

South Durban Sulphur Dioxide Management Systems

Steering Committee :

Emission Inventory for South Durban

April 2000

Reference : DSEI1\_2000

For and on behalf of ECOSERV (Pty) Ltd  Approved by : _____  Signed : _____  Position : _____  Date : _____
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## *Abbreviations*

<b>Abbreviation</b>	<b>Meaning</b>
CFC's	Chloro fluoro carbons
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
CSIR	Council for Scientific and Industrial Research
HFO	Heavy furnace oil
IPCC	Intergovernmental Panel on Climate Change
LPG	Liquefied petroleum gas
LTO	Landing take off
NAAQS	National Ambient Air Quality Standards (US standard)
NO <sub>x</sub>	Oxides of nitrogen
PM	Particulate matter
PM <sub>2.5</sub>	Particulate matter smaller than 2.5 µm in aerodynamic diameter
PM <sub>10</sub>	Particulate matter smaller than 10 µm in aerodynamic diameter
SEA	Strategic Environmental Assessment
SO <sub>2</sub>	Sulphur dioxide
TOC	Total organic compounds
UST	Underground storage tank
VOC	Volatile organic compounds

## *Definitions*

<b>Term</b>	<b>Definition</b>
Emission factor	A representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. An emission factor is usually expressed as the mass of pollutant divided by the a unit mass, volume or duration of the activity emitting the pollutant.
Criteria pollutants	Those pollutants for which there are NAAQS set by the US EPA. Criteria pollutants include PM, NO <sub>x</sub> , CO, lead, SO <sub>2</sub> and ozone.
Primary particulate matter	Primary particulate matter includes that solid, liquid or gaseous material at the pressure and temperature in the process or stack that would be expected to become particulate at ambient temperature and pressure.
Filterable particulate matter	The particulate matter that is collected on the filter of a particulate sampling train as defined by the US EPA Method 5.
Volatile organic compounds (VOC)	Any compound of carbon excluding CO, CO <sub>2</sub> , carbonic acid, metallic carbides or carbonates and ammonium carbonate which participate in atmospheric chemical reactions. There are a number of compounds including methane, ethane and the CFC's which have negligible photochemical reactivity. These compounds are therefore excluded from the definition of VOC.
Total organic compounds (TOC)	The sum of VOC, methane, ethane and CFC's.
Oxides of Nitrogen (NO <sub>x</sub> )	Various combustion products of nitrogen are formed including nitrogen dioxide (NO <sub>2</sub> ), nitric oxide (NO) and nitrous oxide (N <sub>2</sub> O). These compounds are collectively referred to as NO <sub>x</sub> .

# 1 Introduction

ECOSERV was commissioned in February 2000 by the South Durban Metro Sulphur Dioxide Management System Steering Committee to conduct an emission inventory of major industries located in the South Durban area.

ECOSERV in conducting the emission inventory has:

- estimated the total quantities of 5 key pollutants emitted within the South Durban;
- determined the contribution to total emissions of various emission sources.

The emission inventory is intended to provide a baseline scientific database to assist the committee in strategic decision making. The emission inventory could also be used as an input to any more detailed air pollution studies of the area.

## 2 Methodology

### 2.1 Overall approach

#### 2.1.1 *Emission sources*

Essentially emissions occur from three broad categories of sources; namely point sources, area sources and mobile sources. Point sources are those facilities/plants/activities for which individual records are maintained in the inventory. Furthermore emissions from a point source can be allocated spatially to a specific point on a map. One facility may have more than one point source. As an example, emissions could be allocated to three point sources for a plant that has three stacks emitting pollutants. Area sources are those activities for which aggregated source and emissions information is maintained for entire source categories rather than for each source and covers emissions from sources too numerous and / or too small to be categorised individually. Emissions from an area source can be allocated spatially to an area on a map and not to a point. Mobile sources are by definition a sub-category of the area source category. They have however been treated here as a separate category due to the different procedures used in determining these emissions and their substantial contribution to overall emissions.

#### 2.1.2 *Choice of pollutants*

The emission inventory was developed for five pollutants namely particulate matter, carbon monoxide, total organic compounds, sulphur dioxide and oxides of nitrogen. These pollutants with the exception of total organic compounds are defined by the United States Environmental Protection Agency (US EPA) as *criteria pollutants*. The total organic compound inventory is important as it leads to the formation of the criteria pollutant ozone, and because of the adverse health effects associated directly with particular VOC's.

### 2.2 Point sources

The purpose of the emission inventory was to estimate the magnitude of each emission source for the companies included in the inventory. A questionnaire was compiled in order to estimate emissions from point sources. The questionnaire was divided into seven sections namely:

- Section 1 for providing company information.
- Section 2 for providing details of emission points.
- Section 3 for providing the results of emissions tests and / or emissions calculations.
- Section 4 for providing details of fuels burnt on site.
- Section 5 for providing production details.
- Section 6 for providing details of air cleaning equipment.
- Section 7 for providing details of solvents and other organic liquids used on site.
- Section 8 for providing details of any other emissions not covered in the balance of the questionnaire.

Originally it was proposed to include 40 companies in the emission inventory. A mailing list was prepared for these companies. These companies consisted primarily of those companies inventoried by the CSIR during the SEA study of the South Durban area. Upon subsequent inspection the mailing list was increased to 54 companies to include additional potential emission sources not included in the SEA. The following literature was mailed to each company on the mailing list:

- An emission inventory questionnaire;
- An instruction manual for the completion of the questionnaire;
- A letter of introduction from G. C. Coetsee; Chairman of the South Durban Sulphur Dioxide Management Systems Steering Committee and the Chief Air Pollution Control Officer KwaZulu-Natal.
- A stamped envelope addressed to ECOSERV for submitting completed questionnaires.

Each industry on the mailing list was contacted telephonically by ECOSERV in order to ensure timely completion of questionnaires and to assist industries with any queries they might have had. One of the primary functions of this task was to establish the nature of emissions, if any, from each facility.

Emissions were estimated using one of the following methods:

- Sulphur dioxide emissions from fuel combustion were estimated from the sulphur content of the fuel and the quantity of fuel burnt. Default sulphur contents were used when the sulphur content was not known.

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- Emissions of pollutants other than sulphur dioxide were estimated from the results of emissions tests when emission testing had been performed.
  - When no emissions tests had been performed, emissions were estimated using emission factors contained in the *Compilation Of Air Pollutant Emission Factors (AP-42)* published by the US EPA and activity data sourced from questionnaire respondents.

In certain instances questionnaires were not returned. In addition, various companies which are situated within the study area were not included in the mailing list. Emission estimates for the majority of these companies exist and are on the data base established as part of the *Durban Metro Air Quality and Emission Inventory Study* commissioned by Durban Metro Wastewater Management Department in 1997. Estimates from this database were included in emission inventory study in those instances where updated emission estimates were not available in order for the emission inventory to be as complete as possible. In addition emissions estimated from other studies including the Island View Complex Air Emission Inventory and the Bluff Mechanical Appliance Environmental Impact Assessment were included in the composite database.

