- Figure 4.18 to Figure 4.22 present industrial emissions by NSW Activity Type for the Wollongong region.

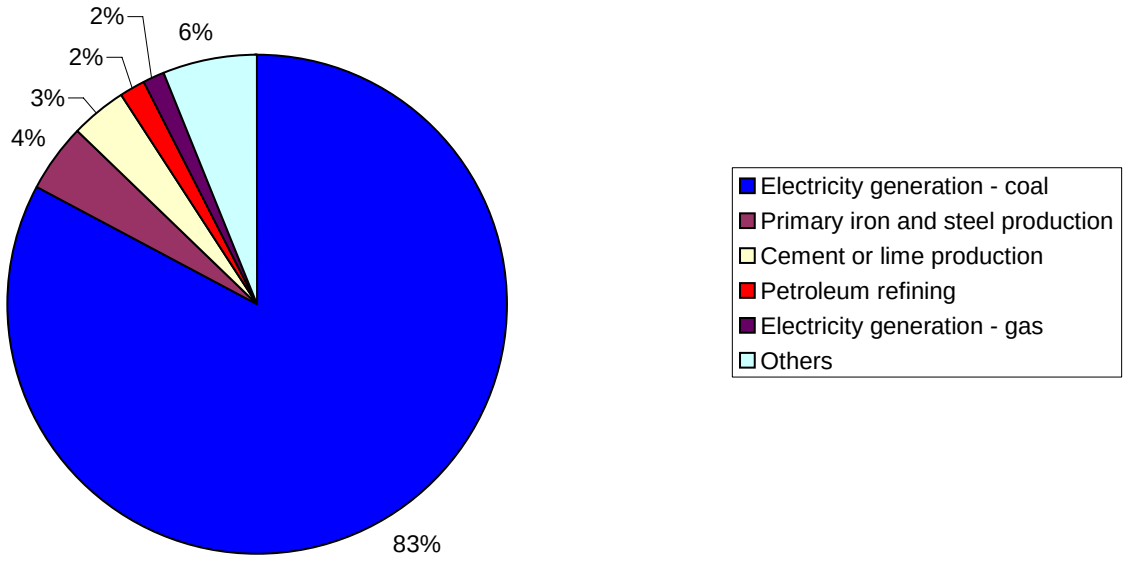

Figure 4.3: Industrial Emissions of Oxides of Nitrogen (NO_x) by NSW Activity Type in the GMR (Total Emissions = 175,500 tonnes/year)

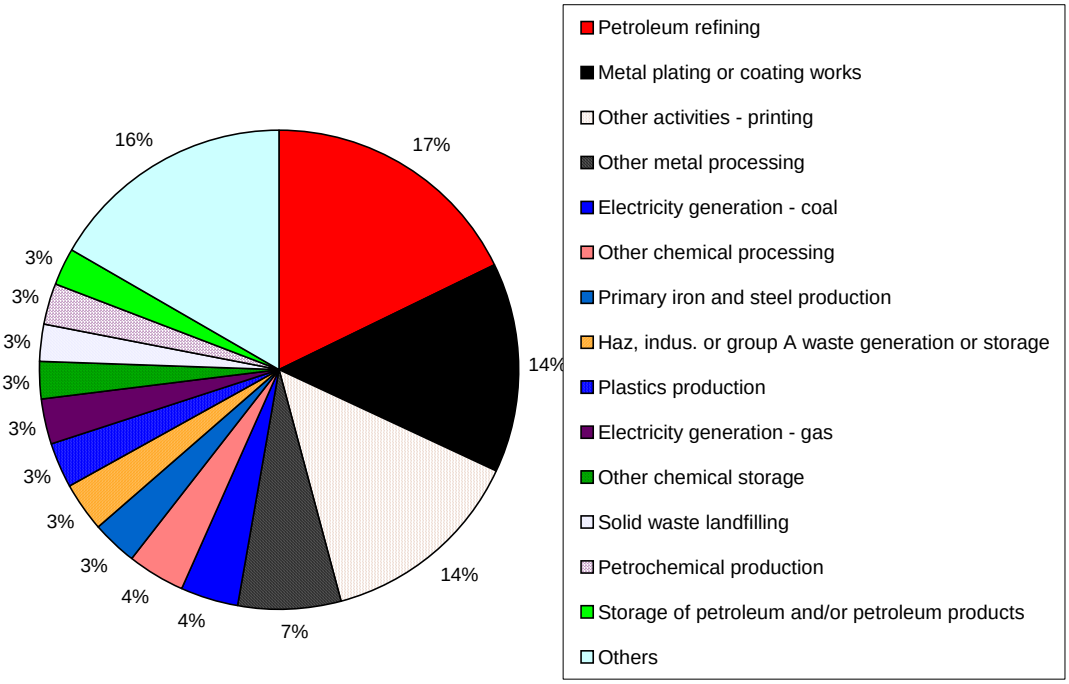

Figure 4.4: Industrial Emissions of Total VOCs by NSW Activity Type in the GMR (Total Emissions = 17,700 tonnes/year)

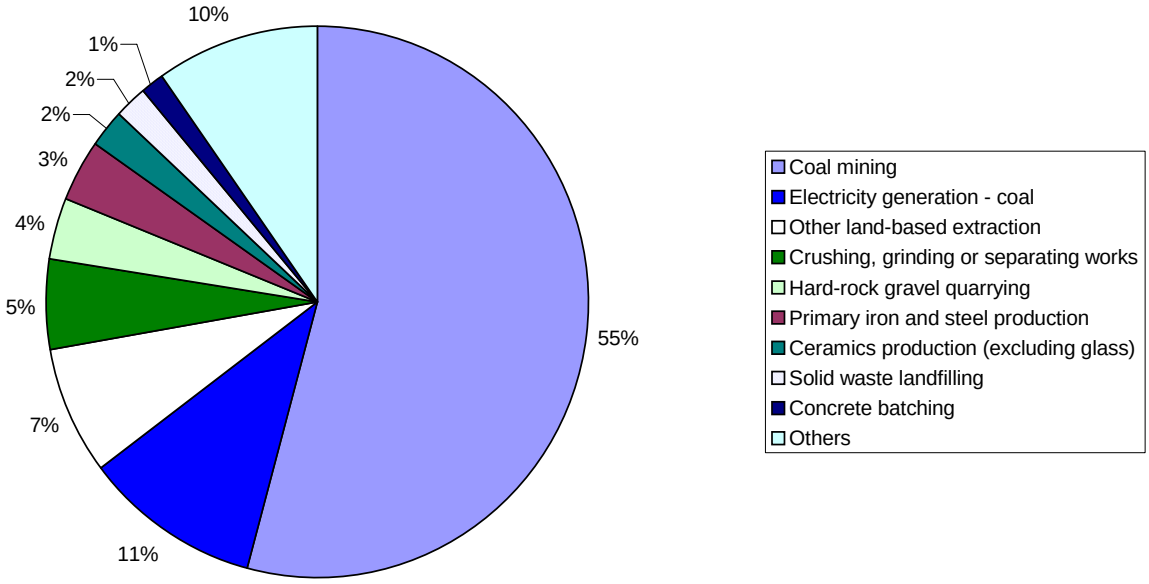

Figure 4.5: Industrial Emissions of Particles (PM_{10}) by NSW Activity Type in the GMR (Total Emissions = 46,500 tonnes/year)

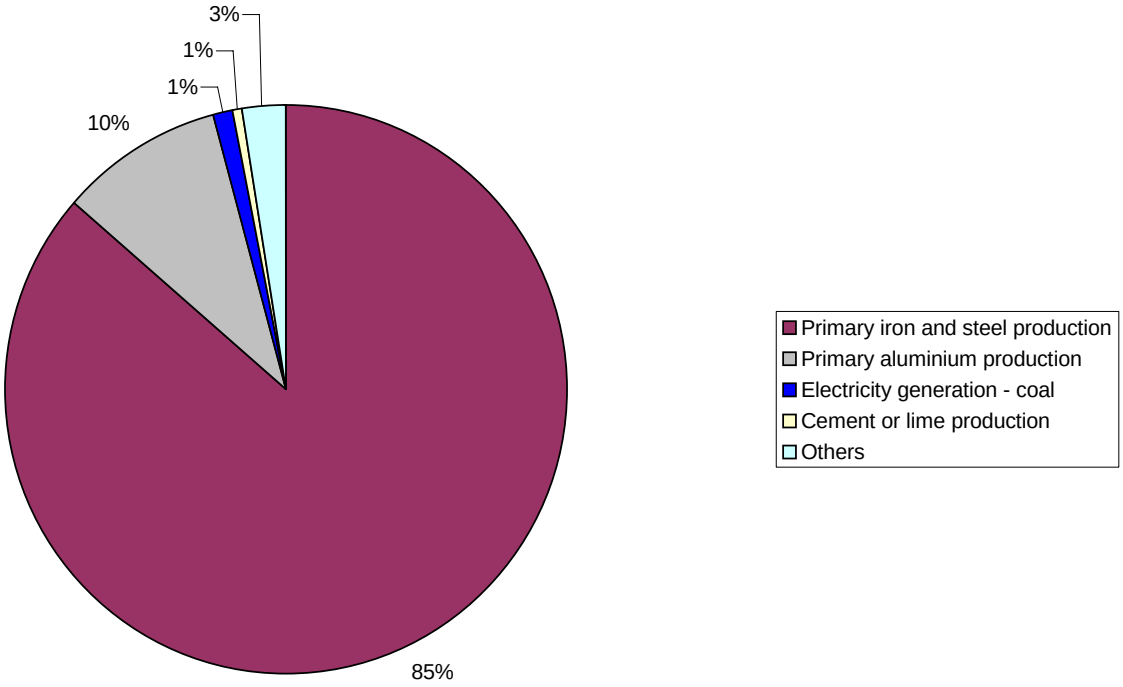

Figure 4.6: Industrial Emissions of Carbon Monoxide (CO) by NSW Activity Type in the GMR (Total Emissions = 603,000 tonnes/year)

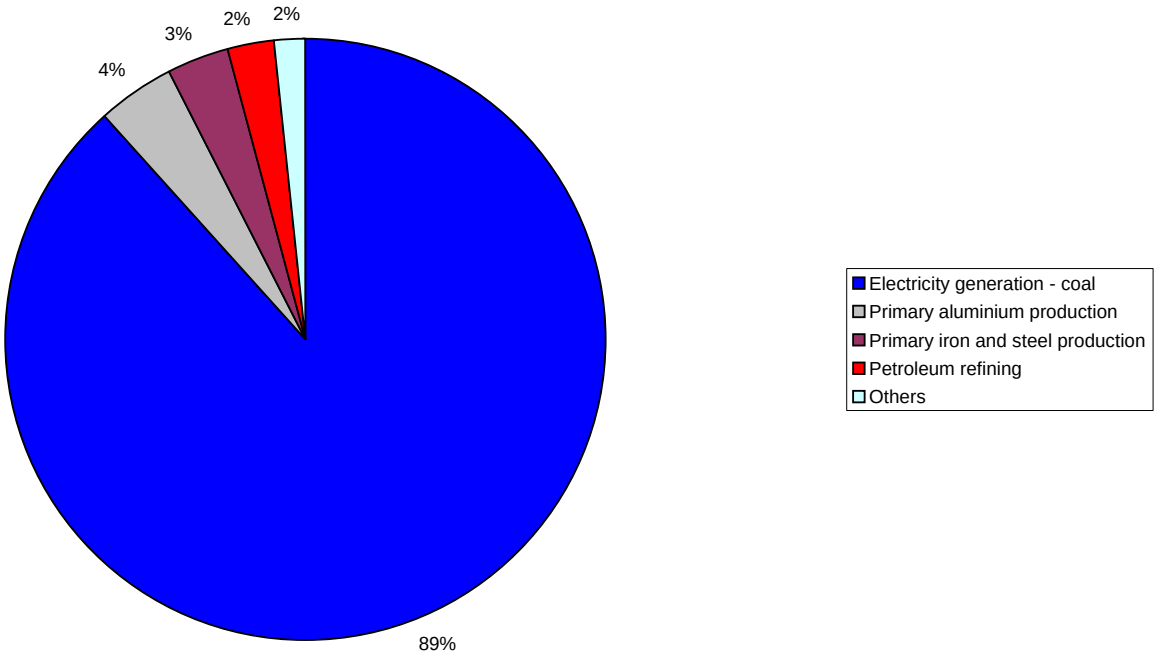

Figure 4.7: Industrial Emissions of Sulfur Dioxide (SO_2) by NSW Activity Type in the GMR (Total Emissions = 296,000 tonnes/year)

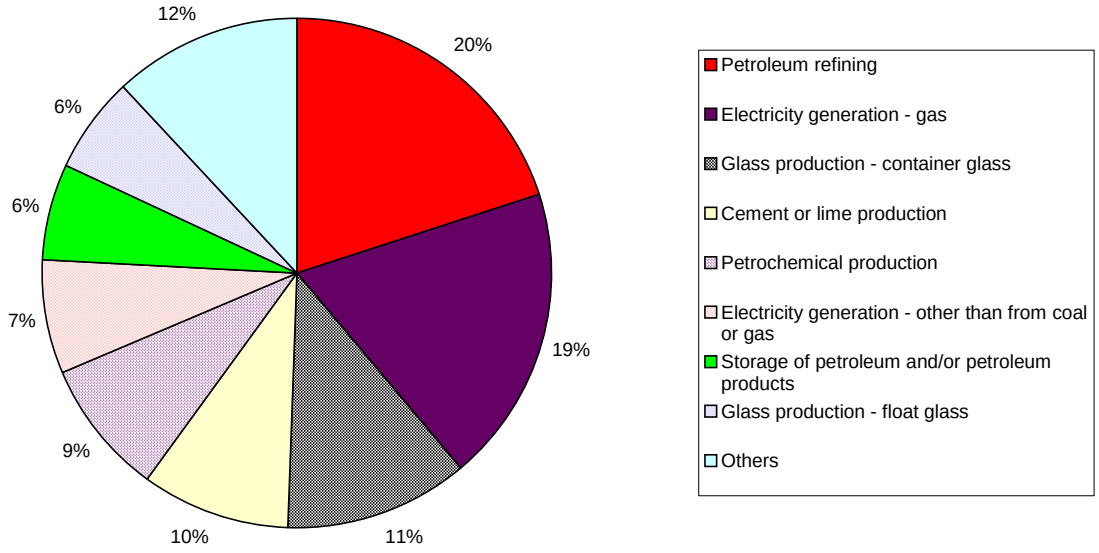

Figure 4.8: Industrial Emissions of Oxides of Nitrogen (NO_x) by NSW Activity Type in Sydney (Total Emissions = 14,000 tonnes/year)

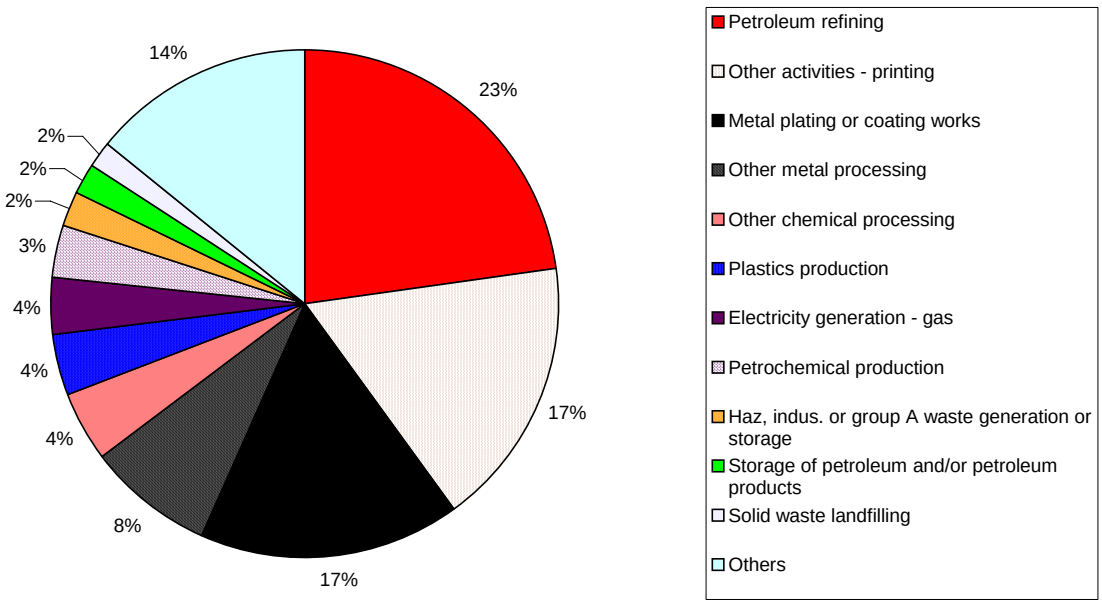

Figure 4.9: Industrial Emissions of Total VOCs by NSW Activity Type in Sydney (Total Emissions = 14,000 tonnes/year)

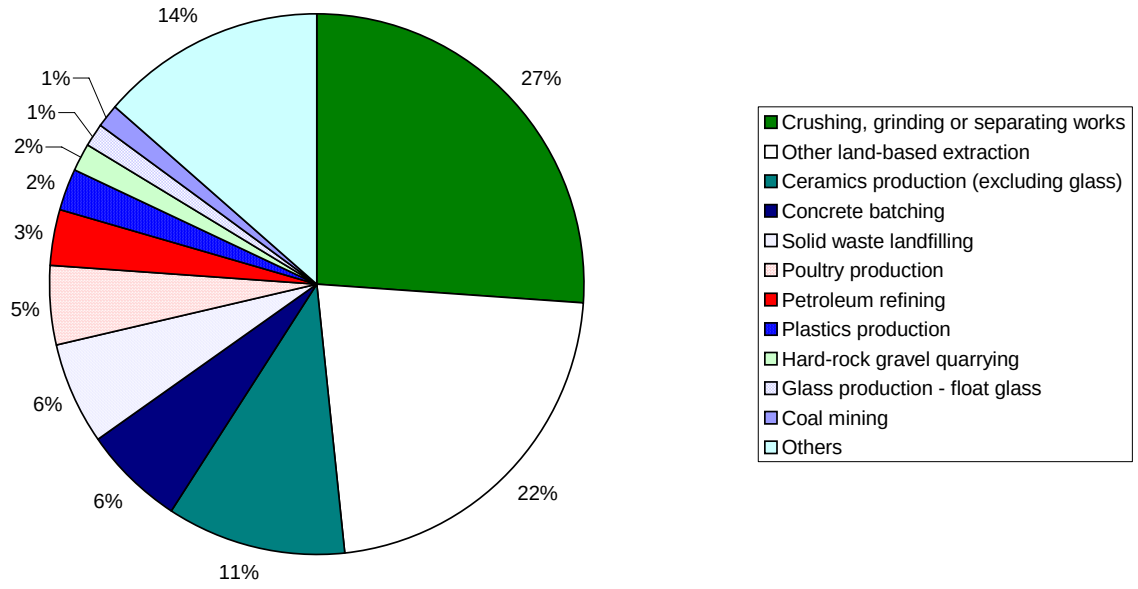

Figure 4.10: Industrial Emissions of Particles (PM_{10}) by NSW Activity Type in Sydney (Total Emissions = 7,890 tonnes/year)

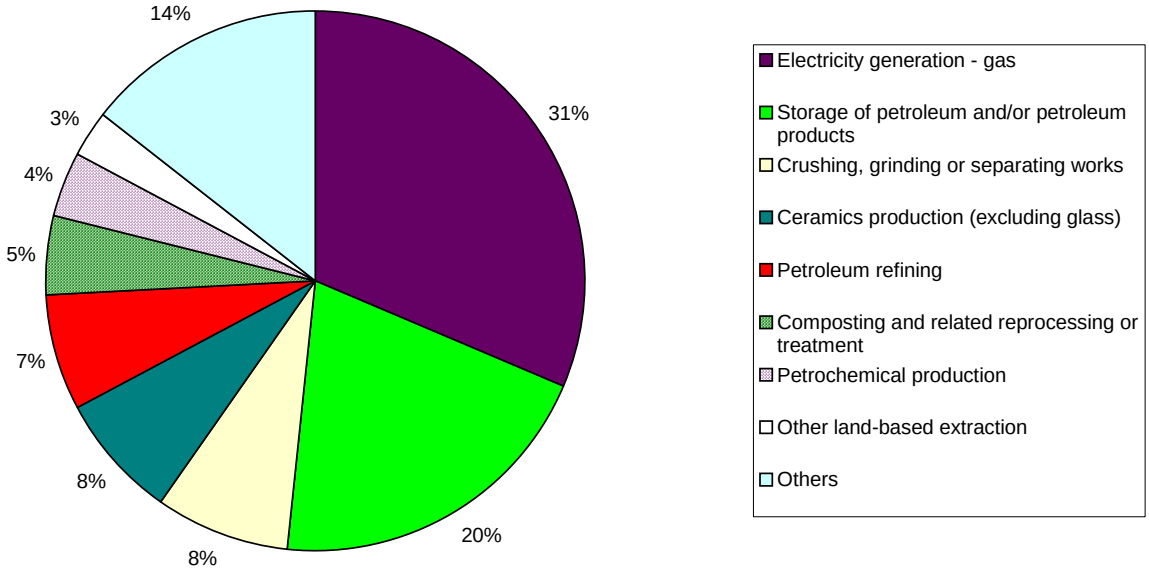

Figure 4.11: Industrial Emissions of Carbon Monoxide (CO) by NSW Activity Type in Sydney (Total Emissions = 8,000 tonnes/year)

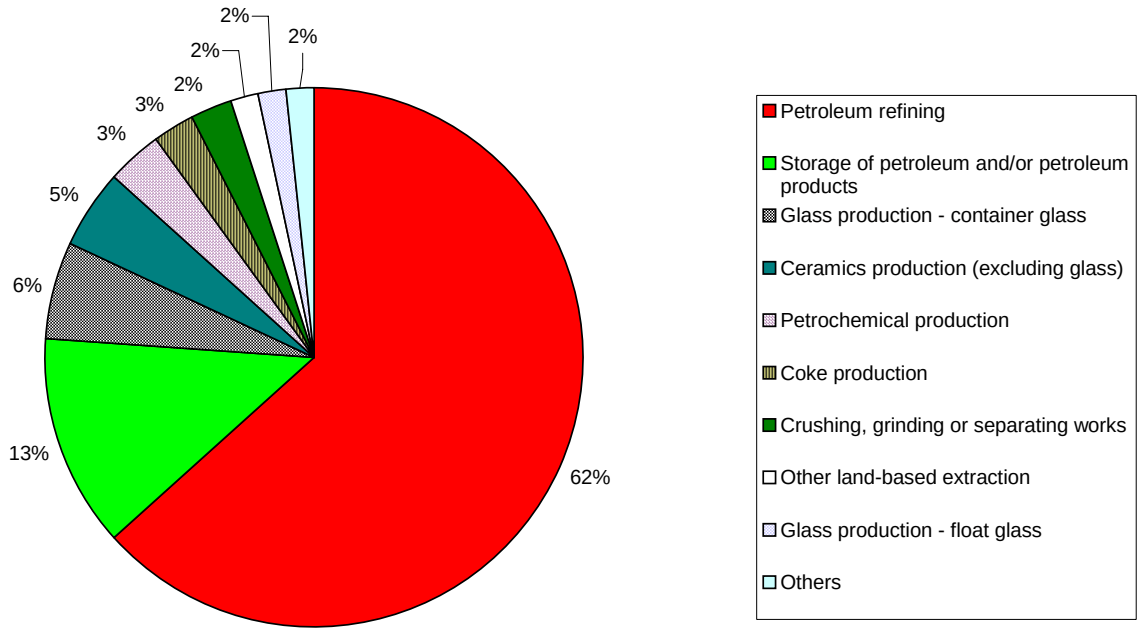

Figure 4.12: Industrial Emissions of Sulfur Dioxide (SO_2) by NSW Activity Type in Sydney (Total Emissions = 11,000 tonnes/year)

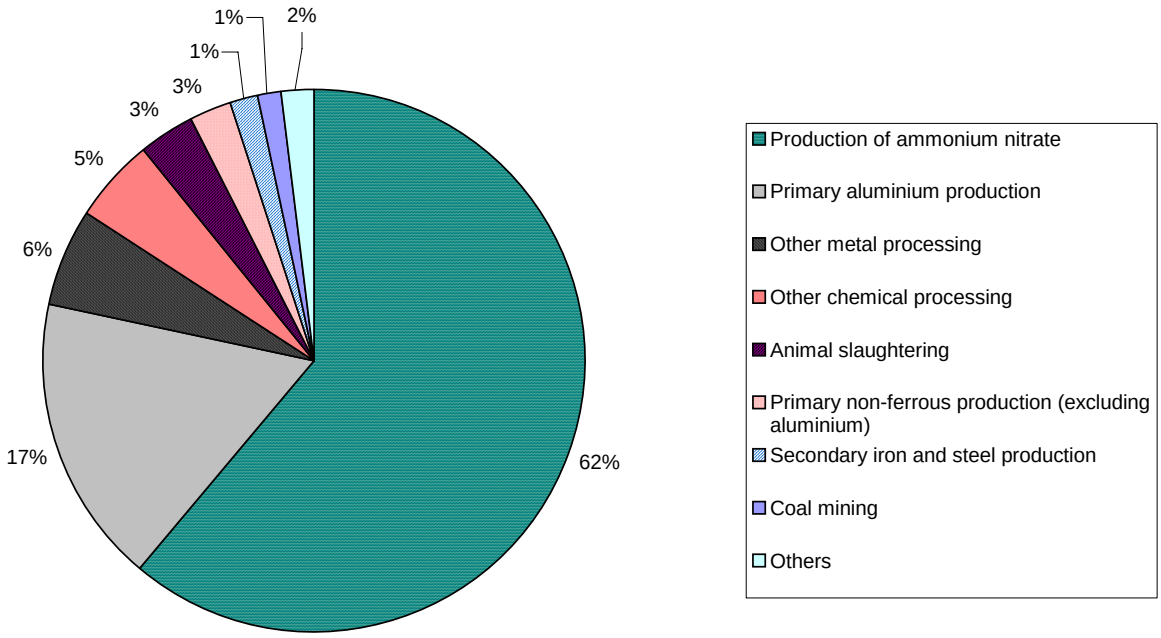

Figure 4.13: Industrial Emissions of Oxides of Nitrogen (NO_x) by NSW Activity Type in Newcastle (Total Emissions = 1,730 tonnes/year)

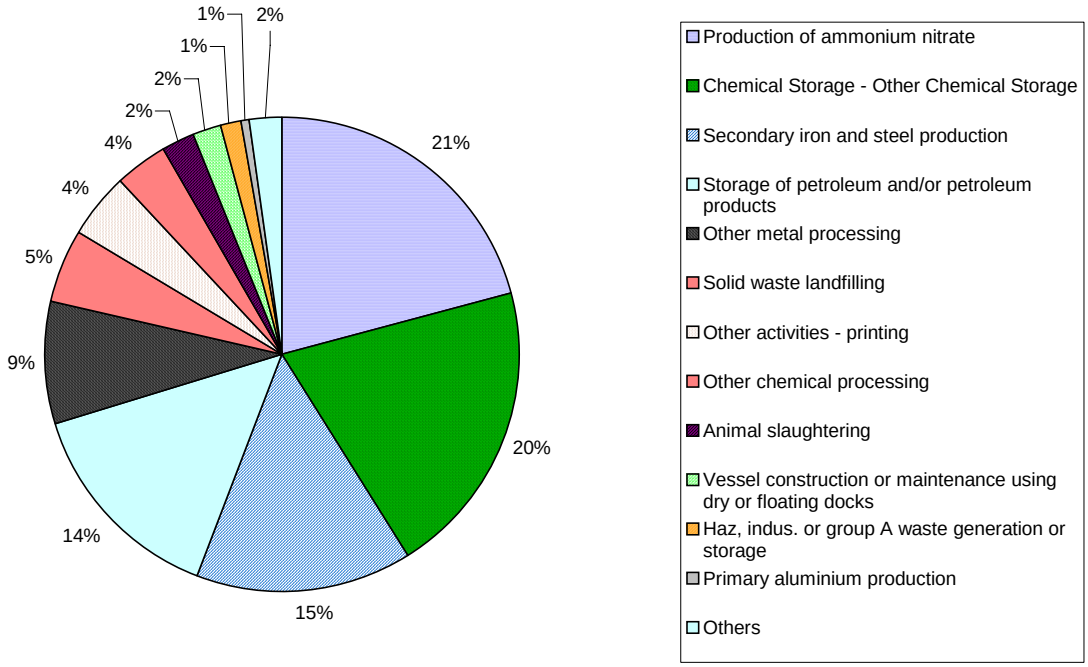

Figure 4.14: Industrial Emissions of Total VOCs by NSW Activity Type in Newcastle (Total Emissions = 1,270 tonnes/year)

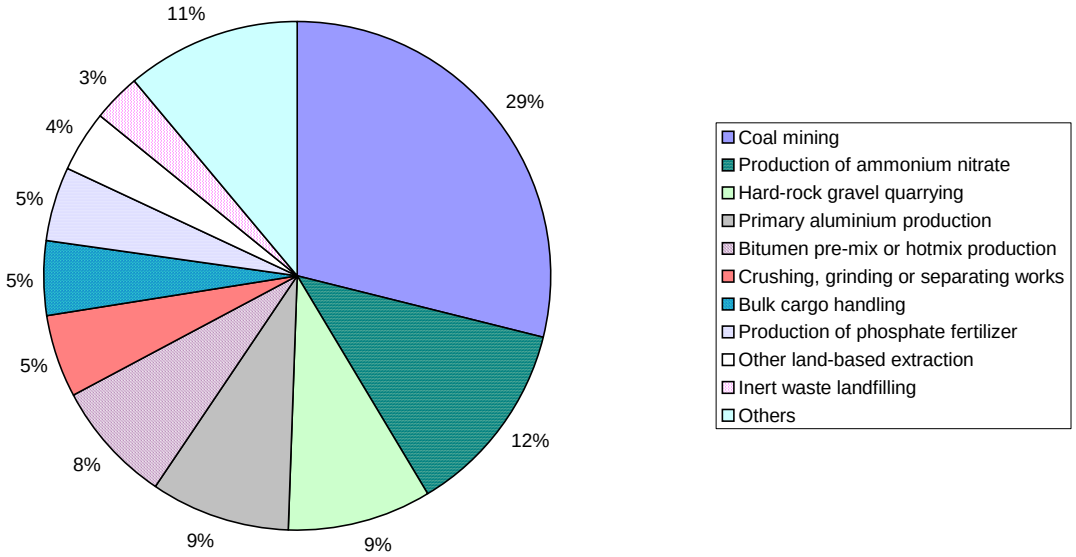

Figure 4.15: Industrial Emissions of Particles (PM_{10}) by NSW Activity Type in Newcastle (Total Emissions = 1,710 tonnes/year)

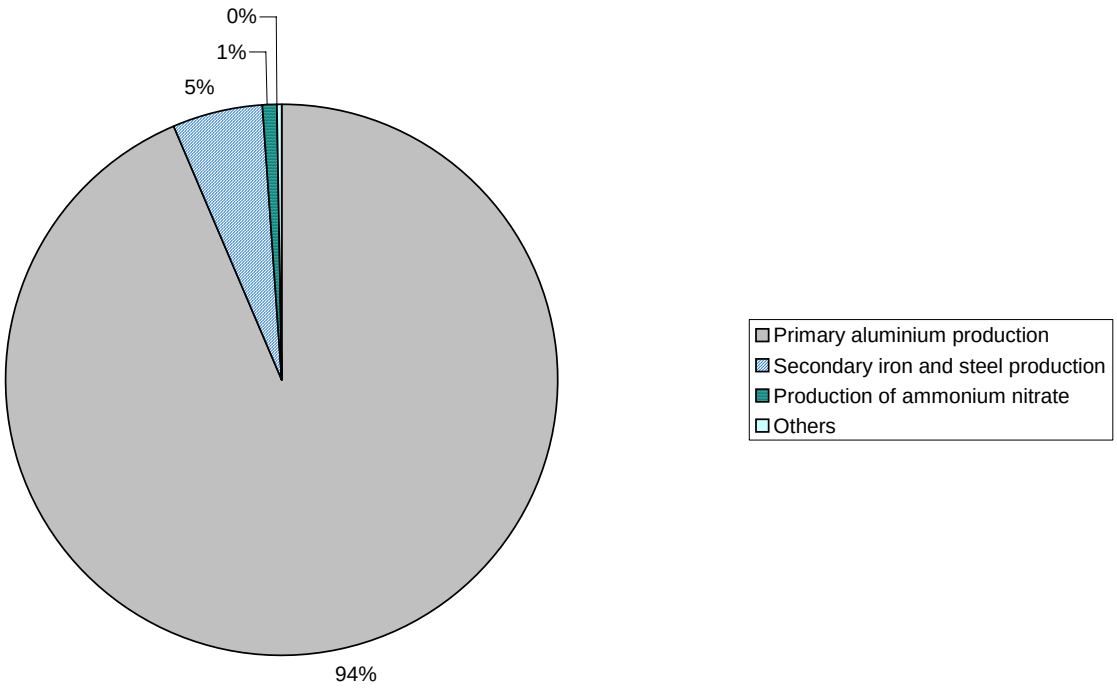

Figure 4.16: Industrial Emissions of Carbon Monoxide (CO) by NSW Activity Type in Newcastle (Total Emissions = 47,800 tonnes/year)

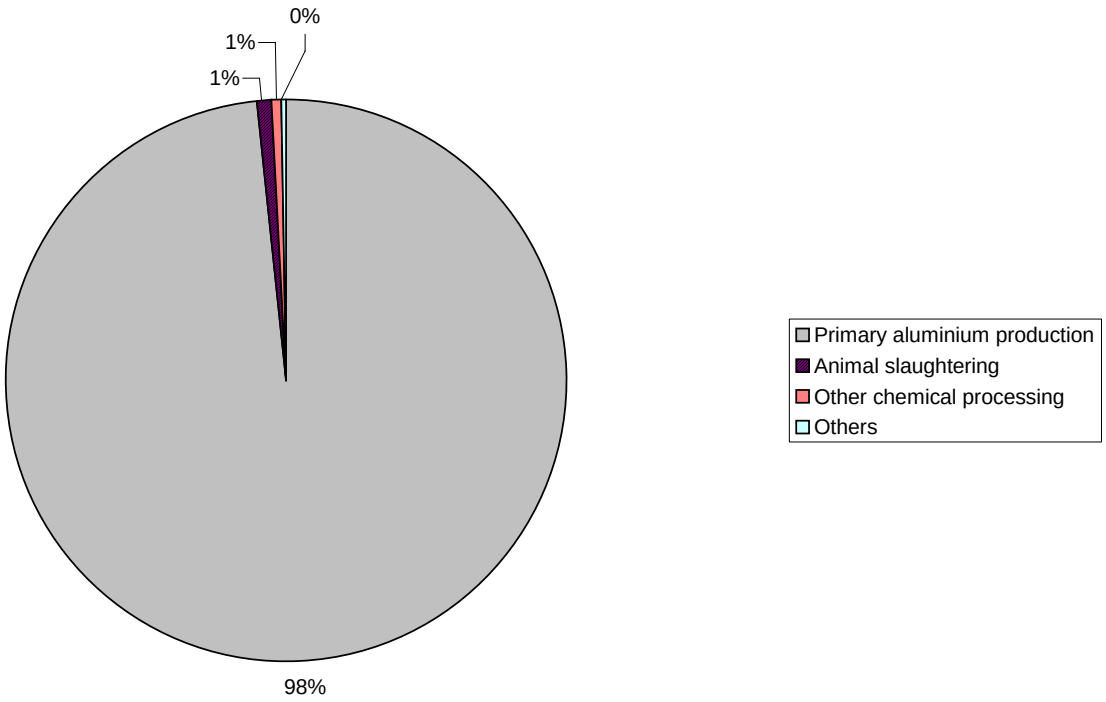

Figure 4.17: Industrial Emissions of Sulfur Dioxide (SO_2) by NSW Activity Type in Newcastle (Total Emissions = 9,300 tonnes/year)

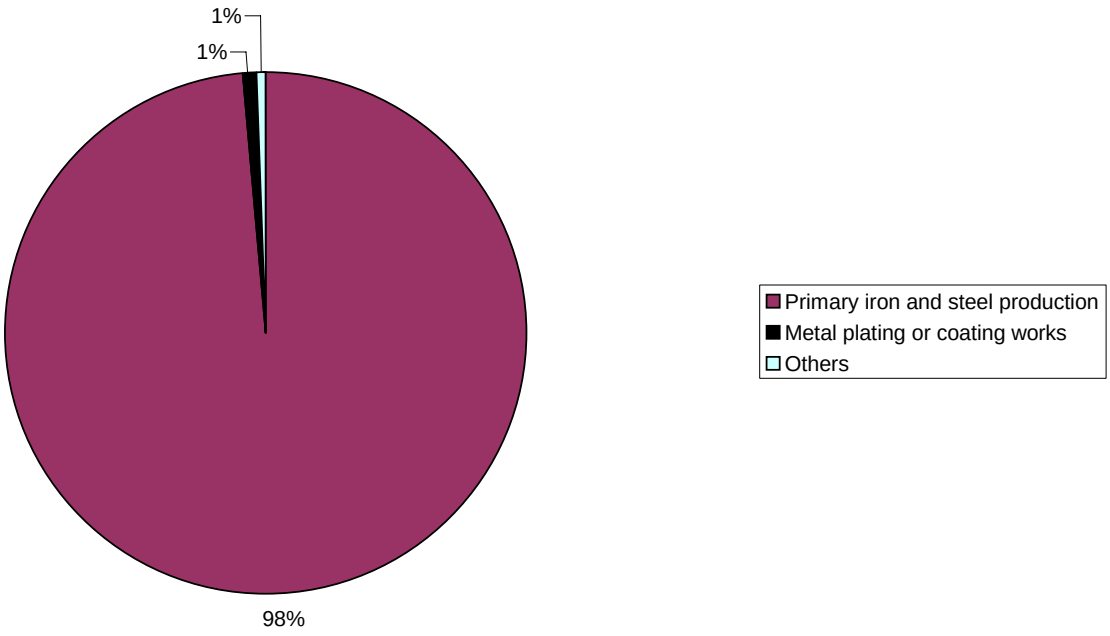

Figure 4.18: Industrial Emissions of Oxides of Nitrogen (NO_x) by NSW Activity Type in Wollongong (Total Emissions = 7,930 tonnes/year)

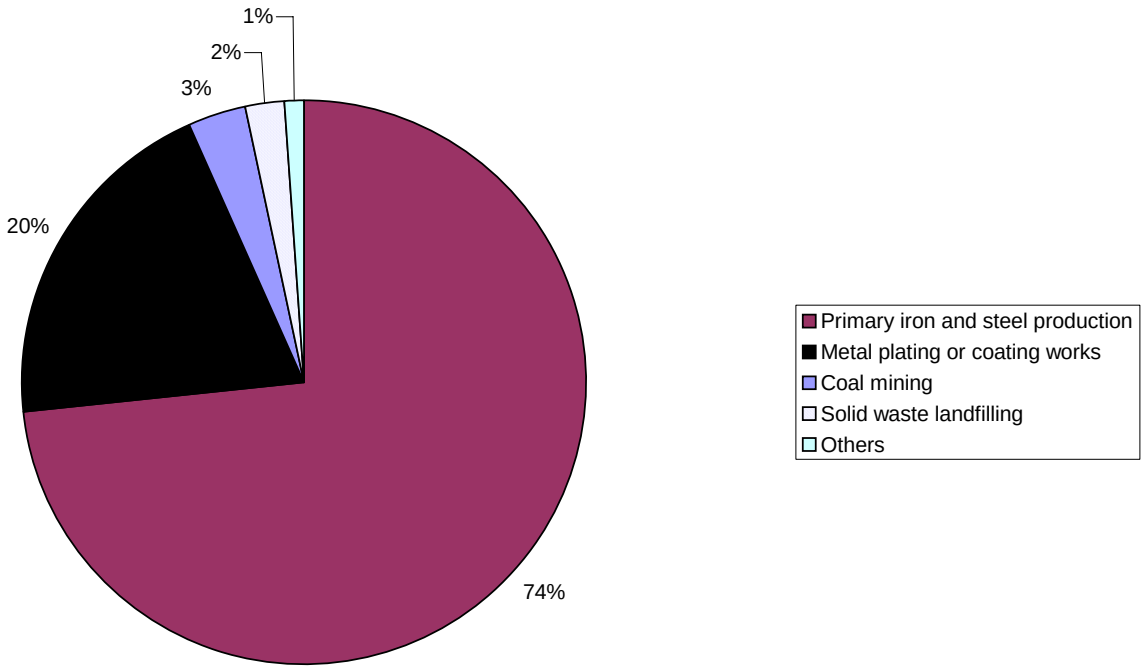

Figure 4.19: Industrial Emissions of Total VOCs by NSW Activity Type in Wollongong (Total Emissions = 788 tonnes/year)

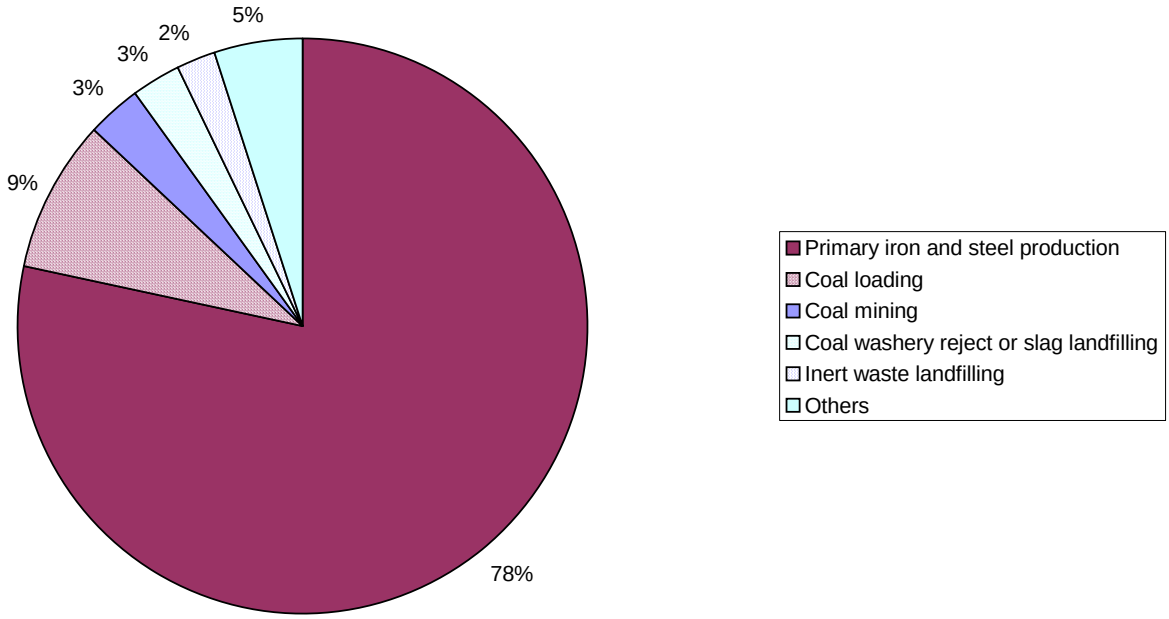

Figure 4.20: Industrial Emissions of Particles (PM_{10}) by NSW Activity Type in Wollongong (Total Emissions = 2,070 tonnes/year)

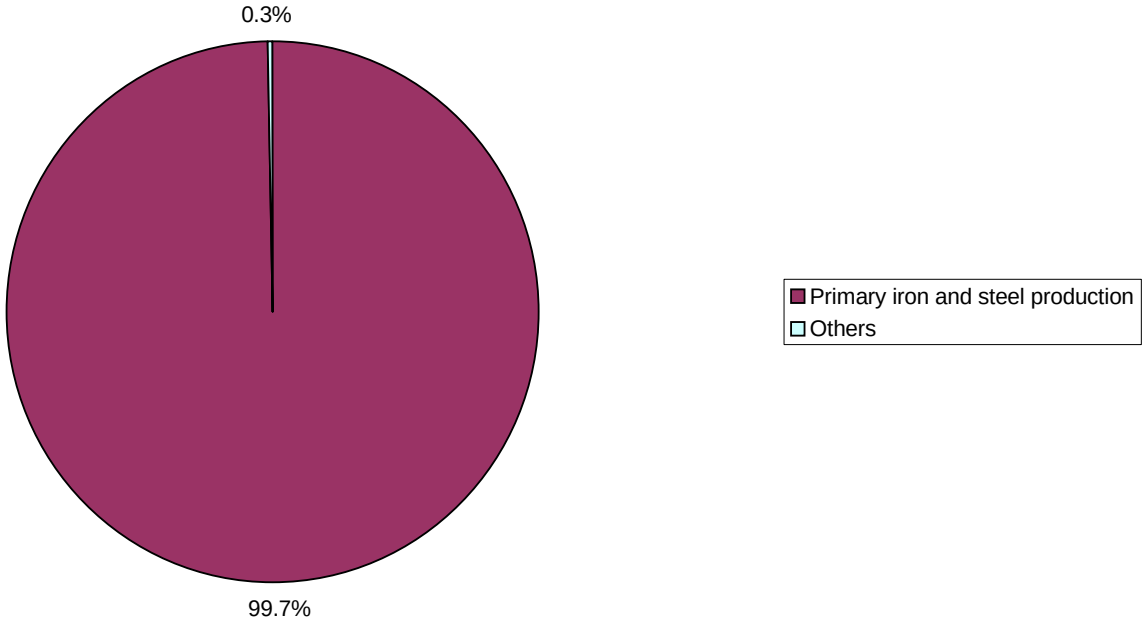

Figure 4.21: Industrial Emissions of Carbon Monoxide (CO) by NSW Activity Type in Wollongong (Total Emissions = 522,000 tonnes/year)

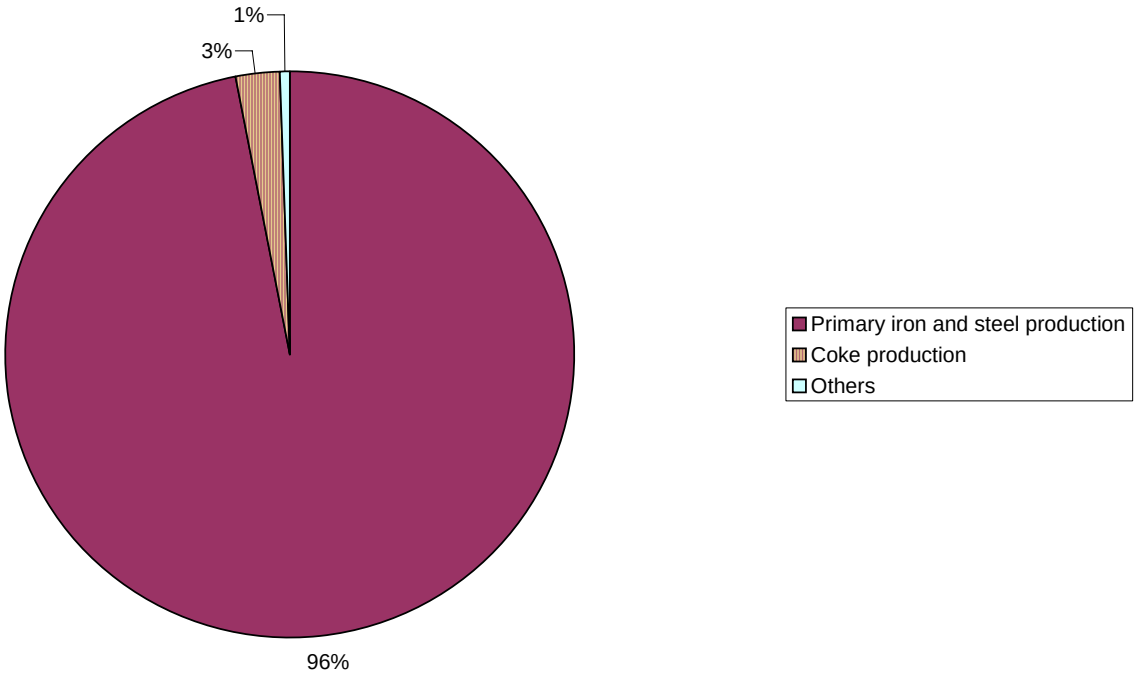

Figure 4.22: Industrial Emissions of Sulfur Dioxide (SO_2) by NSW Activity Type in Wollongong (Total Emissions = 10,300 tonnes/year)

4.1 Industrial Emissions by NSW Activity Type

Total industrial emissions by each NSW Activity Type are presented in this section.

- Table 4.2 and Table 4.3 present industrial emissions by NSW Activity Type for the GMR.
- Table 4.4 and Table 4.5 present industrial emissions by NSW Activity Type for the Sydney region.
- Table 4.6 and Table 4.7 present industrial emissions by NSW Activity Type for the Newcastle region
- Table 4.8 and Table 4.9 present industrial emissions by NSW Activity Type for the Wollongong region.

In this section emissions are presented for the following pollutants only:

- 1,3 butadiene (1,3-BUT)
- Acetaldehyde (ACET)
- Benzene (BENZ)
- Carbon monoxide (CO)
- Formaldehyde (HCHO)
- Isomers of xylene (XYLE)
- Lead & compounds (Pb)
- Oxides of nitrogen (NO_x)
- Particulate matter < 10 µm (PM_{10})
- Particulate matter < 2.5 µm ($PM_{2.5}$)
- Perchloroethylene (PERC)
- Polycyclic aromatic hydrocarbons (PAHs)
- Sulfur dioxide (SO_2)
- Toluene (TOLU)
- Total suspended particulates (TSP)
- Total VOCS (VOCs)
- Trichloroethylene (TCE)

Table 4.2: Total Industrial Emissions by NSW Activity Type in the GMR (tonnes/year)

NSW Activity Type	CO	Pb	NOx	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	$3.0x10^{+02}$	$1.1x10^{-03}$	$1.1x10^{+03}$	$2.1x10^{+02}$	$2.3x10^{+02}$	$1.2x10^{+00}$	$2.4x10^{+02}$	$2.7x10^{+02}$
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	$6.7x10^{+00}$	$3.7x10^{-05}$	$1.4x10^{+01}$	$8.2x10^{+01}$	$8.0x10^{+01}$	$2.1x10^{+01}$	$8.5x10^{+01}$	$1.1x10^{+00}$
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	$1.7x10^{+00}$
Animal slaughtering	$6.6x10^{+00}$	$1.7x10^{-03}$	$6.3x10^{+01}$	$2.2x10^{+00}$	$1.1x10^{+00}$	$7.6x10^{+01}$	$4.9x10^{+00}$	$3.6x10^{+01}$
Battery production	0	$9.5x10^{-01}$	0	$4.1x10^{+00}$	$4.1x10^{+00}$	0	$4.1x10^{+00}$	0
Beer or distilled alcohol production	$1.5x10^{+01}$	$8.9x10^{-05}$	$3.0x10^{+01}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$9.4x10^{-02}$	$1.7x10^{+00}$	$2.6x10^{+01}$
Biomedical waste incineration	$5.5x10^{+00}$	$2.9x10^{-02}$	$3.8x10^{+00}$	$7.2x10^{-01}$	$7.2x10^{-01}$	$1.1x10^{+00}$	$7.2x10^{-01}$	$5.6x10^{-01}$
Bitumen pre-mix or hotmix production	$1.5x10^{+02}$	$1.9x10^{-02}$	$3.0x10^{+01}$	$2.0x10^{+02}$	$1.5x10^{+02}$	$5.2x10^{+00}$	$2.4x10^{+02}$	$3.4x10^{+01}$
Bulk cargo handling	0	$2.8x10^{-06}$	0	$9.0x10^{+01}$	$1.4x10^{+01}$	0	$1.9x10^{+02}$	$1.2x10^{+00}$
Cement or lime handling	$2.2x10^{+00}$	$1.6x10^{-04}$	$2.6x10^{+00}$	$2.0x10^{+02}$	$6.1x10^{+01}$	$9.6x10^{-03}$	$5.0x10^{+02}$	$1.2x10^{+02}$
Cement or lime production	$3.3x10^{+03}$	$5.0x10^{-01}$	$6.1x10^{+03}$	$2.8x10^{+02}$	$1.7x10^{+02}$	$2.1x10^{+02}$	$3.3x10^{+02}$	$8.5x10^{+01}$
Ceramics production (excluding glass)	$8.1x10^{+02}$	$2.0x10^{-04}$	$2.4x10^{+02}$	$1.1x10^{+03}$	$8.0x10^{+02}$	$6.9x10^{+02}$	$2.1x10^{+03}$	$1.2x10^{+02}$
Chemical storage	0	0	0	0	0	0	0	$1.8x10^{+01}$
Chemical Storage - Other Chemical Storage	$4.3x10^{+00}$	$2.5x10^{-05}$	$6.3x10^{+00}$	$6.0x10^{-01}$	$5.1x10^{-01}$	$2.7x10^{-02}$	$8.1x10^{-01}$	$4.7x10^{+02}$
Chemical Storage - Storage of Petroleum Products	$1.6x10^{+03}$	$8.8x10^{-03}$	$8.6x10^{+02}$	$6.8x10^{+01}$	$6.8x10^{+01}$	$1.4x10^{+03}$	$9.9x10^{+01}$	$4.5x10^{+02}$
Coal loading	$8.7x10^{-01}$	$2.0x10^{-02}$	$4.1x10^{+00}$	$3.1x10^{+02}$	$3.4x10^{+01}$	$2.4x10^{-01}$	$6.9x10^{+02}$	$4.3x10^{+00}$
Coal mining	$2.3x10^{+03}$	$1.4x10^{+00}$	$1.4x10^{+03}$	$2.5x10^{+04}$	$4.2x10^{+03}$	$7.9x10^{+01}$	$5.6x10^{+04}$	$1.3x10^{+02}$
Coal washery reject or slag landfilling	$7.3x10^{-03}$	0	$2.7x10^{-02}$	$5.7x10^{+01}$	$1.1x10^{+01}$	$8.9x10^{-04}$	$1.1x10^{+02}$	$6.9x10^{-04}$
Coke production	$7.5x10^{+00}$	$4.8x10^{-01}$	$3.0x10^{+01}$	$6.9x10^{+01}$	$6.9x10^{+01}$	$5.5x10^{+02}$	$1.4x10^{+02}$	$6.1x10^{-01}$
Composting and related reprocessing or treatment	$4.0x10^{+02}$	$3.7x10^{-06}$	$4.3x10^{+00}$	$6.4x10^{+01}$	$1.3x10^{+01}$	$3.1x10^{-03}$	$1.3x10^{+02}$	$2.1x10^{+02}$
Concrete batching	$5.2x10^{+00}$	$3.3x10^{-03}$	$7.5x10^{+00}$	$6.1x10^{+02}$	$1.3x10^{+02}$	$3.2x10^{-02}$	$2.6x10^{+03}$	$1.5x10^{+02}$
Contaminated soil treatment	0	0	0	$2.5x10^{-04}$	$2.5x10^{-05}$	0	$5.3x10^{-04}$	0
Crushing, grinding or separating works	$6.5x10^{+02}$	$2.8x10^{-02}$	$2.4x10^{+02}$	$2.5x10^{+03}$	$9.2x10^{+02}$	$2.6x10^{+02}$	$7.9x10^{+03}$	$6.7x10^{+01}$
Drum or container reconditioning	$6.8x10^{-01}$	$2.3x10^{-02}$	$3.2x10^{+00}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$2.1x10^{-02}$	$1.2x10^{-01}$	$6.7x10^{+01}$
Electricity Generation - Generation of electrical power from coal	$6.9x10^{+03}$	$1.0x10^{+00}$	$1.5x10^{+05}$	$4.8x10^{+03}$	$1.7x10^{+03}$	$2.6x10^{+05}$	$1.1x10^{+04}$	$7.0x10^{+02}$
Electricity Generation - Generation of electrical power from gas	$2.5x10^{+03}$	$2.2x10^{-03}$	$2.7x10^{+03}$	$4.7x10^{+01}$	$4.6x10^{+01}$	$1.3x10^{+01}$	$4.7x10^{+01}$	$5.0x10^{+02}$
Electricity Generation - Generation of electrical power other than	$1.0x10^{+02}$	0	$1.0x10^{+03}$	$4.9x10^{-01}$	$4.9x10^{-01}$	$1.6x10^{-01}$	$4.9x10^{-01}$	$5.6x10^{+01}$

NSW Activity Type	CO	Pb	NOx	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCs
from coal or gas								
Environmentally sensitive area landfilling	$4.0x10^{+00}$	$4.9x10^{-05}$	$6.0x10^{-02}$	$7.7x10^{+01}$	$1.6x10^{+01}$	$3.1x10^{-03}$	$1.7x10^{+02}$	$1.9x10^{+01}$
Explosives or pyrotechnics production	$1.2x10^{-03}$	$3.0x10^{-07}$	$1.8x10^{-01}$	$2.6x10^{-04}$	$2.6x10^{-04}$	$1.7x10^{-03}$	$2.7x10^{-04}$	$6.6x10^{-01}$
Freeway or tollway construction	0	$1.8x10^{-03}$	0	$8.7x10^{+01}$	$1.4x10^{+01}$	0	$2.0x10^{+02}$	$2.9x10^{-03}$
Glass Production - Production of container glass	$1.9x10^{+01}$	$2.3x10^{+00}$	$1.6x10^{+03}$	$8.6x10^{+01}$	$8.6x10^{+01}$	$6.5x10^{+02}$	$1.1x10^{+02}$	$3.8x10^{+01}$
Glass Production - Production of float glass	$1.0x10^{+01}$	$2.9x10^{-04}$	$8.4x10^{+02}$	$1.1x10^{+02}$	$1.1x10^{+02}$	$1.8x10^{+02}$	$1.1x10^{+02}$	$1.3x10^{+01}$
Hard-rock gravel quarrying	$3.9x10^{-01}$	$5.2x10^{-03}$	0	$1.7x10^{+03}$	$4.3x10^{+02}$	0	$8.8x10^{+03}$	$1.7x10^{+02}$
Hazardous, industrial or group A waste generation or storage	$9.7x10^{+00}$	$5.1x10^{-05}$	$1.4x10^{+01}$	$2.0x10^{+00}$	$1.8x10^{+00}$	$3.6x10^{-01}$	$2.1x10^{+00}$	$5.8x10^{+02}$
Hazardous, industrial, group A or group B waste disposal	0	0	0	0	0	0	0	$4.3x10^{-04}$
Hazardous, industrial, group A or group B waste processing	$4.2x10^{+00}$	$3.3x10^{-05}$	$5.1x10^{+00}$	$5.3x10^{+00}$	$5.2x10^{+00}$	$6.9x10^{-02}$	$1.0x10^{+01}$	$9.5x10^{+00}$
Inert waste landfilling	$4.0x10^{-01}$	$8.1x10^{-05}$	0	$1.8x10^{+02}$	$3.9x10^{+01}$	0	$5.2x10^{+02}$	$4.5x10^{+00}$
Landfilling in designated areas	$3.6x10^{+00}$	0	0	$2.2x10^{+01}$	$4.5x10^{+00}$	0	$4.5x10^{+01}$	$4.1x10^{+01}$
Metal plating or coating works	$1.2x10^{+03}$	$5.8x10^{-02}$	$7.3x10^{+01}$	$4.3x10^{+01}$	$4.1x10^{+01}$	$3.0x10^{+01}$	$4.4x10^{+01}$	$2.5x10^{+03}$
Milk processing	$1.0x10^{+01}$	$6.0x10^{-05}$	$1.3x10^{+01}$	$9.4x10^{-01}$	$9.4x10^{-01}$	$6.3x10^{-02}$	$9.4x10^{-01}$	$6.6x10^{+00}$
Mining (other than coal)	0	$4.1x10^{-04}$	0	$3.7x10^{+02}$	$7.8x10^{+01}$	0	$8.7x10^{+02}$	$3.2x10^{-03}$
Mooring and boat storage	0	0	0	0	0	0	0	$3.5x10^{+00}$
Other activities - bread manufacturing	$1.7x10^{+00}$	$1.0x10^{-05}$	$2.0x10^{+00}$	$2.6x10^{-01}$	$2.6x10^{-01}$	$1.0x10^{-02}$	$2.6x10^{-01}$	$2.0x10^{-01}$
Other activities - cake and pastry manufacturing	$1.3x10^{+00}$	$7.5x10^{-06}$	$1.5x10^{+00}$	$1.1x10^{-01}$	$1.1x10^{-01}$	$7.9x10^{-03}$	$1.1x10^{-01}$	$8.3x10^{-02}$
Other activities - confectionary manufacturing	$1.7x10^{-01}$	$3.5x10^{-06}$	$1.2x10^{+00}$	$5.3x10^{-02}$	$5.3x10^{-02}$	$3.7x10^{-03}$	$5.3x10^{-02}$	$7.9x10^{-01}$
Other activities - dry cleaning	$1.2x10^{+00}$	$7.8x10^{-06}$	$1.6x10^{+00}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$8.2x10^{-03}$	$1.2x10^{-01}$	$5.7x10^{-01}$
Other activities - oil and fat manufacturing	$5.3x10^{+00}$	$3.2x10^{-05}$	$1.1x10^{+01}$	$4.8x10^{-01}$	$4.8x10^{-01}$	$3.3x10^{-02}$	$4.8x10^{-01}$	$3.5x10^{-01}$
Other activities - printing	$1.1x10^{+01}$	$6.4x10^{-05}$	$2.2x10^{+01}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$8.3x10^{-02}$	$1.2x10^{+00}$	$2.5x10^{+03}$
Other activities - services to air transport	$2.2x10^{+00}$	$1.3x10^{-05}$	$2.7x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$1.4x10^{-02}$	$2.0x10^{-01}$	$1.0x10^{+02}$
Other activities - soft drink manufacturing	$9.7x10^{-01}$	$5.8x10^{-06}$	$1.2x10^{+00}$	$8.8x10^{-02}$	$8.8x10^{-02}$	$6.0x10^{-03}$	$8.8x10^{-02}$	$2.1x10^{+00}$
Other agricultural crop processing	$2.9x10^{+01}$	$1.7x10^{-04}$	$3.4x10^{+01}$	$7.1x10^{+01}$	$2.4x10^{+01}$	$2.6x10^{-01}$	$1.4x10^{+02}$	$1.1x10^{+01}$
Other chemical processing	$7.4x10^{+01}$	$5.2x10^{-04}$	$1.3x10^{+02}$	$4.0x10^{+01}$	$3.9x10^{+01}$	$5.3x10^{+01}$	$4.1x10^{+01}$	$6.7x10^{+02}$
Other land-based extraction	$2.4x10^{+02}$	$6.3x10^{-03}$	$7.9x10^{+01}$	$3.5x10^{+03}$	$8.0x10^{+02}$	$2.0x10^{+02}$	$1.0x10^{+04}$	$6.8x10^{+01}$
Other livestock processing	$6.4x10^{+00}$	$3.7x10^{-05}$	$8.1x10^{+00}$	$5.9x10^{-01}$	$5.9x10^{-01}$	$3.9x10^{-02}$	$5.9x10^{-01}$	$5.0x10^{+00}$
Other metal processing	$1.5x10^{+02}$	$5.9x10^{-03}$	$1.5x10^{+02}$	$4.8x10^{+01}$	$4.8x10^{+01}$	$4.0x10^{+00}$	$5.0x10^{+01}$	$1.2x10^{+03}$
Other vessel construction or maintenance	0	$1.5x10^{-04}$	$5.8x10^{-01}$	$2.1x10^{+01}$	$2.0x10^{+01}$	0	$2.5x10^{+01}$	$9.4x10^{+01}$

NSW Activity Type	CO	Pb	NOx	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Paint production	$2.5x10^{+00}$	$7.5x10^{-05}$	$3.1x10^{+00}$	$1.0x10^{+01}$	$1.0x10^{+01}$	$2.9x10^{-02}$	$1.1x10^{+01}$	$9.4x10^{+01}$
Paper production using recycled materials	$4.7x10^{+01}$	$2.2x10^{-02}$	$1.2x10^{+02}$	$1.5x10^{+00}$	$1.5x10^{+00}$	$1.2x10^{+01}$	$7.3x10^{+00}$	$2.8x10^{+01}$
Pesticides production	$1.4x10^{-01}$	$8.5x10^{-07}$	$1.7x10^{-01}$	$1.3x10^{-02}$	$1.3x10^{-02}$	$8.9x10^{-04}$	$1.3x10^{-02}$	$6.5x10^{+00}$
Petrochemical production	$3.0x10^{+02}$	$1.8x10^{-01}$	$1.2x10^{+03}$	$4.5x10^{+01}$	$4.5x10^{+01}$	$3.6x10^{+02}$	$1.1x10^{+02}$	$4.6x10^{+02}$
Petroleum refining	$5.5x10^{+02}$	$5.8x10^{-02}$	$2.8x10^{+03}$	$2.7x10^{+02}$	$2.4x10^{+02}$	$7.0x10^{+03}$	$4.4x10^{+02}$	$3.2x10^{+03}$
Pharmaceutical or veterinary products production	$5.8x10^{+00}$	$3.4x10^{-05}$	$8.0x10^{+00}$	$5.8x10^{-01}$	$5.7x10^{-01}$	$6.2x10^{-02}$	$5.9x10^{-01}$	$5.1x10^{+01}$
Plastics production	$3.6x10^{+00}$	$3.7x10^{-03}$	$1.3x10^{+01}$	$1.9x10^{+02}$	$1.9x10^{+02}$	$2.1x10^{-02}$	$2.2x10^{+02}$	$5.5x10^{+02}$
Poultry production	$4.7x10^{+00}$	$2.7x10^{-05}$	$6.5x10^{+00}$	$4.4x10^{+02}$	$1.2x10^{+02}$	$2.9x10^{-02}$	$9.0x10^{+02}$	$1.7x10^{+01}$
Primary aluminium production	$5.7x10^{+04}$	$1.0x10^{-01}$	$3.4x10^{+02}$	$4.3x10^{+02}$	$3.1x10^{+02}$	$1.3x10^{+04}$	$7.9x10^{+02}$	$1.2x10^{+01}$
Primary iron and steel production	$5.2x10^{+05}$	$3.9x10^{+00}$	$7.8x10^{+03}$	$1.6x10^{+03}$	$1.4x10^{+03}$	$1.0x10^{+04}$	$1.9x10^{+03}$	$5.8x10^{+02}$
Primary non-ferrous production (excluding aluminium)	$2.0x10^{+01}$	$1.4x10^{-04}$	$4.7x10^{+01}$	$1.5x10^{+01}$	$1.2x10^{+01}$	$8.5x10^{+00}$	$1.9x10^{+01}$	$1.5x10^{+00}$
Railway activities	0	0	0	$4.7x10^{+00}$	$4.7x10^{+00}$	0	$4.7x10^{+00}$	$1.6x10^{+01}$
Rendering or fat extraction	$1.8x10^{+01}$	$3.0x10^{-04}$	$2.2x10^{+01}$	$4.4x10^{+00}$	$2.5x10^{+00}$	$9.0x10^{+00}$	$8.9x10^{+00}$	$5.2x10^{+00}$
Scrap metal recovery	0	0	$6.7x10^{+00}$	$5.2x10^{+01}$	$3.9x10^{+01}$	0	$8.3x10^{+01}$	$8.9x10^{-03}$
Secondary aluminium production	$7.7x10^{+01}$	$2.8x10^{-03}$	$6.8x10^{+01}$	$3.0x10^{+01}$	$2.0x10^{+01}$	$2.9x10^{+01}$	$3.7x10^{+01}$	$1.3x10^{+02}$
Secondary iron and steel production	$2.6x10^{+03}$	$1.0x10^{-01}$	$2.6x10^{+01}$	$3.5x10^{+01}$	$3.2x10^{+01}$	$3.3x10^{+00}$	$5.3x10^{+01}$	$2.9x10^{+02}$
Secondary non-ferrous production (excluding aluminium)	$1.6x10^{+02}$	$7.2x10^{-01}$	$3.3x10^{+01}$	$5.8x10^{+00}$	$5.3x10^{+00}$	$8.9x10^{+01}$	$7.9x10^{+00}$	$2.5x10^{+00}$
Sewage treatment	0	0	$4.0x10^{-02}$	0	0	0	0	0
Sewage Treatment - processing by large plants (> 10000 ML/y)	$9.6x10^{+01}$	$3.5x10^{-05}$	$6.0x10^{+02}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$2.6x10^{-01}$	$1.7x10^{+00}$	$4.6x10^{+01}$
Sewage Treatment - processing by small plants (< 10000 ML/y)	$2.3x10^{+02}$	$5.9x10^{-03}$	$4.4x10^{+01}$	$7.2x10^{+01}$	$1.8x10^{+01}$	$1.2x10^{+00}$	$2.1x10^{+02}$	$7.7x10^{+01}$
Soap or detergent production	$4.6x10^{+00}$	$2.7x10^{-05}$	$4.8x10^{+00}$	$4.2x10^{-01}$	$4.2x10^{-01}$	$2.5x10^{+00}$	$4.2x10^{-01}$	$8.3x10^{+01}$
Solid waste landfilling	$2.7x10^{+02}$	$1.0x10^{-03}$	$6.2x10^{+00}$	$9.3x10^{+02}$	$1.9x10^{+02}$	0	$2.0x10^{+03}$	$4.6x10^{+02}$
Used tyre processing or disposal	0	0	0	0	0	0	0	$7.7x10^{-04}$
Vessel construction or maintenance using dry or floating docks	0	0	0	$3.9x10^{+00}$	$3.6x10^{+00}$	0	$4.5x10^{+00}$	$2.9x10^{+01}$
Waste oil recovery	$2.8x10^{+00}$	$6.0x10^{-04}$	$1.1x10^{+01}$	$2.8x10^{-01}$	$2.8x10^{-01}$	$1.6x10^{+01}$	$2.9x10^{-01}$	$4.5x10^{-01}$
Waste storage, transfer, separating or processing	$5.4x10^{+01}$	$2.6x10^{-05}$	$4.2x10^{+01}$	$3.4x10^{+01}$	$7.2x10^{+00}$	$6.0x10^{-03}$	$9.6x10^{+01}$	$2.0x10^{+00}$
Wood or timber milling	$3.1x10^{+01}$	$3.2x10^{-02}$	$4.5x10^{+01}$	$1.9x10^{+01}$	$7.5x10^{+00}$	$4.2x10^{+01}$	$4.8x10^{+01}$	$9.0x10^{+01}$
Wood preservation	0	0	0	0	0	0	0	$4.2x10^{-02}$
Grand Total	**603,000**	**12**	**175,500**	**111,000**	**46,500**	**13,100**	**296,000**	**17,700**

Table 4.3: Total Industrial Emissions by NSW Activity Type in the GMR (tonnes/year)

