

## **APPENDIX 6-F: EMISSIONS INVENTORY PROJECTIONS**

**VEHICLE EMISSION PROJECTIONS, SCENARIO 1 (2000 AND 2005)**

2000									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	71600	69500	37100	33200	22900	6610	4180	1910	247000
NOx	57100	56900	28700	24200	17200	4800	3500	1420	194000
CO	506000	544000	255000	242000	185000	55300	34300	8990	1830000
PM <sub>10</sub>	2710	2720	1390	1060	710	196	164	76.4	9030
SO <sub>2</sub>	2250	1940	1950	580	245	153	116	42.4	7280
Pb	95.8	95.8	50.2	58.2	35.7	8.3	7	1.89	353
Acetaldehyde	1270	1760	979	733	430	110	110	49.1	5450
Benzene	2280	2410	1080	1040	855	221	149	52.2	8090
1,3-Butadiene	255	249	127	121	86.7	25.2	16.3	5.23	886
Formaldehyde	995	1250	681	553	341	90.3	79.5	32.4	4020
PAH (Semi-Volatile)	98.2	138	76.9	57	33.2	8.47	8.55	3.88	424
PAH as %wt of PM <sub>10</sub>	1.98	2.82	1.59	0.99	0.52	0.13	0.17	0.1	8.29
Total PAH	100	141	78.5	58	33.7	8.59	8.72	3.99	432
Toluene	3820	3720	1980	1850	1280	371	234	92.3	13300
Xylenes (o,m,p)	3300	3230	1730	1610	1110	323	201	82.2	11600
PM <sub>2.5</sub>	2440	2450	1250	958	639	177	148	68.8	8130
2005									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	67800	67100	37800	32400	21100	6370	3780	1900	238000
NOx	51400	55300	28100	24200	15900	4270	3150	1320	184000
CO	414000	508000	237000	228000	160000	45500	27600	7330	1630000
PM <sub>10</sub>	2560	2560	1350	1040	656	196	153	73.9	8580
SO <sub>2</sub>	2480	2250	1950	612	278	166	133	45.9	7920
Pb	5.81	5.81	3.1	2.74	1.92	0.58	0.34	0.16	20.5
Acetaldehyde	1250	1870	1060	782	424	110	105	50.5	5660
Benzene	2090	2260	984	802	754	205	126	36.7	7250
1,3-Butadiene	203	207	110	98.5	65.6	20.6	11.9	4.32	721
Formaldehyde	892	1210	688	524	295	82.3	69.1	31.5	3790
PAH (Semi-Volatile)	97.9	148	84.1	61.5	33.2	8.53	8.32	4.01	445
PAH as %wt of PM <sub>10</sub>	2.18	3.1	1.79	1.13	0.57	0.15	0.19	0.12	9.22
Total PAH	100	151	85.9	62.6	33.7	8.68	8.5	4.13	454
Toluene	3220	3250	1820	1600	1040	321	183	82.4	11500
Xylenes (o,m,p)	2800	2850	1600	1410	910	280	159	73.6	10100
PM <sub>2.5</sub>	2300	2300	1210	932	590	177	137	66.5	7720