### **2.3 Mobile and area sources**

Emissions from mobile and area sources contribute to the total emissions from an area. Emissions from these sources have therefore been estimated and included in the inventory so that the total magnitude and relative contribution of each emission source may be estimated. Mobile and area source emissions have been estimated as follows:

- Emissions from vehicular traffic were determined from fuel based emission factors determined for the South African vehicle fleet and from petroleum and diesel sales data. This data is available for each magisterial area. The Durban magisterial area includes an a region that falls outside the South Durban industrial basin, including for example the central business district and the Durban North suburbs. Approximately 50 % of the Durban magisterial area lies within the South Durban industrial basin. It was therefore assumed that 50 % of fuel purchased in the Durban magisterial area is consumed in the South Durban industrial basin.

- Emissions from trains were determined from fuel based emission factors and fuel usages obtained from Spoornet. 50 % of this fuel was assumed to be used in the South Durban industrial basin.
- Aircraft emissions only have a ground level effect when aircraft enter the mixing layer as they approach or leave an airport. Emission factors have been determined by the United States Environmental Protection Agency (US EPA) for most aircraft engines running at power settings typically used by aircraft during landing and taking off. These emission factors and airport activity data were used to estimate aircraft emissions at Durban International Airport.
- The results of a study of emissions from US harbours was used to determine emission factors for harbour-bound vessels and for ocean-going vessels. Emissions from Durban Harbour were then determined using these emission factors and harbour activity data obtained from Portnet.
- US EPA emission factors, which are dependant on the emission reduction controls in place, were used with petroleum and diesel sales data to estimate emissions from the marketing and distribution of petroleum products. Emissions that were estimated were transit losses and losses from service stations.

The US EPA has developed population based emission factors to account for TOC emissions from solvent evaporation. These emission factors account for emissions from dry cleaning, surface cleaning, surface coating, printing, asphalt paving and consumer solvent use. These emissions have not been estimated as part of the emission inventory as the applicability of these emission factors to South African conditions are not known. However certain of these emissions have been included in the emission inventory as point sources. Thus for example emissions from surface coatings includes emissions from can coating and new vehicle manufacturing. These emissions have been accounted for in the point source emission inventory. However the total TOC emission inventory for the south Durban industrial basin does not contain some of these sources (e.g. asphalt paving) which would indicate that the TOC emission inventory is underestimated.

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### 3 Results

The results of the emission inventory has been summarised in Figure 1. A composite database showing the results of the emission inventory has been prepared and is given in Appendix 1. In general each emission source is represented by a single entry in the database. However for the sake of simplicity it was sometimes necessary to combine multiple sources into a single database entry and to give the total emissions associated with multiple sources (e.g. an example is the emission estimate for the Island View Tank Farm. One entry is given in the database showing the total emissions from the tank farm instead of a separate entry for each storage tank in the Tank farm). The following comments are made with respect to detailed emission inventory given in Appendix 1.

- "Refinery gas" provides a considerable portion of the refineries fuel requirements. This gas consists of methane, heavier hydrocarbons and hydrogen. No emission factors are published in AP-42 for this mixture. Emissions were estimated using the mean of the emission factors given for liquid petroleum gas and methane.
- Emissions of NO<sub>x</sub> from fuel combustion at SAPREF have been estimated at 1333 ton per annum using US EPA emission factors for HFO and refinery gas as determined using the assumption given above. SAPREF have estimated these same emissions at 404 tons per annum using Shell approved emission factors.
- The burning of fuel accounts for only part of the SO<sub>2</sub> emissions at the refineries. SO<sub>2</sub> emissions from fuel combustion at the refineries have been estimated from the quantity of fuel burnt and the sulphur content of the fuel. The balance of the SO<sub>2</sub> emissions have been estimated by the refineries by calculation and emission tests. The total SO<sub>2</sub> emissions at the refineries were supplied to ECOSERV by the refineries. The accuracy of these emission estimates is dependant on the accuracy of the emission tests and calculations.
- In certain instances it was not possible to estimate process emissions as no emission tests have been performed and no published emission factors exist for the process in question. In these cases an entry has been included in the emission inventory to indicate that process emissions are expected but insufficient data exists to estimate the magnitude of these emissions.
- Emissions from processes where solvents are mixed, with or without heat, have been estimated through the use of simple emission factors for those instances where emission tests had not been performed. AP-42 notes that these emissions are highly variable. Thus for example with regard

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to varnish cooking AP-42 states the following: "*Emissions from varnish cooking range from 1 to 6 % the raw material*". Therefore it will be necessary to measure these emissions if it is required to increase the accuracy of the emission estimate.