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	0	$5.0x10^{+00}$	$2.4x10^{+01}$	$2.4x10^{+00}$	$1.3x10^{+00}$	0	$1.6x10^{-03}$	$5.6x10^{+00}$	0
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	0	0	$1.0x10^{-01}$	$2.0x10^{-01}$	$1.3x10^{-04}$	0	$5.1x10^{-05}$	$5.0x10^{-02}$	0
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	0	0
Animal slaughtering	0	$8.9x10^{-02}$	$3.0x10^{-01}$	$5.6x10^{-01}$	$4.4x10^{+00}$	$5.9x10^{+00}$	$1.5x10^{-04}$	$3.4x10^{+00}$	$7.2x10^{-01}$
Battery production	0	0	0	0	0	0	0	0	0
Beer or distilled alcohol production	0	0	$8.9x10^{-02}$	$1.8x10^{-01}$	0	0	$1.2x10^{-04}$	$4.5x10^{-02}$	0
Biomedical waste incineration	0	$2.1x10^{-06}$	$2.2x10^{-01}$	$1.2x10^{-05}$	$9.5x10^{-05}$	$1.4x10^{-04}$	$2.6x10^{-01}$	$7.9x10^{-05}$	$1.7x10^{-05}$
Bitumen pre-mix or hotmix production	0	$1.7x10^{-04}$	$3.0x10^{+00}$	$6.6x10^{+00}$	$8.3x10^{-03}$	$1.1x10^{-02}$	$1.2x10^{-01}$	$1.5x10^{+00}$	$1.4x10^{-03}$
Bulk cargo handling	0	$2.8x10^{-08}$	$8.4x10^{-08}$	$1.6x10^{-07}$	$4.6x10^{-02}$	$1.9x10^{-06}$	0	$1.6x10^{-01}$	$2.3x10^{-07}$
Cement or lime handling	0	$1.9x10^{-04}$	$1.5x10^{-02}$	$2.7x10^{-02}$	$1.2x10^{+01}$	$1.2x10^{-02}$	$1.5x10^{-05}$	$4.2x10^{+01}$	$1.5x10^{-03}$
Cement or lime production	0	0	0	0	$4.0x10^{+01}$	0	$1.5x10^{+00}$	$5.0x10^{+00}$	0
Ceramics production (excluding glass)	0	$6.4x10^{-07}$	$3.2x10^{+00}$	$6.4x10^{+00}$	$8.5x10^{+00}$	$4.2x10^{-05}$	$3.3x10^{-06}$	$2.4x10^{+00}$	$5.2x10^{-06}$
Chemical storage	0	0	0	0	$3.9x10^{-02}$	$2.3x10^{+00}$	0	$2.4x10^{-01}$	0
Chemical Storage - Other Chemical Storage	0	$1.4x10^{-01}$	$4.3x10^{+00}$	$5.4x10^{-02}$	$4.3x10^{+00}$	$3.1x10^{-03}$	$1.2x10^{-01}$	$1.0x10^{+01}$	$2.5x10^{+00}$
Chemical Storage - Storage of Petroleum Products	0	$1.6x10^{-04}$	$3.8x10^{+00}$	$1.3x10^{+00}$	$2.5x10^{+00}$	$1.0x10^{-02}$	$7.0x10^{-03}$	$8.2x10^{+00}$	$1.3x10^{-03}$
Coal loading	$9.3x10^{-03}$	$1.5x10^{-02}$	$2.6x10^{-02}$	$3.8x10^{-02}$	$1.9x10^{-01}$	$1.6x10^{-01}$	$5.9x10^{-05}$	$7.3x10^{-01}$	$2.0x10^{-02}$
Coal mining	$6.3x10^{+00}$	$1.3x10^{+00}$	$7.8x10^{+00}$	$2.5x10^{+00}$	$2.4x10^{+00}$	$4.0x10^{-01}$	$3.8x10^{-02}$	$8.9x10^{+00}$	$2.5x10^{-02}$
Coal washery reject or slag landfilling	$5.4x10^{-05}$	0	$6.1x10^{-05}$	0	0	0	0	0	0
Coke production	0	0	$3.6x10^{-01}$	0	$3.0x10^{-03}$	0	$7.8x10^{+00}$	$3.6x10^{-02}$	0
Composting and related reprocessing or treatment	0	$6.2x10^{-06}$	$3.3x10^{+00}$	$6.1x10^{-03}$	$5.0x10^{+00}$	$1.7x10^{+00}$	$4.1x10^{-06}$	$5.8x10^{+01}$	$5.0x10^{-05}$
Concrete batching	0	$4.6x10^{-05}$	$3.5x10^{-02}$	$6.7x10^{-02}$	$2.2x10^{+01}$	$3.0x10^{-03}$	$4.6x10^{-05}$	$2.1x10^{+01}$	$3.7x10^{-04}$
Contaminated soil treatment	0	0	0	0	0	0	0	0	0
Crushing, grinding or separating works	$6.4x10^{-02}$	$2.3x10^{-08}$	$2.2x10^{+00}$	$3.8x10^{+00}$	$1.3x10^{+00}$	$3.6x10^{-01}$	$2.0x10^{-02}$	$1.4x10^{+01}$	0
Drum or container reconditioning	0	$4.7x10^{-06}$	$8.7x10^{-03}$	$1.8x10^{-02}$	$7.0x10^{+00}$	$3.1x10^{-04}$	$1.0x10^{-05}$	$2.2x10^{+01}$	$3.8x10^{-05}$
Electricity Generation - Generation of electrical power from coal	0	$6.1x10^{-05}$	$7.5x10^{-03}$	$3.4x10^{-04}$	$2.4x10^{+02}$	$4.0x10^{-03}$	$2.9x10^{-01}$	$2.9x10^{+01}$	$4.9x10^{-04}$
Electricity Generation - Generation of electrical power from gas	$9.0x10^{-04}$	$5.2x10^{-01}$	$1.9x10^{+00}$	$1.1x10^{+02}$	$7.0x10^{-01}$	$3.7x10^{-05}$	$7.7x10^{-02}$	$7.0x10^{-01}$	$4.5x10^{-06}$
Electricity Generation - Generation of electrical power other than from coal or gas	0	$6.4x10^{-02}$	$4.2x10^{-01}$	$2.0x10^{+00}$	$1.5x10^{+00}$	$1.8x10^{+00}$	$7.5x10^{-03}$	$4.6x10^{+00}$	$2.1x10^{-01}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Environmentally sensitive area landfilling	0	0	$3.0x10^{-01}$	0	$4.5x10^{-01}$	$1.5x10^{-01}$	0	$5.2x10^{+00}$	0
Explosives or pyrotechnics production	0	$1.8x10^{-06}$	$5.5x10^{-06}$	$4.9x10^{-05}$	$4.7x10^{-02}$	$1.2x10^{-04}$	0	$2.3x10^{-01}$	$1.5x10^{-05}$
Freeway or tollway construction	0	$7.8x10^{-07}$	$2.3x10^{-06}$	$4.3x10^{-06}$	$2.7x10^{-04}$	$5.2x10^{-05}$	0	$1.0x10^{-04}$	$6.3x10^{-06}$
Glass Production - Production of container glass	0	0	$1.3x10^{+00}$	$7.5x10^{-01}$	$4.5x10^{-05}$	0	0	$3.6x10^{-01}$	0
Glass Production - Production of float glass	0	0	$4.5x10^{-01}$	$2.6x10^{-01}$	$8.5x10^{-04}$	0	$7.5x10^{-06}$	$1.2x10^{-01}$	0
Hard-rock gravel quarrying	0	0	$7.1x10^{-02}$	0	$5.5x10^{+00}$	$3.5x10^{-02}$	0	$1.3x10^{+01}$	0
Hazardous, industrial or group A waste generation or storage	$2.7x10^{-02}$	$2.2x10^{-03}$	$7.7x10^{-01}$	$1.5x10^{-01}$	$6.2x10^{+01}$	$1.7x10^{-01}$	$2.5x10^{-04}$	$5.4x10^{+01}$	$1.3x10^{-01}$
Hazardous, industrial, group A or group B waste disposal	0	0	0	0	$3.9x10^{-05}$	0	0	$1.2x10^{-05}$	0
Hazardous, industrial, group A or group B waste processing	0	$2.2x10^{-02}$	$9.5x10^{-02}$	$1.7x10^{-01}$	$1.0x10^{+00}$	$1.5x10^{+00}$	$3.4x10^{-05}$	$9.1x10^{-01}$	$1.8x10^{-01}$
Inert waste landfilling	0	$3.8x10^{-06}$	$7.2x10^{-02}$	$2.1x10^{-05}$	$1.1x10^{-01}$	$3.6x10^{-02}$	0	$1.3x10^{+00}$	$3.0x10^{-05}$
Landfilling in designated areas	0	0	$6.5x10^{-01}$	0	$9.7x10^{-01}$	$3.2x10^{-01}$	0	$1.1x10^{+01}$	0
Metal plating or coating works	$2.1x10^{-04}$	$3.0x10^{-04}$	$6.3x10^{+00}$	$1.1x10^{+01}$	$7.3x10^{+01}$	$4.4x10^{-01}$	$5.6x10^{-01}$	$3.7x10^{+02}$	$3.0x10^{+00}$
Milk processing	0	$1.3x10^{-02}$	$9.9x10^{-02}$	$1.9x10^{-01}$	$7.6x10^{-01}$	$8.6x10^{-01}$	$8.2x10^{-05}$	$6.7x10^{-01}$	$1.0x10^{-01}$
Mining (other than coal)	0	0	0	0	$2.9x10^{-04}$	0	0	$8.9x10^{-05}$	0
Mooring and boat storage	0	$5.8x10^{-07}$	$1.2x10^{-02}$	$3.2x10^{-06}$	$1.4x10^{-01}$	$3.8x10^{-05}$	0	$7.0x10^{-01}$	$4.7x10^{-06}$
Other activities - bread manufacturing	0	$5.8x10^{-05}$	$1.1x10^{-02}$	$2.0x10^{-02}$	$3.1x10^{-03}$	$3.8x10^{-03}$	$1.4x10^{-05}$	$8.4x10^{-03}$	$4.7x10^{-04}$
Other activities - cake and pastry manufacturing	0	$1.0x10^{-06}$	$7.5x10^{-03}$	$1.5x10^{-02}$	$4.7x10^{-05}$	$6.9x10^{-05}$	$1.0x10^{-05}$	$3.8x10^{-03}$	$8.4x10^{-06}$
Other activities - confectionary manufacturing	0	0	$3.5x10^{-03}$	$7.0x10^{-03}$	$1.5x10^{-01}$	0	$4.8x10^{-06}$	$1.4x10^{-01}$	0
Other activities - dry cleaning	0	0	$7.8x10^{-03}$	$1.6x10^{-02}$	0	$4.8x10^{-01}$	$1.1x10^{-05}$	$3.9x10^{-03}$	0
Other activities - oil and fat manufacturing	0	0	$3.2x10^{-02}$	$6.3x10^{-02}$	0	0	$4.4x10^{-05}$	$1.6x10^{-02}$	0
Other activities - printing	$1.1x10^{-03}$	$6.1x10^{-04}$	$6.2x10^{-02}$	$1.3x10^{-01}$	$2.0x10^{+01}$	$5.0x10^{+00}$	$4.9x10^{-04}$	$3.0x10^{+01}$	$1.3x10^{-03}$
Other activities - services to air transport	0	0	$1.3x10^{-02}$	$2.7x10^{-02}$	$1.3x10^{+01}$	0	$1.8x10^{-05}$	$1.0x10^{+01}$	0
Other activities - soft drink manufacturing	0	$5.3x10^{-03}$	$2.2x10^{-02}$	$4.1x10^{-02}$	$2.4x10^{-01}$	$3.5x10^{-01}$	$8.0x10^{-06}$	$2.0x10^{-01}$	$4.2x10^{-02}$
Other agricultural crop processing	0	$1.7x10^{-03}$	$1.4x10^{-01}$	$2.9x10^{-01}$	$4.1x10^{-01}$	$5.4x10^{-02}$	$2.4x10^{-04}$	$1.6x10^{+00}$	$6.6x10^{-03}$
Other chemical processing	$1.3x10^{-02}$	$5.3x10^{-01}$	$2.0x10^{+01}$	$3.7x10^{+00}$	$1.5x10^{+01}$	$1.2x10^{-01}$	$1.0x10^{-01}$	$1.6x10^{+02}$	$1.1x10^{+01}$
Other land-based extraction	$2.3x10^{-01}$	$1.1x10^{-05}$	$1.1x10^{+00}$	$1.7x10^{+00}$	$1.8x10^{+00}$	$7.4x10^{-04}$	$1.5x10^{-03}$	$4.4x10^{+00}$	$9.0x10^{-05}$
Other livestock processing	0	$1.0x10^{-02}$	$6.8x10^{-02}$	$1.3x10^{-01}$	$4.7x10^{-01}$	$6.7x10^{-01}$	$5.1x10^{-05}$	$4.3x10^{-01}$	$8.2x10^{-02}$
Other metal processing	0	$8.8x10^{-04}$	$8.7x10^{-01}$	$1.1x10^{+00}$	$1.5x10^{+02}$	$5.8x10^{-02}$	$2.1x10^{-03}$	$2.6x10^{+02}$	$2.3x10^{+01}$
Other vessel construction or maintenance	$4.2x10^{-02}$	$1.3x10^{-07}$	$9.7x10^{-03}$	$7.0x10^{-07}$	$7.1x10^{+00}$	$8.4x10^{-06}$	0	$3.4x10^{+01}$	$1.0x10^{-06}$
Paint production	$4.2x10^{-06}$	$2.6x10^{-02}$	$1.3x10^{-01}$	$7.3x10^{-02}$	$8.6x10^{-01}$	$8.2x10^{-02}$	$2.6x10^{-05}$	$2.4x10^{+01}$	$8.7x10^{-03}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Paper production using recycled materials	0	$4.3x10^{-03}$	$2.3x10^{-02}$	$4.3x10^{-02}$	$2.2x10^{-01}$	$2.9x10^{-01}$	$5.6x10^{-04}$	$2.9x10^{-01}$	$3.5x10^{-02}$
Pesticides production	0	$2.3x10^{-07}$	$9.6x10^{-04}$	$1.7x10^{-03}$	$2.8x10^{-02}$	$1.5x10^{-05}$	$1.2x10^{-06}$	$4.6x10^{-04}$	$1.8x10^{-06}$
Petrochemical production	$4.0x10^{-03}$	0	$2.6x10^{+00}$	$4.2x10^{+01}$	$1.9x10^{+00}$	0	$2.6x10^{-03}$	$2.8x10^{+00}$	0
Petroleum refining	0	$1.1x10^{-01}$	$2.6x10^{+01}$	$2.0x10^{+02}$	$2.4x10^{+01}$	$7.3x10^{+00}$	$1.4x10^{-01}$	$3.5x10^{+01}$	$9.0x10^{-01}$
Pharmaceutical or veterinary products production	$1.3x10^{-03}$	$1.5x10^{-03}$	$4.5x10^{-02}$	$8.6x10^{-02}$	$5.8x10^{-01}$	$9.7x10^{-02}$	$5.4x10^{-05}$	$5.9x10^{-01}$	$1.2x10^{-02}$
Plastics production	0	$2.4x10^{+00}$	$1.1x10^{+01}$	$5.3x10^{+00}$	$1.4x10^{+01}$	0	$2.6x10^{-05}$	$1.2x10^{+01}$	27
Poultry production	0	$4.3x10^{-02}$	$1.6x10^{-01}$	$3.0x10^{-01}$	$1.9x10^{+00}$	$2.8x10^{+00}$	$3.8x10^{-05}$	$1.6x10^{+00}$	$3.4x10^{-01}$
Primary aluminium production	0	0	$9.3x10^{-02}$	$1.2x10^{-01}$	$8.9x10^{-02}$	0	$1.2x10^{+01}$	$1.2x10^{+00}$	0
Primary iron and steel production	0	$2.0x10^{-02}$	$2.2x10^{+02}$	$4.0x10^{+01}$	$6.0x10^{+00}$	$5.3x10^{-01}$	$3.1x10^{+01}$	$4.4x10^{+01}$	$6.2x10^{-02}$
Primary non-ferrous production (excluding aluminium)	0	$3.3x10^{-04}$	$1.2x10^{-01}$	$2.5x10^{-01}$	$1.5x10^{-02}$	$2.2x10^{-02}$	$1.8x10^{-04}$	$7.4x10^{-02}$	$2.7x10^{-03}$
Railway activities	0	$1.0x10^{-03}$	$3.1x10^{-03}$	$5.6x10^{-03}$	$2.6x10^{-01}$	$6.7x10^{-02}$	0	$3.4x10^{+00}$	$8.2x10^{-03}$
Rendering or fat extraction	0	$2.7x10^{-03}$	$1.2x10^{-01}$	$1.9x10^{-01}$	$1.6x10^{-01}$	$1.8x10^{-01}$	$1.4x10^{-04}$	$2.3x10^{-01}$	$2.2x10^{-02}$
Scrap metal recovery	0	$8.6x10^{-07}$	$2.6x10^{-06}$	$4.8x10^{-06}$	$8.1x10^{-04}$	$5.7x10^{-05}$	0	$2.7x10^{-04}$	$7.0x10^{-06}$
Secondary aluminium production	0	0	$9.9x10^{+00}$	$2.0x10^{+01}$	$5.4x10^{-02}$	0	$3.5x10^{-04}$	$5.1x10^{+00}$	0
Secondary iron and steel production	0	0	$1.7x10^{+01}$	$3.4x10^{+01}$	$3.1x10^{+00}$	0	$1.2x10^{+00}$	$8.0x10^{+01}$	0
Secondary non-ferrous production (excluding aluminium)	0	0	$7.9x10^{-01}$	$4.6x10^{-01}$	$4.1x10^{-02}$	0	$2.1x10^{-05}$	$2.1x10^{-01}$	0
Sewage treatment	0	0	0	0	0	0	0	0	0
Sewage Treatment - processing by large plants (> 10000 ML per year)	$8.3x10^{-03}$	$7.9x10^{-02}$	$3.0x10^{-01}$	$2.8x10^{+00}$	$2.6x10^{+00}$	$3.7x10^{+00}$	$5.6x10^{-03}$	$2.2x10^{+00}$	$4.6x10^{-01}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$7.4x10^{-03}$	$2.3x10^{-01}$	$1.4x10^{-01}$	$9.5x10^{+00}$	$6.1x10^{-01}$	$8.4x10^{-01}$	$8.2x10^{-03}$	$5.6x10^{-01}$	$3.2x10^{+01}$
Soap or detergent production	$1.7x10^{-04}$	$1.5x10^{+00}$	$7.0x10^{+00}$	$8.5x10^{-02}$	$4.4x10^{-01}$	$6.9x10^{-02}$	$3.9x10^{-05}$	$1.6x10^{+00}$	$8.4x10^{-03}$
Solid waste landfilling	0	0	$7.1x10^{+00}$	$2.9x10^{+00}$	$1.1x10^{+01}$	$3.6x10^{+00}$	$2.7x10^{-03}$	$1.2x10^{+02}$	0
Used tyre processing or disposal	0	0	0	0	$7.0x10^{-05}$	0	0	$2.1x10^{-05}$	0
Vessel construction or maintenance using dry or floating docks	$1.8x10^{-02}$	0	$4.7x10^{-03}$	0	$1.0x10^{+00}$	0	0	$2.7x10^{+00}$	0
Waste oil recovery	0	$3.1x10^{-04}$	$1.3x10^{-02}$	$1.1x10^{-01}$	$2.0x10^{-02}$	$1.8x10^{-02}$	$6.0x10^{-04}$	$1.8x10^{-02}$	$2.2x10^{-03}$
Waste storage, transfer, separating or processing	0	$1.7x10^{-03}$	$6.2x10^{-03}$	$4.3x10^{-02}$	$1.8x10^{-01}$	$1.0x10^{-02}$	$2.7x10^{-04}$	$1.2x10^{-01}$	$1.3x10^{-03}$
Wood or timber milling	0	$2.0x10^{-04}$	$1.2x10^{-02}$	$3.2x10^{-02}$	$1.6x10^{+01}$	$1.3x10^{-02}$	$7.9x10^{-05}$	$1.3x10^{+01}$	$1.6x10^{-03}$
Wood preservation	0	0	0	0	$1.3x10^{-02}$	0	0	$3.7x10^{-04}$	0
Grand Total	**6.73**	**12.1**	**395**	**517**	**795**	**42.5**	**55.5**	**1550**	**102**

Table 4.4: Total Industrial Emissions by NSW Activity Type in the Sydney Region (tonnes/year)

NSW Activity Type	CO	Pb	NO_x	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	$1.5x10^{+00}$
Animal slaughtering	$3.7x10^{+00}$	$2.8x10^{-05}$	$5.0x10^{+00}$	$3.5x10^{-01}$	$3.5x10^{-01}$	$3.5x10^{-01}$	$6.0x10^{-02}$	$5.0x10^{+00}$
Battery production	0	$9.5x10^{-01}$	0	$4.1x10^{+00}$	$4.1x10^{+00}$	$4.1x10^{+00}$	0	0
Beer or distilled alcohol production	$1.5x10^{+01}$	$8.9x10^{-05}$	$3.0x10^{+01}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$9.4x10^{-02}$	$2.6x10^{+01}$
Biomedical waste incineration	$5.5x10^{+00}$	$2.9x10^{-02}$	$3.8x10^{+00}$	$7.2x10^{-01}$	$7.2x10^{-01}$	$7.2x10^{-01}$	$1.1x10^{+00}$	$5.6x10^{-01}$
Bitumen pre-mix or hotmix production	$9.1x10^{+01}$	$6.1x10^{-03}$	$2.1x10^{+01}$	$8.8x10^{+01}$	$6.1x10^{+01}$	$2.6x10^{+01}$	$2.8x10^{+00}$	$2.7x10^{+01}$
Bulk cargo handling	0	0	0	$1.8x10^{+01}$	$9.1x10^{+00}$	$1.7x10^{+00}$	0	$5.4x10^{-01}$
Cement or lime handling	$1.8x10^{+00}$	$1.6x10^{-05}$	$2.2x10^{+00}$	$7.1x10^{+01}$	$5.2x10^{+01}$	$2.5x10^{+01}$	$7.3x10^{-03}$	$1.2x10^{+02}$
Cement or lime production	$8.2x10^{+01}$	$7.1x10^{-02}$	$1.3x10^{+03}$	$7.9x10^{+01}$	$7.1x10^{+01}$	$4.7x10^{+01}$	$1.3x10^{+01}$	$3.5x10^{+00}$
Ceramics production (excluding glass)	$6.1x10^{+02}$	$1.0x10^{-04}$	$1.6x10^{+02}$	$1.6x10^{+03}$	$8.4x10^{+02}$	$6.1x10^{+02}$	$5.2x10^{+02}$	$1.1x10^{+02}$
Chemical storage	0	0	0	0	0	0	0	$1.8x10^{+01}$
Chemical Storage - Other Chemical Storage	$4.3x10^{+00}$	$2.5x10^{-05}$	$6.3x10^{+00}$	$3.9x10^{-01}$	$3.9x10^{-01}$	$3.9x10^{-01}$	$2.7x10^{-02}$	$1.8x10^{+02}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	$1.6x10^{+03}$	$8.8x10^{-03}$	$8.6x10^{+02}$	$9.9x10^{+01}$	$6.8x10^{+01}$	$6.8x10^{+01}$	$1.4x10^{+03}$	$2.6x10^{+02}$
Coal mining	$7.4x10^{+00}$	$7.7x10^{-03}$	$3.1x10^{+01}$	$2.4x10^{+02}$	$1.1x10^{+02}$	$1.4x10^{+01}$	$1.7x10^{+00}$	$2.0x10^{+00}$
Coke production	$3.9x10^{+00}$	$2.5x10^{-01}$	$1.6x10^{+01}$	$7.2x10^{+01}$	$3.6x10^{+01}$	$3.6x10^{+01}$	$2.9x10^{+02}$	$3.4x10^{-01}$
Composting and related reprocessing or treatment	$4.0x10^{+02}$	$6.9x10^{-07}$	0	$1.3x10^{+02}$	$6.4x10^{+01}$	$1.3x10^{+01}$	0	$1.8x10^{+02}$
Concrete batching	$3.6x10^{+00}$	$2.9x10^{-03}$	$4.4x10^{+00}$	$2.3x10^{+03}$	$4.9x10^{+02}$	$1.1x10^{+02}$	$2.2x10^{-02}$	$1.5x10^{+02}$
Contaminated soil treatment	0	0	0	$5.3x10^{-04}$	$2.5x10^{-04}$	$2.5x10^{-05}$	0	0
Crushing, grinding or separating works	$6.5x10^{+02}$	$2.7x10^{-02}$	$2.4x10^{+02}$	$6.0x10^{+03}$	$2.1x10^{+03}$	$8.1x10^{+02}$	$2.6x10^{+02}$	$6.4x10^{+01}$
Drum or container reconditioning	$6.8x10^{-01}$	$2.3x10^{-02}$	$3.2x10^{+00}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$1.8x10^{-02}$	$6.4x10^{+01}$
Electricity Generation - Generation of electrical power from gas	$2.5x10^{+03}$	$2.2x10^{-03}$	$2.7x10^{+03}$	$4.7x10^{+01}$	$4.7x10^{+01}$	$4.6x10^{+01}$	$1.3x10^{+01}$	$5.0x10^{+02}$
Electricity Generation - Generation of electrical power other than from coal or gas	$1.0x10^{+02}$	0	$1.0x10^{+03}$	$4.9x10^{-01}$	$4.9x10^{-01}$	$4.9x10^{-01}$	$1.6x10^{-01}$	$5.6x10^{+01}$
Environmentally sensitive area landfilling	$1.1x10^{+00}$	$3.9x10^{-06}$	0	$1.2x10^{+02}$	$5.1x10^{+01}$	$1.0x10^{+01}$	0	$1.3x10^{+01}$
Freeway or tollway construction	0	$1.8x10^{-03}$	0	$1.2x10^{+02}$	$4.3x10^{+01}$	$5.7x10^{+00}$	0	$2.9x10^{-03}$
Glass Production - Production of container glass	$1.9x10^{+01}$	$2.3x10^{+00}$	$1.6x10^{+03}$	$1.1x10^{+02}$	$8.6x10^{+01}$	$8.6x10^{+01}$	$6.5x10^{+02}$	$3.8x10^{+01}$
Glass Production - Production of float glass	$1.0x10^{+01}$	$2.9x10^{-04}$	$8.4x10^{+02}$	$1.1x10^{+02}$	$1.1x10^{+02}$	$1.1x10^{+02}$	$1.8x10^{+02}$	$1.3x10^{+01}$

NSW Activity Type	CO	Pb	NO_x	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Hard-rock gravel quarrying	$3.9x10^{-01}$	$1.5x10^{-04}$	0	$7.4x10^{+02}$	$1.3x10^{+02}$	$3.4x10^{+01}$	0	$4.5x10^{+00}$
Hazardous, industrial or group A waste generation or storage	$9.6x10^{+00}$	$5.0x10^{-05}$	$1.4x10^{+01}$	$1.9x10^{+00}$	$1.8x10^{+00}$	$1.8x10^{+00}$	$3.6x10^{-01}$	$3.3x10^{+02}$
Hazardous, industrial, group A or group B waste processing	$4.1x10^{+00}$	$3.2x10^{-05}$	$5.0x10^{+00}$	$1.0x10^{+01}$	$5.1x10^{+00}$	$5.1x10^{+00}$	$6.8x10^{-02}$	$9.5x10^{+00}$
Inert waste landfilling	0	0	0	$2.2x10^{+02}$	$6.2x10^{+01}$	$1.4x10^{+01}$	0	$5.0x10^{-04}$
Landfilling in designated areas	$3.6x10^{+00}$	0	0	$4.2x10^{+01}$	$2.1x10^{+01}$	$4.3x10^{+00}$	0	$4.0x10^{+01}$
Metal plating or coating works	$1.3x10^{+01}$	$7.6x10^{-05}$	$1.6x10^{+01}$	$3.0x10^{+01}$	$3.0x10^{+01}$	$2.9x10^{+01}$	$8.1x10^{-02}$	$2.3x10^{+03}$
Milk processing	$7.5x10^{+00}$	$4.4x10^{-05}$	$9.8x10^{+00}$	$6.8x10^{-01}$	$6.8x10^{-01}$	$6.8x10^{-01}$	$4.6x10^{-02}$	$6.3x10^{+00}$
Mining (other than coal)	0	$2.6x10^{-05}$	0	$2.5x10^{+01}$	$1.3x10^{+01}$	$2.5x10^{+00}$	0	0
Mooring and boat storage	0	0	0	0	0	0	0	1.066264
Other activities - bread manufacturing	$1.7x10^{+00}$	$1.0x10^{-05}$	$2.0x10^{+00}$	$2.6x10^{-01}$	$2.6x10^{-01}$	$2.6x10^{-01}$	$1.0x10^{-02}$	$2.0x10^{-01}$
Other activities - cake and pastry manufacturing	$1.3x10^{+00}$	$7.5x10^{-06}$	$1.5x10^{+00}$	$1.1x10^{-01}$	$1.1x10^{-01}$	$1.1x10^{-01}$	$7.9x10^{-03}$	$8.3x10^{-02}$
Other activities - confectionary manufacturing	$1.7x10^{-01}$	$3.5x10^{-06}$	$1.2x10^{+00}$	$5.3x10^{-02}$	$5.3x10^{-02}$	$5.3x10^{-02}$	$3.7x10^{-03}$	$7.9x10^{-01}$
Other activities - dry cleaning	$1.2x10^{+00}$	$7.8x10^{-06}$	$1.6x10^{+00}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$8.2x10^{-03}$	$5.7x10^{-01}$
Other activities - oil and fat manufacturing	$5.3x10^{+00}$	$3.2x10^{-05}$	$1.1x10^{+01}$	$4.8x10^{-01}$	$4.8x10^{-01}$	$4.8x10^{-01}$	$3.3x10^{-02}$	$3.5x10^{-01}$
Other activities - printing	$1.1x10^{+01}$	$6.4x10^{-05}$	$2.2x10^{+01}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$8.3x10^{-02}$	$2.4x10^{+03}$
Other activities - services to air transport	$2.2x10^{+00}$	$1.3x10^{-05}$	$2.7x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$1.4x10^{-02}$	$1.0x10^{+02}$
Other activities - soft drink manufacturing	$9.7x10^{-01}$	$5.8x10^{-06}$	$1.2x10^{+00}$	$8.8x10^{-02}$	$8.8x10^{-02}$	$8.8x10^{-02}$	$6.0x10^{-03}$	$2.1x10^{+00}$
Other agricultural crop processing	$1.5x10^{+01}$	$8.9x10^{-05}$	$1.7x10^{+01}$	$8.7x10^{+01}$	$4.4x10^{+01}$	$1.5x10^{+01}$	$9.3x10^{-02}$	$6.2x10^{+00}$
Other chemical processing	$4.6x10^{+01}$	$2.0x10^{-04}$	$4.4x10^{+01}$	$3.9x10^{+00}$	$3.8x10^{+00}$	$3.8x10^{+00}$	$2.6x10^{-01}$	$6.3x10^{+02}$
Other land-based extraction	$2.3x10^{+02}$	$4.1x10^{-03}$	$3.8x10^{+01}$	$5.0x10^{+03}$	$1.8x10^{+03}$	$4.2x10^{+02}$	$2.0x10^{+02}$	$9.4x10^{+00}$
Other livestock processing	$2.7x10^{+00}$	$1.6x10^{-05}$	$3.1x10^{+00}$	$2.4x10^{-01}$	$2.4x10^{-01}$	$2.4x10^{-01}$	$1.6x10^{-02}$	$4.4x10^{+00}$
Other metal processing	$8.8x10^{+01}$	$5.5x10^{-03}$	$4.4x10^{+01}$	$3.4x10^{+01}$	$3.2x10^{+01}$	$3.2x10^{+01}$	$3.6x10^{+00}$	$1.1x10^{+03}$
Other vessel construction or maintenance	0	$2.3x10^{-05}$	0	$3.9x10^{+00}$	$3.4x10^{+00}$	$3.1x10^{+00}$	0	$8.7x10^{+01}$
Paint production	$2.5x10^{+00}$	$7.5x10^{-05}$	$3.1x10^{+00}$	$1.1x10^{+01}$	$1.0x10^{+01}$	$1.0x10^{+01}$	$2.9x10^{-02}$	$9.4x10^{+01}$
Paper production using recycled materials	$4.7x10^{+01}$	$2.2x10^{-02}$	$1.2x10^{+02}$	$7.3x10^{+00}$	$1.5x10^{+00}$	$1.5x10^{+00}$	$1.2x10^{+01}$	$2.8x10^{+01}$
Pesticides production	$1.4x10^{-01}$	$8.5x10^{-07}$	$1.7x10^{-01}$	$1.3x10^{-02}$	$1.3x10^{-02}$	$1.3x10^{-02}$	$8.9x10^{-04}$	$6.5x10^{+00}$
Petrochemical production	$3.0x10^{+02}$	$1.8x10^{-01}$	$1.2x10^{+03}$	$1.1x10^{+02}$	$4.5x10^{+01}$	$4.5x10^{+01}$	$3.6x10^{+02}$	$4.6x10^{+02}$
Petroleum refining	$5.5x10^{+02}$	$5.8x10^{-02}$	$2.8x10^{+03}$	$4.4x10^{+02}$	$2.7x10^{+02}$	$2.4x10^{+02}$	$7.0x10^{+03}$	$3.2x10^{+03}$
Pharmaceutical or veterinary products production	$5.8x10^{+00}$	$3.4x10^{-05}$	$8.0x10^{+00}$	$5.9x10^{-01}$	$5.8x10^{-01}$	$5.7x10^{-01}$	$6.2x10^{-02}$	$5.1x10^{+01}$

NSW Activity Type	CO	Pb	NO_x	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Plastics production	$3.0x10^{+00}$	$1.6x10^{-05}$	$1.1x10^{+01}$	$2.2x10^{+02}$	$1.9x10^{+02}$	$1.9x10^{+02}$	$1.8x10^{-02}$	$5.5x10^{+02}$
Poultry production	$4.7x10^{+00}$	$2.7x10^{-05}$	$6.3x10^{+00}$	$7.8x10^{+02}$	$3.8x10^{+02}$	$1.1x10^{+02}$	$2.9x10^{-02}$	$1.7x10^{+01}$
Primary iron and steel production	$2.1x10^{-01}$	$2.7x10^{-02}$	$2.5x10^{-01}$	$3.4x10^{+00}$	$2.2x10^{+00}$	$1.6x10^{+00}$	$1.3x10^{-03}$	$1.3x10^{+00}$
Primary non-ferrous production (excluding aluminium)	0	0	$6.3x10^{-03}$	$5.2x10^{-01}$	$3.2x10^{-01}$	$2.6x10^{-01}$	$2.3x10^{-02}$	$4.5x10^{-04}$
Railway activities	0	0	0	$4.7x10^{+00}$	$4.7x10^{+00}$	$4.7x10^{+00}$	0	$1.6x10^{+01}$
Rendering or fat extraction	$8.3x10^{+00}$	$2.4x10^{-04}$	$1.0x10^{+01}$	$8.1x10^{+00}$	$3.5x10^{+00}$	$1.6x10^{+00}$	$8.9x10^{+00}$	$3.5x10^{+00}$
Scrap metal recovery	0	0	$4.8x10^{+00}$	$8.3x10^{+01}$	$5.2x10^{+01}$	$3.9x10^{+01}$	0	$6.5x10^{-03}$
Secondary aluminium production	$4.7x10^{+01}$	$2.2x10^{-03}$	$5.8x10^{+01}$	$2.6x10^{+01}$	$1.9x10^{+01}$	$8.8x10^{+00}$	$2.8x10^{+01}$	$1.3x10^{+02}$
Secondary iron and steel production	0	$8.9x10^{-03}$	$7.4x10^{-01}$	$7.9x10^{+00}$	$6.9x10^{+00}$	$7.2x10^{+00}$	$1.3x10^{+00}$	$1.0x10^{+02}$
Secondary non-ferrous production (excluding aluminium)	$1.6x10^{+02}$	$7.2x10^{-01}$	$3.3x10^{+01}$	$7.9x10^{+00}$	$5.8x10^{+00}$	$5.3x10^{+00}$	$8.9x10^{+01}$	$2.5x10^{+00}$
Sewage treatment	0	0	$4.0x10^{-02}$	0	0	0	0	0
Sewage Treatment - processing by large plants (> 10000 ML per year)	$9.1x10^{+01}$	$3.2x10^{-05}$	$6.0x10^{+02}$	$1.5x10^{+00}$	$1.5x10^{+00}$	$1.5x10^{+00}$	$2.6x10^{-01}$	$4.2x10^{+01}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$2.1x10^{+01}$	$5.9x10^{-03}$	$2.2x10^{+01}$	$2.0x10^{+02}$	$6.7x10^{+01}$	$1.3x10^{+01}$	$1.0x10^{+00}$	$4.1x10^{+01}$
Soap or detergent production	$4.6x10^{+00}$	$2.7x10^{-05}$	$4.8x10^{+00}$	$4.2x10^{-01}$	$4.2x10^{-01}$	$4.2x10^{-01}$	$2.5x10^{+00}$	$8.3x10^{+01}$
Solid waste landfilling	$1.4x10^{+02}$	$3.5x10^{-05}$	0	$1.1x10^{+03}$	$4.8x10^{+02}$	$9.9x10^{+01}$	0	$2.5x10^{+02}$
Vessel construction or maintenance using dry or floating docks	0	0	0	0	0	0	0	$3.7x10^{+00}$
Waste oil recovery	$9.2x10^{-02}$	0	$7.5x10^{-01}$	$9.1x10^{-03}$	$9.1x10^{-03}$	$9.1x10^{-03}$	$1.4x10^{-04}$	$1.6x10^{-01}$
Waste storage, transfer, separating or processing	$5.4x10^{+01}$	$2.3x10^{-05}$	$4.2x10^{+01}$	$9.6x10^{+01}$	$3.4x10^{+01}$	$7.2x10^{+00}$	$6.0x10^{-03}$	$1.4x10^{+00}$
Grand Total	**8,000**	**4.7**	**14,000**	**20,400**	**7,890**	**3,370**	**11,000**	**14,000**

Table 4.5: Total Industrial Emissions by NSW Activity Type in the Sydney Region (tonnes/year)

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	0	0
Animal slaughtering	0	$1.2x10^{-02}$	$6.2x10^{-02}$	$1.2x10^{-01}$	$5.4x10^{-01}$	$7.9x10^{-01}$	$3.0x10^{-05}$	$4.6x10^{-01}$	$9.6x10^{-02}$
Battery production	0	0	0	0	0	0	0	0	0
Beer or distilled alcohol production	0	0	$8.9x10^{-02}$	$1.8x10^{-01}$	0	0	$1.2x10^{-04}$	$4.5x10^{-02}$	0
Biomedical waste incineration	0	$2.1x10^{-06}$	$2.2x10^{-01}$	$1.2x10^{-05}$	$9.5x10^{-05}$	$1.4x10^{-04}$	$2.6x10^{-01}$	$7.9x10^{-05}$	$1.7x10^{-05}$
Bitumen pre-mix or hotmix production	0	$4.7x10^{-05}$	$2.5x10^{+00}$	$5.0x10^{+00}$	$2.2x10^{-03}$	$3.1x10^{-03}$	$9.3x10^{-02}$	$1.2x10^{+00}$	$3.8x10^{-04}$
Bulk cargo handling	0	$2.8x10^{-08}$	$8.4x10^{-08}$	$1.6x10^{-07}$	$2.5x10^{-02}$	$1.9x10^{-06}$	0	$8.0x10^{-02}$	$2.3x10^{-07}$
Cement or lime handling	0	$1.9x10^{-04}$	$1.3x10^{-02}$	$2.3x10^{-02}$	$1.2x10^{+01}$	$1.2x10^{-02}$	$1.1x10^{-05}$	$4.2x10^{+01}$	$1.5x10^{-03}$
Cement or lime production	0	0	0	0	$1.2x10^{+00}$	0	$2.2x10^{-01}$	$2.1x10^{-01}$	0
Ceramics production (excluding glass)	0	$6.4x10^{-07}$	$2.1x10^{+00}$	$4.1x10^{+00}$	$8.5x10^{+00}$	$4.2x10^{-05}$	$3.3x10^{-06}$	$1.8x10^{+00}$	$5.2x10^{-06}$
Chemical storage	0	0	0	0	$3.9x10^{-02}$	$2.3x10^{+00}$	0	$2.4x10^{-01}$	0
Chemical Storage - Other Chemical Storage	0	$1.4x10^{-01}$	$2.0x10^{+00}$	$5.3x10^{-02}$	$2.6x10^{+00}$	$2.1x10^{-03}$	$1.2x10^{-01}$	$4.6x10^{+00}$	$2.5x10^{+00}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	0	$1.6x10^{-04}$	$2.3x10^{+00}$	$1.3x10^{+00}$	$1.4x10^{+00}$	$1.0x10^{-02}$	$7.0x10^{-03}$	$4.6x10^{+00}$	$1.3x10^{-03}$
Coal mining	$4.9x10^{-03}$	$1.9x10^{-01}$	$5.2x10^{-02}$	$3.8x10^{-01}$	$3.0x10^{-02}$	$3.8x10^{-03}$	0	$4.0x10^{-02}$	$4.7x10^{-04}$
Coke production	0	0	$1.9x10^{-01}$	0	$2.7x10^{-03}$	0	$2.4x10^{-02}$	$3.3x10^{-02}$	0
Composting and related reprocessing or treatment	0	0	$2.8x10^{+00}$	0	$4.2x10^{+00}$	$1.4x10^{+00}$	0	$4.9x10^{+01}$	0
Concrete batching	0	$1.2x10^{-05}$	$2.1x10^{-02}$	$4.3x10^{-02}$	$2.2x10^{+01}$	$7.8x10^{-04}$	$2.9x10^{-05}$	$2.1x10^{+01}$	$9.5x10^{-05}$
Contaminated soil treatment	0	0	0	0	0	0	0	0	0
Crushing, grinding or separating works	$1.5x10^{-02}$	$2.3x10^{-08}$	$2.2x10^{+00}$	$3.7x10^{+00}$	$1.2x10^{+00}$	$3.6x10^{-01}$	$1.9x10^{-02}$	$1.4x10^{+01}$	0
Drum or container reconditioning	0	$4.7x10^{-06}$	$8.7x10^{-03}$	$1.8x10^{-02}$	$6.9x10^{+00}$	$3.1x10^{-04}$	$1.0x10^{-05}$	$2.1x10^{+01}$	$3.8x10^{-05}$
Electricity Generation - Generation of electrical power from gas	$9.0x10^{-04}$	$5.2x10^{-01}$	$1.9x10^{+00}$	$1.1x10^{+02}$	$7.0x10^{-01}$	$3.7x10^{-05}$	$7.7x10^{-02}$	$7.0x10^{-01}$	$4.5x10^{-06}$
Electricity Generation - Generation of electrical power other than from coal or gas	0	$6.4x10^{-02}$	$4.2x10^{-01}$	$2.0x10^{+00}$	$1.5x10^{+00}$	$1.8x10^{+00}$	$7.5x10^{-03}$	$4.6x10^{+00}$	$2.1x10^{-01}$
Environmentally sensitive area landfilling	0	0	$2.0x10^{-01}$	0	$3.0x10^{-01}$	$1.0x10^{-01}$	0	$3.5x10^{+00}$	0
Freeway or tollway construction	0	$7.8x10^{-07}$	$2.3x10^{-06}$	$4.3x10^{-06}$	$2.7x10^{-04}$	$5.2x10^{-05}$	0	$1.0x10^{-04}$	$6.3x10^{-06}$
Glass Production - Production of container glass	0	0	$1.3x10^{+00}$	$7.5x10^{-01}$	$4.5x10^{-05}$	0	0	$3.6x10^{-01}$	0
Glass Production - Production of float glass	0	0	$4.5x10^{-01}$	$2.6x10^{-01}$	$8.5x10^{-04}$	0	$7.5x10^{-06}$	$1.2x10^{-01}$	0

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Hard-rock gravel quarrying	0	0	$7.1x10^{-02}$	0	$1.1x10^{-01}$	$3.5x10^{-02}$	0	$1.2x10^{+00}$	0
Hazardous, industrial or group A waste generation or storage	$2.7x10^{-02}$	$2.2x10^{-03}$	$6.8x10^{-01}$	$1.5x10^{-01}$	$3.9x10^{+00}$	$1.7x10^{-01}$	$2.5x10^{-04}$	$1.0x10^{+01}$	$1.3x10^{-01}$
Hazardous, industrial, group A or group B waste processing	0	$2.2x10^{-02}$	$9.4x10^{-02}$	$1.7x10^{-01}$	$1.0x10^{+00}$	$1.4x10^{+00}$	$3.4x10^{-05}$	$9.0x10^{-01}$	$1.8x10^{-01}$
Inert waste landfilling	0	0	0	0	$4.5x10^{-05}$	0	0	$1.4x10^{-05}$	0
Landfilling in designated areas	0	0	$6.4x10^{-01}$	0	$9.6x10^{-01}$	$3.2x10^{-01}$	0	$1.1x10^{+01}$	0
Metal plating or coating works	$2.1x10^{-04}$	$1.1x10^{-04}$	$8.0x10^{-02}$	$1.5x10^{-01}$	$6.3x10^{+01}$	$7.4x10^{-03}$	$1.1x10^{-04}$	$3.5x10^{+02}$	$2.6x10^{+00}$
Milk processing	0	$1.3x10^{-02}$	$8.3x10^{-02}$	$1.6x10^{-01}$	$7.4x10^{-01}$	$8.4x10^{-01}$	$6.1x10^{-05}$	$6.3x10^{-01}$	$1.0x10^{-01}$
Mining (other than coal)	0	0	0	0	0	0	0	0	0
Mooring and boat storage	0	$9.0x10^{-09}$	$8.6x10^{-03}$	$5.1x10^{-08}$	$6.6x10^{-03}$	$6.2x10^{-07}$	0	$2.1x10^{-02}$	$7.5x10^{-08}$
Other activities - bread manufacturing	0	$5.8x10^{-05}$	$1.1x10^{-02}$	$2.0x10^{-02}$	$3.1x10^{-03}$	$3.8x10^{-03}$	$1.4x10^{-05}$	$8.4x10^{-03}$	$4.7x10^{-04}$
Other activities - cake and pastry manufacturing	0	$1.0x10^{-06}$	$7.5x10^{-03}$	$1.5x10^{-02}$	$4.7x10^{-05}$	$6.9x10^{-05}$	$1.0x10^{-05}$	$3.8x10^{-03}$	$8.4x10^{-06}$
Other activities - confectionary manufacturing	0	0	$3.5x10^{-03}$	$7.0x10^{-03}$	$1.5x10^{-01}$	0	$4.8x10^{-06}$	$1.4x10^{-01}$	0
Other activities - dry cleaning	0	0	$7.8x10^{-03}$	$1.6x10^{-02}$	0	$4.8x10^{-01}$	$1.1x10^{-05}$	$3.9x10^{-03}$	0
Other activities - oil and fat manufacturing	0	0	$3.2x10^{-02}$	$6.3x10^{-02}$	0	0	$4.4x10^{-05}$	$1.6x10^{-02}$	0
Other activities - printing	$1.1x10^{-03}$	$6.1x10^{-04}$	$6.2x10^{-02}$	$1.3x10^{-01}$	$2.0x10^{+01}$	$5.0x10^{+00}$	$4.9x10^{-04}$	$3.0x10^{+01}$	$1.3x10^{-03}$
Other activities - services to air transport	0	0	$1.3x10^{-02}$	$2.7x10^{-02}$	$1.3x10^{+01}$	0	$1.8x10^{-05}$	$1.0x10^{+01}$	0
Other activities - soft drink manufacturing	0	$5.3x10^{-03}$	$2.2x10^{-02}$	$4.1x10^{-02}$	$2.4x10^{-01}$	$3.5x10^{-01}$	$8.0x10^{-06}$	$2.0x10^{-01}$	$4.2x10^{-02}$
Other agricultural crop processing	0	$5.7x10^{-04}$	$5.4x10^{-02}$	$1.2x10^{-01}$	$4.0x10^{-01}$	$3.8x10^{-02}$	$1.2x10^{-04}$	$1.5x10^{+00}$	$4.6x10^{-03}$
Other chemical processing	0	$5.3x10^{-01}$	$7.8x10^{+00}$	$3.3x10^{+00}$	$6.8x10^{+00}$	$1.2x10^{-01}$	$2.7x10^{-04}$	$1.5x10^{+02}$	$1.1x10^{+01}$
Other land-based extraction	0	$1.1x10^{-05}$	$8.3x10^{-01}$	$1.7x10^{+00}$	$1.5x10^{-02}$	$7.4x10^{-04}$	$5.5x10^{-06}$	$4.9x10^{-01}$	$9.0x10^{-05}$
Other livestock processing	0	$9.3x10^{-03}$	$4.4x10^{-02}$	$8.6x10^{-02}$	$4.3x10^{-01}$	$6.2x10^{-01}$	$2.2x10^{-05}$	$3.8x10^{-01}$	$7.5x10^{-02}$
Other metal processing	0	$8.7x10^{-04}$	$5.0x10^{-01}$	$4.5x10^{-01}$	$1.4x10^{+02}$	$5.8x10^{-02}$	$1.6x10^{-03}$	$2.2x10^{+02}$	$2.3x10^{+01}$
Other vessel construction or maintenance	$1.8x10^{-02}$	$1.3x10^{-07}$	$5.2x10^{-03}$	$7.0x10^{-07}$	$6.6x10^{+00}$	$8.3x10^{-06}$	0	$3.1x10^{+01}$	$1.0x10^{-06}$
Paint production	$4.2x10^{-06}$	$2.6x10^{-02}$	$1.3x10^{-01}$	$7.3x10^{-02}$	$8.6x10^{-01}$	$8.2x10^{-02}$	$2.6x10^{-05}$	$2.4x10^{+01}$	$8.7x10^{-03}$
Paper production using recycled materials	0	$4.3x10^{-03}$	$2.3x10^{-02}$	$4.3x10^{-02}$	$2.2x10^{-01}$	$2.9x10^{-01}$	$5.6x10^{-04}$	$2.9x10^{-01}$	$3.5x10^{-02}$
Pesticides production	0	$2.3x10^{-07}$	$9.6x10^{-04}$	$1.7x10^{-03}$	$2.8x10^{-02}$	$1.5x10^{-05}$	$1.2x10^{-06}$	$4.6x10^{-04}$	$1.8x10^{-06}$
Petrochemical production	$4.0x10^{-03}$	0	$2.6x10^{+00}$	$4.2x10^{+01}$	$1.9x10^{+00}$	0	$2.6x10^{-03}$	$2.8x10^{+00}$	0
Petroleum refining	0	$1.1x10^{-01}$	$2.6x10^{+01}$	$2.0x10^{+02}$	$2.4x10^{+01}$	$7.3x10^{+00}$	$1.4x10^{-01}$	$3.5x10^{+01}$	$9.0x10^{-01}$
Pharmaceutical or veterinary products production	$1.3x10^{-03}$	$1.5x10^{-03}$	$4.5x10^{-02}$	$8.6x10^{-02}$	$5.8x10^{-01}$	$9.7x10^{-02}$	$5.4x10^{-05}$	$5.9x10^{-01}$	$1.2x10^{-02}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Plastics production	0	$2.4x10^{+00}$	$1.1x10^{+01}$	$5.3x10^{+00}$	$1.4x10^{+01}$	0	$2.1x10^{-05}$	$1.2x10^{+01}$	27
Poultry production	0	$4.3x10^{-02}$	$1.6x10^{-01}$	$3.0x10^{-01}$	$1.9x10^{+00}$	$2.8x10^{+00}$	$3.8x10^{-05}$	$1.6x10^{+00}$	$3.4x10^{-01}$
Primary iron and steel production	0	0	$1.2x10^{-03}$	$2.5x10^{-03}$	$1.1x10^{-01}$	0	$1.7x10^{-06}$	$3.8x10^{-01}$	0
Primary non-ferrous production (excluding aluminium)	0	0	0	0	$4.1x10^{-05}$	0	0	$1.2x10^{-05}$	0
Railway activities	0	$1.0x10^{-03}$	$3.1x10^{-03}$	$5.6x10^{-03}$	$2.6x10^{-01}$	$6.7x10^{-02}$	0	$3.4x10^{+00}$	$8.2x10^{-03}$
Rendering or fat extraction	0	$2.8x10^{-04}$	$5.7x10^{-02}$	$6.4x10^{-02}$	$4.4x10^{-02}$	$1.9x10^{-02}$	$5.4x10^{-05}$	$8.8x10^{-02}$	$2.3x10^{-03}$
Scrap metal recovery	0	$8.6x10^{-07}$	$2.6x10^{-06}$	$4.8x10^{-06}$	$5.9x10^{-04}$	$5.7x10^{-05}$	0	$2.0x10^{-04}$	$7.0x10^{-06}$
Secondary aluminium production	0	0	$9.9x10^{+00}$	$2.0x10^{+01}$	$5.4x10^{-02}$	0	$3.4x10^{-04}$	$5.1x10^{+00}$	0
Secondary iron and steel production	0	0	$3.9x10^{-02}$	$4.8x10^{-02}$	$2.9x10^{+00}$	0	$1.2x10^{+00}$	$7.1x10^{+01}$	0
Secondary non-ferrous production (excluding aluminium)	0	0	$7.9x10^{-01}$	$4.6x10^{-01}$	$4.1x10^{-02}$	0	$2.1x10^{-05}$	$2.1x10^{-01}$	0
Sewage treatment	0	0	0	0	0	0	0	0	0
Sewage Treatment - processing by large plants (> 10000 ML per year)	$8.3x10^{-03}$	$6.9x10^{-02}$	$2.6x10^{-01}$	$2.5x10^{+00}$	$2.2x10^{+00}$	$3.1x10^{+00}$	$5.4x10^{-03}$	$1.8x10^{+00}$	$3.8x10^{-01}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$7.4x10^{-03}$	$2.3x10^{-01}$	$9.5x10^{-02}$	$1.2x10^{+00}$	$3.2x10^{-01}$	$4.1x10^{-01}$	$6.1x10^{-04}$	$3.1x10^{-01}$	$3.2x10^{+01}$
Soap or detergent production	$1.7x10^{-04}$	$1.5x10^{+00}$	$7.0x10^{+00}$	$8.5x10^{-02}$	$4.4x10^{-01}$	$6.9x10^{-02}$	$3.9x10^{-05}$	$1.6x10^{+00}$	$8.4x10^{-03}$
Solid waste landfilling	0	0	$4.0x10^{+00}$	0	$6.0x10^{+00}$	$2.0x10^{+00}$	0	$7.0x10^{+01}$	0
Vessel construction or maintenance using dry or floating docks	$1.8x10^{-02}$	0	$4.7x10^{-03}$	0	$1.8x10^{-01}$	0	0	$8.6x10^{-01}$	0
Waste oil recovery	0	$3.1x10^{-04}$	$9.8x10^{-04}$	$2.5x10^{-03}$	$2.0x10^{-02}$	$1.8x10^{-02}$	$3.2x10^{-05}$	$1.2x10^{-02}$	$2.2x10^{-03}$
Waste storage, transfer, separating or processing	0	$1.7x10^{-03}$	$6.1x10^{-03}$	$4.3x10^{-02}$	$1.9x10^{-02}$	$8.2x10^{-03}$	$2.7x10^{-04}$	$1.0x10^{-02}$	$1.0x10^{-03}$
Grand Total	**0.11**	**5.9**	**92.1**	**411**	**380**	**32.6**	**2.2**	**1,220**	**101**

Table 4.6: Total Industrial Emissions by NSW Activity Type in the Newcastle Region (tonnes/year)

NSW Activity Type	CO	Pb	NO_x	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	$3.0x10^{+02}$	$1.1x10^{-03}$	$1.1x10^{+03}$	$2.4x10^{+02}$	$2.1x10^{+02}$	$2.3x10^{+02}$	$1.2x10^{+00}$	$2.7x10^{+02}$
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	$5.3x10^{+00}$	$2.8x10^{-05}$	$5.5x10^{+00}$	$8.3x10^{+01}$	$7.9x10^{+01}$	$7.8x10^{+01}$	$4.5x10^{-02}$	$3.0x10^{-01}$
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	$1.3x10^{-01}$
Animal slaughtering	$2.8x10^{+00}$	$1.7x10^{-03}$	$5.8x10^{+01}$	$4.6x10^{+00}$	$1.9x10^{+00}$	$7.5x10^{-01}$	$7.6x10^{+01}$	$3.1x10^{+01}$
Bitumen pre-mix or hotmix production	$2.3x10^{+01}$	$1.2x10^{-02}$	$3.6x10^{+00}$	$1.4x10^{+02}$	$1.3x10^{+02}$	$1.1x10^{+02}$	$1.7x10^{+00}$	$2.2x10^{+00}$
Bulk cargo handling	0	$2.8x10^{-06}$	0	$1.7x10^{+02}$	$8.0x10^{+01}$	$1.2x10^{+01}$	0	$6.5x10^{-01}$
Cement or lime handling	$3.7x10^{-01}$	$2.2x10^{-06}$	$4.4x10^{-01}$	$5.4x10^{+00}$	$4.2x10^{+00}$	$2.4x10^{+00}$	$2.3x10^{-03}$	$2.9x10^{-02}$
Chemical Storage - Other Chemical Storage	0	0	0	0	0	0	0	$2.6x10^{+02}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	0	0	0	0	0	0	0	$1.8x10^{+02}$
Coal loading	0	$1.7x10^{-05}$	0	$4.8x10^{-01}$	$2.3x10^{-01}$	$2.2x10^{-02}$	0	$3.9x10^{+00}$
Coal mining	$9.5x10^{+00}$	$3.3x10^{-02}$	$2.4x10^{+01}$	$1.2x10^{+03}$	$4.9x10^{+02}$	$7.1x10^{+01}$	$1.0x10^{+00}$	$3.1x10^{+00}$
Concrete batching	0	$1.0x10^{-04}$	0	$7.4x10^{+01}$	$3.1x10^{+01}$	$4.7x10^{+00}$	0	$7.7x10^{-02}$
Crushing, grinding or separating works	$3.0x10^{+00}$	$1.3x10^{-04}$	$7.4x10^{+00}$	$5.1x10^{+02}$	$9.3x10^{+01}$	$2.5x10^{+01}$	$4.8x10^{-01}$	$1.4x10^{+00}$
Explosives or pyrotechnics production	$1.2x10^{-03}$	$3.0x10^{-07}$	$1.8x10^{-01}$	$2.7x10^{-04}$	$2.6x10^{-04}$	$2.6x10^{-04}$	$1.7x10^{-03}$	$1.3x10^{-03}$
Hard-rock gravel quarrying	0	$1.5x10^{-03}$	0	$8.7x10^{+02}$	$1.6x10^{+02}$	$4.1x10^{+01}$	0	$5.2x10^{-03}$
Hazardous, industrial or group A waste generation or storage	$6.1x10^{-03}$	$3.7x10^{-08}$	$7.3x10^{-03}$	$5.5x10^{-04}$	$5.5x10^{-04}$	$5.5x10^{-04}$	$3.8x10^{-05}$	$1.6x10^{+01}$
Hazardous, industrial, group A or group B waste processing	$3.5x10^{-02}$	$2.1x10^{-07}$	$4.1x10^{-02}$	$3.1x10^{-03}$	$3.1x10^{-03}$	$3.1x10^{-03}$	$2.1x10^{-04}$	$2.3x10^{-03}$
Inert waste landfilling	0	0	0	$1.1x10^{+02}$	$5.4x10^{+01}$	$1.1x10^{+01}$	0	0
Metal plating or coating works	$1.8x10^{+00}$	$1.0x10^{-05}$	$2.1x10^{+00}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$1.1x10^{-02}$	$5.2x10^{-01}$
Milk processing	$2.6x10^{+00}$	$1.5x10^{-05}$	$3.1x10^{+00}$	$2.6x10^{-01}$	$2.6x10^{-01}$	$2.6x10^{-01}$	$1.6x10^{-02}$	$3.5x10^{-01}$
Mooring and boat storage	0	0	0	0	0	0	0	$7.1x10^{-01}$
Other activities - printing	0	0	0	0	0	0	0	$5.6x10^{+01}$
Other agricultural crop processing	$8.3x10^{+00}$	$4.9x10^{-05}$	$9.9x10^{+00}$	$1.9x10^{+01}$	$9.9x10^{+00}$	$3.4x10^{+00}$	$1.3x10^{-01}$	$3.9x10^{+00}$
Other chemical processing	$2.5x10^{+01}$	$3.1x10^{-04}$	$8.3x10^{+01}$	$3.5x10^{+01}$	$3.4x10^{+01}$	$3.4x10^{+01}$	$5.3x10^{+01}$	$4.6x10^{+01}$
Other land-based extraction	$1.7x10^{-01}$	$3.6x10^{-04}$	$1.2x10^{+00}$	$1.1x10^{+02}$	$6.5x10^{+01}$	$1.3x10^{+01}$	$6.4x10^{-06}$	$7.9x10^{-02}$
Other metal processing	$5.8x10^{+01}$	$3.5x10^{-04}$	$1.0x10^{+02}$	$1.5x10^{+01}$	$1.5x10^{+01}$	$1.5x10^{+01}$	$3.9x10^{-01}$	$1.1x10^{+02}$
Other vessel construction or maintenance	0	$1.3x10^{-04}$	$5.8x10^{-01}$	$2.1x10^{+01}$	$1.8x10^{+01}$	$1.6x10^{+01}$	0	$6.2x10^{+00}$

NSW Activity Type	CO	Pb	NO_x	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Primary aluminium production	$4.5x10^{+04}$	$1.0x10^{-01}$	$3.0x10^{+02}$	$3.4x10^{+02}$	$1.5x10^{+02}$	$1.1x10^{+02}$	$9.2x10^{+03}$	$8.6x10^{+00}$
Primary non-ferrous production (excluding aluminium)	$2.0x10^{+01}$	$1.4x10^{-04}$	$4.7x10^{+01}$	$1.8x10^{+01}$	$1.5x10^{+01}$	$1.2x10^{+01}$	$8.4x10^{+00}$	$1.5x10^{+00}$
Scrap metal recovery	0	0	$1.9x10^{+00}$	0	0	0	0	$1.7x10^{-03}$
Secondary iron and steel production	$2.6x10^{+03}$	$9.2x10^{-02}$	$2.5x10^{+01}$	$4.5x10^{+01}$	$2.8x10^{+01}$	$2.5x10^{+01}$	$2.0x10^{+00}$	$1.9x10^{+02}$
Sewage Treatment - processing by large plants (> 10000 ML per year)	0	0	0	0	0	0	0	$1.1x10^{+00}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	0	0	0	0	0	0	0	$8.8x10^{-03}$
Solid waste landfilling	$5.5x10^{+00}$	$9.8x10^{-04}$	0	$6.1x10^{+01}$	$2.3x10^{+01}$	$4.7x10^{+00}$	0	$6.2x10^{+01}$
Used tyre processing or disposal	0	0	0	0	0	0	0	$7.7x10^{-04}$
Vessel construction or maintenance using dry or floating docks	0	0	0	$4.5x10^{+00}$	$3.9x10^{+00}$	$3.6x10^{+00}$	0	$2.6x10^{+01}$
Waste storage, transfer, separating or processing	$4.2x10^{-03}$	$3.0x10^{-06}$	$4.9x10^{-03}$	$6.0x10^{-01}$	$3.0x10^{-01}$	$5.6x10^{-02}$	$2.6x10^{-05}$	$6.5x10^{-01}$
Wood or timber milling	0	0	0	$2.6x10^{+00}$	$2.7x10^{-01}$	$1.0x10^{-01}$	0	0
Wood preservation	0	0	0	0	0	0	0	$4.2x10^{-02}$
Grand Total	**47,800**	**0.25**	**1,730**	**4,040**	**1,710**	**826**	**9,300**	**1,270**

Table 4.7: Total Industrial Emissions by NSW Activity Type in the Newcastle Region (tonnes/year)

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	0	$5.0x10^{+00}$	$2.4x10^{+01}$	$2.4x10^{+00}$	$1.3x10^{+00}$	0	$1.6x10^{-03}$	$5.6x10^{+00}$	0
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	0	0	$2.8x10^{-02}$	$5.5x10^{-02}$	$1.3x10^{-04}$	0	$3.8x10^{-05}$	$1.4x10^{-02}$	0
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	0	0
Animal slaughtering	0	$7.7x10^{-02}$	$2.4x10^{-01}$	$4.4x10^{-01}$	$3.9x10^{+00}$	$5.1x10^{+00}$	$1.2x10^{-04}$	$3.0x10^{+00}$	$6.3x10^{-01}$
Bitumen pre-mix or hotmix production	0	0	$1.9x10^{-01}$	$9.1x10^{-01}$	$2.1x10^{-04}$	0	$8.0x10^{-03}$	$9.4x10^{-02}$	0
Bulk cargo handling	0	0	0	0	$2.1x10^{-02}$	0	0	$7.7x10^{-02}$	0
Cement or lime handling	0	0	$2.2x10^{-03}$	$4.4x10^{-03}$	$2.6x10^{-04}$	0	$3.0x10^{-06}$	$1.2x10^{-03}$	0
Chemical Storage - Other Chemical Storage	0	0	$2.1x10^{+00}$	0	$1.5x10^{+00}$	0	0	$5.1x10^{+00}$	0
Chemical Storage - Storage of Petroleum and/or Petroleum Products	0	0	$1.4x10^{+00}$	0	$1.1x10^{+00}$	0	0	$3.6x10^{+00}$	0
Coal loading	0	$2.4x10^{-03}$	$1.2x10^{-02}$	$1.4x10^{-02}$	$1.8x10^{-01}$	$1.6x10^{-01}$	0	$7.2x10^{-01}$	$2.0x10^{-02}$
Coal mining	$2.0x10^{-02}$	$2.9x10^{-01}$	$9.2x10^{-02}$	$5.8x10^{-01}$	$4.1x10^{-02}$	0	$8.0x10^{-05}$	$5.8x10^{-02}$	0
Concrete batching	0	0	$6.2x10^{-04}$	0	$4.9x10^{-04}$	0	0	$1.5x10^{-03}$	0
Crushing, grinding or separating works	$4.2x10^{-02}$	0	$4.7x10^{-02}$	$5.9x10^{-02}$	$5.6x10^{-02}$	0	$3.3x10^{-04}$	$2.6x10^{-01}$	0
Explosives or pyrotechnics production	0	$1.8x10^{-06}$	$5.5x10^{-06}$	$4.9x10^{-05}$	$1.3x10^{-04}$	$1.2x10^{-04}$	0	$8.3x10^{-05}$	$1.5x10^{-05}$
Hard-rock gravel quarrying	0	0	0	0	$3.8x10^{-04}$	0	0	$1.2x10^{-04}$	0
Hazardous, industrial or group A waste generation or storage	0	0	$3.7x10^{-05}$	$7.3x10^{-05}$	$8.9x10^{-01}$	0	$5.0x10^{-08}$	$3.6x10^{+00}$	0
Hazardous, industrial, group A or group B waste processing	0	0	$2.1x10^{-04}$	$4.1x10^{-04}$	0	0	$2.8x10^{-07}$	$1.0x10^{-04}$	0
Inert waste landfilling	0	0	0	0	0	0	0	0	0
Metal plating or coating works	0	0	$1.0x10^{-02}$	$2.1x10^{-02}$	$8.2x10^{-02}$	0	$1.4x10^{-05}$	$7.5x10^{-02}$	0
Milk processing	0	$2.1x10^{-04}$	$1.6x10^{-02}$	$3.2x10^{-02}$	$1.4x10^{-02}$	$1.4x10^{-02}$	$2.1x10^{-05}$	$4.2x10^{-02}$	$1.7x10^{-03}$
Mooring and boat storage	0	0	$6.0x10^{-04}$	0	$2.5x10^{-02}$	0	0	$1.6x10^{-01}$	0
Other activities - printing	0	0	0	0	0	0	0	0	0
Other agricultural crop processing	0	$9.3x10^{-04}$	$5.0x10^{-02}$	$9.9x10^{-02}$	$7.9x10^{-04}$	$1.3x10^{-04}$	$6.8x10^{-05}$	$2.7x10^{-02}$	$1.6x10^{-05}$
Other chemical processing	0	$4.2x10^{-05}$	$1.2x10^{+01}$	$3.0x10^{-01}$	$7.9x10^{+00}$	$2.8x10^{-03}$	$1.0x10^{-01}$	$7.9x10^{+00}$	$3.4x10^{-04}$
Other land-based extraction	0	0	$7.5x10^{-03}$	$1.5x10^{-02}$	$1.4x10^{-03}$	0	0	$1.6x10^{-02}$	0
Other metal processing	0	0	$3.6x10^{-01}$	$6.9x10^{-01}$	$7.2x10^{+00}$	0	$4.8x10^{-04}$	$3.9x10^{+01}$	0

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Other vessel construction or maintenance	$2.4x10^{-02}$	0	$4.2x10^{-03}$	0	$4.3x10^{-01}$	0	0	$2.2x10^{+00}$	0
Primary aluminium production	0	0	$1.7x10^{-02}$	0	$8.1x10^{-02}$	0	$5.7x10^{+00}$	$1.2x10^{+00}$	0
Primary non-ferrous production (excluding aluminium)	0	$3.3x10^{-04}$	$1.2x10^{-01}$	$2.5x10^{-01}$	$1.5x10^{-02}$	$2.2x10^{-02}$	$1.8x10^{-04}$	$7.4x10^{-02}$	$2.7x10^{-03}$
Scrap metal recovery	0	0	0	0	$1.5x10^{-04}$	0	0	$4.6x10^{-05}$	0
Secondary iron and steel production	0	0	$1.7x10^{+01}$	$3.4x10^{+01}$	$1.3x10^{-01}$	0	$3.1x10^{-04}$	$8.7x10^{+00}$	0
Sewage Treatment - processing by large plants (> 10000 ML per year)	0	$2.8x10^{-03}$	$8.3x10^{-03}$	$1.5x10^{-02}$	$1.3x10^{-01}$	$1.8x10^{-01}$	0	$1.0x10^{-01}$	$2.2x10^{-02}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	0	$2.3x10^{-05}$	$6.9x10^{-05}$	$1.3x10^{-04}$	$1.0x10^{-03}$	$1.5x10^{-03}$	0	$8.6x10^{-04}$	$1.9x10^{-04}$
Solid waste landfilling	0	0	$9.8x10^{-01}$	0	$1.5x10^{+00}$	$4.9x10^{-01}$	0	$1.7x10^{+01}$	0
Used tyre processing or disposal	0	0	0	0	$7.0x10^{-05}$	0	0	$2.1x10^{-05}$	0
Vessel construction or maintenance using dry or floating docks	0	0	0	0	$8.4x10^{-01}$	0	0	$1.8x10^{+00}$	0
Waste storage, transfer, separating or processing	0	$3.5x10^{-05}$	$1.3x10^{-04}$	$2.4x10^{-04}$	$1.6x10^{-01}$	$2.3x10^{-03}$	$3.4x10^{-08}$	$1.1x10^{-01}$	$2.8x10^{-04}$
Wood or timber milling	0	0	0	0	0	0	0	0	0
Wood preservation	0	0	0	0	$1.3x10^{-02}$	0	0	$3.7x10^{-04}$	0
Grand Total	**0.09**	**5.35**	**58.3**	**39.6**	**27.5**	**6.0**	**5.82**	**101**	**0.67**

Table 4.8: Total Industrial Emissions by NSW Activity Type in the Wollongong Region (tonnes/year)

NSW Activity Type	CO	Pb	NO_x	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	$1.4x10^{+00}$	$9.8x10^{-06}$	$8.2x10^{+00}$	$2.4x10^{+00}$	$2.4x10^{+00}$	$2.4x10^{+00}$	$2.1x10^{+01}$	$7.9x10^{-01}$
Bitumen pre-mix or hotmix production	$2.5x10^{+01}$	$2.7x10^{-04}$	$2.6x10^{+00}$	$4.9x10^{+00}$	$3.5x10^{+00}$	$2.4x10^{+00}$	$3.9x10^{-01}$	$1.6x10^{+00}$
Bulk cargo handling	0	0	0	$1.2x10^{+00}$	$5.5x10^{-01}$	$5.5x10^{-02}$	0	$9.9x10^{-04}$
Cement or lime handling	0	0	0	$1.1x10^{-01}$	$6.0x10^{-02}$	$9.9x10^{-03}$	0	$2.3x10^{-02}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	0	0	0	0	0	0	0	$3.7x10^{-01}$
Coal loading	$5.3x10^{-01}$	$1.1x10^{-02}$	$2.5x10^{+00}$	$3.9x10^{+02}$	$1.8x10^{+02}$	$1.9x10^{+01}$	$1.4x10^{-01}$	$1.6x10^{-01}$
Coal mining	2	$1.1x10^{-03}$	$9.4x10^{+00}$	$1.4x10^{+02}$	$6.5x10^{+01}$	$1.4x10^{+01}$	$5.2x10^{-01}$	$2.6x10^{+01}$
Coal washery reject or slag landfilling	$7.3x10^{-03}$	0	$2.7x10^{-02}$	$1.1x10^{+02}$	$5.7x10^{+01}$	$1.1x10^{+01}$	$8.9x10^{-04}$	$6.9x10^{-04}$
Coke production	$3.6x10^{+00}$	$2.3x10^{-01}$	$1.5x10^{+01}$	$6.7x10^{+01}$	$3.3x10^{+01}$	$3.3x10^{+01}$	$2.7x10^{+02}$	$2.6x10^{-01}$
Concrete batching	0	$3.4x10^{-05}$	0	$2.8x10^{+01}$	$1.2x10^{+01}$	$1.9x10^{+00}$	0	$2.7x10^{-02}$
Crushing, grinding or separating works	0	$1.3x10^{-04}$	0	$8.4x10^{+00}$	$4.9x10^{+00}$	$2.1x10^{+00}$	0	0
Drum or container reconditioning	$2.1x10^{-03}$	$5.3x10^{-07}$	$8.4x10^{-03}$	$4.7x10^{-04}$	$4.6x10^{-04}$	$4.5x10^{-04}$	$3.0x10^{-03}$	$3.1x10^{+00}$
Environmentally sensitive area landfilling	0	$4.5x10^{-05}$	0	$1.3x10^{+01}$	$6.6x10^{+00}$	$1.3x10^{+00}$	0	0
Hazardous, industrial, group A or group B waste processing	$6.0x10^{-02}$	$1.2x10^{-06}$	$7.2x10^{-02}$	$3.4x10^{-01}$	$1.7x10^{-01}$	$3.8x10^{-02}$	$3.8x10^{-04}$	$4.4x10^{-02}$
Inert waste landfilling	0	$1.1x10^{-05}$	0	$9.0x10^{+01}$	$4.5x10^{+01}$	$9.0x10^{+00}$	0	$1.4x10^{-03}$
Metal plating or coating works	$1.2x10^{+03}$	$5.8x10^{-02}$	$5.4x10^{+01}$	$1.2x10^{+01}$	$1.0x10^{+01}$	$9.5x10^{+00}$	$3.0x10^{+01}$	$1.6x10^{+02}$
Other chemical processing	$1.2x10^{+00}$	$6.9x10^{-06}$	$1.4x10^{+00}$	$1.9x10^{+00}$	$9.8x10^{-01}$	$2.8x10^{-01}$	$7.2x10^{-03}$	$7.6x10^{-02}$
Other metal processing	$5.8x10^{-01}$	$3.4x10^{-06}$	$6.9x10^{-01}$	$3.1x10^{-01}$	$2.4x10^{-01}$	$2.1x10^{-01}$	$3.6x10^{-03}$	$1.3x10^{+00}$
Other vessel construction or maintenance	0	0	0	0	0	0	0	$9.3x10^{-04}$
Primary iron and steel production	$5.2x10^{+05}$	$3.8x10^{+00}$	$7.8x10^{+03}$	$1.9x10^{+03}$	$1.6x10^{+03}$	$1.4x10^{+03}$	$1.0x10^{+04}$	$5.8x10^{+02}$
Scrap metal recovery	0	0	0	0	0	0	0	$7.6x10^{-04}$
Sewage Treatment - processing by large plants (> 10000 ML per year)	$6.9x10^{-01}$	$2.6x10^{-06}$	$2.3x10^{+00}$	$9.8x10^{-02}$	$9.6x10^{-02}$	$9.6x10^{-02}$	$2.8x10^{-03}$	$5.3x10^{-01}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$1.5x10^{+00}$	$4.8x10^{-06}$	$1.0x10^{+00}$	$8.8x10^{-02}$	$8.8x10^{-02}$	$8.8x10^{-02}$	$5.5x10^{-03}$	$9.3x10^{-01}$
Solid waste landfilling	$1.3x10^{+02}$	0	$6.2x10^{+00}$	$5.6x10^{+01}$	$2.9x10^{+01}$	$7.0x10^{+00}$	0	$1.7x10^{+01}$
Grand Total	**522,000**	**4.13**	**7,930**	**2,810**	**2,070**	**1,560**	**10,300**	**788**

Table 4.9: Total Industrial Emissions by NSW Activity Type in the Wollongong Region (tonnes/year)

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	0	0	$7.2x10^{-02}$	$1.4x10^{-01}$	0	0	$1.3x10^{-05}$	$3.6x10^{-02}$	0
Bitumen pre-mix or hotmix production	0	$7.8x10^{-05}$	$1.4x10^{-01}$	$2.9x10^{-01}$	$3.6x10^{-03}$	$5.2x10^{-03}$	$1.0x10^{-02}$	$7.5x10^{-02}$	$6.3x10^{-04}$
Bulk cargo handling	0	0	0	0	$8.9x10^{-05}$	0	0	$2.7x10^{-05}$	0
Cement or lime handling	0	0	0	0	$1.4x10^{-03}$	0	0	$5.9x10^{-03}$	0
Chemical Storage - Storage of Petroleum and/or Petroleum Products	0	$8.4x10^{-08}$	$2.6x10^{-07}$	$4.7x10^{-07}$	$1.6x10^{-02}$	$5.6x10^{-06}$	0	$5.0x10^{-03}$	$6.9x10^{-07}$
Coal loading	$3.1x10^{-04}$	$1.2x10^{-02}$	$3.6x10^{-03}$	$2.4x10^{-02}$	$2.0x10^{-03}$	0	0	$3.2x10^{-03}$	0
Coal mining	$1.2x10^{-03}$	$4.6x10^{-02}$	$4.2x10^{-01}$	$9.2x10^{-02}$	$6.2x10^{-01}$	$2.0x10^{-01}$	0	$7.1x10^{+00}$	$6.3x10^{-05}$
Coal washery reject or slag landfilling	$5.4x10^{-05}$	0	$6.1x10^{-05}$	0	0	0	0	0	0
Coke production	0	0	$1.7x10^{-01}$	0	$2.5x10^{-04}$	0	$7.8x10^{+00}$	$3.0x10^{-03}$	0
Concrete batching	0	0	$2.1x10^{-04}$	0	$2.4x10^{-04}$	0	0	$5.4x10^{-04}$	0
Crushing, grinding or separating works	0	0	0	0	0	0	0	0	0
Drum or container reconditioning	0	0	0	$6.8x10^{-05}$	$1.6x10^{-01}$	0	0	$7.9x10^{-01}$	0
Environmentally sensitive area landfilling	0	0	0	0	0	0	0	0	0
Hazardous, industrial, group A or group B waste processing	0	$1.0x10^{-04}$	$6.7x10^{-04}$	$1.3x10^{-03}$	$4.7x10^{-03}$	$6.7x10^{-03}$	$5.0x10^{-07}$	$4.0x10^{-03}$	$8.2x10^{-04}$
Inert waste landfilling	0	$3.8x10^{-06}$	$1.1x10^{-05}$	$2.1x10^{-05}$	$1.7x10^{-04}$	$2.5x10^{-04}$	0	$1.4x10^{-04}$	$3.0x10^{-05}$
Metal plating or coating works	0	$1.9x10^{-04}$	$6.2x10^{+00}$	$1.1x10^{+01}$	$1.0x10^{+01}$	$4.3x10^{-01}$	$5.6x10^{-01}$	$1.8x10^{+01}$	$4.1x10^{-01}$
Other chemical processing	0	0	$6.9x10^{-03}$	$1.4x10^{-02}$	$5.4x10^{-05}$	0	$9.4x10^{-06}$	$3.5x10^{-03}$	0
Other metal processing	0	$8.2x10^{-06}$	$3.5x10^{-03}$	$6.9x10^{-03}$	$1.7x10^{-02}$	$5.4x10^{-04}$	$4.7x10^{-06}$	$2.6x10^{-01}$	$6.6x10^{-05}$
Other vessel construction or maintenance	0	0	0	0	$8.3x10^{-05}$	0	0	$2.6x10^{-05}$	0
Primary iron and steel production	0	$2.0x10^{-02}$	$2.2x10^{+02}$	$4.0x10^{+01}$	$5.9x10^{+00}$	$5.3x10^{-01}$	$3.1x10^{+01}$	$4.4x10^{+01}$	$6.2x10^{-02}$
Scrap metal recovery	0	0	0	0	$6.9x10^{-05}$	0	0	$2.1x10^{-05}$	0
Sewage Treatment - processing by large plants (> 10000 ML per year)	0	$1.2x10^{-03}$	$6.3x10^{-03}$	$1.2x10^{-02}$	$5.5x10^{-02}$	$8.0x10^{-02}$	$3.6x10^{-06}$	$4.7x10^{-02}$	$9.7x10^{-03}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	0	$2.0x10^{-03}$	$1.1x10^{-02}$	$4.7x10^{-02}$	$9.1x10^{-02}$	$1.3x10^{-01}$	$3.1x10^{-05}$	$7.8x10^{-02}$	$1.6x10^{-02}$
Solid waste landfilling	0	0	$8.1x10^{-02}$	$2.9x10^{+00}$	$1.2x10^{-01}$	$4.0x10^{-02}$	$2.7x10^{-03}$	$1.4x10^{+00}$	0
Grand Total	**0.002**	**0.08**	**232**	**53.8**	**17.1**	**1.43**	**39**	**71.4**	**0.50**

4.2 Industrial Emissions by ANZSIC Class

Total industrial emissions by each ANZSIC (Australia and New Zealand Standard Industrial Classification) class are presented in this section.