HC = Hydrocarbons

Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 1 (2010 AND 2020)**

2010 Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	66600	59200	36700	32000	18500	6080	3370	1910	224000
NOx	48800	47300	26100	23400	13100	3860	2750	1220	167000
CO	364000	328000	183000	199000	109000	35000	19000	5410	1240000
PM <sub>10</sub>	2410	2440	1330	1020	618	194	143	73.1	8230
SO <sub>2</sub>	2770	2610	2190	705	313	178	152	53	8970
Pb	5.95	5.95	3.35	2.96	1.95	0.61	0.35	0.17	21.3
Acetaldehyde	1300	1580	1040	814	367	106	94.9	52.8	5360
Benzene	2010	1800	908	734	607	186	104	32.5	6380
1,3-Butadiene	173	144	87.1	81.7	46.4	16.4	8.4	3.61	561
Formaldehyde	862	979	639	511	240	73.4	58.4	31.8	3400
PAH (Semi-Volatile)	102	126	82.7	64.5	28.9	8.32	7.53	4.21	424
PAH as %wt of PM <sub>10</sub>	2.35	3.43	2.05	1.31	0.63	0.17	0.21	0.14	10.3
Total PAH	104	129	84.8	65.8	29.5	8.49	7.74	4.35	434
Toluene	2890	2470	1550	1410	792	271	141	75.1	9600
Xylenes (o,m,p)	2510	2140	1370	1250	693	236	122	66.9	8390
PM <sub>2.5</sub>	2170	2200	1200	922	556	175	129	65.8	7410
<b>2020</b>									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	65100	57400	39300	30300	16600	6420	3220	2230	221000
NOx	42500	44300	24600	19700	10300	3510	2450	1230	149000
CO	186000	167000	97500	78000	47700	22100	9490	3950	612000
PM <sub>10</sub>	2540	2490	1520	1130	617	224	144	84.1	8750
SO <sub>2</sub>	3190	3180	2620	854	348	189	178	66	10600
Pb	6.06	6.06	3.77	3.29	1.94	0.66	0.35	0.19	22.3
Acetaldehyde	1360	1600	1190	694	325	135	98.7	78.6	5490
Benzene	1900	1610	875	512	485	206	91.2	36.6	5720
1,3-Butadiene	141	111	74.3	51.7	30.9	16	6.4	3.89	435
Formaldehyde	868	960	705	419	203	88.6	58.6	45.7	3350
PAH (Semi-Volatile)	108	128	94.8	55.2	25.7	10.6	7.88	6.29	436
PAH as %wt of PM <sub>10</sub>	3.33	4.56	3.17	1.91	0.84	0.27	0.28	0.23	14.6
Total PAH	111	132	98	57.2	26.6	10.9	8.16	6.52	451
Toluene	2520	2090	1480	1080	599	275	117	85.2	8240
Xylenes (o,m,p)	2160	1780	1280	932	511	237	98.5	75.6	7070
PM <sub>2.5</sub>	2290	2240	1370	1010	555	201	129	75.7	7880

HC = Hydrocarbons

Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 2 (2000 AND 2005)**

2000									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	71600	69500	36800	33200	22900	6680	4180	1910	247000
NOx	57100	57000	28700	24200	17200	4810	3500	1420	194000
CO	506000	544000	255000	242000	185000	55300	34300	8990	1830000
PM <sub>10</sub>	2710	2720	1390	1060	710	196	164	76.4	9030
SO <sub>2</sub>	2220	1940	1950	580	245	155	116	42.4	7250
Pb	102	95.8	50.2	58.2	35.7	8.32	7	1.89	359
Acetaldehyde	1270	1760	980	734	430	110	110	49.2	5450
Benzene	2280	2410	1080	1040	855	222	149	52.2	8090
1,3-Butadiene	255	249	127	121	86.7	25.2	16.3	5.23	886
Formaldehyde	996	1250	681	553	341	90.3	79.6	32.4	4020
PAH (Semi-Volatile)	98.2	138	76.9	57	33.2	8.47	8.56	3.88	424
PAH as %wt of PM <sub>10</sub>	1.98	2.82	1.59	0.99	0.52	0.13	0.17	0.1	8.29
Total PAH	100	141	78.5	58	33.7	8.59	8.72	3.99	432
Toluene	3820	3720	1960	1850	1280	375	234	92.3	13300
Xylenes (o,m,p)	3300	3230	1710	1610	1110	326	201	82.2	11600
PM <sub>2.5</sub>	2440	2450	1250	958	639	177	148	68.8	8130
2005									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	66400	65400	37100	31800	20600	6200	3670	1880	233000
NOx	47600	52100	26600	22900	15100	4040	2980	1220	173000
CO	395000	479000	228000	218000	152000	42500	25900	7370	1550000
PM <sub>10</sub>	2440	2420	1320	1020	629	188	144	72.3	8220
SO <sub>2</sub>	1420	1460	796	608	156	106	86.2	45.6	4680
Pb	6.42	5.75	3.07	2.72	1.9	0.57	0.34	0.16	20.9
Acetaldehyde	1200	1780	1030	751	406	104	100	49.4	5420
Benzene	2180	2250	1010	774	761	212	125	36	7350
1,3-Butadiene	194	197	107	94.6	62.8	19.6	11.2	4.22	690
Formaldehyde	854	1160	665	504	283	78.1	65.5	30.8	3640
PAH (Semi-Volatile)	93.8	141	81.2	59.1	31.8	8.1	7.89	3.92	427
PAH as %wt of PM <sub>10</sub>	2.07	2.93	1.75	1.11	0.55	0.14	0.18	0.11	8.84
Total PAH	95.8	144	82.9	60.2	32.3	8.24	8.06	4.04	435
Toluene	3110	3130	1770	1550	999	307	175	81.2	11100
Xylenes (o,m,p)	2700	2740	1560	1370	877	268	152	72.6	9730
PM <sub>2.5</sub>	2190	2170	1190	914	566	169	130	65	7400