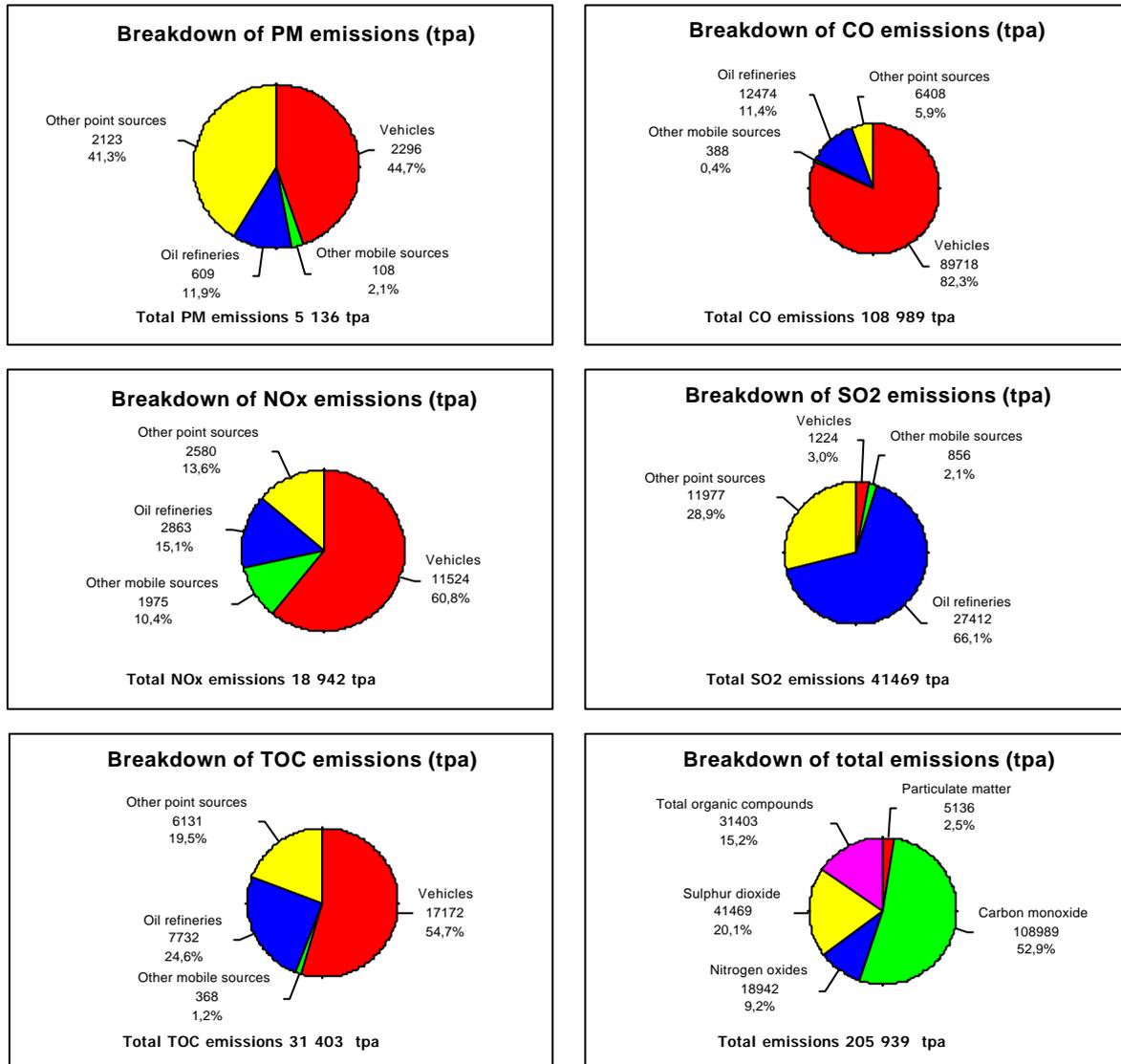
- Air cleaning equipment was taken into account in determining emissions. Thus for example, Mondi provided an efficiency of 98,5 % for the electrostatic precipitators fitted to their coal fired boilers. This efficiency was used in estimating the particulate matter emissions from coal combustion at Mondi. Similarly an efficiency of 83 % was used for the grit collectors fitted to the coal fired boilers at the Tongaat Hulett Refinery in estimating particulate matter from coal combustion on this site.
- Certain companies have estimated emissions from storage tanks on site. These estimates have been included in the emission inventory when known. The detailed listing given in Appendix 1 contains entries listing further companies which have storage tanks for which no emission estimates are available.
- Emission estimates generated from emission testing results or from mass balance calculations were used when such estimates were available. In instances where such estimates were not available emission factors were used to estimate emissions. In certain instances, inconsistencies can be identified in the results when comparing emissions estimates for similar operations due to the use of different emission estimation techniques. For example the organic emissions from the oil/water separator at SAPREF were estimated by emission factor whereas the equivalent emission at Engen was estimated by detailed calculation. Thus these emission results may not be directly comparable. The methodology used for estimating emissions at SAPREF and Engen for the pollutants under consideration (excluding SO<sub>2</sub>) is given in Table 1 and Table 2; below:

<b>Table 1 : Methodology used to estimate emissions at SAPREF</b>				
<b>Emission source</b>	<b>Emission methodology</b>			
	<b>Particulate matter</b>	<b>CO</b>	<b>NO<sub>x</sub></b>	<b>TOC</b>
Combustion	Emission factor	Emission factor	Emission factor	Emission factor
FCCU regeneration	Mass balance	Emission test results and percentage gas bypassing CO boiler as provided by SAPREF	Emission test results provided by SAPREF	Emission factor and percentage gas bypassing CO boiler as provided by SAPREF
Vacuum distillation column condensers	N/A	N/A	N/A	Emission factor for controlled emissions
Cooling towers	N/A	N/A	N/A	Emission factor
Oil / water separators	N/A	N/A	N/A	Emission factor
Miscellaneous fugitive emissions (valves, flanges, drains etc.)	N/A	N/A	N/A	Emission factor
Storage tanks	N/A	N/A	N/A	Emission calculations performed by SAPREF using Shell approved method
Venting	N/A	N/A	N/A	Emission calculation provided by SAPREF
Loading losses	N/A	N/A	N/A	Loading losses at SAPREF (excluding losses at Island View Tank Farm) were not estimated but were assumed to be negligible

<b>Table 2 : Emission methodology used to estimate emissions at Engen</b>				
<b>Emission source</b>	<b>Emission methodology</b>			
	<b>Particulate matter</b>	<b>CO</b>	<b>NO<sub>x</sub></b>	<b>TOC</b>
Combustion	Emission factor	Emission factor	Emission factor	Emission factor
FCCU regeneration	Mass balance	Emission test. No gas bypass of CO boiler.	Emission factor	Emission factor. No gas bypass of CO boiler. CO boiler assumed to be 99 % efficient.
Vacuum distillation column condensers	N/A	N/A	N/A	Emission factor for controlled emissions
Cooling towers	N/A	N/A	N/A	Emission factor
Oil / water separators	N/A	N/A	N/A	Detailed calculation performed by Engen using US EPA approved methodology
Miscellaneous fugitive emissions (valves, flanges, drains etc.)	N/A	N/A	N/A	Emission factor
Storage tanks	N/A	N/A	N/A	Detailed emission calculation performed by Engen using US EPA approved methodology
Loading losses	N/A	N/A	N/A	Detailed emission calculation performed by Engen using US EPA approved methodology

A summarised emission inventory is given in Appendix 2 giving the total emissions from each site for each pollutant.

Figure 1 : Emission inventory summary



## 4 Conclusions

The following conclusions are drawn with regard to the emission inventory.

- Motor vehicles and industrial sources are the major contributors to the particulate matter, nitrogen oxides and total organic compound emission inventories.
- Diesel powered vehicles are the major vehicular contributor to particulate matter emission inventory, whereas gasoline powered vehicles are the major vehicular contributor to the carbon monoxide and total organic compound emission inventories. Both gasoline and diesel powered vehicles contribute significantly to the nitrogen oxides inventory.
- The particulate matter inventory is likely to be underestimated as fugitive emission sources such as paved and unpaved roads, wind erosion and construction sites have been excluded from the inventory. Although in the instance of Durban South no data on the magnitude of these emissions is known, it is noted that these fugitive sources account for more than 50 % of the total emission inventory for the USA but this figure relates to the whole of the USA, not only to industrial areas like Durban South.
- Motor vehicles (especially gasoline powered vehicles) are the major source of CO emissions. It would appear that the most effective method of controlling or reducing these emissions would be through national legislation (e.g. fitting the vehicle fleet with catalytic converters or emission testing of the vehicle fleet).
- Industry is the major source of SO<sub>2</sub> emissions. The monitoring of ambient levels of SO<sub>2</sub> in Durban south therefore provide an indication of the level of industrial pollution in the area. SO<sub>2</sub> emissions could be reduced by burning fuels with a lower sulphur content.
- The TOC emission inventory is likely to be underestimated due to the fact that certain emission sources were excluded from the inventory (e.g. solvent degreasing etc.). Considerable work would still be required in improving the accuracy of this inventory, and estimating the emissions of problematic organics before a health risk assessment could be performed of organic emissions.