- Table 4.10 and Table 4.11 present industrial emissions by ANZSIC class for the entire GMR.
- Table 4.12 and Table 4.13 present industrial emissions by ANZSIC class for the Sydney region
- Table 4.14 and Table 4.15 present industrial emissions by ANZSIC class for the Newcastle region
- Table 4.16 and Table 4.17 present industrial emissions by ANZSIC class for the Wollongong region

In this section emissions are presented for the following pollutants only:

- 1,3 butadiene (1,3-BUT)
- Acetaldehyde (ACET)
- Benzene (BENZ)
- Carbon monoxide (CO)
- Formaldehyde (HCHO)
- Isomers of xylene (XYLE)
- Lead & compounds (Pb)
- Oxides of nitrogen (NO_x)
- Particulate matter < 10 µm (PM_{10})
- Particulate matter < 2.5 µm ($PM_{2.5}$)
- Perchloroethylene (PERC)
- Polycyclic aromatic hydrocarbons (PAHs)
- Sulfur dioxide (SO_2)
- Toluene (TOLU)
- Total suspended particulates (TSP)
- Total VOCS (VOCs)
- Trichloroethylene (TCE)

Table 4.10: Total Industrial Emissions by ANZSIC Class in the GMR (tonnes/year)

ANZSIC CLASS	CO	Pb	NO_x	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCS
Aluminium Smelting	$5.7x10^{+04}$	$1.1x10^{-01}$	$4.1x10^{+02}$	$8.2x10^{+02}$	$4.6x10^{+02}$	$3.3x10^{+02}$	$1.3x10^{+04}$	$1.4x10^{+02}$
Basic Iron & Steel Manufacturing	$5.2x10^{+05}$	$4.0x10^{+00}$	$7.9x10^{+03}$	$1.9x10^{+03}$	$1.7x10^{+03}$	$1.5x10^{+03}$	$1.0x10^{+04}$	$8.7x10^{+02}$
Basic Non-Ferrous Metal Manufacturing n.e.c. [a]	$1.6x10^{+02}$	$7.2x10^{-01}$	$4.0x10^{+01}$	$9.1x10^{+01}$	$5.8x10^{+01}$	$4.4x10^{+01}$	89	$2.5x10^{+00}$
Battery Manufacturing	0	$9.5x10^{-01}$	0	$4.1x10^{+00}$	$4.1x10^{+00}$	$4.1x10^{+00}$	0	$0.0x10^{+00}$
Beer & Malt Manufacturing	$1.5x10^{+01}$	$8.9x10^{-05}$	$3.0x1^{0+01}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$9.4x10^{-02}$	$2.6x10^{+01}$
Black Coal Mining	$2.3x10^{+03}$	$1.4x10^{+00}$	$1.4x10^{+03}$	$5.6x10^{+04}$	$2.5x10^{+04}$	$4.2x10^{+03}$	$7.9x10^{+01}$	$1.3x10^{+02}$
Boat building	$0.0x10^{+00}$	$1.5x10^{-04}$	$5.8x10^{-01}$	$2.5x10^{+01}$	$2.1x10^{+01}$	$2.0x10^{+01}$	0	$9.4x10^{+01}$
Bread Manufacturing	$1.7x10^{+00}$	$1.0x10^{-05}$	$2.0x10^{+00}$	$2.6x10^{-01}$	$2.6x10^{-01}$	$2.6x10^{-01}$	$1.0x10^{-02}$	$2.0x10^{-01}$
Cake and Pastry Manufacturing	$1.3x10^{+00}$	$7.5x10^{-06}$	$1.5x10^{+00}$	$1.1x10^{-01}$	$1.1x10^{-01}$	$1.1x10^{-01}$	$7.9x10^{-03}$	$8.3x10^{-02}$
Cement & Lime Manufacturing	$3.3x10^{+03}$	$5.0x10^{-01}$	$6.1x10^{+03}$	$8.2x10^{+02}$	$4.8x10^{+02}$	$2.4x10^{+02}$	$2.1x10^{+02}$	$2.1x10^{+02}$
Ceramic Product Manufacturing	$8.1x10^{+02}$	$2.0x10^{-04}$	$2.4x10^{+02}$	$2.1x10^{+03}$	$1.1x10^{+03}$	$8.0x10^{+02}$	$6.9x10^{+02}$	$1.2x10^{+02}$
Chemical Product Manufacturing n.e.c.	$7.4x10^{+01}$	$5.2x10^{-04}$	$1.3x10^{+02}$	$4.1x10^{+01}$	$4.0x10^{+01}$	$3.9x10^{+01}$	$5.3x10^{+01}$	$6.7x10^{+02}$
Chemical Wholesaling	$4.3x10^{+00}$	$2.5x10^{-05}$	$6.3x10^{+00}$	$8.1x10^{-01}$	$6.0x10^{-01}$	$5.1x10^{-01}$	$2.7x10^{-02}$	$4.9x10^{+02}$
Concrete Slurry Manufacturing	$5.2x10^{+00}$	$3.3x10^{-03}$	$7.5x10^{+00}$	$2.6x10^{+03}$	$6.1x10^{+02}$	$1.3x10^{+02}$	$3.2x10^{-02}$	$1.5x10^{+02}$
Confectionery Manufacturing	$1.7x10^{-01}$	$3.5x10^{-06}$	$1.2x10^{+00}$	$5.3x10^{-02}$	$5.3x10^{-02}$	$5.3x10^{-02}$	$3.7x10^{-03}$	$7.9x10^{-01}$
Construction Material Mining n.e.c.	$6.5x10^{+02}$	$2.8x10^{-02}$	$2.4x10^{+02}$	$7.9x10^{+03}$	$2.5x10^{+03}$	$9.2x10^{+02}$	$2.6x10^{+02}$	$6.7x10^{+01}$
Copper, Silver, Lead & Zinc Smelting, Refining	$2.0x10^{+01}$	$1.4x10^{-04}$	$4.7x10^{+01}$	$1.9x10^{+01}$	$1.5x10^{+01}$	$1.2x10^{+01}$	$8.5x10^{+00}$	$1.5x10^{+00}$
Electricity Supply	$9.5x10^{+03}$	$1.0x10^{+00}$	$1.5x10^{+05}$	$1.1x10^{+04}$	$4.9x10^{+03}$	$1.8x10^{+03}$	$2.6x10^{+05}$	$1.3x10^{+03}$
Explosive Manufacturing	$1.2x10^{-03}$	$3.0x10^{-07}$	$1.8x10^{-01}$	$2.7x10^{-04}$	$2.6x10^{-04}$	$2.6x10^{-04}$	$1.7x10^{-03}$	$6.6x10^{-01}$
Fabricated Metal Product Manufacturing n.e.c.	$1.5x10^{+02}$	$5.9x10^{-03}$	$1.5x10^{+02}$	$5.0x10^{+01}$	$4.8x10^{+01}$	$4.8x10^{+01}$	$4.0x10^{+00}$	$1.2x10^{+03}$
Fertiliser Manufacturing	$3.1x10^{+02}$	$1.2x10^{-03}$	$1.1x10^{+03}$	$3.3x10^{+02}$	$2.9x10^{+02}$	$3.1x10^{+02}$	$2.2x10^{+01}$	$2.7x10^{+02}$
Glass and Glass Product Manufacturing	$2.9x10^{+01}$	$2.3x10^{+00}$	$2.4x10^{+03}$	$2.2x10^{+02}$	$2.0x10^{+02}$	$2.0x10^{+02}$	$8.2x10^{+02}$	$5.1x10^{+01}$
Gravel & Sand Quarrying	$3.9x10^{-01}$	$5.2x10^{-03}$	0	$8.8x10^{+03}$	$1.7x10^{+03}$	$4.3x10^{+02}$	0	$1.7x10^{+02}$
Laundries & Dry-Cleaners	$1.2x10^{+00}$	$7.8x10^{-06}$	$1.6x10^{+00}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$8.2x10^{-03}$	$5.7x10^{-01}$
Log Sawmilling	$3.1x10^{+01}$	$3.2x10^{-02}$	$4.5x10^{+01}$	$4.8x10^{+01}$	$1.9x10^{+01}$	$7.5x10^{+00}$	$4.2x10^{+01}$	$9.0x10^{+01}$
Meat Processing	$2.5x10^{+01}$	$2.0x10^{-03}$	$8.4x10^{+01}$	$1.4x10^{+01}$	$6.6x10^{+00}$	$3.6x10^{+00}$	$8.5x10^{+01}$	$4.1x10^{+01}$
Medicinal & Pharmaceutical Product Manufacturing	$5.8x10^{+00}$	$3.4x10^{-05}$	$8.0x10^{+00}$	$5.9x10^{-01}$	$5.8x10^{-01}$	$5.7x10^{-01}$	$6.2x10^{-02}$	$5.1x10^{+01}$
Metal Coating & Finishing	$1.2x10^{+03}$	$5.8x10^{-02}$	$7.3x10^{+01}$	$4.4x10^{+01}$	$4.3x10^{+01}$	$4.1x10^{+01}$	$3.0x10^{+01}$	$2.5x10^{+03}$

ANZSIC CLASS	CO	Pb	NO_x	TSP	PM_{10}	$PM_{2.5}$	SO_2	VOCS
Metal Container Manufacturing	$6.8x10^{-01}$	$2.3x10^{-02}$	$3.2x10^{+00}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$2.1x10^{-02}$	$6.7x10^{+01}$
Milk & Cream Processing	$1.0x10^{+01}$	$6.0x10^{-05}$	$1.3x10^{+01}$	$9.4x10^{-01}$	$9.4x10^{-01}$	$9.4x10^{-01}$	$6.3x10^{-02}$	$6.6x10^{+00}$
Mining n.e.c.	$2.4x10^{+02}$	$6.7x10^{-03}$	$7.9x10^{+01}$	$1.1x10^{+04}$	$3.8x10^{+03}$	$8.8x10^{+02}$	$2.0x10^{+02}$	$6.8x10^{+01}$
Oil & Fat Manufacturing	$5.3x10^{+00}$	$3.2x10^{-05}$	$1.1x10^{+01}$	$4.8x10^{-01}$	$4.8x10^{-01}$	$4.8x10^{-01}$	$3.3x10^{-02}$	$3.5x10^{-01}$
Paint Manufacturing	$2.5x10^{+00}$	$7.5x10^{-05}$	$3.1x10^{+00}$	$1.1x10^{+01}$	$1.0x10^{+01}$	$1.0x10^{+01}$	$2.9x10^{-02}$	$9.4x10^{+01}$
Pesticide Manufacturing	$1.4x10^{-01}$	$8.5x10^{-07}$	$1.7x10^{-01}$	$1.3x10^{-02}$	$1.3x10^{-02}$	$1.3x10^{-02}$	$8.9x10^{-04}$	$6.5x10^{+00}$
Petroleum and Coal Product Manufacturing n.e.c.	$4.6x10^{+02}$	$6.8x10^{-01}$	$1.3x10^{+03}$	$4.9x10^{+02}$	$3.1x10^{+02}$	$2.6x10^{+02}$	$9.2x10^{+02}$	$4.9x10^{+02}$
Petroleum Product Wholesaling	$1.6x10^{+03}$	$8.8x10^{-03}$	$8.6x10^{+02}$	$9.9x10^{+01}$	$6.8x10^{+01}$	$6.8x10^{+01}$	$1.4x10^{+03}$	$4.5x10^{+02}$
Petroleum Refining	$5.5x10^{+02}$	$5.8x10^{-02}$	$2.8x10^{+03}$	$4.4x10^{+02}$	$2.7x10^{+02}$	$2.4x10^{+02}$	$7.0x10^{+03}$	$3.2x10^{+03}$
Poultry Farming(Meat)	$4.7x10^{+00}$	$2.7x10^{-05}$	$6.5x10^{+00}$	$9.0x10^{+02}$	$4.4x10^{+02}$	$1.2x10^{+02}$	$2.9x10^{-02}$	$1.7x10^{+01}$
Poultry Processing	$6.4x10^{+00}$	$3.7x10^{-05}$	$8.1x10^{+00}$	$5.9x10^{-01}$	$5.9x10^{-01}$	$5.9x10^{-01}$	$3.9x10^{-02}$	$5.0x10^{+00}$
Printing	$1.1x10^{+01}$	$6.4x10^{-05}$	$2.2x10^{+01}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$8.3x10^{-02}$	$2.5x10^{+03}$
Pulp, Paper & Paperboard Manufacturing	$4.7x10^{+01}$	$2.2x10^{-02}$	$1.2x10^{+02}$	$7.3x10^{+00}$	$1.5x10^{+00}$	$1.5x10^{+00}$	$1.2x10^{+01}$	$2.8x10^{+01}$
Rail Transport	0	0	0	$4.7x10^{+00}$	$4.7x10^{+00}$	$4.7x10^{+00}$	0	$1.6x10^{+01}$
Road & Bridge Construction	0	$1.8x10^{-03}$	0	$2.0x10^{+02}$	$8.7x10^{+01}$	$1.4x10^{+01}$	0	$2.9x10^{-03}$
Services to Agriculture n.e.c.	$2.9x10^{+01}$	$1.7x10^{-04}$	$3.4x10^{+01}$	$1.4x10^{+02}$	$7.1x10^{+01}$	$2.4x10^{+01}$	$2.6x10^{-01}$	$1.1x10^{+01}$
Services to Air Transport	$2.2x10^{+00}$	$1.3x10^{-05}$	$2.7x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$1.4x10^{-02}$	$1.0x10^{+02}$
Services to Transport n.e.c.	$8.7x10^{-01}$	$2.0x10^{-02}$	$4.1x10^{+00}$	$6.9x10^{+02}$	$3.1x10^{+02}$	$3.4x10^{+01}$	$2.4x10^{-01}$	$4.3x10^{+00}$
Services to Water Transport n.e.c.	0	0	0	0	0	0	0	$3.5x10^{+00}$
Sewerage and Drainage Services	$3.2x10^{+02}$	$5.9x10^{-03}$	$6.5x10^{+02}$	$2.1x10^{+02}$	$7.3x10^{+01}$	$1.9x10^{+01}$	$1.5x10^{+00}$	$1.2x10^{+02}$
Shipbuilding	0	0	0	$4.5x10^{+00}$	$3.9x10^{+00}$	$3.6x10^{+00}$	0	$2.9x10^{+01}$
Soap & Other Detergent Manufacturing	$4.6x10^{+00}$	$2.7x10^{-05}$	$4.8x10^{+00}$	$4.2x10^{-01}$	$4.2x10^{-01}$	$4.2x10^{-01}$	$2.5x10^{+00}$	$8.3x10^{+01}$
Soft Drink, Cordial and Syrup Manufacturing	$9.7x10^{-01}$	$5.8x10^{-06}$	$1.2x10^{+00}$	$8.8x10^{-02}$	$8.8x10^{-02}$	$8.8x10^{-02}$	$6.0x10^{-03}$	$2.1x10^{+00}$
Synthetic Resin Manufacturing	$3.6x10^{+00}$	$3.7x10^{-03}$	$1.3x10^{+01}$	$2.2x10^{+02}$	$1.9x10^{+02}$	$1.9x10^{+02}$	$2.1x10^{-02}$	$5.5x10^{+02}$
Waste Disposal Services	$7.5x10^{+02}$	$3.1x10^{-02}$	$8.6x10^{+01}$	$3.0x10^{+03}$	$1.4x10^{+03}$	$2.9x10^{+02}$	$1.7x10^{+01}$	$1.3x10^{+03}$
Water Transport Terminals	0	$2.8x10^{-06}$	0	$1.9x10^{+02}$	$9.0x10^{+01}$	$1.4x10^{+01}$	0	$1.2x10^{+00}$
Wood Product Manufacturing n.e.c.	0	0	0	0	0	0	0	$4.2x10^{-02}$
Grand Total	**603,000**	**12**	**175,500**	**111,000**	**46,500**	**13,100**	**296,000**	**17,700**

[a] n.e.c. = not elsewhere classified

Table 4.11: Total Industrial Emissions by ANZSIC Class in the GMR (tonnes/year)

ANZSIC CLASS	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Aluminium Smelting	0	0	$1.0x10^{+01}$	$2.0x10^{+01}$	$1.4x10^{-01}$	0	$1.2x10^{+01}$	$6.4x10^{+00}$	0
Basic Iron & Steel Manufacturing	0	$2.0x10^{-02}$	$2.4x10^{+02}$	$7.3x10^{+01}$	$9.1x10^{+00}$	$5.3x10^{-01}$	$3.2x10^{+01}$	$1.2x10^{+02}$	$6.2x10^{-02}$
Basic Non-Ferrous Metal Manufacturing n.e.c.	0	$8.6x10^{-07}$	$7.9x10^{-01}$	$4.6x10^{-01}$	$4.2x10^{-02}$	$5.7x10^{-05}$	$2.1x10^{-05}$	$2.1x10^{-01}$	$7.0x10^{-06}$
Battery Manufacturing	0	0	0	0	0	0	0	0	0
Beer & Malt Manufacturing	0	0	$8.9x10^{-02}$	$1.8x10^{-01}$	0	0	$1.2x10^{-04}$	$4.5x10^{-02}$	0
Black Coal Mining	$6.3x10^{00}$	$1.3x10^{+00}$	$7.8x10^{+00}$	$2.5x10^{+00}$	$2.4x10^{+00}$	$4.0x10^{-01}$	$3.8x10^{-02}$	$8.9x10^{+00}$	$2.5x10^{-02}$
Boat building	$4.2x10^{-02}$	$1.3x10^{-07}$	$9.7x10^{-03}$	$7.0x10^{-07}$	$7.1x10^{+00}$	$8.4x10^{-06}$	0	$3.4x10^{+01}$	$1.0x10^{-06}$
Bread Manufacturing	0	$5.8x10^{-05}$	$1.1x10^{-02}$	$2.0x10^{-02}$	$3.1x10^{-03}$	$3.8x10^{-03}$	$1.4x10^{-05}$	$8.4x10^{-03}$	$4.7x10^{-04}$
Cake and Pastry Manufacturing	0	$1.0x10^{-06}$	$7.5x10^{-03}$	$1.5x10^{-02}$	$4.7x10^{-05}$	$6.9x10^{-05}$	$1.0x10^{-05}$	$3.8x10^{-03}$	$8.4x10^{-06}$
Cement & Lime Manufacturing	0	$1.9x10^{-04}$	$1.5x10^{-02}$	$2.7x10^{-02}$	$5.1x10^{+01}$	$1.2x10^{-02}$	$1.5x10^{+00}$	$4.7x10^{+01}$	$1.5x10^{-03}$
Ceramic Product Manufacturing	0	$6.4x10^{-07}$	$3.2x10^{+00}$	$6.4x10^{+00}$	$8.5x10^{+00}$	$4.2x10^{-05}$	$3.3x10^{-06}$	$2.4x10^{+00}$	$5.2x10^{-06}$
Chemical Product Manufacturing n.e.c.	$1.3x10^{-02}$	$5.3x10^{-01}$	$2.0x10^{+01}$	$3.7x10^{+00}$	$1.5x10^{+01}$	$1.2x10^{-01}$	$1.0x10^{-01}$	$1.6x10^{+02}$	$1.1x10^{+01}$
Chemical Wholesaling	0	$1.4x10^{-01}$	$4.3x10^{+00}$	$5.4x10^{-02}$	$4.4x10^{+00}$	$2.3x10^{+00}$	$1.2x10^{-01}$	$1.1x10^{+01}$	$2.5x10^{+00}$
Concrete Slurry Manufacturing	0	$4.6x10^{-05}$	$3.5x10^{-02}$	$6.7x10^{-02}$	$2.2x10^{+01}$	$3.0x10^{-03}$	$4.6x10^{-05}$	$2.1x10^{+01}$	$3.7x10^{-04}$
Confectionery Manufacturing	0	0	$3.5x10^{-03}$	$7.0x10^{-03}$	$1.5x10^{-01}$	0	$4.8x10^{-06}$	$1.4x10^{-01}$	0
Construction Material Mining n.e.c.	$6.4x10^{-02}$	$2.3x10^{-08}$	$2.2x10^{+00}$	$3.8x10^{+00}$	$1.3x10^{+00}$	$3.6x10^{-01}$	$2.0x10^{-02}$	$1.4x10^{+01}$	0
Copper, Silver, Lead & Zinc Smelting, Refining	0	$3.3x10^{-04}$	$1.2x10^{-01}$	$2.5x10^{-01}$	$1.5x10^{-02}$	$2.2x10^{-02}$	$1.8x10^{-04}$	$7.4x10^{-02}$	$2.7x10^{-03}$
Electricity Supply	$9.0x10^{-04}$	$5.9x10^{-01}$	$2.3x10^{+00}$	$1.1x10^{+02}$	$2.5x10^{+02}$	$1.8x10^{+00}$	$3.8x10^{-01}$	$3.4x10^{+01}$	$2.1x10^{-01}$
Explosive Manufacturing	0	$1.8x10^{-06}$	$5.5x10^{-06}$	$4.9x10^{-05}$	$4.7x10^{-02}$	$1.2x10^{-04}$	0	$2.3x10^{-01}$	$1.5x10^{-05}$
Fabricated Metal Product Manufacturing n.e.c.	0	$8.8x10^{-04}$	$8.7x10^{-01}$	$1.1x10^{+00}$	$1.5x10^{+02}$	$5.8x10^{-02}$	$2.1x10^{-03}$	$2.6x10^{+02}$	$2.3x10^{+01}$
Fertiliser Manufacturing	0	$5.0x10^{+00}$	$2.4x10^{+01}$	$2.6x10^{+00}$	$1.3x10^{+00}$	0	$1.6x10^{-03}$	$5.6x10^{+00}$	0
Glass and Glass Product Manufacturing	0	0	$1.8x10^{+00}$	$1.0x10^{+00}$	$8.9x10^{-04}$	0	$7.5x10^{-06}$	$4.9x10^{-01}$	0
Gravel & Sand Quarrying	0	0	$7.1x10^{-02}$	0	$5.5x10^{+00}$	$3.5x10^{-02}$	0	$1.3x10^{+01}$	0
Laundries & Dry-Cleaners	0	0	$7.8x10^{-03}$	$1.6x10^{-02}$	$0.0x10^{+00}$	$4.8x10^{-01}$	$1.1x10^{-05}$	$3.9x10^{-03}$	0
Log Sawmilling	0	$2.0x10^{-04}$	$1.2x10^{-02}$	$3.2x10^{-02}$	$1.6x10^{+01}$	$1.3x10^{-02}$	$7.9x10^{-05}$	$1.3x10^{+01}$	$1.6x10^{-03}$
Meat Processing	0	$9.2x10^{-02}$	$4.2x10^{-01}$	$7.5x10^{-01}$	$4.6x10^{+00}$	$6.1x10^{+00}$	$2.9x10^{-04}$	$3.6x10^{+00}$	$7.4x10^{-01}$
Medicinal & Pharmaceutical Product Manufacturing	$1.3x10^{-03}$	$1.5x10^{-03}$	$4.5x10^{-02}$	$8.6x10^{-02}$	$5.8x10^{-01}$	$9.7x10^{-02}$	$5.4x10^{-05}$	$5.9x10^{-01}$	$1.2x10^{-02}$
Metal Coating & Finishing	$2.1x10^{-04}$	$3.0x10^{-04}$	$6.3x10^{+00}$	$1.1x10^{+01}$	$7.3x10^{+01}$	$4.4x10^{-01}$	$5.6x10^{-01}$	$3.7x10^{+02}$	$3.0x10^{+00}$

ANZSIC CLASS	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Metal Container Manufacturing	0	$4.7x10^{-06}$	$8.7x10^{-03}$	$1.8x10^{-02}$	$7.0x10^{+00}$	$3.1x10^{-04}$	$1.0x10^{-05}$	$2.2x10^{+01}$	$3.8x10^{-05}$
Milk & Cream Processing	0	$1.3x10^{-02}$	$9.9x10^{-02}$	$1.9x10^{-01}$	$7.6x10^{-01}$	$8.6x10^{-01}$	$8.2x10^{-05}$	$6.7x10^{-01}$	$1.0x10^{-01}$
Mining n.e.c.	$2.3x10^{-01}$	$1.1x10^{-05}$	$1.1x10^{+00}$	$1.7x10^{+00}$	$1.8x10^{+00}$	$7.4x10^{-04}$	$1.5x10^{-03}$	$4.4x10^{+00}$	$9.0x10^{-05}$
Oil & Fat Manufacturing	0	0	$3.2x10^{-02}$	$6.3x10^{-02}$	$0.0x10^{+00}$	0	$4.4x10^{-05}$	$1.6x10^{-02}$	0
Paint Manufacturing	$4.2x10^{-06}$	$2.6x10^{-02}$	$1.3x10^{-01}$	$7.3x10^{-02}$	$8.6x10^{-01}$	$8.2x10^{-02}$	$2.6x10^{-05}$	$2.4x10^{+01}$	$8.7x10^{-03}$
Pesticide Manufacturing	0	$2.3x10^{-07}$	$9.6x10^{-04}$	$1.7x10^{-03}$	$2.8x10^{-02}$	$1.5x10^{-05}$	$1.2x10^{-06}$	$4.6x10^{-04}$	$1.8x10^{-06}$
Petroleum and Coal Product Manufacturing n.e.c.	$4.0x10^{-03}$	$1.7x10^{-04}$	$6.0x10^{+00}$	$4.9x10^{+01}$	$1.9x10^{+00}$	$1.1x10^{-02}$	$7.9x10^{+00}$	$4.4x10^{+00}$	$1.4x10^{-03}$
Petroleum Product Wholesaling	0	$1.6x10^{-04}$	$3.8x10^{+00}$	$1.3x10^{+00}$	$2.5x10^{+00}$	$1.0x10^{-02}$	$7.0x10^{-03}$	$8.2x10^{+00}$	$1.3x10^{-03}$
Petroleum Refining	0	$1.1x10^{-01}$	$2.6x10^{+01}$	$2.0x10^{+02}$	$2.4x10^{+01}$	$7.3x10^{+00}$	$1.4x10^{-01}$	$3.5x10^{+01}$	$9.0x10^{-01}$
Poultry Farming(Meat)	0	$4.3x10^{-02}$	$1.6x10^{-01}$	$3.0x10^{-01}$	$1.9x10^{+00}$	$2.8x10^{+00}$	$3.8x10^{-05}$	$1.6x10^{+00}$	$3.4x10^{-01}$
Poultry Processing	0	$1.0x10^{-02}$	$6.8x10^{-02}$	$1.3x10^{-01}$	$4.7x10^{-01}$	$6.7x10^{-01}$	$5.1x10^{-05}$	$4.3x10^{-01}$	$8.2x10^{-02}$
Printing	$1.1x10^{-03}$	$6.1x10^{-04}$	$6.2x10^{-02}$	$1.3x10^{-01}$	$2.0x10^{+01}$	$5.0x10^{+00}$	$4.9x10^{-04}$	$3.0x10^{+01}$	$1.3x10^{-03}$
Pulp, Paper & Paperboard Manufacturing	0	$4.3x10^{-03}$	$2.3x10^{-02}$	$4.3x10^{-02}$	$2.2x10^{-01}$	$2.9x10^{-01}$	$5.6x10^{-04}$	$2.9x10^{-01}$	$3.5x10^{-02}$
Rail Transport	0	$1.0x10^{-03}$	$3.1x10^{-03}$	$5.6x10^{-03}$	$2.6x10^{-01}$	$6.7x10^{-02}$	0	$3.4x10^{+00}$	$8.2x10^{-03}$
Road & Bridge Construction	0	$7.8x10^{-07}$	$2.3x10^{-06}$	$4.3x10^{-06}$	$2.7x10^{-04}$	$5.2x10^{-05}$	0	$1.0x10^{-04}$	$6.3x10^{-06}$
Services to Agriculture n.e.c.	0	$1.7x10^{-03}$	$1.4x10^{-01}$	$2.9x10^{-01}$	$4.1x10^{-01}$	$5.4x10^{-02}$	$2.4x10^{-04}$	$1.6x10^{+00}$	$6.6x10^{-03}$
Services to Air Transport	0	0	$1.3x10^{-02}$	$2.7x10^{-02}$	$1.3x10^{+01}$	0	$1.8x10^{-05}$	$1.0x10^{+01}$	0
Services to Transport n.e.c.	$9.3x10^{-03}$	$1.5x10^{-02}$	$2.6x10^{-02}$	$3.8x10^{-02}$	$1.9x10^{-01}$	$1.6x10^{-01}$	$5.9x10^{-05}$	$7.3x10^{-01}$	$2.0x10^{-02}$
Services to Water Transport n.e.c.	0	$5.8x10^{-07}$	$1.2x10^{-02}$	$3.2x10^{-06}$	$1.4x10^{-01}$	$3.8x10^{-05}$	0	$7.0x10^{-01}$	$4.7x10^{-06}$
Sewerage and Drainage Services	$1.6x10^{-02}$	$3.1x10^{-01}$	$4.3x10^{-01}$	$1.2x10^{+01}$	$3.2x10^{+00}$	$4.6x10^{+00}$	$1.4x10^{-02}$	$2.7x10^{+00}$	$3.3x10^{+01}$
Shipbuilding	$1.8x10^{-02}$	0	$4.7x10^{-03}$	0	$1.0x10^{+00}$	0	0	$2.7x10^{+00}$	0
Soap & Other Detergent Manufacturing	$1.7x10^{-04}$	$1.5x10^{+00}$	$7.0x10^{+00}$	$8.5x10^{-02}$	$4.4x10^{-01}$	$6.9x10^{-02}$	$3.9x10^{-05}$	$1.6x10^{+00}$	$8.4x10^{-03}$
Soft Drink, Cordial and Syrup Manufacturing	0	$5.3x10^{-03}$	$2.2x10^{-02}$	$4.1x10^{-02}$	$2.4x10^{-01}$	$3.5x10^{-01}$	$8.0x10^{-06}$	$2.0x10^{-01}$	$4.2x10^{-02}$
Synthetic Resin Manufacturing	0	$2.4x10^{+00}$	$1.1x10^{+01}$	$5.3x10^{+00}$	$1.4x10^{+01}$	0	$2.6x10^{-05}$	$1.2x10^{+01}$	$2.7x10^{+01}$
Waste Disposal Services	$2.7x10^{-02}$	$2.6x10^{-02}$	$1.3x10^{+01}$	$3.4x10^{+00}$	$8.1x10^{+01}$	$7.4x10^{+00}$	$2.6x10^{-01}$	$2.6x10^{+02}$	$3.2x10^{-01}$
Water Transport Terminals	0	$2.8x10^{-08}$	$8.4x10^{-08}$	$1.6x10^{-07}$	$4.6x10^{-02}$	$1.9x10^{-06}$	0	$1.6x10^{-01}$	$2.3x10^{-07}$
Wood Product Manufacturing n.e.c.	0	0	0	0	$1.3x10^{-02}$	0	0	$3.7x10^{-04}$	0
Grand Total	**6.73**	**12.1**	**395**	**517**	**795**	**42.5**	**55.5**	**1550**	**102**

Table 4.12: Total Industrial Emissions by ANZSIC Class in the Sydney Region (tonnes/year)

ANZSIC CLASS	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCS
Aluminium Smelting	$4.7x10^{+01}$	$2.2x10^{-03}$	$5.8x10^{+01}$	$2.6x10^{+01}$	$1.9x10^{+01}$	$8.8x10^{+00}$	$2.8x10^{+01}$	$1.3x10^{-02}$
Basic Iron and Steel Manufacturing	$2.1x10^{-01}$	$3.6x10^{-02}$	$9.9x10^{-01}$	$1.1x10^{+01}$	$9.1x10^{+00}$	$8.8x10^{+00}$	$1.3x10^{+00}$	$1.0x10^{-02}$
Basic Non-Ferrous Metal Manufacturing n.e.c.	$1.6x10^{-02}$	$7.2x10^{-01}$	$3.8x10^{+01}$	$9.1x10^{+01}$	$5.8x10^{+01}$	$4.4x10^{+01}$	$8.9x10^{+01}$	$2.5x10^{+00}$
Battery Manufacturing	0	$9.5x10^{-01}$	0	$4.1x10^{+00}$	$4.1x10^{+00}$	$4.1x10^{+00}$	0	0
Beer and Malt Manufacturing	$1.5x10^{+01}$	$8.9x10^{-05}$	$3.0x10^{+01}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$9.4x10^{-02}$	$2.6x10^{+01}$
Black Coal Mining	$7.4x10^{+00}$	$7.7x10^{-03}$	$3.1x10^{+01}$	$2.4x10^{-02}$	$1.1x10^{-02}$	$1.4x10^{+01}$	$1.7x10^{+00}$	$2.0x10^{+00}$
Boatbuilding	0	$2.3x10^{-05}$	0	$3.9x10^{+00}$	$3.4x10^{+00}$	$3.1x10^{+00}$	0	$8.7x10^{+01}$
Bread Manufacturing	$1.7x10^{+00}$	$1.0x10^{-05}$	$2.0x10^{+00}$	$2.6x10^{-01}$	$2.6x10^{-01}$	$2.6x10^{-01}$	$1.0x10^{-02}$	$2.0x10^{-01}$
Cake and Pastry Manufacturing	$1.3x10^{+00}$	$7.5x10^{-06}$	$1.5x10^{+00}$	$1.1x10^{-01}$	$1.1x10^{-01}$	$1.1x10^{-01}$	$7.9x10^{-03}$	$8.3x10^{-02}$
Cement and Lime Manufacturing	$8.3x10^{+01}$	$7.1x10^{-02}$	$1.3x10^{+03}$	$1.5x10^{-02}$	$1.2x10^{-02}$	$7.2x10^{+01}$	$1.3x10^{+01}$	$1.3x10^{-02}$
Ceramic Product Manufacturing	$6.1x10^{-02}$	$1.0x10^{-04}$	$1.6x10^{-02}$	$1.6x10^{+03}$	$8.4x10^{-02}$	$6.1x10^{-02}$	$5.2x10^{-02}$	$1.1x10^{-02}$
Chemical Product Manufacturing n.e.c.	$4.6x10^{+01}$	$2.0x10^{-04}$	$4.4x10^{+01}$	$3.9x10^{+00}$	$3.8x10^{+00}$	$3.8x10^{+00}$	$2.6x10^{-01}$	$6.3x10^{-02}$
Chemical Wholesaling	$4.3x10^{+00}$	$2.5x10^{-05}$	$6.3x10^{+00}$	$3.9x10^{-01}$	$3.9x10^{-01}$	$3.9x10^{-01}$	$2.7x10^{-02}$	$1.9x10^{-02}$
Concrete Slurry Manufacturing	$3.6x10^{+00}$	$2.9x10^{-03}$	$4.4x10^{+00}$	$2.3x10^{+03}$	$4.9x10^{-02}$	$1.1x10^{-02}$	$2.2x10^{-02}$	$1.5x10^{-02}$
Confectionery Manufacturing	$1.7x10^{-01}$	$3.5x10^{-06}$	$1.2x10^{+00}$	$5.3x10^{-02}$	$5.3x10^{-02}$	$5.3x10^{-02}$	$3.7x10^{-03}$	$7.9x10^{-01}$
Construction Material Mining n.e.c.	$6.5x10^{-02}$	$2.7x10^{-02}$	$2.4x10^{-02}$	$6.0x10^{+03}$	$2.1x10^{+03}$	$8.1x10^{-02}$	$2.6x10^{-02}$	$6.4x10^{+01}$
Copper, Silver, Lead and Zinc Smelting, Refining	0	0	$6.3x10^{-03}$	$5.2x10^{-01}$	$3.2x10^{-01}$	$2.6x10^{-01}$	$2.3x10^{-02}$	$4.5x10^{-04}$
Electricity Supply	$2.6x10^{+03}$	$2.2x10^{-03}$	$3.7x10^{+03}$	$4.7x10^{+01}$	$4.7x10^{+01}$	$4.7x10^{+01}$	$1.3x10^{+01}$	$5.6x10^{-02}$
Fabricated Metal Product Manufacturing n.e.c.	$8.8x10^{+01}$	$5.5x10^{-03}$	$4.4x10^{+01}$	$3.4x10^{+01}$	$3.2x10^{+01}$	$3.2x10^{+01}$	$3.6x10^{+00}$	$1.1x10^{+03}$
Glass and Glass Product Manufacturing	$2.9x10^{+01}$	$2.3x10^{+00}$	$2.4x10^{+03}$	$2.2x10^{-02}$	$2.0x10^{-02}$	$2.0x10^{-02}$	$8.2x10^{-02}$	$5.1x10^{+01}$
Gravel and Sand Quarrying	$3.9x10^{-01}$	$1.5x10^{-04}$	0	$7.4x10^{-02}$	$1.3x10^{-02}$	$3.4x10^{+01}$	0	$4.5x10^{+00}$
Laundries and Dry-Cleaners	$1.2x10^{+00}$	$7.8x10^{-06}$	$1.6x10^{+00}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$8.2x10^{-03}$	$5.7x10^{-01}$
Meat Processing	$1.2x10^{+01}$	$2.7x10^{-04}$	$1.5x10^{+01}$	$8.4x10^{+00}$	$3.9x10^{+00}$	$2.0x10^{+00}$	$9.0x10^{+00}$	$8.5x10^{+00}$
Medicinal and Pharmaceutical Product Manufacturing	$5.8x10^{+00}$	$3.4x10^{-05}$	$8.0x10^{+00}$	$5.9x10^{-01}$	$5.8x10^{-01}$	$5.7x10^{-01}$	$6.2x10^{-02}$	$5.1x10^{+01}$
Metal Coating and Finishing	$1.3x10^{+01}$	$7.6x10^{-05}$	$1.6x10^{+01}$	$3.0x10^{+01}$	$3.0x10^{+01}$	$2.9x10^{+01}$	$8.1x10^{-02}$	$2.3x10^{+03}$
Metal Container Manufacturing	$6.8x10^{-01}$	$2.3x10^{-02}$	$3.2x10^{+00}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$1.2x10^{-01}$	$1.8x10^{-02}$	$6.4x10^{+01}$
Milk and Cream Processing	$7.5x10^{+00}$	$4.4x10^{-05}$	$9.8x10^{+00}$	$6.8x10^{-01}$	$6.8x10^{-01}$	$6.8x10^{-01}$	$4.6x10^{-02}$	$6.3x10^{+00}$
Mining n.e.c.	$2.3x10^{-02}$	$4.1x10^{-03}$	$3.8x10^{+01}$	$5.0x10^{+03}$	$1.8x10^{+03}$	$4.2x10^{-02}$	$2.0x10^{-02}$	$9.4x10^{+00}$
Oil and Fat Manufacturing	$5.3x10^{+00}$	$3.2x10^{-05}$	$1.1x10^{+01}$	$4.8x10^{-01}$	$4.8x10^{-01}$	$4.8x10^{-01}$	$3.3x10^{-02}$	$3.5x10^{-01}$

ANZSIC CLASS	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCS
Paint Manufacturing	$2.5x10^{+00}$	$7.5x10^{-05}$	$3.1x10^{+00}$	$1.1x10^{+01}$	$1.0x10^{+01}$	$1.0x10^{+01}$	$2.9x10^{-02}$	$9.4x10^{+01}$
Pesticide Manufacturing	$1.4x10^{-01}$	$8.5x10^{-07}$	$1.7x10^{-01}$	$1.3x10^{-02}$	$1.3x10^{-02}$	$1.3x10^{-02}$	$8.9x10^{-04}$	$6.5x10^{+00}$
Petroleum and Coal Product Manufacturing n.e.c.	$4.0x10^{-02}$	$4.4x10^{-01}$	$1.2x10^{+03}$	$2.7x10^{-02}$	$1.4x10^{-02}$	$1.1x10^{-02}$	$6.5x10^{-02}$	$4.9x10^{-02}$
Petroleum Product Wholesaling	$1.6x10^{+03}$	$8.8x10^{-03}$	$8.6x10^{-02}$	$9.9x10^{+01}$	$6.8x10^{+01}$	$6.8x10^{+01}$	$1.4x10^{+03}$	$2.6x10^{-02}$
Petroleum Refining	$5.5x10^{-02}$	$5.8x10^{-02}$	$2.8x10^{+03}$	$4.4x10^{-02}$	$2.7x10^{-02}$	$2.4x10^{-02}$	$7.0x10^{+03}$	$3.2x10^{+03}$
Poultry Farming (Meat)	$4.7x10^{+00}$	$2.7x10^{-05}$	$6.3x10^{+00}$	$7.8x10^{-02}$	$3.8x10^{-02}$	$1.1x10^{-02}$	$2.9x10^{-02}$	$1.7x10^{+01}$
Poultry Processing	$2.7x10^{+00}$	$1.6x10^{-05}$	$3.1x10^{+00}$	$2.4x10^{-01}$	$2.4x10^{-01}$	$2.4x10^{-01}$	$1.6x10^{-02}$	$4.4x10^{+00}$
Printing	$1.1x10^{+01}$	$6.4x10^{-05}$	$2.2x10^{+01}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$8.3x10^{-02}$	$2.4x10^{+03}$
Pulp, Paper and Paperboard Manufacturing	$4.7x10^{+01}$	$2.2x10^{-02}$	$1.2x10^{-02}$	$7.3x10^{+00}$	$1.5x10^{+00}$	$1.5x10^{+00}$	$1.2x10^{+01}$	$2.8x10^{+01}$
Rail Transport	0	0	0	$4.7x10^{+00}$	$4.7x10^{+00}$	$4.7x10^{+00}$	0	$1.6x10^{+01}$
Road and Bridge Construction	0	$1.8x10^{-03}$	0	$1.2x10^{-02}$	$4.3x10^{+01}$	$5.7x10^{+00}$	0	$2.9x10^{-03}$
Services to Agriculture n.e.c.	$1.5x10^{+01}$	$8.9x10^{-05}$	$1.7x10^{+01}$	$8.7x10^{+01}$	$4.4x10^{+01}$	$1.5x10^{+01}$	$9.3x10^{-02}$	$6.2x10^{+00}$
Services to Air Transport	$2.2x10^{+00}$	$1.3x10^{-05}$	$2.7x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$1.4x10^{-02}$	$1.0x10^{-02}$
Services to Water Transport n.e.c.	0	0	0	0	0	0	0	$1.1x10^{+00}$
Sewerage and Drainage Services	$1.1x10^{-02}$	$5.9x10^{-03}$	$6.2x10^{-02}$	$2.1x10^{-02}$	$6.8x10^{+01}$	$1.4x10^{+01}$	$1.3x10^{+00}$	$8.3x10^{+01}$
Shipbuilding	0	0	0	0	0	0	0	$3.7x10^{+00}$
Soap and Other Detergent Manufacturing	$4.6x10^{+00}$	$2.7x10^{-05}$	$4.8x10^{+00}$	$4.2x10^{-01}$	$4.2x10^{-01}$	$4.2x10^{-01}$	$2.5x10^{+00}$	$8.3x10^{+01}$
Soft Drink, Cordial and Syrup Manufacturing	$9.7x10^{-01}$	$5.8x10^{-06}$	$1.2x10^{+00}$	$8.8x10^{-02}$	$8.8x10^{-02}$	$8.8x10^{-02}$	$6.0x10^{-03}$	$2.1x10^{+00}$
Synthetic Resin Manufacturing	$3.0x10^{+00}$	$1.6x10^{-05}$	$1.1x10^{+01}$	$2.2x10^{-02}$	$1.9x10^{-02}$	$1.9x10^{-02}$	$1.8x10^{-02}$	$5.5x10^{-02}$
Waste Disposal Services	$6.1x10^{-02}$	$2.9x10^{-02}$	$6.5x10^{+01}$	$1.7x10^{+03}$	$7.2x10^{-02}$	$1.5x10^{-02}$	$1.6x10^{+00}$	$8.2x10^{-02}$
Water Transport Terminals	0	0	0	$1.8x10^{+01}$	$9.1x10^{+00}$	$1.7x10^{+00}$	0	$5.4x10^{-01}$
Grand Total	**8,000**	**4.7**	**14,000**	**20,400**	**7,890**	**3,370**	**11,000**	**14,000**

Table 4.13: Total Industrial Emissions by ANZSIC Class in the Sydney Region (tonnes/year)

ANZSIC CLASS	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Aluminium Smelting	0	0	$9.9x10^{+00}$	$2.0x10^{+01}$	$5.4x10^{-02}$	0	$3.4x10^{-04}$	$5.1x10^{+00}$	0
Basic Iron and Steel Manufacturing	0	0	$4.0x10^{-02}$	$5.0x10^{-02}$	$3.1x10^{+00}$	0	$1.2x10^{+00}$	$7.2x10^{+01}$	0
Basic Non-Ferrous Metal Manufacturing n.e.c.	0	$8.6x10^{-07}$	$7.9x10^{-01}$	$4.6x10^{-01}$	$4.2x10^{-02}$	$5.7x10^{-05}$	$2.1x10^{-05}$	$2.1x10^{-01}$	$7.0x10^{-06}$
Battery Manufacturing	0	0	0	0	0	0	0	0	0
Beer and Malt Manufacturing	0	0	$8.9x10^{-02}$	$1.8x10^{-01}$	0	0	$1.2x10^{-04}$	$4.5x10^{-02}$	0
Black Coal Mining	$4.9x10^{-03}$	$1.9x10^{-01}$	$5.2x10^{-02}$	$3.8x10^{-01}$	$3.0x10^{-02}$	$3.8x10^{-03}$	0	$4.0x10^{-02}$	$4.7x10^{-04}$
Boatbuilding	$1.8x10^{-02}$	$1.3x10^{-07}$	$5.2x10^{-03}$	$7.0x10^{-07}$	$6.6x10^{+00}$	$8.3x10^{-06}$	0	$3.1x10^{+01}$	$1.0x10^{-06}$
Bread Manufacturing	0	$5.8x10^{-05}$	$1.1x10^{-02}$	$2.0x10^{-02}$	$3.1x10^{-03}$	$3.8x10^{-03}$	$1.4x10^{-05}$	$8.4x10^{-03}$	$4.7x10^{-04}$
Cake and Pastry Manufacturing	0	$1.0x10^{-06}$	$7.5x10^{-03}$	$1.5x10^{-02}$	$4.7x10^{-05}$	$6.9x10^{-05}$	$1.0x10^{-05}$	$3.8x10^{-03}$	$8.4x10^{-06}$
Cement and Lime Manufacturing	0	$1.9x10^{-04}$	$1.3x10^{-02}$	$2.3x10^{-02}$	$1.3x10^{+01}$	$1.2x10^{-02}$	$2.2x10^{-01}$	$4.2x10^{+01}$	$1.5x10^{-03}$
Ceramic Product Manufacturing	0	$6.4x10^{-07}$	$2.1x10^{+00}$	$4.1x10^{+00}$	$8.5x10^{+00}$	$4.2x10^{-05}$	$3.3x10^{-06}$	$1.8x10^{+00}$	$5.2x10^{-06}$
Chemical Product Manufacturing n.e.c.	0	$5.3x10^{-01}$	$7.8x10^{+00}$	$3.3x10^{+00}$	$6.8x10^{+00}$	$1.2x10^{-01}$	$2.7x10^{-04}$	$1.5x10^{-02}$	$1.1x10^{+01}$
Chemical Wholesaling	0	$1.4x10^{-01}$	$2.0x10^{+00}$	$5.3x10^{-02}$	$2.6x10^{+00}$	$2.3x10^{+00}$	$1.2x10^{-01}$	$4.9x10^{+00}$	$2.5x10^{+00}$
Concrete Slurry Manufacturing	0	$1.2x10^{-05}$	$2.1x10^{-02}$	$4.3x10^{-02}$	$2.2x10^{+01}$	$7.8x10^{-04}$	$2.9x10^{-05}$	$2.1x10^{+01}$	$9.5x10^{-05}$
Confectionery Manufacturing	0	0	$3.5x10^{-03}$	$7.0x10^{-03}$	$1.5x10^{-01}$	0	$4.8x10^{-06}$	$1.4x10^{-01}$	0
Construction Material Mining n.e.c.	$1.5x10^{-02}$	$2.3x10^{-08}$	$2.2x10^{+00}$	$3.7x10^{+00}$	$1.2x10^{+00}$	$3.6x10^{-01}$	$1.9x10^{-02}$	$1.4x10^{+01}$	0
Copper, Silver, Lead and Zinc Smelting, Refining	0	0	0	0	$4.1x10^{-05}$	0	$0.0x10^{+00}$	$1.2x10^{-05}$	0
Electricity Supply	$9.0x10^{-04}$	$5.9x10^{-01}$	$2.3x10^{+00}$	$1.1x10^{-02}$	$2.2x10^{+00}$	$1.8x10^{+00}$	$8.4x10^{-02}$	$5.3x10^{+00}$	$2.1x10^{-01}$
Fabricated Metal Product Manufacturing n.e.c.	0	$8.7x10^{-04}$	$5.0x10^{-01}$	$4.5x10^{-01}$	$1.4x10^{-02}$	$5.8x10^{-02}$	$1.6x10^{-03}$	$2.2x10^{-02}$	$2.3x10^{+01}$
Glass and Glass Product Manufacturing	0	0	$1.8x10^{+00}$	$1.0x10^{+00}$	$8.9x10^{-04}$	0	$7.5x10^{-06}$	$4.9x10^{-01}$	0
Gravel and Sand Quarrying	0	0	$7.1x10^{-02}$	0	$1.1x10^{-01}$	$3.5x10^{-02}$	0	$1.2x10^{+00}$	0
Laundries and Dry-Cleaners	0	0	$7.8x10^{-03}$	$1.6x10^{-02}$	0	$4.8x10^{-01}$	$1.1x10^{-05}$	$3.9x10^{-03}$	0
Meat Processing	0	$1.2x10^{-02}$	$1.2x10^{-01}$	$1.8x10^{-01}$	$5.9x10^{-01}$	$8.1x10^{-01}$	$8.4x10^{-05}$	$5.5x10^{-01}$	$9.9x10^{-02}$
Medicinal and Pharmaceutical Product Manufacturing	$1.3x10^{-03}$	$1.5x10^{-03}$	$4.5x10^{-02}$	$8.6x10^{-02}$	$5.8x10^{-01}$	$9.7x10^{-02}$	$5.4x10^{-05}$	$5.9x10^{-01}$	$1.2x10^{-02}$
Metal Coating and Finishing	$2.1x10^{-04}$	$1.1x10^{-04}$	$8.0x10^{-02}$	$1.5x10^{-01}$	$6.3x10^{+01}$	$7.4x10^{-03}$	$1.1x10^{-04}$	$3.5x10^{-02}$	$2.6x10^{+00}$
Metal Container Manufacturing	0	$4.7x10^{-06}$	$8.7x10^{-03}$	$1.8x10^{-02}$	$6.9x10^{+00}$	$3.1x10^{-04}$	$1.0x10^{-05}$	$2.1x10^{+01}$	$3.8x10^{-05}$
Milk and Cream Processing	0	$1.3x10^{-02}$	$8.3x10^{-02}$	$1.6x10^{-01}$	$7.4x10^{-01}$	$8.4x10^{-01}$	$6.1x10^{-05}$	$6.3x10^{-01}$	$1.0x10^{-01}$
Mining n.e.c.	0	$1.1x10^{-05}$	$8.3x10^{-01}$	$1.7x10^{+00}$	$1.5x10^{-02}$	$7.4x10^{-04}$	$5.5x10^{-06}$	$4.9x10^{-01}$	$9.0x10^{-05}$
Oil and Fat Manufacturing	0	0	$3.2x10^{-02}$	$6.3x10^{-02}$	0	0	$4.4x10^{-05}$	$1.6x10^{-02}$	0

ANZSIC CLASS	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Paint Manufacturing	$4.2x10^{-06}$	$2.6x10^{-02}$	$1.3x10^{-01}$	$7.3x10^{-02}$	$8.6x10^{-01}$	$8.2x10^{-02}$	$2.6x10^{-05}$	$2.4x10^{+01}$	$8.7x10^{-03}$
Pesticide Manufacturing	0	$2.3x10^{-07}$	$9.6x10^{-04}$	$1.7x10^{-03}$	$2.8x10^{-02}$	$1.5x10^{-05}$	$1.2x10^{-06}$	$4.6x10^{-04}$	$1.8x10^{-06}$
Petroleum and Coal Product Manufacturing n.e.c.	$4.0x10^{-03}$	$4.7x10^{-05}$	$5.2x10^{+00}$	$4.7x10^{+01}$	$1.9x10^{+00}$	$3.1x10^{-03}$	$1.2x10^{-01}$	$4.1x10^{+00}$	$3.8x10^{-04}$
Petroleum Product Wholesaling	0	$1.6x10^{-04}$	$2.3x10^{+00}$	$1.3x10^{+00}$	$1.4x10^{+00}$	$1.0x10^{-02}$	$7.0x10^{-03}$	$4.6x10^{+00}$	$1.3x10^{-03}$
Petroleum Refining	0	$1.1x10^{-01}$	$2.6x10^{+01}$	$2.0x10^{-02}$	$2.4x10^{+01}$	$7.3x10^{+00}$	$1.4x10^{-01}$	$3.5x10^{+01}$	$9.0x10^{-01}$
Poultry Farming (Meat)	0	$4.3x10^{-02}$	$1.6x10^{-01}$	$3.0x10^{-01}$	$1.9x10^{+00}$	$2.8x10^{+00}$	$3.8x10^{-05}$	$1.6x10^{+00}$	$3.4x10^{-01}$
Poultry Processing	0	$9.3x10^{-03}$	$4.4x10^{-02}$	$8.6x10^{-02}$	$4.3x10^{-01}$	$6.2x10^{-01}$	$2.2x10^{-05}$	$3.8x10^{-01}$	$7.5x10^{-02}$
Printing	$1.1x10^{-03}$	$6.1x10^{-04}$	$6.2x10^{-02}$	$1.3x10^{-01}$	$2.0x10^{+01}$	$5.0x10^{+00}$	$4.9x10^{-04}$	$3.0x10^{+01}$	$1.3x10^{-03}$
Pulp, Paper and Paperboard Manufacturing	0	$4.3x10^{-03}$	$2.3x10^{-02}$	$4.3x10^{-02}$	$2.2x10^{-01}$	$2.9x10^{-01}$	$5.6x10^{-04}$	$2.9x10^{-01}$	$3.5x10^{-02}$
Rail Transport	0	$1.0x10^{-03}$	$3.1x10^{-03}$	$5.6x10^{-03}$	$2.6x10^{-01}$	$6.7x10^{-02}$	0	$3.4x10^{+00}$	$8.2x10^{-03}$
Road and Bridge Construction	0	$7.8x10^{-07}$	$2.3x10^{-06}$	$4.3x10^{-06}$	$2.7x10^{-04}$	$5.2x10^{-05}$	0	$1.0x10^{-04}$	$6.3x10^{-06}$
Services to Agriculture n.e.c.	0	$5.7x10^{-04}$	$5.4x10^{-02}$	$1.2x10^{-01}$	$4.0x10^{-01}$	$3.8x10^{-02}$	$1.2x10^{-04}$	$1.5x10^{+00}$	$4.6x10^{-03}$
Services to Air Transport	0	0	$1.3x10^{-02}$	$2.7x10^{-02}$	$1.3x10^{+01}$	0	$1.8x10^{-05}$	$1.0x10^{+01}$	0
Services to Water Transport n.e.c.	0	$9.0x10^{-09}$	$8.6x10^{-03}$	5.1x10-08	$6.6x10^{-03}$	$6.2x10^{-07}$	0	$2.1x10^{-02}$	7.5x10-08
Sewerage and Drainage Services	$1.6x10^{-02}$	$3.0x10^{-01}$	$3.6x10^{-01}$	$3.7x10^{+00}$	$2.5x10^{+00}$	$3.5x10^{+00}$	$6.1x10^{-03}$	$2.1x10^{+00}$	$3.2x10^{+01}$
Shipbuilding	$1.8x10^{-02}$	0	$4.7x10^{-03}$	0	$1.8x10^{-01}$	0	0	$8.6x10^{-01}$	0
Soap and Other Detergent Manufacturing	$1.7x10^{-04}$	$1.5x10^{+00}$	$7.0x10^{+00}$	$8.5x10^{-02}$	$4.4x10^{-01}$	$6.9x10^{-02}$	$3.9x10^{-05}$	$1.6x10^{+00}$	$8.4x10^{-03}$
Soft Drink, Cordial and Syrup Manufacturing	0	$5.3x10^{-03}$	$2.2x10^{-02}$	$4.1x10^{-02}$	$2.4x10^{-01}$	$3.5x10^{-01}$	$8.0x10^{-06}$	$2.0x10^{-01}$	$4.2x10^{-02}$
Synthetic Resin Manufacturing	0	$2.4x10^{+00}$	$1.1x10^{+01}$	$5.3x10^{+00}$	$1.4x10^{+01}$	0	$2.1x10^{-05}$	$1.2x10^{+01}$	$2.7x10^{+01}$
Waste Disposal Services	$2.7x10^{-02}$	$2.6x10^{-02}$	$8.6x10^{+00}$	$3.6x10^{-01}$	$1.6x10^{+01}$	$5.5x10^{+00}$	$2.6x10^{-01}$	$1.4x10^{-02}$	$3.1x10^{-01}$
Water Transport Terminals	0	$2.8x10^{-08}$	8.4x10-08	$1.6x10^{-07}$	$2.5x10^{-02}$	$1.9x10^{-06}$	0	$8.0x10^{-02}$	$2.3x10^{-07}$
Grand Total	**0.11**	**5.9**	**92.1**	**411**	**380**	**32.6**	**2.2**	**1220**	**101**

Table 4.14: Total Industrial Emissions by ANZSIC Class in the Newcastle Region (tonnes/year)

ANZSIC CLASS	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCS
Aluminium Smelting	$4.5X10^{+04}$	$1.0X10^{-01}$	$3.0X10^{+02}$	$1.5X10^{+02}$	$1.1X10^{+02}$	$9.2X10^{+03}$	$3.4X10^{+02}$	$8.6X10^{+00}$
Basic Iron and Steel Manufacturing	$2.6X10^{+03}$	$9.2X10^{-02}$	$2.5X10^{+01}$	$2.8X10^{+01}$	$2.5X10^{+01}$	$2.0X10^{+00}$	$4.5X10^{+01}$	$1.9X10^{+02}$
Basic Non-Ferrous Metal Manufacturing n.e.c.	0	0	$1.9X10^{+00}$	0	0	0	0	$1.7X10^{-03}$
Black Coal Mining	$9.5X10^{+00}$	$3.3X10^{-02}$	$2.4X10^{+01}$	$4.9X10^{+02}$	$7.1X10^{+01}$	$1.0X10^{+00}$	$1.2X10^{+03}$	$3.1X10^{+00}$
Boatbuilding	0	$1.3X10^{-04}$	$5.8X10^{-01}$	$1.8X10^{+01}$	$1.6X10^{+01}$	0	$2.1X10^{+01}$	$6.2X10^{+00}$
Cement and Lime Manufacturing	$3.7X10^{-01}$	$2.2X10^{-06}$	$4.4X10^{-01}$	$4.2X10^{+00}$	$2.4X10^{+00}$	$2.3X10^{-03}$	$5.4X10^{+00}$	$2.9X10^{-02}$
Chemical Product Manufacturing n.e.c.	$2.5X10^{+01}$	$3.1X10^{-04}$	$8.3X10^{+01}$	$3.4X10^{+01}$	$3.4X10^{+01}$	$5.3X10^{+01}$	$3.5X10^{+01}$	$4.6X10^{+01}$
Chemical Wholesaling	0	0	0	0	0	0	0	$2.6X10^{+02}$
Concrete Slurry Manufacturing	0	$1.0X10^{-04}$	0	$3.1X10^{+01}$	$4.7X10^{+00}$	0	$7.4X10^{+01}$	$7.7X10^{-02}$
Construction Material Mining n.e.c.	3	$1.3X10^{-04}$	$7.4X10^{+00}$	$9.3X10^{+01}$	$2.5X10^{+01}$	$4.8X10^{-01}$	$5.1X10^{+02}$	$1.4X10^{+00}$
Copper, Silver, Lead and Zinc Smelting, Refining	$2.0X10^{+01}$	$1.4X10^{-04}$	$4.7X10^{+01}$	$1.5X10^{+01}$	$1.2X10^{+01}$	$8.4X10^{+00}$	$1.8X10^{+01}$	$1.5X10^{+00}$
Explosive Manufacturing	$1.2X10^{-03}$	$3.0X10^{-07}$	$1.8X10^{-01}$	$2.6X10^{-04}$	$2.6X10^{-04}$	$1.7X10^{-03}$	$2.7X10^{-04}$	$1.3X10^{-03}$
Fabricated Metal Product Manufacturing n.e.c.	$5.8X10^{+01}$	$3.5X10^{-04}$	$1.0X10^{+02}$	$1.5X10^{+01}$	$1.5X10^{+01}$	$3.9X10^{-01}$	$1.5X10^{+01}$	$1.1X10^{+02}$
Fertiliser Manufacturing	$3.1X10^{+02}$	$1.2X10^{-03}$	$1.1X10^{+03}$	$2.9X10^{+02}$	$3.0X10^{+02}$	$1.2X10^{+00}$	$3.2X10^{+02}$	$2.7X10^{+02}$
Gravel and Sand Quarrying	0	$1.5X10^{-03}$	0	$1.6X10^{+02}$	$4.1X10^{+01}$	0	$8.7X10^{+02}$	$5.2X10^{-03}$
Log Sawmilling	0	0	0	$2.7X10^{-01}$	0.1	0	$2.6X10^{+00}$	0
Meat Processing	$2.8X10^{+00}$	$1.7X10^{-03}$	$5.8X10^{+01}$	$1.9X10^{+00}$	$7.5X10^{-01}$	$7.6X10^{+01}$	$4.6X10^{+00}$	$3.1X10^{+01}$
Metal Coating and Finishing	$1.8X10^{+00}$	$1.0X10^{-05}$	$2.1X10^{+00}$	$2.5X10^{+00}$	$2.5X10^{+00}$	$1.1X10^{-02}$	$2.5X10^{+00}$	$5.2X10^{-01}$
Milk and Cream Processing	$2.6X10^{+00}$	$1.5X10^{-05}$	$3.1X10^{+00}$	$2.6X10^{-01}$	$2.6X10^{-01}$	$1.6X10^{-02}$	$2.6X10^{-01}$	$3.5X10^{-01}$
Mining n.e.c.	$1.7X10^{-01}$	$3.6X10^{-04}$	$1.2X10^{+00}$	$6.5X10^{+01}$	$1.3X10^{+01}$	$6.4X10^{-06}$	$1.1X10^{+02}$	$7.9X10^{-02}$
Petroleum and Coal Product Manufacturing n.e.c.	$2.3X10^{+01}$	$1.2X10^{-02}$	$3.6X10^{+00}$	$1.3X10^{+02}$	$1.1X10^{+02}$	$1.7X10^{+00}$	$1.4X10^{+02}$	$2.2X10^{+00}$
Petroleum Product Wholesaling	0	0	0	0	0	0	0	$1.8X10^{+02}$
Printing	0	0	0	0	0	0	0	$5.6X10^{+01}$
Services to Agriculture n.e.c.	$8.3X10^{+00}$	$4.9X10^{-05}$	$9.9X10^{+00}$	$9.9X10^{+00}$	$3.4X10^{+00}$	$1.3X10^{-01}$	$1.9X10^{+01}$	$3.9X10^{+00}$
Services to Air Transport	0	0	0	0	0	0	0	$1.3X10^{-01}$
Services to Transport n.e.c.	0	$1.7X10^{-05}$	0	$2.3X10^{-01}$	$2.2X10^{-02}$	0	$4.8X10^{-01}$	$3.9X10^{+00}$
Services to Water Transport n.e.c.	0	0	0	0	0	0	0	$7.1X10^{-01}$
Sewerage and Drainage Services	0	0	0	0	0	0	0	$1.1X10^{+00}$
Shipbuilding	0	0	0	$3.9X10^{+00}$	$3.6X10^{+00}$	0	$4.5X10^{+00}$	$2.6X10^{+01}$

ANZSIC CLASS	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCS
Waste Disposal Services	$5.5X10^{+00}$	$9.8X10^{-04}$	$5.3X10^{-02}$	$7.8X10^{+01}$	$1.6X10^{+01}$	$2.8X10^{-04}$	$1.7X10^{+02}$	$7.9X10^{+01}$
Water Transport Terminals	0	$2.8X10^{-06}$	0	$8.0X10^{+01}$	$1.2X10^{+01}$	0	$1.7X10^{+02}$	$6.5X10^{-01}$
Wood Product Manufacturing n.e.c.	0	0	0	0	0	0	0	$4.2X10^{-02}$
Grand Total	**47,800**	**0.25**	**1,730**	**4,040**	**1,710**	**826**	**9,300**	**1,270**

Table 4.15: Total Industrial Emissions by ANZSIC Class in the Newcastle Region (tonnes/year)

ANZSIC CLASS	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Aluminium Smelting	0	0	$1.7x10^{-02}$	0	$8.1x10^{-02}$	0	$5.7x10^{+00}$	$1.2x10^{+00}$	0
Basic Iron and Steel Manufacturing	0	0	$1.7x10^{+01}$	$3.4x10^{+01}$	$1.3x10^{-01}$	0	$3.1x10^{-04}$	$8.7x10^{+00}$	0
Basic Non-Ferrous Metal Manufacturing n.e.c.	0	0	0	0	$1.5x10^{-04}$	0	0	$4.6x10^{-05}$	0
Black Coal Mining	$2.0x10^{-02}$	$2.9x10^{-01}$	$9.2x10^{-02}$	$5.8x10^{-01}$	$4.1x10^{-02}$	0	$8.0x10^{-05}$	$5.8x10^{-02}$	0
Boatbuilding	$2.4x10^{-02}$	0	$4.2x10^{-03}$	0	$4.3x10^{-01}$	0	0	$2.2x10^{+00}$	0
Cement and Lime Manufacturing	0	0	$2.2x10^{-03}$	$4.4x10^{-03}$	$2.6x10^{-04}$	0	$3.0x10^{-06}$	$1.2x10^{-03}$	0
Chemical Product Manufacturing n.e.c.	0	$4.2x10^{-05}$	$1.2x10^{+01}$	$3.0x10^{-01}$	$7.9x10^{+00}$	$2.8x10^{-03}$	$1.0x10^{-01}$	$7.9x10^{+00}$	$3.4x10^{-04}$
Chemical Wholesaling	0	0	$2.1x10^{+00}$	0	$1.5x10^{+00}$	0	0	$5.1x10^{+00}$	0
Concrete Slurry Manufacturing	0	0	$6.2x10^{-04}$	0	$4.9x10^{-04}$	0	0	$1.5x10^{-03}$	0
Construction Material Mining n.e.c.	$4.2x10^{-02}$	0	$4.7x10^{-02}$	$5.9x10^{-02}$	$5.6x10^{-02}$	0	$3.3x10^{-04}$	$2.6x10^{-01}$	0
Copper, Silver, Lead and Zinc Smelting, Refining	0	$3.3x10^{-04}$	$1.2x10^{-01}$	$2.5x10^{-01}$	$1.5x10^{-02}$	$2.2x10^{-02}$	$1.8x10^{-04}$	$7.4x10^{-02}$	$2.7x10^{-03}$
Explosive Manufacturing	0	$1.8x10^{-06}$	$5.5x10^{-06}$	$4.9x10^{-05}$	$1.3x10^{-04}$	$1.2x10^{-04}$	0	$8.3x10^{-05}$	$1.5x10^{-05}$
Fabricated Metal Product Manufacturing n.e.c.	0	0	$3.6x10^{-01}$	$6.9x10^{-01}$	$7.2x10^{+00}$	0	$4.8x10^{-04}$	$3.9x10^{+01}$	0
Fertiliser Manufacturing	0	$5.0x10^{+00}$	$2.4x10^{+01}$	$2.4x10^{+00}$	$1.3x10^{+00}$	0	$1.6x10^{-03}$	$5.6x10^{+00}$	0
Gravel and Sand Quarrying	0	0	0	0	$3.8x10^{-04}$	0	0	$1.2x10^{-04}$	0
Log Sawmilling	0	0	0	0	0	0	0	0	0
Meat Processing	0	$7.7x10^{-02}$	$2.4x10^{-01}$	$4.4x10^{-01}$	$3.9x10^{+00}$	$5.1x10^{+00}$	$1.2x10^{-04}$	$3.0x10^{+00}$	$6.3x10^{-01}$
Metal Coating and Finishing	0	0	$1.0x10^{-02}$	$2.1x10^{-02}$	$8.2x10^{-02}$	0	$1.4x10^{-05}$	$7.5x10^{-02}$	0
Milk and Cream Processing	0	$2.1x10^{-04}$	$1.6x10^{-02}$	$3.2x10^{-02}$	$1.4x10^{-02}$	$1.4x10^{-02}$	$2.1x10^{-05}$	$4.2x10^{-02}$	$1.7x10^{-03}$
Mining n.e.c.	0	0	$7.5x10^{-03}$	$1.5x10^{-02}$	$1.4x10^{-03}$	0	0	$1.6x10^{-02}$	0
Petroleum and Coal Product Manufacturing n.e.c.	0	0	$1.9x10^{-01}$	$9.1x10^{-01}$	$2.1x10^{-04}$	0	$8.0x10^{-03}$	$9.4x10^{-02}$	0
Petroleum Product Wholesaling	0	0	$1.4x10^{+00}$	0	$1.1x10^{+00}$	0	0	$3.6x10^{+00}$	0
Printing	0	0	0	0	0	0	0	0	0
Services to Agriculture n.e.c.	0	$9.3x10^{-04}$	$5.0x10^{-02}$	$9.9x10^{-02}$	$7.9x10^{-04}$	$1.3x10^{-04}$	$6.8x10^{-05}$	$2.7x10^{-02}$	$1.6x10^{-05}$
Services to Air Transport	0	0	0	0	0	0	0	0	0
Services to Transport n.e.c.	0	$2.4x10^{-03}$	$1.2x10^{-02}$	$1.4x10^{-02}$	$1.8x10^{-01}$	$1.6x10^{-01}$	0	$7.2x10^{-01}$	$2.0x10^{-02}$
Services to Water Transport n.e.c.	0	0	$6.0x10^{-04}$	0	$2.5x10^{-02}$	0	0	$1.6x10^{-01}$	0
Sewerage and Drainage Services	0	$2.8x10^{-03}$	$8.4x10^{-03}$	$1.5x10^{-02}$	$1.3x10^{-01}$	$1.8x10^{-01}$	0	$1.0x10^{-01}$	$2.3x10^{-02}$
Shipbuilding	0	0	0	0	$8.4x10^{-01}$	0	0	$1.8x10^{+00}$	0

ANZSIC CLASS	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Waste Disposal Services	0	$3.5x10^{-05}$	$9.8x10^{-01}$	$7.3x10^{-04}$	$2.5x10^{+00}$	$4.9x10^{-01}$	$3.7x10^{-07}$	$2.1x10^{+01}$	$2.8x10^{-04}$
Water Transport Terminals	0	0	0	0	$2.1x10^{-02}$	0	0	$7.7x10^{-02}$	0
Wood Product Manufacturing n.e.c.	0	0	0	0	$1.3x10^{-02}$	0	0	$3.7x10^{-04}$	0
Grand Total	**0.09**	**5.35**	**58.3**	**39.6**	**27.5**	**6.0**	**5.82**	**101**	**0.67**

Table 4.16: Total Industrial Emissions by ANZSIC Class in the Wollongong Region (tonnes/year)

ANZSIC CLASS	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCS
Basic Iron and Steel Manufacturing	$5.2x10^{+05}$	$3.8x10^{+00}$	$7.8x10^{+03}$	$1.6x10^{+03}$	$1.4x10^{+03}$	$1.0x10^{+04}$	$1.9x10^{+03}$	$5.8x10^{+02}$
Basic Non-Ferrous Metal Manufacturing n.e.c.	0	0	0	0	0	0	0	$7.6x10^{-04}$
Black Coal Mining	2	$1.1x10^{-03}$	$9.4x10^{+00}$	$6.5x10^{+01}$	$1.4x10^{+01}$	$5.2x10^{-01}$	$1.4x10^{+02}$	$2.6x10^{+01}$
Boatbuilding	0	0	0	0	0	0	0	$9.3x10^{-04}$
Cement and Lime Manufacturing	0	0	0	$6.0x10^{-02}$	$9.9x10^{-03}$	0	$1.1x10^{-01}$	$2.3x10^{-02}$
Chemical Product Manufacturing n.e.c.	$1.2x10^{+00}$	$6.9x10^{-06}$	$1.4x10^{+00}$	$9.8x10^{-01}$	$2.8x10^{-01}$	$7.2x10^{-03}$	$1.9x10^{+00}$	$7.6x10^{-02}$
Concrete Slurry Manufacturing	0	$3.4x10^{-05}$	0	$1.2x10^{+01}$	$1.9x10^{+00}$	0	$2.8x10^{+01}$	$2.7x10^{-02}$
Construction Material Mining n.e.c.	0	$1.3x10^{-04}$	0	$4.9x10^{+00}$	$2.1x10^{+00}$	0	$8.4x10^{+00}$	0
Fabricated Metal Product Manufacturing n.e.c.	$5.8x10^{-01}$	$3.4x10^{-06}$	$6.9x10^{-01}$	$2.4x10^{-01}$	$2.1x10^{-01}$	$3.6x10^{-03}$	$3.1x10^{-01}$	$1.3x10^{+00}$
Fertiliser Manufacturing	$1.4x10^{+00}$	$9.8x10^{-06}$	$8.2x10^{+00}$	$2.4x10^{+00}$	$2.4x10^{+00}$	$2.1x10^{+01}$	$2.4x10^{+00}$	$7.9x10^{-01}$
Metal Coating and Finishing	$1.2x10^{+03}$	$5.8x10^{-02}$	$5.4x10^{+01}$	$1.0x10^{+01}$	$9.5x10^{+00}$	$3.0x10^{+01}$	$1.2x10^{+01}$	$1.6x10^{+02}$
Metal Container Manufacturing	$2.1x10^{-03}$	$5.3x10^{-07}$	$8.4x10^{-03}$	$4.6x10^{-04}$	$4.5x10^{-04}$	$3.0x10^{-03}$	$4.7x10^{-04}$	$3.1x10^{+00}$
Petroleum and Coal Product Manufacturing n.e.c.	$2.8x10^{+01}$	$2.3x10^{-01}$	$1.7x10^{+01}$	$3.7x10^{+01}$	$3.6x10^{+01}$	$2.7x10^{+02}$	$7.2x10^{+01}$	$1.9x10^{+00}$
Petroleum Product Wholesaling	0	0	0	0	0	0	0	$3.7x10^{-01}$
Services to Transport n.e.c.	$5.3x10^{-01}$	$1.1x10^{-02}$	$2.5x10^{+00}$	$1.8x10^{+02}$	$1.9x10^{+01}$	$1.4x10^{-01}$	$3.9x10^{+02}$	$1.6x10^{-01}$
Sewerage and Drainage Services	$2.1x10^{+00}$	$7.4x10^{-06}$	$3.4x10^{+00}$	$1.8x10^{-01}$	$1.8x10^{-01}$	$8.3x10^{-03}$	$1.9x10^{-01}$	$1.5x10^{+00}$
Waste Disposal Services	$1.3x10^{+02}$	$5.8x10^{-05}$	$6.3x10^{+00}$	$1.4x10^{+02}$	$2.9x10^{+01}$	$1.3x10^{-03}$	$2.7x10^{+02}$	$1.7x10^{+01}$
Water Transport Terminals	0	0	0	$5.5x10^{-01}$	$5.5x10^{-02}$	0	$1.2x10^{+00}$	$9.9x10^{-04}$
Grand Total	**522,000**	**4.13**	**7,930**	**2,810**	**2,070**	**1,560**	**10,300**	**788**

Table 4.17: Total Industrial Emissions by ANZSIC Class in the Wollongong Region (tonnes/year)

ANZSIC CLASS	1,3-BUT	ACET	BENZ	HCHO	XYLE	PERC	PAHs	TOLU	TCE
Basic Iron and Steel Manufacturing	0	$2.0x10^{-02}$	$2.2x10^{+02}$	$4.0x10^{+01}$	$5.9x10^{+00}$	$5.3x10^{-01}$	$3.1x10^{+01}$	$4.4x10^{+01}$	$6.2x10^{-02}$
Basic Non-Ferrous Metal Manufacturing n.e.c.	0	0	0	0	$6.9x10^{-05}$	0	0	$2.1x10^{-05}$	0
Black Coal Mining	$1.2x10^{-03}$	$4.6x10^{-02}$	$4.2x10^{-01}$	$9.2x10^{-02}$	$6.2x10^{-01}$	$2.0x10^{-01}$	0	$7.1x10^{+00}$	$6.3x10^{-05}$
Boatbuilding	0	0	0	0	$8.3x10^{-05}$	0	0	$2.6x10^{-05}$	0
Cement and Lime Manufacturing	0	0	0	0	$1.4x10^{-03}$	0	0	$5.9x10^{-03}$	0
Chemical Product Manufacturing n.e.c.	0	0	$6.9x10^{-03}$	$1.4x10^{-02}$	$5.4x10^{-05}$	0	$9.4x10^{-06}$	$3.5x10^{-03}$	0
Concrete Slurry Manufacturing	0	0	$2.1x10^{-04}$	0	$2.4x10^{-04}$	0	0	$5.4x10^{-04}$	0
Construction Material Mining n.e.c.	0	0	0	0	0	0	0	0	0
Fabricated Metal Product Manufacturing n.e.c.	0	$8.2x10^{-06}$	$3.5x10^{-03}$	$6.9x10^{-03}$	$1.7x10^{-02}$	$5.4x10^{-04}$	$4.7x10^{-06}$	$2.6x10^{-01}$	$6.6x10^{-05}$
Fertiliser Manufacturing	0	0	$7.2x10^{-02}$	$1.4x10^{-01}$	0	0	$1.3x10^{-05}$	$3.6x10^{-02}$	0
Metal Coating and Finishing	0	$1.9x10^{-04}$	$6.2x10^{+00}$	$1.1x10^{+01}$	$1.0x10^{+01}$	$4.3x10^{-01}$	$5.6x10^{-01}$	$1.8x10^{+01}$	$4.1x10^{-01}$
Metal Container Manufacturing	0	0	0	$6.8x10^{-05}$	$1.6x10^{-01}$	0	0	$7.9x10^{-01}$	0
Petroleum and Coal Product Manufacturing n.e.c.	0	$7.8x10^{-05}$	$3.2x10^{-01}$	$2.9x10^{-01}$	$3.8x10^{-03}$	$5.2x10^{-03}$	$7.8x10^{+00}$	$7.8x10^{-02}$	$6.3x10^{-04}$
Petroleum Product Wholesaling	0	$8.4x10^{-08}$	$2.6x10^{-07}$	$4.7x10^{-07}$	$1.6x10^{-02}$	$5.6x10^{-06}$	0	$5.0x10^{-03}$	$6.9x10^{-07}$
Services to Transport n.e.c.	$3.1x10^{-04}$	$1.2x10^{-02}$	$3.6x10^{-03}$	$2.4x10^{-02}$	$2.0x10^{-03}$	0	0	$3.2x10^{-03}$	0
Sewerage and Drainage Services	0	$3.2x10^{-03}$	$1.7x10^{-02}$	$5.9x10^{-02}$	$1.5x10^{-01}$	$2.1x10^{-01}$	$3.5x10^{-05}$	$1.2x10^{-01}$	$2.6x10^{-02}$
Waste Disposal Services	$5.4x10^{-05}$	$1.1x10^{-04}$	$8.1x10^{-02}$	$2.9x10^{+00}$	$1.3x10^{-01}$	$4.7x10^{-02}$	$2.7x10^{-03}$	$1.4x10^{+00}$	$8.5x10^{-04}$
Water Transport Terminals	0	0	0	0	$8.9x10^{-05}$	0	0	$2.7x10^{-05}$	0
Grand Total	**0.002**	**0.08**	**232**	**53.8**	**17.1**	**1.43**	**39**	**71.4**	**0.50**

4.3 Industrial Emissions by NSW Activity Type by Day Type

Average daily emissions for each NSW Activity Type within the GMR are presented in this section.