HC = Hydrocarbons

Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 2 (2010 AND 2020)**

2010									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	62900	55800	35000	30400	17600	5720	3150	1840	212000
NO <sub>x</sub>	36900	38000	20900	19100	10600	2990	2210	914	131000
CO	340000	300000	173000	184000	100000	31600	17100	5580	1150000
PM <sub>10</sub>	2070	2050	1150	900	541	172	120	62.6	7070
SO <sub>2</sub>	825	760	429	368	20.8	73.2	44.5	22.1	2540
Pb	6.45	5.73	3.23	2.87	1.89	0.59	0.34	0.16	21.3
Acetaldehyde	1140	1380	932	730	326	93.1	81.7	47.8	4730
Benzene	2110	1800	921	685	609	194	102	30.6	6440
1,3-Butadiene	152	126	78	73.2	41.2	14.3	7.24	3.26	495
Formaldehyde	758	855	572	458	213	64.3	50.3	28.7	3000
PAH (Semi-Volatile)	89.8	110	74	57.8	25.7	7.28	6.49	3.81	375
PAH as %wt of PM <sub>10</sub>	2.02	2.88	1.77	1.15	0.55	0.15	0.17	0.12	8.81
Total PAH	91.8	113	75.8	59	26.2	7.43	6.66	3.93	383
Toluene	2610	2220	1430	1300	722	244	125	70.5	8720
Xylenes (o,m,p)	2250	1920	1260	1150	629	212	107	62.8	7590
PM <sub>2.5</sub>	1860	1840	1040	810	487	154	108	56.3	6360
2020									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	58000	51000	35300	27600	15100	5680	2830	2010	198000
NO <sub>x</sub>	18500	20200	11000	8380	4030	1440	1090	517	65200
CO	189000	164000	98300	79300	48200	21300	9250	4240	613000
PM <sub>10</sub>	1750	1600	1010	807	454	161	92.5	54.1	5930
SO <sub>2</sub>	833	756	469	395	22.6	74.7	43.5	24.2	2620
Pb	6.4	5.46	3.42	3	1.74	0.6	0.31	0.17	21.1
Acetaldehyde	974	1120	843	507	236	97.5	67.2	54.6	3900
Benzene	1690	1380	751	406	430	182	75.9	27.7	4940
1,3-Butadiene	100	77.7	52.7	37.8	22.5	11.6	4.36	2.71	310
Formaldehyde	619	671	500	306	148	64	39.9	31.8	2380
PAH (Semi-Volatile)	77	89.3	67.2	40.4	18.7	7.68	5.36	4.37	310
PAH as %wt of PM <sub>10</sub>	2.29	2.94	2.1	1.37	0.62	0.19	0.18	0.15	9.83
Total PAH	79.3	92.2	69.3	41.7	19.3	7.87	5.54	4.52	320
Toluene	1990	1640	1190	889	486	216	89.1	69.6	6560
Xylenes (o,m,p)	1670	1370	1020	762	408	184	73.6	61.7	5550
PM <sub>2.5</sub>	1580	1440	907	726	409	145	83.3	48.7	5340

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Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NO<sub>x</sub> = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 3 (2000 AND 2005)**

2000									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	71600	69500	37100	33200	22900	6610	4180	1910	247000
NOx	57100	57000	28700	24200	17200	4810	3500	1420	194000
CO	506000	544000	255000	242000	185000	55300	34300	8990	1830000
PM <sub>10</sub>	2710	2720	1390	1060	710	196	164	76.4	9030
SO <sub>2</sub>	2200	1940	1950	583	245	153	115	42.5	7230
Pb	102	95.8	50.2	58.2	35.7	8.32	7	1.89	359
Acetaldehyde	1270	1760	980	734	430	110	110	49.2	5450
Benzene	2280	2330	1090	1090	855	221	145	55	8060
1,3-Butadiene	255	249	127	121	86.7	25.2	16.3	5.23	886
Formaldehyde	996	1250	681	553	341	90.3	79.6	32.4	4020
PAH (Semi-Volatile)	98.2	138	76.9	57	33.2	8.47	8.56	3.88	424
PAH as %wt of PM <sub>10</sub>	1.98	2.82	1.59	0.99	0.52	0.13	0.17	0.1	8.29
Total PAH	100	141	78.5	58	33.7	8.59	8.72	3.99	432
Toluene	3820	3720	1980	1850	1280	371	234	92.3	13300
Xylenes (o,m,p)	3300	3230	1730	1610	1110	323	201	82.2	11600
PM <sub>2.5</sub>	2440	2450	1250	958	639	177	148	68.8	8130
2005									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	65400	63800	35900	31200	20200	6090	3590	1820	228000
NOx	47700	52100	26600	22900	15100	4040	2980	1220	173000
CO	377000	459000	219000	209000	145000	40700	24700	7040	1480000
PM <sub>10</sub>	2440	2420	1320	1020	629	188	144	72.3	8220
SO <sub>2</sub>	1030	1350	796	608	156	71.3	79.8	45.6	4140
Pb	6.42	5.75	3.07	2.72	1.9	0.57	0.34	0.16	20.9
Acetaldehyde	1170	1740	1010	735	396	102	97.6	48.3	5300
Benzene	1990	2040	935	757	688	194	114	35.1	6750
1,3-Butadiene	189	193	104	92.6	61.2	19.1	11	4.13	675
Formaldehyde	834	1130	651	493	275	76.3	63.9	30.1	3550
PAH (Semi-Volatile)	91.5	138	79.5	57.8	31	7.91	7.7	3.84	417
PAH as %wt of PM <sub>10</sub>	2.07	2.93	1.75	1.11	0.55	0.14	0.18	0.11	8.84
Total PAH	93.6	140	81.3	58.9	31.5	8.05	7.87	3.95	426
Toluene	3040	3030	1700	1510	974	300	170	77.7	10800
Xylenes (o,m,p)	2630	2640	1490	1330	854	261	147	68.9	9420
PM <sub>2.5</sub>	2190	2170	1190	914	566	169	130	65	7400