## 5 References

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Author: Energy Research Institute  
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Date: 1997
- II. Title: Compilation of air pollution emission factors Volume 1:  
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Office Of Air Quality Planning And Standards  
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- III. Title: Procedures for the preparation of emission inventories for  
carbon monoxide and precursors of ozone Volume 1: General  
guidance for stationary sources  
Order No: EPA-450/4-91-016  
Author: Office Of Air Quality Planning And Standards  
US EPA  
Research Triangle Park NC 27711  
Edition: First Edition  
May 1991



# *Appendix 1*

## *Detailed emission inventory listing*

## Appendix 1

Detailed emission inventory listing						
Name	Source code	PM emissions-total (tpa)	CO emissions-Total (tpa)	NOx emissions-Total (tpa)	SOx emissions-Total (tpa)	TOC emissions-Total (tpa)
Cargo Carriers Natal (Pty) Ltd	Stack1	0.22	0.14	1.53	1.44	0.04
Cookson Chemicals (Pty) Ltd	Calcine	0.38	2.63	31.66	90.09	0.04
Cookson Chemicals (Pty) Ltd	Zimtek	1.58	0.30	3.70	21.03	0.05
Cookson Chemicals (Pty) Ltd	Red Lead	0.00	0.79	9.48	26.97	0.00
Cookson Chemicals (Pty) Ltd	Anzon	0.00	2.57	30.91	0.39	0.00
Chemical Specialities	Boiler	0.07	0.04	0.40	3.63	0.02
Chemical Specialities	Thermopak	0.17	0.08	0.92	8.46	0.04
Chemical Specialities	Dowtherm	0.01	0.01	0.08	0.07	0.00
Chemical Specialities	Process emissions	0.00	0.00	0.00	0.00	44.71
Chemical Specialities	Process emissions	0.00	0.00	0.00	0.00	14.04
Chemical Specialities	Process emissions	0.00	0.00	0.00	0.00	2.16
Colas East (Pty) Ltd	BoilerBD310	2.94	1.47	16.16	147.96	0.67
AECI	Boiler emissions	no data	no data	no data	450.00	no data
BB Cereals	Stack1	20.64	7.74	9.68	51.60	0.14
BB Cereals	Stack2	7.20	2.70	3.38	18.00	0.05
BB Cereals	Stack3	0.12	0.31	1.24	0.63	0.02
BB Cereals	Stack4	0.05	0.12	0.46	0.23	0.01
BB Cereals	Stack5	0.30	0.20	2.14	2.02	0.05
Bayside Distillers	Stack1	0.36	0.18	1.98	18.13	0.08
Bayer (SA) (Pty) Ltd	Spray Drier Stack 1	0.29	0.73	2.93	9.78	0.04
Bayer (SA) (Pty) Ltd	Auxilliary boiler	0.07	0.18	0.72	2.40	0.01
Bayer (SA) (Pty) Ltd	Spray Drier Stack 2	0.21	0.53	2.13	7.11	0.03
Beier Wool Pty Ltd	Boiler	48.00	18.00	22.50	120.00	0.33
Beacon sweets	Stack1	71.14	26.68	33.35	177.84	0.49
Beacon sweets	Stack2	0.18	0.09	0.99	9.07	0.04
Beacon sweets	Stack3	0.50	0.69	4.03	0.00	0.10
Bluff Mechanical Appliance	Process emissions	88.74	0.00	0.00	0.00	0.00
BLENDCOR (SHELL & B.P.)	Stack1	0.10	0.05	0.55	5.08	0.02
Blue Ribbon bakery	Stack1	0.05	0.13	0.52	0.26	0.01
Premier milling	Fugitive emissions	89.54	0.00	0.00	0.00	no data

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Detailed emission inventory listing						
Name	Source code	PM emissions-total (tpa)	CO emissions-Total (tpa)	NOx emissions-Total (tpa)	SOx emissions-Total (tpa)	TOC emissions-Total (tpa)
Caltex Oil SA (Pty) Ltd	SB1	1.20	0.60	6.60	60.44	0.27
Caltex Oil SA (Pty) Ltd	HO1	0.33	0.22	2.33	2.20	0.06
Castrol SA Pty Ltd	Stack 1	0.28	0.14	1.52	13.90	0.06
Castrol SA Pty Ltd	Stack 2	0.18	0.09	1.02	9.31	0.04
Casual Clothing Pty Ltd	Stack1	0.08	0.04	0.46	4.23	0.02
Casual Clothing Pty Ltd	Stack2	0.08	0.04	0.46	4.23	0.02
Cladwell Clothing Manufacturer	Stack1	0.14	0.10	1.02	0.96	0.02
Coates Brothers	Process emissions	0.00	0.00	0.00	0.00	27.89
Coates Brothers	Storage tanks	0.00	0.00	0.00	0.00	no data
Cray Valley Products	Stack1	0.60	0.30	3.30	30.22	0.14
Cray Valley Products	Stack2	0.60	0.30	3.30	30.22	0.14
Cray Valley Products	Process emission vent	0.00	0.00	0.00	0.00	71.82
Cray Valley Products	Storage tanks	0.00	0.00	0.00	0.00	no data
City Steam Laundry	Stack1	3.84	1.44	1.80	9.60	0.03
Corruseal Packaging Industries Pty Ltd		0.00	0.00	0.00	0.00	0.00
Aunde Tap (Pty) Ltd	Coal Boiler	23.04	8.64	10.80	84.10	0.16
Aunde Tap (Pty) Ltd	Oil Boiler	0.53	0.26	2.90	26.59	0.12
Island View Industrialss Ltd		0.00	0.00	0.00	0.00	0.00
Ulster Carpets	Stack1					
DEFY INDUSTRIES / DEFY APPLIANCE PROP	Stack1					
DISTILLERS CORPORATION Ltd	OO198	0.60	0.30	3.30	30.22	0.14
Downtown Drycleaners	Stack1	4.13	1.55	1.94	10.32	0.03
DRUM SERVICES	Stack1	16.15	6.16	11.56	78.29	0.29
Drumco	Stack1	4.32	1.62	2.03	10.80	0.03
Dunlop Slazenger	Stack2	0.21	0.11	1.16	10.58	0.05
DUNLOP SLAZENGER	Stack1	0.00	0.00	0.00	0.00	0.00
Dunlop SA	Boiler emissions	115.58	43.34	54.18	288.96	0.79
Dunlop SA	Stack1	88.03	33.01	41.27	220.08	0.61
Dunlop SA	Stack2	88.03	33.01	41.27	220.08	0.61