- Table 4.18 and Table 4.19 present emissions for a January week day (representing a typical summer week day)

- Table 4.20 and Table 4.21 present emissions for a January weekend day (representing a typical summer weekend day)

Table 4.22 and Table 4.23 present emissions for a July week day (representing a typical winter week day)

- Table 4.24 and Table 4.25 present emissions for a July weekend day (representing a typical winter weekend day)

In this section emissions are presented for the following pollutants only:

- 1,3 butadiene (1,3-BUT)
- Acetaldehyde (ACET)
- Benzene (BENZ)
- Carbon monoxide (CO)
- Formaldehyde (HCHO)
- Isomers of xylene (XYLE)
- Lead & compounds (Pb)
- Oxides of nitrogen (NO_x)
- Particulate matter < 10 µm (PM_{10})
- Particulate matter < 2.5 µm ($PM_{2.5}$)
- Perchloroethylene (PERC)
- Polycyclic aromatic hydrocarbons (PAHs)
- Sulfur dioxide (SO_2)
- Toluene (TOLU)
- Total suspended particulates (TSP)
- Total VOCS (VOCs)
- Trichloroethylene (TCE)

Table 4.18: Average Daily Industrial Emissions (January Week Day/Summer Week Day) (kg/day)

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	$8.1x10^{+02}$	$3.1x10^{-03}$	$2.8x10^{+03}$	$6.5x10^{+02}$	$5.7x10^{+02}$	$5.6x10^{+02}$	$3.2x10^{+00}$	$7.1x10^{+02}$
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	$2.0x10^{+01}$	$1.1x10^{-04}$	$3.9x10^{+01}$	$2.9x10^{+02}$	$2.7x10^{+02}$	$2.7x10^{+02}$	$5.6x10^{+01}$	$3.1x10^{+00}$
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	$5.4x10^{+00}$
Animal slaughtering	$2.3x10^{+01}$	$7.6x10^{-03}$	$2.7x10^{+02}$	$2.2x10^{+01}$	$9.5x10^{+00}$	$4.4x10^{+00}$	$3.4x10^{+02}$	$9.7x10^{+01}$
Battery production	0	$2.1x10^{+00}$	0	$9.2x10^{+00}$	$9.2x10^{+00}$	$9.2x10^{+00}$	0	0
Beer or distilled alcohol production	$5.7x10^{+01}$	$3.4x10^{-04}$	$1.2x10^{+02}$	$6.4x10^{+00}$	$6.4x10^{+00}$	$6.4x10^{+00}$	$3.5x10^{-01}$	$9.9x10^{+01}$
Biomedical waste incineration	$1.5x10^{+01}$	$8.1x10^{-02}$	$1.1x10^{+01}$	$2.0x10^{+00}$	$2.0x10^{+00}$	$2.0x10^{+00}$	$3.2x10^{+00}$	$1.6x10^{+00}$
Bitumen pre-mix or hotmix production	$4.1x10^{+02}$	$5.4x10^{-02}$	$8.6x10^{+01}$	$7.0x10^{+02}$	$5.7x10^{+02}$	$4.0x10^{+02}$	$1.5x10^{+01}$	$1.0x10^{+02}$
Bulk cargo handling	0	$7.4x10^{-06}$	0	$5.2x10^{+02}$	$2.5x10^{+02}$	$3.7x10^{+01}$	0	$3.3x10^{+00}$
Cement or lime handling	$6.2x10^{+00}$	$5.9x10^{-04}$	$7.4x10^{+00}$	$1.5x10^{+03}$	$5.7x10^{+02}$	$1.8x10^{+02}$	$2.7x10^{-02}$	$2.3x10^{+02}$
Cement or lime production	$8.8x10^{+03}$	$1.3x10^{+00}$	$1.6x10^{+04}$	$8.8x10^{+02}$	$7.6x10^{+02}$	$4.7x10^{+02}$	$5.6x10^{+02}$	$2.3x10^{+02}$
Ceramics production (excluding glass)	$2.1x10^{+03}$	$5.8x10^{-04}$	$6.3x10^{+02}$	$5.6x10^{+03}$	$3.0x10^{+03}$	$2.2x10^{+03}$	$1.8x10^{+03}$	$3.1x10^{+02}$
Chemical storage	0	0	0	0	0	0	0	$2.1x10^{+01}$
Chemical Storage - Other Chemical Storage	$1.3x10^{+01}$	$7.7x10^{-05}$	$1.9x10^{+01}$	$3.3x10^{+00}$	$2.2x10^{+00}$	$1.8x10^{+00}$	$8.0x10^{-02}$	$1.3x10^{+03}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	$4.3x10^{+03}$	$2.4x10^{-02}$	$2.3x10^{+03}$	$2.7x10^{+02}$	$1.8x10^{+02}$	$1.8x10^{+02}$	$3.8x10^{+03}$	$1.2x10^{+03}$
Coal loading	$2.3x10^{+00}$	$5.4x10^{-02}$	$1.1x10^{+01}$	$1.8x10^{+03}$	$8.3x10^{+02}$	$9.0x10^{+01}$	$6.5x10^{-01}$	$1.2x10^{+01}$
Coal mining	$6.3x10^{+03}$	$3.7x10^{+00}$	$4.0x10^{+03}$	$1.5x10^{+05}$	$6.6x10^{+04}$	$1.1x10^{+04}$	$2.2x10^{+02}$	$3.6x10^{+02}$
Coal washery reject or slag landfilling	$2.3x10^{-02}$	0	$8.6x10^{-02}$	$3.1x10^{+02}$	$1.5x10^{+02}$	$3.1x10^{+01}$	$2.8x10^{-03}$	$2.2x10^{-03}$
Coke production	$2.0x10^{+01}$	$1.3x10^{+00}$	$8.2x10^{+01}$	$3.7x10^{+02}$	$1.9x10^{+02}$	$1.9x10^{+02}$	$1.5x10^{+03}$	$1.7x10^{+00}$
Composting and related reprocessing or treatment	$1.1x10^{+03}$	$1.0x10^{-05}$	$1.2x10^{+01}$	$3.5x10^{+02}$	$1.7x10^{+02}$	$3.5x10^{+01}$	$8.5x10^{-03}$	$5.6x10^{+02}$
Concrete batching	$1.5x10^{+01}$	$3.0x10^{-03}$	$2.1x10^{+01}$	$3.1x10^{+03}$	$1.0x10^{+03}$	$2.1x10^{+02}$	$9.2x10^{-02}$	$4.2x10^{+02}$
Contaminated soil treatment	0	0	0	0	0	0	0	0
Crushing, grinding or separating works	$1.6x10^{+03}$	$7.4x10^{-02}$	$6.2x10^{+02}$	$2.3x10^{+04}$	$6.9x10^{+03}$	$2.4x10^{+03}$	$5.9x10^{+02}$	$1.8x10^{+02}$
Drum or container reconditioning	$2.1x10^{+00}$	$7.1x10^{-02}$	$1.0x10^{+01}$	$3.8x10^{-01}$	$3.8x10^{-01}$	$3.8x10^{-01}$	$7.4x10^{-02}$	$2.1x10^{+02}$
Electricity Generation - Generation of electrical power from coal	$1.9x10^{+04}$	$2.8x10^{+00}$	$3.9x10^{+05}$	$2.9x10^{+04}$	$1.3x10^{+04}$	$4.6x10^{+03}$	$7.1x10^{+05}$	$1.9x10^{+03}$
Electricity Generation - Generation of electrical power from gas	$6.8x10^{+03}$	$6.0x10^{-03}$	$7.2x10^{+03}$	$1.3x10^{+02}$	$1.3x10^{+02}$	$1.2x10^{+02}$	$3.4x10^{+01}$	$1.3x10^{+03}$
Electricity Generation - Generation of electrical power	$2.7x10^{+02}$	0	$2.8x10^{+03}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$4.4x10^{-01}$	$1.5x10^{+02}$

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
other than from coal or gas								
Environmentally sensitive area landfilling	$1.3x10^{+01}$	$1.6x10^{-04}$	$2.3x10^{-01}$	$4.6x10^{+02}$	$2.1x10^{+02}$	$4.2x10^{+01}$	$1.2x10^{-02}$	$5.1x10^{+01}$
Explosives or pyrotechnics production	$4.5x10^{-03}$	$1.1x10^{-06}$	$6.7x10^{-01}$	$1.0x10^{-03}$	$9.8x10^{-04}$	$9.7x10^{-04}$	$6.4x10^{-03}$	$3.8x10^{-03}$
Freeway or tollway construction	0	$5.5x10^{-03}$	0	$5.7x10^{+02}$	$2.5x10^{+02}$	$4.1x10^{+01}$	0	$9.1x10^{-03}$
Glass Production - Production of container glass	$5.0x10^{+01}$	$6.1x10^{+00}$	$4.3x10^{+03}$	$2.9x10^{+02}$	$2.3x10^{+02}$	$2.3x10^{+02}$	$1.7x10^{+03}$	$1.0x10^{+02}$
Glass Production - Production of float glass	$2.8x10^{+01}$	$7.8x10^{-04}$	$2.3x10^{+03}$	$3.1x10^{+02}$	$3.0x10^{+02}$	$3.0x10^{+02}$	$4.8x10^{+02}$	$3.4x10^{+01}$
Hard-rock gravel quarrying	$1.1x10^{+00}$	$1.2x10^{-02}$	0	$1.9x10^{+04}$	$4.1x10^{+03}$	$1.0x10^{+03}$	0	$4.6x10^{+02}$
Hazardous, industrial or group A waste generation or storage	$2.7x10^{+01}$	$1.4x10^{-04}$	$4.3x10^{+01}$	$5.4x10^{+00}$	$5.2x10^{+00}$	$4.8x10^{+00}$	$1.3x10^{+00}$	$1.6x10^{+03}$
Hazardous, industrial, group A or group B waste disposal	0	0	0	0	0	0	0	$1.4x10^{-03}$
Hazardous, industrial, group A or group B waste processing	$1.3x10^{+01}$	$9.8x10^{-05}$	$1.5x10^{+01}$	$3.0x10^{+01}$	$1.5x10^{+01}$	$1.5x10^{+01}$	$1.9x10^{-01}$	$2.6x10^{+01}$
Inert waste landfilling	$1.2x10^{+00}$	$3.5x10^{-05}$	0	$1.2x10^{+03}$	$4.5x10^{+02}$	$9.4x10^{+01}$	0	$8.2x10^{+01}$
Landfilling in designated areas	$9.6x10^{+00}$	0	0	$1.2x10^{+02}$	$6.0x10^{+01}$	$1.2x10^{+01}$	0	$1.1x10^{+02}$
Metal plating or coating works	$3.2x10^{+03}$	$1.6x10^{-01}$	$1.9x10^{+02}$	$1.1x10^{+02}$	$1.1x10^{+02}$	$1.0x10^{+02}$	$8.1x10^{+01}$	$6.7x10^{+03}$
Milk processing	$2.7x10^{+01}$	$1.6x10^{-04}$	$3.5x10^{+01}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$1.7x10^{-01}$	$1.8x10^{+01}$
Mining (other than coal)	0	$1.2x10^{-03}$	0	$2.4x10^{+03}$	$1.0x10^{+03}$	$2.1x10^{+02}$	0	$1.0x10^{-02}$
Mooring and boat storage	0	0	0	0	0	0	0	$1.1x10^{+01}$
Other activities - bread manufacturing	$4.5x10^{+00}$	$2.7x10^{-05}$	$5.4x10^{+00}$	$7.0x10^{-01}$	$7.0x10^{-01}$	$7.0x10^{-01}$	$2.8x10^{-02}$	$5.3x10^{-01}$
Other activities - cake and pastry manufacturing	$2.4x10^{+00}$	$1.4x10^{-05}$	$2.8x10^{+00}$	$2.1x10^{-01}$	$2.1x10^{-01}$	$2.1x10^{-01}$	$1.5x10^{-02}$	$1.6x10^{-01}$
Other activities - confectionary manufacturing	$2.2x10^{-01}$	$4.5x10^{-06}$	$1.5x10^{+00}$	$6.9x10^{-02}$	$6.9x10^{-02}$	$6.9x10^{-02}$	$4.7x10^{-03}$	$1.0x10^{+00}$
Other activities - dry cleaning	$3.3x10^{+00}$	$2.1x10^{-05}$	$4.2x10^{+00}$	$3.2x10^{-01}$	$3.2x10^{-01}$	$3.2x10^{-01}$	$2.2x10^{-02}$	$1.5x10^{+00}$
Other activities - oil and fat manufacturing	$1.4x10^{+01}$	$8.5x10^{-05}$	$3.1x10^{+01}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$8.9x10^{-02}$	$9.4x10^{-01}$
Other activities - printing	$2.8x10^{+01}$	$1.6x10^{-04}$	$5.0x10^{+01}$	$2.9x10^{+00}$	$2.9x10^{+00}$	$2.9x10^{+00}$	$2.1x10^{-01}$	$6.7x10^{+03}$
Other activities - services to air transport	$6.0x10^{+00}$	$3.6x10^{-05}$	$7.2x10^{+00}$	$5.5x10^{-01}$	$5.5x10^{-01}$	$5.5x10^{-01}$	$3.8x10^{-02}$	$2.7x10^{+02}$
Other activities - soft drink manufacturing	$2.2x10^{+00}$	$1.3x10^{-05}$	$2.6x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$1.4x10^{-02}$	$5.6x10^{+00}$
Other agricultural crop processing	$8.3x10^{+01}$	$5.0x10^{-04}$	$9.8x10^{+01}$	$4.2x10^{+02}$	$2.1x10^{+02}$	$7.0x10^{+01}$	$7.3x10^{-01}$	$2.9x10^{+01}$
Other chemical processing	$2.1x10^{+02}$	$1.6x10^{-03}$	$3.8x10^{+02}$	$1.1x10^{+02}$	$1.1x10^{+02}$	$1.1x10^{+02}$	$1.4x10^{+02}$	$2.2x10^{+03}$
Other land-based extraction	$6.5x10^{+02}$	$1.3x10^{-02}$	$2.4x10^{+02}$	$2.9x10^{+04}$	$9.4x10^{+03}$	$2.2x10^{+03}$	$5.5x10^{+02}$	$1.8x10^{+02}$
Other livestock processing	$1.7x10^{+01}$	$1.0x10^{-04}$	$2.2x10^{+01}$	$1.6x10^{+00}$	$1.6x10^{+00}$	$1.6x10^{+00}$	$1.0x10^{-01}$	$1.4x10^{+01}$
Other metal processing	$3.6x10^{+02}$	$1.6x10^{-02}$	$3.4x10^{+02}$	$1.2x10^{+02}$	$1.2x10^{+02}$	$1.2x10^{+02}$	$1.1x10^{+01}$	$3.2x10^{+03}$
Other vessel construction or maintenance	0	$7.5x10^{-04}$	$1.6x10^{+00}$	$1.3x10^{+02}$	$1.1x10^{+02}$	$1.0x10^{+02}$	0	$3.5x10^{+02}$
Paint production	$8.7x10^{+00}$	$2.7x10^{-04}$	$1.1x10^{+01}$	$4.1x10^{+01}$	$3.8x10^{+01}$	$3.7x10^{+01}$	$9.9x10^{-02}$	$3.0x10^{+02}$

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
Paper production using recycled materials	$1.3x10^{+02}$	$5.9x10^{-02}$	$3.3x10^{+02}$	$2.0x10^{+01}$	$4.0x10^{+00}$	$4.0x10^{+00}$	$3.2x10^{+01}$	$7.4x10^{+01}$
Pesticides production	$6.7x10^{-01}$	$4.0x10^{-06}$	$8.0x10^{-01}$	$6.0x10^{-02}$	$6.0x10^{-02}$	$6.0x10^{-02}$	$4.2x10^{-03}$	$2.4x10^{+01}$
Petrochemical production	$8.1x10^{+02}$	$4.9x10^{-01}$	$3.2x10^{+03}$	$3.0x10^{+02}$	$1.2x10^{+02}$	$1.2x10^{+02}$	$9.6x10^{+02}$	$1.2x10^{+03}$
Petroleum refining	$1.5x10^{+03}$	$1.6x10^{-01}$	$7.5x10^{+03}$	$1.2x10^{+03}$	$7.1x10^{+02}$	$6.4x10^{+02}$	$1.9x10^{+04}$	$8.8x10^{+03}$
Pharmaceutical or veterinary products production	$1.8x10^{+01}$	$1.1x10^{-04}$	$2.4x10^{+01}$	$1.9x10^{+00}$	$1.8x10^{+00}$	$1.8x10^{+00}$	$1.5x10^{-01}$	$1.6x10^{+02}$
Plastics production	$7.4x10^{+00}$	$6.7x10^{-03}$	$3.3x10^{+01}$	$4.2x10^{+02}$	$3.8x10^{+02}$	$3.8x10^{+02}$	$4.5x10^{-02}$	$1.6x10^{+03}$
Poultry production	$1.8x10^{+01}$	$1.0x10^{-04}$	$2.3x10^{+01}$	$2.4x10^{+03}$	$1.2x10^{+03}$	$3.2x10^{+02}$	$1.1x10^{-01}$	$4.5x10^{+01}$
Primary aluminium production	$1.5x10^{+05}$	$2.8x10^{-01}$	$9.2x10^{+02}$	$2.1x10^{+03}$	$1.2x10^{+03}$	$8.4x10^{+02}$	$3.4x10^{+04}$	$3.3x10^{+01}$
Primary iron and steel production	$1.4x10^{+06}$	$1.0x10^{+01}$	$2.1x10^{+04}$	$5.1x10^{+03}$	$4.4x10^{+03}$	$3.9x10^{+03}$	$2.7x10^{+04}$	$1.6x10^{+03}$
Primary non-ferrous production (excluding aluminium)	$5.4x10^{+01}$	$3.8x10^{-04}$	$1.3x10^{+02}$	$5.0x10^{+01}$	$4.0x10^{+01}$	$3.3x10^{+01}$	$2.3x10^{+01}$	$4.0x10^{+00}$
Railway activities	0	0	0	$1.3x10^{+01}$	$1.3x10^{+01}$	$1.3x10^{+01}$	0	$4.3x10^{+01}$
Rendering or fat extraction	$6.2x10^{+01}$	$1.1x10^{-03}$	$7.4x10^{+01}$	$3.2x10^{+01}$	$1.6x10^{+01}$	$8.7x10^{+00}$	$3.3x10^{+01}$	$1.5x10^{+01}$
Scrap metal recovery	0	0	$1.6x10^{+01}$	$2.6x10^{+02}$	$1.6x10^{+02}$	$1.2x10^{+02}$	0	$2.8x10^{-02}$
Secondary aluminium production	$1.8x10^{+02}$	$6.9x10^{-03}$	$1.7x10^{+02}$	$8.7x10^{+01}$	$6.7x10^{+01}$	$4.1x10^{+01}$	$7.6x10^{+01}$	$3.4x10^{+02}$
Secondary iron and steel production	$5.6x10^{+03}$	$2.1x10^{-01}$	$5.7x10^{+01}$	$1.1x10^{+02}$	$7.4x10^{+01}$	$6.9x10^{+01}$	$5.7x10^{+00}$	$5.7x10^{+02}$
Secondary non-ferrous production (excluding aluminium)	$4.2x10^{+02}$	$1.9x10^{+00}$	$8.9x10^{+01}$	$2.1x10^{+01}$	$1.5x10^{+01}$	$1.4x10^{+01}$	$2.4x10^{+02}$	$6.8x10^{+00}$
Sewage Treatment - processing by large plants (> 10000 ML per year)	$2.6x10^{+02}$	$9.5x10^{-05}$	$1.6x10^{+03}$	$4.5x10^{+00}$	$4.5x10^{+00}$	$4.5x10^{+00}$	$7.1x10^{-01}$	$1.2x10^{+02}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$6.1x10^{+02}$	$1.6x10^{-02}$	$1.2x10^{+02}$	$5.7x10^{+02}$	$2.0x10^{+02}$	$4.8x10^{+01}$	$3.3x10^{+00}$	$2.2x10^{+02}$
Soap or detergent production	$1.2x10^{+01}$	$6.9x10^{-05}$	$1.2x10^{+01}$	$1.0x10^{+00}$	$1.0x10^{+00}$	$1.0x10^{+00}$	$6.6x10^{+00}$	$2.2x10^{+02}$
Solid waste landfilling	$7.3x10^{+02}$	$2.7x10^{-03}$	$1.7x10^{+01}$	$5.3x10^{+03}$	$2.5x10^{+03}$	$5.1x10^{+02}$	0	$1.3x10^{+03}$
Used tyre processing or disposal	0	0	0	0	0	0	0	$2.5x10^{-03}$
Vessel construction or maintenance using dry or floating docks	0	0	0	$1.2x10^{+01}$	$1.0x10^{+01}$	$9.6x10^{+00}$	0	$8.1x10^{+01}$
Waste oil recovery	$8.0x10^{+00}$	$1.6x10^{-03}$	$3.0x10^{+01}$	$8.2x10^{-01}$	$8.1x10^{-01}$	$8.0x10^{-01}$	$4.2x10^{+01}$	$1.3x10^{+00}$
Waste storage, transfer, separating or processing	$1.5x10^{+02}$	$5.5x10^{-05}$	$1.1x10^{+02}$	$2.2x10^{+02}$	$8.6x10^{+01}$	$1.8x10^{+01}$	$1.6x10^{-02}$	$5.5x10^{+00}$
Wood or timber milling	$1.3x10^{+02}$	$1.3x10^{-01}$	$1.8x10^{+02}$	$1.9x10^{+02}$	$7.6x10^{+01}$	$3.1x10^{+01}$	$1.7x10^{+02}$	$3.7x10^{+02}$
Wood preservation	0	0	0	0	0	0	0	$1.6x10^{-01}$
Grand Total	**1,620,000**	**31.6**	**475,200**	**288,650**	**122,540**	**34,850**	**801,700**	**48,710**

Table 4.19: Average Daily Industrial Emissions (January Week Day/Summer Week Day) (kg/day)

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	0	$1.3x10^{+01}$	$6.4x10^{+01}$	$6.4x10^{+00}$	$3.5x10^{+00}$	0	$4.2x10^{-03}$	$1.5x10^{+01}$	0
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	0	0	$2.8x10^{-01}$	$5.5x10^{-01}$	$4.0x10^{-04}$	0	$1.5x10^{-04}$	$1.4x10^{-01}$	0
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	0	0
Animal slaughtering	0	$2.4x10^{-01}$	$8.1x10^{-01}$	$1.5x10^{+00}$	$1.3x10^{+01}$	$1.6x10^{+01}$	$6.2x10^{-04}$	$9.3x10^{+00}$	$1.9x10^{+00}$
Battery production	0	0	0	0	0	0	0	0	0
Beer or distilled alcohol production	0	0	$3.4x10^{-01}$	$6.7x10^{-01}$	0	0	$4.6x10^{-04}$	$1.7x10^{-01}$	0
Biomedical waste incineration	0	$5.6x10^{-06}$	$6.1x10^{-01}$	$3.1x10^{-05}$	$2.6x10^{-04}$	$3.7x10^{-04}$	$7.2x10^{-01}$	$2.1x10^{-04}$	$4.5x10^{-05}$
Bitumen pre-mix or hotmix production	0	$4.6x10^{-04}$	$9.1x10^{+00}$	$2.0x10^{+01}$	$2.2x10^{-02}$	$3.1x10^{-02}$	$3.5x10^{-01}$	$4.5x10^{+00}$	$3.7x10^{-03}$
Bulk cargo handling	0	$7.5x10^{-08}$	$2.3x10^{-07}$	$4.2x10^{-07}$	$1.3x10^{-01}$	$5.0x10^{-06}$	0	$4.2x10^{-01}$	$6.1x10^{-07}$
Cement or lime handling	0	$5.0x10^{-04}$	$4.3x10^{-02}$	$7.6x10^{-02}$	$1.9x10^{+01}$	$3.3x10^{-02}$	$4.1x10^{-05}$	$9.2x10^{+01}$	$4.1x10^{-03}$
Cement or lime production	0	0	0	0	$1.1x10^{+02}$	0	$4.1x10^{+00}$	$1.3x10^{+01}$	0
Ceramics production (excluding glass)	0	$1.7x10^{-06}$	$7.6x10^{+00}$	$1.5x10^{+01}$	$2.3x10^{+01}$	$1.1x10^{-04}$	$8.9x10^{-06}$	$5.9x10^{+00}$	$1.4x10^{-05}$
Chemical storage	0	0	0	0	$1.2x10^{-01}$	$6.2x10^{+00}$	0	$7.5x10^{-01}$	0
Chemical Storage - Other Chemical Storage	0	$5.4x10^{-01}$	$1.3x10^{+01}$	$1.6x10^{-01}$	$1.1x10^{+01}$	$8.2x10^{-03}$	$3.3x10^{-01}$	$2.8x10^{+01}$	$5.0x10^{+00}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	0	$4.3x10^{-04}$	$1.0x10^{+01}$	$3.5x10^{+00}$	$7.0x10^{+00}$	$2.8x10^{-02}$	$1.9x10^{-02}$	$2.2x10^{+01}$	$3.4x10^{-03}$
Coal loading	$2.5x10^{-02}$	$3.9x10^{-02}$	$6.9x10^{-02}$	$1.0x10^{-01}$	$5.1x10^{-01}$	$4.3x10^{-01}$	$1.6x10^{-04}$	$2.0x10^{+00}$	$5.3x10^{-02}$
Coal mining	$1.8x10^{+01}$	$3.5x10^{+00}$	$2.2x10^{+01}$	$7.0x10^{+00}$	$6.4x10^{+00}$	$1.1x10^{+00}$	$1.1x10^{-01}$	$2.4x10^{+01}$	$6.6x10^{-02}$
Coal washery reject or slag landfilling	$1.7x10^{-04}$	0	$1.9x10^{-04}$	0	0	0	0	0	0
Coke production	0	0	$9.8x10^{-01}$	0	$1.1x10^{-02}$	0	$2.1x10^{+01}$	$1.4x10^{-01}$	0
Composting and related reprocessing or treatment	0	$1.7x10^{-05}$	$8.9x10^{+00}$	$1.6x10^{-02}$	$1.3x10^{+01}$	$4.5x10^{+00}$	$1.1x10^{-05}$	$1.6x10^{+02}$	$1.4x10^{-04}$
Concrete batching	0	$1.2x10^{-04}$	$9.9x10^{-02}$	$1.9x10^{-01}$	$5.8x10^{+01}$	$8.1x10^{-03}$	$1.3x10^{-04}$	$5.7x10^{+01}$	$9.9x10^{-04}$
Contaminated soil treatment	0	0	0	0	0	0	0	0	0
Crushing, grinding or separating works	$1.8x10^{-01}$	$3.3x10^{-08}$	$5.8x10^{+00}$	$9.6x10^{+00}$	$3.4x10^{+00}$	$9.6x10^{-01}$	$5.3x10^{-02}$	$3.8x10^{+01}$	0
Drum or container reconditioning	0	$1.3x10^{-05}$	$2.7x10^{-02}$	$5.6x10^{-02}$	$2.2x10^{+01}$	$8.4x10^{-04}$	$3.2x10^{-05}$	$7.0x10^{+01}$	$1.0x10^{-04}$
Electricity Generation - Generation of electrical power from coal	0	$1.6x10^{-04}$	$2.1x10^{-02}$	$9.0x10^{-04}$	$6.6x10^{+02}$	$1.1x10^{-02}$	$7.9x10^{-01}$	$7.7x10^{+01}$	$1.3x10^{-03}$
Electricity Generation - Generation of electrical power from gas	$2.4x10^{-03}$	$1.4x10^{+00}$	$5.1x10^{+00}$	$3.0x10^{+02}$	$1.9x10^{+00}$	$9.9x10^{-05}$	$2.1x10^{-01}$	$1.9x10^{+00}$	$1.2x10^{-05}$
Electricity Generation - Generation of electrical power other than from coal or gas	0	$1.7x10^{-01}$	$1.1x10^{+00}$	$5.5x10^{+00}$	$4.1x10^{+00}$	$4.9x10^{+00}$	$2.0x10^{-02}$	$1.2x10^{+01}$	$5.7x10^{-01}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Environmentally sensitive area landfilling	0	0	$8.1x10^{-01}$	0	$1.2x10^{+00}$	$4.0x10^{-01}$	0	$1.4x10^{+01}$	0
Explosives or pyrotechnics production	0	$4.9x10^{-06}$	$1.5x10^{-05}$	$1.7x10^{-04}$	$3.7x10^{-04}$	$3.3x10^{-04}$	0	$2.3x10^{-04}$	$4.0x10^{-05}$
Freeway or tollway construction	0	$2.1x10^{-06}$	$6.3x10^{-06}$	$1.2x10^{-05}$	$8.5x10^{-04}$	$1.4x10^{-04}$	0	$3.1x10^{-04}$	$1.7x10^{-05}$
Glass Production - Production of container glass	0	0	$3.6x10^{+00}$	$2.0x10^{+00}$	$1.4x10^{-04}$	0	0	$9.8x10^{-01}$	0
Glass Production - Production of float glass	0	0	$1.2x10^{+00}$	$6.9x10^{-01}$	$2.7x10^{-03}$	0	$2.0x10^{-05}$	$3.3x10^{-01}$	0
Hard-rock gravel quarrying	0	0	$1.9x10^{-01}$	0	$1.5x10^{+01}$	$9.5x10^{-02}$	0	$3.5x10^{+01}$	0
Hazardous, industrial or group A waste generation or storage	$1.0x10^{-01}$	$5.8x10^{-03}$	$2.4x10^{+00}$	$3.9x10^{-01}$	$2.3x10^{+02}$	$4.5x10^{-01}$	$8.5x10^{-04}$	$1.8x10^{+02}$	$3.6x10^{-01}$
Hazardous, industrial, group A or group B waste disposal	0	0	0	0	$1.2x10^{-04}$	0	0	$3.8x10^{-05}$	0
Hazardous, industrial, group A or group B waste processing	0	$6.0x10^{-02}$	$2.7x10^{-01}$	$4.8x10^{-01}$	$2.7x10^{+00}$	$3.9x10^{+00}$	$1.0x10^{-04}$	$2.5x10^{+00}$	$4.8x10^{-01}$
Inert waste landfilling	0	$1.0x10^{-05}$	$1.3x10^{+00}$	$5.6x10^{-05}$	$2.0x10^{+00}$	$6.5x10^{-01}$	0	$2.3x10^{+01}$	$8.2x10^{-05}$
Landfilling in designated areas	0	0	$1.7x10^{+00}$	0	$2.6x10^{+00}$	$8.7x10^{-01}$	0	$3.0x10^{+01}$	0
Metal plating or coating works	$5.6x10^{-04}$	$7.7x10^{-04}$	$1.7x10^{+01}$	$2.9x10^{+01}$	$2.0x10^{+02}$	$1.2x10^{+00}$	$1.5x10^{+00}$	$1.0x10^{+03}$	$8.1x10^{+00}$
Milk processing	0	$3.5x10^{-02}$	$2.7x10^{-01}$	$5.2x10^{-01}$	$2.0x10^{+00}$	$2.3x10^{+00}$	$2.2x10^{-04}$	$1.8x10^{+00}$	$2.8x10^{-01}$
Mining (other than coal)	0	0	0	0	$9.2x10^{-04}$	0	0	$2.8x10^{-04}$	0
Mooring and boat storage	0	$1.6x10^{-06}$	$3.1x10^{-02}$	$8.6x10^{-06}$	$5.0x10^{-01}$	$1.0x10^{-04}$	0	$2.4x10^{+00}$	$1.3x10^{-05}$
Other activities - bread manufacturing	0	$1.6x10^{-04}$	$2.9x10^{-02}$	$5.5x10^{-02}$	$8.3x10^{-03}$	$1.0x10^{-02}$	$3.7x10^{-05}$	$2.3x10^{-02}$	$1.3x10^{-03}$
Other activities - cake and pastry manufacturing	0	$2.8x10^{-06}$	$1.4x10^{-02}$	$2.8x10^{-02}$	$1.3x10^{-04}$	$1.8x10^{-04}$	$1.9x10^{-05}$	$7.2x10^{-03}$	$2.3x10^{-05}$
Other activities - confectionary manufacturing	0	0	$4.5x10^{-03}$	$9.0x10^{-03}$	$1.9x10^{-01}$	0	$6.2x10^{-06}$	$1.8x10^{-01}$	0
Other activities - dry cleaning	0	0	$2.1x10^{-02}$	$4.2x10^{-02}$	0	$1.3x10^{+00}$	$2.9x10^{-05}$	$1.1x10^{-02}$	0
Other activities - oil and fat manufacturing	0	0	$8.5x10^{-02}$	$1.7x10^{-01}$	0	0	$1.2x10^{-04}$	$4.3x10^{-02}$	0
Other activities - printing	$2.3x10^{-03}$	$1.2x10^{-03}$	$1.6x10^{-01}$	$3.3x10^{-01}$	$5.0x10^{+01}$	$1.1x10^{+01}$	$9.4x10^{-04}$	$8.0x10^{+01}$	$3.4x10^{-03}$
Other activities - services to air transport	0	0	$3.6x10^{-02}$	$7.2x10^{-02}$	$3.4x10^{+01}$	0	$4.9x10^{-05}$	$2.7x10^{+01}$	0
Other activities - soft drink manufacturing	0	$1.4x10^{-02}$	$5.5x10^{-02}$	$1.0x10^{-01}$	$6.4x10^{-01}$	$9.3x10^{-01}$	$1.8x10^{-05}$	$5.4x10^{-01}$	$1.1x10^{-01}$
Other agricultural crop processing	0	$4.7x10^{-03}$	$4.1x10^{-01}$	$8.3x10^{-01}$	$1.1x10^{+00}$	$1.4x10^{-01}$	$6.9x10^{-04}$	$4.3x10^{+00}$	$1.8x10^{-02}$
Other chemical processing	$3.9x10^{-02}$	$2.0x10^{+00}$	$6.1x10^{+01}$	$1.3x10^{+01}$	$4.3x10^{+01}$	$3.2x10^{-01}$	$2.8x10^{-01}$	$5.0x10^{+02}$	$3.1x10^{+01}$
Other land-based extraction	$7.9x10^{-01}$	$3.0x10^{-05}$	$3.2x10^{+00}$	$4.5x10^{+00}$	$4.9x10^{+00}$	$2.0x10^{-03}$	$5.2x10^{-03}$	$1.2x10^{+01}$	$2.4x10^{-04}$
Other livestock processing	0	$2.7x10^{-02}$	$1.8x10^{-01}$	$3.6x10^{-01}$	$1.3x10^{+00}$	$1.8x10^{+00}$	$1.4x10^{-04}$	$1.1x10^{+00}$	$2.2x10^{-01}$
Other metal processing	0	$2.4x10^{-03}$	$2.1x10^{+00}$	$2.7x10^{+00}$	$4.0x10^{+02}$	$1.6x10^{-01}$	$5.4x10^{-03}$	$6.5x10^{+02}$	$8.5x10^{+01}$
Other vessel construction or maintenance	$1.2x10^{-01}$	$3.4x10^{-07}$	$2.8x10^{-02}$	$1.9x10^{-06}$	$2.4x10^{+01}$	$2.2x10^{-05}$	0	$1.2x10^{+02}$	$2.7x10^{-06}$
Paint production	$1.5x10^{-05}$	$9.7x10^{-02}$	$5.0x10^{-01}$	$2.6x10^{-01}$	$2.9x10^{+00}$	$2.3x10^{-01}$	$9.1x10^{-05}$	$8.3x10^{+01}$	$2.4x10^{-02}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Paper production using recycled materials	0	$1.2x10^{-02}$	$6.1x10^{-02}$	$1.2x10^{-01}$	$5.8x10^{-01}$	$7.7x10^{-01}$	$1.5x10^{-03}$	$7.9x10^{-01}$	$9.4x10^{-02}$
Pesticides production	0	$6.0x10^{-07}$	$4.5x10^{-03}$	$8.0x10^{-03}$	$1.3x10^{-01}$	$4.0x10^{-05}$	$5.5x10^{-06}$	$2.1x10^{-03}$	$4.9x10^{-06}$
Petrochemical production	$1.1x10^{-02}$	0	$6.9x10^{+00}$	$1.1x10^{+02}$	$5.2x10^{+00}$	0	$6.9x10^{-03}$	$7.6x10^{+00}$	0
Petroleum refining	0	$3.0x10^{-01}$	$7.7x10^{+01}$	$5.5x10^{+02}$	$6.9x10^{+01}$	$2.0x10^{+01}$	$3.7x10^{-01}$	$1.0x10^{+02}$	$2.4x10^{+00}$
Pharmaceutical or veterinary products production	$1.3x10^{-03}$	$4.2x10^{-03}$	$1.4x10^{-01}$	$2.7x10^{-01}$	$1.5x10^{+00}$	$2.6x10^{-01}$	$1.7x10^{-04}$	$1.4x10^{+00}$	$3.2x10^{-02}$
Plastics production	0	$7.4x10^{+00}$	$3.4x10^{+01}$	$1.4x10^{+01}$	$3.5x10^{+01}$	0	$5.2x10^{-05}$	$3.1x10^{+01}$	$8.5x10^{+01}$
Poultry production	0	$1.1x10^{-01}$	$4.6x10^{-01}$	$8.7x10^{-01}$	$5.2x10^{+00}$	$7.6x10^{+00}$	$1.4x10^{-04}$	$4.3x10^{+00}$	$9.2x10^{-01}$
Primary aluminium production	0	0	$2.5x10^{-01}$	$3.2x10^{-01}$	$2.4x10^{-01}$	0	$3.3x10^{+01}$	$3.3x10^{+00}$	0
Primary iron and steel production	0	$5.3x10^{-02}$	$6.0x10^{+02}$	$1.1x10^{+02}$	$1.6x10^{+01}$	$1.4x10^{+00}$	$8.2x10^{+01}$	$1.2x10^{+02}$	$1.7x10^{-01}$
Primary non-ferrous production (excluding aluminium)	0	$8.8x10^{-04}$	$3.3x10^{-01}$	$6.7x10^{-01}$	$4.0x10^{-02}$	$5.8x10^{-02}$	$4.9x10^{-04}$	$2.0x10^{-01}$	$7.1x10^{-03}$
Railway activities	0	0	0	0	$5.7x10^{-01}$	0	0	$9.0x10^{+00}$	0
Rendering or fat extraction	0	$7.4x10^{-03}$	$3.9x10^{-01}$	$6.4x10^{-01}$	$4.4x10^{-01}$	$4.9x10^{-01}$	$4.7x10^{-04}$	$6.4x10^{-01}$	$5.9x10^{-02}$
Scrap metal recovery	0	$2.3x10^{-06}$	$6.9x10^{-06}$	$1.3x10^{-05}$	$2.6x10^{-03}$	$1.5x10^{-04}$	0	$8.5x10^{-04}$	$1.9x10^{-05}$
Secondary aluminium production	0	0	$2.7x10^{+01}$	$5.3x10^{+01}$	$1.5x10^{-01}$	0	$9.3x10^{-04}$	$1.4x10^{+01}$	0
Secondary iron and steel production	0	0	$3.7x10^{+01}$	$7.3x10^{+01}$	$9.2x10^{+00}$	0	$3.8x10^{+00}$	$9.6x10^{+01}$	0
Secondary non-ferrous production (excluding aluminium)	0	0	$2.1x10^{+00}$	$1.2x10^{+00}$	$1.1x10^{-01}$	0	$5.7x10^{-05}$	$5.5x10^{-01}$	0
Sewage Treatment - processing by large plants (> 10000 ML per year)	$2.2x10^{-02}$	$2.1x10^{-01}$	$7.9x10^{-01}$	$7.4x10^{+00}$	$7.0x10^{+00}$	$1.0x10^{+01}$	$1.5x10^{-02}$	$5.8x10^{+00}$	$1.2x10^{+00}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$2.0x10^{-02}$	$6.3x10^{-01}$	$3.7x10^{-01}$	$2.6x10^{+01}$	$1.7x10^{+00}$	$2.2x10^{+00}$	$2.2x10^{-02}$	$1.5x10^{+00}$	$1.0x10^{+02}$
Soap or detergent production	$4.5x10^{-04}$	$4.1x10^{+00}$	$1.9x10^{+01}$	$2.2x10^{-01}$	$1.2x10^{+00}$	$1.8x10^{-01}$	$9.7x10^{-05}$	$4.2x10^{+00}$	$2.3x10^{-02}$
Solid waste landfilling	0	0	$1.9x10^{+01}$	$7.9x10^{+00}$	$2.9x10^{+01}$	$9.7x10^{+00}$	$7.2x10^{-03}$	$3.4x10^{+02}$	0
Used tyre processing or disposal	0	0	0	0	$2.2x10^{-04}$	0	0	$6.9x10^{-05}$	0
Vessel construction or maintenance using dry or floating docks	$6.8x10^{-02}$	0	$1.6x10^{-02}$	0	$2.9x10^{+00}$	0	0	$7.7x10^{+00}$	0
Waste oil recovery	0	$8.7x10^{-04}$	$3.7x10^{-02}$	$2.9x10^{-01}$	$5.6x10^{-02}$	$4.9x10^{-02}$	$1.6x10^{-03}$	$5.1x10^{-02}$	$5.9x10^{-03}$
Waste storage, transfer, separating or processing	0	$4.6x10^{-03}$	$1.7x10^{-02}$	$1.2x10^{-01}$	$4.8x10^{-01}$	$2.8x10^{-02}$	$7.4x10^{-04}$	$3.2x10^{-01}$	$3.4x10^{-03}$
Wood or timber milling	0	$8.0x10^{-04}$	$4.7x10^{-02}$	$1.3x10^{-01}$	$6.6x10^{+01}$	$5.3x10^{-02}$	$3.2x10^{-04}$	$5.1x10^{+01}$	$6.5x10^{-03}$
Wood preservation	0	0	0	0	$4.9x10^{-02}$	0	0	$1.4x10^{-03}$	0
Grand Total	**19.4**	**34.4**	**1,080**	**1,380**	**2,220**	**113**	**150**	**4,190**	**324**

Table 4.20: Average Daily Industrial Emissions (January Weekend Day/Summer Weekend Day) (kg/day)

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	$8.1x10^{+02}$	$3.1x10^{-03}$	$2.8x10^{+03}$	$6.5x10^{+02}$	$5.7x10^{+02}$	$5.6x10^{+02}$	$3.2x10^{+00}$	$7.1x10^{+02}$
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	$2.0x10^{+01}$	$1.1x10^{-04}$	$3.9x10^{+01}$	$2.9x10^{+02}$	$2.7x10^{+02}$	$2.7x10^{+02}$	$5.6x10^{+01}$	$3.1x10^{+00}$
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	$5.4x10^{+00}$
Animal slaughtering	$7.9x10^{+00}$	$4.7x10^{-05}$	$1.0x10^{+01}$	$7.3x10^{-01}$	$7.3x10^{-01}$	$7.3x10^{-01}$	$4.9x10^{-02}$	$9.3x10^{+01}$
Battery production	0	$1.4x10^{+00}$	0	$6.0x10^{+00}$	$6.0x10^{+00}$	$6.0x10^{+00}$	0	0
Beer or distilled alcohol production	0	0	0	0	0	0	0	0
Biomedical waste incineration	$1.5x10^{+01}$	$8.1x10^{-02}$	$1.1x10^{+01}$	$2.0x10^{+00}$	$2.0x10^{+00}$	$2.0x10^{+00}$	$3.2x10^{+00}$	$1.6x10^{+00}$
Bitumen pre-mix or hotmix production	$2.6x10^{+02}$	$4.3x10^{-02}$	$5.5x10^{+01}$	$5.1x10^{+02}$	$4.4x10^{+02}$	$3.5x10^{+02}$	$1.0x10^{+01}$	$6.3x10^{+01}$
Bulk cargo handling	0	$7.4x10^{-06}$	0	$4.5x10^{+02}$	$2.2x10^{+02}$	$3.4x10^{+01}$	0	$3.1x10^{+00}$
Cement or lime handling	$2.8x10^{+00}$	$3.1x10^{-05}$	$3.4x10^{+00}$	$8.2x10^{+02}$	$4.4x10^{+02}$	$1.1x10^{+02}$	$6.4x10^{-03}$	$1.7x10^{+02}$
Cement or lime production	$8.8x10^{+03}$	$1.3x10^{+00}$	$1.6x10^{+04}$	$8.8x10^{+02}$	$7.6x10^{+02}$	$4.7x10^{+02}$	$5.6x10^{+02}$	$2.3x10^{+02}$
Ceramics production (excluding glass)	$2.1x10^{+03}$	$2.7x10^{-04}$	$6.3x10^{+02}$	$5.6x10^{+03}$	$3.0x10^{+03}$	$2.2x10^{+03}$	$1.8x10^{+03}$	$3.1x10^{+02}$
Chemical storage	0	0	0	0	0	0	0	$1.7x10^{+01}$
Chemical Storage - Other Chemical Storage	$7.1x10^{+00}$	$4.2x10^{-05}$	$1.2x10^{+01}$	$6.4x10^{-01}$	$6.4x10^{-01}$	$6.4x10^{-01}$	$4.4x10^{-02}$	$1.4x10^{+03}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	$4.3x10^{+03}$	$2.4x10^{-02}$	$2.3x10^{+03}$	$2.7x10^{+02}$	$1.8x10^{+02}$	$1.8x10^{+02}$	$3.8x10^{+03}$	$1.2x10^{+03}$
Coal loading	$2.3x10^{+00}$	$5.4x10^{-02}$	$1.1x10^{+01}$	$1.8x10^{+03}$	$8.2x10^{+02}$	$9.0x10^{+01}$	$6.5x10^{-01}$	$1.2x10^{+01}$
Coal mining	$6.1x10^{+03}$	$3.4x10^{+00}$	$3.3x10^{+03}$	$1.4x10^{+05}$	$6.2x10^{+04}$	$1.0x10^{+04}$	$1.8x10^{+02}$	$3.1x10^{+02}$
Coal washery reject or slag landfilling	$1.1x10^{-02}$	0	$4.3x10^{-02}$	$3.1x10^{+02}$	$1.5x10^{+02}$	$3.1x10^{+01}$	$1.4x10^{-03}$	$1.1x10^{-03}$
Coke production	$2.0x10^{+01}$	$1.3x10^{+00}$	$8.2x10^{+01}$	$3.7x10^{+02}$	$1.9x10^{+02}$	$1.9x10^{+02}$	$1.5x10^{+03}$	$1.3x10^{+00}$
Composting and related reprocessing or treatment	$1.1x10^{+03}$	$9.2x10^{-06}$	$1.2x10^{+01}$	$3.4x10^{+02}$	$1.7x10^{+02}$	$3.5x10^{+01}$	$8.5x10^{-03}$	$5.6x10^{+02}$
Concrete batching	$7.9x10^{+00}$	$1.6x10^{-03}$	$1.2x10^{+01}$	$1.9x10^{+03}$	$6.5x10^{+02}$	$1.2x10^{+02}$	$4.8x10^{-02}$	$4.2x10^{+02}$
Contaminated soil treatment	0	0	0	0	0	0	0	0
Crushing, grinding or separating works	$1.6x10^{+03}$	$6.9x10^{-02}$	$6.2x10^{+02}$	$1.5x10^{+04}$	$5.8x10^{+03}$	$2.1x10^{+03}$	$5.9x10^{+02}$	$1.8x10^{+02}$
Drum or container reconditioning	$1.3x10^{+00}$	$3.6x10^{-02}$	$4.8x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$1.4x10^{-02}$	$9.5x10^{+01}$
Electricity Generation - Generation of electrical power from coal	$1.9x10^{+04}$	$2.8x10^{+00}$	$3.9x10^{+05}$	$2.9x10^{+04}$	$1.3x10^{+04}$	$4.6x10^{+03}$	$7.1x10^{+05}$	$1.9x10^{+03}$
Electricity Generation - Generation of electrical power from gas	$6.8x10^{+03}$	$6.0x10^{-03}$	$7.2x10^{+03}$	$1.3x10^{+02}$	$1.3x10^{+02}$	$1.2x10^{+02}$	$3.4x10^{+01}$	$1.3x10^{+03}$
Electricity Generation - Generation of electrical power other than from coal or gas	$2.7x10^{+02}$	0	$2.8x10^{+03}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$4.4x10^{-01}$	$1.5x10^{+02}$
Environmentally sensitive area landfilling	$4.4x10^{+00}$	$7.1x10^{-05}$	0	$4.2x10^{+02}$	$2.0x10^{+02}$	$4.1x10^{+01}$	0	$5.0x10^{+01}$
Explosives or pyrotechnics production	0	0	0	0	0	0	0	$3.5x10^{-03}$
Freeway or tollway construction	0	$3.5x10^{-03}$	0	$4.2x10^{+02}$	$2.0x10^{+02}$	$3.4x10^{+01}$	0	$9.1x10^{-03}$
Glass Production - Production of container glass	$5.0x10^{+01}$	$6.1x10^{+00}$	$4.3x10^{+03}$	$2.9x10^{+02}$	$2.3x10^{+02}$	$2.3x10^{+02}$	$1.7x10^{+03}$	$1.0x10^{+02}$

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
Glass Production - Production of float glass	$2.8x10^{+01}$	$7.8x10^{-04}$	$2.3x10^{+03}$	$3.1x10^{+02}$	$3.0x10^{+02}$	$3.0x10^{+02}$	$4.8x10^{+02}$	$3.4x10^{+01}$
Hard-rock gravel quarrying	$1.1x10^{+00}$	$7.8x10^{-03}$	0	$1.4x10^{+04}$	$3.5x10^{+03}$	$8.3x10^{+02}$	0	$4.6x10^{+02}$
Hazardous, industrial or group A waste generation or storage	$4.0x10^{+00}$	$2.1x10^{-05}$	$2.7x10^{+00}$	$2.4x10^{+00}$	$2.2x10^{+00}$	$1.8x10^{+00}$	$1.4x10^{-02}$	$3.9x10^{+02}$
Hazardous, industrial, group A or group B waste disposal	0	0	0	0	0	0	0	$1.4x10^{-03}$
Hazardous, industrial, group A or group B waste processing	$1.1x10^{+01}$	$8.5x10^{-05}$	$1.3x10^{+01}$	$3.0x10^{+01}$	$1.5x10^{+01}$	$1.5x10^{+01}$	$1.8x10^{-01}$	$2.5x10^{+01}$
Inert waste landfilling	$1.2x10^{+00}$	$1.8x10^{-05}$	0	$1.0x10^{+03}$	$4.3x10^{+02}$	$8.8x10^{+01}$	0	$8.2x10^{+01}$
Landfilling in designated areas	$9.6x10^{+00}$	0	0	$1.2x10^{+02}$	$6.0x10^{+01}$	$1.2x10^{+01}$	0	$1.1x10^{+02}$
Metal plating or coating works	$3.2x10^{+03}$	$1.5x10^{-01}$	$1.7x10^{+02}$	$8.0x10^{+01}$	$7.6x10^{+01}$	$7.4x10^{+01}$	$8.1x10^{+01}$	$6.5x10^{+03}$
Milk processing	$2.7x10^{+01}$	$1.6x10^{-04}$	$3.5x10^{+01}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$1.7x10^{-01}$	$1.8x10^{+01}$
Mining (other than coal)	0	$6.0x10^{-04}$	0	$2.1x10^{+03}$	$9.7x10^{+02}$	$2.0x10^{+02}$	0	$1.0x10^{-02}$
Mooring and boat storage	0	0	0	0	0	0	0	$5.6x10^{+00}$
Other activities - bread manufacturing	$4.5x10^{+00}$	$2.7x10^{-05}$	$5.4x10^{+00}$	$7.0x10^{-01}$	$7.0x10^{-01}$	$7.0x10^{-01}$	$2.8x10^{-02}$	$5.3x10^{-01}$
Other activities - cake and pastry manufacturing	$2.4x10^{+00}$	$1.4x10^{-05}$	$2.8x10^{+00}$	$2.1x10^{-01}$	$2.1x10^{-01}$	$2.1x10^{-01}$	$1.5x10^{-02}$	$1.6x10^{-01}$
Other activities - confectionary manufacturing	$2.2x10^{-01}$	$4.5x10^{-06}$	$1.5x10^{+00}$	$6.9x10^{-02}$	$6.9x10^{-02}$	$6.9x10^{-02}$	$4.7x10^{-03}$	$1.0x10^{+00}$
Other activities - dry cleaning	$3.3x10^{+00}$	$2.1x10^{-05}$	$4.2x10^{+00}$	$3.2x10^{-01}$	$3.2x10^{-01}$	$3.2x10^{-01}$	$2.2x10^{-02}$	$1.5x10^{+00}$
Other activities - oil and fat manufacturing	$1.4x10^{+01}$	$8.5x10^{-05}$	$3.1x10^{+01}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$8.9x10^{-02}$	$9.4x10^{-01}$
Other activities - printing	$2.3x10^{+01}$	$1.3x10^{-04}$	$3.7x10^{+01}$	$2.3x10^{+00}$	$2.3x10^{+00}$	$2.3x10^{+00}$	$1.6x10^{-01}$	$4.4x10^{+03}$
Other activities - services to air transport	$6.0x10^{+00}$	$3.6x10^{-05}$	$7.2x10^{+00}$	$5.5x10^{-01}$	$5.5x10^{-01}$	$5.5x10^{-01}$	$3.8x10^{-02}$	$2.7x10^{+02}$
Other activities - soft drink manufacturing	$2.2x10^{+00}$	$1.3x10^{-05}$	$2.6x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$1.4x10^{-02}$	$5.6x10^{+00}$
Other agricultural crop processing	$7.1x10^{+01}$	$4.3x10^{-04}$	$8.4x10^{+01}$	$3.2x10^{+02}$	$1.6x10^{+02}$	$5.5x10^{+01}$	$6.5x10^{-01}$	$2.8x10^{+01}$
Other chemical processing	$1.7x10^{+02}$	$8.0x10^{-04}$	$3.2x10^{+02}$	$1.0x10^{+02}$	$9.9x10^{+01}$	$9.7x10^{+01}$	$1.4x10^{+02}$	$9.0x10^{+02}$
Other land-based extraction	$6.3x10^{+02}$	$6.8x10^{-03}$	$1.4x10^{+02}$	$2.2x10^{+04}$	$8.5x10^{+03}$	$1.9x10^{+03}$	$5.5x10^{+02}$	$1.8x10^{+02}$
Other livestock processing	$1.6x10^{+01}$	$9.6x10^{-05}$	$1.9x10^{+01}$	$1.5x10^{+00}$	$1.5x10^{+00}$	$1.5x10^{+00}$	$1.0x10^{-01}$	$1.3x10^{+01}$
Other metal processing	$3.5x10^{+01}$	$2.1x10^{-04}$	$4.3x10^{+01}$	$4.0x10^{+01}$	$3.6x10^{+01}$	$3.6x10^{+01}$	$2.2x10^{-01}$	$2.5x10^{+03}$
Other vessel construction or maintenance	0	$6.3x10^{-04}$	$1.6x10^{+00}$	$1.1x10^{+02}$	$9.1x10^{+01}$	$8.4x10^{+01}$	0	$2.2x10^{+02}$
Paint production	$1.8x10^{+00}$	$1.3x10^{-05}$	$2.1x10^{+00}$	$3.4x10^{+00}$	$3.2x10^{+00}$	$3.2x10^{+00}$	$2.8x10^{-02}$	$1.1x10^{+02}$
Paper production using recycled materials	$1.3x10^{+02}$	$5.9x10^{-02}$	$3.3x10^{+02}$	$2.0x10^{+01}$	$4.0x10^{+00}$	$4.0x10^{+00}$	$3.2x10^{+01}$	$7.4x10^{+01}$
Pesticides production	$3.3x10^{-01}$	$1.9x10^{-06}$	$3.9x10^{-01}$	$2.9x10^{-02}$	$2.9x10^{-02}$	$2.9x10^{-02}$	$2.0x10^{-03}$	$3.0x10^{-01}$
Petrochemical production	$8.1x10^{+02}$	$4.9x10^{-01}$	$3.2x10^{+03}$	$3.0x10^{+02}$	$1.2x10^{+02}$	$1.2x10^{+02}$	$9.6x10^{+02}$	$1.2x10^{+03}$
Petroleum refining	$1.5x10^{+03}$	$1.6x10^{-01}$	$7.5x10^{+03}$	$1.2x10^{+03}$	$7.1x10^{+02}$	$6.4x10^{+02}$	$1.9x10^{+04}$	$8.8x10^{+03}$
Pharmaceutical or veterinary products production	$8.5x10^{+00}$	$5.1x10^{-05}$	$1.2x10^{+01}$	$9.2x10^{-01}$	$9.0x10^{-01}$	$8.9x10^{-01}$	$8.5x10^{-02}$	$8.8x10^{+01}$
Plastics production	$5.1x10^{+00}$	$2.4x10^{-05}$	$2.7x10^{+01}$	$4.2x10^{+02}$	$3.8x10^{+02}$	$3.7x10^{+02}$	$2.7x10^{-02}$	$8.7x10^{+02}$

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
Poultry production	$3.4x10^{+00}$	$1.8x10^{-05}$	$6.5x10^{+00}$	$2.4x10^{+03}$	$1.2x10^{+03}$	$3.2x10^{+02}$	$1.9x10^{-02}$	$4.4x10^{+01}$
Primary aluminium production	$1.5x10^{+05}$	$2.8x10^{-01}$	$9.2x10^{+02}$	$2.1x10^{+03}$	$1.2x10^{+03}$	$8.4x10^{+02}$	$3.4x10^{+04}$	$3.3x10^{+01}$
Primary iron and steel production	$1.4x10^{+06}$	$1.0x10^{+01}$	$2.1x10^{+04}$	$5.0x10^{+03}$	$4.3x10^{+03}$	$3.9x10^{+03}$	$2.7x10^{+04}$	$1.6x10^{+03}$
Primary non-ferrous production (excluding aluminium)	$5.4x10^{+01}$	$3.8x10^{-04}$	$1.3x10^{+02}$	$4.9x10^{+01}$	$4.0x10^{+01}$	$3.2x10^{+01}$	$2.3x10^{+01}$	$4.0x10^{+00}$
Railway activities	0	0	0	$1.3x10^{+01}$	$1.3x10^{+01}$	$1.3x10^{+01}$	0	$4.3x10^{+01}$
Rendering or fat extraction	$1.2x10^{+01}$	$7.1x10^{-05}$	$1.4x10^{+01}$	$1.1x10^{+00}$	$1.1x10^{+00}$	$1.1x10^{+00}$	$1.3x10^{-01}$	$1.2x10^{+01}$
Scrap metal recovery	0	0	$7.9x10^{+00}$	$1.3x10^{+02}$	$8.2x10^{+01}$	$6.1x10^{+01}$	0	$2.8x10^{-02}$
Secondary aluminium production	$1.8x10^{+02}$	$6.9x10^{-03}$	$1.7x10^{+02}$	$8.5x10^{+01}$	$6.6x10^{+01}$	$4.0x10^{+01}$	$7.6x10^{+01}$	$3.4x10^{+02}$
Secondary iron and steel production	0	0	$1.2x10^{+00}$	$9.1x10^{+00}$	$7.8x10^{+00}$	$8.6x10^{+00}$	$5.5x10^{-02}$	$4.9x10^{+01}$
Secondary non-ferrous production (excluding aluminium)	$4.2x10^{+02}$	$1.9x10^{+00}$	$8.9x10^{+01}$	$2.1x10^{+01}$	$1.5x10^{+01}$	$1.4x10^{+01}$	$2.4x10^{+02}$	$6.8x10^{+00}$
Sewage Treatment - processing by large plants (> 10000 ML per year)	$2.6x10^{+02}$	$9.5x10^{-05}$	$1.6x10^{+03}$	$4.5x10^{+00}$	$4.5x10^{+00}$	$4.5x10^{+00}$	$7.1x10^{-01}$	$1.2x10^{+02}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$6.1x10^{+02}$	$1.6x10^{-02}$	$1.2x10^{+02}$	$5.6x10^{+02}$	$1.9x10^{+02}$	$4.8x10^{+01}$	$3.3x10^{+00}$	$1.7x10^{+02}$
Soap or detergent production	$1.2x10^{+01}$	$6.9x10^{-05}$	$1.2x10^{+01}$	$1.0x10^{+00}$	$1.0x10^{+00}$	$1.0x10^{+00}$	$6.6x10^{+00}$	$2.2x10^{+02}$
Solid waste landfilling	$7.3x10^{+02}$	$2.7x10^{-03}$	$1.7x10^{+01}$	$5.1x10^{+03}$	$2.5x10^{+03}$	$5.0x10^{+02}$	0	$1.3x10^{+03}$
Used tyre processing or disposal	0	0	0	0	0	0	0	$2.5x10^{-03}$
Vessel construction or maintenance using dry or floating docks	0	0	0	$1.2x10^{+01}$	$1.0x10^{+01}$	$9.6x10^{+00}$	0	$7.5x10^{+01}$
Waste oil recovery	$6.5x10^{+00}$	$1.6x10^{-03}$	$2.6x10^{+01}$	$6.9x10^{-01}$	$6.7x10^{-01}$	$6.7x10^{-01}$	$4.2x10^{+01}$	$1.1x10^{+00}$
Waste storage, transfer, separating or processing	$1.5x10^{+02}$	$2.2x10^{-05}$	$1.1x10^{+02}$	$1.8x10^{+02}$	$7.7x10^{+01}$	$1.6x10^{+01}$	$1.6x10^{-02}$	$5.5x10^{+00}$
Wood or timber milling	0	0	0	$7.1x10^{+00}$	$7.3x10^{-01}$	$2.7x10^{-01}$	0	$3.2x10^{-03}$
Wood preservation	0	0	0	0	0	0	0	$1.3x10^{-03}$
Grand Total	**1,613,300**	**30.1**	**473,200**	**254,860**	**114,710**	**32,820**	**801,080**	**40,560**

Table 4.21: Average Daily Industrial Emissions (January Weekend Day/Summer Weekend Day) (kg/day)