HC = Hydrocarbons

Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 3 (2010 AND 2020)**

2010									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	60100	52800	32900	29000	16900	5480	3000	1720	202000
NOx	36200	37500	20700	18800	10400	2930	2180	902	130000
CO	304000	269000	158000	169000	91600	28700	15300	4930	1040000
PM <sub>10</sub>	2100	2100	1210	932	545	174	123	65.1	7250
SO <sub>2</sub>	331	322	182	149	20.8	27.9	18.8	9.73	1060
Pb	6.45	5.73	3.23	2.87	1.89	0.59	0.34	0.16	21.3
Acetaldehyde	1060	1290	870	684	308	87.1	76.1	44.2	4410
Benzene	1650	1370	765	643	478	153	78.1	28.2	5160
1,3-Butadiene	141	117	72.8	68.6	38.9	13.4	6.74	3.01	461
Formaldehyde	702	795	534	429	201	60.1	46.9	26.6	2800
PAH (Semi-Volatile)	83.2	102	69.1	54.2	24.3	6.82	6.04	3.52	349
PAH as %wt of PM <sub>10</sub>	2.05	2.94	1.86	1.19	0.56	0.15	0.18	0.12	9.06
Total PAH	85.2	105	71	55.4	24.8	6.96	6.22	3.64	358
Toluene	2420	2040	1310	1210	680	228	116	63.9	8070
Xylenes (o,m,p)	2080	1750	1130	1060	588	196	98.3	56.1	6960
PM <sub>2.5</sub>	1890	1890	1090	839	490	156	111	58.6	6530
2020									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	53000	45900	31500	25100	13800	5160	2560	1820	179000
NOx	16600	18700	10100	7600	3540	1260	1000	472	59300
CO	124000	106000	65000	51200	31200	14600	5860	2880	400000
PM <sub>10</sub>	1760	1630	1050	828	457	162	93.9	55.9	6030
SO <sub>2</sub>	343	339	208	165	22.6	29.1	19.4	11.2	1140
Pb	6.4	5.46	3.42	3	1.74	0.6	0.31	0.17	21.1
Acetaldehyde	743	843	650	377	179	76.2	50.4	43.5	2960
Benzene	1080	854	513	315	269	118	47.2	22.6	3220
1,3-Butadiene	76.6	58.5	40.6	28.1	17	9.05	3.27	2.15	235
Formaldehyde	473	505	386	227	112	50	29.9	25.3	1810
PAH (Semi-Volatile)	58.8	67.2	51.9	30	14.1	6.01	4.02	3.48	236
PAH as %wt of PM <sub>10</sub>	2.31	2.98	2.18	1.41	0.62	0.19	0.18	0.15	10
Total PAH	61.1	70.2	54.1	31.4	14.8	6.2	4.2	3.63	246
Toluene	1630	1320	961	727	399	178	71.7	58.2	5340
Xylenes (o,m,p)	1340	1060	803	608	326	149	57.2	50.5	4400
PM <sub>2.5</sub>	1590	1460	944	745	411	146	84.5	50.3	5430

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SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 4 (2000 AND 2005)**