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Detailed emission inventory listing						
Name	Source code	PM emissions- total (tpa)	CO emissions- Total (tpa)	NOx emissions- Total (tpa)	SOx emissions- Total (tpa)	TOC emissions- Total (tpa)
Dunlop SA	Stack3	9.98	3.74	4.68	24.96	0.07
DURBAN BULK SHIPPING		no data	no data	no data	no data	no data
DURBAN BULK SHIPPING	Fugitive emissions	no data	0.00	0.00	0.00	0.00
DURBAN CLOTHING MANUFACTURERS	Boiler3	0.15	0.07	0.82	7.51	0.03
DURBAN CLOTHING MANUFACTURERS	Boiler2	0.15	0.07	0.82	7.51	0.03
DURBAN CLOTHING MANUFACTURERS	Boiler1	0.15	0.07	0.82	7.51	0.03
Durban Fibres	Boiler stack 1	12.65	4.74	5.93	27.82	0.09
Durban Fibres	Boiler stack 2	12.65	4.74	5.93	27.82	0.09
Durban Fibres	Boiler stack 3	12.65	4.74	5.93	27.82	0.09
Durban Fibres	Boiler stack 4	12.65	4.74	5.93	27.82	0.09
Durban Fibres	Batch poly stack	0.79	0.39	4.34	39.48	0.18
Durban Fibres	CP 50 stack	0.55	1.39	5.54	1.80	0.08
Durban Fibres	CP 50 vent	0.00	0.00	0.00	0.00	2.00
Durban Fibres	Batch esterifier vent 1	0.00	0.00	0.00	0.00	0.21
Durban Fibres	Batch esterifier vent 2	0.00	0.00	0.00	0.00	0.21
Durban Fibres	Batch polymerisation vessel vent 1	0.00	0.00	0.00	0.00	0.09
Durban Fibres	Batch polymerisation vessel vent 2	0.00	0.00	0.00	0.00	0.09
Durban Fibres	Spinning quench air vents and stretchline	0.00	0.00	0.00	0.00	11.59
Durban Fibres	Batch ethylene recovery vacuum system	0.00	0.00	0.00	0.00	0.01
Durban Fibres	Continuous plant ethylene recovery vacuum system	0.00	0.00	0.00	0.00	0.03
Durban Fibres	Product Storage	0.01	0.00	0.00	0.00	
Durban Fibres	Ethylene glycol tank	0.00	0.00	0.00	0.00	0.01

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Detailed emission inventory listing						
Name	Source code	PM emissions- total (tpa)	CO emissions- Total (tpa)	NOx emissions- Total (tpa)	SOx emissions- Total (tpa)	TOC emissions- Total (tpa)
Durban Fibres	HFO tank	0.00	0.00	0.00	0.00	0.00
Durban Fibres	LFO tank	0.00	0.00	0.00	0.00	0.01
Durban Fibres	Diesel tank	0.00	0.00	0.00	0.00	0.00
Engen	Storage tanks	0.00	0.00	0.00	0.00	1921.50
Engen	Wentworth road loading	0.00	0.00	0.00	0.00	531.70
Engen	Tara rail loading	0.00	0.00	0.00	0.00	16.10
Engen	Oil / water separator	0.00	0.00	0.00	0.00	200.00
Engen	Vacuum unit condensers	0.00	0.00	0.00	0.00	0.00
Engen	Cooling towers	0.00	0.00	0.00	0.00	70.61
Engen	Fugitive emissions (valves; Fl	0.00	0.00	0.00	0.00	500.07
Engen	North flare	0.32	2.56	11.17	0.91	0.37
Engen	South flare	0.81	6.47	28.24	2.30	0.93
Engen	1-North complex - CDU and b	0.00	0.00	0.00	0.00	0.00
Engen	2-North Complex reformer pre	0.00	0.00	0.00	0.00	0.00
Engen	3-Combo visvac/TCK	0.00	0.00	0.00	0.00	0.00
Engen	4-Combo FCCU	0.00	0.00	0.00	0.00	0.00
Engen	5-South Complex	0.00	0.00	0.00	0.00	0.00
Engen	6-SAFOR	0.00	0.00	0.00	0.00	0.00
Engen	7-Asphalt	0.00	0.00	0.00	0.00	0.00
Engen	11-Sulphur 1 and 3	0.00	0.00	0.00	0.00	0.00
Engen	10-Sulphur 2	0.00	0.00	0.00	0.00	0.00
Engen	Total stack	276.37	199.43	1363.44	13017.38	49.87
Frame Textile mill	A	0.03	0.01	0.16	1.50	0.01
Frame Textile mill	B	0.03	0.01	0.16	1.50	0.01
Frame Textile mill	C	0.03	0.01	0.16	1.50	0.01
Frame Textile mill	D	0.79	0.39	4.34	39.70	0.18
Frame Textile mill	E	0.79	0.39	4.34	39.70	0.18
Frame Textile mill	F	0.79	0.39	4.34	39.70	0.18
Frame Textile mill	G	0.66	0.33	3.61	33.08	0.15
Frame Textile mill	H	0.79	0.39	4.34	39.70	0.18

## Appendix 1

Detailed emission inventory listing						
Name	Source code	PM emissions-total (tpa)	CO emissions-Total (tpa)	NOx emissions-Total (tpa)	SOx emissions-Total (tpa)	TOC emissions-Total (tpa)
Frame Textile mill	I	0.66	0.33	3.61	33.08	0.15
Frame Textile mill	J	0.00	0.00	0.00	0.00	0.00
Frame Textile mill	LPG Area source	0.50	0.69	4.01	0.35	0.10
FFS refineries	Stack1	0.31	0.77	3.08	1.57	0.05
Genrec Engineering - Elgin Works	Stack 3	0.01	0.01	0.08	0.08	0.00
Genrec Engineering - Elgin Works	Stack2	0.14	0.10	1.02	0.96	0.02
Genrec Engineering - Elgin Works	Stack1	0.02	0.02	0.17	0.16	0.00
Hermes Laundry works	Stack1	2.80	1.05	1.31	7.00	0.02
Hoescht SA (Pty) Ltd	Stack1	0.37	0.19	2.06	18.86	0.09
Tongaat Hulett Refineries Ltd	Stack1	132.21	291.65	364.56	2333.16	5.35
Tongaat Hulett Refineries Ltd	Stack2	0.00	0.00	0.00	0.00	0.00
Tongaat Hulett Refineries Ltd	Stack3	0.00	0.00	0.00	0.00	0.00
Tongaat Hulett Refineries Ltd	Stack4	0.00	0.00	0.00	0.00	0.00
Industrial Oleochemical Products Pty Ltd	JT111	4.99	2.50	27.46	251.43	1.14
Industrial Oleochemical Products Pty Ltd	JT11	0.12	0.06	0.66	6.04	0.03
Industrial Oleochemical Products Pty Ltd	Bertrams	1.92	1.06	11.51	70.48	0.40
Industrial Oleochemical Products Pty Ltd	Babcock	0.17	0.08	0.92	8.46	0.04
Industrial Oleochemical Products Pty Ltd	Rosin Crusher	No data	0.00	0.00	0.00	0.00
Kenprint (Pty) Ltd	Stack1	0.40	0.20	2.18	19.95	0.09
KING EDWARD VIII HOSPITAL	Stack1	9.98	3.74	4.68	24.96	0.07
Kingsdale Steam Laundry	Stack1	1.92	0.72	0.90	4.80	0.01
Kingsrest Tanker Wash	Stack1	59.14	22.18	27.72	147.84	0.41
Unifoods	Storage tanks	0.00	0.00	0.00	0.00	no data
Lever Brothers	Stack1	41.28	15.48	19.35	103.20	0.28
Lever Brothers	Stack2	165.12	61.92	77.40	412.80	1.14
Lever Brothers	Stack3	1.92	0.72	0.90	4.80	0.01
M.B.GLASS	Hot end Stack 3/1	4.92	6.72	39.36	0.00	0.98
Bevcan	Stack1	0.70	0.95	5.59	0.00	0.14
Bevcan	Process emissions					397.50
DIVPAC	Area1	0.42	0.57	3.36	0.00	0.08