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	0	$1.3x10^{+01}$	$6.4x10^{+01}$	$6.4x10^{+00}$	$3.5x10^{+00}$	0	$4.2x10^{-03}$	$1.5x10^{+01}$	0
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	0	0	$2.8x10^{-01}$	$5.5x10^{-01}$	$4.0x10^{-04}$	0	$1.5x10^{-04}$	$1.4x10^{-01}$	0
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	0	0
Animal slaughtering	0	$2.4x10^{-01}$	$7.8x10^{-01}$	$1.4x10^{+00}$	$1.1x10^{+01}$	$1.6x10^{+01}$	$6.4x10^{-05}$	$9.1x10^{+00}$	$1.9x10^{+00}$
Battery production	0	0	0	0	0	0	0	0	0
Beer or distilled alcohol production	0	0	0	0	0	0	0	0	0
Biomedical waste incineration	0	$5.6x10^{-06}$	$6.1x10^{-01}$	$3.1x10^{-05}$	$2.6x10^{-04}$	$3.7x10^{-04}$	$7.2x10^{-01}$	$2.1x10^{-04}$	$4.5x10^{-05}$
Bitumen pre-mix or hotmix production	0	$4.6x10^{-04}$	$5.5x10^{+00}$	$1.3x10^{+01}$	$2.2x10^{-02}$	$3.1x10^{-02}$	$2.2x10^{-01}$	$2.8x10^{+00}$	$3.7x10^{-03}$
Bulk cargo handling	0	$7.5x10^{-08}$	$2.3x10^{-07}$	$4.2x10^{-07}$	$1.2x10^{-01}$	$5.0x10^{-06}$	0	$4.2x10^{-01}$	$6.1x10^{-07}$
Cement or lime handling	0	$5.0x10^{-04}$	$2.3x10^{-02}$	$3.6x10^{-02}$	$1.9x10^{+01}$	$3.3x10^{-02}$	$1.8x10^{-05}$	$4.9x10^{+01}$	$4.1x10^{-03}$
Cement or lime production	0	0	0	0	$1.1x10^{+02}$	0	$4.1x10^{+00}$	$1.3x10^{+01}$	0
Ceramics production (excluding glass)	0	$1.7x10^{-06}$	$7.6x10^{+00}$	$1.5x10^{+01}$	$2.3x10^{+01}$	$1.1x10^{-04}$	$8.9x10^{-06}$	$5.9x10^{+00}$	$1.4x10^{-05}$
Chemical storage	0	0	0	0	$6.1x10^{-02}$	$6.2x10^{+00}$	0	$3.7x10^{-01}$	0
Chemical Storage - Other Chemical Storage	0	$1.1x10^{-04}$	$1.1x10^{+01}$	$8.5x10^{-02}$	$1.1x10^{+01}$	$8.2x10^{-03}$	$3.3x10^{-01}$	$2.9x10^{+01}$	$5.0x10^{+00}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	0	$4.3x10^{-04}$	$1.0x10^{+01}$	$3.5x10^{+00}$	$7.0x10^{+00}$	$2.8x10^{-02}$	$1.9x10^{-02}$	$2.2x10^{+01}$	$3.4x10^{-03}$
Coal loading	$2.5x10^{-02}$	$3.9x10^{-02}$	$6.9x10^{-02}$	$1.0x10^{-01}$	$5.1x10^{-01}$	$4.3x10^{-01}$	$1.6x10^{-04}$	$2.0x10^{+00}$	$5.3x10^{-02}$
Coal mining	$1.4x10^{+01}$	$3.5x10^{+00}$	$1.8x10^{+01}$	$7.0x10^{+00}$	$6.4x10^{+00}$	$1.1x10^{+00}$	$8.6x10^{-02}$	$2.4x10^{+01}$	$6.6x10^{-02}$
Coal washery reject or slag landfilling	$8.5x10^{-05}$	0	$9.6x10^{-05}$	0	0	0	0	0	0
Coke production	0	0	$9.8x10^{-01}$	0	$4.9x10^{-05}$	0	$2.1x10^{+01}$	$1.5x10^{-05}$	0
Composting and related reprocessing or treatment	0	$1.7x10^{-05}$	$8.9x10^{+00}$	$1.6x10^{-02}$	$1.3x10^{+01}$	$4.5x10^{+00}$	$1.1x10^{-05}$	$1.6x10^{+02}$	$1.4x10^{-04}$
Concrete batching	0	$1.2x10^{-04}$	$5.4x10^{-02}$	$9.9x10^{-02}$	$5.8x10^{+01}$	$8.1x10^{-03}$	$6.7x10^{-05}$	$5.7x10^{+01}$	$9.9x10^{-04}$
Contaminated soil treatment	0	0	0	0	0	0	0	0	0
Crushing, grinding or separating works	$1.7x10^{-01}$	$3.3x10^{-08}$	$5.7x10^{+00}$	$9.6x10^{+00}$	$3.4x10^{+00}$	$9.6x10^{-01}$	$5.3x10^{-02}$	$3.8x10^{+01}$	0
Drum or container reconditioning	0	$1.3x10^{-05}$	$1.3x10^{-02}$	$2.7x10^{-02}$	$1.1x10^{+01}$	$8.4x10^{-04}$	$1.8x10^{-05}$	$3.3x10^{+01}$	$1.0x10^{-04}$
Electricity Generation - Generation of electrical power from coal	0	$1.6x10^{-04}$	$2.1x10^{-02}$	$9.0x10^{-04}$	$6.6x10^{+02}$	$1.1x10^{-02}$	$7.9x10^{-01}$	$7.7x10^{+01}$	$1.3x10^{-03}$
Electricity Generation - Generation of electrical power from gas	$2.4x10^{-03}$	$1.4x10^{+00}$	$5.1x10^{+00}$	$3.0x10^{+02}$	$1.9x10^{+00}$	$9.9x10^{-05}$	$2.1x10^{-01}$	$1.9x10^{+00}$	$1.2x10^{-05}$
Electricity Generation - Generation of electrical power other than from coal or gas	0	$1.7x10^{-01}$	$1.1x10^{+00}$	$5.5x10^{+00}$	$4.1x10^{+00}$	$4.9x10^{+00}$	$2.0x10^{-02}$	$1.2x10^{+01}$	$5.7x10^{-01}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Environmentally sensitive area landfilling	0	0	$8.0x10^{-01}$	0	$1.2x10^{+00}$	$4.0x10^{-01}$	0	$1.4x10^{+01}$	0
Explosives or pyrotechnics production	0	$4.9x10^{-06}$	$1.5x10^{-05}$	$2.7x10^{-05}$	$3.7x10^{-04}$	$3.3x10^{-04}$	0	$2.3x10^{-04}$	$4.0x10^{-05}$
Freeway or tollway construction	0	$2.1x10^{-06}$	$6.3x10^{-06}$	$1.2x10^{-05}$	$8.5x10^{-04}$	$1.4x10^{-04}$	0	$3.1x10^{-04}$	$1.7x10^{-05}$
Glass Production - Production of container glass	0	0	$3.6x10^{+00}$	$2.0x10^{+00}$	$1.4x10^{-04}$	0	0	$9.8x10^{-01}$	0
Glass Production - Production of float glass	0	0	$1.2x10^{+00}$	$6.9x10^{-01}$	$2.7x10^{-03}$	0	$2.0x10^{-05}$	$3.3x10^{-01}$	0
Hard-rock gravel quarrying	0	0	$1.9x10^{-01}$	0	$1.5x10^{+01}$	$9.5x10^{-02}$	0	$3.5x10^{+01}$	0
Hazardous, industrial or group A waste generation or storage	0	$5.8x10^{-03}$	$9.8x10^{-01}$	$1.6x10^{-01}$	$7.1x10^{+00}$	$4.5x10^{-01}$	$1.8x10^{-05}$	$1.3x10^{+01}$	$3.6x10^{-01}$
Hazardous, industrial, group A or group B waste disposal	0	0	0	0	$1.2x10^{-04}$	0	0	$3.8x10^{-05}$	0
Hazardous, industrial, group A or group B waste processing	0	$6.0x10^{-02}$	$2.5x10^{-01}$	$4.6x10^{-01}$	$2.7x10^{+00}$	$3.9x10^{+00}$	$8.6x10^{-05}$	$2.4x10^{+00}$	$4.8x10^{-01}$
Inert waste landfilling	0	$1.0x10^{-05}$	$1.3x10^{+00}$	$5.6x10^{-05}$	$2.0x10^{+00}$	$6.5x10^{-01}$	0	$2.3x10^{+01}$	$8.2x10^{-05}$
Landfilling in designated areas	0	0	$1.7x10^{+00}$	0	$2.6x10^{+00}$	$8.7x10^{-01}$	0	$3.0x10^{+01}$	0
Metal plating or coating works	$5.6x10^{-04}$	$7.1x10^{-04}$	$1.7x10^{+01}$	$2.9x10^{+01}$	$1.9x10^{+02}$	$1.2x10^{+00}$	$1.5x10^{+00}$	$9.4x10^{+02}$	$8.1x10^{+00}$
Milk processing	0	$3.5x10^{-02}$	$2.7x10^{-01}$	$5.2x10^{-01}$	$2.0x10^{+00}$	$2.3x10^{+00}$	$2.2x10^{-04}$	$1.8x10^{+00}$	$2.8x10^{-01}$
Mining (other than coal)	0	0	0	0	$9.2x10^{-04}$	0	0	$2.8x10^{-04}$	0
Mooring and boat storage	0	$1.6x10^{-06}$	$3.1x10^{-02}$	$8.6x10^{-06}$	$9.1x10^{-02}$	$1.0x10^{-04}$	0	$5.0x10^{-01}$	$1.3x10^{-05}$
Other activities - bread manufacturing	0	$1.6x10^{-04}$	$2.9x10^{-02}$	$5.5x10^{-02}$	$8.3x10^{-03}$	$1.0x10^{-02}$	$3.7x10^{-05}$	$2.3x10^{-02}$	$1.3x10^{-03}$
Other activities - cake and pastry manufacturing	0	$2.8x10^{-06}$	$1.4x10^{-02}$	$2.8x10^{-02}$	$1.3x10^{-04}$	$1.8x10^{-04}$	$1.9x10^{-05}$	$7.2x10^{-03}$	$2.3x10^{-05}$
Other activities - confectionary manufacturing	0	0	$4.5x10^{-03}$	$9.0x10^{-03}$	$1.9x10^{-01}$	0	$6.2x10^{-06}$	$1.8x10^{-01}$	0
Other activities - dry cleaning	0	0	$2.1x10^{-02}$	$4.2x10^{-02}$	0	$1.3x10^{+00}$	$2.9x10^{-05}$	$1.1x10^{-02}$	0
Other activities - oil and fat manufacturing	0	0	$8.5x10^{-02}$	$1.7x10^{-01}$	0	0	$1.2x10^{-04}$	$4.3x10^{-02}$	0
Other activities - printing	$1.5x10^{-03}$	$9.5x10^{-04}$	$1.3x10^{-01}$	$2.6x10^{-01}$	$3.1x10^{+01}$	$5.6x10^{+00}$	$6.5x10^{-04}$	$4.1x10^{+01}$	$3.4x10^{-03}$
Other activities - services to air transport	0	0	$3.6x10^{-02}$	$7.2x10^{-02}$	$3.4x10^{+01}$	0	$4.9x10^{-05}$	$2.7x10^{+01}$	0
Other activities - soft drink manufacturing	0	$1.4x10^{-02}$	$5.5x10^{-02}$	$1.0x10^{-01}$	$6.4x10^{-01}$	$9.3x10^{-01}$	$1.8x10^{-05}$	$5.4x10^{-01}$	$1.1x10^{-01}$
Other agricultural crop processing	0	$4.7x10^{-03}$	$3.4x10^{-01}$	$7.0x10^{-01}$	$1.1x10^{+00}$	$1.4x10^{-01}$	$5.9x10^{-04}$	$4.3x10^{+00}$	$1.8x10^{-02}$
Other chemical processing	$2.0x10^{-02}$	$4.3x10^{-01}$	$3.4x10^{+01}$	$1.4x10^{+00}$	$3.1x10^{+01}$	$3.2x10^{-01}$	$2.8x10^{-01}$	$2.6x10^{+02}$	$2.6x10^{+01}$
Other land-based extraction	$2.2x10^{-01}$	$3.0x10^{-05}$	$2.5x10^{+00}$	$4.5x10^{+00}$	$4.9x10^{+00}$	$2.0x10^{-03}$	$1.4x10^{-03}$	$1.2x10^{+01}$	$2.4x10^{-04}$
Other livestock processing	0	$2.7x10^{-02}$	$1.8x10^{-01}$	$3.5x10^{-01}$	$1.3x10^{+00}$	$1.8x10^{+00}$	$1.3x10^{-04}$	$1.1x10^{+00}$	$2.2x10^{-01}$
Other metal processing	0	$2.4x10^{-03}$	$1.8x10^{-01}$	$3.6x10^{-01}$	$3.7x10^{+02}$	$1.6x10^{-01}$	$2.9x10^{-04}$	$4.5x10^{+02}$	$1.9x10^{-02}$
Other vessel construction or maintenance	$8.9x10^{-02}$	$3.4x10^{-07}$	$2.2x10^{-02}$	$1.9x10^{-06}$	$1.3x10^{+01}$	$2.2x10^{-05}$	0	$7.0x10^{+01}$	$2.7x10^{-06}$
Paint production	0	$2.9x10^{-03}$	$1.8x10^{-02}$	$3.5x10^{-02}$	$8.0x10^{-01}$	$1.9x10^{-01}$	$1.7x10^{-05}$	$2.1x10^{+01}$	$2.3x10^{-02}$
Paper production using recycled materials	0	$1.2x10^{-02}$	$6.1x10^{-02}$	$1.2x10^{-01}$	$5.8x10^{-01}$	$7.7x10^{-01}$	$1.5x10^{-03}$	$7.9x10^{-01}$	$9.4x10^{-02}$
Pesticides production	0	$6.0x10^{-07}$	$2.2x10^{-03}$	$3.9x10^{-03}$	$6.7x10^{-02}$	$4.0x10^{-05}$	$2.7x10^{-06}$	$1.1x10^{-03}$	$4.9x10^{-06}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Petrochemical production	$1.1x10^{-02}$	0	$6.9x10^{+00}$	$1.1x10^{+02}$	$5.2x10^{+00}$	0	$6.9x10^{-03}$	$7.6x10^{+00}$	0
Petroleum refining	0	$3.0x10^{-01}$	$7.7x10^{+01}$	$5.5x10^{+02}$	$6.9x10^{+01}$	$2.0x10^{+01}$	$3.7x10^{-01}$	$1.0x10^{+02}$	$2.4x10^{+00}$
Pharmaceutical or veterinary products production	$1.3x10^{-03}$	$4.1x10^{-03}$	$7.2x10^{-02}$	$1.4x10^{-01}$	$1.5x10^{+00}$	$2.6x10^{-01}$	$8.2x10^{-05}$	$1.4x10^{+00}$	$3.2x10^{-02}$
Plastics production	0	$3.7x10^{+00}$	$1.7x10^{+01}$	$1.4x10^{+01}$	$1.8x10^{+01}$	0	$3.2x10^{-05}$	$1.6x10^{+01}$	$4.2x10^{+01}$
Poultry production	0	$1.1x10^{-01}$	$3.8x10^{-01}$	$7.0x10^{-01}$	$5.2x10^{+00}$	$7.6x10^{+00}$	$2.5x10^{-05}$	$4.3x10^{+00}$	$9.2x10^{-01}$
Primary aluminium production	0	0	$2.5x10^{-01}$	$3.2x10^{-01}$	$2.4x10^{-01}$	0	$3.3x10^{+01}$	$3.3x10^{+00}$	0
Primary iron and steel production	0	$5.3x10^{-02}$	$6.0x10^{+02}$	$1.1x10^{+02}$	$1.6x10^{+01}$	$1.4x10^{+00}$	$8.2x10^{+01}$	$1.2x10^{+02}$	$1.7x10^{-01}$
Primary non-ferrous production (excluding aluminium)	0	$8.8x10^{-04}$	$3.3x10^{-01}$	$6.7x10^{-01}$	$4.0x10^{-02}$	$5.8x10^{-02}$	$4.9x10^{-04}$	$2.0x10^{-01}$	$7.1x10^{-03}$
Railway activities	0	0	0	0	$5.7x10^{-01}$	0	0	$9.0x10^{+00}$	0
Rendering or fat extraction	0	$7.4x10^{-03}$	$1.6x10^{-01}$	$1.8x10^{-01}$	$3.9x10^{-01}$	$4.9x10^{-01}$	$9.7x10^{-05}$	$5.2x10^{-01}$	$5.9x10^{-02}$
Scrap metal recovery	0	$2.3x10^{-06}$	$6.9x10^{-06}$	$1.3x10^{-05}$	$2.6x10^{-03}$	$1.5x10^{-04}$	0	$8.5x10^{-04}$	$1.9x10^{-05}$
Secondary aluminium production	0	0	$2.7x10^{+01}$	$5.3x10^{+01}$	$1.5x10^{-01}$	0	$9.3x10^{-04}$	$1.4x10^{+01}$	0
Secondary iron and steel production	0	0	$2.3x10^{-02}$	0	$4.4x10^{+00}$	0	$1.9x10^{+00}$	$8.0x10^{+00}$	0
Secondary non-ferrous production (excluding aluminium)	0	0	$2.1x10^{+00}$	$1.2x10^{+00}$	$1.1x10^{-01}$	0	$5.7x10^{-05}$	$5.5x10^{-01}$	0
Sewage Treatment - processing by large plants (> 10000 ML per year)	$2.2x10^{-02}$	$2.1x10^{-01}$	$7.9x10^{-01}$	$7.4x10^{+00}$	$7.0x10^{+00}$	$1.0x10^{+01}$	$1.5x10^{-02}$	$5.8x10^{+00}$	$1.2x10^{+00}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$2.0x10^{-02}$	$6.3x10^{-01}$	$3.6x10^{-01}$	$2.6x10^{+01}$	$1.6x10^{+00}$	$2.2x10^{+00}$	$2.2x10^{-02}$	$1.5x10^{+00}$	$5.0x10^{+01}$
Soap or detergent production	$4.5x10^{-04}$	$4.1x10^{+00}$	$1.9x10^{+01}$	$2.2x10^{-01}$	$1.2x10^{+00}$	$1.8x10^{-01}$	$9.7x10^{-05}$	$4.2x10^{+00}$	$2.3x10^{-02}$
Solid waste landfilling	0	0	$1.9x10^{+01}$	$7.9x10^{+00}$	$2.9x10^{+01}$	$9.7x10^{+00}$	$7.2x10^{-03}$	$3.4x10^{+02}$	0
Used tyre processing or disposal	0	0	0	0	$2.2x10^{-04}$	0	0	$6.9x10^{-05}$	0
Vessel construction or maintenance using dry or floating docks	0	0	$4.1x10^{-03}$	0	$2.4x10^{+00}$	0	0	$5.8x10^{+00}$	0
Waste oil recovery	0	$7.4x10^{-04}$	$2.9x10^{-02}$	$2.7x10^{-01}$	$4.8x10^{-02}$	$4.9x10^{-02}$	$1.5x10^{-03}$	$4.2x10^{-02}$	$5.9x10^{-03}$
Waste storage, transfer, separating or processing	0	$4.6x10^{-03}$	$1.7x10^{-02}$	$1.1x10^{-01}$	$4.8x10^{-01}$	$2.8x10^{-02}$	$7.4x10^{-04}$	$3.2x10^{-01}$	$3.4x10^{-03}$
Wood or timber milling	0	0	0	0	$2.9x10^{-04}$	0	0	$8.9x10^{-05}$	0
Wood preservation	0	0	0	0	$1.2x10^{-04}$	0	0	$3.7x10^{-05}$	0
Grand Total	**14.9**	**28.5**	**980**	**1,280**	**1,810**	**107**	**148**	**3,140**	**141**

Table 4.22: Average Daily Industrial Emissions (July Week Day/Winter Week Day) (kg/day)

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	$8.1x10^{+02}$	$3.1x10^{-03}$	$2.8x10^{+03}$	$6.5x10^{+02}$	$5.7x10^{+02}$	$5.6x10^{+02}$	$3.2x10^{+00}$	$7.1x10^{+02}$
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	$6.6x10^{+00}$	$3.6x10^{-05}$	$2.4x10^{+01}$	$1.9x10^{+02}$	$1.8x10^{+02}$	$1.8x10^{+02}$	$5.6x10^{+01}$	$2.2x10^{+00}$
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	$4.0x10^{+00}$
Animal slaughtering	$2.1x10^{+01}$	$6.1x10^{-03}$	$2.2x10^{+02}$	$1.8x10^{+01}$	$7.9x10^{+00}$	$3.8x10^{+00}$	$2.7x10^{+02}$	$9.6x10^{+01}$
Battery production	0	$2.4x10^{+00}$	0	$1.0x10^{+01}$	$1.0x10^{+01}$	$1.0x10^{+01}$	0	0
Beer or distilled alcohol production	$6.2x10^{+01}$	$3.7x10^{-04}$	$1.3x10^{+02}$	$6.9x10^{+00}$	$6.9x10^{+00}$	$6.9x10^{+00}$	$3.8x10^{-01}$	$1.1x10^{+02}$
Biomedical waste incineration	$1.3x10^{+01}$	$6.9x10^{-02}$	$9.1x10^{+00}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$2.7x10^{+00}$	$1.3x10^{+00}$
Bitumen pre-mix or hotmix production	$4.1x10^{+02}$	$5.4x10^{-02}$	$8.6x10^{+01}$	$7.0x10^{+02}$	$5.7x10^{+02}$	$4.0x10^{+02}$	$1.5x10^{+01}$	$1.0x10^{+02}$
Bulk cargo handling	0	$7.4x10^{-06}$	0	$5.2x10^{+02}$	$2.5x10^{+02}$	$3.7x10^{+01}$	0	$3.2x10^{+00}$
Cement or lime handling	$7.2x10^{+00}$	$5.9x10^{-04}$	$8.6x10^{+00}$	$1.5x10^{+03}$	$5.7x10^{+02}$	$1.8x10^{+02}$	$3.4x10^{-02}$	$3.7x10^{+02}$
Cement or lime production	$8.8x10^{+03}$	$1.3x10^{+00}$	$1.6x10^{+04}$	$8.7x10^{+02}$	$7.5x10^{+02}$	$4.6x10^{+02}$	$3.6x10^{+02}$	$2.2x10^{+02}$
Ceramics production (excluding glass)	$2.2x10^{+03}$	$6.4x10^{-04}$	$6.5x10^{+02}$	$5.7x10^{+03}$	$3.0x10^{+03}$	$2.2x10^{+03}$	$1.9x10^{+03}$	$3.3x10^{+02}$
Chemical storage	0	0	0	0	0	0	0	$7.8x10^{+01}$
Chemical Storage - Other Chemical Storage	$1.4x10^{+01}$	$8.5x10^{-05}$	$2.0x10^{+01}$	$2.8x10^{+00}$	$2.1x10^{+00}$	$1.7x10^{+00}$	$8.9x10^{-02}$	$1.2x10^{+03}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	$4.3x10^{+03}$	$2.4x10^{-02}$	$2.3x10^{+03}$	$2.7x10^{+02}$	$1.8x10^{+02}$	$1.8x10^{+02}$	$3.8x10^{+03}$	$1.2x10^{+03}$
Coal loading	$2.3x10^{+00}$	$5.4x10^{-02}$	$1.1x10^{+01}$	$1.8x10^{+03}$	$8.3x10^{+02}$	$9.0x10^{+01}$	$6.5x10^{-01}$	$1.2x10^{+01}$
Coal mining	$6.2x10^{+03}$	$3.9x10^{+00}$	$3.9x10^{+03}$	$1.6x10^{+05}$	$7.0x10^{+04}$	$1.1x10^{+04}$	$2.2x10^{+02}$	$3.5x10^{+02}$
Coal washery reject or slag landfilling	$2.3x10^{-02}$	0	$8.6x10^{-02}$	$3.1x10^{+02}$	$1.5x10^{+02}$	$3.1x10^{+01}$	$2.8x10^{-03}$	$2.2x10^{-03}$
Coke production	$2.0x10^{+01}$	$1.3x10^{+00}$	$8.2x10^{+01}$	$3.7x10^{+02}$	$1.9x10^{+02}$	$1.9x10^{+02}$	$1.5x10^{+03}$	$1.7x10^{+00}$
Composting and related reprocessing or treatment	$1.1x10^{+03}$	$1.0x10^{-05}$	$1.2x10^{+01}$	$3.5x10^{+02}$	$1.7x10^{+02}$	$3.5x10^{+01}$	$8.5x10^{-03}$	$5.6x10^{+02}$
Concrete batching	$1.7x10^{+01}$	$1.2x10^{-02}$	$2.4x10^{+01}$	$9.0x10^{+03}$	$2.0x10^{+03}$	$4.5x10^{+02}$	$1.0x10^{-01}$	$4.2x10^{+02}$
Contaminated soil treatment	0	0	0	$2.2x10^{-03}$	$1.0x10^{-03}$	$1.0x10^{-04}$	0	0
Crushing, grinding or separating works	$1.6x10^{+03}$	$7.7x10^{-02}$	$6.2x10^{+02}$	$2.3x10^{+04}$	$6.9x10^{+03}$	$2.4x10^{+03}$	$5.9x10^{+02}$	$1.8x10^{+02}$
Drum or container reconditioning	$2.1x10^{+00}$	$7.1x10^{-02}$	$1.0x10^{+01}$	$3.8x10^{-01}$	$3.8x10^{-01}$	$3.8x10^{-01}$	$7.4x10^{-02}$	$2.1x10^{+02}$
Electricity Generation - Generation of electrical power from coal	$1.9x10^{+04}$	$2.8x10^{+00}$	$4.0x10^{+05}$	$2.9x10^{+04}$	$1.3x10^{+04}$	$4.6x10^{+03}$	$7.3x10^{+05}$	$1.9x10^{+03}$
Electricity Generation - Generation of electrical power from gas	$6.8x10^{+03}$	$6.0x10^{-03}$	$7.2x10^{+03}$	$1.3x10^{+02}$	$1.3x10^{+02}$	$1.2x10^{+02}$	$3.4x10^{+01}$	$1.3x10^{+03}$
Electricity Generation - Generation of electrical power other	$2.7x10^{+02}$	0	$2.8x10^{+03}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$4.4x10^{-01}$	$1.5x10^{+02}$

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
than from coal or gas								
Environmentally sensitive area landfilling	$1.3x10^{+01}$	$1.6x10^{-04}$	$2.3x10^{-01}$	$4.6x10^{+02}$	$2.1x10^{+02}$	$4.2x10^{+01}$	$1.2x10^{-02}$	$5.1x10^{+01}$
Explosives or pyrotechnics production	$4.5x10^{-03}$	$1.1x10^{-06}$	$6.7x10^{-01}$	$1.0x10^{-03}$	$9.8x10^{-04}$	$9.7x10^{-04}$	$6.4x10^{-03}$	$2.6x10^{+00}$
Freeway or tollway construction	0	$5.5x10^{-03}$	0	$5.7x10^{+02}$	$2.5x10^{+02}$	$4.1x10^{+01}$	0	$7.0x10^{-03}$
Glass Production - Production of container glass	$5.0x10^{+01}$	$6.1x10^{+00}$	$4.3x10^{+03}$	$2.9x10^{+02}$	$2.3x10^{+02}$	$2.3x10^{+02}$	$1.7x10^{+03}$	$1.0x10^{+02}$
Glass Production - Production of float glass	$2.8x10^{+01}$	$7.8x10^{-04}$	$2.3x10^{+03}$	$3.1x10^{+02}$	$3.0x10^{+02}$	$3.0x10^{+02}$	$4.8x10^{+02}$	$3.4x10^{+01}$
Hard-rock gravel quarrying	$1.1x10^{+00}$	$1.6x10^{-02}$	0	$2.7x10^{+04}$	$4.8x10^{+03}$	$1.3x10^{+03}$	0	$4.6x10^{+02}$
Hazardous, industrial or group A waste generation or storage	$3.5x10^{+01}$	$1.9x10^{-04}$	$5.3x10^{+01}$	$7.0x10^{+00}$	$6.7x10^{+00}$	$6.3x10^{+00}$	$1.4x10^{+00}$	$2.1x10^{+03}$
Hazardous, industrial, group A or group B waste disposal	0	0	0	0	0	0	0	$1.0x10^{-03}$
Hazardous, industrial, group A or group B waste processing	$1.3x10^{+01}$	$9.8x10^{-05}$	$1.5x10^{+01}$	$3.0x10^{+01}$	$1.5x10^{+01}$	$1.5x10^{+01}$	$1.9x10^{-01}$	$2.6x10^{+01}$
Inert waste landfilling	$1.2x10^{+00}$	$3.5x10^{-05}$	0	$1.2x10^{+03}$	$4.5x10^{+02}$	$9.4x10^{+01}$	0	$8.2x10^{+01}$
Landfilling in designated areas	$9.6x10^{+00}$	0	0	$1.2x10^{+02}$	$6.0x10^{+01}$	$1.2x10^{+01}$	0	$1.1x10^{+02}$
Metal plating or coating works	$3.2x10^{+03}$	$1.6x10^{-01}$	$2.1x10^{+02}$	$1.3x10^{+02}$	$1.3x10^{+02}$	$1.3x10^{+02}$	$8.1x10^{+01}$	$6.8x10^{+03}$
Milk processing	$2.7x10^{+01}$	$1.6x10^{-04}$	$3.5x10^{+01}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$1.7x10^{-01}$	$1.8x10^{+01}$
Mining (other than coal)	0	$1.2x10^{-03}$	0	$2.4x10^{+03}$	$1.0x10^{+03}$	$2.1x10^{+02}$	0	$7.7x10^{-03}$
Mooring and boat storage	0	0	0	0	0	0	0	$1.1x10^{+01}$
Other activities - bread manufacturing	$4.5x10^{+00}$	$2.7x10^{-05}$	$5.4x10^{+00}$	$7.0x10^{-01}$	$7.0x10^{-01}$	$7.0x10^{-01}$	$2.8x10^{-02}$	$5.3x10^{-01}$
Other activities - cake and pastry manufacturing	$4.4x10^{+00}$	$2.6x10^{-05}$	$5.3x10^{+00}$	$4.0x10^{-01}$	$4.0x10^{-01}$	$4.0x10^{-01}$	$2.7x10^{-02}$	$2.9x10^{-01}$
Other activities - confectionary manufacturing	$3.3x10^{-01}$	$6.8x10^{-06}$	$2.3x10^{+00}$	$1.0x10^{-01}$	$1.0x10^{-01}$	$1.0x10^{-01}$	$7.1x10^{-03}$	$1.5x10^{+00}$
Other activities - dry cleaning	$3.3x10^{+00}$	$2.1x10^{-05}$	$4.2x10^{+00}$	$3.2x10^{-01}$	$3.2x10^{-01}$	$3.2x10^{-01}$	$2.2x10^{-02}$	$1.5x10^{+00}$
Other activities - oil and fat manufacturing	$1.4x10^{+01}$	$8.5x10^{-05}$	$3.1x10^{+01}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$8.9x10^{-02}$	$9.4x10^{-01}$
Other activities - printing	$3.0x10^{+01}$	$1.7x10^{-04}$	$6.1x10^{+01}$	$3.2x10^{+00}$	$3.2x10^{+00}$	$3.2x10^{+00}$	$2.3x10^{-01}$	$7.3x10^{+03}$
Other activities - services to air transport	$6.0x10^{+00}$	$3.6x10^{-05}$	$7.2x10^{+00}$	$5.5x10^{-01}$	$5.5x10^{-01}$	$5.5x10^{-01}$	$3.8x10^{-02}$	$2.7x10^{+02}$
Other activities - soft drink manufacturing	$2.2x10^{+00}$	$1.3x10^{-05}$	$2.6x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$1.4x10^{-02}$	$5.6x10^{+00}$
Other agricultural crop processing	$8.1x10^{+01}$	$4.9x10^{-04}$	$9.6x10^{+01}$	$4.0x10^{+02}$	$2.0x10^{+02}$	$6.7x10^{+01}$	$7.1x10^{-01}$	$2.9x10^{+01}$
Other chemical processing	$2.1x10^{+02}$	$1.7x10^{-03}$	$3.8x10^{+02}$	$1.1x10^{+02}$	$1.1x10^{+02}$	$1.1x10^{+02}$	$1.4x10^{+02}$	$2.1x10^{+03}$
Other land-based extraction	$6.5x10^{+02}$	$1.8x10^{-02}$	$2.4x10^{+02}$	$3.0x10^{+04}$	$9.6x10^{+03}$	$2.2x10^{+03}$	$5.5x10^{+02}$	$1.8x10^{+02}$
Other livestock processing	$1.7x10^{+01}$	$1.0x10^{-04}$	$2.2x10^{+01}$	$1.6x10^{+00}$	$1.6x10^{+00}$	$1.6x10^{+00}$	$1.0x10^{-01}$	$1.4x10^{+01}$
Other metal processing	$5.7x10^{+02}$	$2.4x10^{-02}$	$5.7x10^{+02}$	$1.8x10^{+02}$	$1.7x10^{+02}$	$1.7x10^{+02}$	$1.6x10^{+01}$	$3.6x10^{+03}$
Other vessel construction or maintenance	0	$8.2x10^{-04}$	$1.6x10^{+00}$	$1.4x10^{+02}$	$1.2x10^{+02}$	$1.1x10^{+02}$	0	$3.5x10^{+02}$
Paint production	$8.7x10^{+00}$	$2.7x10^{-04}$	$1.1x10^{+01}$	$4.1x10^{+01}$	$3.8x10^{+01}$	$3.7x10^{+01}$	$9.9x10^{-02}$	$3.2x10^{+02}$

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
Paper production using recycled materials	$1.3x10^{+02}$	$5.9x10^{-02}$	$3.3x10^{+02}$	$2.0x10^{+01}$	$4.0x10^{+00}$	$4.0x10^{+00}$	$3.2x10^{+01}$	$7.4x10^{+01}$
Pesticides production	$3.0x10^{-01}$	$1.8x10^{-06}$	$3.5x10^{-01}$	$2.7x10^{-02}$	$2.7x10^{-02}$	$2.7x10^{-02}$	$1.8x10^{-03}$	$2.4x10^{+01}$
Petrochemical production	$8.1x10^{+02}$	$4.9x10^{-01}$	$3.2x10^{+03}$	$3.0x10^{+02}$	$1.2x10^{+02}$	$1.2x10^{+02}$	$9.6x10^{+02}$	$1.2x10^{+03}$
Petroleum refining	$1.5x10^{+03}$	$1.6x10^{-01}$	$7.5x10^{+03}$	$1.2x10^{+03}$	$7.1x10^{+02}$	$6.4x10^{+02}$	$1.9x10^{+04}$	$8.3x10^{+03}$
Pharmaceutical or veterinary products production	$1.8x10^{+01}$	$1.0x10^{-04}$	$2.5x10^{+01}$	$1.8x10^{+00}$	$1.8x10^{+00}$	$1.8x10^{+00}$	$2.2x10^{-01}$	$1.6x10^{+02}$
Plastics production	$1.1x10^{+01}$	$1.5x10^{-02}$	$4.0x10^{+01}$	$6.1x10^{+02}$	$5.5x10^{+02}$	$5.5x10^{+02}$	$7.1x10^{-02}$	$1.8x10^{+03}$
Poultry production	$1.4x10^{+01}$	$8.2x10^{-05}$	$1.9x10^{+01}$	$2.4x10^{+03}$	$1.2x10^{+03}$	$3.2x10^{+02}$	$8.5x10^{-02}$	$4.5x10^{+01}$
Primary aluminium production	$1.5x10^{+05}$	$2.8x10^{-01}$	$9.2x10^{+02}$	$2.1x10^{+03}$	$1.2x10^{+03}$	$8.4x10^{+02}$	$3.4x10^{+04}$	$3.3x10^{+01}$
Primary iron and steel production	$1.4x10^{+06}$	$1.0x10^{+01}$	$2.1x10^{+04}$	$5.1x10^{+03}$	$4.4x10^{+03}$	$3.9x10^{+03}$	$2.7x10^{+04}$	$1.6x10^{+03}$
Primary non-ferrous production (excluding aluminium)	$5.4x10^{+01}$	$3.8x10^{-04}$	$1.3x10^{+02}$	$5.0x10^{+01}$	$4.1x10^{+01}$	$3.3x10^{+01}$	$2.3x10^{+01}$	$4.0x10^{+00}$
Railway activities	0	0	0	$1.3x10^{+01}$	$1.3x10^{+01}$	$1.3x10^{+01}$	0	$4.3x10^{+01}$
Rendering or fat extraction	$6.4x10^{+01}$	$1.2x10^{-03}$	$7.7x10^{+01}$	$3.6x10^{+01}$	$1.7x10^{+01}$	$9.3x10^{+00}$	$3.7x10^{+01}$	$1.4x10^{+01}$
Scrap metal recovery	0	0	$2.2x10^{+01}$	$2.6x10^{+02}$	$1.6x10^{+02}$	$1.2x10^{+02}$	0	$2.1x10^{-02}$
Secondary aluminium production	$2.1x10^{+02}$	$7.6x10^{-03}$	$1.9x10^{+02}$	$1.0x10^{+02}$	$8.2x10^{+01}$	$5.6x10^{+01}$	$7.7x10^{+01}$	$3.4x10^{+02}$
Secondary iron and steel production	$1.0x10^{+04}$	$3.9x10^{-01}$	$1.0x10^{+02}$	$2.0x10^{+02}$	$1.3x10^{+02}$	$1.2x10^{+02}$	$1.3x10^{+01}$	$1.1x10^{+03}$
Secondary non-ferrous production (excluding aluminium)	$4.2x10^{+02}$	$1.9x10^{+00}$	$8.9x10^{+01}$	$2.1x10^{+01}$	$1.5x10^{+01}$	$1.4x10^{+01}$	$2.4x10^{+02}$	$6.8x10^{+00}$
Sewage Treatment - processing by large plants (> 10000 ML per year)	$2.6x10^{+02}$	$9.5x10^{-05}$	$1.6x10^{+03}$	$4.5x10^{+00}$	$4.5x10^{+00}$	$4.5x10^{+00}$	$7.1x10^{-01}$	$1.2x10^{+02}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$6.1x10^{+02}$	$1.6x10^{-02}$	$1.2x10^{+02}$	$5.6x10^{+02}$	$1.9x10^{+02}$	$4.8x10^{+01}$	$3.3x10^{+00}$	$2.2x10^{+02}$
Soap or detergent production	$1.3x10^{+01}$	$7.9x10^{-05}$	$1.4x10^{+01}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$6.9x10^{+00}$	$2.2x10^{+02}$
Solid waste landfilling	$7.3x10^{+02}$	$2.7x10^{-03}$	$1.7x10^{+01}$	$5.3x10^{+03}$	$2.5x10^{+03}$	$5.1x10^{+02}$	0	$1.2x10^{+03}$
Used tyre processing or disposal	0	0	0	0	0	0	0	$1.9x10^{-03}$
Vessel construction or maintenance using dry or floating docks	0	0	0	$1.2x10^{+01}$	$1.0x10^{+01}$	$9.6x10^{+00}$	0	$8.1x10^{+01}$
Waste oil recovery	$7.6x10^{+00}$	$1.6x10^{-03}$	$3.0x10^{+01}$	$7.9x10^{-01}$	$7.7x10^{-01}$	$7.7x10^{-01}$	$4.2x10^{+01}$	$1.3x10^{+00}$
Waste storage, transfer, separating or processing	$1.5x10^{+02}$	$9.6x10^{-05}$	$1.1x10^{+02}$	$3.1x10^{+02}$	$1.0x10^{+02}$	$2.2x10^{+01}$	$1.6x10^{-02}$	$5.4x10^{+00}$
Wood or timber milling	$1.3x10^{+02}$	$1.3x10^{-01}$	$1.8x10^{+02}$	$1.9x10^{+02}$	$7.6x10^{+01}$	$3.1x10^{+01}$	$1.7x10^{+02}$	$3.7x10^{+02}$
Wood preservation	0	0	0	0	0	0	0	$1.6x10^{-01}$
Grand Total	**1,625,300**	**32.3**	**484,170**	**312,240**	**128,650**	**36,090**	**822,130**	**50,690**

Table 4.23: Average Daily Industrial Emissions (July Week Day/Winter Week Day) (kg/day)

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	0	$1.3x10^{+01}$	$6.4x10^{+01}$	$6.4x10^{+00}$	$3.5x10^{+00}$	0	$4.2x10^{-03}$	$1.5x10^{+01}$	0
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	0	0	$2.0x10^{-01}$	$4.1x10^{-01}$	$3.0x10^{-04}$	0	$5.0x10^{-05}$	$1.0x10^{-01}$	0
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	0	0
Animal slaughtering	0	$2.4x10^{-01}$	$8.1x10^{-01}$	$1.5x10^{+00}$	$1.2x10^{+01}$	$1.6x10^{+01}$	$5.2x10^{-04}$	$9.2x10^{+00}$	$1.9x10^{+00}$
Battery production	0	0	0	0	0	0	0	0	0
Beer or distilled alcohol production	0	0	$3.7x10^{-01}$	$7.3x10^{-01}$	0	0	$5.0x10^{-04}$	$1.8x10^{-01}$	0
Biomedical waste incineration	0	$5.6x10^{-06}$	$5.2x10^{-01}$	$3.1x10^{-05}$	$2.6x10^{-04}$	$3.7x10^{-04}$	$6.1x10^{-01}$	$2.1x10^{-04}$	$4.5x10^{-05}$
Bitumen pre-mix or hotmix production	0	$4.6x10^{-04}$	$9.1x10^{+00}$	$2.0x10^{+01}$	$2.2x10^{-02}$	$3.1x10^{-02}$	$3.5x10^{-01}$	$4.5x10^{+00}$	$3.7x10^{-03}$
Bulk cargo handling	0	$7.5x10^{-08}$	$2.3x10^{-07}$	$4.2x10^{-07}$	$1.3x10^{-01}$	$5.0x10^{-06}$	0	$4.2x10^{-01}$	$6.1x10^{-07}$
Cement or lime handling	0	$5.0x10^{-04}$	$4.9x10^{-02}$	$8.9x10^{-02}$	$3.4x10^{+01}$	$3.3x10^{-02}$	$4.7x10^{-05}$	$1.3x10^{+02}$	$4.1x10^{-03}$
Cement or lime production	0	0	0	0	$1.0x10^{+02}$	0	$4.0x10^{+00}$	$1.3x10^{+01}$	0
Ceramics production (excluding glass)	0	$1.7x10^{-06}$	$9.0x10^{+00}$	$1.8x10^{+01}$	$2.3x10^{+01}$	$1.1x10^{-04}$	$8.9x10^{-06}$	$6.6x10^{+00}$	$1.4x10^{-05}$
Chemical storage	0	0	0	0	$1.2x10^{-01}$	$6.2x10^{+00}$	0	$7.5x10^{-01}$	0
Chemical Storage - Other Chemical Storage	0	$5.4x10^{-01}$	$1.2x10^{+01}$	$1.8x10^{-01}$	$1.3x10^{+01}$	$8.2x10^{-03}$	$3.0x10^{-01}$	$2.8x10^{+01}$	$9.0x10^{+00}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	0	$4.3x10^{-04}$	$1.0x10^{+01}$	$3.5x10^{+00}$	$6.7x10^{+00}$	$2.8x10^{-02}$	$1.9x10^{-02}$	$2.2x10^{+01}$	$3.4x10^{-03}$
Coal loading	$2.5x10^{-02}$	$3.9x10^{-02}$	$6.9x10^{-02}$	$1.0x10^{-01}$	$5.0x10^{-01}$	$4.3x10^{-01}$	$1.6x10^{-04}$	$1.9x10^{+00}$	$5.3x10^{-02}$
Coal mining	$1.8x10^{+01}$	$3.0x10^{+00}$	$2.2x10^{+01}$	$6.1x10^{+00}$	$6.4x10^{+00}$	$1.1x10^{+00}$	$1.1x10^{-01}$	$2.4x10^{+01}$	$6.6x10^{-02}$
Coal washery reject or slag landfilling	$1.7x10^{-04}$	0	$1.9x10^{-04}$	0	0	0	0	0	0
Coke production	0	0	$9.8x10^{-01}$	0	$1.1x10^{-02}$	0	$2.1x10^{+01}$	$1.4x10^{-01}$	0
Composting and related reprocessing or treatment	0	$1.7x10^{-05}$	$8.9x10^{+00}$	$1.6x10^{-02}$	$1.3x10^{+01}$	$4.5x10^{+00}$	$1.1x10^{-05}$	$1.6x10^{+02}$	$1.4x10^{-04}$
Concrete batching	0	$1.2x10^{-04}$	$1.1x10^{-01}$	$2.2x10^{-01}$	$5.8x10^{+01}$	$8.1x10^{-03}$	$1.5x10^{-04}$	$5.7x10^{+01}$	$9.9x10^{-04}$
Contaminated soil treatment	0	0	0	0	0	0	0	0	0
Crushing, grinding or separating works	$1.8x10^{-01}$	$6.6x10^{-08}$	$5.8x10^{+00}$	$9.6x10^{+00}$	$3.4x10^{+00}$	$9.6x10^{-01}$	$5.3x10^{-02}$	$3.8x10^{+01}$	0
Drum or container reconditioning	0	$1.3x10^{-05}$	$2.7x10^{-02}$	$5.6x10^{-02}$	$2.2x10^{+01}$	$8.4x10^{-04}$	$3.2x10^{-05}$	$7.0x10^{+01}$	$1.0x10^{-04}$
Electricity Generation - Generation of electrical power from coal	0	$1.6x10^{-04}$	$2.0x10^{-02}$	$9.0x10^{-04}$	$6.6x10^{+02}$	$1.1x10^{-02}$	$8.1x10^{-01}$	$7.7x10^{+01}$	$1.3x10^{-03}$
Electricity Generation - Generation of electrical power from gas	$2.4x10^{-03}$	$1.4x10^{+00}$	$5.1x10^{+00}$	$3.0x10^{+02}$	$1.9x10^{+00}$	$9.9x10^{-05}$	$2.1x10^{-01}$	$1.9x10^{+00}$	$1.2x10^{-05}$
Electricity Generation - Generation of electrical power other than	0	$1.7x10^{-01}$	$1.1x10^{+00}$	$5.5x10^{+00}$	$4.1x10^{+00}$	$4.9x10^{+00}$	$2.0x10^{-02}$	$1.2x10^{+01}$	$5.7x10^{-01}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
from coal or gas									
Environmentally sensitive area landfilling	0	0	$8.1x10^{-01}$	0	$1.2x10^{+00}$	$4.0x10^{-01}$	0	$1.4x10^{+01}$	0
Explosives or pyrotechnics production	0	$4.9x10^{-06}$	$1.5x10^{-05}$	$1.7x10^{-04}$	$1.8x10^{-01}$	$3.3x10^{-04}$	0	$9.1x10^{-01}$	$4.0x10^{-05}$
Freeway or tollway construction	0	$2.1x10^{-06}$	$6.3x10^{-06}$	$1.2x10^{-05}$	$6.6x10^{-04}$	$1.4x10^{-04}$	0	$2.5x10^{-04}$	$1.7x10^{-05}$
Glass Production - Production of container glass	0	0	$3.6x10^{+00}$	$2.0x10^{+00}$	$1.1x10^{-04}$	0	0	$9.8x10^{-01}$	0
Glass Production - Production of float glass	0	0	$1.2x10^{+00}$	$6.9x10^{-01}$	$2.0x10^{-03}$	0	$2.0x10^{-05}$	$3.3x10^{-01}$	0
Hard-rock gravel quarrying	0	0	$1.9x10^{-01}$	0	$1.5x10^{+01}$	$9.5x10^{-02}$	0	$3.5x10^{+01}$	0
Hazardous, industrial or group A waste generation or storage	$1.0x10^{-01}$	$5.8x10^{-03}$	$2.5x10^{+00}$	$4.9x10^{-01}$	$2.3x10^{+02}$	$4.5x10^{-01}$	$9.2x10^{-04}$	$2.0x10^{+02}$	$3.6x10^{-01}$
Hazardous, industrial, group A or group B waste disposal	0	0	0	0	$9.4x10^{-05}$	0	0	$2.9x10^{-05}$	0
Hazardous, industrial, group A or group B waste processing	0	$6.0x10^{-02}$	$2.7x10^{-01}$	$4.8x10^{-01}$	$2.7x10^{+00}$	$3.9x10^{+00}$	$1.0x10^{-04}$	$2.5x10^{+00}$	$4.8x10^{-01}$
Inert waste landfilling	0	$1.0x10^{-05}$	$1.3x10^{+00}$	$5.6x10^{-05}$	$2.0x10^{+00}$	$6.5x10^{-01}$	0	$2.3x10^{+01}$	$8.2x10^{-05}$
Landfilling in designated areas	0	0	$1.7x10^{+00}$	0	$2.6x10^{+00}$	$8.7x10^{-01}$	0	$3.0x10^{+01}$	0
Metal plating or coating works	$5.6x10^{-04}$	$7.7x10^{-04}$	$1.7x10^{+01}$	$2.9x10^{+01}$	$2.0x10^{+02}$	$1.2x10^{+00}$	$1.5x10^{+00}$	$1.0x10^{+03}$	$8.1x10^{+00}$
Milk processing	0	$3.5x10^{-02}$	$2.7x10^{-01}$	$5.2x10^{-01}$	$2.0x10^{+00}$	$2.3x10^{+00}$	$2.2x10^{-04}$	$1.8x10^{+00}$	$2.8x10^{-01}$
Mining (other than coal)	0	0	0	0	$6.9x10^{-04}$	0	0	$2.1x10^{-04}$	0
Mooring and boat storage	0	$1.6x10^{-06}$	$3.1x10^{-02}$	$8.6x10^{-06}$	$5.0x10^{-01}$	$1.0x10^{-04}$	0	$2.4x10^{+00}$	$1.3x10^{-05}$
Other activities - bread manufacturing	0	$1.6x10^{-04}$	$2.9x10^{-02}$	$5.5x10^{-02}$	$8.3x10^{-03}$	$1.0x10^{-02}$	$3.7x10^{-05}$	$2.3x10^{-02}$	$1.3x10^{-03}$
Other activities - cake and pastry manufacturing	0	$2.8x10^{-06}$	$2.6x10^{-02}$	$5.3x10^{-02}$	$1.3x10^{-04}$	$1.8x10^{-04}$	$3.6x10^{-05}$	$1.3x10^{-02}$	$2.3x10^{-05}$
Other activities - confectionary manufacturing	0	0	$6.8x10^{-03}$	$1.4x10^{-02}$	$2.9x10^{-01}$	0	$9.3x10^{-06}$	$2.6x10^{-01}$	0
Other activities - dry cleaning	0	0	$2.1x10^{-02}$	$4.2x10^{-02}$	0	$1.3x10^{+00}$	$2.9x10^{-05}$	$1.1x10^{-02}$	0
Other activities - oil and fat manufacturing	0	0	$8.5x10^{-02}$	$1.7x10^{-01}$	0	0	$1.2x10^{-04}$	$4.3x10^{-02}$	0
Other activities - printing	$3.4x10^{-03}$	$1.7x10^{-03}$	$1.7x10^{-01}$	$3.5x10^{-01}$	$5.7x10^{+01}$	$2.0x10^{+01}$	$1.4x10^{-03}$	$8.9x10^{+01}$	$3.4x10^{-03}$
Other activities - services to air transport	0	0	$3.6x10^{-02}$	$7.2x10^{-02}$	$3.4x10^{+01}$	0	$4.9x10^{-05}$	$2.7x10^{+01}$	0
Other activities - soft drink manufacturing	0	$1.4x10^{-02}$	$5.5x10^{-02}$	$1.0x10^{-01}$	$6.4x10^{-01}$	$9.3x10^{-01}$	$1.8x10^{-05}$	$5.4x10^{-01}$	$1.1x10^{-01}$
Other agricultural crop processing	0	$4.7x10^{-03}$	$3.9x10^{-01}$	$8.1x10^{-01}$	$1.1x10^{+00}$	$1.4x10^{-01}$	$6.7x10^{-04}$	$4.3x10^{+00}$	$1.8x10^{-02}$
Other chemical processing	$3.9x10^{-02}$	$1.4x10^{+00}$	$5.9x10^{+01}$	$1.3x10^{+01}$	$4.3x10^{+01}$	$3.2x10^{-01}$	$2.8x10^{-01}$	$5.0x10^{+02}$	$3.1x10^{+01}$
Other land-based extraction	$7.9x10^{-01}$	$3.0x10^{-05}$	$3.2x10^{+00}$	$4.5x10^{+00}$	$4.9x10^{+00}$	$2.0x10^{-03}$	$5.2x10^{-03}$	$1.2x10^{+01}$	$2.4x10^{-04}$
Other livestock processing	0	$2.7x10^{-02}$	$1.8x10^{-01}$	$3.6x10^{-01}$	$1.3x10^{+00}$	$1.8x10^{+00}$	$1.4x10^{-04}$	$1.1x10^{+00}$	$2.2x10^{-01}$
Other metal processing	0	$2.4x10^{-03}$	$3.4x10^{+00}$	$4.4x10^{+00}$	$4.3x10^{+02}$	$1.6x10^{-01}$	$8.1x10^{-03}$	$7.9x10^{+02}$	$8.9x10^{+01}$
Other vessel construction or maintenance	$1.2x10^{-01}$	$3.4x10^{-07}$	$2.8x10^{-02}$	$1.9x10^{-06}$	$2.4x10^{+01}$	$2.2x10^{-05}$	0	$1.2x10^{+02}$	$2.7x10^{-06}$
Paint production	$1.5x10^{-05}$	$9.7x10^{-02}$	$5.0x10^{-01}$	$2.6x10^{-01}$	$2.9x10^{+00}$	$2.3x10^{-01}$	$9.1x10^{-05}$	$8.3x10^{+01}$	$2.4x10^{-02}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Paper production using recycled materials	0	$1.2x10^{-02}$	$6.1x10^{-02}$	$1.2x10^{-01}$	$5.8x10^{-01}$	$7.7x10^{-01}$	$1.5x10^{-03}$	$7.9x10^{-01}$	$9.4x10^{-02}$
Pesticides production	0	$6.0x10^{-07}$	$2.0x10^{-03}$	$3.5x10^{-03}$	$5.7x10^{-02}$	$4.0x10^{-05}$	$2.4x10^{-06}$	$9.6x10^{-04}$	$4.9x10^{-06}$
Petrochemical production	$1.1x10^{-02}$	0	$6.9x10^{+00}$	$1.1x10^{+02}$	$5.2x10^{+00}$	0	$6.9x10^{-03}$	$7.6x10^{+00}$	0
Petroleum refining	0	$3.0x10^{-01}$	$6.7x10^{+01}$	$5.5x10^{+02}$	$6.2x10^{+01}$	$2.0x10^{+01}$	$3.7x10^{-01}$	$9.0x10^{+01}$	$2.4x10^{+00}$
Pharmaceutical or veterinary products production	$5.4x10^{-03}$	$4.0x10^{-03}$	$1.4x10^{-01}$	$2.6x10^{-01}$	$1.6x10^{+00}$	$2.6x10^{-01}$	$1.6x10^{-04}$	$1.6x10^{+00}$	$3.2x10^{-02}$
Plastics production	0	$7.4x10^{+00}$	$3.4x10^{+01}$	$1.4x10^{+01}$	$5.2x10^{+01}$	0	$8.5x10^{-05}$	$4.3x10^{+01}$	$8.5x10^{+01}$
Poultry production	0	$1.1x10^{-01}$	$4.4x10^{-01}$	$8.3x10^{-01}$	$5.2x10^{+00}$	$7.6x10^{+00}$	$1.1x10^{-04}$	$4.3x10^{+00}$	$9.2x10^{-01}$
Primary aluminium production	0	0	$2.5x10^{-01}$	$3.2x10^{-01}$	$2.4x10^{-01}$	0	$3.3x10^{+01}$	$3.3x10^{+00}$	0
Primary iron and steel production	0	$5.3x10^{-02}$	$6.0x10^{+02}$	$1.1x10^{+02}$	$1.6x10^{+01}$	$1.4x10^{+00}$	$8.2x10^{+01}$	$1.2x10^{+02}$	$1.7x10^{-01}$
Primary non-ferrous production (excluding aluminium)	0	$8.8x10^{-04}$	$3.3x10^{-01}$	$6.7x10^{-01}$	$4.0x10^{-02}$	$5.8x10^{-02}$	$4.9x10^{-04}$	$2.0x10^{-01}$	$7.1x10^{-03}$
Railway activities	0	0	0	0	$5.7x10^{-01}$	0	0	$9.0x10^{+00}$	0
Rendering or fat extraction	0	$7.4x10^{-03}$	$3.9x10^{-01}$	$6.5x10^{-01}$	$4.4x10^{-01}$	$4.9x10^{-01}$	$4.8x10^{-04}$	$6.4x10^{-01}$	$5.9x10^{-02}$
Scrap metal recovery	0	$2.3x10^{-06}$	$6.9x10^{-06}$	$1.3x10^{-05}$	$2.0x10^{-03}$	$1.5x10^{-04}$	0	$6.6x10^{-04}$	$1.9x10^{-05}$
Secondary aluminium production	0	0	$2.7x10^{+01}$	$5.3x10^{+01}$	$1.4x10^{-01}$	0	$9.3x10^{-04}$	$1.4x10^{+01}$	0
Secondary iron and steel production	0	0	$6.6x10^{+01}$	$1.3x10^{+02}$	$9.9x10^{+00}$	0	$3.8x10^{+00}$	$3.2x10^{+02}$	0
Secondary non-ferrous production (excluding aluminium)	0	0	$2.1x10^{+00}$	$1.2x10^{+00}$	$1.1x10^{-01}$	0	$5.7x10^{-05}$	$5.5x10^{-01}$	0
Sewage Treatment - processing by large plants (> 10000 ML per year)	$2.2x10^{-02}$	$2.1x10^{-01}$	$7.9x10^{-01}$	$7.4x10^{+00}$	$7.0x10^{+00}$	$1.0x10^{+01}$	$1.5x10^{-02}$	$5.8x10^{+00}$	$1.2x10^{+00}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$2.0x10^{-02}$	$6.3x10^{-01}$	$3.7x10^{-01}$	$2.6x10^{+01}$	$1.7x10^{+00}$	$2.2x10^{+00}$	$2.2x10^{-02}$	$1.5x10^{+00}$	$1.0x10^{+02}$
Soap or detergent production	$4.5x10^{-04}$	$4.1x10^{+00}$	$1.9x10^{+01}$	$2.4x10^{-01}$	$1.2x10^{+00}$	$1.8x10^{-01}$	$1.1x10^{-04}$	$4.2x10^{+00}$	$2.3x10^{-02}$
Solid waste landfilling	0	0	$1.9x10^{+01}$	$7.9x10^{+00}$	$2.9x10^{+01}$	$9.5x10^{+00}$	$7.2x10^{-03}$	$3.3x10^{+02}$	0
Used tyre processing or disposal	0	0	0	0	$1.7x10^{-04}$	0	0	$5.1x10^{-05}$	0
Vessel construction or maintenance using dry or floating docks	$6.8x10^{-02}$	0	$1.6x10^{-02}$	0	$2.9x10^{+00}$	0	0	$7.7x10^{+00}$	0
Waste oil recovery	0	$8.7x10^{-04}$	$3.4x10^{-02}$	$2.8x10^{-01}$	$5.6x10^{-02}$	$4.9x10^{-02}$	$1.6x10^{-03}$	$4.9x10^{-02}$	$5.9x10^{-03}$
Waste storage, transfer, separating or processing	0	$4.6x10^{-03}$	$1.7x10^{-02}$	$1.2x10^{-01}$	$4.7x10^{-01}$	$2.8x10^{-02}$	$7.4x10^{-04}$	$3.2x10^{-01}$	$3.4x10^{-03}$
Wood or timber milling	0	$8.0x10^{-04}$	$4.7x10^{-02}$	$1.3x10^{-01}$	$6.6x10^{+01}$	$5.3x10^{-02}$	$3.2x10^{-04}$	$5.1x10^{+01}$	$6.5x10^{-03}$
Wood preservation	0	0	0	0	$4.9x10^{-02}$	0	0	$1.4x10^{-03}$	0
Grand Total	**19.4**	**33.4**	**1,090**	**1,440**	**2,280**	**121**	**150**	**4,620**	**332**

Table 4.24: Average Daily Industrial Emissions (July Weekend Day / Winter Weekend Day) (kg / day)

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	$8.1x10^{+02}$	$3.1x10^{-03}$	$2.8x10^{+03}$	$6.5x10^{+02}$	$5.7x10^{+02}$	$5.6x10^{+02}$	$3.2x10^{+00}$	$7.1x10^{+02}$
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	$6.6x10^{+00}$	$3.6x10^{-05}$	$2.4x10^{+01}$	$1.9x10^{+02}$	$1.8x10^{+02}$	$1.8x10^{+02}$	$5.6x10^{+01}$	$2.2x10^{+00}$
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	$4.0x10^{+00}$
Animal slaughtering	$7.9x10^{+00}$	$4.7x10^{-05}$	$1.0x10^{+01}$	$7.3x10^{-01}$	$7.3x10^{-01}$	$7.3x10^{-01}$	$4.9x10^{-02}$	$9.3x10^{+01}$
Battery production	0	$1.8x10^{+00}$	0	$7.7x10^{+00}$	$7.7x10^{+00}$	$7.7x10^{+00}$	0	0
Beer or distilled alcohol production	0	0	0	0	0	0	0	0
Biomedical waste incineration	$1.3x10^{+01}$	$6.9x10^{-02}$	$9.1x10^{+00}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$1.7x10^{+00}$	$2.7x10^{+00}$	$1.3x10^{+00}$
Bitumen pre-mix or hotmix production	$2.6x10^{+02}$	$4.3x10^{-02}$	$5.5x10^{+01}$	$5.1x10^{+02}$	$4.4x10^{+02}$	$3.5x10^{+02}$	$1.1x10^{+01}$	$6.3x10^{+01}$
Bulk cargo handling	0	$7.4x10^{-06}$	0	$4.5x10^{+02}$	$2.2x10^{+02}$	$3.4x10^{+01}$	0	$3.1x10^{+00}$
Cement or lime handling	$3.7x10^{+00}$	$3.7x10^{-05}$	$4.5x10^{+00}$	$8.3x10^{+02}$	$4.4x10^{+02}$	$1.1x10^{+02}$	$1.2x10^{-02}$	$3.1x10^{+02}$
Cement or lime production	$8.8x10^{+03}$	$1.3x10^{+00}$	$1.6x10^{+04}$	$8.7x10^{+02}$	$7.5x10^{+02}$	$4.6x10^{+02}$	$3.6x10^{+02}$	$2.2x10^{+02}$
Ceramics production (excluding glass)	$2.2x10^{+03}$	$2.3x10^{-04}$	$6.5x10^{+02}$	$5.6x10^{+03}$	$3.0x10^{+03}$	$2.2x10^{+03}$	$1.9x10^{+03}$	$3.3x10^{+02}$
Chemical storage	0	0	0	0	0	0	0	$4.5x10^{+01}$
Chemical Storage - Other Chemical Storage	$6.3x10^{+00}$	$3.7x10^{-05}$	$1.1x10^{+01}$	$5.7x10^{-01}$	$5.7x10^{-01}$	$5.7x10^{-01}$	$3.9x10^{-02}$	$1.3x10^{+03}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	$4.3x10^{+03}$	$2.4x10^{-02}$	$2.3x10^{+03}$	$2.7x10^{+02}$	$1.8x10^{+02}$	$1.8x10^{+02}$	$3.8x10^{+03}$	$1.2x10^{+03}$
Coal loading	$2.3x10^{+00}$	$5.4x10^{-02}$	$1.1x10^{+01}$	$1.8x10^{+03}$	$8.2x10^{+02}$	$9.0x10^{+01}$	$6.5x10^{-01}$	$1.2x10^{+01}$
Coal mining	$6.1x10^{+03}$	$3.5x10^{+00}$	$3.3x10^{+03}$	$1.4x10^{+05}$	$6.4x10^{+04}$	$1.1x10^{+04}$	$1.8x10^{+02}$	$3.1x10^{+02}$
Coal washery reject or slag landfilling	$1.1x10^{-02}$	0	$4.3x10^{-02}$	$3.1x10^{+02}$	$1.5x10^{+02}$	$3.1x10^{+01}$	$1.4x10^{-03}$	$1.1x10^{-03}$
Coke production	$2.0x10^{+01}$	$1.3x10^{+00}$	$8.2x10^{+01}$	$3.7x10^{+02}$	$1.9x10^{+02}$	$1.9x10^{+02}$	$1.5x10^{+03}$	$1.3x10^{+00}$
Composting and related reprocessing or treatment	$1.1x10^{+03}$	$9.2x10^{-06}$	$1.2x10^{+01}$	$3.4x10^{+02}$	$1.7x10^{+02}$	$3.5x10^{+01}$	$8.5x10^{-03}$	$5.6x10^{+02}$
Concrete batching	$8.4x10^{+00}$	$5.9x10^{-03}$	$1.3x10^{+01}$	$4.8x10^{+03}$	$1.1x10^{+03}$	$2.4x10^{+02}$	$5.2x10^{-02}$	$4.2x10^{+02}$
Contaminated soil treatment	0	0	0	0	0	0	0	0
Crushing, grinding or separating works	$1.6x10^{+03}$	$7.1x10^{-02}$	$6.2x10^{+02}$	$1.5x10^{+04}$	$5.8x10^{+03}$	$2.1x10^{+03}$	$5.9x10^{+02}$	$1.8x10^{+02}$
Drum or container reconditioning	$1.3x10^{+00}$	$3.6x10^{-02}$	$4.8x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$1.4x10^{-02}$	$9.5x10^{+01}$
Electricity Generation - Generation of electrical power from coal	$1.9x10^{+04}$	$2.8x10^{+00}$	$4.0x10^{+05}$	$2.9x10^{+04}$	$1.3x10^{+04}$	$4.6x10^{+03}$	$7.3x10^{+05}$	$1.9x10^{+03}$
Electricity Generation - Generation of electrical power from gas	$6.8x10^{+03}$	$6.0x10^{-03}$	$7.2x10^{+03}$	$1.3x10^{+02}$	$1.3x10^{+02}$	$1.2x10^{+02}$	$3.4x10^{+01}$	$1.3x10^{+03}$

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
Electricity Generation - Generation of electrical power other than from coal or gas	$2.7x10^{+02}$	0	$2.8x10^{+03}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$4.4x10^{-01}$	$1.5x10^{+02}$
Environmentally sensitive area landfilling	$4.4x10^{+00}$	$7.1x10^{-05}$	0	$4.2x10^{+02}$	$2.0x10^{+02}$	$4.1x10^{+01}$	0	$5.0x10^{+01}$
Explosives or pyrotechnics production	0	0	0	0	0	0	0	$3.1x10^{-03}$
Freeway or tollway construction	0	$3.5x10^{-03}$	0	$4.2x10^{+02}$	$2.0x10^{+02}$	$3.4x10^{+01}$	0	$7.0x10^{-03}$
Glass Production - Production of container glass	$5.0x10^{+01}$	$6.1x10^{+00}$	$4.3x10^{+03}$	$2.9x10^{+02}$	$2.3x10^{+02}$	$2.3x10^{+02}$	$1.7x10^{+03}$	$1.0x10^{+02}$
Glass Production - Production of float glass	$2.8x10^{+01}$	$7.8x10^{-04}$	$2.3x10^{+03}$	$3.1x10^{+02}$	$3.0x10^{+02}$	$3.0x10^{+02}$	$4.8x10^{+02}$	$3.4x10^{+01}$
Hard-rock gravel quarrying	$1.1x10^{+00}$	$1.1x10^{-02}$	0	$2.0x10^{+04}$	$4.1x10^{+03}$	$1.0x10^{+03}$	0	$4.6x10^{+02}$
Hazardous, industrial or group A waste generation or storage	$3.8x10^{+00}$	$2.2x10^{-05}$	$2.5x10^{+00}$	$3.2x10^{+00}$	$3.0x10^{+00}$	$2.5x10^{+00}$	$1.2x10^{-02}$	$3.9x10^{+02}$
Hazardous, industrial, group A or group B waste disposal	0	0	0	0	0	0	0	$1.0x10^{-03}$
Hazardous, industrial, group A or group B waste processing	$1.1x10^{+01}$	$8.5x10^{-05}$	$1.3x10^{+01}$	$3.0x10^{+01}$	$1.5x10^{+01}$	$1.5x10^{+01}$	$1.8x10^{-01}$	$2.5x10^{+01}$
Inert waste landfilling	$1.2x10^{+00}$	$1.8x10^{-05}$	0	$1.0x10^{+03}$	$4.3x10^{+02}$	$8.8x10^{+01}$	0	$8.2x10^{+01}$
Landfilling in designated areas	$9.6x10^{+00}$	0	0	$1.2x10^{+02}$	$6.0x10^{+01}$	$1.2x10^{+01}$	0	$1.1x10^{+02}$
Metal plating or coating works	$3.2x10^{+03}$	$1.5x10^{-01}$	$1.7x10^{+02}$	$9.1x10^{+01}$	$8.8x10^{+01}$	$8.6x10^{+01}$	$8.1x10^{+01}$	$6.5x10^{+03}$
Milk processing	$2.7x10^{+01}$	$1.6x10^{-04}$	$3.5x10^{+01}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$1.7x10^{-01}$	$1.8x10^{+01}$
Mining (other than coal)	0	$6.0x10^{-04}$	0	$2.1x10^{+03}$	$9.7x10^{+02}$	$2.0x10^{+02}$	0	$7.7x10^{-03}$
Mooring and boat storage	0	0	0	0	0	0	0	$5.6x10^{+00}$
Other activities - bread manufacturing	$4.5x10^{+00}$	$2.7x10^{-05}$	$5.4x10^{+00}$	$7.0x10^{-01}$	$7.0x10^{-01}$	$7.0x10^{-01}$	$2.8x10^{-02}$	$5.3x10^{-01}$
Other activities - cake and pastry manufacturing	$4.4x10^{+00}$	$2.6x10^{-05}$	$5.3x10^{+00}$	$4.0x10^{-01}$	$4.0x10^{-01}$	$4.0x10^{-01}$	$2.7x10^{-02}$	$2.9x10^{-01}$
Other activities - confectionary manufacturing	$3.3x10^{-01}$	$6.8x10^{-06}$	$2.3x10^{+00}$	$1.0x10^{-01}$	$1.0x10^{-01}$	$1.0x10^{-01}$	$7.1x10^{-03}$	$1.5x10^{+00}$
Other activities - dry cleaning	$3.3x10^{+00}$	$2.1x10^{-05}$	$4.2x10^{+00}$	$3.2x10^{-01}$	$3.2x10^{-01}$	$3.2x10^{-01}$	$2.2x10^{-02}$	$1.5x10^{+00}$
Other activities - oil and fat manufacturing	$1.4x10^{+01}$	$8.5x10^{-05}$	$3.1x10^{+01}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$1.3x10^{+00}$	$8.9x10^{-02}$	$9.4x10^{-01}$
Other activities - printing	$2.5x10^{+01}$	$1.3x10^{-04}$	$4.5x10^{+01}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$2.5x10^{+00}$	$1.7x10^{-01}$	$5.0x10^{+03}$
Other activities - services to air transport	$6.0x10^{+00}$	$3.6x10^{-05}$	$7.2x10^{+00}$	$5.5x10^{-01}$	$5.5x10^{-01}$	$5.5x10^{-01}$	$3.8x10^{-02}$	$2.7x10^{+02}$
Other activities - soft drink manufacturing	$2.2x10^{+00}$	$1.3x10^{-05}$	$2.6x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$2.0x10^{-01}$	$1.4x10^{-02}$	$5.6x10^{+00}$
Other agricultural crop processing	$6.9x10^{+01}$	$4.2x10^{-04}$	$8.2x10^{+01}$	$3.0x10^{+02}$	$1.5x10^{+02}$	$5.2x10^{+01}$	$6.4x10^{-01}$	$2.8x10^{+01}$
Other chemical processing	$1.7x10^{+02}$	$8.0x10^{-04}$	$3.2x10^{+02}$	$1.0x10^{+02}$	$9.9x10^{+01}$	$9.7x10^{+01}$	$1.4x10^{+02}$	$8.9x10^{+02}$
Other land-based extraction	$6.3x10^{+02}$	$9.0x10^{-03}$	$1.4x10^{+02}$	$2.2x10^{+04}$	$8.6x10^{+03}$	$1.9x10^{+03}$	$5.5x10^{+02}$	$1.8x10^{+02}$
Other livestock processing	$1.6x10^{+01}$	$9.6x10^{-05}$	$1.9x10^{+01}$	$1.5x10^{+00}$	$1.5x10^{+00}$	$1.5x10^{+00}$	$1.0x10^{-01}$	$1.3x10^{+01}$
Other metal processing	$4.9x10^{+01}$	$2.9x10^{-04}$	$6.1x10^{+01}$	$4.3x10^{+01}$	$4.0x10^{+01}$	$4.0x10^{+01}$	$3.0x10^{-01}$	$2.6x10^{+03}$
Other vessel construction or maintenance	0	$6.2x10^{-04}$	$1.6x10^{+00}$	$1.0x10^{+02}$	$9.0x10^{+01}$	$8.2x10^{+01}$	0	$2.2x10^{+02}$

NSW Activity Type	CO	Pb	NOx	TSP	PM10	PM2.5	SO2	VOCs
Paint production	$1.8x10^{+00}$	$1.3x10^{-05}$	$2.1x10^{+00}$	$3.4x10^{+00}$	$3.2x10^{+00}$	$3.2x10^{+00}$	$2.8x10^{-02}$	$1.1x10^{+02}$
Paper production using recycled materials	$1.3x10^{+02}$	$5.9x10^{-02}$	$3.3x10^{+02}$	$2.0x10^{+01}$	$4.0x10^{+00}$	$4.0x10^{+00}$	$3.2x10^{+01}$	$7.4x10^{+01}$
Pesticides production	$1.4x10^{-01}$	$8.3x10^{-07}$	$1.7x10^{-01}$	$1.3x10^{-02}$	$1.3x10^{-02}$	$1.3x10^{-02}$	$8.7x10^{-04}$	$1.3x10^{-01}$
Petrochemical production	$8.1x10^{+02}$	$4.9x10^{-01}$	$3.2x10^{+03}$	$3.0x10^{+02}$	$1.2x10^{+02}$	$1.2x10^{+02}$	$9.6x10^{+02}$	$1.2x10^{+03}$
Petroleum refining	$1.5x10^{+03}$	$1.6x10^{-01}$	$7.5x10^{+03}$	$1.2x10^{+03}$	$7.1x10^{+02}$	$6.4x10^{+02}$	$1.9x10^{+04}$	$8.3x10^{+03}$
Pharmaceutical or veterinary products production	$1.0x10^{+01}$	$5.9x10^{-05}$	$1.5x10^{+01}$	$1.1x10^{+00}$	$1.1x10^{+00}$	$1.1x10^{+00}$	$1.6x10^{-01}$	$8.7x10^{+01}$
Plastics production	$7.5x10^{+00}$	$3.8x10^{-05}$	$3.0x10^{+01}$	$6.1x10^{+02}$	$5.5x10^{+02}$	$5.4x10^{+02}$	$4.3x10^{-02}$	$1.0x10^{+03}$
Poultry production	$3.4x10^{+00}$	$1.8x10^{-05}$	$6.5x10^{+00}$	$2.4x10^{+03}$	$1.2x10^{+03}$	$3.2x10^{+02}$	$1.9x10^{-02}$	$4.4x10^{+01}$
Primary aluminium production	$1.5x10^{+05}$	$2.8x10^{-01}$	$9.2x10^{+02}$	$2.1x10^{+03}$	$1.2x10^{+03}$	$8.4x10^{+02}$	$3.4x10^{+04}$	$3.3x10^{+01}$
Primary iron and steel production	$1.4x10^{+06}$	$1.0x10^{+01}$	$2.1x10^{+04}$	$5.0x10^{+03}$	$4.3x10^{+03}$	$3.9x10^{+03}$	$2.7x10^{+04}$	$1.6x10^{+03}$
Primary non-ferrous production (excluding aluminium)	$5.4x10^{+01}$	$3.8x10^{-04}$	$1.3x10^{+02}$	$5.0x10^{+01}$	$4.1x10^{+01}$	$3.3x10^{+01}$	$2.3x10^{+01}$	$4.0x10^{+00}$
Railway activities	0	0	0	$1.3x10^{+01}$	$1.3x10^{+01}$	$1.3x10^{+01}$	0	$4.3x10^{+01}$
Rendering or fat extraction	$1.2x10^{+01}$	$7.1x10^{-05}$	$1.4x10^{+01}$	$1.1x10^{+00}$	$1.1x10^{+00}$	$1.1x10^{+00}$	$1.3x10^{-01}$	$1.2x10^{+01}$
Scrap metal recovery	0	0	$1.1x10^{+01}$	$1.3x10^{+02}$	$8.2x10^{+01}$	$6.1x10^{+01}$	0	$2.1x10^{-02}$
Secondary aluminium production	$2.1x10^{+02}$	$7.6x10^{-03}$	$1.9x10^{+02}$	$9.9x10^{+01}$	$8.0x10^{+01}$	$5.5x10^{+01}$	$7.7x10^{+01}$	$3.4x10^{+02}$
Secondary iron and steel production	0	0	$1.2x10^{+00}$	$9.1x10^{+00}$	$7.8x10^{+00}$	$8.6x10^{+00}$	$5.5x10^{-02}$	$4.9x10^{+01}$
Secondary non-ferrous production (excluding aluminium)	$4.2x10^{+02}$	$1.9x10^{+00}$	$8.9x10^{+01}$	$2.1x10^{+01}$	$1.5x10^{+01}$	$1.4x10^{+01}$	$2.4x10^{+02}$	$6.8x10^{+00}$
Sewage Treatment - processing by large plants (> 10000 ML per year)	$2.6x10^{+02}$	$9.5x10^{-05}$	$1.6x10^{+03}$	$4.5x10^{+00}$	$4.5x10^{+00}$	$4.5x10^{+00}$	$7.1x10^{-01}$	$1.2x10^{+02}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$6.1x10^{+02}$	$1.6x10^{-02}$	$1.2x10^{+02}$	$5.6x10^{+02}$	$1.9x10^{+02}$	$4.7x10^{+01}$	$3.3x10^{+00}$	$1.7x10^{+02}$
Soap or detergent production	$1.3x10^{+01}$	$7.9x10^{-05}$	$1.4x10^{+01}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$1.2x10^{+00}$	$6.9x10^{+00}$	$2.2x10^{+02}$
Solid waste landfilling	$7.3x10^{+02}$	$2.7x10^{-03}$	$1.7x10^{+01}$	$5.1x10^{+03}$	$2.5x10^{+03}$	$5.0x10^{+02}$	0	$1.2x10^{+03}$
Used tyre processing or disposal	0	0	0	0	0	0	0	$1.9x10^{-03}$
Vessel construction or maintenance using dry or floating docks	0	0	0	$1.2x10^{+01}$	$1.0x10^{+01}$	$9.6x10^{+00}$	0	$7.5x10^{+01}$
Waste oil recovery	$6.5x10^{+00}$	$1.6x10^{-03}$	$2.6x10^{+01}$	$6.9x10^{-01}$	$6.7x10^{-01}$	$6.7x10^{-01}$	$4.2x10^{+01}$	$1.1x10^{+00}$
Waste storage, transfer, separating or processing	$1.5x10^{+02}$	$4.2x10^{-05}$	$1.1x10^{+02}$	$2.2x10^{+02}$	$8.5x10^{+01}$	$1.8x10^{+01}$	$1.6x10^{-02}$	$5.4x10^{+00}$
Wood or timber milling	0	0	0	$7.1x10^{+00}$	$7.3x10^{-01}$	$2.7x10^{-01}$	0	$2.4x10^{-03}$
Wood preservation	0	0	0	0	0	0	0	$1.0x10^{-03}$
Grand Total	**1,613,900**	**30.6**	**481,930**	**268,300**	**118,050**	**33,500**	**821,560**	**40,990**

Table 4.25: Average Daily Industrial Emissions (July Weekend Day / Winter Weekend Day) (kg / day)