2000									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	71600	69500	37100	33200	22900	6610	4180	1910	247000
NOx	57100	57000	28700	24200	17200	4810	3500	1420	194000
CO	506000	544000	255000	242000	185000	55300	34300	8990	1830000
PM <sub>10</sub>	2710	2720	1390	1060	710	196	164	76.4	9030
SO <sub>2</sub>	2210	1940	1950	583	245	154	116	42.5	7240
Pb	102	95.8	50.2	58.2	35.7	8.32	7	1.89	359
Acetaldehyde	1270	1760	980	734	430	110	110	49.2	5450
Benzene	2280	2340	1090	1090	855	221	145	55	8070
1,3-Butadiene	255	249	127	121	86.7	25.2	16.3	5.23	886
Formaldehyde	996	1250	681	553	341	90.3	79.6	32.4	4020
PAH (Semi-Volatile)	98.2	138	76.9	57	33.2	8.47	8.56	3.88	424
PAH as %wt of PM <sub>10</sub>	1.98	2.82	1.59	0.99	0.52	0.13	0.17	0.1	8.29
Total PAH	100	141	78.5	58	33.7	8.59	8.72	3.99	432
Toluene	3820	3720	1980	1850	1280	371	234	92.3	13300
Xylenes (o,m,p)	3300	3230	1730	1610	1110	323	201	82.2	11600
PM <sub>2.5</sub>	2440	2450	1250	958	639	177	148	68.8	8130
2005									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	64800	63300	35600	30800	20000	6030	3570	1790	226000
NOx	47900	52300	26700	23000	15200	4060	2990	1230	173000
CO	376000	459000	219000	209000	145000	40700	24700	7020	1480000
PM <sub>10</sub>	2440	2420	1320	1020	629	188	144	72.3	8220
SO <sub>2</sub>	1420	1460	796	608	156	106	86.2	45.6	4680
Pb	6.42	5.75	3.07	2.72	1.9	0.57	0.34	0.16	20.9
Acetaldehyde	1170	1740	1000	734	395	102	97.4	48.2	5290
Benzene	1520	1490	781	754	509	150	83.7	34.9	5320
1,3-Butadiene	189	192	104	92.5	61.1	19.1	11	4.12	673
Formaldehyde	832	1130	650	492	275	76.2	63.8	30.1	3550
PAH (Semi-Volatile)	91.3	137	79.4	57.7	30.9	7.89	7.69	3.83	416
PAH as %wt of PM <sub>10</sub>	2.07	2.93	1.75	1.11	0.55	0.14	0.18	0.11	8.84
Total PAH	93.4	140	81.2	58.8	31.5	8.03	7.86	3.94	425
Toluene	3010	3000	1680	1490	964	297	169	76.6	10700
Xylenes (o,m,p)	2600	2610	1470	1310	843	257	145	67.7	9300
PM <sub>2.5</sub>	2190	2170	1190	914	566	169	130	65	7400

HC = Hydrocarbons

Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 4 (2010 AND 2020)**

2010									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	59300	52000	32400	28500	16700	5390	2960	1690	199000
NOx	36100	37400	20700	18800	10400	2940	2170	899	129000
CO	299000	265000	156000	167000	90400	28200	15100	4830	1030000
PM <sub>10</sub>	2060	2050	1190	913	548	171	120	63.6	7110
SO <sub>2</sub>	331	322	182	149	20.8	27.9	18.8	9.73	1060
Pb	6.45	5.73	3.23	2.87	1.89	0.59	0.34	0.16	21.3
Acetaldehyde	1040	1260	854	674	304	85.6	74.5	43.1	4330
Benzene	1200	977	609	600	340	112	56.1	26.3	3920
1,3-Butadiene	138	115	71.4	67.6	38.4	13.2	6.6	2.94	453
Formaldehyde	690	779	524	423	199	59.1	45.9	25.9	2750
PAH (Semi-Volatile)	81.7	100	67.8	53.4	23.9	6.7	5.92	3.44	343
PAH as %wt of PM <sub>10</sub>	2.02	2.88	1.82	1.16	0.56	0.15	0.17	0.12	8.88
Total PAH	83.7	103	69.7	54.5	24.5	6.85	6.09	3.56	352
Toluene	2370	1990	1280	1180	666	223	113	62.1	7890
Xylenes (o,m,p)	2030	1700	1100	1030	573	191	95.7	54.3	6770
PM <sub>2.5</sub>	1860	1840	1070	822	493	154	108	57.3	6400
<b>2020</b>									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	52000	45000	30900	24500	13500	5050	2510	1790	175000
NOx	16800	18700	10200	7670	3630	1280	1010	471	59700
CO	118000	100000	62000	48300	29500	14000	5530	2770	380000
PM <sub>10</sub>	1750	1600	1030	817	459	160	92.5	55	5970
SO <sub>2</sub>	343	339	208	165	22.6	29.1	19.4	11.2	1140
Pb	6.4	5.46	3.42	3	1.74	0.6	0.31	0.17	21.1
Acetaldehyde	714	805	623	358	170	73.7	47.9	41.9	2830
Benzene	708	551	374	276	164	80	30.6	20.2	2200
1,3-Butadiene	73.6	55.8	39	26.7	16.2	8.75	3.11	2.08	225
Formaldehyde	454	482	370	216	106	48.4	28.5	24.4	1730
PAH (Semi-Volatile)	56.5	64.1	49.8	28.5	13.5	5.81	3.82	3.36	225
PAH as %wt of PM <sub>10</sub>	2.28	2.94	2.15	1.39	0.62	0.19	0.18	0.15	9.9
Total PAH	58.8	67.1	51.9	29.9	14.1	6	4	3.5	235
Toluene	1570	1260	923	691	381	171	68.7	56.1	5120
Xylenes (o,m,p)	1280	1010	765	571	308	142	54.3	48.5	4180
PM <sub>2.5</sub>	1570	1440	931	736	413	144	83.3	49.5	5370