## Appendix 1

Detailed emission inventory listing						
Name	Source code	PM emissions-total (tpa)	CO emissions-Total (tpa)	NOx emissions-Total (tpa)	SOx emissions-Total (tpa)	TOC emissions-Total (tpa)
DIVPAC	Process emissions					215.31
Divpak paper products	Area1	0.02	0.02	0.12	0.00	0.00
Mondi Paper Co Ltd	1	7.20	3.60	39.60	362.64	1.64
Mondi Paper Co Ltd	6	10.18	254.48	318.11	1187.59	4.67
Mondi Paper Co Ltd	2	7.20	3.60	39.60	362.64	1.64
Mondi Paper Co Ltd	5	10.18	254.48	318.11	1187.59	4.67
NCP Isipingo	Stack1	2.13	1.07	11.72	35.52	0.49
NCP Isipingo	4011	0.00	2177.28	0.00	0.00	200.45
NCP Isipingo	4011	0.00	2566.08	0.00	0.00	1429.06
NCP Food products	Dryer emissions	no data	0.00	0.00	0.00	0.00
Natal Portland Cement	Area1	19.28	0.00	0.00	0.00	0.00
Natcos Tank Farm	Storage tank emissions	0.00	0.00	0.00	0.00	No data
National sorghum Breweries	Stack1	57.60	21.60	27.00	144.00	0.40
NATYRE (Pty) Ltd		0.00	0.00	0.00	0.00	0.00
Non Ferrous metals	fugitive	1.36	0.00	0.00	0.00	0.00
Non Ferrous metals	IM2	1.64	0.36	1.44	12.00	0.02
Non Ferrous metals	IM1	3.72	0.00	0.00	0.00	0.00
Non Ferrous metals	B1	2.23	0.00	0.00	0.00	0.00
PAPERKEM	Boiler2	0.10	0.05	0.57	5.26	0.02
PAPERKEM	Boiler1	4.97	1.86	2.33	12.42	0.03
PAPERKEM	Wansen Burner	0.06	0.04	0.43	0.41	0.01
Plascon paints	DB-549	0.18	0.09	0.99	7.32	0.04
Plascon paints	PB-18	0.18	0.09	0.99	7.32	0.04
Plascon paints	PPBN02	0.09	0.06	0.65	0.61	0.02
Plascon paints	PPBN01	0.09	0.06	0.65	0.61	0.02
Plascon paints	PMBN01	0.07	0.04	0.47	0.44	0.01
Plascon paints	PJBN01	0.08	0.06	0.59	0.56	0.01
Plascon paints	Process emissions	6.00	0.00	0.00	0.00	292.00
Plascon paints	Storage tanks	0.00	0.00	0.00	0.00	no data
Plascon IPC	Boiler emissions	0.04	0.26	0.03	0.28	0.01

## Appendix 1

Detailed emission inventory listing						
Name	Source code	PM emissions-total (tpa)	CO emissions-Total (tpa)	NOx emissions-Total (tpa)	SOx emissions-Total (tpa)	TOC emissions-Total (tpa)
Plascon IPC	Storage tanks	0.00	0.00	0.00	0.00	0.06
Plascon IPC	Loading losses	0.00	0.00	0.00	0.00	0.04
Plascon IPC	Production fugitive emissions	5.63	0.00	0.00	0.00	27.66
Quality Products Pty Ltd	OO1	0.06	0.04	0.42	0.40	0.01
RECKITT & COLMAN	Stack1	4.32	1.62	2.03	10.80	0.03
Revertex Chemicals	B1	0.20	0.10	1.11	7.42	0.05
Revertex Chemicals	B2	0.20	0.10	1.11	7.42	0.05
Revertex Chemicals	B3	0.20	0.10	1.11	7.42	0.05
Revertex Chemicals	Process emissions	no data	no data	no data	no data	no data
Revertex Chemicals	Storage tanks	0.00	0.00	0.00	0.00	no data
Robertsons Trade Marks Pty Ltd		0.00	0.00	0.00	0.00	0.00
The Van Dyk Carpets Company	1-11979	0.00	0.00	0.00	0.00	0.00
The Van Dyk Carpets Company	Area1	0.02	0.02	0.12	0.00	0.00
Feltex Automotive Components	B1	11.68	4.38	5.48	29.20	0.08
Feltex Automotive Components	B2	4.56	1.71	2.14	11.40	0.03
Feltex Automotive Components	B3	10.24	3.84	4.80	25.60	0.07
Feltex Automotive Components	T1	0.01	0.02	0.11	0.00	0.00
Feltex Automotive Components	T2	0.01	0.02	0.11	0.00	0.00
South African Breweries	311-5k-301	52.00	19.50	24.38	141.70	0.36
South African Breweries	311-5k-001	104.00	39.00	48.75	283.40	0.72
South African Breweries	311-5k-004	52.12	19.56	25.04	148.70	0.38
South African Breweries	Diesel heater and methane gas	0.40	4.42	5.29	0.12	0.58
South African Breweries	bottle washing	0.00	0.00	0.00	0.00	0.27
South African Breweries	bottle filling	0.00	0.00	0.00	0.00	2.08
South African Breweries	can filling	0.00	0.00	0.00	0.00	0.13
South African Breweries	other fugitive	0.00	0.00	0.00	0.00	0.48
SA Ti Oxide	DGS#2	unknown	unknown	unknown	unknown	unknown
SA Ti Oxide	Sulfacid	unknown	unknown	unknown	unknown	unknown
SA Ti Oxide	Gas Producer	unknown	unknown	unknown	unknown	unknown
SA Ti Oxide	Phenol incinerator	unknown	unknown	unknown	unknown	unknown