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of ammonium nitrate	0	$1.3x10^{+01}$	$6.4x10^{+01}$	$6.4x10^{+00}$	$3.5x10^{+00}$	0	$4.2x10^{-03}$	$1.5x10^{+01}$	0
Agricultural Fertilizer and/or Ammonium Nitrate Production - Production of phosphate fertilizer	0	0	$2.0x10^{-01}$	$4.1x10^{-01}$	$3.0x10^{-04}$	0	$5.0x10^{-05}$	$1.0x10^{-01}$	0
Aircraft (helicopter) facilities	0	0	0	0	0	0	0	0	0
Animal slaughtering	0	$2.4x10^{-01}$	$7.8x10^{-01}$	$1.4x10^{+00}$	$1.1x10^{+01}$	$1.6x10^{+01}$	$6.4x10^{-05}$	$9.0x10^{+00}$	$1.9x10^{+00}$
Battery production	0	0	0	0	0	0	0	0	0
Beer or distilled alcohol production	0	0	0	0	0	0	0	0	0
Biomedical waste incineration	0	$5.6x10^{-06}$	$5.2x10^{-01}$	$3.1x10^{-05}$	$2.6x10^{-04}$	$3.7x10^{-04}$	$6.1x10^{-01}$	$2.1x10^{-04}$	$4.5x10^{-05}$
Bitumen pre-mix or hotmix production	0	$4.6x10^{-04}$	$5.6x10^{+00}$	$1.3x10^{+01}$	$2.2x10^{-02}$	$3.1x10^{-02}$	$2.2x10^{-01}$	$2.8x10^{+00}$	$3.7x10^{-03}$
Bulk cargo handling	0	$7.5x10^{-08}$	$2.3x10^{-07}$	$4.2x10^{-07}$	$1.1x10^{-01}$	$5.0x10^{-06}$	0	$4.2x10^{-01}$	$6.1x10^{-07}$
Cement or lime handling	0	$5.0x10^{-04}$	$2.8x10^{-02}$	$4.7x10^{-02}$	$3.4x10^{+01}$	$3.3x10^{-02}$	$2.5x10^{-05}$	$8.8x10^{+01}$	$4.1x10^{-03}$
Cement or lime production	0	0	0	0	$1.0x10^{+02}$	0	$4.0x10^{+00}$	$1.3x10^{+01}$	0
Ceramics production (excluding glass)	0	$1.7x10^{-06}$	$9.0x10^{+00}$	$1.8x10^{+01}$	$2.3x10^{+01}$	$1.1x10^{-04}$	$8.9x10^{-06}$	$6.6x10^{+00}$	$1.4x10^{-05}$
Chemical storage	0	0	0	0	$6.1x10^{-02}$	$6.2x10^{+00}$	0	$3.7x10^{-01}$	0
Chemical Storage - Other Chemical Storage	0	$1.1x10^{-04}$	$1.0x10^{+01}$	$7.6x10^{-02}$	$1.3x10^{+01}$	$8.2x10^{-03}$	$3.0x10^{-01}$	$2.9x10^{+01}$	$9.0x10^{+00}$
Chemical Storage - Storage of Petroleum and/or Petroleum Products	0	$4.3x10^{-04}$	$1.0x10^{+01}$	$3.5x10^{+00}$	$6.7x10^{+00}$	$2.8x10^{-02}$	$1.9x10^{-02}$	$2.2x10^{+01}$	$3.4x10^{-03}$
Coal loading	$2.5x10^{-02}$	$3.9x10^{-02}$	$6.9x10^{-02}$	$1.0x10^{-01}$	$5.0x10^{-01}$	$4.3x10^{-01}$	$1.6x10^{-04}$	$1.9x10^{+00}$	$5.3x10^{-02}$
Coal mining	$1.4x10^{+01}$	$3.0x10^{+00}$	$1.8x10^{+01}$	$6.1x10^{+00}$	$6.4x10^{+00}$	$1.1x10^{+00}$	$8.6x10^{-02}$	$2.4x10^{+01}$	$6.6x10^{-02}$
Coal washery reject or slag landfilling	$8.5x10^{-05}$	0	$9.6x10^{-05}$	0	0	0	0	0	0
Coke production	0	0	$9.8x10^{-01}$	0	$3.7x10^{-05}$	0	$2.1x10^{+01}$	$1.1x10^{-05}$	0
Composting and related reprocessing or treatment	0	$1.7x10^{-05}$	$8.9x10^{+00}$	$1.6x10^{-02}$	$1.3x10^{+01}$	$4.5x10^{+00}$	$1.1x10^{-05}$	$1.6x10^{+02}$	$1.4x10^{-04}$
Concrete batching	0	$1.2x10^{-04}$	$5.9x10^{-02}$	$1.1x10^{-01}$	$5.8x10^{+01}$	$8.1x10^{-03}$	$7.5x10^{-05}$	$5.7x10^{+01}$	$9.9x10^{-04}$
Contaminated soil treatment	0	0	0	0	0	0	0	0	0
Crushing, grinding or separating works	$1.7x10^{-01}$	$6.6x10^{-08}$	$5.7x10^{+00}$	$9.6x10^{+00}$	$3.4x10^{+00}$	$9.6x10^{-01}$	$5.3x10^{-02}$	$3.8x10^{+01}$	0
Drum or container reconditioning	0	$1.3x10^{-05}$	$1.3x10^{-02}$	$2.7x10^{-02}$	$1.1x10^{+01}$	$8.4x10^{-04}$	$1.8x10^{-05}$	$3.3x10^{+01}$	$1.0x10^{-04}$
Electricity Generation - Generation of electrical power from coal	0	$1.6x10^{-04}$	$2.0x10^{-02}$	$9.0x10^{-04}$	$6.6x10^{+02}$	$1.1x10^{-02}$	$8.1x10^{-01}$	$7.7x10^{+01}$	$1.3x10^{-03}$
Electricity Generation - Generation of electrical power from gas	$2.4x10^{-03}$	$1.4x10^{+00}$	$5.1x10^{+00}$	$3.0x10^{+02}$	$1.9x10^{+00}$	$9.9x10^{-05}$	$2.1x10^{-01}$	$1.9x10^{+00}$	$1.2x10^{-05}$
Electricity Generation - Generation of electrical power other than from coal or gas	0	$1.7x10^{-01}$	$1.1x10^{+00}$	$5.5x10^{+00}$	$4.1x10^{+00}$	$4.9x10^{+00}$	$2.0x10^{-02}$	$1.2x10^{+01}$	$5.7x10^{-01}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Environmentally sensitive area landfilling	0	0	$8.0x10^{-01}$	0	$1.2x10^{+00}$	$4.0x10^{-01}$	0	$1.4x10^{+01}$	0
Explosives or pyrotechnics production	0	$4.9x10^{-06}$	$1.5x10^{-05}$	$2.7x10^{-05}$	$3.3x10^{-04}$	$3.3x10^{-04}$	0	$2.2x10^{-04}$	$4.0x10^{-05}$
Freeway or tollway construction	0	$2.1x10^{-06}$	$6.3x10^{-06}$	$1.2x10^{-05}$	$6.6x10^{-04}$	$1.4x10^{-04}$	0	$2.5x10^{-04}$	$1.7x10^{-05}$
Glass Production - Production of container glass	0	0	$3.6x10^{+00}$	$2.0x10^{+00}$	$1.1x10^{-04}$	0	0	$9.8x10^{-01}$	0
Glass Production - Production of float glass	0	0	$1.2x10^{+00}$	$6.9x10^{-01}$	$2.0x10^{-03}$	0	$2.0x10^{-05}$	$3.3x10^{-01}$	0
Hard-rock gravel quarrying	0	0	$1.9x10^{-01}$	0	$1.5x10^{+01}$	$9.5x10^{-02}$	0	$3.5x10^{+01}$	0
Hazardous, industrial or group A waste generation or storage	0	$5.8x10^{-03}$	$9.8x10^{-01}$	$1.6x10^{-01}$	$7.3x10^{+00}$	$4.5x10^{-01}$	$1.6x10^{-05}$	$1.4x10^{+01}$	$3.6x10^{-01}$
Hazardous, industrial, group A or group B waste disposal	0	0	0	0	$9.4x10^{-05}$	0	0	$2.9x10^{-05}$	0
Hazardous, industrial, group A or group B waste processing	0	$6.0x10^{-02}$	$2.5x10^{-01}$	$4.6x10^{-01}$	$2.7x10^{+00}$	$3.9x10^{+00}$	$8.6x10^{-05}$	$2.4x10^{+00}$	$4.8x10^{-01}$
Inert waste landfilling	0	$1.0x10^{-05}$	$1.3x10^{+00}$	$5.6x10^{-05}$	$2.0x10^{+00}$	$6.5x10^{-01}$	0	$2.3x10^{+01}$	$8.2x10^{-05}$
Landfilling in designated areas	0	0	$1.7x10^{+00}$	0	$2.6x10^{+00}$	$8.7x10^{-01}$	0	$3.0x10^{+01}$	0
Metal plating or coating works	$5.6x10^{-04}$	$7.1x10^{-04}$	$1.7x10^{+01}$	$2.9x10^{+01}$	$1.9x10^{+02}$	$1.2x10^{+00}$	$1.5x10^{+00}$	$9.4x10^{+02}$	$8.1x10^{+00}$
Milk processing	0	$3.5x10^{-02}$	$2.7x10^{-01}$	$5.2x10^{-01}$	$2.0x10^{+00}$	$2.3x10^{+00}$	$2.2x10^{-04}$	$1.8x10^{+00}$	$2.8x10^{-01}$
Mining (other than coal)	0	0	0	0	$6.9x10^{-04}$	0	0	$2.1x10^{-04}$	0
Mooring and boat storage	0	$1.6x10^{-06}$	$3.1x10^{-02}$	$8.6x10^{-06}$	$9.1x10^{-02}$	$1.0x10^{-04}$	0	$5.0x10^{-01}$	$1.3x10^{-05}$
Other activities - bread manufacturing	0	$1.6x10^{-04}$	$2.9x10^{-02}$	$5.5x10^{-02}$	$8.3x10^{-03}$	$1.0x10^{-02}$	$3.7x10^{-05}$	$2.3x10^{-02}$	$1.3x10^{-03}$
Other activities - cake and pastry manufacturing	0	$2.8x10^{-06}$	$2.6x10^{-02}$	$5.3x10^{-02}$	$1.3x10^{-04}$	$1.8x10^{-04}$	$3.6x10^{-05}$	$1.3x10^{-02}$	$2.3x10^{-05}$
Other activities - confectionary manufacturing	0	0	$6.8x10^{-03}$	$1.4x10^{-02}$	$2.9x10^{-01}$	0	$9.3x10^{-06}$	$2.6x10^{-01}$	0
Other activities - dry cleaning	0	0	$2.1x10^{-02}$	$4.2x10^{-02}$	0	$1.3x10^{+00}$	$2.9x10^{-05}$	$1.1x10^{-02}$	0
Other activities - oil and fat manufacturing	0	0	$8.5x10^{-02}$	$1.7x10^{-01}$	0	0	$1.2x10^{-04}$	$4.3x10^{-02}$	0
Other activities - printing	$2.0x10^{-03}$	$1.3x10^{-03}$	$1.3x10^{-01}$	$2.8x10^{-01}$	$3.7x10^{+01}$	$1.0x10^{+01}$	$9.4x10^{-04}$	$4.8x10^{+01}$	$3.4x10^{-03}$
Other activities - services to air transport	0	0	$3.6x10^{-02}$	$7.2x10^{-02}$	$3.4x10^{+01}$	0	$4.9x10^{-05}$	$2.7x10^{+01}$	0
Other activities - soft drink manufacturing	0	$1.4x10^{-02}$	$5.5x10^{-02}$	$1.0x10^{-01}$	$6.4x10^{-01}$	$9.3x10^{-01}$	$1.8x10^{-05}$	$5.4x10^{-01}$	$1.1x10^{-01}$
Other agricultural crop processing	0	$4.7x10^{-03}$	$3.2x10^{-01}$	$6.7x10^{-01}$	$1.1x10^{+00}$	$1.4x10^{-01}$	$5.7x10^{-04}$	$4.3x10^{+00}$	$1.8x10^{-02}$
Other chemical processing	$2.0x10^{-02}$	$4.3x10^{-01}$	$3.4x10^{+01}$	$1.4x10^{+00}$	$3.1x10^{+01}$	$3.2x10^{-01}$	$2.8x10^{-01}$	$2.6x10^{+02}$	$2.6x10^{+01}$
Other land-based extraction	$2.2x10^{-01}$	$3.0x10^{-05}$	$2.5x10^{+00}$	$4.5x10^{+00}$	$4.9x10^{+00}$	$2.0x10^{-03}$	$1.4x10^{-03}$	$1.2x10^{+01}$	$2.4x10^{-04}$
Other livestock processing	0	$2.7x10^{-02}$	$1.8x10^{-01}$	$3.5x10^{-01}$	$1.3x10^{+00}$	$1.8x10^{+00}$	$1.3x10^{-04}$	$1.1x10^{+00}$	$2.2x10^{-01}$
Other metal processing	0	$2.4x10^{-03}$	$2.6x10^{-01}$	$5.2x10^{-01}$	$3.7x10^{+02}$	$1.6x10^{-01}$	$4.0x10^{-04}$	$4.8x10^{+02}$	$1.9x10^{-02}$
Other vessel construction or maintenance	$8.9x10^{-02}$	$3.4x10^{-07}$	$2.2x10^{-02}$	$1.9x10^{-06}$	$1.3x10^{+01}$	$2.2x10^{-05}$	0	$7.0x10^{+01}$	$2.7x10^{-06}$
Paint production	0	$2.9x10^{-03}$	$1.8x10^{-02}$	$3.5x10^{-02}$	$8.0x10^{-01}$	$1.9x10^{-01}$	$1.7x10^{-05}$	$2.1x10^{+01}$	$2.3x10^{-02}$
Paper production using recycled materials	0	$1.2x10^{-02}$	$6.1x10^{-02}$	$1.2x10^{-01}$	$5.8x10^{-01}$	$7.7x10^{-01}$	$1.5x10^{-03}$	$7.9x10^{-01}$	$9.4x10^{-02}$

NSW Activity Type	1,3-BUT	ACET	BENZ	HCHO	XLYE	PERC	PAHs	TOLU	TCE
Pesticides production	0	$6.0x10^{-07}$	$9.4x10^{-04}$	$1.7x10^{-03}$	$2.9x10^{-02}$	$4.0x10^{-05}$	$1.1x10^{-06}$	$4.7x10^{-04}$	$4.9x10^{-06}$
Petrochemical production	$1.1x10^{-02}$	0	$6.9x10^{+00}$	$1.1x10^{+02}$	$5.2x10^{+00}$	0	$6.9x10^{-03}$	$7.6x10^{+00}$	0
Petroleum refining	0	$3.0x10^{-01}$	$6.7x10^{+01}$	$5.5x10^{+02}$	$6.2x10^{+01}$	$2.0x10^{+01}$	$3.7x10^{-01}$	$9.0x10^{+01}$	$2.4x10^{+00}$
Pharmaceutical or veterinary products production	$5.4x10^{-03}$	$4.0x10^{-03}$	$8.5x10^{-02}$	$1.5x10^{-01}$	$1.6x10^{+00}$	$2.6x10^{-01}$	$9.4x10^{-05}$	$1.6x10^{+00}$	$3.2x10^{-02}$
Plastics production	0	$3.7x10^{+00}$	$1.7x10^{+01}$	$1.4x10^{+01}$	$2.6x10^{+01}$	0	$5.2x10^{-05}$	$2.1x10^{+01}$	$4.2x10^{+01}$
Poultry production	0	$1.1x10^{-01}$	$3.8x10^{-01}$	$7.0x10^{-01}$	$5.2x10^{+00}$	$7.6x10^{+00}$	$2.5x10^{-05}$	$4.3x10^{+00}$	$9.2x10^{-01}$
Primary aluminium production	0	0	$2.5x10^{-01}$	$3.2x10^{-01}$	$2.4x10^{-01}$	0	$3.3x10^{+01}$	$3.3x10^{+00}$	0
Primary iron and steel production	0	$5.3x10^{-02}$	$6.0x10^{+02}$	$1.1x10^{+02}$	$1.6x10^{+01}$	$1.4x10^{+00}$	$8.2x10^{+01}$	$1.2x10^{+02}$	$1.7x10^{-01}$
Primary non-ferrous production (excluding aluminium)	0	$8.8x10^{-04}$	$3.3x10^{-01}$	$6.7x10^{-01}$	$4.0x10^{-02}$	$5.8x10^{-02}$	$4.9x10^{-04}$	$2.0x10^{-01}$	$7.1x10^{-03}$
Railway activities	0	0	0	0	$5.7x10^{-01}$	0	0	$9.0x10^{+00}$	0
Rendering or fat extraction	0	$7.4x10^{-03}$	$1.6x10^{-01}$	$1.8x10^{-01}$	$3.9x10^{-01}$	$4.9x10^{-01}$	$9.7x10^{-05}$	$5.1x10^{-01}$	$5.9x10^{-02}$
Scrap metal recovery	0	$2.3x10^{-06}$	$6.9x10^{-06}$	$1.3x10^{-05}$	$2.0x10^{-03}$	$1.5x10^{-04}$	0	$6.6x10^{-04}$	$1.9x10^{-05}$
Secondary aluminium production	0	0	$2.7x10^{+01}$	$5.3x10^{+01}$	$1.4x10^{-01}$	0	$9.3x10^{-04}$	$1.4x10^{+01}$	0
Secondary iron and steel production	0	0	$2.3x10^{-02}$	0	$4.4x10^{+00}$	0	$1.9x10^{+00}$	$8.0x10^{+00}$	0
Secondary non-ferrous production (excluding aluminium)	0	0	$2.1x10^{+00}$	$1.2x10^{+00}$	$1.1x10^{-01}$	0	$5.7x10^{-05}$	$5.5x10^{-01}$	0
Sewage Treatment - processing by large plants (> 10000 ML per year)	$2.2x10^{-02}$	$2.1x10^{-01}$	$7.9x10^{-01}$	$7.4x10^{+00}$	$7.0x10^{+00}$	$1.0x10^{+01}$	$1.5x10^{-02}$	$5.8x10^{+00}$	$1.2x10^{+00}$
Sewage Treatment - processing by small plants (< 10000 ML per year)	$2.0x10^{-02}$	$6.3x10^{-01}$	$3.6x10^{-01}$	$2.6x10^{+01}$	$1.6x10^{+00}$	$2.2x10^{+00}$	$2.2x10^{-02}$	$1.5x10^{+00}$	$5.0x10^{+01}$
Soap or detergent production	$4.5x10^{-04}$	$4.1x10^{+00}$	$1.9x10^{+01}$	$2.4x10^{-01}$	$1.2x10^{+00}$	$1.8x10^{-01}$	$1.1x10^{-04}$	$4.2x10^{+00}$	$2.3x10^{-02}$
Solid waste landfilling	0	0	$1.9x10^{+01}$	$7.9x10^{+00}$	$2.9x10^{+01}$	$9.5x10^{+00}$	$7.2x10^{-03}$	$3.3x10^{+02}$	0
Used tyre processing or disposal	0	0	0	0	$1.7x10^{-04}$	0	0	$5.1x10^{-05}$	0
Vessel construction or maintenance using dry or floating docks	0	0	$4.1x10^{-03}$	0	$2.4x10^{+00}$	0	0	$5.8x10^{+00}$	0
Waste oil recovery	0	$7.4x10^{-04}$	$2.9x10^{-02}$	$2.7x10^{-01}$	$4.8x10^{-02}$	$4.9x10^{-02}$	$1.5x10^{-03}$	$4.2x10^{-02}$	$5.9x10^{-03}$
Waste storage, transfer, separating or processing	0	$4.6x10^{-03}$	$1.7x10^{-02}$	$1.1x10^{-01}$	$4.7x10^{-01}$	$2.8x10^{-02}$	$7.4x10^{-04}$	$3.2x10^{-01}$	$3.4x10^{-03}$
Wood or timber milling	0	0	0	0	$2.2x10^{-04}$	0	0	$6.7x10^{-05}$	0
Wood preservation	0	0	0	0	$9.1x10^{-05}$	0	0	$2.8x10^{-05}$	0
Grand Total	**14.9**	**28.0**	**970**	**1,280**	**1,830**	**111**	**147**	**3,200**	**145**

5 INDUSTRIAL INVENTORY SOFTWARE

The industrial emissions inventory has been compiled using a database specifically designed for the project. The database is compatible with Microsoft SQL server using Microsoft Access.

The database includes the following functionalities.

- Generate mail-merge letters for survey questionnaires.
- Track progress of the survey and store survey responses.
- Store activity data, emission factors and organic speciation profiles.
- Store and calculate emissions data for each source and pollutant.
- Store emission source locations (MGA coordinates) and LGA identity
- Store temporal variation of each emission source (hourly, daily, monthly and yearly)
- Store source type (ANZSIC code, POEO activity, emission source name/type)

The database calculates source category specific emissions. The database is structured so that it holds all information required to estimate emissions from every identified emission source, using all possible emission estimation techniques. Each emission estimation technique is stored in the database as an “emission module”. Within each module, relevant emission factors are stored and the required data to estimate emissions for each substance is stored by the database. When compiling the emissions inventory, users enter emission type details (name of emission source e.g. Natural Gas Boiler) and select the appropriate emission source from the library of emission source types within the database (e.g. boiler, industrial, natural gas). Based on the available information, the user must select the most appropriate emission module to estimate emissions for each identified emission source. Once this has been completed, the user enters the required information necessary to estimate emissions from the selected emission source. The database design concept for the industrial emissions inventory is shown in Figure 5.1.

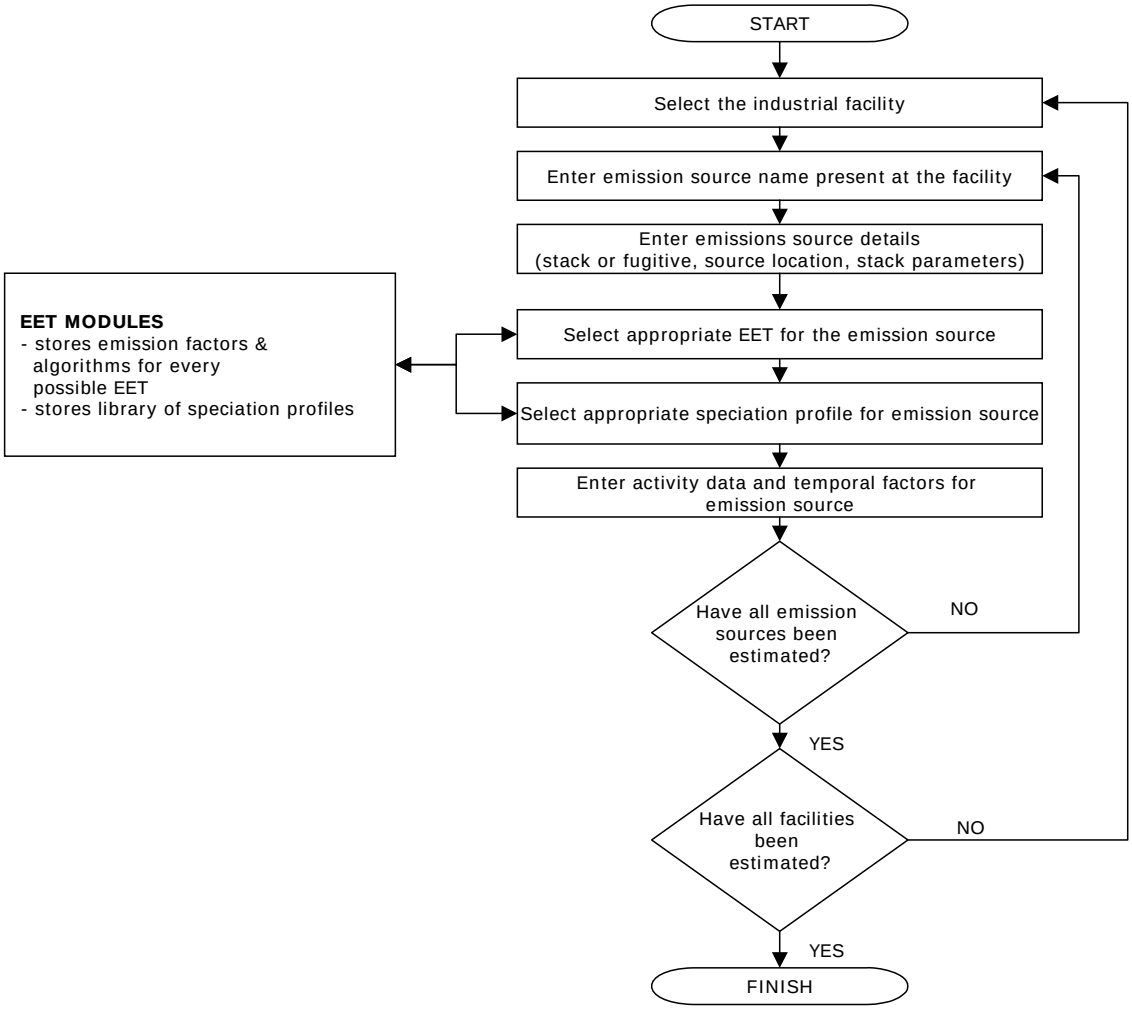

Figure 5.1: Industrial Database Design

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Appendix A:

Sample Industrial Survey Questionnaires

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

COAL MINING QUESTIONNAIRE

Please indicate as much of the following information as possible. If information is unavailable or is difficult to obtain, please provide a best estimate. Please indicate where a question is not applicable (e.g. "NA") or where no data are available (e.g. "ND").

Pacific Air & Environment (PAE) acknowledges that the information may be commercially sensitive. All information presented in this survey will be kept strictly confidential.

Q1. Facility name: <<Facility>>

Q2. Facility street address <<Premises Street>>
<<Premises Suburb>>
<<Premises State>>
<<Premises Postcode>>

Q3. Facility main activity: <<Activity>>

Q4. Facility primary ANZSIC code <<ANZSIC>>
(*Please indicate if incorrect)*

Q5. Does the facility perform any other activity other than described in Question 4 (provide ANZSIC Code if known)? _____

Q6. Person completing questionnaire: _____

Q7. Contact Details Phone number: _____
Fax number: _____
Email: _____

Operating Schedule *(cross out when not operating)*

Q8. Months of the Year: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Q9. Days of the Week: MON TUES WED THUR FRI SAT SUN

Q10. Weekday Hours of the Day:
1 2 3 4 5 6 7 8 9 10 11 12 (noon) 1 2 3 4 5 6 7 8 9 10 11 12 (midnight)

Weekend Hours of the Day:
1 2 3 4 5 6 7 8 9 10 11 12 (noon) 1 2 3 4 5 6 7 8 9 10 11 12 (midnight)

Q11. Seasonal Variation
If activity varies for any reason please indicate the **approximate** variation as a percentage of a full year.
e.g.: JAN – MAR 30%, APR – JUNE 20%, JULY – SEP 10%, OCT – DEC 40%

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Q12. Are there any additional variations in production not addressed by Q8-Q11 above.
_____
_____

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Major Materials and Products

Q13. Please estimate the annual quantity of the main raw materials consumed (e.g. tonnes/year, litres/year). Also indicate the physical state of the raw material (i.e. solid/liquid or gas)[a]

Raw Material	Please circle:	Annual Quantity Used[a]
1.	solid / liquid / gas	
2.	solid / liquid / gas	
3.	solid / liquid / gas	
4.	solid / liquid / gas	
5.	solid / liquid / gas	
6.	solid / liquid / gas	
7.	solid / liquid / gas	

a Pacific Air & Environment (PAE) acknowledges that this information may be commercially sensitive. All information presented in this survey will be kept strictly confidential.

Q14. What product(s) are mined:

1. _____
2. _____
3. _____
4. _____
5. _____

Q15. Please specify the following information for each product(s) mined that is sent off-site.

Product Material	Annual Quantity Produced (tonnes) [a]	Off-site transfer method (eg truck, rail)

a Pacific Air & Environment (PAE) notes that this information may be commercially sensitive. All information presented in this survey will be kept strictly confidential.

Q16. Please estimate the total area of land that is exposed (eg has no vegetative cover) in ha: _____

Q17. Please estimate the average total area of land being worked at any particular time of the year (ha): _____

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q18. Please estimate the average total area of land that is cleared annually through burn off (ha): _____

Q19. Please indicate the 'burn off' regime (eg one day every three weeks) and please indicate whether there are specific periods when burning does not occur (eg December): _____

Q20. Please sketch a flow diagram representing the main stages involved in the process (eg land clearing → top soil removal → storage of top soil → blasting → removal of mineral → crushing → stockpile). If a "ready-made" sketch or more detailed flow diagram is available, please attach it to this questionnaire.

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q21. Regarding the storage of materials in piles, please specify the following information as best as possible (please read the footnotes beneath the table).

Storage Pile Material[a]	Pile Height (m)[b]	Pile Base Area (m^2)	Number of Piles [d]	Material Moisture Content (%) [b]	Silt Content (%) [b, e]	Dust Control Method [h]

a Please indicate the material type (such as topsoil, overburden, mineral (please name), coal)
b Only approximate values are required.
d Please indicate the number of piles that are the same or very similar in size and shape, that are used for the storage of the same material.
e Silt is defined as particles equal to or less than 75 μm (micrometres) in diameter.
h Categorise dust control methods into one of the following categories:
(1) Watering by periodic spraying;
(2) Watering by wind activated spraying system;
(3) Chemical wetting agents;
(4) Continuous chemical spray onto input material;
(5) Surface crusting agents;
(6) Covered (eg using a shed); and/or
(7) Other (please specify) .
If dust generation reduction efficiencies are available please specify (%).

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Air Emission Sources

Q22. Please identify all air emission sources at the facility, indicating whether any emission control technologies (e.g. baghouse or low NO_x burners for point sources) and/or management practices (e.g. watering and chemical wetting agents on stockpiles for fugitive sources) are utilised and the date they were first commissioned and/or either significantly modified, upgraded or replaced. Note that point, fugitive, controlled and uncontrolled sources should be included. Note also that, where there is more than one, all emission control technologies and/or management practices should be included for each source. Attach a separate sheet if there is insufficient space in the table below.

Emission Source Name	Stack/Vent Number[a]	Control Technology	Reduction Efficiency (%)	Date First Commissioned[b,d]	Date Significantly Modified, Upgraded or Replaced[c,d]

a Insert "NA" (not applicable) for fugitive sources

b Include the earliest date (i.e. day, month and year) that either:
- An application for pollution control approval (PCA) was lodged under the *Pollution Control Act 1970*
- A development application (DA) was lodged under the *Environmental Planning and Assessment Act 1979*; or
- A licence application was lodged under the *Protection of the Environment Operations Act 1997*,

Otherwise, include that date the emission source was *"First Commissioned"*, if this information is not available.

c Include the earliest date (i.e. day, month and year) that either:
- An application for pollution control approval (PCA) was lodged under the *Pollution Control Act 1970*
- A development application (DA) or modification to an existing development consent was lodged under the *Environmental Planning and Assessment Act 1979*; or
- A licence application or variation to an existing licence was lodged under the *Protection of the Environment Operations Act 1997*,

Otherwise, include that date the emission source was *"Significantly Modified, Upgraded or Replaced"*, if this information is not available.

d Include codes PCA, EP&A and POEO beside date to denote Pollution Control Act 1970, Environmental Planning and Assessment Act 1979 and Protection of the Environment Operations Act 1997 respectively, where relevant

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Fuel Combustion

Q23. If combustion devices (e.g. see below) are utilised by the facility, please specify their characteristics in the table below). Please read the footnotes.

Type of Combustion Device	Stack/Vent Number	Rated Capacity (kW)	Fuel Type [a]	Estimated Annual Fuel Consumption (either tonnes, litres, cubic metres or MJ)	Emission Control(s) [b]	Control Efficiency (%)

a If the fuel type is an oil, please indicate the type of oil (eg residual, distillate, No.6 Residual Oil).

b Emission controls include flue gas controls such as baghouses and scrubbers as well as the use of combustion related controls such as low NO_x burners. If more than one control device is used, please number the controls and place a corresponding control efficiency for each numbered control in the adjacent column (eg with "(1) baghouse, (2) scrubber" entered into the "Emission Control(s)" column, the adjacent column would read "(1) 99%, (2) 80%". for the corresponding control efficiencies).

Combustion Types

External Combustion		**Internal Combustion**
Boiler - dry bottom - wall fired	Spreader stoker	Gas turbine
Boiler - dry bottom - tangentially fired	Overfeed stoker	4-stroke lean burn
Boiler - dry bottom - cell burner fired	Handfed unit	4-stroke rich burn
Boiler - wet bottom - wall fired	Fluidised bed combustor - circulating	2 stroke lean burn
Boiler - wet bottom - tangentially fired	Fluidised bed combustor - bubbling	
Boiler - wet bottom - cell burner fired	Space heater	
Boiler (other)	Fuel cell/Dutch oven	
Cyclone furnace		

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q24. Please provide source specific emission estimates for any point sources at the facility in the table below. Please indicate any available information on stack properties (e.g. location, height, diameter, exit velocity) even if no emissions data are available. Please attach another sheet if there is insufficient room.

STACK DETAILS:	**Stack/ Vent Number**	**Stack/ Vent Number**	**Stack/ Vent Number**	**Stack/ Vent Number**	**Stack/ Vent Number**	**Stack/ Vent Number**
Stack Identification						
Emission Source ID (please use ID number used in Q22 and Q23) [a]						
Stack Location Easting (MGA) (km)						
Stack Location Northing (MGA) (km)						
Stack height (m)						
Stack internal diameter @ exit (m)						
Gas discharge velocity (m/s) @ discharge temperature						
Gas discharge volume (m^3/s) @ discharge temperature						
EMISSION COMPONENTS (kg/year):						
Total Solid Particulates						
PM_{10}						
CO						
NO						
NO_2						
SO_2						
SO_3						
VOCs [b]						
Lead						
Formaldehyde						
Benzene						
Toluene						
Benzo(α)pyrene or PAHs						
Isomers of xylene						
Other (please specify)						

a Please use the same naming convention as used for Q22 and Q23 (where applicable).
b If the species-specific composition of total VOCs is known, please attach this information separately.

Q25 If the emissions of any of the sources specified in Q22- 24 vary from the operating regime of the facility, described in Q8-Q12, please describe this variation below.

_____
_____
_____
_____

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q26. Please indicate the following information for any fuel or organic liquid storage tanks at the facility. All volumes should be expressed in kilolitres (kL).

Tank Type (please tick)		Capacity	Material Stored (e.g. petrol, diesel, LPG, acetone)	Estimated Loss (if known)	Filling Method (i.e. splash loading, submerged loading or bottom loading) [b]	During filling tanks, are the vapours displaced from the tank **vented** directly to the atmosphere or are they **returned** to the filling tanker?	Annual Throughput	Please specify any emission control measures utilised on the tanks [c]
Above Ground [a]	Below Ground	(kL)		(kL)			(kL/y)	

a If any above ground tanks are present, please indicate whether the tank design is fixed roof, floating roof (internal or external), or a pressure tank.
b *Submerged Filling*: The liquid enters the tank from the top of the tank, freefalling and splashing to the bottom of the tank;
Submerged Filling: The liquid enter the tank via a pipe which reaches down to the bottom of the tank, allowing the end of the pipe to become submerged shortly after filling commences; and *Bottom Loading*: The liquid is filled via a pipe that enters through the bottom of the tank. For gas filled tanks please indicate "NA".
c Emission controls may include devices such as secondary seals (for above ground tanks), vapour recovery units (VRUs) and/or activated carbon filters used on the storage tank vents to minimise breathing and filling releases. Indicate the control efficiency where possible.

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q27. Please provide (attach to the questionnaire) fuel speciation profiles for fuels used at the facility.

Q28. Please estimate the annual consumption and losses of paints, lacquers and solvents at the facility (eg for surface coating, degreasing).

Coating Type	Coating Product Name	Percent Volatile Organics	Annual Consumption (m^3)	Estimated Annual Losses (m^3)	Emission Controls [a]	Control Efficiency (%)

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q29. Do you have an on-site wastewater treatment system? If so, please provide the following data:

VOC emissions to air estimate from wastewater treatment: _____ kg/year

Please specify method of calculation:

_____
_____
_____
_____

Please estimate the annual volume of wastewater treated (i.e. megalitres/year)

_____ ML/yr

Please estimate the minimum, maximum and average Biological Oxygen Demand (BOD) of wastewater as received by the treatment plant (i.e. influent BOD).

_____ kg/m^3 (min)
_____ kg/m^3 (max)
_____ kg/m^3 (annual average)

Industrial Emissions Inventory
Facility ID:<<Facility ID>>

On-Site Vehicles

Q30. Please specify the following information pertaining to vehicles used for ON-SITE operations as best as possible (please read the footnotes beneath the table).

Type of vehicle [a]	Vehicle model year	Number of vehicles of this type operating	Fuel type (Petrol, diesel, LPG)	Engine Size (or power rating – kW or HP)	ON-SITE operating regime (e.g. 6am – 6pm, Monday to Friday)[b]	Typical operating hours per day	Number of operating days per year	Annual ON-SITE VKT per vehicle (km) [c, d]	% of VKT on PAVED roads (%) [c, d]	% of VKT on UNPAVED roads (%) [c,d]

a Covers Off-Road vehicles only. Off-Road vehicles typically are not registered with the Road and Traffic Authority (RTA) because they do not access the road network. Some may have Conditional Registrations with the RTA, when it requires limited access to the road network. Example: front end loader, grader, bulldozer, fork lifts.
b Please characterise the ON-SITE operating regime if it differs to that described in Q8 – Q12.
c It is important to ensure that only ON-SITE operations are considered when providing these data.
d VKT = Vehicle Kilometres Traveled (km). Provide these data on a 'per vehicle' basis (ie so the TOTAL VKT's for a particular vehicle type will be the 'number of vehicles' by the 'VKT's' for each vehicle). This data only needs to be approximate.

Q31. Please specify the total fuel consumed by on-site vehicles:

Petrol:_____ kL/year
Diesel:_____ kL/year
LPG: _____ m^3 /year

Industrial Emissions Inventory
Facility ID:<<Facility ID>>

Q32. Dust emissions from loading/unloading/transfer, vehicle traffic and stockpiles. If you report to the National Pollutant Inventory (NPI), you will have been required to estimate PM_{10} emissions from these operations. Please list these emissions here.

Equipment Type	PM_{10} emission rates[a]	Units

Emission rates should be the emission rate while the equipment is operating, not the hourly equivalent of annual emissions. The hours of operation should be provided in Q30.

Stockpiles	PM_{10} emission rates[a]	Units

Emission rates should be the emission rate while the equipment is operating, not the hourly equivalent of annual emissions. The hours of operation should be provided in Q30.

Industrial Emissions Inventory
Facility ID:<<Facility ID>>

Q33. Please specify any other activities leading to airborne emissions that have not been considered already in this questionnaire. If any estimates of emissions have been performed by the facility (eg fugitive emissions such as solvent loss, particulates from blasting) please present them in the following table.

Activity	Pollutant Emitted	Emission Estimate [a]

a Please specify the units of measurement, as well as the method used to estimate the emission (eg source testing, mass balance).

Q34. Please estimate the annual electricity consumption at the facility (MWh):

_____

Q35. Please provide any site-specific emission estimates (by source) not already covered by this questionnaire and air emission test data (please attach to the completed questionnaire):

_____
_____
_____
_____
_____
_____
_____
_____
_____

Q36. Any additional comments relating to this questionnaire.

_____
_____
_____
_____
_____
_____
_____

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

PETROLEUM REFINERY QUESTIONNAIRE

Please indicate as much of the following information as possible. If information is unavailable or is difficult to obtain, please provide a best estimate. Please indicate where a question is not applicable (e.g. "NA") or where no data are available (e.g. "ND").

Pacific Air & Environment (PAE) acknowledges that the information may be commercially sensitive. All information presented in this survey will be kept strictly confidential.

Q1. Facility name: <<Facility>>

Q2. Facility street address <<Premises Street>>
<<Premises Suburb>>
<<Premises State>>
<<Premises Postcode>>

Q3. Facility main activity: <<Activity>>

Q4. Facility primary ANZSIC code <<ANZSIC>>
(*Please indicate if incorrect)*

Q5. Does the facility perform any other activity other than described in Question 3 (provide ANZSIC Code if known)? _____

Q6. Person completing questionnaire: _____

Q7. Contact Details
Phone number: _____
Fax number: _____
Email: _____

Operating Schedule *(cross out when not operating)*

Q8. Months of the Year: JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Q9. Days of the Week: MON TUES WED THUR FRI SAT SUN

Q10. Weekday Hours of the Day:
1 2 3 4 5 6 7 8 9 10 11 12 (noon) 1 2 3 4 5 6 7 8 9 10 11 12 (midnight)

Weekend Hours of the Day:
1 2 3 4 5 6 7 8 9 10 11 12 (noon) 1 2 3 4 5 6 7 8 9 10 11 12 (midnight)

Q11. Seasonal Variation
If production varies for any reason please indicate the **approximate** production as a percentage of a full year.
e.g.: JAN – MAR 30%, APR – JUNE 20%, JULY – SEP 10%, OCT – DEC 40%

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Q12. Are there any additional variations in production not addressed by Q8-Q11 above.
_____
_____
_____

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Air Emission Sources

Q13. Please identify all air emission sources at the facility, indicating whether any emission control technologies (e.g. baghouse or low NO_x burners for point sources) and/or management practices (e.g. watering and chemical wetting agents on stockpiles for fugitive sources) are utilised and the date they were first commissioned and/or either significantly modified, upgraded or replaced. Note that point, fugitive, controlled and uncontrolled sources should be included. Note also that, where there is more than one, all emission control technologies and/or management practices should be included for each source. Attach a separate sheet if there is insufficient space in the table below.

Emission Source Name	Stack/Vent Number[a]	Control Technology	Reduction Efficiency (%)	Date First Commissioned[b,d]	Date Significantly Modified, Upgraded or Replaced[c,d]

a Insert "NA" (not applicable) for fugitive sources

b Include the earliest date (i.e. day, month and year) that either:
- An application for pollution control approval (PCA) was lodged under the *Pollution Control Act 1970*
- A development application (DA) was lodged under the *Environmental Planning and Assessment Act 1979*; or
- A licence application was lodged under the *Protection of the Environment Operations Act 1997*,

Otherwise, include that date the emission source was *"First Commissioned"*, if this information is not available.

c Include the earliest date (i.e. day, month and year) that either:
- An application for pollution control approval (PCA) was lodged under the *Pollution Control Act 1970*
- A development application (DA) or modification to an existing development consent was lodged under the *Environmental Planning and Assessment Act 1979*; or
- A licence application or variation to an existing licence was lodged under the *Protection of the Environment Operations Act 1997*,

Otherwise, include that date the emission source was *"Significantly Modified, Upgraded or Replaced"*, if this information is not available.

d Include codes PCA, EP&A and POEO beside date to denote Pollution Control Act 1970, Environmental Planning and Assessment Act 1979 and Protection of the Environment Operations Act 1997 respectively, where relevant

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q13. Continued

Emission Source Name	Stack/Vent Number[a]	Control Technology	Reduction Efficiency (%)	Date First Commissioned[b,d]	Date Significantly Modified, Upgraded or Replaced[c,d]

a Insert "NA" (not applicable) for fugitive sources

b Include the earliest date (i.e. day, month and year) that either:
- An application for pollution control approval (PCA) was lodged under the *Pollution Control Act 1970*
- A development application (DA) was lodged under the *Environmental Planning and Assessment Act 1979*; or
- A licence application was lodged under the *Protection of the Environment Operations Act 1997*,

Otherwise, include that date the emission source was *"First Commissioned"*, if this information is not available.

c Include the earliest date (i.e. day, month and year) that either:
- An application for pollution control approval (PCA) was lodged under the *Pollution Control Act 1970*
- A development application (DA) or modification to an existing development consent was lodged under the *Environmental Planning and Assessment Act 1979*; or
- A licence application or variation to an existing licence was lodged under the *Protection of the Environment Operations Act 1997*,

Otherwise, include that date the emission source was *"Significantly Modified, Upgraded or Replaced"*, if this information is not available.

d Include codes PCA, EP&A and POEO beside date to denote Pollution Control Act 1970, Environmental Planning and Assessment Act 1979 and Protection of the Environment Operations Act 1997 respectively, where relevant

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q14. Please provide source specific emission estimates for any point sources at the facility in the table below. Please indicate any available information on stack properties (e.g. location, height, diameter, exit velocity) even if no emissions data are available. Please attach another sheet if there is insufficient room.

STACK DETAILS:	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number
Stack Identification						
Emission Source ID (please use ID number used in Q13) [a]						
Stack Location Easting (MGA) (km)						
Stack Location Northing (MGA) (km)						
Stack height (m)						
Stack internal diameter @ exit (m)						
Discharge temperature (^{0}C)						
Gas discharge velocity (m/s) @ discharge temperature						
Gas discharge volume (m^3/s) @ discharge temperature						
EMISSION COMPONENTS (kg/year):						
Total Solid Particulates						
PM_{10}						
CO						
NO						
NO_2						
SO_2						
SO_3						
VOCs [b]						
Lead						
Formaldehyde						
Benzene						
Toluene						
Benzo(α)pyrene or PAHs						
Isomers of xylene						
Other (please specify)						

a Please use the same naming convention as used for Q13 (where applicable).
b If the species-specific composition of total VOCs is known, please attach this information separately.

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q14. Continued

STACK DETAILS:	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number
Stack Identification						
Emission Source ID (please use ID number used in Q13) [a]						
Stack Location Easting (MGA) (km)						
Stack Location Northing (MGA) (km)						
Stack height (m)						
Stack internal diameter @ exit (m)						
Discharge temperature (^{0}C)						
Gas discharge velocity (m/s) @ discharge temperature						
Gas discharge volume (m^3/s) @ discharge temperature						
EMISSION COMPONENTS (kg/year):						
Total Solid Particulates						
PM_{10}						
CO						
NO						
NO_2						
SO_2						
SO_3						
VOCs [b]						
Lead						
Formaldehyde						
Benzene						
Toluene						
Benzo(α)pyrene or PAHs						
Isomers of xylene						
Other (please specify)						

a Please use the same naming convention as used for Q13 (where applicable).
b If the species-specific composition of total VOCs is known, please attach this information separately.

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q14. Continued

STACK DETAILS:	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number	Stack/ Vent Number
Stack Identification						
Emission Source ID (please use ID number used in Q13) [a]						
Stack Location Easting (MGA) (km)						
Stack Location Northing (MGA) (km)						
Stack height (m)						
Stack internal diameter @ exit (m)						
Discharge temperature (^{0}C)						
Gas discharge velocity (m/s) @ discharge temperature						
Gas discharge volume (m^3/s) @ discharge temperature						
EMISSION COMPONENTS (kg/year):						
Total Solid Particulates						
PM_{10}						
CO						
NO						
NO_2						
SO_2						
SO_3						
VOCs [b]						
Lead						
Formaldehyde						
Benzene						
Toluene						
Benzo(α)pyrene or PAHs						
Isomers of xylene						
Other (please specify)						

a Please use the same naming convention as used for Q13 (where applicable).
b If the species-specific composition of total VOCs is known, please attach this information separately.

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q15. If the emissions of any of the sources specified in Q13-Q14 vary from the operating regime of the facility, described in Q8-Q12, please describe this variation below.

_____
_____
_____
_____
_____
_____

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Fuel Combustion

Q16. If combustion devices (e.g. see below) are utilised by the plant, please specify their characteristics in the table below). Please read the footnotes. Attach a separate sheet if there is insufficient space in the table below.

ID	Type of Combustion Device	Stack/Vent Number	Rated Capacity (kW)	Fuel Type [a]	Sulfur content (%)	Ash content (%)	Estimated Annual Fuel Consumption (either tonnes, litres, cubic metres or MJ)	Emission Control(s) [b]	Control Efficiency (%)

a If the fuel type is an oil, please indicate the type of oil (eg residual, distillate, No.6 Residual Oil).

b Emission controls include flue gas controls such as baghouses and scrubbers as well as the use of combustion related controls such as low NO_x burners. If more than one control device is used, please number the controls and place a corresponding control efficiency for each numbered control in the adjacent column (eg with "(1) baghouse, (2) scrubber" entered into the "Emission Control(s)" column, the adjacent column would read "(1) 99%, (2) 80%". for the corresponding control efficiencies).

Combustion Types

External Combustion		**Internal Combustion**
Boiler - dry bottom - wall fired	Spreader stoker	Gas turbine
Boiler - dry bottom - tangentially fired	Overfeed stoker	4-stroke lean burn
Boiler - dry bottom - cell burner fired	Handfed unit	4-stroke rich burn
Boiler - wet bottom - wall fired	Fluidised bed combustor - circulating	2 stroke lean burn
Boiler - wet bottom - tangentially fired	Fluidised bed combustor - bubbling	
Boiler - wet bottom - cell burner fired	Space heater	
Boiler (other)	Fuel cell/Dutch oven	
Cyclone furnace		

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q16 (Continued)

ID	Type of Combustion Device	Stack/Vent Number	Rated Capacity (kW)	Fuel Type [a]	Sulfur content (%)	Ash content (%)	Estimated Annual Fuel Consumption (either tonnes, litres, cubic metres or MJ)	Emission Control(s) [b]	Control Efficiency (%)

a If the fuel type is an oil, please indicate the type of oil (eg residual, distillate, No.6 Residual Oil).

b Emission controls include flue gas controls such as baghouses and scrubbers as well as the use of combustion related controls such as low NO_x burners. If more than one control device is used, please number the controls and place a corresponding control efficiency for each numbered control in the adjacent column (eg with "(1) baghouse, (2) scrubber" entered into the "Emission Control(s)" column, the adjacent column would read "(1) 99%, (2) 80%". for the corresponding control efficiencies).

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q17. Please estimate the annual quantity of the main products manufactured (e.g. tonnes/year, litres/year). Also indicate the physical state of the product (i.e. solid, liquid or gas).

Manufactured Product	Please circle:	Annual Quantity Produced
1.	solid / liquid / gas	
2.	solid / liquid / gas	
3.	solid / liquid / gas	
4.	solid / liquid / gas	
5.	solid / liquid / gas	
6.	solid / liquid / gas	
7.	solid / liquid / gas	
8.	solid / liquid / gas	
9.	solid / liquid / gas	
10.	solid / liquid / gas	
11.	solid / liquid / gas	
12.	solid / liquid / gas	

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Fuel Loading

Q18. Please provide source specific emission estimates for product loading activities at the facility in the table below. Please attach another sheet if there is insufficient room.

Fuel Type	Amount loaded (m^3/year)	Loading Method	Pollutant (e.g. VOCs)	Estimated emission (kg/year)

Crude Oil and Ballast Water Loading

Q19. Please provide the total amount of crude oil received during a year from port:

_____ ML/year

If emission estimates have been performed for ship ballasting emissions please provide the emission estimate in the table below:

Pollutant	Emission (kg/year)
VOCs	

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q20. Please indicate the following information for any fuel or organic liquid storage tanks at the facility. All volumes should be expressed in kilolitres (kL).

Tank Type (please tick)		Capacity	Material Stored (e.g. petrol, diesel, LPG, acetone)	Estimated Loss (if known)	Filling Method (i.e. splash loading, submerged loading or bottom loading) [b]	During filling tanks, are the vapours displaced from the tank **vented** directly to the atmosphere or are they **returned** to the filling tanker?	Annual Throughput	Please specify any emission control measures utilised on the tanks [c]
Above Ground [a]	Below Ground	(kL)		(kL)			(kL/y)	

a If any above ground tanks are present, please indicate whether the tank design is fixed roof, floating roof (internal or external), or a pressure tank.

b *Splash Filling*: The liquid enters the tank from the top of the tank, freefalling and splashing to the bottom of the tank;
Submerged Filling: The liquid enter the tank via a pipe which reaches down to the bottom of the tank, allowing the end of the pipe to become submerged shortly after filling commences; and *Bottom Loading*: The liquid is filled via a pipe that enters through the bottom of the tank. For gas filled tanks please indicate "NA".

c Emission controls may include devices such as secondary seals (for above ground tanks), vapour recovery units (VRUs) and/or activated carbon filters used on the storage tank vents to minimise breathing and filling releases. Indicate the control efficiency where possible.

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q20. Continued

Tank Type (please tick)		Capacity	Material Stored (e.g. petrol, diesel, LPG, acetone)	Estimated Loss (if known)	Filling Method (i.e. splash loading, submerged loading or bottom loading) [b]	During filling tanks, are the vapours displaced from the tank **vented** directly to the atmosphere or are they **returned** to the filling tanker?	Annual Throughput	Please specify any emission control measures utilised on the tanks [c]
Above Ground [a]	Below Ground	(kL)		(kL)			(kL/y)	

a If any above ground tanks are present, please indicate whether the tank design is fixed roof, floating roof (internal or external), or a pressure tank.

b *Splash Filling*: The liquid enters the tank from the top of the tank, freefalling and splashing to the bottom of the tank;
Submerged Filling: The liquid enter the tank via a pipe which reaches down to the bottom of the tank, allowing the end of the pipe to become submerged shortly after filling commences; and *Bottom Loading*: The liquid is filled via a pipe that enters through the bottom of the tank. For gas filled tanks please indicate "NA".

c Emission controls may include devices such as secondary seals (for above ground tanks), vapour recovery units (VRUs) and/or activated carbon filters used on the storage tank vents to minimise breathing and filling releases. Indicate the control efficiency where possible.

Q21. Please provide (attach to the questionnaire) fuel speciation profiles for fuels used at the facility.

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q22. Do you have an on-site wastewater treatment system? If so, please provide the following data:

VOC emissions to air estimate from wastewater treatment: _____ kg/year

Please specify method of calculation:
_____
_____
_____
_____

Please estimate the annual volume of wastewater treated (i.e. megalitres/year)
_____ ML/yr

Please estimate the minimum, maximum and average Biological Oxygen Demand (BOD) of wastewater as received by the treatment plant (i.e. influent BOD).

_____ kg/m^3 (min)
_____ kg/m^3 (max)
_____ kg/m^3 (annual average)

Fugitive Emissions – Valves, Seals and Flanges

Q23. Please provide the annual losses from valves, seals and flanges if they have been estimated at your facility (specify compounds and mass emissions):
_____
_____
_____
_____

Q24. Please specify method of calculation:
_____
_____
_____
_____

Q25. Please specify any other activities leading to airborne emissions that have not been considered already in this questionnaire. If any estimates of emissions have been performed by the facility, please present them in the following table.

Activity	Pollutant Emitted	Emission Estimate [a]

a Please specify the units of measurement, as well as the method used to estimate the emission (e.g. source testing, mass balance).

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

On-Site Vehicles

Q26. Please specify the following information pertaining to vehicles used for ON-SITE operations as best as possible (please read the footnotes beneath the table).

Type of vehicle [a]	Vehicle model year	Number of vehicles of this type operating	Fuel type (Petrol, diesel, LPG)	Engine Size (or power rating – kW or HP)	ON-SITE operating regime (e.g. 6am – 6pm, Monday to Friday)[b]	Typical operating hours per day	Number of operating days per year	Annual ON-SITE VKT per vehicle (km) [c, d]	% of VKT on PAVED roads (%) [c, d]	% of VKT on UNPAVED roads (%) [c,d]

a Covers Off-Road vehicles only. Off-Road vehicles typically are not registered with the Road and Traffic Authority (RTA) because they do not access the road network. Some may have Conditional Registrations with the RTA, when it requires limited access to the road network. Example: front end loader, grader, bulldozer, fork lifts.

b Please characterise the ON-SITE operating regime if it differs to that described in Q8 – Q12.

c It is important to ensure that only ON-SITE operations are considered when providing these data.

d VKT = Vehicle Kilometres Traveled (km). Provide these data on a 'per vehicle' basis (ie so the TOTAL VKT's for a particular vehicle type will be the 'number of vehicles' by the 'VKT's' for each vehicle). This data only needs to be approximate.

Q27. Please specify the total fuel consumed by on-site vehicles:

Petrol:_____ kL/year
Diesel:_____ kL/year
LPG: _____ m^3 /year

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q28. Please estimate the annual electricity consumption at the facility (MWh): _____

Q29. Please provide any site specific emission estimates (by source) (for e.g. emission estimates used to report to the NPI by source and for all 90 NPI substances i.e. include non-triggered substances) (please attach to the completed questionnaire).

Q30. Any additional comments relating to this questionnaire.
_____
_____
_____
_____
_____
_____
_____

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

SEWAGE, WATER AND WASTEWATER TREATMENT QUESTIONNAIRE

Please indicate as much of the following information as possible. If information is unavailable or is difficult to obtain, please provide a best estimate. Please indicate where a question is not applicable (e.g. "NA") or where no data are available (eg "ND").

Pacific Air & Environment (PAE) acknowledges that the information may be commercially sensitive. All information presented in this survey will be kept strictly confidential.

Q1. Facility name: <<Facility>>

Q2. Facility street address <<Premises Street>>
<<Premises Suburb>>
<<Premises State>>
<<Premises Postcode>>

Q3. Facility main activity: <<Activity>>

Q4. Facility primary ANZSIC code <<ANZSIC>>
(*Please indicate if incorrect)*

Q5. Does the facility perform any other activity other than described in Question 3 (provide ANZSIC Code if known)? _____

Q6. Person completing questionnaire: _____

Q7. Contact Details Phone number: _____
Fax number: _____
Email: _____

Q8. Please estimate the annual volume of wastewater treated (i.e. megalitres per year _____ ML/year

Q9. Please estimate the minimum, maximum and average Biological Oxygen Demand (BOD) of wastewater as received by the treatment plant (i.e. influent BOD).

_____ kg/m^3 (min)
_____ kg/m^3 (max)
_____ kg/m^3 (annual average)

Q10. Please estimate the proportions of wastewater that come from the following two source categories:

Industry _____ %
Domestic _____ %

Q11. If wastewater is received from industrial sources, please estimate the fraction of influent BOD contributed by these sources: _____ %

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q12. Please specify the industries from which wastewater is received (e.g. petrochemical, textile manufacture, food processing). If the contribution of each industry to the treatment facilities inflow can be specified, please specify.

_____

_____

_____

_____

_____

Q13. Is methane recovery practiced at the treatment plant (yes/no)? _____

If 'yes' please specify the quantity of methane recovered annually (tonnes) _____

What fraction of TOTAL methane generation is recovered _____%

Q14. Is methane combusted at the treatment plant (i.e. for electricity generation or in a flare) (yes/no)? _____

If 'yes' please specify the quantity of sewage methane combusted annually: _____ m^3

If yes, please specify the combustion device used (e.g. flare, 1,000 kW internal combustion engine):

_____

_____

_____

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Air Emission Sources

Q15. Please identify all air emission sources at the facility (e.g. VOC volatilisation from the liquid surface, sewage methane combustion, on-site diesel generators) indicating whether any emission control technologies (e.g. methane collection, baghouse or low NO_x burners for point sources) and/or management practices (e.g. watering and chemical wetting agents on stockpiles for fugitive sources) are utilised and the date they were first commissioned and/or either significantly modified, upgraded or replaced. Note that point, fugitive, controlled and uncontrolled sources should be included. Note also that, where there is more than one, all emission control technologies and/or management practices should be included for each source. Attach a separate sheet if there is insufficient space in the table below.

Emission Source Name	Stack/Vent Number[a]	Control Technology	Reduction Efficiency (%)	Date First Commissioned[b,d]	Date Significantly Modified, Upgraded or Replaced[c,d]

a Insert "NA" (not applicable) for fugitive sources

b Include the earliest date (i.e. day, month and year) that either:
- An application for pollution control approval (PCA) was lodged under the *Pollution Control Act 1970*
- A development application (DA) was lodged under the *Environmental Planning and Assessment Act 1979*; or
- A licence application was lodged under the *Protection of the Environment Operations Act 1997*,

Otherwise, include that date the emission source was *"First Commissioned"*, if this information is not available.

c Include the earliest date (i.e. day, month and year) that either:
- An application for pollution control approval (PCA) was lodged under the *Pollution Control Act 1970*
- A development application (DA) or modification to an existing development consent was lodged under the *Environmental Planning and Assessment Act 1979*; or
- A licence application or variation to an existing licence was lodged under the *Protection of the Environment Operations Act 1997*,

Otherwise, include that date the emission source was *"Significantly Modified, Upgraded or Replaced"*, if this information is not available.

d Include codes PCA, EP&A and POEO beside date to denote Pollution Control Act 1970, Environmental Planning and Assessment Act 1979 and Protection of the Environment Operations Act 1997 respectively, where relevant

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q16. If combustion is utilised as a control measure or for power generation, please also specify the following information.
Estimated heating value of the wastewater treatment gas (kJ/kg or kJ/m^3)_____

Type of Combustion Device	Stack/Vent Number	Rated Capacity (kW)	Auxiliary Fuel Type [a] (if used)	Estimated Annual Wastewater Treatment Gas Consumption (either tonnes, cubic metres or MJ)	Estimated Annual Auxiliary Fuel Consumption (either tonnes, litres, cubic metres or MJ)	Emission Control(s)[b]	Control Efficiency (%)

a If the fuel type is an oil, please indicate the type of oil (eg residual, distillate, No.6 Residual Oil).
b Emission controls include flue gas controls such as baghouses and scrubbers as well as the use of combustion related controls such as low NO_x burners. If more than one control device is used, please number the controls and place a corresponding control efficiency for each numbered control in the adjacent column (eg with "(1) baghouse, (2) scrubber" entered into the "Emission Control(s)" column, the adjacent column would read "(1) 99%, (2) 80%". for the corresponding control efficiencies).

Combustion Types

External Combustion		**Internal Combustion**
Boiler - dry bottom - wall fired	Spreader stoker	Gas turbine
Boiler - dry bottom - tangentially fired	Overfeed stoker	4-stroke lean burn
Boiler - dry bottom - cell burner fired	Handfed unit	4-stroke rich burn
Boiler - wet bottom - wall fired	Fluidised bed combustor - circulating	2 stroke lean burn
Boiler - wet bottom - tangentially fired	Fluidised bed combustor - bubbling	
Boiler - wet bottom - cell burner fired	Space heater	
Boiler (other)	Fuel cell/Dutch oven	
Cyclone furnace		

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q17. Please provide source specific emission estimates for any point sources at the facility in the table below. Please indicate any available information on stack properties (e.g. location, height, diameter, exit velocity) even if no emissions data are available. Please attach another sheet if there is insufficient room.

STACK DETAILS:	**Stack/ Vent Number**	**Stack/ Vent Number**	**Stack/ Vent Number**	**Stack/ Vent Number**	**Stack/ Vent Number**	**Stack/ Vent Number**
Stack Identification						
Emission Source ID (please use ID number used in Q15 and Q16) [a]						
Stack Location Easting (MGA) (km)						
Stack Location Northing (MGA) (km)						
Stack height (m)						
Stack internal diameter @ exit (m)						
Gas discharge velocity (m/s) @ discharge temperature						
Gas discharge volume (m^3/s) @ discharge temperature						
EMISSION COMPONENTS (kg/year):						
Total Solid Particulates						
PM_{10}						
CO						
NO						
NO_2						
SO_2						
SO_3						
VOCs [b]						
Lead						
Formaldehyde						
Benzene						
Toluene						
Benzo(α)pyrene or PAHs						
Isomers of xylene						
Other (please specify)						

a Please use the same naming convention as used for Q15 and Q16 (where applicable).
b If the species-specific composition of total VOCs is known, please attach this information separately.

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q18. If emissions to air have been estimated for each emission source at the facility please provide the emission estimates in the table below:

Emission Source[a]	Compound Emitted[b]	Emission Rate[c]	Emission Control[d]	Control Efficiency (%)

a For example: Methane or NMVOC releases from various treatment stages. If more than a single compound has been measured from the same source, list the information for each compound in separate rows.
b For example: VOCs (specify compounds if known), CO.
c Mass/unit time (eg kg/year).
d Such as any gaseous release collection devices.

Please specify method of calculation:

_____

_____

_____

_____

_____

_____

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

On-Site Vehicles

Q19. Please specify the following information pertaining to vehicles used for ON-SITE operations as best as possible (please read the footnotes beneath the table).

Type of vehicle [a]	Vehicle model year	Number of vehicles of this type operating	Fuel type (Petrol, diesel, LPG)	Engine Size (or power rating – kW or HP)	ON-SITE operating regime (e.g. 6am – 6pm, Monday to Friday)[b]	Typical operating hours per day	Number of operating days per year	Annual ON-SITE VKT per vehicle (km) [c, d]	% of VKT on PAVED roads (%) [c, d]	% of VKT on UNPAVED roads (%) [c,d]

a Covers Off-Road vehicles only. Off-Road vehicles typically are not registered with the Road and Traffic Authority (RTA) because they do not access the road network. Some may have Conditional Registrations with the RTA, when it requires limited access to the road network. Example: front end loader, grader, bulldozer, fork lifts.

b Please characterise the ON-SITE operating regime if it differs to that described in Q8 – Q12.

c It is important to ensure that only ON-SITE operations are considered when providing these data.

d VKT = Vehicle Kilometres Traveled (km). Provide these data on a 'per vehicle' basis (ie so the TOTAL VKT's for a particular vehicle type will be the 'number of vehicles' by the 'VKT's' for each vehicle). This data only needs to be approximate.

Q20. Please specify the total fuel consumed by on-site vehicles:

Petrol:_____ kL/year
Diesel:_____ kL/year
LPG: _____ m^3 /year

Industrial Emissions Inventory
Facility ID: <<Facility ID>>

Q21. Please provide (attach to the questionnaire) fuel speciation profiles for fuels used at the facility.

Q22. Please estimate the annual electricity consumption at the facility (MWh): _____

Q23. Please specify any other activities leading to airborne emissions that have not been considered already in this questionnaire. If any estimates of emissions have been performed by the facility (eg fugitive emissions such as solvent loss, particulates from blasting) please present them in the following table.

Activity	Pollutant Emitted	Emission Estimate [a]

a Please specify the units of measurement, as well as the method used to estimate the emission (e.g. source testing, mass balance).

Q24. Any additional comments relating to this questionnaire.

_____

_____

_____

_____

_____

_____

_____

_____

Appendix B:
Total Industrial Emissions

Table B1: Total Industrial Emissions

Substance	Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
(1-METHYLPROPYL)BENZENE (SEC-BUTYL BENZENE)	2.6x10^{-02}	2.4x10^{-03}	1.6x10^{-02}	3.4x10^{-02}	7.7x10^{-02}
(2-METHYLBUTYL)CYCLOHEXANE	3.0x10^{-02}	0	2.0x10^{-02}	3.7x10^{-02}	8.7x10^{-02}
(2-METHYLPROPYL)BENZENE	7.3x10^{-03}	5.1x10^{-03}	1.0x10^{-03}	1.3x10^{-02}	2.6x10^{-02}
1,1,1-TRICHLOROETHANE	2.6x10^{+01}	6.5x10^{+00}	1.3x10^{+00}	6.2x10^{+00}	4.0x10^{+01}
1,1,2,3-TETRAMETHYLCYCLOHEXANE	7.4x10^{-03}	0	5.0x10^{-03}	9.3x10^{-03}	2.2x10^{-02}
1,1,2-TRICHLOROETHANE	0	0	1.3x10^{-01}	0.0x10^{+00}	1.3x10^{-01}
1,1,2-TRIMETHYLCYCLOHEXANE	1.5x10^{-02}	0	1.0x10^{-02}	1.9x10^{-02}	4.3x10^{-02}
1,1,2-TRIMETHYLCYCLOPENTANE	4.4x10^{-02}	0	3.0x10^{-02}	5.6x10^{-02}	1.3x10^{-01}
1,1,3,4-TETRAMETHYLCYCLOHEXANE	3.7x10^{-02}	0	2.5x10^{-02}	4.6x10^{-02}	1.1x10^{-01}
1,1,3-TRIMETHYLCYCLOHEXANE	1.5x10^{-01}	0	1.0x10^{-01}	1.9x10^{-01}	4.3x10^{-01}
1,1,3-TRIMETHYLCYCLOPENTANE	1.5x10^{-01}	0	1.0x10^{-01}	1.9x10^{-01}	4.3x10^{-01}
1,1,4-TRIMETHYLCYCLOHEXANE	3.0x10^{-02}	0	2.0x10^{-02}	3.7x10^{-02}	8.7x10^{-02}
1,1-DICHLOROETHENE {VINYLIDENE CHLORIDE}	9.5x10^{-02}	2.6x10^{-02}	3.5x10^{-03}	5.1x10^{-03}	1.3x10^{-01}
1,1-DIMETHYL-2-PROPYLCYCLOHEXANE	1.5x10^{-02}	0	1.0x10^{-02}	1.9x10^{-02}	4.3x10^{-02}
1,1-DIMETHYLCYCLOHEXANE	5.9x10^{-02}	0	4.0x10^{-02}	7.4x10^{-02}	1.7x10^{-01}
1,1-DIMETHYLCYCLOPENTANE	2.2x10^{-02}	0	1.5x10^{-02}	2.8x10^{-02}	6.5x10^{-02}
1,1-METHYLETHYLCYCLOPENTANE	1.5x10^{-02}	0	1.0x10^{-02}	1.9x10^{-02}	4.3x10^{-02}
1,2,3,5-TETRAMETHYLBENZENE	6.7x10^{-02}	0	4.5x10^{-02}	8.3x10^{-02}	2.0x10^{-01}
1,2,3-TRIMETHYLBENZENE	2.0x10^{+01}	2.8x10^{+00}	1.2x10^{-01}	3.8x10^{-01}	2.3x10^{+01}
1,2,3-TRIMETHYLCYCLOHEXANE	8.9x10^{-02}	0	6.0x10^{-02}	1.1x10^{-01}	2.6x10^{-01}
1,2,4,5-TETRAMETHYLBENZENE	4.4x10^{-02}	0	3.0x10^{-02}	5.6x10^{-02}	1.3x10^{-01}
1,2,4-TRIMETHYLBENZENE	3.7x10^{+01}	1.7x10^{+00}	2.3x10^{-01}	5.6x10^{-01}	3.9x10^{+01}
1,2,4-TRIMETHYLCYCLOPENTENE	3.0x10^{-01}	0	2.1x10^{-01}	3.8x10^{-01}	8.9x10^{-01}
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE {CFC-114}	1.7x10^{-01}	1.9x10^{-01}	0	9.0x10^{-06}	3.6x10^{-01}
1,2-DICHLOROETHANE	6.3x10^{+00}	6.8x10^{+00}	2.6x10^{-03}	4.1x10^{-03}	1.3x10^{+01}
1,2-DICHLOROPROPANE	2.0x10^{-01}	2.1x10^{-01}	0	1.0x10^{-05}	4.1x10^{-01}
1,2-DIETHYL-1-METHYLCYCLOHEXANE	3.0x10^{-02}	0	2.0x10^{-02}	3.7x10^{-02}	8.7x10^{-02}
1,2-DIETHYLBENZENE (ORTHO)	7.0x10^{-03}	3.9x10^{-03}	7.1x10^{-04}	9.7x10^{-03}	2.1x10^{-02}
1,2-DIMETHYL-3-ETHYLCYCLOHEXANE	3.7x10^{-02}	0	2.5x10^{-02}	4.6x10^{-02}	1.1x10^{-01}
1,2-DIMETHYL-4-ETHYLBENZENE	7.4x10^{-02}	0	5.0x10^{-02}	9.3x10^{-02}	2.2x10^{-01}
1,2-DIMETHYLCYCLOPENTANE	2.6x10^{-01}	0	1.8x10^{-01}	3.2x10^{-01}	7.6x10^{-01}
1,2-PROPADIENE	2.7x10^{-02}	1.8x10^{-02}	3.7x10^{-03}	4.7x10^{-02}	9.6x10^{-02}
1,3,5-TRIETHYL CYCLOHEXANE	1.5x10^{-02}	0	1.0x10^{-02}	1.9x10^{-02}	4.3x10^{-02}
1,3,5-TRIMETHYLBENZENE	3.6x10^{+01}	2.1x10^{+00}	3.7x10^{-02}	1.9x10^{-01}	3.8x10^{+01}
1,3-BUTADIENE	1.1x10^{-01}	8.6x10^{-02}	1.6x10^{-03}	6.5x10^{+00}	6.7x10^{+00}
1,3-DICHLOROBENZENE {M-DICHLOROBENZENE}	4.8x10^{-02}	3.3x10^{-02}	8.7x10^{-04}	1.3x10^{-03}	8.4x10^{-02}
1,3-DIETHYL-5-METHYL CYCLOHEXANE	2.0x10^{+01}	4.4x10^{-02}	6.6x10^{-02}	4.8x10^{-03}	2.0x10^{+01}
1,3-DIETHYL-CYCLOHEXANE	2.2x10^{-02}	0	1.5x10^{-02}	2.8x10^{-02}	6.5x10^{-02}
1,3-DIMETHYL-2-ETHYLBENZENE	5.9x10^{-02}	0	4.0x10^{-02}	7.4x10^{-02}	1.7x10^{-01}
1,3-DIMETHYL-4-ETHYLBENZENE	3.0x10^{-02}	0	2.0x10^{-02}	3.7x10^{-02}	8.7x10^{-02}
1,3-DIMETHYL-4-ISOPROPYLBENZENE	7.4x10^{-03}	0	5.0x10^{-03}	9.3x10^{-03}	2.2x10^{-02}
1,3-DIMETHYL-5-ETHYLBENZENE	5.9x10^{-02}	0	4.0x10^{-02}	7.4x10^{-02}	1.7x10^{-01}
1,4-BUTANEDIOL	1.7x10^{+01}	0	5.9x10^{-01}	0	1.7x10^{+01}
1,4-DIETHYLBENZENE (PARA)	1.5x10^{-03}	0	0	2.5x10^{-04}	1.8x10^{-03}
1,4-DIETHYL-CYCLOHEXANE	1.7x10^{+02}	6.6x10^{+00}	2.3x10^{-01}	4.0x10^{+01}	2.2x10^{+02}
1,4-DIMETHYL-2-ETHYLBENZENE	4.4x10^{-02}	0	3.0x10^{-02}	5.6x10^{-02}	1.3x10^{-01}
1,4-DIOXANE	4.8x10^{-02}	1.3x10^{-02}	1.7x10^{-03}	2.5x10^{-03}	6.5x10^{-02}
1,4-PENTADIENE	8.7x10^{-01}	4.5x10^{-01}	6.8x10^{-05}	3.6x10^{-02}	1.4x10^{+00}
1-BUTENE	1.6x10^{+01}	3.3x10^{+00}	3.2x10^{-02}	1.7x10^{+01}	3.7x10^{+01}

Substance	Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
1-CHLOROBUTANE	$3.6x10^{+00}$	$1.3x10^{-01}$	$3.8x10^{-04}$	0	$3.8x10^{+00}$
1-DECENE	$1.2x10^{-01}$	$2.1x10^{-02}$	0	$1.6x10^{+01}$	$1.6x10^{+01}$
1-ETHOXY-2-PROPANOL	$2.4x10^{+00}$	$8.9x10^{-02}$	$2.5x10^{-04}$	0	$2.5x10^{+00}$
1-ETHYL-1,2-DIMETHYLCYCLOHEXANE	$2.8x10^{-02}$	$2.2x10^{-03}$	$1.1x10^{-02}$	$1.9x10^{-02}$	$6.0x10^{-02}$
1-ETHYL-2,2,6-TRIMETHYLCYCLOHEXANE	$1.5x10^{-02}$	0	$1.0x10^{-02}$	$1.9x10^{-02}$	$4.3x10^{-02}$
1-ETHYL-2,4-DIMETHYLCYCLOHEXANE	$7.4x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
1-ETHYL-2-METHYLCYCLOPENTANE	$3.9x10^{-07}$	0	0	0	$3.9x10^{-07}$
1-ETHYL-2-PROPYL CYCLOHEXANE	$2.5x10^{-01}$	0	$1.7x10^{-01}$	$3.2x10^{-01}$	$7.4x10^{-01}$
1-ETHYL-4-ISOPROPYLBENZENE	$3.0x10^{-02}$	0	$2.0x10^{-02}$	$3.7x10^{-02}$	$8.7x10^{-02}$
1-HEXENE	$3.6x10^{-01}$	$2.5x10^{-01}$	0	$2.1x10^{+01}$	$2.2x10^{+01}$
1-METHYL INDAN	$8.8x10^{-01}$	0	$6.0x10^{-02}$	$1.1x10^{-01}$	$1.1x10^{+00}$
1-METHYL-2-ISOPROPYLBENZENE	$3.7x10^{+00}$	0	0	0	$3.7x10^{+00}$
1-METHYL-2-ISOPROPYLCYCLOHEXANE	$6.7x10^{-02}$	0	$4.5x10^{-02}$	$8.3x10^{-02}$	$2.0x10^{-01}$
1-METHYL-2-PYRROLIDINONE	$3.2x10^{+00}$	0	0	0	3.2
1-METHYL-3-ISOPROPYLBENZENE	$8.9x10^{-02}$	$1.3x10^{-03}$	$6.0x10^{-02}$	$1.1x10^{-01}$	$2.6x10^{-01}$
1-METHYL-3-ISOPROPYLCYCLOHEXANE	$7.4x10^{-02}$	0	$5.0x10^{-02}$	$9.3x10^{-02}$	$2.2x10^{-01}$
1-METHYL-3N-PROPYLBENZENE	$1.1x10^{-03}$	$3.3x10^{-04}$	0	$5.0x10^{-04}$	$1.9x10^{-03}$
1-METHYL-4-ISOBUTYLBENZENE	$7.4x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
1-METHYL-4-ISOPROPYLBENZENE	$7.4x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
1-METHYL-4N-PROPYLBENZENE	$1.1x10^{-01}$	0	$7.5x10^{-02}$	$1.4x10^{-01}$	$3.3x10^{-01}$
1-METHYL-4-PENTYL CYCLOHEXANE	$1.5x10^{-02}$	0	$1.0x10^{-02}$	$1.9x10^{-02}$	$4.3x10^{-02}$
1-METHYLCYCLOPENTENE	$2.0x10^{-04}$	$8.8x10^{-03}$	0	$8.8x10^{-03}$	$1.8x10^{-02}$
1-NONENE	$1.9x10^{-01}$	0	0	$3.9x10^{-05}$	$1.9x10^{-01}$
1-OCTENE	$1.9x10^{-01}$	0	0	$3.9x10^{-05}$	$1.9x10^{-01}$
1-PENTENE	$6.6x10^{+00}$	$2.6x10^{+00}$	$2.9x10^{-03}$	$2.4x10^{-01}$	$9.4x10^{+00}$
1-PENTYNE	$1.3x10^{-03}$	0	0	$2.1x10^{-04}$	$1.5x10^{-03}$
1-PROPYNE	$1.6x10^{-03}$	0	0	$2.6x10^{-04}$	$1.8x10^{-03}$
1-UNDECENE	$9.2x10^{-04}$	0	0	$1.5x10^{-04}$	$1.1x10^{-03}$
2-(2-BUTOXYETHOXY)ETHANOL {BUTYL CARBITOL}	$1.7x10^{+00}$	$4.8x10^{-02}$	$2.7x10^{-01}$	$5.0x10^{-01}$	$2.5x10^{+00}$
2,2,3,3-TETRAMETHYLPENTANE	$7.4x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
2,2,3,TRIMETHYLHEXANE	$8.7x10^{-02}$	$4.5x10^{-02}$	$6.8x10^{-06}$	$3.6x10^{-03}$	$1.4x10^{-01}$
2,2,3-TRIMETHYLBUTANE	$1.7x10^{-01}$	$9.1x10^{-02}$	$1.4x10^{-05}$	$7.3x10^{-03}$	$2.7x10^{-01}$
2,2,3-TRIMETHYLPENTANE	$0.0x10^{+00}$	$1.6x10^{-03}$	0	$1.6x10^{-03}$	$3.3x10^{-03}$
2,2,4-TRIMETHYL-1,3-PENTANEDIOL ISOBUTYRATE {TEXAN	$1.0x10^{-04}$	0	0	0	$1.0x10^{-04}$
2,2,4-TRIMETHYLPENTANE	$4.3x10^{+00}$	$2.2x10^{+00}$	$2.7x10^{-03}$	$2.2x10^{-01}$	$6.8x10^{+00}$
2,2,5-TRIMETHYLHEXANE	$2.4x10^{-02}$	$2.6x10^{-03}$	$1.5x10^{-02}$	$3.1x10^{-02}$	$7.2x10^{-02}$
2,2-DICHLORONITROANILINE	$1.9x10^{+00}$	0	0	0	$1.9x10^{+00}$
2,2-DIMETHYLBUTANE	$1.5x10^{+00}$	$6.9x10^{-01}$	$5.7x10^{-04}$	$6.8x10^{-02}$	$2.3x10^{+00}$
2,2-DIMETHYLHEXANE	$1.7x10^{-01}$	$9.1x10^{-02}$	$1.4x10^{-05}$	$7.3x10^{-03}$	$2.7x10^{-01}$
2,2-DIMETHYLPENTANE	$4.4x10^{-01}$	$2.3x10^{-01}$	$3.4x10^{-05}$	$1.8x10^{-02}$	$6.8x10^{-01}$
2,2-DIMETHYLPROPANAL (PIVALDEHYDE)	0	$2.5x10^{-04}$	0	0	$2.5x10^{-04}$
2,3,3-TRIMETHYLPENTANE	$4.4x10^{-01}$	$2.3x10^{-01}$	$3.4x10^{-05}$	$1.9x10^{-02}$	$6.8x10^{-01}$
2,3,4-TRIMETHYLPENTANE	$4.5x10^{-01}$	$2.3x10^{-01}$	$1.0x10^{-02}$	$4.0x10^{-02}$	$7.3x10^{-01}$
2,3,5-TRIMETHYLHEPTANE	$7.4x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
2,3,5-TRIMETHYLHEXANE	$5.3x10^{-04}$	$3.3x10^{-04}$	0	$4.1x10^{-04}$	$1.3x10^{-03}$
2,3-DIMETHYL-1-BUTENE	$1.7x10^{-03}$	$1.2x10^{-03}$	$2.4x10^{-04}$	$3.0x10^{-03}$	$6.1x10^{-03}$
2,3-DIMETHYLBUTANE	$7.1x10^{+00}$	$3.7x10^{+00}$	$5.5x10^{-04}$	$3.1x10^{-01}$	$1.1x10^{+01}$
2,3-DIMETHYLHEXANE	$7.6x10^{-01}$	$3.6x10^{-01}$	$4.5x10^{-02}$	$1.1x10^{-01}$	$1.3x10^{+00}$
2,3-DIMETHYLOCTANE	$1.1x10^{-01}$	0	$7.5x10^{-02}$	$1.4x10^{-01}$	$3.3x10^{-01}$
2,3-DIMETHYLPENTANE	$1.6x10^{+00}$	$8.2x10^{-01}$	$2.6x10^{-02}$	$1.2x10^{-01}$	$2.6x10^{+00}$
2,4,4-TRIMETHYL-1-PENTENE	$1.1x10^{-02}$	0	0	$1.9x10^{-03}$	$1.3x10^{-02}$
2,4-DIMETHYLHEPTANE	$6.7x10^{-02}$	0	$4.5x10^{-02}$	$8.4x10^{-02}$	$2.0x10^{-01}$