HC = Hydrocarbons

Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 5 (2000 AND 2005)**

2000									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	71600	69500	37100	33200	22900	6610	4180	1910	247000
NOx	57100	57000	28700	24200	17200	4810	3500	1420	194000
CO	506000	544000	255000	242000	185000	55300	34300	8990	1830000
PM <sub>10</sub>	2710	2720	1390	1060	710	196	164	76.4	9030
SO <sub>2</sub>	2210	1940	1950	583	245	154	116	42.5	7240
Pb	102	95.8	50.2	58.2	35.7	8.32	7	1.89	359
Acetaldehyde	1270	1760	980	734	430	110	110	49.2	5450
Benzene	2280	2340	1090	1090	855	221	145	55	8070
1,3-Butadiene	255	249	127	121	86.7	25.2	16.3	5.23	886
Formaldehyde	996	1250	681	553	341	90.3	79.6	32.4	4020
PAH (Semi-Volatile)	98.2	138	76.9	57	33.2	8.47	8.56	3.88	424
PAH as %wt of PM <sub>10</sub>	1.98	2.82	1.59	0.99	0.52	0.13	0.17	0.1	8.29
Total PAH	100	141	78.5	58	33.7	8.59	8.72	3.99	432
Toluene	3820	3720	1980	1850	1280	371	234	92.3	13300
Xylenes (o,m,p)	3300	3230	1730	1610	1110	323	201	82.2	11600
PM <sub>2.5</sub>	2440	2450	1250	958	639	177	148	68.8	8130
2005									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	64800	63300	35600	30800	20000	6030	3570	1790	226000
NOx	47900	52300	26700	23000	15200	4060	2990	1230	173000
CO	376000	459000	219000	209000	145000	40700	24700	7020	1480000
PM <sub>10</sub>	2440	2420	1320	1020	629	188	144	72.3	8220
SO <sub>2</sub>	1420	1460	796	608	156	106	86.2	45.6	4680
Pb	6.42	5.75	3.07	2.72	1.9	0.57	0.34	0.16	20.9
Acetaldehyde	1170	1740	1000	734	395	102	97.4	48.2	5290
Benzene	1520	1490	781	754	509	150	83.7	34.9	5320
1,3-Butadiene	189	192	104	92.5	61.1	19.1	11	4.12	673
Formaldehyde	832	1130	650	492	275	76.2	63.8	30.1	3550
PAH (Semi-Volatile)	91.3	137	79.4	57.7	30.9	7.89	7.69	3.83	416
PAH as %wt of PM <sub>10</sub>	2.07	2.93	1.75	1.11	0.55	0.14	0.18	0.11	8.84
Total PAH	93.4	140	81.2	58.8	31.5	8.03	7.86	3.94	425
Toluene	3010	3000	1680	1490	964	297	169	76.6	10700
Xylenes (o,m,p)	2600	2610	1470	1310	843	257	145	67.7	9300
PM <sub>2.5</sub>	2190	2170	1190	914	566	169	130	65	7400