## Appendix 1

Detailed emission inventory listing						
Name	Source code	PM emissions-total (tpa)	CO emissions-Total (tpa)	NOx emissions-Total (tpa)	SOx emissions-Total (tpa)	TOC emissions-Total (tpa)
SA Ti Oxide	Total site emissions	28.00	89.00	108.00	243.00	1.58
SASKO (Pty) Ltd	Area1	20.47	0.00	0.00	0.00	Yes
S.A.CLOTHING INDUSTRIES LTD	Stack1	21.89	8.21	10.26	54.72	0.15
Sasol Fibers	Stack1	187.46	121.80	152.25	503.44	2.23
Sasol Fibers	Storage tanks	0.00	0.00	0.00	0.00	no data
Sasol Fibers	Process emissions	0.00	0.00	0.00	0.00	5.40
Shell & Bp SA Petroleum Refineries	Lubes Stack	4.57	36.49	159.18	342.49	5.23
Shell & Bp SA Petroleum Refineries	Platformer Stack	6.93	44.63	199.47	708.96	6.62
Shell & Bp SA Petroleum Refineries	Cat Cracker Stack	279.15	12013.10	282.01	9462.90	261.36
Shell & Bp SA Petroleum Refineries	CD2 Stack	27.47	79.22	407.74	478.11	14.29
Shell & Bp SA Petroleum Refineries	Utility Stack	10.08	63.49	284.56	5.99	9.46
Shell & Bp SA Petroleum Refineries	Visbreaker Stack	1.77	14.10	61.51	3392.12	2.02
Shell & Bp SA Petroleum Refineries	Flare	1.87	14.97	65.32	1.00	2.15
Shell & Bp SA Petroleum Refineries	Vacuum distillation column co	0.00	0.00	0.00		0.00
Shell & Bp SA Petroleum Refineries	Cooling towers	0.00	0.00	0.00		73.50
Shell & Bp SA Petroleum Refineries	Oil/water separators	0.00	0.00	0.00		893.28
Shell & Bp SA Petroleum Refineries	valves; flanges; pump seals; c	0.00	0.00	0.00		904.28
Shell & Bp SA Petroleum Refineries	storage tanks	0.00	0.00	0.00		431.00
Shell & Bp SA Petroleum Refineries	venting	0.00	0.00	0.00		1838.00
Shell Chemicals	F-5401	0.00	29.75	1.49	0.35	0.56
Shell Chemicals	Benzene vent	0.00	0.00	0.00	0.00	1.05
Shell Chemicals	Tank emissions	0.00	0.00	0.00	0.00	4.01
Shell Chemicals	Loading losses	0.00	0.00	0.00	0.00	0.77
SCI	Stack1	58.32	21.96	30.96	180.26	0.56
SCI	Stack2	3.67	1.48	5.71	47.09	0.20
Illovo Sugar (Merebank)	Stack1	187.01	70.13	87.66	467.52	1.29
Springbok Laundry	Stack1	0.96	0.36	0.45	2.40	0.01
Ferron Engineers		0.00	0.00	0.00	0.00	0.00
Suncrush Ltd	Stack1					
TANKER SERVICES	Stack1	0.50	0.25	2.77	25.38	0.11

## Appendix 1

Detailed emission inventory listing						
Name	Source code	PM emissions-total (tpa)	CO emissions-Total (tpa)	NOx emissions-Total (tpa)	SOx emissions-Total (tpa)	TOC emissions-Total (tpa)
THE PORT ENGINEER - BAYHEAD TRUCKWASH		0.00	0.00	0.00	0.00	0.00
TOYOTA AUTOMOTIVE COMPONENTS		0.00	0.00	0.00	0.00	38.88
van Ommeren Tank Terminal South Africa (Pty) Ltd		0.13	0.06	0.71	6.53	0.03
Enviroserv	Stack1	0.09	0.06	0.61	0.58	0.01
WAYNE RUBBER CO (PTY) LTD		0.00	0.00	0.00	0.00	0.00
Microsteel (Pty) Ltd	Boiler	0.02	0.02	0.14	0.00	0.00
Microsteel (Pty) Ltd	Process emissions	no data	0.00	0.00	0.00	0.00
Albany Bakeries Ltd	Boiler2	0.01	0.03	0.11	0.06	0.00
Albany Bakeries Ltd	Oven1	0.16	0.41	1.62	0.82	0.02
Albany Bakeries Ltd	Oven3	0.00	0.01	0.04	0.02	0.00
Albany Bakeries Ltd	Boiler1	5.41	2.03	2.54	13.52	0.04
Albany Bakeries Ltd	Oven2	0.02	0.06	0.25	0.13	0.00
Albany Bakeries Ltd	Oven4	0.00	0.01	0.04	0.02	0.00
Albany Bakeries Ltd	Oven5	0.00	0.01	0.04	0.02	0.00
TOTAL SA	Stack1	0.22	0.15	1.55	1.46	0.04
Shave and Gibson	Stack1	4.58	3.05	9.16	30.53	0.76
Javellin Trucking	Stack1	0.01	0.04	0.14	0.07	0.00
UNITRANS NATAL	Stack1	0.02	0.04	0.17	0.09	0.00
GWYNEIRA TEXTILES	Stack1	0.95	0.48	5.23	47.87	0.22
TRANSWERK	Stack1	13.25	4.97	6.21	33.12	0.09
Everite Ltd	BoilerDB320	0.35	0.17	1.90	17.41	0.08
WENTWORTH HOSPITAL	Stack1	14.40	5.40	6.75	36.00	0.10
Castrol SA Pty Ltd	Stack 1	0.67	0.34	3.70	33.85	0.15
Castrol SA Pty Ltd	Stack 2	0.67	0.34	3.70	33.85	0.15
Regional Laundry - Durban and Coastal	Stack 1	0.00	0.00	0.00	0.00	0.00
Alpha Stone & ReadyMix (Coedmore plant)	Fugitive emissions	6.96	0.00	0.00	0.00	0.00

## Appendix 1

<b>Detailed emission inventory listing</b>						
<b>Name</b>	<b>Source code</b>	<b>PM emissions- total (tpa)</b>	<b>CO emissions- Total (tpa)</b>	<b>NOx emissions- Total (tpa)</b>	<b>SOx emissions- Total (tpa)</b>	<b>TOC emissions- Total (tpa)</b>
Alpha Stone & ReadyMix (Isipingo plant)	Fugitive emissions	3.50	0.00	0.00	0.00	0.00
Southern Sewage works		0.00	0.00	0.00	0.00	no data
Island View Tank Farm (Cutler Complex)	Storage Tank emissions	0.00	0.00	0.00	0.00	3283.92
Gasoline vehicles (50 % of fuel used in Durban Magisterial area is assumed to be used in Durban South)		331.24	86163.84	4657.52	222.32	15084.72
Diesel vehicles (50 % of fuel used in Durban Magisterial area is assumed to be used in Durban South)		1964.74	3554.28	6866.53	1002.13	1303.78
Ships		108.00	268.00	1815.00	850.00	339.00
Trains (assumed to be 50 % of emissions for Durban Metropolitan Area)		5.50	32.00	213.00	32.00	14.50
Aeroplanes		Negligable	120.00	160.00	6.00	29.00
Service stations (50 % of fuel used in Durban Magisterial area is assumed to be used in Durban South)		0.00	0.00	0.00	0.00	783.06
<b>Total emissions</b>		<b>5135.91</b>	<b>108988.80</b>	<b>18941.92</b>	<b>41469.46</b>	<b>31403.05</b>