Substance	Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
2,4-DIMETHYLHEXANE	$2.7x10^{+01}$	$9.8x10^{+00}$	$1.6x10^{+00}$	$4.3x10^{-01}$	$3.9x10^{+01}$
2,4-DIMETHYLNONANE	$7.4x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
2,4-DIMETHYLPENTANE	$7.7x10^{+00}$	$3.0x10^{+00}$	$3.8x10^{-01}$	$3.8x10^{+01}$	$4.9x10^{+01}$
2,4-TOLUENE DIISOCYANATE {TDI}	$9.7x10^{-01}$	$1.7x10^{-02}$	0	0	$9.9x10^{-01}$
2,5-DIMETHYLHEPTANE	$9.7x10^{-02}$	0	$6.5x10^{-02}$	$1.2x10^{-01}$	$2.8x10^{-01}$
2,5-DIMETHYLHEXANE	$6.1x10^{-01}$	$3.2x10^{-01}$	$4.7x10^{-05}$	$2.6x10^{-02}$	$9.5x10^{-01}$
2,5-DIMETHYLNONANE	$8.2x10^{-02}$	0	$5.5x10^{-02}$	$1.0x10^{-01}$	$2.4x10^{-01}$
2,5-DIMETHYLOCTANE	$7.4x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
2,6-DIMETHYLDECANE	$5.9x10^{-02}$	0	$4.0x10^{-02}$	$7.4x10^{-02}$	$1.7x10^{-01}$
2,6-DIMETHYLHEPTANE	$1.7x10^{-01}$	0	$1.2x10^{-01}$	$2.1x10^{-01}$	$5.0x10^{-01}$
2,6-DIMETHYLNONANE	$3.3x10^{-01}$	0	$2.2x10^{-01}$	$4.1x10^{-01}$	$9.6x10^{-01}$
2,6-DIMETHYLOCTANE	$1.5x10^{-01}$	$1.6x10^{-03}$	$8.5x10^{-02}$	$1.6x10^{-01}$	$4.0x10^{-01}$
2,6-DIMETHYLUNDECANE	$1.5x10^{-02}$	0	$1.0x10^{-02}$	$1.9x10^{-02}$	$4.3x10^{-02}$
2,6-TOLUENE DIISOCYANATE	$2.0x10^{-02}$	0	0	0	$2.0x10^{-02}$
2,7-DIMETHYLOCTANE	$1.5x10^{-02}$	0	$1.0x10^{-02}$	$1.9x10^{-02}$	$4.3x10^{-02}$
2-AMINO-2-METHYL-1-PROPANOL	$6.0x10^{+00}$	0	0	0	$6.0x10^{+00}$
2-BUTYLTETRAHYDROFURAN	$2.5x10^{-01}$	$9.1x10^{-03}$	$2.6x10^{-05}$	0	$2.6x10^{-01}$
2-ETHOXYETHANOL {CELLOSOLVE} {EGEE}	$1.8x10^{-01}$	0	$7.4x10^{-01}$	$2.2x10^{-01}$	$1.1x10^{+00}$
2-ETHOXYETHYL ACETATE {CELLOSOLVE ACETATE}	$2.7x10^{-01}$	0	$1.8x10^{-01}$	$3.3x10^{-01}$	$7.8x10^{-01}$
2-ETHYL-1,3-DIMETHYLCYCLOHEXANE	$2.2x10^{-02}$	0	$1.5x10^{-02}$	$2.8x10^{-02}$	$6.5x10^{-02}$
2-ETHYL-1-HEXANOL	$1.7x10^{+00}$	$6.2x10^{-02}$	$1.7x10^{-04}$	0	$1.7x10^{+00}$
2-HEXENES	0	$2.3x10^{-03}$	0	$2.3x10^{-03}$	$4.6x10^{-03}$
2-METHYL-1-BUTENE	$9.8x10^{+00}$	$5.1x10^{+00}$	$7.6x10^{-04}$	$4.1x10^{-01}$	$1.5x10^{+01}$
2-METHYL-1-PENTENE	$3.9x10^{-01}$	0	0	$7.9x10^{-05}$	$3.9x10^{-01}$
2-METHYL-2-BUTENE	$3.9x10^{+01}$	$2.0x10^{+01}$	$3.0x10^{-03}$	$1.6x10^{+00}$	$6.1x10^{+01}$
2-METHYL-2-PENTENE	$2.2x10^{-03}$	$5.9x10^{-03}$	0	$6.2x10^{-03}$	$1.4x10^{-02}$
2-METHYL-2-PROPENAL (METHACROLEIN)	0	$4.5x10^{-04}$	0	0	$4.5x10^{-04}$
2-METHYL-3-ETHYLPENTANE	$1.5x10^{-02}$	0	$1.0x10^{-02}$	$1.9x10^{-02}$	$4.3x10^{-02}$
2-METHYL-3-HEXANONE	$1.5x10^{+01}$	$3.7x10^{+00}$	$5.8x10^{-01}$	$4.1x10^{+01}$	$6.1x10^{+01}$
2-METHYL-BUTANE	$2.1x10^{-01}$	$4.3x10^{-01}$	$4.7x10^{-03}$	$7.5x10^{+00}$	$8.1x10^{+00}$
2-METHYLDECALIN	$3.0x10^{-02}$	0	$2.0x10^{-02}$	$3.7x10^{-02}$	$8.7x10^{-02}$
2-METHYLDECANE	$1.9x10^{-01}$	$9.8x10^{-04}$	$1.3x10^{-01}$	$2.3x10^{-01}$	$5.5x10^{-01}$
2-METHYLHEPTANE	$1.8x10^{+00}$	$6.8x10^{-01}$	$3.4x10^{-01}$	$6.8x10^{-01}$	$3.5x10^{+00}$
2-METHYLHEXANE	$4.7x10^{+00}$	$2.3x10^{+00}$	$2.0x10^{-01}$	$5.7x10^{-01}$	$7.8x10^{+00}$
2-METHYLNAPHTHALENE	$7.6x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
2-METHYLNONANE	$2.1x10^{-01}$	$4.5x10^{-02}$	$8.5x10^{-02}$	$1.6x10^{-01}$	$5.1x10^{-01}$
2-METHYLOCTANE	$1.6x10^{-01}$	$4.5x10^{-02}$	$5.0x10^{-02}$	$9.6x10^{-02}$	$3.5x10^{-01}$
2-METHYLPENTANE	$4.2x10^{+01}$	$2.3x10^{+01}$	$6.3x10^{-03}$	$1.8x10^{+00}$	$6.6x10^{+01}$
2-METHYLPROPANE; ISOBUTANE	$1.8x10^{+02}$	$1.4x10^{+01}$	$1.2x10^{-02}$	$1.5x10^{+00}$	$2.0x10^{+02}$
2-METHYLPROPENE (ISOBUTENE)	$4.4x10^{-01}$	$3.6x10^{-02}$	$7.2x10^{-03}$	$9.2x10^{-02}$	$5.8x10^{-01}$
2-METHYLUNDECANE {ISODODECANE}	$6.7x10^{-02}$	0	$4.5x10^{-02}$	$8.3x10^{-02}$	$2.0x10^{-01}$
3-(CHLOROMETHYL)-HEPTANE	$1.0x10^{+00}$	$3.8x10^{-02}$	$1.1x10^{-04}$	0	$1.1x10^{+00}$
3,3,5-TRIMETHYLHEPTANE	$7.4x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
3,3-DIMETHYL-1-BUTENE	$1.6x10^{-01}$	$1.1x10^{-01}$	$2.2x10^{-02}$	$2.8x10^{-01}$	$5.7x10^{-01}$
3,3-DIMETHYLPENTANE	$5.2x10^{-01}$	$2.7x10^{-01}$	$4.1x10^{-05}$	$2.2x10^{-02}$	$8.2x10^{-01}$
3,4-DIMETHYLHEXANE	$3.0x10^{-02}$	0	$2.0x10^{-02}$	$3.7x10^{-02}$	$8.7x10^{-02}$
3,4-DIMETHYLOCTANE	$2.2x10^{-02}$	$1.3x10^{-03}$	$1.5x10^{-02}$	$2.9x10^{-02}$	$6.8x10^{-02}$
3,5-DIMETHYLHEPTANE	0	$6.5x10^{-04}$	0	$6.5x10^{-04}$	$1.3x10^{-03}$
3,5-DIMETHYLOCTANE	$2.2x10^{-02}$	0	$1.5x10^{-02}$	$2.8x10^{-02}$	$6.5x10^{-02}$
3,6-DIMETHYL DECANE	$2.2x10^{-02}$	0	$1.5x10^{-02}$	$2.8x10^{-02}$	$6.5x10^{-02}$
3,6-DIMETHYL UNDECANE	$3.8x10^{+00}$	$1.4x10^{-01}$	0	0	$3.9x10^{+00}$
3,6-DIMETHYLOCTANE	$3.0x10^{-02}$	0	$2.0x10^{-02}$	$3.7x10^{-02}$	$8.7x10^{-02}$
3,7-DIMETHYL-1-OCTANOL	$9.1x10^{-01}$	$3.4x10^{-02}$	0	0	$9.4x10^{-01}$

Substance	Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
3,7-DIMETHYLNONANE	$9.6x10^{-02}$	0	$6.5x10^{-02}$	$1.2x10^{-01}$	$2.8x10^{-01}$
3-ETHYL-2-METHYLHEPTANE	$3.7x10^{-02}$	0	$2.5x10^{-02}$	$4.6x10^{-02}$	$1.1x10^{-01}$
3-ETHYL-3-METHYLOCTANE	$3.0x10^{-02}$	0	$2.0x10^{-02}$	$3.7x10^{-02}$	$8.7x10^{-02}$
3-ETHYLDECANE	$7.4x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
3-ETHYLHEPTANE	$3.0x10^{-02}$	0	$2.0x10^{-02}$	$3.7x10^{-02}$	$8.7x10^{-02}$
3-ETHYLHEXANE	$6.7x10^{-02}$	0	$4.5x10^{-02}$	$8.3x10^{-02}$	$2.0x10^{-01}$
3-ETHYLOCTANE	$2.2x10^{-02}$	0	$1.5x10^{-02}$	$2.8x10^{-02}$	$6.5x10^{-02}$
3-ETHYLPENTANE	$8.7x10^{-01}$	$4.5x10^{-01}$	$6.8x10^{-05}$	$3.6x10^{-02}$	$1.4x10^{+00}$
3-METHYL-1-BUTENE	$2.6x10^{-01}$	$1.4x10^{-01}$	$2.0x10^{-05}$	$1.7x10^{-02}$	$4.2x10^{-01}$
3-METHYLDECANE	$1.7x10^{-01}$	$0.0x10^{+00}$	$1.2x10^{-01}$	$2.1x10^{-01}$	$5.0x10^{-01}$
3-METHYLHEPTANE	$1.9x10^{+00}$	$6.4x10^{-01}$	$2.1x10^{-01}$	$4.4x10^{-01}$	$3.2x10^{+00}$
3-METHYLHEXANE	$5.7x10^{+00}$	$2.9x10^{+00}$	$2.3x10^{-02}$	$3.1x10^{-01}$	$8.9x10^{+00}$
3-METHYLNONANE	$7.4x10^{-02}$	0	$5.0x10^{-02}$	$9.3x10^{-02}$	$2.2x10^{-01}$
3-METHYLOCTANE	$2.6x10^{-01}$	$9.1x10^{-02}$	$6.0x10^{-02}$	$1.2x10^{-01}$	$5.3x10^{-01}$
3-METHYLPENTANE	$2.1x10^{+01}$	$1.1x10^{+01}$	$2.5x10^{-03}$	$8.8x10^{-01}$	$3.3x10^{+01}$
3-METHYLUNDECANE	$3.7x10^{-02}$	0	$2.5x10^{-02}$	$4.6x10^{-02}$	$1.1x10^{-01}$
3-PHENYLPENTANE	$3.7x10^{-02}$	0	$2.5x10^{-02}$	$4.6x10^{-02}$	$1.1x10^{-01}$
4,4-METHYLENE DIANILINE	$9.6x10^{-04}$	0	0	0	$9.6x10^{-04}$
4,5-DIMETHYLDECANE	$7.4x10^{-03}$	0	$5.0x10^{-03}$	$9.3x10^{-03}$	$2.2x10^{-02}$
4,5-DIMETHYLOCTANE	$3.7x10^{-02}$	0	$2.5x10^{-02}$	$4.6x10^{-02}$	$1.1x10^{-01}$
4-ETHYLDECANE	$3.0x10^{-02}$	0	$2.0x10^{-02}$	$3.7x10^{-02}$	$8.7x10^{-02}$
4-METHYLANILINE	$5.3x10^{-01}$	0	0	0	$5.3x10^{-01}$
4-METHYLDECANE	$1.5x10^{-01}$	0	$1.0x10^{-01}$	$1.9x10^{-01}$	$4.3x10^{-01}$
4-METHYLHEPTANE	$8.3x10^{-01}$	$3.6x10^{-01}$	$9.1x10^{-02}$	$2.0x10^{-01}$	$1.5x10^{+00}$
4-METHYLINDAN	$1.5x10^{-02}$	0	$1.0x10^{-02}$	$1.9x10^{-02}$	$4.3x10^{-02}$
4-METHYLNONANE	$2.2x10^{-01}$	0	$1.5x10^{-01}$	$2.7x10^{-01}$	$6.3x10^{-01}$
4-METHYLOCTANE	$2.0x10^{-01}$	$4.5x10^{-02}$	$7.5x10^{-02}$	$1.4x10^{-01}$	$4.6x10^{-01}$
4-METHYLUNDECANE	$2.2x10^{-02}$	0	$1.5x10^{-02}$	$2.8x10^{-02}$	$6.5x10^{-02}$
4-PHENYL-1-BUTENE	$1.7x10^{-03}$	0	0	$2.9x10^{-04}$	$2.0x10^{-03}$
5-ISOPROPYLNONANE	$2.2x10^{-02}$	0	$1.5x10^{-02}$	$2.8x10^{-02}$	$6.5x10^{-02}$
5-METHYLDECANE	$1.4x10^{-01}$	0	$9.6x10^{-02}$	$1.8x10^{-01}$	$4.1x10^{-01}$
5-METHYLINDAN	$1.2x10^{-01}$	0	$8.0x10^{-02}$	$1.5x10^{-01}$	$3.5x10^{-01}$
5-METHYLUNDECANE	$3.0x10^{-02}$	0	$2.0x10^{-02}$	$3.7x10^{-02}$	$8.7x10^{-02}$
6-ETHYL-2-METHYLOCTANE	$3.7x10^{-02}$	0	$2.5x10^{-02}$	$4.6x10^{-02}$	$1.1x10^{-01}$
6-METHYLUNDECANE	$3.7x10^{-02}$	0	$2.5x10^{-02}$	$4.6x10^{-02}$	$1.1x10^{-01}$
ACENAPHTHENE	$4.3x10^{-05}$	$2.0x10^{-02}$	0	$2.0x10^{-02}$	$4.0x10^{-02}$
ACENAPHTHYLENE	$5.2x10^{-06}$	$3.3x10^{-01}$	0	$3.3x10^{-01}$	$6.6x10^{-01}$
ACETALDEHYDE	$5.9x10^{+00}$	$5.4x10^{+00}$	$8.1x10^{-02}$	$7.5x10^{-01}$	$1.2x10^{+01}$
ACETIC ACID	$3.9x10^{+00}$	$3.9x10^{+00}$	0	$1.0x10^{-02}$	$7.9x10^{+00}$
ACETIC ANHYDRIDE	$2.2x10^{-01}$	$2.4x10^{-01}$	0	$1.2x10^{-05}$	$4.6x10^{-01}$
ACETONE	$8.4x10^{+01}$	$9.2x10^{+00}$	$6.0x10^{+01}$	$2.3x10^{+01}$	$1.8x10^{+02}$
ACETONITRILE	$7.8x10^{-01}$	0	$1.5x10^{-01}$	0	$9.3x10^{-01}$
ACETYLENE	$1.2x10^{+01}$	$5.8x10^{+00}$	$7.6x10^{-01}$	$1.1x10^{+01}$	$2.9x10^{+01}$
ACROLEIN (2-PROPENAL)	$4.4x10^{+00}$	$4.8x10^{+00}$	0	$2.3x10^{-04}$	$9.2x10^{+00}$
ACRYLAMIDE	$2.7x10^{-04}$	0	0	0	$2.7x10^{-04}$
ACRYLIC ACID	$4.9x10^{-02}$	0	0	0	$4.9x10^{-02}$
ACRYLONITRILE	$2.3x10^{+00}$	$2.5x10^{+00}$	$7.3x10^{-01}$	$1.2x10^{-04}$	$5.6x10^{+00}$
AMMONIA (TOTAL)	$9.4x10^{+02}$	$4.5x10^{+02}$	$4.0x10^{+02}$	$2.6x10^{+02}$	$2.0x10^{+03}$
ANILINE {AMINOBENZENE}	$6.8x10^{+00}$	0	0	0	$6.8x10^{+00}$
ANTHRACENE	$6.6x10^{-06}$	$2.5x10^{-01}$	0	$2.4x10^{-01}$	$4.9x10^{-01}$
ANTIMONY & COMPOUNDS	$3.0x10^{-01}$	$6.5x10^{-03}$	$1.7x10^{-01}$	$2.6x10^{-01}$	$7.3x10^{-01}$
ARSENIC & COMPOUNDS	$2.1x10^{-01}$	$5.3x10^{-02}$	$1.7x10^{-01}$	$1.1x10^{+00}$	$1.6x10^{+00}$
BENZALDEHYDE	$1.7x10^{+01}$	$2.5x10^{-01}$	$6.0x10^{-02}$	$7.4x10^{-02}$	$1.8x10^{+01}$
BENZENE	$9.2x10^{+01}$	$5.8x10^{+01}$	$2.3x10^{+02}$	$1.3x10^{+01}$	$4.0x10^{+02}$

Substance	Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
BENZO(A)ANTHRACENE	$2.3x10^{-05}$	$5.2x10^{-03}$	0	$5.2x10^{-03}$	$1.0x10^{-02}$
BENZO(A)PYRENE	$1.0x10^{-06}$	$3.9x10^{-03}$	0	$3.9x10^{-03}$	$7.8x10^{-03}$
BENZO(B)FLUORANTHENE	$2.8x10^{-06}$	0	0	0	$2.8x10^{-06}$
BENZOIC ACID	$6.7x10^{-01}$	$4.1x10^{-01}$	0	$1.9x10^{-05}$	$1.1x10^{+00}$
BERYLLIUM & COMPOUNDS	$3.3x10^{-02}$	$3.9x10^{-03}$	$7.0x10^{-02}$	$9.9x10^{-02}$	$2.1x10^{-01}$
BICYCLO[4.3.0]NONANE (OCTAHYDROINDENE)	$3.9x10^{-02}$	$6.7x10^{-03}$	$1.5x10^{-03}$	$2.4x10^{-03}$	$5.0x10^{-02}$
BIPHENYL {PHENYL BENZENE}	0	0	$6.4x10^{-02}$	0	$6.4x10^{-02}$
BIPHENYLOL {2-PHENYLPHENOL}	$1.1x10^{+00}$	$4.0x10^{-02}$	0	0	$1.1x10^{+00}$
B-METHYLSTYRENE	$2.8x10^{-03}$	$2.0x10^{-03}$	$3.9x10^{-04}$	$5.0x10^{-03}$	$1.0x10^{-02}$
BORON & COMPOUNDS	$2.3x10^{-01}$	$6.0x10^{-02}$	$2.0x10^{-01}$	$3.9x10^{+02}$	$3.9x10^{+02}$
BROMODICHLOROMETHANE	$4.3x10^{+00}$	$4.9x10^{-01}$	$2.4x10^{-01}$	$1.6x10^{+00}$	$6.6x10^{+00}$
BUTANE, BRANCHED & LINEAR	$4.4x10^{+01}$	0	0	$3.8x10^{-03}$	$4.4x10^{+01}$
BUTYL CELLOSOLVE {2-BUTOXYETHANOL} {EGBE}	$2.4x10^{+01}$	$8.3x10^{+00}$	$2.9x10^{+00}$	$3.1x10^{+00}$	$3.9x10^{+01}$
BUTYL ISOPROPYL PHTHALATE	$1.9x10^{+02}$	$7.2x10^{+00}$	0	0	$2.0x10^{+02}$
BUTYLBENZENE ISOMERS	$5.4x10^{-01}$	$8.0x10^{-02}$	$1.8x10^{-02}$	$4.0x10^{-02}$	$6.8x10^{-01}$
BUTYLCYCLOHEXANE	$3.5x10^{-01}$	$3.2x10^{-02}$	$9.7x10^{-02}$	$1.8x10^{-01}$	$6.5x10^{-01}$
BUTYRALDEHYDE	$1.3x10^{-01}$	$1.0x10^{-01}$	$1.5x10^{-02}$	$1.9x10^{-01}$	$4.3x10^{-01}$
C10 OLEFINS	$1.6x10^{+02}$	$5.1x10^{-01}$	$5.3x10^{-01}$	$6.2x10^{-02}$	$1.7x10^{+02}$
C10H12	$1.1x10^{+02}$	$6.3x10^{+00}$	$2.9x10^{-03}$	$3.9x10^{+01}$	$1.5x10^{+02}$
C11 OLEFINS	$9.4x10^{-02}$	$1.6x10^{-02}$	$3.6x10^{-03}$	$5.9x10^{-03}$	$1.2x10^{-01}$
C12 OLEFINS	$2.3x10^{-02}$	$3.9x10^{-03}$	$8.8x10^{-04}$	$1.4x10^{-03}$	$2.9x10^{-02}$
C2 ALKYL INDAN	$5.5x10^{+00}$	0	0	0	$5.5x10^{+00}$
C4 SUBSTITUTED CYCLOHEXANONE	$1.2x10^{+00}$	0	0	0	$1.2x10^{+00}$
C5 ALDEHYDE	$6.1x10^{-03}$	$4.3x10^{-03}$	$8.7x10^{-04}$	$1.1x10^{-02}$	$2.2x10^{-02}$
C5 KETONES	$3.3x10^{-01}$	0	$2.2x10^{-01}$	$4.1x10^{-01}$	$9.5x10^{-01}$
C5 SUBSTITUTED CYCLOHEXANE	$2.0x10^{+00}$	0	0	0	$2.0x10^{+00}$
C6 ALDEHYDES	$2.1x10^{-01}$	$1.5x10^{-01}$	$3.0x10^{-02}$	$3.8x10^{-01}$	$7.7x10^{-01}$
C6 OLEFINS (HEXENE ISOMERS)	0	$2.9x10^{-03}$	0	$2.9x10^{-03}$	$5.9x10^{-03}$
C6 SUBSTITUTED CYCLOHEXANE	$1.5x10^{+00}$	0	0	0	$1.5x10^{+00}$
C7 CYCLOPARAFFINS	$6.9x10^{+01}$	$4.7x10^{+00}$	0	$2.2x10^{-04}$	$7.4x10^{+01}$
C7 INTERNAL ALKENES	$3.6x10^{-01}$	$2.9x10^{-02}$	0	$2.2x10^{+01}$	$2.2x10^{+01}$
C8 CYCLOPARAFFINS	$1.8x10^{+01}$	$8.3x10^{-02}$	0	$3.8x10^{-06}$	$1.8x10^{+01}$
C8 INTERNAL ALKENES	$2.0x10^{+00}$	$1.4x10^{-01}$	$2.3x10^{-02}$	$4.7x10^{-03}$	$2.1x10^{+00}$
C8 OLEFINS	$3.2x10^{-01}$	$5.6x10^{-02}$	$1.3x10^{-02}$	$2.0x10^{-02}$	$4.1x10^{-01}$
C9 CYCLOPARAFFINS	$5.0x10^{+01}$	$2.7x10^{+00}$	$1.3x10^{-03}$	$1.7x10^{+01}$	$7.0x10^{+01}$
C9 OLEFINS	$7.8x10^{-01}$	0	0	$1.6x10^{-04}$	$7.8x10^{-01}$
CADMIUM & COMPOUNDS	$1.1x10^{-01}$	$6.2x10^{-02}$	$1.8x10^{-01}$	$1.6x10^{-01}$	$5.1x10^{-01}$
CARBITOL {DEGEE} {2-(2-ETHOXYETHOXY)ETHANOL}	$8.9x10^{-02}$	0	$6.0x10^{-02}$	$1.1x10^{-01}$	$2.6x10^{-01}$
CARBON DISULFIDE	$2.6x10^{+01}$	$1.1x10^{+00}$	$1.7x10^{-02}$	$5.1x10^{-05}$	$2.7x10^{+01}$
CARBON MONOXIDE	$8.0x10^{+03}$	$4.8x10^{+04}$	$5.2x10^{+05}$	$2.6x10^{+04}$	$6.0x10^{+05}$
CARBON TETRACHLORIDE	$8.8x10^{-01}$	$8.4x10^{-01}$	$5.2x10^{-03}$	$7.6x10^{-03}$	$1.7x10^{+00}$
CARBONYL SULFIDE	$3.2x10^{-01}$	$3.5x10^{-01}$	0	$1.7x10^{-05}$	$6.7x10^{-01}$
CARYOPHYLLENE	$1.7x10^{+00}$	$6.2x10^{-02}$	0	0	$1.7x10^{+00}$
CHLORINE	$3.7x10^{+00}$	0	$6.3x10^{-03}$	0	$3.7x10^{+00}$
CHLOROBENZENE	$7.5x10^{+00}$	$8.1x10^{+00}$	$8.7x10^{-04}$	$1.7x10^{-03}$	$1.6x10^{+01}$
CHLORODIFLUOROMETHANE (F-22)	$7.2x10^{+00}$	$1.9x10^{+00}$	0	$9.2x10^{-05}$	$9.1x10^{+00}$
CHLOROETHANE (ETHYL CHLORIDE)	$4.2x10^{+00}$	$3.5x10^{+00}$	$1.1x10^{-04}$	$1.6x10^{-04}$	$7.6x10^{+00}$
CHLOROFORM (TRICHLOROMETHANE)	$1.6x10^{+01}$	$4.5x10^{+00}$	$6.0x10^{-01}$	$8.7x10^{-01}$	$2.2x10^{+01}$
CHLOROPENTAFLUOROETHANE (F115)	$1.7x10^{-01}$	$1.9x10^{-01}$	0	$9.0x10^{-06}$	$3.6x10^{-01}$
CHLOROPRENE (2-CHLORO-1,3-BUTADIENE)	$3.8x10^{+00}$	$4.1x10^{+00}$	0	$1.9x10^{-04}$	$7.8x10^{+00}$
CHLOROTRIFLUOROMETHANE (F-13)	$5.9x10^{-01}$	$6.4x10^{-01}$	0	$3.1x10^{-05}$	$1.2x10^{+00}$
CHROMIUM (III) COMPOUNDS	$2.3x10^{+00}$	$3.0x10^{-01}$	$7.0x10^{-02}$	$3.0x10^{+00}$	$5.7x10^{+00}$

Substance	Emissions (tonnes/year)				
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CHROMIUM (VI) COMPOUNDS	5.3x10^{-02}	8.2x10^{-02}	1.3x10^{-01}	7.6x10^{-02}	3.4x10^{-01}
CHRYSENE	5.5x10^{-06}	4.6x10^{-03}	0	4.5x10^{-03}	9.1x10^{-03}
CIS,CIS-1,2,4-TRIMETHYLCYCLOHEXANE	3.0x10^{-02}	0	2.0x10^{-02}	3.7x10^{-02}	8.7x10^{-02}
CIS,TRANS-1,2,3-TRIMETHYLCYCLOHEXANE	2.2x10^{-02}	0	1.5x10^{-02}	2.8x10^{-02}	6.5x10^{-02}
CIS,TRANS-1,2,4-TRIMETHYLCYCLOHEXANE	5.9x10^{-02}	0	4.0x10^{-02}	7.4x10^{-02}	1.7x10^{-01}
CIS-1,2-DIMETHYLCYCLOHEXANE	2.2x10^{-02}	0	1.5x10^{-02}	2.8x10^{-02}	6.5x10^{-02}
CIS-1,3-DIMETHYLCYCLOHEXANE	5.6x10^{-01}	0	3.8x10^{-01}	7.0x10^{-01}	1.7x10^{+00}
CIS-1,3-DIMETHYLCYCLOPENTANE	2.0x10^{+00}	1.0x10^{+00}	6.0x10^{-02}	1.9x10^{-01}	3.3x10^{+00}
CIS-1,4-DIMETHYLCYCLOHEXANE	3.0x10^{-02}	0	2.0x10^{-02}	3.7x10^{-02}	8.7x10^{-02}
CIS-1,CIS-2,3-TRIMETHYLCYCLOPENTANE	7.4x10^{-02}	0	5.0x10^{-02}	9.3x10^{-02}	2.2x10^{-01}
CIS-1,CIS-2,4-TRIMETHYLCYCLOPENTANE	1.2x10^{+00}	6.4x10^{-01}	9.5x10^{-05}	5.1x10^{-02}	1.9x10^{+00}
CIS-1,CIS-3,5-TRIMETHYLCYCLOHEXANE	1.6x10^{-01}	0	1.1x10^{-01}	1.9x10^{-01}	4.6x10^{-01}
CIS-1,TRANS-2,3-TRIMETHYLCYCLOPENTANE	7.4x10^{-02}	0	5.0x10^{-02}	9.3x10^{-02}	2.2x10^{-01}
CIS-1-2-DIMETHYLCYCLOPENTANE	1.2x10^{+00}	6.4x10^{-01}	9.5x10^{-05}	5.1x10^{-02}	1.9x10^{+00}
CIS-1-ETHYL-2-METHYLCYCLOHEXANE	7.4x10^{-03}	0	5.0x10^{-03}	9.3x10^{-03}	2.2x10^{-02}
CIS-1-ETHYL-2-METHYLCYCLOPENTANE	7.4x10^{-03}	0	5.0x10^{-03}	9.3x10^{-03}	2.2x10^{-02}
CIS-1-ETHYL-3-METHYLCYCLOHEXANE	9.6x10^{-02}	0	6.5x10^{-02}	1.2x10^{-01}	2.8x10^{-01}
CIS-1-METHYL-3-ETHYLCYCLOPENTANE	2.2x10^{-02}	0	1.5x10^{-02}	2.8x10^{-02}	6.5x10^{-02}
CIS-2-BUTENE	3.0x10^{+00}	1.4x10^{+00}	9.1x10^{-04}	1.5x10^{-01}	4.6x10^{+00}
CIS-2-HEXENE	7.3x10^{-04}	0	0.0x10^{+00}	1.2x10^{-04}	8.5x10^{-04}
CIS-2-PENTENE	1.4x10^{+01}	7.4x10^{+00}	1.3x10^{-03}	6.8x10^{+00}	2.8x10^{+01}
CIS-BICYCLO[3.3.0]OCTANE	7.4x10^{-03}	0	5.0x10^{-03}	9.3x10^{-03}	2.2x10^{-02}
CIS-BICYCLO[4.3.0]NONANE	3.0x10^{-02}	0	2.0x10^{-02}	3.7x10^{-02}	8.7x10^{-02}
CIS-DECALIN	7.4x10^{-03}	0	5.0x10^{-03}	9.3x10^{-03}	2.2x10^{-02}
COBALT & COMPOUNDS	8.4x10^{-02}	1.9x10^{-02}	4.2x10^{-02}	8.1x10^{-01}	9.6x10^{-01}
COPPER & COMPOUNDS	4.6x10^{-01}	4.6x10^{+00}	1.0x10^{+00}	1.1x10^{+00}	7.2x10^{+00}
CUMENE (1-METHYLETHYLBENZENE)	8.3x10^{+00}	1.0x10^{+00}	1.2x10^{+00}	1.4x10^{-01}	1.1x10^{+01}
CYANIDE (INORGANIC) COMPOUNDS	1.3x10^{+00}	0	1.2x10^{+01}	8.9x10^{+00}	2.2x10^{+01}
CYCLOHEXANE	8.2x10^{+01}	1.0x10^{+01}	6.5x10^{+00}	6.1x10^{+00}	1.0x10^{+02}
CYCLOHEXANOL	4.0x10^{-01}	4.3x10^{-01}	0	2.0x10^{-05}	8.2x10^{-01}
CYCLOHEXANONE	4.1x10^{-01}	4.3x10^{-01}	8.7x10^{-04}	1.1x10^{-02}	8.5x10^{-01}
CYCLOHEXENE	3.3x10^{+00}	1.2x10^{-01}	0	0	3.4x10^{+00}
CYCLOPENTANE	1.6x10^{+00}	8.3x10^{-03}	7.9x10^{-05}	9.4x10^{-03}	1.6x10^{+00}
CYCLOPENTENE	2.6x10^{-01}	1.4x10^{-01}	2.0x10^{-05}	1.4x10^{-02}	4.2x10^{-01}
CYCLOPENTYLCYCLOPENTANE	3.0x10^{-03}	0	0	5.1x10^{-04}	3.5x10^{-03}
DECALINS (MIXED CIS,TRANS)	6.2x10^{-02}	1.1x10^{-02}	2.4x10^{-03}	3.9x10^{-03}	7.9x10^{-02}
DI(2-ETHYLHEXYL)PHTHALATE	7.1x10^{-02}	1.9x10^{-02}	2.6x10^{-03}	3.8x10^{-03}	9.7x10^{-02}
DI(PROPYLENE GLYCOL) METHYL ETHER	2.2x10^{-01}	0	1.5x10^{-01}	2.8x10^{-01}	6.5x10^{-01}
DIACETONE ALCOHOL (4-HYDROXY-4-METHYL-2-PENTANONE)	3.5x10^{+00}	4.8x10^{-02}	1.5x10^{+00}	2.7x10^{+00}	7.7x10^{+00}
DIBROMOETHANE	2.0x10^{+01}	5.7x10^{-02}	6.7x10^{-02}	7.4x10^{-03}	2.1x10^{+01}
DIBUTYL ETHER	3.9x10^{-01}	1.5x10^{-02}	4.1x10^{-05}	0	4.1x10^{-01}
DIBUTYL PHTHALATE	1.5x10^{+02}	5.7x10^{+00}	0	0	1.6x10^{+02}
DICHLOROBENZENES	2.2x10^{-01}	2.4x10^{-01}	0	1.2x10^{-05}	4.6x10^{-01}
DICHLORODIFLUOROMETHANE (F-12)	3.1x10^{+01}	6.2x10^{+00}	9.8x10^{-01}	6.4x10^{+00}	4.5x10^{+01}
DICHLOROMETHANE {METHYLENE CHLORIDE}	3.6x10^{+02}	8.1x10^{+00}	1.7x10^{+00}	4.7x10^{+00}	3.8x10^{+02}
DIETHANOLAMINE	1.7x10^{-01}	0	0	0	1.7x10^{-01}
DIETHYLBENZENES	8.8x10^{+00}	1.4x10^{-01}	1.1x10^{-03}	1.4x10^{-02}	8.9x10^{+00}
DIETHYLCYCLOHEXANE	1.8x10^{+02}	4.0x10^{-01}	5.8x10^{-01}	4.7x10^{-02}	1.8x10^{+02}
DIETHYLENE GLYCOL (2,2'-OXYBISETHANOL)	8.0x10^{+01}	1.7x10^{-01}	1.4x10^{-03}	5.5x10^{-01}	8.1x10^{+01}
DIMETHOXYMETHANE (METHYLAL)	4.5x10^{+01}	2.7x10^{+00}	4.6x10^{-03}	4.9x10^{-05}	4.8x10^{+01}
DIMETHYL DISULFIDE	0	1.6x10^{-03}	0	0	1.6x10^{-03}
DIMETHYL ETHER	2.3x10^{+01}	1.1x10^{+01}	0	5.4x10^{-04}	3.5x10^{+01}
DIMETHYL SULFIDE	4.3x10^{+00}	4.9x10^{-01}	2.4x10^{-01}	1.6x10^{+00}	6.6x10^{+00}

Substance	Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
DIMETHYLAMINE	$5.0x10^{-04}$	0	0	0	$5.0x10^{-04}$
DIMETHYLBENZYLALCOHOL	$1.6x10^{-02}$	$2.8x10^{-03}$	$6.3x10^{-04}$	$1.0x10^{-03}$	$2.1x10^{-02}$
DIMETHYLCYCLOBUTANONE	$6.2x10^{-02}$	$1.1x10^{-02}$	$2.4x10^{-03}$	$3.9x10^{-03}$	$7.9x10^{-02}$
DIMETHYLCYCLOHEXANES	$5.8x10^{+01}$	$5.3x10^{+00}$	$1.0x10^{+00}$	$1.5x10^{-01}$	$6.5x10^{+01}$
DIMETHYLCYCLOPENTANE	$7.5x10^{-01}$	$1.3x10^{-01}$	$2.9x10^{-02}$	$4.7x10^{-02}$	$9.5x10^{-01}$
DIMETHYLHEPTANES	$2.3x10^{+00}$	$8.6x10^{-01}$	$1.5x10^{-01}$	$2.4x10^{-02}$	$3.3x10^{+00}$
DIMETHYLHEPTANOL (2,6-DIMETHYL-2-HEPTANOL)	$6.0x10^{-01}$	$2.3x10^{-02}$	0	0	$6.3x10^{-01}$
DIMETHYLHEXANES	$3.5x10^{-01}$	$6.1x10^{-02}$	$1.4x10^{-02}$	$2.2x10^{-02}$	$4.5x10^{-01}$
DIMETHYLHEXENES	0	$3.3x10^{-04}$	0	$3.2x10^{-04}$	$6.5x10^{-04}$
DIMETHYLNONANES	$2.3x10^{-01}$	$3.9x10^{-02}$	$8.8x10^{-03}$	$1.4x10^{-02}$	$2.9x10^{-01}$
DIMETHYLOCTANES	$3.2x10^{-01}$	$5.5x10^{-02}$	$1.2x10^{-02}$	$2.0x10^{-02}$	$4.1x10^{-01}$
EICOSANE	$7.2x10^{+00}$	$2.7x10^{-01}$	0	0	$7.5x10^{+00}$
ETHANE	$7.5x10^{+02}$	$3.5x10^{+01}$	$2.2x10^{+01}$	$1.3x10^{+02}$	$9.4x10^{+02}$
ETHYL ACETATE	$1.6x10^{+02}$	$2.3x10^{+00}$	$1.1x10^{+00}$	$2.6x10^{+01}$	$1.9x10^{+02}$
ETHYL ACRYLATE	$1.3x10^{+00}$	$1.4x10^{+00}$	0	$6.9x10^{-05}$	$2.8x10^{+00}$
ETHYL ALCOHOL	$4.5x10^{+02}$	$2.4x10^{+00}$	$2.0x10^{+00}$	$1.2x10^{+01}$	$4.7x10^{+02}$
ETHYL ETHER	$1.4x10^{+00}$	$1.5x10^{+00}$	0	$7.3x10^{-05}$	$2.9x10^{+00}$
ETHYL ISOPROPYL ETHER	$8.5x10^{+00}$	$3.2x10^{-01}$	$9.0x10^{-04}$	0	$8.9x10^{+00}$
ETHYL PROPYLCYCLOHEXANES	$6.5x10^{-02}$	$1.1x10^{-02}$	$2.5x10^{-03}$	$4.1x10^{-03}$	$8.3x10^{-02}$
ETHYLBENZENE	$3.2x10^{+01}$	$4.3x10^{+00}$	$1.1x10^{+00}$	$7.4x10^{+01}$	$1.1x10^{+02}$
ETHYLCYCLOHEXANE	$6.2x10^{+00}$	$1.8x10^{+00}$	$4.6x10^{-01}$	$3.4x10^{-01}$	$8.8x10^{+00}$
ETHYLCYCLOPENTANE	$3.3x10^{+00}$	$3.4x10^{-01}$	$1.2x10^{-01}$	$1.8x10^{-01}$	$3.9x10^{+00}$
ETHYLDIMETHYLBENZENES	$4.5x10^{+00}$	0	0	0	$4.5x10^{+00}$
ETHYLDIMETHYLPHENOL	$5.8x10^{-02}$	$1.0x10^{-02}$	$2.3x10^{-03}$	$3.7x10^{-03}$	$7.4x10^{-02}$
ETHYLENE	$6.7x10^{+01}$	$2.3x10^{+01}$	$4.3x10^{-01}$	$2.8x10^{+01}$	$1.2x10^{+02}$
ETHYLENE GLYCOL	$3.4x10^{+00}$	$3.5x10^{-02}$	$1.7x10^{+00}$	$3.1x10^{+00}$	$8.3x10^{+00}$
ETHYLENE OXIDE	$2.3x10^{-01}$	$1.9x10^{-01}$	0	$9.0x10^{-06}$	$4.2x10^{-01}$
ETHYLHEPTENE	$5.1x10^{+01}$	$1.2x10^{-01}$	$1.6x10^{-01}$	$1.4x10^{-02}$	$5.1x10^{+01}$
ETHYLHEXANE	$5.5x10^{-02}$	$1.1x10^{-02}$	$2.5x10^{-03}$	$9.3x10^{-03}$	$7.8x10^{-02}$
ETHYLMETHYLCYCLOHEXANES	$7.3x10^{-01}$	$1.3x10^{-01}$	$2.8x10^{-02}$	$4.5x10^{-02}$	$9.3x10^{-01}$
ETHYLMETHYLOCTANE	$7.1x10^{-02}$	$1.2x10^{-02}$	$2.8x10^{-03}$	$4.5x10^{-03}$	$9.1x10^{-02}$
ETHYLOCTANE	$6.7x10^{+00}$	$2.5x10^{-01}$	$1.0x10^{-03}$	$1.6x10^{-03}$	$6.9x10^{+00}$
ETHYLOCTENES	$4.5x10^{-02}$	$7.8x10^{-03}$	$1.8x10^{-03}$	$2.8x10^{-03}$	$5.8x10^{-02}$
ETHYLTOLUENES {METHYLETHYLBENZENES}	$8.2x10^{-01}$	$8.0x10^{+00}$	$3.1x10^{-02}$	$2.2x10^{+00}$	$1.1x10^{+01}$
FLUORANTHENE	$1.2x10^{-04}$	$1.3x10^{-01}$	0	$1.2x10^{-01}$	$2.5x10^{-01}$
FLUORENE	$4.5x10^{-05}$	$1.1x10^{-01}$	0	$1.1x10^{-01}$	$2.3x10^{-01}$
FLUORIDE COMPOUNDS	$4.9x10^{+02}$	$3.6x10^{+02}$	$1.4x10^{+01}$	$1.5x10^{+03}$	$2.4x10^{+03}$
FORMALDEHYDE	$4.1x10^{+02}$	$4.0x10^{+01}$	$5.4x10^{+01}$	$1.3x10^{+01}$	$5.2x10^{+02}$
FORMIC ACID	$2.5x10^{-01}$	$2.7x10^{-01}$	0	$1.3x10^{-05}$	$5.1x10^{-01}$
FURFURYL ALCOHOL	$5.5x10^{-04}$	0	0	0	$5.5x10^{-04}$
HENEICOSANE	$4.5x10^{+00}$	$1.7x10^{-01}$	0	0	$4.7x10^{+00}$
HEXADECANE	$5.0x10^{+01}$	$1.9x10^{+00}$	$5.8x10^{-05}$	$4.0x10^{-04}$	$5.2x10^{+01}$
HEXAFLUOROETHANE {F-116}	$4.4x10^{+00}$	$4.8x10^{+00}$	0	$2.3x10^{-04}$	$9.3x10^{+00}$
HEXAMETHYLENEDIAMINE	$3.8x10^{+00}$	$4.1x10^{+00}$	0	$1.9x10^{-04}$	$7.8x10^{+00}$
HEXANAL (HEXANALADEHYDE)	0	$5.1x10^{-04}$	0	0	$5.1x10^{-04}$
HEXYLCYCLOHEXANE	$1.5x10^{-02}$	0	$1.0x10^{-02}$	$1.9x10^{-02}$	$4.3x10^{-02}$
HEXYLCYCLOPENTANE	$2.2x10^{-02}$	0	$1.5x10^{-02}$	$2.8x10^{-02}$	$6.5x10^{-02}$
HEXYLENE GLYCOL (2-METHYLPENTANE-2,4-DIOL)	$3.6x10^{+01}$	$8.7x10^{-02}$	$2.5x10^{-04}$	0	$3.6x10^{+01}$
HEXYNE	$1.3x10^{-04}$	0	0	$2.2x10^{-05}$	$1.5x10^{-04}$
HYDROCHLORIC ACID	$1.3x10^{+02}$	$5.4x10^{+00}$	$7.2x10^{+02}$	$9.5x10^{+03}$	$1.0x10^{+04}$
HYDROGEN SULFIDE	$1.6x10^{+01}$	$1.7x10^{+00}$	$1.2x10^{+02}$	$2.1x10^{+00}$	$1.4x10^{+02}$
INDAN	$2.6x10^{+00}$	$7.8x10^{-03}$	$3.2x10^{-02}$	$7.5x10^{-02}$	$2.7x10^{+00}$

Substance	Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
ISOAMYL ALCOHOL (3-METHYL-1-BUTANOL)	$8.4x10^{-03}$	0	0	0	$8.4x10^{-03}$
ISOBUTYL ALCOHOL	$1.5x10^{+00}$	0	$1.0x10^{+00}$	$1.9x10^{+00}$	$4.5x10^{+00}$
ISOBUTYLCYCLOHEXANE (2-METHYLPROPYL CYCLOHEXANE)	$6.7x10^{-02}$	0	$4.5x10^{-02}$	$8.3x10^{-02}$	$2.0x10^{-01}$
ISOBUTYRALDEHYDE	$3.9x10^{-01}$	0	0	$7.9x10^{-05}$	$3.9x10^{-01}$
ISOMERS OF BUTENE	$5.4x10^{+00}$	$3.5x10^{-01}$	0	$1.0x10^{-03}$	$5.7x10^{+00}$
ISOMERS OF C10H18	$1.0x10^{+02}$	$2.2x10^{-01}$	$3.2x10^{-01}$	$2.4x10^{-02}$	$1.0x10^{+02}$
ISOMERS OF C9H16	$1.3x10^{-01}$	$2.2x10^{-02}$	$4.9x10^{-03}$	$7.9x10^{-03}$	$1.6x10^{-01}$
ISOMERS OF DECANE (C10 PARAFFINS)	$1.5x10^{+02}$	$5.6x10^{-01}$	$5.2x10^{-01}$	$1.2x10^{-01}$	$1.6x10^{+02}$
ISOMERS OF DODECANE (C12 PARAFFINS)	$5.0x10^{+00}$	$5.1x10^{-02}$	$1.1x10^{-02}$	$1.8x10^{-02}$	$5.1x10^{+00}$
ISOMERS OF HEPTADECANE (C17 PARAFFINS)	$5.6x10^{+01}$	$2.1x10^{+00}$	0	0	$5.8x10^{+01}$
ISOMERS OF HEPTANE	$5.2x10^{+01}$	$3.1x10^{-02}$	$3.6x10^{-06}$	$4.2x10^{-03}$	$5.2x10^{+01}$
ISOMERS OF HEXANE	$1.6x10^{+02}$	$5.1x10^{+00}$	$1.1x10^{+00}$	$4.2x10^{-01}$	$1.7x10^{+02}$
ISOMERS OF NONANE (C9 PARAFFIN)	$1.8x10^{+02}$	$5.6x10^{+00}$	$9.4x10^{-01}$	$1.3x10^{+01}$	$2.0x10^{+02}$
ISOMERS OF OCTADECANE (C18 PARAFFINS)	$2.5x10^{+01}$	$9.6x10^{-01}$	0	0	$2.6x10^{+01}$
ISOMERS OF OCTANE (C8 PARAFFIN)	$1.8x10^{+01}$	$5.2x10^{-02}$	$6.6x10^{-06}$	$7.4x10^{-03}$	$1.8x10^{+01}$
ISOMERS OF PENTADECANE (C15 PARAFFINS)	$2.3x10^{+00}$	$8.5x10^{-02}$	0	0	$2.3x10^{+00}$
ISOMERS OF PENTANE	$1.1x10^{+03}$	$2.7x10^{+02}$	$5.8x10^{+01}$	$2.2x10^{+01}$	$1.4x10^{+03}$
ISOMERS OF PENTENE	$2.5x10^{-01}$	0	0	0	$2.5x10^{-01}$
ISOMERS OF PROPYLBENZENE	$5.5x10^{+00}$	$1.2x10^{+00}$	$1.1x10^{-02}$	$1.8x10^{-02}$	$6.7x10^{+00}$
ISOMERS OF TETRADECANE (C14 PARAFFINS)	$4.1x10^{+01}$	$2.5x10^{+00}$	$2.4x10^{-03}$	$1.6x10^{+01}$	$6.0x10^{+01}$
ISOMERS OF TRIDECANE (C13 PARAFFINS)	$9.7x10^{-03}$	$1.7x10^{-03}$	$3.8x10^{-04}$	$6.1x10^{-04}$	$1.2x10^{-02}$
ISOMERS OF UNDECANE (C11 PARAFFINS)	$1.2x10^{+02}$	$5.0x10^{+00}$	$1.6x10^{-01}$	$2.9x10^{+01}$	$1.5x10^{+02}$
ISOMERS OF XYLENE	$2.8x10^{+02}$	$1.9x10^{+01}$	$1.6x10^{+01}$	$5.9x10^{+01}$	$3.7x10^{+02}$
ISOPRENE	$6.6x10^{-04}$	$3.3x10^{-04}$	0	$4.3x10^{-04}$	$1.4x10^{-03}$
ISOPROPYL ACETATE	$4.5x10^{+02}$	$1.7x10^{+01}$	0	0	$4.7x10^{+02}$
ISOPROPYL ALCOHOL	$2.6x10^{+02}$	$6.4x10^{+00}$	$2.8x10^{+00}$	$1.9x10^{+01}$	$2.9x10^{+02}$
ISOPROPYLAMINE	$2.0x10^{-02}$	0	0	0	$2.0x10^{-02}$
ISOPROPYLCYCLOHEXANE (2-METHYLETHYL CYCLOHEXANE)	$6.7x10^{-02}$	0	$4.5x10^{-02}$	$8.3x10^{-02}$	$2.0x10^{-01}$
ISOVALERALDEHYDE (3-METHYLBUTANAL)	0	$7.1x10^{-04}$	0	0	$7.1x10^{-04}$
LEAD & COMPOUNDS	$4.7x10^{+00}$	$2.5x10^{-01}$	$4.1x10^{+00}$	$2.9x10^{+00}$	$1.2x10^{+01}$
MAGNESIUM OXIDE FUME	$1.7x10^{+00}$	$1.5x10^{+00}$	$7.9x10^{-01}$	$1.6x10^{-01}$	$4.2x10^{+00}$
MALEIC ANHYDRIDE	$7.4x10^{-01}$	$8.0x10^{-01}$	0	$3.8x10^{-05}$	$1.5x10^{+00}$
MANGANESE & COMPOUNDS	$6.0x10^{+00}$	$8.9x10^{-01}$	$1.6x10^{+01}$	$2.6x10^{+01}$	$4.9x10^{+01}$
MERCURIC CHLORIDE	$1.3x10^{-06}$	0	0	0	$1.3x10^{-06}$
MERCURY & COMPOUNDS	$1.6x10^{+00}$	$6.9x10^{-02}$	$4.9x10^{-01}$	$5.7x10^{-01}$	$2.7x10^{+00}$
METHANE	$4.5x10^{+04}$	$5.1x10^{+03}$	$2.8x10^{+03}$	$1.6x10^{+04}$	$6.9x10^{+04}$
METHENE(B)4-PHENYLISOCYANATE {METHYLENEDIPHENYLDII	$2.9x10^{-03}$	0	0	0	$2.9x10^{-03}$
METHYL ACETATE	$3.4x10^{+00}$	$3.7x10^{+00}$	0	$1.8x10^{-04}$	$7.1x10^{+00}$
METHYL ALCOHOL	$1.3x10^{+02}$	$7.9x10^{+00}$	$1.3x10^{+01}$	$3.1x10^{-01}$	$1.6x10^{+02}$
METHYL AMYL KETONE	$5.3x10^{+00}$	$8.8x10^{-01}$	$2.6x10^{-01}$	$9.3x10^{+00}$	$1.6x10^{+01}$
METHYL BROMIDE	$3.5x10^{-02}$	0	0	0	$3.5x10^{-02}$
METHYL CARBITOL {2-(2-METHOXYETHOXY)ETHANOL} {DEGM	$6.9x10^{-01}$	$2.3x10^{-02}$	$6.0x10^{-02}$	$1.1x10^{-01}$	$8.9x10^{-01}$
METHYL CHLORIDE	$9.3x10^{-01}$	$6.0x10^{-02}$	$9.5x10^{-05}$	$1.3x10^{-06}$	$9.9x10^{-01}$
METHYL ETHYL KETONE (MEK) (2-BUTANONE)	$4.4x10^{+02}$	$8.4x10^{+00}$	$4.0x10^{+00}$	$2.3x10^{+01}$	$4.7x10^{+02}$
METHYL FORMATE	$2.4x10^{+00}$	$2.7x10^{+00}$	0	$1.3x10^{-04}$	$5.1x10^{+00}$
METHYL HEXANE	$1.4x10^{+00}$	$2.3x10^{-01}$	$5.2x10^{-02}$	$8.4x10^{-02}$	$1.7x10^{+00}$
METHYL ISOBUTYL KETONE	$2.6x10^{+02}$	$1.7x10^{+00}$	$1.7x10^{+01}$	$1.1x10^{+01}$	$2.9x10^{+02}$
METHYL METHACRYLATE	$1.1x10^{+00}$	$1.2x10^{+00}$	$3.2x10^{-01}$	$5.5x10^{-05}$	$2.5x10^{+00}$
METHYL N-BUTYL KETONE	$5.0x10^{-02}$	$3.5x10^{-02}$	$7.1x10^{-03}$	$9.0x10^{-02}$	$1.8x10^{-01}$
METHYL PALMITATE {METHYL	$5.9x10^{-01}$	$2.2x10^{-02}$	$6.2x10^{-05}$	0	$6.1x10^{-01}$

Substance	Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
HEXADECANOATE}					
METHYL PROPYLCYCLOHEXANES	$2.7x10^{-01}$	$4.6x10^{-02}$	$1.0x10^{-02}$	$1.7x10^{-02}$	$3.4x10^{-01}$
METHYLCYCLOHEXANE	$2.5x10^{+02}$	$4.7x10^{+00}$	$3.0x10^{+00}$	$3.1x10^{+00}$	$2.6x10^{+02}$
METHYLCYCLOOCTANE	$2.2x10^{-03}$	0	0	$3.6x10^{-04}$	$2.5x10^{-03}$
METHYLCYCLOPENTANE	$8.2x10^{+00}$	$1.8x10^{+00}$	$1.7x10^{-01}$	$1.4x10^{-01}$	$1.0x10^{+01}$
METHYLDECALINS	$2.6x10^{-02}$	$4.5x10^{-03}$	$1.0x10^{-03}$	$1.6x10^{-03}$	$3.3x10^{-02}$
METHYLDECANES	$4.7x10^{-01}$	$8.2x10^{-02}$	$1.8x10^{-02}$	$3.0x10^{-02}$	$6.0x10^{-01}$
METHYLDECENES	$8.1x10^{-02}$	$1.4x10^{-02}$	$3.1x10^{-03}$	$5.1x10^{-03}$	$1.0x10^{-01}$
METHYLDODECANES	$1.9x10^{-02}$	$3.4x10^{-03}$	$7.5x10^{-04}$	$1.2x10^{-03}$	$2.5x10^{-02}$
METHYLENE BROMIDE	$3.7x10^{-01}$	$4.0x10^{-01}$	0	$1.9x10^{-05}$	$7.7x10^{-01}$
METHYLETHYLPENTANOATE	$4.5x10^{-01}$	$1.7x10^{-02}$	0	0	$4.7x10^{-01}$
METHYLHEPTANOL	$1.1x10^{+00}$	$4.0x10^{-02}$	0	0	$1.1x10^{+00}$
METHYLHEXENES	$1.3x10^{-01}$	$2.2x10^{-02}$	$5.0x10^{-03}$	$8.1x10^{-03}$	$1.7x10^{-01}$
METHYLINDANS	$3.2x10^{-03}$	$5.6x10^{-04}$	$1.3x10^{-04}$	$2.0x10^{-04}$	$4.1x10^{-03}$
METHYLNAPHTHALENES	$5.0x10^{+00}$	0	0	0	$5.0x10^{+00}$
METHYLNONANE	$8.4x10^{-01}$	$1.4x10^{-01}$	$3.1x10^{-02}$	$5.0x10^{-02}$	$1.1x10^{+00}$
METHYLNONENES	$2.9x10^{-02}$	$5.0x10^{-03}$	$1.1x10^{-03}$	$1.8x10^{-03}$	$3.7x10^{-02}$
METHYLOCTANES	$7.8x10^{-01}$	$1.3x10^{-01}$	$3.0x10^{-02}$	$4.9x10^{-02}$	$9.9x10^{-01}$
METHYLPROPYLNONANE	$3.6x10^{-02}$	$6.2x10^{-03}$	$1.4x10^{-03}$	$2.2x10^{-03}$	$4.5x10^{-02}$
M-ETHYLTOLUENE	$1.8x10^{+01}$	$4.7x10^{-01}$	$7.5x10^{-02}$	$3.0x10^{-01}$	$1.9x10^{+01}$
METHYLUNDECANE	$2.6x10^{+01}$	$9.7x10^{-01}$	$1.3x10^{-03}$	$2.0x10^{-03}$	$2.7x10^{+01}$
M-XYLENE	$4.8x10^{+01}$	$2.0x10^{+00}$	$1.3x10^{-01}$	$2.3x10^{+02}$	$2.8x10^{+02}$
N,N-DIMETHYLETHANOLAMINE	$3.0x10^{+00}$	0	0	0	$3.0x10^{+00}$
NAPTHALENE	$3.4x10^{+00}$	$3.2x10^{-01}$	$3.7x10^{-02}$	$2.6x10^{-01}$	$4.1x10^{+00}$
N-BUTANE	$5.5x10^{+02}$	$1.1x10^{+02}$	$5.5x10^{+01}$	$1.5x10^{+01}$	$7.3x10^{+02}$
N-BUTYL ACETATE	$3.1x10^{+02}$	$1.2x10^{+01}$	$4.6x10^{+00}$	$3.5x10^{+01}$	$3.6x10^{+02}$
N-BUTYL ACRYLATE	$5.4x10^{-01}$	$5.9x10^{-01}$	0	$2.8x10^{-05}$	$1.1x10^{+00}$
N-BUTYL ALCOHOL	$1.2x10^{+02}$	$4.9x10^{+00}$	$5.0x10^{-03}$	$4.7x10^{+00}$	$1.3x10^{+02}$
N-BUTYLCYCLOPENTANE	$4.5x10^{-02}$	$3.1x10^{-03}$	0	0	$4.8x10^{-02}$
N-DECANE	$3.5x10^{+01}$	$1.6x10^{-01}$	$6.8x10^{-01}$	$1.3x10^{+00}$	$3.7x10^{+01}$
N-DODECANE	$2.1x10^{+01}$	$2.4x10^{-01}$	$8.7x10^{-02}$	$1.7x10^{-01}$	$2.1x10^{+01}$
N-HEPTADECANE	$1.4x10^{-02}$	$2.9x10^{-03}$	$1.9x10^{-05}$	$1.3x10^{-04}$	$1.7x10^{-02}$
N-HEPTANE	$1.7x10^{+02}$	$6.7x10^{+00}$	$1.9x10^{+00}$	$1.5x10^{+01}$	$1.9x10^{+02}$
N-HEXANE	$1.5x10^{+02}$	$3.3x10^{+00}$	$6.0x10^{+00}$	$5.8x10^{+01}$	$2.2x10^{+02}$
NICKEL & COMPOUNDS	$2.2x10^{+00}$	$3.2x10^{-01}$	$3.0x10^{-01}$	$2.6x10^{+00}$	$5.4x10^{+00}$
NITRIC ACID	$8.3x10^{-02}$	$1.1x10^{+01}$	$1.0x10^{-03}$	$0.0x10^{+00}$	$1.1x10^{+01}$
NITRIC OXIDE	$8.3x10^{+03}$	$1.0x10^{+03}$	$4.9x10^{+03}$	$9.4x10^{+04}$	$1.1x10^{+05}$
NITROGEN DIOXIDE	$1.5x10^{+03}$	$7.6x10^{+01}$	$4.0x10^{+02}$	$7.2x10^{+03}$	$9.1x10^{+03}$
N-NONANE	$2.0x10^{+01}$	$2.4x10^{-01}$	$2.2x10^{-01}$	$4.2x10^{-01}$	$2.0x10^{+01}$
N-OCTANE	$5.0x10^{+01}$	$7.9x10^{-03}$	$6.0x10^{-01}$	$1.1x10^{+00}$	$5.2x10^{+01}$
NONADECANE	$1.3x10^{+01}$	$5.0x10^{-01}$	0	0	$1.4x10^{+01}$
NONADIENE	$2.3x10^{-02}$	$3.9x10^{-03}$	$8.8x10^{-04}$	$1.4x10^{-03}$	$2.9x10^{-02}$
N-PENTADECANE	$4.4x10^{+00}$	$5.7x10^{-02}$	$2.7x10^{-04}$	$1.9x10^{-03}$	$4.5x10^{+00}$
N-PENTANE	$2.4x10^{+02}$	$2.9x10^{+01}$	$3.7x10^{+01}$	$2.6x10^{+00}$	$3.1x10^{+02}$
N-PENTYLCYCLOHEXANE	$1.1x10^{+00}$	$9.0x10^{-03}$	$3.2x10^{-02}$	$5.9x10^{-02}$	$1.2x10^{+00}$
N-PHENYLANILINE {DIPHENYLAMINE}	$6.0x10^{-01}$	$2.3x10^{-02}$	0	0	$6.3x10^{-01}$
N-PROPYL ALCOHOL	$4.0x10^{-01}$	0	0	0	$4.0x10^{-01}$
N-PROPYLBENZENE	$8.9x10^{+00}$	$2.0x10^{-01}$	$2.0x10^{-02}$	$1.1x10^{-01}$	$9.2x10^{+00}$
N-TETRADECANE	$7.4x10^{+00}$	$1.3x10^{-01}$	$7.7x10^{-04}$	$5.4x10^{-03}$	$7.5x10^{+00}$
N-TRIDECANE	$1.1x10^{+01}$	$1.8x10^{-01}$	$6.1x10^{-03}$	$1.7x10^{-02}$	$1.1x10^{+01}$
N-UNDECANE	$7.4x10^{+01}$	$2.8x10^{-01}$	$8.8x10^{-01}$	$1.3x10^{+00}$	$7.6x10^{+01}$
O-DICHLOROBENZENE	$4.7x10^{-01}$	$4.5x10^{-01}$	$2.6x10^{-03}$	$3.8x10^{-03}$	$9.2x10^{-01}$
O-ETHYLTOLUENE	$1.5x10^{+01}$	$1.7x10^{-01}$	$7.6x10^{-02}$	$2.5x10^{-01}$	$1.5x10^{+01}$
ORGANO-TIN COMPOUNDS	0	0	$1.1x10^{-02}$	0	$1.1x10^{-02}$

Substance	Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
OXIDES OF NITROGEN	$1.4x10^{+04}$	$1.7x10^{+03}$	$7.9x10^{+03}$	$1.5x10^{+05}$	$1.8x10^{+05}$
O-XYLENE	$3.0x10^{+01}$	$5.8x10^{+00}$	$7.9x10^{-01}$	$8.0x10^{+01}$	$1.2x10^{+02}$
PARTICULATE MATTER 10µm	$7.9x10^{+03}$	$1.7x10^{+03}$	$2.1x10^{+03}$	$3.5x10^{+04}$	$4.7x10^{+04}$
PARTICULATE MATTER 2.5µm	$3.4x10^{+03}$	$8.1x10^{+02}$	$1.6x10^{+03}$	$7.4x10^{+03}$	$1.3x10^{+04}$
P-DICHLOROBENZENE	$1.0x10^{+01}$	$9.3x10^{+00}$	$9.0x10^{-02}$	$1.3x10^{-01}$	$2.0x10^{+01}$
PENTAMETHYLBENZENE	$2.6x10^{-01}$	0	0	0	$2.6x10^{-01}$
PENTYLCYCLOPENTANE	$7.3x10^{-02}$	$1.1x10^{-03}$	$4.6x10^{-02}$	$8.4x10^{-02}$	$2.0x10^{-01}$
PERCHLOROETHYLENE	$3.3x10^{+01}$	$6.0x10^{+00}$	$1.4x10^{+00}$	$2.7x10^{+00}$	$4.3x10^{+01}$
P-ETHYLTOLUENE	$2.8x10^{+01}$	$4.4x10^{-01}$	$1.0x10^{-01}$	$4.0x10^{-01}$	$2.9x10^{+01}$
PHENANTHRENE	$4.7x10^{-04}$	$2.4x10^{-01}$	0	$2.4x10^{-01}$	$4.8x10^{-01}$
PHENOL (CARBOLIC ACID)	$4.5x10^{+00}$	$4.4x10^{+00}$	$8.5x10^{+00}$	$1.4x10^{-01}$	$1.8x10^{+01}$
PHENYL ISOCYANATE	$2.3x10^{+00}$	0	0	0	$2.3x10^{+00}$
PHOSPHORIC ACID	$2.4x10^{-01}$	0	0	0	$2.4x10^{-01}$
PHTHALIC ANHYDRIDE	$1.9x10^{+01}$	$2.5x10^{+00}$	$5.5x10^{-02}$	$4.2x10^{-03}$	$2.2x10^{+01}$
POLYCHLORINATED DIOXINS AND FURANS	$3.5x10^{-06}$	$7.0x10^{-09}$	$1.1x10^{-05}$	$1.8x10^{-05}$	$3.2x10^{-05}$
POLYCYCLIC AROMATIC HYDROCARBONS	$2.2x10^{+00}$	$5.8x10^{+00}$	$3.9x10^{+01}$	$8.4x10^{+00}$	$5.5x10^{+01}$
PROPANE	$7.8x10^{+02}$	$2.9x10^{+01}$	$4.6x10^{+01}$	$2.6x10^{+01}$	$8.8x10^{+02}$
PROPENYLCYCLOHEXANE	$2.3x10^{-02}$	$3.9x10^{-03}$	$8.8x10^{-04}$	$1.4x10^{-03}$	$2.9x10^{-02}$
PROPIONALDEHYDE	$5.4x10^{-02}$	$3.8x10^{-02}$	$7.6x10^{-03}$	$9.7x10^{-02}$	$2.0x10^{-01}$
PROPYL ACETATE	$4.4x10^{+02}$	$1.6x10^{+01}$	$3.0x10^{-01}$	$1.1x10^{+00}$	$4.5x10^{+02}$
PROPYLCYCLOHEXANE	$9.6x10^{-02}$	0	$6.5x10^{-02}$	$1.2x10^{-01}$	$2.8x10^{-01}$
PROPYLCYCLOPENTANE	$1.5x10^{-02}$	0	$1.0x10^{-02}$	$1.9x10^{-02}$	$4.3x10^{-02}$
PROPYLENE	$9.7x10^{+01}$	$7.4x10^{+00}$	$2.0x10^{-01}$	$1.6x10^{+01}$	$1.2x10^{+02}$
PROPYLENE GLYCOL	$9.6x10^{-01}$	0	$6.2x10^{-01}$	$1.1x10^{+00}$	$2.7x10^{+00}$
PROPYLENE GLYCOL METHYL ETHER {1-METHOXY-2-PROPANO	$2.2x10^{-01}$	0	$1.5x10^{-01}$	$2.8x10^{-01}$	$6.5x10^{-01}$
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE {2-(1-ME	$4.4x10^{-01}$	0	$3.0x10^{-01}$	$5.6x10^{-01}$	$1.3x10^{+00}$
PROPYLENE OXIDE	$4.4x10^{+00}$	$5.4x10^{-02}$	0	$2.6x10^{-06}$	$4.5x10^{+00}$
P-TOLUALDEHYDE {4-METHYLBENZALDEHYDE}	$2.3x10^{+01}$	$5.1x10^{-02}$	$7.6x10^{-02}$	$5.6x10^{-03}$	$2.4x10^{+01}$
P-XYLENE	$2.5x10^{+01}$	$7.6x10^{-01}$	$8.1x10^{-02}$	$6.8x10^{-02}$	$2.6x10^{+01}$
PYRENE	$1.2x10^{-04}$	$9.2x10^{-02}$	0	$9.1x10^{-02}$	$1.8x10^{-01}$
SEC-BUTYL ALCOHOL	$5.9x10^{+00}$	$4.1x10^{+00}$	$1.5x10^{+00}$	$2.7x10^{+00}$	$1.4x10^{+01}$
SEC-BUTYLCYCLOHEXANE	$1.9x10^{-02}$	$1.3x10^{-03}$	0	0	$2.0x10^{-02}$
SELENIUM & COMPOUNDS	$5.2x10^{+00}$	$2.6x10^{-02}$	$3.5x10^{-01}$	$1.5x10^{+01}$	$2.1x10^{+01}$
STYRENE (ETHENYLBENZENE)	$2.5x10^{+01}$	$1.0x10^{+01}$	$2.5x10^{+00}$	$7.8x10^{-03}$	$3.8x10^{+01}$
SUBSTITUTED C9 ESTER (C12)	$4.7x10^{+01}$	$1.7x10^{+00}$	$4.9x10^{-03}$	0	$4.9x10^{+01}$
SULFUR DIOXIDE	$1.1x10^{+04}$	$9.3x10^{+03}$	$1.0x10^{+04}$	$2.7x10^{+05}$	$3.0x10^{+05}$
SULFUR TRIOXIDE	$1.4x10^{+02}$	$7.0x10^{+00}$	$1.4x10^{+01}$	$4.2x10^{+03}$	$4.4x10^{+03}$
SULFURIC ACID	$2.6x10^{+02}$	$1.8x10^{+00}$	$1.9x10^{+02}$	$3.0x10^{+03}$	$3.5x10^{+03}$
TEREPHTHALIC ACID (P-BENZENEDICARBOXYLIC ACID)	$4.9x10^{-02}$	$5.4x10^{-02}$	0	$2.6x10^{-06}$	$1.0x10^{-01}$
TETRAFLUOROMETHANE {CARBON TETRAFLUORIDE} {R 14}	$3.7x10^{-01}$	$4.0x10^{-01}$	0	$1.9x10^{-05}$	$7.7x10^{-01}$
TETRAMETHYLBENZENES	$3.2x10^{-02}$	$5.6x10^{-03}$	$1.3x10^{-03}$	$2.0x10^{-03}$	$4.1x10^{-02}$
TETRAMETHYLCYCLOBUTENE	$3.2x10^{-03}$	$5.6x10^{-04}$	$1.3x10^{-04}$	$2.0x10^{-04}$	$4.1x10^{-03}$
TETRAMETHYLCYCLOPENTANE	$7.1x10^{-02}$	$1.2x10^{-02}$	$2.8x10^{-03}$	$4.5x10^{-03}$	$9.1x10^{-02}$
TETRAMETHYLTHIOUREA	$6.5x10^{-03}$	$1.1x10^{-03}$	$2.5x10^{-04}$	$4.1x10^{-04}$	$8.3x10^{-03}$
TIN & COMPOUNDS	$7.1x10^{-03}$	0	0	0	$7.1x10^{-03}$
TOLUENE	$1.2x10^{+03}$	$1.0x10^{+02}$	$7.1x10^{+01}$	$1.6x10^{+02}$	$1.6x10^{+03}$
TOTAL SUSPENDED PARTICULATES (TSP)	$2.0x10^{+04}$	$4.0x10^{+03}$	$2.8x10^{+03}$	$8.3x10^{+04}$	$1.1x10^{+05}$
TOTAL VOCS	$1.4x10^{+04}$	$1.3x10^{+03}$	$7.9x10^{+02}$	$1.7x10^{+03}$	$1.8x10^{+04}$
TRANS 1-METHYL-3-PROPYL CYCLOHEXANE	$1.9x10^{-01}$	0	$1.3x10^{-01}$	$2.3x10^{-01}$	$5.4x10^{-01}$
TRANS 1-METHYL-4-ETHYLCYCLOHEXANE	$1.5x10^{-01}$	$4.5x10^{-02}$	$4.5x10^{-02}$	$8.7x10^{-02}$	$3.3x10^{-01}$