HC = Hydrocarbons

Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 5 (2010 AND 2020)**

2010 Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	59300	52000	32300	28500	16600	5380	2960	1690	199000
NOx	36100	37400	20700	18800	10400	2950	2170	899	129000
CO	299000	265000	156000	167000	90300	28200	15100	4830	1030000
PM <sub>10</sub>	2060	2050	1190	913	548	171	120	63.6	7110
SO <sub>2</sub>	331	322	182	149	20.8	27.9	18.8	9.73	1060
Pb	6.45	5.73	3.23	2.87	1.89	0.59	0.34	0.16	21.3
Acetaldehyde	1040	1260	853	674	304	85.6	74.5	43.1	4330
Benzene	1200	970	607	599	339	112	55.8	26.3	3910
1,3-Butadiene	138	115	71.4	67.6	38.4	13.2	6.6	2.94	453
Formaldehyde	690	779	524	423	198	59.1	45.9	25.9	2740
PAH (Semi-Volatile)	81.6	99.9	67.8	53.4	23.9	6.69	5.91	3.43	343
PAH as %wt of PM <sub>10</sub>	2.02	2.88	1.82	1.16	0.56	0.15	0.17	0.12	8.88
Total PAH	83.6	103	69.6	54.5	24.5	6.84	6.09	3.55	352
Toluene	2370	1990	1280	1180	666	222	113	62.1	7880
Xylenes (o,m,p)	2030	1690	1100	1030	573	191	95.7	54.3	6770
PM <sub>2.5</sub>	1860	1840	1070	822	493	154	108	57.3	6400
<b>2020</b>									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	52000	44900	30900	24400	13500	5050	2510	1790	175000
NOx	16800	18700	10200	7690	3630	1280	1010	472	59800
CO	118000	100000	61800	48200	29400	13900	5510	2760	379000
PM <sub>10</sub>	1750	1600	1030	817	459	160	92.5	55	5970
SO <sub>2</sub>	343	339	208	165	22.6	29.1	19.4	11.2	1140
Pb	6.4	5.46	3.42	3	1.74	0.6	0.31	0.17	21.1
Acetaldehyde	713	804	623	358	170	73.6	47.9	41.9	2830
Benzene	705	548	372	275	164	79.8	30.4	20.2	2190
1,3-Butadiene	73.5	55.7	38.9	26.7	16.2	8.74	3.1	2.08	225
Formaldehyde	453	481	370	216	106	48.3	28.4	24.4	1730
PAH (Semi-Volatile)	56.4	64	49.7	28.5	13.4	5.8	3.82	3.35	225
PAH as %wt of PM <sub>10</sub>	2.28	2.94	2.15	1.39	0.62	0.19	0.18	0.15	9.9
Total PAH	58.7	67	51.8	29.9	14.1	5.99	4	3.5	235
Toluene	1570	1260	922	690	380	171	68.6	56.1	5120
Xylenes (o,m,p)	1280	1010	764	571	308	142	54.2	48.5	4170
PM <sub>2.5</sub>	1570	1440	931	736	413	144	83.3	49.5	5370

HC = Hydrocarbons

Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 6 (2000 AND 2005)**

2000									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	71600	69500	37100	33200	22900	6610	4180	1910	247000
NOx	57100	57000	28700	24200	17200	4810	3500	1420	194000
CO	506000	544000	255000	242000	185000	55300	34300	8990	1830000
PM <sub>10</sub>	2710	2720	1390	1060	710	196	164	76.4	9030
SO <sub>2</sub>	2210	1940	1950	583	245	154	116	42.5	7240
Pb	102	95.8	50.2	58.2	35.7	8.32	7	1.89	359
Acetaldehyde	1270	1760	980	734	430	110	110	49.2	5450
Benzene	2280	2340	1090	1090	855	221	145	55	8070
1,3-Butadiene	255	249	127	121	86.7	25.2	16.3	5.23	886
Formaldehyde	996	1250	681	553	341	90.3	79.6	32.4	4020
PAH (Semi-Volatile)	98.2	138	76.9	57	33.2	8.47	8.56	3.88	424
PAH as %wt of PM <sub>10</sub>	1.98	2.82	1.59	0.99	0.52	0.13	0.17	0.1	8.29
Total PAH	100	141	78.5	58	33.7	8.59	8.72	3.99	432
Toluene	3820	3720	1980	1850	1280	371	234	92.3	13300
Xylenes (o,m,p)	3300	3230	1730	1610	1110	323	201	82.2	11600
PM <sub>2.5</sub>	2440	2450	1250	958	639	177	148	68.8	8130
2005									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	63800	62300	34900	30200	19800	5930	3520	1760	222000
NOx	47100	51500	26400	22700	15000	3990	2940	1210	171000
CO	370000	451000	215000	206000	143000	40000	24300	6870	1460000
PM <sub>10</sub>	2360	2330	1310	995	618	182	139	70.7	8000
SO <sub>2</sub>	320	306	165	136	18.8	26.5	18	9.02	1000
Pb	6.42	5.75	3.07	2.72	1.9	0.57	0.34	0.16	20.9
Acetaldehyde	1150	1710	981	720	393	100	95.9	46.8	5200
Benzene	1470	1440	754	730	499	144	81.1	33.6	5150
1,3-Butadiene	186	189	102	90.7	60.7	18.8	10.8	4	662
Formaldehyde	818	1110	635	483	273	74.9	62.8	29.2	3480
PAH (Semi-Volatile)	89.7	135	77.6	56.6	30.7	7.77	7.56	3.72	409
PAH as %wt of PM <sub>10</sub>	2.01	2.82	1.74	1.08	0.54	0.14	0.17	0.11	8.61
Total PAH	91.7	138	79.3	57.7	31.3	7.9	7.73	3.83	417
Toluene	2950	2940	1640	1450	952	290	166	74.3	10500
Xylenes (o,m,p)	2540	2550	1430	1270	831	251	142	65.5	9080
PM <sub>2.5</sub>	2120	2100	1180	896	556	164	125	63.6	7200