Substance	Emissions (tonnes/year)				
	Sydney	Newcastle	Wollongong	Non-Urban	GMR
TRANS,CIS-1,2,4-TRIMETHYLCYCLOHEXANE	$1.5x10^{-01}$	0	$1.0x10^{-01}$	$1.9x10^{-01}$	$4.3x10^{-01}$
TRANS,TRANS-1,2,4-TRIMETHYLCYCLOHEXANE	$2.7x10^{-01}$	0	$1.9x10^{-01}$	$3.4x10^{-01}$	$8.0x10^{-01}$
TRANS,TRANS-1,3,5-TRIMETHYLCYCLOHEXANE	$1.4x10^{-01}$	0	$9.6x10^{-02}$	$1.8x10^{-01}$	$4.1x10^{-01}$
TRANS-1,2-CIS-4-TRIMETHYLCYCLOPENTANE	$2.6x10^{-01}$	$1.4x10^{-01}$	$2.0x10^{-05}$	$1.1x10^{-02}$	$4.1x10^{-01}$
TRANS-1,2-DIMETHYLCYCLOHEXANE	$1.5x10^{-02}$	0	$1.0x10^{-02}$	$1.9x10^{-02}$	$4.3x10^{-02}$
TRANS-1,3-DIMETHYLCYCLOHEXANE	$1.9x10^{-01}$	0	$1.3x10^{-01}$	$2.3x10^{-01}$	$5.4x10^{-01}$
TRANS-1,3-DIMETHYLCYCLOPENTANE	$7.3x10^{-01}$	$3.2x10^{-01}$	$8.1x10^{-02}$	$1.7x10^{-01}$	$1.3x10^{+00}$
TRANS-1,4-DIMETHYLCYCLOHEXANE	$1.9x10^{-01}$	0	$1.3x10^{-01}$	$2.4x10^{-01}$	$5.6x10^{-01}$
TRANS-1,CIS-2,3-TRIMETHYLCYCLOPENTANE	$3.5x10^{-01}$	$1.8x10^{-01}$	$2.7x10^{-05}$	$1.5x10^{-02}$	$5.4x10^{-01}$
TRANS-1-2-DIMETHYLCYCLOPENTANE	$4.4x10^{-01}$	$2.3x10^{-01}$	$3.4x10^{-05}$	$1.8x10^{-02}$	$6.8x10^{-01}$
TRANS-1-ETHYL-2-METHYLCYCLOHEXANE	$3.0x10^{-02}$	0	$2.0x10^{-02}$	$3.7x10^{-02}$	$8.7x10^{-02}$
TRANS-1-ETHYL-3-METHYLCYCLOHEXANE	$5.2x10^{-02}$	0	$3.5x10^{-02}$	$6.5x10^{-02}$	$1.5x10^{-01}$
TRANS-1-METHYL-3-ETHYLCYCLOPENTANE	$2.2x10^{-02}$	0	$1.5x10^{-02}$	$2.8x10^{-02}$	$6.5x10^{-02}$
TRANS-1-PHENYLBUTENE	$1.5x10^{-03}$	0	0	$2.5x10^{-04}$	$1.8x10^{-03}$
TRANS-2-BUTENE	$2.7x10^{+01}$	$1.3x10^{+01}$	$3.5x10^{-03}$	$1.1x10^{+00}$	$4.1x10^{+01}$
TRANS-2-ETHYLMETHYLCYCLOPENTANE	$3.0x10^{-01}$	$1.4x10^{-01}$	$2.5x10^{-02}$	$5.7x10^{-02}$	$5.2x10^{-01}$
TRANS-2-NONENE	$1.1x10^{-03}$	0	0	$1.9x10^{-04}$	$1.3x10^{-03}$
TRANS-2-PENTENE	$2.6x10^{+01}$	$1.3x10^{+01}$	$2.3x10^{-03}$	$1.1x10^{+00}$	$4.0x10^{+01}$
TRICHLOROETHYLENE (TCE)	$1.0x10^{+02}$	$6.7x10^{-01}$	$5.0x10^{-01}$	$1.3x10^{-01}$	$1.0x10^{+02}$
TRICHLOROFLUOROMETHANE	$8.8x10^{+00}$	$3.1x10^{+00}$	0	$1.5x10^{-04}$	$1.2x10^{+01}$
TRICHLOROTRIFLUOROETHANE-F113	$5.6x10^{+00}$	$2.4x10^{-01}$	0	$1.2x10^{-05}$	$5.9x10^{+00}$
TRIFLUOROMETHANE (F-23)	$3.4x10^{+00}$	$3.6x10^{+00}$	0	$1.7x10^{-04}$	$7.0x10^{+00}$
TRIMETHYLBENZENES	$5.1x10^{+00}$	$1.6x10^{-01}$	$2.9x10^{-02}$	$1.3x10^{+00}$	$6.6x10^{+00}$
TRIMETHYLCYCLOHEXANES	$7.0x10^{+00}$	$2.1x10^{+00}$	$3.6x10^{-01}$	$7.2x10^{-02}$	$9.6x10^{+00}$
TRIMETHYLCYCLOPENTANE	$2.6x10^{+00}$	$2.2x10^{-01}$	$4.1x10^{-02}$	$2.9x10^{-02}$	$2.9x10^{+00}$
TRIMETHYLDECANE	$4.5x10^{+00}$	$1.7x10^{-01}$	0	0	$4.7x10^{+00}$
TRIMETHYLDECENES	$2.7x10^{+00}$	0	0	0	$2.7x10^{+00}$
TRIMETHYLFLUOROSILANE	0	0	$1.7x10^{+01}$	0	$1.7x10^{+01}$
TRIMETHYLHEPTANES	$2.3x10^{-01}$	$4.0x10^{-02}$	$8.9x10^{-03}$	$1.4x10^{-02}$	$2.9x10^{-01}$
TRIMETHYLOCTANES	$1.2x10^{+01}$	$4.7x10^{-01}$	$1.9x10^{-03}$	$3.0x10^{-03}$	$1.3x10^{+01}$
VANADIUM & COMPOUNDS	$1.4x10^{-01}$	0	0	0	$1.4x10^{-01}$
VINYL ACETATE	$6.3x10^{+00}$	$6.6x10^{+00}$	$2.1x10^{-05}$	$3.1x10^{-04}$	$1.3x10^{+01}$
VINYL CHLORIDE MONOMER	$1.0x10^{+02}$	$4.8x10^{+00}$	$2.5x10^{-01}$	$1.6x10^{+00}$	$1.1x10^{+02}$
ZINC & COMPOUNDS	$2.7x10^{+01}$	$1.0x10^{+01}$	$1.8x10^{+01}$	$3.9x10^{+00}$	$5.9x10^{+01}$

Table B2: Proportion of Total Industrial Emissions Emitted from each Region

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
(1-METHYLPROPYL)BENZENE (SEC-BUTYL BENZENE)	33%	3%	20%	44%	100%
(2-METHYLBUTYL)CYCLOHEXANE	34%	0%	23%	43%	100%
(2-METHYLPROPYL)BENZENE	28%	19%	4%	49%	100%
1,1,1-TRICHLOROETHANE	65%	16%	3%	15%	100%
1,1,2,3-TETRAMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1,1,2-TRICHLOROETHANE	0%	0%	100%	0%	100%
1,1,2-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1,1,2-TRIMETHYLCYCLOPENTANE	34%	0%	23%	43%	100%
1,1,3,4-TETRAMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1,1,3-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1,1,3-TRIMETHYLCYCLOPENTANE	34%	0%	23%	43%	100%
1,1,4-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1,1-DICHLOROETHENE {VINYLIDENE CHLORIDE}	74%	20%	3%	4%	100%
1,1-DIMETHYL-2-PROPYLCYCLOHEXANE	34%	0%	23%	43%	100%
1,1-DIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1,1-DIMETHYLCYCLOPENTANE	34%	0%	23%	43%	100%
1,1-METHYLETHYLCYCLOPENTANE	34%	0%	23%	43%	100%
1,2,3,5-TETRAMETHYLBENZENE	34%	0%	23%	43%	100%
1,2,3-TRIMETHYLBENZENE	86%	12%	1%	2%	100%
1,2,3-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1,2,4,5-TETRAMETHYLBENZENE	34%	0%	23%	43%	100%
1,2,4-TRIMETHYLBENZENE	94%	4%	1%	1%	100%
1,2,4-TRIMETHYLCYCLOPENTENE	34%	0%	23%	43%	100%
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE {CFC-114}	48%	52%	0%	0%	100%
1,2-DICHLOROETHANE	48%	52%	0%	0%	100%
1,2-DICHLOROPROPANE	48%	52%	0%	0%	100%
1,2-DIETHYL-1-METHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1,2-DIETHYLBENZENE (ORTHO)	33%	18%	3%	45%	100%
1,2-DIMETHYL-3-ETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1,2-DIMETHYL-4-ETHYLBENZENE	34%	0%	23%	43%	100%
1,2-DIMETHYLCYCLOPENTANE	34%	0%	23%	43%	100%
1,2-PROPADIENE	28%	19%	4%	49%	100%
1,3,5-TRIETHYL CYCLOHEXANE	34%	0%	23%	43%	100%
1,3,5-TRIMETHYLBENZENE	94%	6%	0%	1%	100%
1,3-BUTADIENE	2%	1%	0%	97%	100%
1,3-DICHLOROBENZENE {M-DICHLOROBENZENE}	58%	40%	1%	2%	100%
1,3-DIETHYL-5-METHYL CYCLOHEXANE	99%	0%	0%	0%	100%
1,3-DIETHYL-CYCLOHEXANE	34%	0%	23%	43%	100%
1,3-DIMETHYL-2-ETHYLBENZENE	34%	0%	23%	43%	100%
1,3-DIMETHYL-4-ETHYLBENZENE	34%	0%	23%	43%	100%
1,3-DIMETHYL-4-ISOPROPYLBENZENE	34%	0%	23%	43%	100%
1,3-DIMETHYL-5-ETHYLBENZENE	34%	0%	23%	43%	100%
1,4-BUTANEDIOL	97%	0%	3%	0%	100%
1,4-DIETHYLBENZENE (PARA)	86%	0%	0%	14%	100%
1,4-DIETHYL-CYCLOHEXANE	79%	3%	0%	18%	100%
1,4-DIMETHYL-2-ETHYLBENZENE	34%	0%	23%	43%	100%
1,4-DIOXANE	74%	20%	3%	4%	100%
1,4-PENTADIENE	64%	33%	0%	3%	100%
1-BUTENE	44%	9%	0%	47%	100%
1-CHLOROBUTANE	96%	4%	0%	0%	100%
1-DECENE	1%	0%	0%	99%	100%
1-ETHOXY-2-PROPANOL	96%	4%	0%	0%	100%
1-ETHYL-1,2-DIMETHYLCYCLOHEXANE	46%	4%	18%	32%	100%

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
1-ETHYL-2,2,6-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1-ETHYL-2,4-DIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
1-ETHYL-2-METHYLCYCLOPENTANE	100%	0%	0%	0%	100%
1-ETHYL-2-PROPYL CYCLOHEXANE	34%	0%	23%	43%	100%
1-ETHYL-4-ISOPROPYLBENZENE	34%	0%	23%	43%	100%
1-HEXENE	2%	1%	0%	97%	100%
1-METHYL INDAN	84%	0%	6%	11%	100%
1-METHYL-2-ISOPROPYLBENZENE	100%	0%	0%	0%	100%
1-METHYL-2-ISOPROPYLCYCLOHEXANE	34%	0%	23%	43%	100%
1-METHYL-2-PYRROLIDINONE	100%	0%	0%	0%	100%
1-METHYL-3-ISOPROPYLBENZENE	34%	0%	23%	43%	100%
1-METHYL-3-ISOPROPYLCYCLOHEXANE	34%	0%	23%	43%	100%
1-METHYL-3N-PROPYLBENZENE	56%	17%	0%	27%	100%
1-METHYL-4-ISOBUTYLBENZENE	34%	0%	23%	43%	100%
1-METHYL-4-ISOPROPYLBENZENE	34%	0%	23%	43%	100%
1-METHYL-4N-PROPYLBENZENE	34%	0%	23%	43%	100%
1-METHYL-4-PENTYL CYCLOHEXANE	34%	0%	23%	43%	100%
1-METHYLCYCLOPENTENE	1%	50%	0%	49%	100%
1-NONENE	100%	0%	0%	0%	100%
1-OCTENE	100%	0%	0%	0%	100%
1-PENTENE	70%	27%	0%	3%	100%
1-PENTYNE	86%	0%	0%	14%	100%
1-PROPYNE	86%	0%	0%	14%	100%
1-UNDECENE	86%	0%	0%	14%	100%
2-(2-BUTOXYETHOXY)ETHANOL {BUTYL CARBITOL}	67%	2%	11%	20%	100%
2,2,3,3-TETRAMETHYLPENTANE	34%	0%	23%	43%	100%
2,2,3,TRIMETHYLHEXANE	64%	33%	0%	3%	100%
2,2,3-TRIMETHYLBUTANE	64%	33%	0%	3%	100%
2,2,3-TRIMETHYLPENTANE	0%	50%	0%	50%	100%
2,2,4-TRIMETHYL-1,3-PENTANEDIOL ISOBUTYRATE {TEXAN	100%	0%	0%	0%	100%
2,2,4-TRIMETHYLPENTANE	64%	33%	0%	3%	100%
2,2,5-TRIMETHYLHEXANE	33%	4%	21%	43%	100%
2,2-DICHLORONITROANILINE	100%	0%	0%	0%	100%
2,2-DIMETHYLBUTANE	66%	30%	0%	3%	100%
2,2-DIMETHYLHEXANE	64%	33%	0%	3%	100%
2,2-DIMETHYLPENTANE	64%	33%	0%	3%	100%
2,2-DIMETHYLPROPANAL (PIVALDEHYDE)	0%	100%	0%	0%	100%
2,3,3-TRIMETHYLPENTANE	64%	33%	0%	3%	100%
2,3,4-TRIMETHYLPENTANE	62%	31%	1%	5%	100%
2,3,5-TRIMETHYLHEPTANE	34%	0%	23%	43%	100%
2,3,5-TRIMETHYLHEXANE	42%	26%	0%	32%	100%
2,3-DIMETHYL-1-BUTENE	28%	19%	4%	49%	100%
2,3-DIMETHYLBUTANE	64%	33%	0%	3%	100%
2,3-DIMETHYLHEXANE	59%	28%	4%	9%	100%
2,3-DIMETHYLOCTANE	35%	0%	23%	42%	100%
2,3-DIMETHYLPENTANE	62%	32%	1%	5%	100%
2,4,4-TRIMETHYL-1-PENTENE	86%	0%	0%	14%	100%
2,4-DIMETHYLHEPTANE	34%	0%	23%	43%	100%
2,4-DIMETHYLHEXANE	69%	25%	4%	1%	100%
2,4-DIMETHYLNONANE	34%	0%	23%	43%	100%
2,4-DIMETHYLPENTANE	16%	6%	1%	77%	100%
2,4-TOLUENE DIISOCYANATE {TDI}	98%	2%	0%	0%	100%
2,5-DIMETHYLHEPTANE	34%	0%	23%	43%	100%
2,5-DIMETHYLHEXANE	64%	33%	0%	3%	100%

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
2,5-DIMETHYLNONANE	34%	0%	23%	43%	100%
2,5-DIMETHYLOCTANE	34%	0%	23%	43%	100%
2,6-DIMETHYLDECANE	34%	0%	23%	43%	100%
2,6-DIMETHYLHEPTANE	34%	0%	23%	43%	100%
2,6-DIMETHYLNONANE	34%	0%	23%	43%	100%
2,6-DIMETHYLOCTANE	38%	0%	22%	40%	100%
2,6-DIMETHYLUNDECANE	34%	0%	23%	43%	100%
2,6-TOLUENE DIISOCYANATE	100%	0%	0%	0%	100%
2,7-DIMETHYLOCTANE	34%	0%	23%	43%	100%
2-AMINO-2-METHYL-1-PROPANOL	100%	0%	0%	0%	100%
2-BUTYLTETRAHYDROFURAN	96%	4%	0%	0%	100%
2-ETHOXYETHANOL {CELLOSOLVE} {EGEE}	16%	0%	65%	20%	100%
2-ETHOXYETHYL ACETATE {CELLOSOLVE ACETATE}	34%	0%	23%	43%	100%
2-ETHYL-1,3-DIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
2-ETHYL-1-HEXANOL	96%	4%	0%	0%	100%
2-HEXENES	0%	50%	0%	50%	100%
2-METHYL-1-BUTENE	64%	33%	0%	3%	100%
2-METHYL-1-PENTENE	100%	0%	0%	0%	100%
2-METHYL-2-BUTENE	64%	33%	0%	3%	100%
2-METHYL-2-PENTENE	16%	41%	0%	43%	100%
2-METHYL-2-PROPENAL (METHACROLEIN)	0%	100%	0%	0%	100%
2-METHYL-3-ETHYLPENTANE	34%	0%	23%	43%	100%
2-METHYL-3-HEXANONE	25%	6%	1%	68%	100%
2-METHYL-BUTANE	3%	5%	0%	92%	100%
2-METHYLDECALIN	34%	0%	23%	43%	100%
2-METHYLDECANE	34%	0%	23%	42%	100%
2-METHYLHEPTANE	51%	19%	10%	19%	100%
2-METHYLHEXANE	61%	30%	3%	7%	100%
2-METHYLNAPHTHALENE	35%	0%	23%	42%	100%
2-METHYLNONANE	42%	9%	17%	32%	100%
2-METHYLOCTANE	46%	13%	14%	27%	100%
2-METHYLPENTANE	63%	34%	0%	3%	100%
2-METHYLPROPANE; ISOBUTANE	92%	7%	0%	1%	100%
2-METHYLPROPENE (ISOBUTENE)	76%	6%	1%	16%	100%
2-METHYLUNDECANE {ISODODECANE}	34%	0%	23%	43%	100%
3-(CHLOROMETHYL)-HEPTANE	96%	4%	0%	0%	100%
3,3,5-TRIMETHYLHEPTANE	34%	0%	23%	43%	100%
3,3-DIMETHYL-1-BUTENE	28%	19%	4%	49%	100%
3,3-DIMETHYLPENTANE	64%	33%	0%	3%	100%
3,4-DIMETHYLHEXANE	34%	0%	23%	43%	100%
3,4-DIMETHYLOCTANE	33%	2%	22%	43%	100%
3,5-DIMETHYLHEPTANE	0%	50%	0%	50%	100%
3,5-DIMETHYLOCTANE	34%	0%	23%	43%	100%
3,6-DIMETHYL DECANE	34%	0%	23%	43%	100%
3,6-DIMETHYL UNDECANE	96%	4%	0%	0%	100%
3,6-DIMETHYLOCTANE	34%	0%	23%	43%	100%
3,7-DIMETHYL-1-OCTANOL	96%	4%	0%	0%	100%
3,7-DIMETHYLNONANE	34%	0%	23%	43%	100%
3-ETHYL-2-METHYLHEPTANE	34%	0%	23%	43%	100%
3-ETHYL-3-METHYLOCTANE	34%	0%	23%	43%	100%
3-ETHYLDECANE	34%	0%	23%	43%	100%
3-ETHYLHEPTANE	34%	0%	23%	43%	100%
3-ETHYLHEXANE	34%	0%	23%	43%	100%
3-ETHYLOCTANE	34%	0%	23%	43%	100%
3-ETHYLPENTANE	64%	33%	0%	3%	100%

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
3-METHYL-1-BUTENE	62%	34%	0%	4%	100%
3-METHYLDECANE	34%	0%	23%	43%	100%
3-METHYLHEPTANE	60%	20%	7%	14%	100%
3-METHYLHEXANE	64%	32%	0%	3%	100%
3-METHYLNONANE	34%	0%	23%	43%	100%
3-METHYLOCTANE	50%	17%	11%	22%	100%
3-METHYLPENTANE	63%	34%	0%	3%	100%
3-METHYLUNDECANE	34%	0%	23%	43%	100%
3-PHENYLPENTANE	34%	0%	23%	43%	100%
4,4-METHYLENE DIANILINE	100%	0%	0%	0%	100%
4,5-DIMETHYLDECANE	34%	0%	23%	43%	100%
4,5-DIMETHYLOCTANE	34%	0%	23%	43%	100%
4-ETHYLDECANE	34%	0%	23%	43%	100%
4-METHYLANILINE	100%	0%	0%	0%	100%
4-METHYLDECANE	34%	0%	23%	43%	100%
4-METHYLHEPTANE	56%	25%	6%	13%	100%
4-METHYLINDAN	34%	0%	23%	43%	100%
4-METHYLNONANE	34%	0%	23%	43%	100%
4-METHYLOCTANE	43%	10%	16%	31%	100%
4-METHYLUNDECANE	34%	0%	23%	43%	100%
4-PHENYL-1-BUTENE	86%	0%	0%	14%	100%
5-ISOPROPYLNONANE	34%	0%	23%	43%	100%
5-METHYLDECANE	34%	0%	23%	43%	100%
5-METHYLINDAN	34%	0%	23%	43%	100%
5-METHYLUNDECANE	34%	0%	23%	43%	100%
6-ETHYL-2-METHYLOCTANE	34%	0%	23%	43%	100%
6-METHYLUNDECANE	34%	0%	23%	43%	100%
ACENAPHTHENE	0%	50%	0%	50%	100%
ACENAPHTHYLENE	0%	50%	0%	50%	100%
ACETALDEHYDE	49%	44%	1%	6%	100%
ACETIC ACID	50%	50%	0%	0%	100%
ACETIC ANHYDRIDE	48%	52%	0%	0%	100%
ACETONE	48%	5%	34%	13%	100%
ACETONITRILE	84%	0%	16%	0%	100%
ACETYLENE	40%	20%	3%	37%	100%
ACROLEIN (2-PROPENAL)	48%	52%	0%	0%	100%
ACRYLAMIDE	100%	0%	0%	0%	100%
ACRYLIC ACID	100%	0%	0%	0%	100%
ACRYLONITRILE	42%	45%	13%	0%	100%
AMMONIA (TOTAL)	46%	22%	20%	13%	100%
ANILINE {AMINOBENZENE}	100%	0%	0%	0%	100%
ANTHRACENE	0%	50%	0%	50%	100%
ANTIMONY & COMPOUNDS	41%	1%	23%	35%	100%
ARSENIC & COMPOUNDS	13%	3%	11%	72%	100%
BENZALDEHYDE	98%	1%	0%	0%	100%
BENZENE	23%	15%	59%	3%	100%
BENZO(A)ANTHRACENE	0%	50%	0%	50%	100%
BENZO(A)PYRENE	0%	50%	0%	50%	100%
BENZO(B)FLUORANTHENE	100%	0%	0%	0%	100%
BENZOIC ACID	62%	38%	0%	0%	100%
BERYLLIUM & COMPOUNDS	16%	2%	34%	48%	100%
BICYCLO[4.3.0]NONANE (OCTAHYDROINDENE)	79%	14%	3%	5%	100%
BIPHENYL {PHENYL BENZENE}	0%	0%	100%	0%	100%
BIPHENYLOL {2-PHENYLPHENOL}	96%	4%	0%	0%	100%
B-METHYLSTYRENE	28%	19%	4%	49%	100%

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
BORON & COMPOUNDS	0%	0%	0%	100%	100%
BROMODICHLOROMETHANE	65%	7%	4%	24%	100%
BUTANE, BRANCHED & LINEAR	100%	0%	0%	0%	100%
BUTYL CELLOSOLVE {2-BUTOXYETHANOL} {EGBE}	63%	22%	8%	8%	100%
BUTYL ISOPROPYL PHTHALATE	96%	4%	0%	0%	100%
BUTYLBENZENE ISOMERS	80%	12%	3%	6%	100%
BUTYLCYCLOHEXANE	53%	5%	15%	27%	100%
BUTYRALDEHYDE	30%	23%	3%	43%	100%
C10 OLEFINS	99%	0%	0%	0%	100%
C10H12	70%	4%	0%	26%	100%
C11 OLEFINS	79%	14%	3%	5%	100%
C12 OLEFINS	79%	14%	3%	5%	100%
C2 ALKYL INDAN	100%	0%	0%	0%	100%
C4 SUBSTITUTED CYCLOHEXANONE	100%	0%	0%	0%	100%
C5 ALDEHYDE	28%	19%	4%	49%	100%
C5 KETONES	34%	0%	23%	43%	100%
C5 SUBSTITUTED CYCLOHEXANE	100%	0%	0%	0%	100%
C6 ALDEHYDES	28%	19%	4%	49%	100%
C6 OLEFINS (HEXENE ISOMERS)	0%	50%	0%	50%	100%
C6 SUBSTITUTED CYCLOHEXANE	100%	0%	0%	0%	100%
C7 CYCLOPARAFFINS	94%	6%	0%	0%	100%
C7 INTERNAL ALKENES	2%	0%	0%	98%	100%
C8 CYCLOPARAFFINS	100%	0%	0%	0%	100%
C8 INTERNAL ALKENES	92%	6%	1%	0%	100%
C8 OLEFINS	79%	14%	3%	5%	100%
C9 CYCLOPARAFFINS	71%	4%	0%	25%	100%
C9 OLEFINS	100%	0%	0%	0%	100%
CADMIUM & COMPOUNDS	22%	12%	34%	32%	100%
CARBITOL {DEGEE} {2-(2-ETHOXYETHOXY)ETHANOL}	34%	0%	23%	43%	100%
CARBON DISULFIDE	96%	4%	0%	0%	100%
CARBON MONOXIDE	1%	8%	87%	4%	100%
CARBON TETRACHLORIDE	51%	48%	0%	0%	100%
CARBONYL SULFIDE	48%	52%	0%	0%	100%
CARYOPHYLLENE	96%	4%	0%	0%	100%
CHLORINE	100%	0%	0%	0%	100%
CHLOROBENZENE	48%	52%	0%	0%	100%
CHLORODIFLUOROMETHANE (F-22)	79%	21%	0%	0%	100%
CHLOROETHANE (ETHYL CHLORIDE)	55%	45%	0%	0%	100%
CHLOROFORM (TRICHLOROMETHANE)	73%	20%	3%	4%	100%
CHLOROPENTAFLUOROETHANE (F115)	48%	52%	0%	0%	100%
CHLOROPRENE (2-CHLORO-1,3-BUTADIENE)	48%	52%	0%	0%	100%
CHLOROTRIFLUOROMETHANE (F-13)	48%	52%	0%	0%	100%
CHROMIUM (III) COMPOUNDS	41%	5%	1%	53%	100%
CHROMIUM (VI) COMPOUNDS	16%	24%	38%	22%	100%
CHRYSENE	0%	50%	0%	50%	100%
CIS,CIS-1,2,4-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
CIS,TRANS-1,2,3-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
CIS,TRANS-1,2,4-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
CIS-1,2-DIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
CIS-1,3-DIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
CIS-1,3-DIMETHYLCYCLOPENTANE	62%	31%	2%	6%	100%
CIS-1,4-DIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
CIS-1,CIS-2,3-TRIMETHYLCYCLOPENTANE	34%	0%	23%	43%	100%
CIS-1,CIS-2,4-TRIMETHYLCYCLOPENTANE	64%	33%	0%	3%	100%

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
CIS-1,CIS-3,5-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
CIS-1,TRANS-2,3-TRIMETHYLCYCLOPENTANE	34%	0%	23%	43%	100%
CIS-1-2-DIMETHYLCYCLOPENTANE	64%	33%	0%	3%	100%
CIS-1-ETHYL-2-METHYLCYCLOHEXANE	34%	0%	23%	43%	100%
CIS-1-ETHYL-2-METHYLCYCLOPENTANE	34%	0%	23%	43%	100%
CIS-1-ETHYL-3-METHYLCYCLOHEXANE	34%	0%	23%	43%	100%
CIS-1-METHYL-3-ETHYLCYCLOPENTANE	34%	0%	23%	43%	100%
CIS-2-BUTENE	66%	31%	0%	3%	100%
CIS-2-HEXENE	86%	0%	0%	14%	100%
CIS-2-PENTENE	50%	26%	0%	24%	100%
CIS-BICYCLO[3.3.0]OCTANE	34%	0%	23%	43%	100%
CIS-BICYCLO[4.3.0]NONANE	34%	0%	23%	43%	100%
CIS-DECALIN	34%	0%	23%	43%	100%
COBALT & COMPOUNDS	9%	2%	4%	85%	100%
COPPER & COMPOUNDS	6%	64%	14%	16%	100%
CUMENE (1-METHYLETHYLBENZENE)	78%	10%	11%	1%	100%
CYANIDE (INORGANIC) COMPOUNDS	6%	0%	55%	40%	100%
CYCLOHEXANE	78%	10%	6%	6%	100%
CYCLOHEXANOL	48%	52%	0%	0%	100%
CYCLOHEXANONE	48%	51%	0%	1%	100%
CYCLOHEXENE	96%	4%	0%	0%	100%
CYCLOPENTANE	99%	1%	0%	1%	100%
CYCLOPENTENE	63%	33%	0%	3%	100%
CYCLOPENTYLCYCLOPENTANE	86%	0%	0%	14%	100%
DECALINS (MIXED CIS,TRANS)	79%	14%	3%	5%	100%
DI(2-ETHYLHEXYL)PHTHALATE	74%	20%	3%	4%	100%
DI(PROPYLENE GLYCOL) METHYL ETHER	34%	0%	23%	43%	100%
DIACETONE ALCOHOL (4-HYDROXY-4-METHYL-2-PENTANONE)	45%	1%	19%	35%	100%
DIBROMOETHANE	99%	0%	0%	0%	100%
DIBUTYL ETHER	96%	4%	0%	0%	100%
DIBUTYL PHTHALATE	96%	4%	0%	0%	100%
DICHLOROBENZENES	48%	52%	0%	0%	100%
DICHLORODIFLUOROMETHANE (F-12)	70%	14%	2%	14%	100%
DICHLOROMETHANE {METHYLENE CHLORIDE}	96%	2%	0%	1%	100%
DIETHANOLAMINE	100%	0%	0%	0%	100%
DIETHYLBENZENES	98%	2%	0%	0%	100%
DIETHYLCYCLOHEXANE	99%	0%	0%	0%	100%
DIETHYLENE GLYCOL (2,2'-OXYBISETHANOL)	99%	0%	0%	1%	100%
DIMETHOXYMETHANE (METHYLAL)	94%	6%	0%	0%	100%
DIMETHYL DISULFIDE	0%	100%	0%	0%	100%
DIMETHYL ETHER	67%	33%	0%	0%	100%
DIMETHYL SULFIDE	65%	7%	4%	24%	100%
DIMETHYLAMINE	100%	0%	0%	0%	100%
DIMETHYLBENZYLALCOHOL	79%	14%	3%	5%	100%
DIMETHYLCYCLOBUTANONE	79%	14%	3%	5%	100%
DIMETHYLCYCLOHEXANES	90%	8%	2%	0%	100%
DIMETHYLCYCLOPENTANE	79%	14%	3%	5%	100%
DIMETHYLHEPTANES	69%	26%	4%	1%	100%
DIMETHYLHEPTANOL (2,6-DIMETHYL-2-HEPTANOL)	96%	4%	0%	0%	100%
DIMETHYLHEXANES	79%	14%	3%	5%	100%
DIMETHYLHEXENES	0%	50%	0%	50%	100%
DIMETHYLNONANES	79%	14%	3%	5%	100%
DIMETHYLOCTANES	79%	14%	3%	5%	100%
EICOSANE	96%	4%	0%	0%	100%

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
ETHANE	80%	4%	2%	14%	100%
ETHYL ACETATE	85%	1%	1%	13%	100%
ETHYL ACRYLATE	48%	52%	0%	0%	100%
ETHYL ALCOHOL	97%	1%	0%	3%	100%
ETHYL ETHER	48%	52%	0%	0%	100%
ETHYL ISOPROPYL ETHER	96%	4%	0%	0%	100%
ETHYL PROPYLCYCLOHEXANES	79%	14%	3%	5%	100%
ETHYLBENZENE	29%	4%	1%	66%	100%
ETHYLCYCLOHEXANE	70%	21%	5%	4%	100%
ETHYLCYCLOPENTANE	84%	9%	3%	4%	100%
ETHYLDIMETHYLBENZENES	100%	0%	0%	0%	100%
ETHYLDIMETHYLPHENOL	79%	14%	3%	5%	100%
ETHYLENE	57%	19%	0%	24%	100%
ETHYLENE GLYCOL	42%	0%	20%	38%	100%
ETHYLENE OXIDE	55%	45%	0%	0%	100%
ETHYLHEPTENE	99%	0%	0%	0%	100%
ETHYLHEXANE	71%	14%	3%	12%	100%
ETHYLMETHYLCYCLOHEXANES	79%	14%	3%	5%	100%
ETHYLMETHYLOCTANE	79%	14%	3%	5%	100%
ETHYLOCTANE	96%	4%	0%	0%	100%
ETHYLOCTENES	79%	14%	3%	5%	100%
ETHYLTOLUENES {METHYLETHYLBENZENES}	7%	72%	0%	20%	100%
FLUORANTHENE	0%	50%	0%	50%	100%
FLUORENE	0%	50%	0%	50%	100%
FLUORIDE COMPOUNDS	20%	15%	1%	64%	100%
FORMALDEHYDE	79%	8%	10%	3%	100%
FORMIC ACID	48%	52%	0%	0%	100%
FURFURYL ALCOHOL	100%	0%	0%	0%	100%
HENEICOSANE	96%	4%	0%	0%	100%
HEXADECANE	96%	4%	0%	0%	100%
HEXAFLUOROETHANE {F-116}	48%	52%	0%	0%	100%
HEXAMETHYLENEDIAMINE	48%	52%	0%	0%	100%
HEXANAL (HEXANALADEHYDE)	0%	100%	0%	0%	100%
HEXYLCYCLOHEXANE	34%	0%	23%	43%	100%
HEXYLCYCLOPENTANE	34%	0%	23%	43%	100%
HEXYLENE GLYCOL (2-METHYLPENTANE-2,4-DIOL)	100%	0%	0%	0%	100%
HEXYNE	86%	0%	0%	14%	100%
HYDROCHLORIC ACID	1%	0%	7%	92%	100%
HYDROGEN SULFIDE	11%	1%	86%	1%	100%
INDAN	96%	0%	1%	3%	100%
ISOAMYL ALCOHOL (3-METHYL-1-BUTANOL)	100%	0%	0%	0%	100%
ISOBUTYL ALCOHOL	34%	0%	23%	43%	100%
ISOBUTYLCYCLOHEXANE (2-METHYLPROPYL CYCLOHEXANE)	34%	0%	23%	43%	100%
ISOBUTYRALDEHYDE	100%	0%	0%	0%	100%
ISOMERS OF BUTENE	94%	6%	0%	0%	100%
ISOMERS OF C10H18	99%	0%	0%	0%	100%
ISOMERS OF C9H16	79%	14%	3%	5%	100%
ISOMERS OF DECANE (C10 PARAFFINS)	99%	0%	0%	0%	100%
ISOMERS OF DODECANE (C12 PARAFFINS)	98%	1%	0%	0%	100%
ISOMERS OF HEPTADECANE (C17 PARAFFINS)	96%	4%	0%	0%	100%
ISOMERS OF HEPTANE	100%	0%	0%	0%	100%
ISOMERS OF HEXANE	96%	3%	1%	0%	100%
ISOMERS OF NONANE (C9 PARAFFIN)	90%	3%	0%	6%	100%
ISOMERS OF OCTADECANE (C18 PARAFFINS)	96%	4%	0%	0%	100%

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
ISOMERS OF OCTANE (C8 PARAFFIN)	100%	0%	0%	0%	100%
ISOMERS OF PENTADECANE (C15 PARAFFINS)	96%	4%	0%	0%	100%
ISOMERS OF PENTANE	76%	19%	4%	2%	100%
ISOMERS OF PENTENE	100%	0%	0%	0%	100%
ISOMERS OF PROPYLBENZENE	82%	18%	0%	0%	100%
ISOMERS OF TETRADECANE (C14 PARAFFINS)	69%	4%	0%	26%	100%
ISOMERS OF TRIDECANE (C13 PARAFFINS)	79%	14%	3%	5%	100%
ISOMERS OF UNDECANE (C11 PARAFFINS)	77%	3%	0%	19%	100%
ISOMERS OF XYLENE	75%	5%	4%	16%	100%
ISOPRENE	46%	23%	0%	31%	100%
ISOPROPYL ACETATE	96%	4%	0%	0%	100%
ISOPROPYL ALCOHOL	90%	2%	1%	7%	100%
ISOPROPYLAMINE	100%	0%	0%	0%	100%
ISOPROPYLCYCLOHEXANE (2-METHYLETHYL CYCLOHEXANE)	34%	0%	23%	43%	100%
ISOVALERALDEHYDE (3-METHYLBUTANAL)	0%	100%	0%	0%	100%
LEAD & COMPOUNDS	39%	2%	35%	24%	100%
MAGNESIUM OXIDE FUME	41%	36%	19%	4%	100%
MALEIC ANHYDRIDE	48%	52%	0%	0%	100%
MANGANESE & COMPOUNDS	12%	2%	33%	53%	100%
MERCURIC CHLORIDE	100%	0%	0%	0%	100%
MERCURY & COMPOUNDS	59%	3%	18%	21%	100%
METHANE	65%	7%	4%	23%	100%
METHENE(B)4-PHENYLISOCYANATE {METHYLENEDIPHENYLDII	100%	0%	0%	0%	100%
METHYL ACETATE	48%	52%	0%	0%	100%
METHYL ALCOHOL	86%	5%	8%	0%	100%
METHYL AMYL KETONE	34%	6%	2%	59%	100%
METHYL BROMIDE	100%	0%	0%	0%	100%
METHYL CARBITOL {2-(2-METHOXYETHOXY)ETHANOL} {DEGM	78%	3%	7%	13%	100%
METHYL CHLORIDE	94%	6%	0%	0%	100%
METHYL ETHYL KETONE (MEK) (2-BUTANONE)	93%	2%	1%	5%	100%
METHYL FORMATE	48%	52%	0%	0%	100%
METHYL HEXANE	79%	14%	3%	5%	100%
METHYL ISOBUTYL KETONE	90%	1%	6%	4%	100%
METHYL METHACRYLATE	42%	45%	13%	0%	100%
METHYL N-BUTYL KETONE	28%	19%	4%	49%	100%
METHYL PALMITATE {METHYL HEXADECANOATE}	96%	4%	0%	0%	100%
METHYL PROPYLCYCLOHEXANES	79%	14%	3%	5%	100%
METHYLCYCLOHEXANE	96%	2%	1%	1%	100%
METHYLCYCLOOCTANE	86%	0%	0%	14%	100%
METHYLCYCLOPENTANE	79%	18%	2%	1%	100%
METHYLDECALINS	79%	14%	3%	5%	100%
METHYLDECANES	79%	14%	3%	5%	100%
METHYLDECENES	79%	14%	3%	5%	100%
METHYLDODECANES	79%	14%	3%	5%	100%
METHYLENE BROMIDE	48%	52%	0%	0%	100%
METHYLETHYLPENTANOATE	96%	4%	0%	0%	100%
METHYLHEPTANOL	96%	4%	0%	0%	100%
METHYLHEXENES	79%	14%	3%	5%	100%
METHYLINDANS	79%	14%	3%	5%	100%
METHYLNAPHTHALENES	100%	0%	0%	0%	100%
METHYLNONANE	79%	13%	3%	5%	100%
METHYLNONENES	79%	14%	3%	5%	100%

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
METHYLOCTANES	79%	14%	3%	5%	100%
METHYLPROPYLNONANE	79%	14%	3%	5%	100%
M-ETHYLTOLUENE	95%	3%	0%	2%	100%
METHYLUNDECANE	96%	4%	0%	0%	100%
M-XYLENE	17%	1%	0%	82%	100%
N,N-DIMETHYLETHANOLAMINE	100%	0%	0%	0%	100%
NAPTHALENE	85%	8%	1%	6%	100%
N-BUTANE	76%	15%	8%	2%	100%
N-BUTYL ACETATE	86%	3%	1%	10%	100%
N-BUTYL ACRYLATE	48%	52%	0%	0%	100%
N-BUTYL ALCOHOL	93%	4%	0%	4%	100%
N-BUTYLCYCLOPENTANE	94%	6%	0%	0%	100%
N-DECANE	94%	0%	2%	4%	100%
N-DODECANE	98%	1%	0%	1%	100%
N-HEPTADECANE	82%	17%	0%	1%	100%
N-HEPTANE	88%	4%	1%	8%	100%
N-HEXANE	69%	2%	3%	26%	100%
NICKEL & COMPOUNDS	40%	6%	5%	49%	100%
NITRIC ACID	1%	99%	0%	0%	100%
NITRIC OXIDE	8%	1%	5%	87%	100%
NITROGEN DIOXIDE	16%	1%	4%	78%	100%
N-NONANE	96%	1%	1%	2%	100%
N-OCTANE	97%	0%	1%	2%	100%
NONADECANE	96%	4%	0%	0%	100%
NONADIENE	79%	14%	3%	5%	100%
N-PENTADECANE	99%	1%	0%	0%	100%
N-PENTANE	78%	9%	12%	1%	100%
N-PENTYLCYCLOHEXANE	92%	1%	3%	5%	100%
N-PHENYLANILINE {DIPHENYLAMINE}	96%	4%	0%	0%	100%
N-PROPYL ALCOHOL	100%	0%	0%	0%	100%
N-PROPYLBENZENE	96%	2%	0%	1%	100%
N-TETRADECANE	98%	2%	0%	0%	100%
N-TRIDECANE	98%	2%	0%	0%	100%
N-UNDECANE	97%	0%	1%	2%	100%
O-DICHLOROBENZENE	51%	49%	0%	0%	100%
O-ETHYLTOLUENE	97%	1%	0%	2%	100%
ORGANO-TIN COMPOUNDS	0%	0%	100%	0%	100%
OXIDES OF NITROGEN	8%	1%	5%	87%	100%
O-XYLENE	25%	5%	1%	69%	100%
PARTICULATE MATTER 10µm	17%	4%	4%	75%	100%
PARTICULATE MATTER 2.5µm	26%	6%	12%	56%	100%
P-DICHLOROBENZENE	52%	47%	0%	1%	100%
PENTAMETHYLBENZENE	100%	0%	0%	0%	100%
PENTYLCYCLOPENTANE	36%	1%	22%	41%	100%
PERCHLOROETHYLENE	76%	14%	3%	6%	100%
P-ETHYLTOLUENE	97%	2%	0%	1%	100%
PHENANTHRENE	0%	50%	0%	50%	100%
PHENOL (CARBOLIC ACID)	25%	25%	49%	1%	100%
PHENYL ISOCYANATE	100%	0%	0%	0%	100%
PHOSPHORIC ACID	100%	0%	0%	0%	100%
PHTHALIC ANHYDRIDE	88%	11%	0%	0%	100%
POLYCHLORINATED DIOXINS AND FURANS	11%	0%	34%	55%	100%
POLYCYCLIC AROMATIC HYDROCARBONS	4%	11%	70%	15%	100%
PROPANE	89%	3%	5%	3%	100%
PROPENYLCYCLOHEXANE	79%	14%	3%	5%	100%

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
PROPIONALDEHYDE	28%	19%	4%	49%	100%
PROPYL ACETATE	96%	3%	0%	0%	100%
PROPYLCYCLOHEXANE	34%	0%	23%	43%	100%
PROPYLCYCLOPENTANE	34%	0%	23%	43%	100%
PROPYLENE	80%	6%	0%	14%	100%
PROPYLENE GLYCOL	35%	0%	23%	42%	100%
PROPYLENE GLYCOL METHYL ETHER {1-METHOXY-2-PROPANO	34%	0%	23%	43%	100%
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE {2-(1-ME	34%	0%	23%	43%	100%
PROPYLENE OXIDE	99%	1%	0%	0%	100%
P-TOLUALDEHYDE {4-METHYLBENZALDEHYDE}	99%	0%	0%	0%	100%
P-XYLENE	97%	3%	0%	0%	100%
PYRENE	0%	50%	0%	50%	100%
SEC-BUTYL ALCOHOL	42%	29%	10%	19%	100%
SEC-BUTYLCYCLOHEXANE	94%	6%	0%	0%	100%
SELENIUM & COMPOUNDS	25%	0%	2%	73%	100%
STYRENE (ETHENYLBENZENE)	66%	28%	7%	0%	100%
SUBSTITUTED C9 ESTER (C12)	96%	4%	0%	0%	100%
SULFUR DIOXIDE	4%	3%	3%	90%	100%
SULFUR TRIOXIDE	3%	0%	0%	96%	100%
SULFURIC ACID	7%	0%	6%	87%	100%
TEREPHTHALIC ACID (P-BENZENEDICARBOXYLIC ACID)	48%	52%	0%	0%	100%
TETRAFLUOROMETHANE {CARBON TETRAFLUORIDE} {R 14}	48%	52%	0%	0%	100%
TETRAMETHYLBENZENES	79%	14%	3%	5%	100%
TETRAMETHYLCYCLOBUTENE	79%	14%	3%	5%	100%
TETRAMETHYLCYCLOPENTANE	79%	14%	3%	5%	100%
TETRAMETHYLTHIOUREA	79%	14%	3%	5%	100%
TIN & COMPOUNDS	100%	0%	0%	0%	100%
TOLUENE	78%	6%	5%	10%	100%
TOTAL SUSPENDED PARTICULATES (TSP)	18%	4%	3%	75%	100%
TOTAL VOCS	79%	7%	4%	10%	100%
TRANS 1-METHYL-3-PROPYL CYCLOHEXANE	34%	0%	23%	43%	100%
TRANS 1-METHYL-4-ETHYLCYCLOHEXANE	46%	14%	14%	26%	100%
TRANS,CIS-1,2,4-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
TRANS,TRANS-1,2,4-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
TRANS,TRANS-1,3,5-TRIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
TRANS-1,2-CIS-4-TRIMETHYLCYCLOPENTANE	64%	33%	0%	3%	100%
TRANS-1,2-DIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
TRANS-1,3-DIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
TRANS-1,3-DIMETHYLCYCLOPENTANE	56%	24%	6%	13%	100%
TRANS-1,4-DIMETHYLCYCLOHEXANE	34%	0%	23%	43%	100%
TRANS-1,CIS-2,3-TRIMETHYLCYCLOPENTANE	64%	33%	0%	3%	100%
TRANS-1-2-DIMETHYLCYCLOPENTANE	64%	33%	0%	3%	100%
TRANS-1-ETHYL-2-METHYLCYCLOHEXANE	34%	0%	23%	43%	100%
TRANS-1-ETHYL-3-METHYLCYCLOHEXANE	34%	0%	23%	43%	100%
TRANS-1-METHYL-3-ETHYLCYCLOPENTANE	34%	0%	23%	43%	100%
TRANS-1-PHENYLBUTENE	86%	0%	0%	14%	100%
TRANS-2-BUTENE	66%	31%	0%	3%	100%
TRANS-2-ETHYLMETHYLCYCLOPENTANE	58%	26%	5%	11%	100%
TRANS-2-NONENE	86%	0%	0%	14%	100%
TRANS-2-PENTENE	64%	33%	0%	3%	100%
TRICHLOROETHYLENE (TCE)	99%	1%	0%	0%	100%

Substance	Sydney	Newcastle	Wollongong	Non-Urban	GMR
TRICHLOROFLUOROMETHANE	74%	26%	0%	0%	100%
TRICHLOROTRIFLUOROETHANE-F113	96%	4%	0%	0%	100%
TRIFLUOROMETHANE (F-23)	48%	52%	0%	0%	100%
TRIMETHYLBENZENES	78%	2%	0%	19%	100%
TRIMETHYLCYCLOHEXANES	73%	22%	4%	1%	100%
TRIMETHYLCYCLOPENTANE	90%	8%	1%	1%	100%
TRIMETHYLDECANE	96%	4%	0%	0%	100%
TRIMETHYLDECENES	100%	0%	0%	0%	100%
TRIMETHYLFLUOROSILANE	0%	0%	100%	0%	100%
TRIMETHYLHEPTANES	79%	14%	3%	5%	100%
TRIMETHYLOCTANES	96%	4%	0%	0%	100%
VANADIUM & COMPOUNDS	100%	0%	0%	0%	100%
VINYL ACETATE	49%	51%	0%	0%	100%
VINYL CHLORIDE MONOMER	94%	5%	0%	2%	100%
ZINC & COMPOUNDS	46%	17%	30%	7%	100%

Appendix C:
Default Organic Speciation Profiles

Table C3: Default Organic Speciation Profiles

EET name	Speciation Profile Name	Reference
Acrylic (dry spun) manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Acrylic (inorganic wet spun) manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Acrylic (wet spun) manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Baking (fermentation)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Activated carbon regeneration)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Aging tank filling)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Bottle crusher with water sprays)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Bottle crusher)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Bottle filling line)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Bottle soaker and cleaner)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Brew kettle)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Brewers grain dryer)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Can crusher with pneumatic conveyer)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Can filling line)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Cereal cooker)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Fermenter venting: closed fermenter)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Hot wort settling tank)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Keg filling line)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Lauter tun)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Mash tun)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Sterilized bottle filling line)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Sterilized can filling line)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Trub vessel)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Beer Production (Wort cooler)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Boiler (Bark, FBC Boiler)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Boiler (Bark, Fuel cell/Dutch oven burner)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)

EET name	Speciation Profile Name	Reference
Boiler (Bark, Stoker Boiler)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Boiler (Coal - Bituminous, Cell burner fired, Dry Bottom)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Cyclone furnace)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Fluidised bed combustor, bubbling bed)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Fluidised bed combustor, circulating bed)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Hand-fed unit)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Overfeed stoker)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Spreader stoker)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Tangentially-fired, Dry Bottom, Post-1971)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Tangentially-fired, Dry Bottom, Pre-1971)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Tangentially-fired, Dry Bottom, Pre-1971, Low-NOx)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Tangentially-fired, Wet Bottom, Pre-1971)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Underfeed stoker)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Wall-fired, Dry Bottom, Post-1971)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Wall-fired, Dry Bottom, Pre-1971)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Wall-fired, Dry Bottom, Pre-1971, Low-NOx)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Bituminous, Wall-fired, Wet Bottom, Pre-1971)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Cell burner fired, Dry Bottom)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Cyclone furnace)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Fluidised bed combustor, bubbling bed)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Fluidised bed combustor, circulating bed)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Hand-fed unit)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Overfeed stoker)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous,	Coal-Fired Boiler - Electric	USEPA (2002) SPECIATEv3.2 (Profile

EET name	Speciation Profile Name	Reference
Spreader stoker)	Generation	ID=1178)
Boiler (Coal - Sub-Bituminous, Tangentially-fired, Dry Bottom, Pre-1971)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Tangentially-fired, Dry Bottom, Pre-1971, Low NOx)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Underfeed stoker)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Wall-fired, Dry Bottom, Post-1971)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Wall-fired, Dry Bottom, Pre-1971)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Wall-fired, Dry Bottom, Pre-1971, Low NOx)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Coal - Sub-Bituminous, Wall-fired, Wet Bottom, Pre-1971)	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Boiler (Diesel, Commercial Boiler)	External Combustion Boiler - Distillate Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0002)
Boiler (Diesel, Industrial Boiler (< 100 GJ/h))	External Combustion Boiler - Distillate Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0002)
Boiler (Diesel, Industrial Boiler (> 100 GJ/h))	External Combustion Boiler - Distillate Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0002)
Boiler (Diesel, Industrial Boiler (> 100 GJ/h), Low NOx Flue gas recirculation)	External Combustion Boiler - Distillate Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0002)
Boiler (Heavy Fuel Oil, Commercial Boiler)	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Heavy Fuel Oil, Industrial Boiler (< 100 GJ/h))	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Heavy Fuel Oil, Industrial Boiler (> 100 GJ/h), Normal Firing)	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Heavy Fuel Oil, Industrial Boiler (> 100 GJ/h), Normal Firing, Low NOx)	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Heavy Fuel Oil, Industrial Boiler (> 100 GJ/h), Tangential Firing)	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Heavy Fuel Oil, Industrial Boiler (> 100 GJ/h), Tangential Firing, Low NOx)	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Heavy Fuel Oil, Utility Boiler (< 100 GJ/h))	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Heavy Fuel Oil, Utility Boiler (> 100 GJ/h), Normal Firing)	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Heavy Fuel Oil, Utility Boiler (> 100 GJ/h), Normal Firing, Low NOx)	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Heavy Fuel Oil, Utility Boiler (> 100 GJ/h), Tangential Firing)	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Heavy Fuel Oil, Utility	External Combustion Boiler -	USEPA (2002) SPECIATEv3.2 (Profile

EET name	Speciation Profile Name	Reference
Boiler (> 100 GJ/h), Tangential Firing, Low NOx)	Residual Oil	ID=0001)
Boiler (Light Fuel Oil, Commercial Boiler)	External Combustion Boiler - Distillate Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0002)
Boiler (Light Fuel Oil, Industrial Boiler (< 100 GJ/h))	External Combustion Boiler - Distillate Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0002)
Boiler (Light Fuel Oil, Industrial Boiler (> 100 GJ/h), Normal Firing)	External Combustion Boiler - Distillate Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0002)
Boiler (Light Fuel Oil, Industrial Boiler (> 100 GJ/h), Tangential Firing)	External Combustion Boiler - Distillate Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0002)
Boiler (LPG, Commercial Boiler (0.3-10 GJ/h))	LPG Combustion	NPI EET Manual for Boilers, Version 1.2 and USEPA (1996) AP42 Chapter 1.5 LPG Combustion
Boiler (LPG, Industrial Boiler (10-100 GJ/h))	LPG Combustion	NPI EET Manual for Boilers, Version 1.2 and USEPA (1996) AP42 Chapter 1.5 LPG Combustion
Boiler (Natural gas, Large, wall-fired, Fuel gas recirculation)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Boiler (Natural gas, Large, wall-fired, Low-NOx)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Boiler (Natural gas, Large, wall-fired, Post-1971)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Boiler (Natural gas, Large, wall-fired, Pre-1971)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Boiler (Natural gas, Residential (<0.3 GJ/h))	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Boiler (Natural gas, Small boiler)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Boiler (Natural gas, Small boiler, Low NOx & flue gas recirculation)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Boiler (Natural gas, Small boiler, Low NOx)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Boiler (Natural gas, Tangential-fired)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Boiler (Waste Oil, Small Boiler (0.3 - 100 GJ/h))	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Waste Oil, Space Heater, Atomising Burner)	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Waste Oil, Space Heater, Vaporising Burner)	External Combustion Boiler - Residual Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0001)
Boiler (Wood, FBC Boiler)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Boiler (Wood, Fuel cell/Dutch oven burner)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Boiler (Wood, Stoker Boiler)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Boiler (Wood/Bark, FBC Boiler)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Boiler (Wood/Bark, Fuel cell/Dutch oven burner)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Boiler (Wood/Bark, Stoker Boiler)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Brick - Dryer with supplement gas burner	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)

EET name	Speciation Profile Name	Reference
Brick - Kiln - Natural gas - dry scrubber	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Brick - Kiln - Natural gas - uncontrolled	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Brick - Kiln and dryer - Sawdust fired	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Cellulose acetate manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Cement Kiln - Precalcinator Kiln - Coal - ESP	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Cement Kiln - Precalcinator Kiln - Coal - Fabric Filter	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Cement Kiln - Precalcinator Kiln - Gas - ESP	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Cement Kiln - Precalcinator Kiln - Gas - Fabric Filter	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Cement Kiln - Preheater Kiln - Coal - ESP	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Cement Kiln - Preheater Kiln - Coal - Fabric Filter	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Cement Kiln - Wet and semi-wet process - Coal - ESP	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Cement Kiln - Wet and semi-wet process - Coal - Fabric Filter	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Cement Kiln - Wet and semi-wet process - Gas - ESP	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Cement Kiln - Wet and semi-wet process - Gas - Fabric Filter	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Cement Kiln - Wet and semi-wet process - Lignite fuel - ESP	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Cement Kiln - Wet and semi-wet process - Lignite fuel - Fabric Filter	Coal-Fired Boiler - Electric Generation	USEPA (2002) SPECIATEv3.2 (Profile ID=1178)
Ceramic - Firing-natural gas fired kiln	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Coke Production (Oven charging (larry car))	By Product Coke Oven Stack Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0011)
Coke Production (Oven door leaks)	By Product Coke Oven Stack Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0011)
Coke Production (Oven pushing)	By Product Coke Oven Stack Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0011)
Composting	LANDFILLS, USEPA LANDFILL EMISSION MODEL	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9017)
Cremation	Cremation	CARB (1992) "Evaluation Test on Two Propane Fired Crematories at Camellia Memorial Lawn Cemetery" (Profile ID=9015)
Dry cleaning (perchloroethylene)	Drycleaning	USEPA (2004) SPECIATEv3.2 (Profile ID=1193)
Dry cleaning (white spirit solvent)	Drycleaning	USEPA (2004) SPECIATEv3.2 (Profile ID=1193)
Fibreglass (Filament Winding)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Fibreglass (Gel Coat Application)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)

EET name	Speciation Profile Name	Reference
Fibreglass (Manual Resin Application (non-vapour suppressed))	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Fibreglass (Manual Resin Application (vapour suppressed))	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Fibreglass (Mechanical Resin Application (non-vapour suppressed))	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Fibreglass (Mechanical Resin Application (vapour suppressed))	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Fuel storage - diesel/distillate	Diesel Vapour	Pers Comm. Peter Jones, Bulwer Refinery (2001) Average Diesel Vapour Concentration from diesel produced at BP refineries around Australia
Fuel storage - ethanol	Ethanol fuel evaporation	Engineering calculation
Fuel storage - heavy fuel oil	Fixed Roof Tank - Crude Oil Refinery	USEPA (2002) SPECIATEv3.2 (Profile ID=0297)
Fuel storage - light fuel oil	Diesel Vapour	Pers Comm. Peter Jones, Bulwer Refinery (2001) Average Diesel Vapour Concentration from diesel produced at BP refineries around Australia
Fuel storage - petrol	Petrol Vapour	Pers Comm. Peter Jones, BP Bulwer Refinery (2001) (Average profile (measured and calculated) from a range of BP petrol batches across Australian BP refineries)
Glass Production (Forming and Finishing (Container))	MINERAL PRODUCTS - AVERAGE (EPA 9011)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1411) (Profile ID=9020)
Glass Production (Melting Furnace (Container))	MINERAL PRODUCTS - AVERAGE (EPA 9011)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1411) (Profile ID=9020)
Glass Production (Melting Furnace (Float))	MINERAL PRODUCTS - AVERAGE (EPA 9011)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1411) (Profile ID=9020)
Glass Production (Pressed and Blown)	MINERAL PRODUCTS - AVERAGE (EPA 9011)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1411) (Profile ID=9020)
Incineration (Biomedical Waste)	Bar Screen Waste Incinerator	USEPA (2002) SPECIATEv3.2 (Profile ID=0122)
Incineration (Sewage Sludge)	Bar Screen Waste Incinerator	USEPA (2002) SPECIATEv3.2 (Profile ID=0122)
Internal Combustion Engine (Diesel, P<450kW)	Reciprocating Diesel Fuel Engine	USEPA (2002) SPECIATEv3.2 (Profile ID=0008)
Internal Combustion Engine (Diesel, P>450kW)	Reciprocating Diesel Fuel Engine	USEPA (2002) SPECIATEv3.2 (Profile ID=0008)
Internal Combustion Engine (Duel fuel - Natural gas (95%) & Diesel (5%), P>450kW)	Internal Combustion Engine - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=1001)
Internal Combustion Engine (Landfill Gas, 2-Stroke Lean-Burn)	Internal Combustion Engine - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=1001)
Internal Combustion Engine (Landfill Gas, 4-Stroke Lean-Burn)	Internal Combustion Engine - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=1001)
Internal Combustion Engine (Landfill Gas, 4-Stroke Rich-Burn)	Internal Combustion Engine - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=1001)

EET name	Speciation Profile Name	Reference
Internal Combustion Engine (LNG, 2-Stroke Lean-Burn)	Internal Combustion Engine - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=1001)
Internal Combustion Engine (LNG, 4-Stroke Lean-Burn)	Internal Combustion Engine - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=1001)
Internal Combustion Engine (LNG, 4-Stroke Rich-Burn)	Internal Combustion Engine - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=1001)
Internal Combustion Engine (Natural Gas, 2-Stroke Lean-Burn)	Internal Combustion Engine - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=1001)
Internal Combustion Engine (Natural Gas, 4-Stroke Lean-Burn)	Internal Combustion Engine - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=1001)
Internal Combustion Engine (Natural Gas, 4-Stroke Rich-Burn)	Internal Combustion Engine - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=1001)
Internal Combustion Engine (Petrol, P<450kW)	Heavy Duty Gasoline Trucks	USEPA (2002) SPECIATEv3.2 (Profile ID 1186)
Iron Production (Furnace, Electric Arc)	Basic Oxygen Furnace	USEPA (2002) SPECIATEv3.2 (Profile ID=0016)
Landfills (digestion)	LANDFILLS, USEPA LANDFILL EMISSION MODEL	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9017)
Medium density fibreboard (board cooler)	MEDIUM DENSITY FIBREBOARD MANUFACTURING	Table 10.6.3-3, USEPA (1998) AP42 Chapter 10.6.3 Medium Density Fiberboard Manufacturing (mixed species) (Profile ID=9022)
Medium density fibreboard (hot press)	MEDIUM DENSITY FIBREBOARD MANUFACTURING	Table 10.6.3-3, USEPA (1998) AP42 Chapter 10.6.3 Medium Density Fiberboard Manufacturing (mixed species) (Profile ID=9022)
Medium density fibreboard (tube dryer - wood fired)	MEDIUM DENSITY FIBREBOARD MANUFACTURING	Table 10.6.3-3, USEPA (1998) AP42 Chapter 10.6.3 Medium Density Fiberboard Manufacturing (mixed species) (Profile ID=9022)
Modacrylic (dry spun) manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Modacrylic (wet spun) manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Nylon 6 manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Nylon 66 manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Paint Production (Paint Grinding & Mixing)	Paint Manufacture - Blending Kettle	USEPA (2002) SPECIATEv3.2 (Profile ID=1094)
Paint Production (Solvent reclamation - Condensor vent)	Paint Manufacture - Blending Kettle	USEPA (2002) SPECIATEv3.2 (Profile ID=1094)
Paint Production (Solvent reclamation - Fugitive (Spills & Loading))	Paint Manufacture - Blending Kettle	USEPA (2002) SPECIATEv3.2 (Profile ID=1094)
Paint Production (Solvent reclamation - Storage tank vent)	Paint Manufacture - Blending Kettle	USEPA (2002) SPECIATEv3.2 (Profile ID=1094)
Paint Production (Varnish Grinding & Mixing)	Paint Manufacture - Blending Kettle	USEPA (2002) SPECIATEv3.2 (Profile ID=1094)
Paper Production (Bleaching (Kraft))	Pulp and Paper Industry - Plywood Veneer Dryer	USEPA (2002) SPECIATEv3.2 (Profile ID=1189)
Paper Production (Bleaching	Pulp and Paper Industry -	USEPA (2002) SPECIATEv3.2 (Profile

EET name	Speciation Profile Name	Reference
(Sulphite))	Plywood Veneer Dryer	ID=1189)
Paper Production (Digestion (Kraft))	Pulp and Paper Industry - Plywood Veneer Dryer	USEPA (2002) SPECIATEv3.2 (Profile ID=1189)
Paper Production (Drying Paper Pulp)	Pulp and Paper Industry - Plywood Veneer Dryer	USEPA (2002) SPECIATEv3.2 (Profile ID=1189)
Paper Production (Recausticising (Kraft))	Pulp and Paper Industry - Plywood Veneer Dryer	USEPA (2002) SPECIATEv3.2 (Profile ID=1189)
Paper Production (Recausticising (Sulphite))	Pulp and Paper Industry - Plywood Veneer Dryer	USEPA (2002) SPECIATEv3.2 (Profile ID=1189)
Paper Production (Recovery Boiler (Kraft))	Pulp and Paper Industry - Plywood Veneer Dryer	USEPA (2002) SPECIATEv3.2 (Profile ID=1189)
Paper Production (Washing (Kraft))	Pulp and Paper Industry - Plywood Veneer Dryer	USEPA (2002) SPECIATEv3.2 (Profile ID=1189)
Particle board manufacturing (Board Cooler)	Particle Board Manufacturing - Board Cooler	Table 10.6.2-3, USEPA (1998) AP42 Chapter 10.6.3 Particleboard Manufacturing (Profile ID=9023)
Particle board manufacturing (Hot Press)	Particle Board Manufacturing - Hot Press	Table 10.6.2-3, USEPA (1998) AP42 Chapter 10.6.3 Particleboard Manufacturing (Profile ID=9024)
Particle board manufacturing (Rotary dryer - natural gas fired)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Particle board manufacturing (Rotary dryer - wood fired)	Particle Board Manufacturing - Dryer-wood fired	Table 10.6.2-3, USEPA (1998) AP42 Chapter 10.6.3 Particleboard Manufacturing (Profile ID=9025)
Petroleum Refining (Blowdown System)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Petroleum Refining (Compressor Engines - Gas Turbine)	Natural Gas Turbine	USEPA (2002) SPECIATEv3.2 (Profile ID=0007)
Petroleum Refining (Compressor Engines - Internal Combustion Engine)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Petroleum Refining (Flare)	Flares - Natural Gas	USEPA (2004) SPECIATEv3.2 (Profile ID=0051)
Petroleum Refining (Fluid Coking)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Petroleum Refining (Fluidised Catalytic Cracking)	Refinery Fluid Catalytic Cracker	USEPA (2002) SPECIATEv3.2 (Profile ID=0029)
Petroleum Refining (Moving Bed Catalytic Cracking)	Refinery Fluid Catalytic Cracker	USEPA (2002) SPECIATEv3.2 (Profile ID=0029)
Petroleum Refining (Process Fugitives, Compressor seals, Gas)	Refinery Fugitive Emissions - Compressor Seals - Refinery Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0039)
Petroleum Refining (Process Fugitives, Compressor seals, Heavy Liquid)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Petroleum Refining (Process Fugitives, Compressor seals, Light Liquid)	Refinery Fugitive Emissions - Relief Valves - Liquefied Petroleum Gas	USEPA (2004) SPECIATEv3.2 (Profile ID=0047)
Petroleum Refining (Process Fugitives, Connectors, Gas)	Refinery Fugitive Emissions - Compressor Seals - Refinery Gas	USEPA (2004) SPECIATEv3.2 (Profile ID=0039)
Petroleum Refining (Process Fugitives, Connectors, Heavy Liquid)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)

EET name	Speciation Profile Name	Reference
Petroleum Refining (Process Fugitives, Connectors, Light Liquid)	Refinery Fugitive Emissions - Relief Valves - Liquefied Petroleum Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0047)
Petroleum Refining (Process Fugitives, Drains)	Refinery Fugitive Emissions - Covered Drainage / Separation Pits	USEPA (2002) SPECIATEv3.2 (Profile ID=0031)
Petroleum Refining (Process Fugitives, Flanges, Gas)	Refinery Fugitive Emissions - Compressor Seals - Refinery Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0039)
Petroleum Refining (Process Fugitives, Flanges, Heavy Liquid)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Petroleum Refining (Process Fugitives, Flanges, Light Liquid)	Refinery Fugitive Emissions - Relief Valves - Liquefied Petroleum Gas	USEPA (2004) SPECIATEv3.2 (Profile ID=0047)
Petroleum Refining (Process Fugitives, Open Ended Lines)	Refinery Fugitive Emissions - Covered Drainage / Separation Pits	USEPA (2004) SPECIATEv3.2 (Profile ID=0031)
Petroleum Refining (Process Fugitives, Pressure Relief Valves)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Petroleum Refining (Process Fugitives, Pump seals, Gas)	Refinery Fugitive Emissions - Compressor Seals - Refinery Gas	USEPA (2004) SPECIATEv3.2 (Profile ID=0039)
Petroleum Refining (Process Fugitives, Pump seals, Heavy Liquid)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Petroleum Refining (Process Fugitives, Pump seals, Light Liquid)	Refinery Fugitive Emissions - Relief Valves - Liquefied Petroleum Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0047)
Petroleum Refining (Process Fugitives, Sampling Connections)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Petroleum Refining (Process Fugitives, Valves, Gas)	Refinery Fugitive Emissions - Compressor Seals - Refinery Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0039)
Petroleum Refining (Process Fugitives, Valves, Heavy Liquid)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Petroleum Refining (Process Fugitives, Valves, Light Liquid)	Refinery Fugitive Emissions - Relief Valves - Liquefied Petroleum Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0047)
Petroleum Refining (Vacuum Distillation Unit Condensers)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Plywood press	Pulp and Paper Industry - Plywood Veneer Dryer	USEPA (2002) SPECIATEv3.2 (Profile ID=1189)
Plywood veneer dryer (natural gas fired)	Pulp and Paper Industry - Plywood Veneer Dryer	USEPA (2002) SPECIATEv3.2 (Profile ID=1189)
Plywood veneer dryer (wood fired)	Pulp and Paper Industry - Plywood Veneer Dryer	USEPA (2002) SPECIATEv3.2 (Profile ID=1189)
Polyester manufacturing	PLASTICS PRODUCTION - AVERAGE (EPA 9005)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1405) (Profile ID=9005)
Polyolefin manufacturing	PLASTICS PRODUCTION - AVERAGE (EPA 9005)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1405) (Profile

EET name	Speciation Profile Name	Reference
		ID=9005)
Polypropylene Manufacturing	Wastewater Treatment (POTWs), AB2588 Data, USEPA 50% unidentified.	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9016)
Polystyrene Manufacturing (Batch)	Plastics Production - Polystyrene	USEPA (2002) SPECIATEv3.2 (Profile ID=1004)
Polystyrene Manufacturing (Continuous - Steam Jets)	Plastics Production - Polystyrene	USEPA (2002) SPECIATEv3.2 (Profile ID=1004)
Polystyrene Manufacturing (Continuous - Vacuum Pump)	Plastics Production - Polystyrene	USEPA (2002) SPECIATEv3.2 (Profile ID=1004)
Polystyrene Manufacturing (In-Site Process)	Plastics Production - Polystyrene	USEPA (2002) SPECIATEv3.2 (Profile ID=1004)
Polystyrene Manufacturing (Post-impregnation suspension process)	Plastics Production - Polystyrene	USEPA (2002) SPECIATEv3.2 (Profile ID=1004)
Powder coating	Surface Coating Operations (Industrial)	USEPA (2002) SPECIATEv3.2 (Profile ID=6002)
Printing (heat set)	Graphic Arts - (Printing)	USEPA (2002) SPECIATEv3.2 (Profile ID=1191)
Printing (non-heat set)	Graphic Arts - (Printing)	USEPA (2002) SPECIATEv3.2 (Profile ID=1191)
Printing Ink Manufacturing	Graphic Arts - (Printing)	USEPA (2002) SPECIATEv3.2 (Profile ID=1191)
Rubber Product Manufacturing (Autoclave)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing (Calendering)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing (Extrusion)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing (Grinding - Belt)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing (Grinding - Carcass)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing (Grinding - Retread)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing (Grinding - Sidewall)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing (Hot Air)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing (Milling)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing (Mixing)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing (Platen Press)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Rubber Product Manufacturing	RUBBER/MISC. PLASTICS	CARB (2003) ARB Organic Gas Speciation

EET name	Speciation Profile Name	Reference
(Tyre)	PRODUCTN - AVERAGE (EPA 9014)	Profiles 19/03/2003 (Profile ID=9014)
Smokehouse (Batch smokehouse, smoking cycle)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Smokehouse (Continuous smokehouse, smoke zone with vortex wet scrubber and demister)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Smokehouse (Continuous smokehouse, smoke zone)	Residential Wood Combustion	USEPA (2002) SPECIATEv3.2 (Profile ID=1167)
Surface coating usage	Architectural Coatings (Solvent Coating and Thinning Solvent)	USEPA (2002) SPECIATEv3.2 (Profile ID=6003)
Spandex (dry spun) manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Spandex (wet spun) manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Spirit Manufacturing (Ageing)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Spirit Production (Fermentation vats)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Surface coating (adhesive)	Surface Coating Operations - Coating Application - Adhesives	USEPA (2002) SPECIATEv3.2 (Profile ID=1020)
Surface coating (enamel)	Surface Coating Operations - Coating Application - Enamel	USEPA (2002) SPECIATEv3.2 (Profile ID=1018)
Surface coating (lacquer)	Surface Coating Operations - Coating Application - Lacquer	USEPA (2002) SPECIATEv3.2 (Profile ID=1017)
Surface coating (paint - solvent based)	Surface Coating Operations - Coating Application -Solvent-Base Paint	USEPA (2002) SPECIATEv3.2 (Profile ID=1003)
Surface coating (primer)	Surface Coating Operations - Coating Application - Primer	USEPA (2002) SPECIATEv3.2 (Profile ID=1019)
Surface coating (thinner)	Surface Coating Operations - Thinning Solvents - Composite	USEPA (2002) SPECIATEv3.2 (Profile ID=1016)
Synthetic rubber manufacturing (emulsion crumb - adsorber vent)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Synthetic rubber manufacturing (emulsion crumb - blend/coagulation tank)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Synthetic rubber manufacturing (emulsion crumb - dryers)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Synthetic rubber manufacturing (emulsion crumb - monomer recovery)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Synthetic rubber manufacturing (emulsion latex - blend tanks)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Synthetic rubber manufacturing (emulsion latex - monomer removal condenser vent)	RUBBER/MISC. PLASTICS PRODUCTN - AVERAGE (EPA 9014)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9014)
Textile fabric printing (flat screen)	Graphic Arts - (Printing)	USEPA (2002) SPECIATEv3.2 (Profile

EET name	Speciation Profile Name	Reference
		ID=1191)
Textile fabric printing (roller)	Graphic Arts - (Printing)	USEPA (2002) SPECIATEv3.2 (Profile ID=1191)
Textile fabric printing (rotary screen)	Graphic Arts - (Printing)	USEPA (2002) SPECIATEv3.2 (Profile ID=1191)
Vinyon manufacturing	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Wastewater Treatment (VOC vaporisation (large biomass producing facilities))	Wastewater Treatment (POTWs), AB2588 Data, USEPA 50% unidentified.	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9016)
Wastewater Treatment (VOC vaporisation (municipal wastewater))	Wastewater Treatment (POTWs), AB2588 Data, USEPA 50% unidentified.	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9016)
Wastewater Treatment (VOC vaporisation (other industries))	Wastewater Treatment (POTWs), AB2588 Data, USEPA 50% unidentified.	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9016)
Wastewater Treatment (VOC vaporisation (petrochemical, synthetic resins and textiles))	Wastewater Treatment (POTWs), AB2588 Data, USEPA 50% unidentified.	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (Profile ID=9016)
Wine Fermentation (red wine)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Wine Fermentation (white wine)	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Wine Manufacturing (Bottling (red wine))	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Wine Manufacturing (Bottling (white wine))	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Wine Manufacturing (Pomace pressing (red wine))	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Wine Manufacturing (Pomace screening (red wine))	Fermentation Processes	USEPA (2002) SPECIATEv3.2 (Profile ID=1188)
Flares (landfill gas)	Flares - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0051)
Plastic production - Dust and VOCs	PLASTICS PRODUCTION - AVERAGE (EPA 9005)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1405) (Profile ID=9005)
Turbine (natural gas)	Natural Gas Turbine	USEPA (2002) SPECIATEv3.2 (Profile ID=0007)
Direct entry - Nitric acid plant	CHEMICAL MANUFACTURING - AVERAGE (EPA 9004)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1404) (Profile ID=9004)
Fugitive Emissions - Carbon Disulfide	Solvent Utilization: Carbon Disulfide	USEPA (2002) SPECIATEv3.2 (Profile ID=8075)
Organic liquid storage	Surface Coating - Primer - Mineral Spirits	USEPA (2002) SPECIATEv3.2 (Profile ID=0225)
Direct entry - petroleum refining	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Fuel loading - ULP	Petrol Vapour	Pers Comm. Peter Jones, BP Bulwer Refinery (2001) (Average profile (measured and calculated) from a range of BP petrol batches across Australian BP refineries)
Fuel loading - naphtha	Diesel Vapour	Pers Comm. Peter Jones, Bulwer Refinery (2001) Average Diesel Vapour Concentration from diesel produced at BP refineries around

EET name	Speciation Profile Name	Reference
		Australia
Direct entry - organics, ammonia, HCl	Acrylic acid	Speciation profile to allow the direct entry of Acrylic acid
Direct entry - primary aluminium production	Primary Aluminium Production	USEPA (2002) SPECIATEv3.2 (Profile ID=1202)
Internal Combustion Engine (LPG)	LPG Combustion	NPI EET Manual for Boilers, Version 1.2 and USEPA (1996) AP42 Chapter 1.5 LPG Combustion
Direct entry - petroleum refinery (Clyde)	PETROLEUM INDUSTRY - AVERAGE (EPA 9012)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1412) (Profile ID=9021)
Asphalt Manufacturing (batch mix, natural gas-fired dryer)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Asphalt manufacturing (drum mix, natural gas-fired dryer)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Asphalt manufacturing (drum mix, oil fired)	External Combustion Boiler - Distillate Oil	USEPA (2002) SPECIATEv3.2 (Profile ID=0002)
Fuel storage - jet fuel	Fixed Roof Tank - Commercial Jet Fuel (Jet A)	USEPA (2002) SPECIATEv3.2 (Profile ID=0100)
Direct entry - coke production	Coke Oven Blast Furnace Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0217)
Direct entry - iron and steel production	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Direct entry - ceramics production	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Direct entry - secondary aluminium	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Direct entry - criteria pollutants and fluoride	Primary Aluminium Production	USEPA (2002) SPECIATEv3.2 (Profile ID=1202)
Airport activities (space heaters, boilers and emergency generators)	External Combustion Boiler - Natural Gas	USEPA (2002) SPECIATEv3.2 (Profile ID=0003)
Airport activities (solvent and paint usage)	Surface Coatings - General	USEPA (2002) SPECIATEv3.2 & Carter (2004) Speciation Profile for mineral spirits (Profile ID=2425)
Airport activities (aircraft refuelling)	Jet fuel evaporation (jet a)	CARB (2003) Jet fuel evaporation (jet a)
Airport activities (fuel and organic liquid storage)	Jet fuel evaporation (jet a)	CARB (2003) Jet fuel evaporation (jet a)
Cutback bitumen (kerosene cutter)	MINERAL PRODUCTS - AVERAGE (EPA 9011)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1411) (Profile ID=9020)
Cutback bitumen (flux oil)	MINERAL PRODUCTS - AVERAGE (EPA 9011)	CARB (2003) ARB Organic Gas Speciation Profiles 19/03/2003 (ID = 1411) (Profile ID=9020)
Vehicle emissions	Diesel vehicle exhaust	CARB (2003) Diesel vehicle exhaust - farm equipment (light and heavy)