HC = Hydrocarbons

Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons

**VEHICLE EMISSION PROJECTIONS, SCENARIO 6 (2010 AND 2020)**

2010									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	59300	52000	32300	28500	16600	5380	2960	1690	199000
NOx	36100	37400	20700	18800	10400	2950	2170	899	129000
CO	299000	265000	156000	167000	90300	28200	15100	4830	1030000
PM <sub>10</sub>	2060	2050	1180	912	547	171	120	63.5	7100
SO <sub>2</sub>	331	322	182	149	20.8	27.9	18.8	9.73	1060
Pb	6.45	5.73	3.23	2.87	1.89	0.59	0.34	0.16	21.3
Acetaldehyde	1040	1260	853	674	304	85.6	74.5	43.1	4330
Benzene	1200	970	607	599	339	112	55.8	26.3	3910
1,3-Butadiene	138	115	71.4	67.6	38.4	13.2	6.6	2.94	453
Formaldehyde	690	779	524	423	198	59.1	45.9	25.9	2740
PAH (Semi-Volatile)	81.6	99.9	67.8	53.4	23.9	6.69	5.91	3.43	343
PAH as %wt of PM <sub>10</sub>	2.01	2.87	1.82	1.16	0.56	0.15	0.17	0.12	8.86
Total PAH	83.6	103	69.6	54.5	24.5	6.84	6.09	3.55	352
Toluene	2370	1990	1280	1180	666	222	113	62.1	7880
Xylenes (o,m,p)	2030	1690	1100	1030	573	191	95.7	54.3	6770
PM <sub>2.5</sub>	1850	1840	1070	821	492	153	108	57.2	6390
<b>2020</b>									
Parameter (t/yr)	Sydney	Melbourne	Brisbane	Perth	Adelaide	Canberra	Hobart	Darwin	Total
HC	52000	44900	30900	24400	13500	5050	2510	1790	175000
NOx	16800	18700	10200	7690	3630	1280	1010	472	59800
CO	118000	100000	61800	48200	29400	13900	5510	2760	379000
PM <sub>10</sub>	1750	1600	1030	816	458	160	92.4	54.9	5960
SO <sub>2</sub>	308	290	179	147	15.1	26.9	16.6	9.42	992
Pb	6.4	5.46	3.42	3	1.74	0.6	0.31	0.17	21.1
Acetaldehyde	713	804	623	358	170	73.6	47.9	41.9	2830
Benzene	705	548	372	275	164	79.8	30.4	20.2	2190
1,3-Butadiene	73.5	55.7	38.9	26.7	16.2	8.74	3.1	2.08	225
Formaldehyde	453	481	370	216	106	48.3	28.4	24.4	1730
PAH (Semi-Volatile)	56.4	64	49.7	28.5	13.4	5.8	3.82	3.35	225
PAH as %wt of PM <sub>10</sub>	2.28	2.94	2.15	1.39	0.62	0.19	0.18	0.15	9.89
Total PAH	58.7	67	51.8	29.9	14.1	5.99	4	3.5	235
Toluene	1570	1260	922	690	380	171	68.6	56.1	5120
Xylenes (o,m,p)	1280	1010	764	571	308	142	54.2	48.5	4170
PM <sub>2.5</sub>	1570	1440	930	735	412	144	83.2	49.4	5370

HC = Hydrocarbons

Pb = Lead

VOC = Volatile organic hydrocarbons

SO<sub>2</sub> = Sulfur dioxide

NOx = Oxides of nitrogen

PM<sub>10</sub> = Particulates < 10 µm

CO = Carbon monoxide

PM<sub>2.5</sub> = Particulates < 2.5 µm

PAH = Poly-aromatic hydrocarbons