## *Appendix 2*

### *Summarised emission inventory*

<b>Particulate matter emissions summary</b>			
<b>Name</b>	<b>PM emissions- (tpa)</b>	<b>Percentage of total</b>	<b>Cumulative percentage</b>
Diesel vehicles	1964.74	38.3%	38.3%
Shell & Bp SA Petroleum Refineries	331.83	6.5%	44.7%
Gasoline vehicles	331.24	6.4%	51.2%
Dunlop SA	301.63	5.9%	57.0%
Engen	277.50	5.4%	62.4%
South African Breweries	208.52	4.1%	66.5%
Lever Brothers	208.32	4.1%	70.6%
Sasol Fibers	187.46	3.7%	74.2%
Illovo Sugar (Merebank)	187.01	3.6%	77.8%
Tongaat Hulett Refineries Ltd	132.21	2.6%	80.4%
Ships	108.00	2.1%	82.5%
Premier milling	89.54	1.7%	84.3%
Bluff Mechanical Appliance	88.74	1.7%	86.0%
Beacon sweets	71.82	1.4%	87.4%
Crosfield SA	61.99	1.2%	88.6%
Kingsrest Tanker Wash	59.14	1.2%	89.8%
National sorgum Breweries	57.60	1.1%	90.9%
Durban Fibres	51.94	1.0%	91.9%
Beier Wool Pty Ltd	48.00	0.9%	92.8%
Mondi Paper Co Ltd	34.76	0.7%	93.5%
BB Cereals	28.31	0.6%	94.0%
SA Ti Oxide	28.00	0.5%	94.6%
Feltex Automotive Components	26.51	0.5%	95.1%
Aunde Tap (Pty) Ltd	23.57	0.5%	95.6%
S.A.CLOTHING INDUSTRIES LTD	21.89	0.4%	96.0%
SASKO (Pty) Ltd	20.47	0.4%	96.4%
Natal Portland Cement	19.28	0.4%	96.8%
DRUM SERVICES	16.15	0.3%	97.1%
WENTWORTH HOSPITAL	14.40	0.3%	97.4%
TRANSWERK	13.25	0.3%	97.6%
KING EDWARD VIII HOSPITAL	9.98	0.2%	97.8%
Non Ferrous metals	8.95	0.2%	98.0%
Industrial Oleochemical Products Pty Ltd	7.20	0.1%	98.1%
Alpha Stone & ReadyMix (Coedmore plant)	6.96	0.1%	98.3%
Plascon paints	6.69	0.1%	98.4%
Plascon IPC	5.67	0.1%	98.5%
Albany Bakeries Ltd	5.62	0.1%	98.6%
Trains (assumed to be 50 % of emissions for Durban Metropolitan Area)	5.50	0.1%	98.7%
PAPERKEM	5.13	0.1%	98.8%
Frame Textile mill	5.06	0.1%	98.9%
M.B.GLASS	4.92	0.1%	99.0%
Shave and Gibson	4.58	0.1%	99.1%
RECKITT & COLMAN	4.32	0.1%	99.2%
Drumco	4.32	0.1%	99.3%
Downtown Drycleaners	4.13	0.1%	99.4%
City Steam Laundry	3.84	0.1%	99.4%
Alpha Stone & ReadyMix (Isipingo plant)	3.50	0.1%	99.5%
Colas East (Pty) Ltd	2.94	0.1%	99.6%
Hermes Laundry works	2.80	0.1%	99.6%
NCP Isipingo	2.13	0.0%	99.7%

<b>Particulate matter emissions summary</b>			
<b>Name</b>	<b>PM emissions- (tpa)</b>	<b>Percentage of total</b>	<b>Cumulative percentage</b>
Cookson Chemicals (Pty) Ltd	1.96	0.0%	99.7%
Kingsdale Steam Laundry	1.92	0.0%	99.7%
Caltex Oil SA (Pty) Ltd	1.53	0.0%	99.8%
Castrol SA Pty Ltd	1.34	0.0%	99.8%
Cray Valley Products	1.20	0.0%	99.8%
Springbok Laundry	0.96	0.0%	99.8%
GWYNEIRA TEXTILES	0.95	0.0%	99.8%
Bevcan	0.70	0.0%	99.9%
Revertex Chemicals	0.61	0.0%	99.9%
DISTILLERS CORPORATION Ltd	0.60	0.0%	99.9%
Bayer (SA) (Pty) Ltd	0.58	0.0%	99.9%
TANKER SERVICES	0.50	0.0%	99.9%
Castrol SA Pty Ltd	0.46	0.0%	99.9%
DURBAN CLOTHING MANUFACTURERS	0.45	0.0%	99.9%
DIVPAC	0.42	0.0%	99.9%
Kenprint (Pty) Ltd	0.40	0.0%	99.9%
Hoescht SA (Pty) Ltd	0.37	0.0%	99.9%
Bayside Distillers	0.36	0.0%	100.0%
Everite Ltd	0.35	0.0%	100.0%
FFS refineries	0.31	0.0%	100.0%
Chemical Specialities	0.25	0.0%	100.0%
TOTAL SA	0.22	0.0%	100.0%
Cargo Carriers Natal (Pty) Ltd	0.22	0.0%	100.0%
Dunlop Slazenger	0.21	0.0%	100.0%
Genrec Engineering - Elgin Works	0.18	0.0%	100.0%
Casual Clothing Pty Ltd	0.17	0.0%	100.0%
Cladwell Clothing Manufacturer	0.14	0.0%	100.0%
van Ommeren Tank Terminal South Africa (Pty) Ltd	0.13	0.0%	100.0%
BLENDCOR (SHELL & B.P.)	0.10	0.0%	100.0%
Enviroserv	0.09	0.0%	100.0%
Quality Products Pty Ltd	0.06	0.0%	100.0%
Blue Ribbon bakery	0.05	0.0%	100.0%
Microsteel (Pty) Ltd	0.02	0.0%	100.0%
UNITRANS NATAL	0.02	0.0%	100.0%
Divpak paper products	0.02	0.0%	100.0%
The Van Dyk Carpets Company	0.02	0.0%	100.0%
Javellin Trucking	0.01	0.0%	100.0%
TOYOTA AUTOMOTIVE COMPONENTS	0.00	0.0%	100.0%
Southern Sewage works	0.00	0.0%	100.0%
Coates Brothers	0.00	0.0%	100.0%
Island View Tank Farm (Cutler Complex)	0.00	0.0%	100.0%
Unifoods	0.00	0.0%	100.0%
Chemical Specialities	0.00	0.0%	100.0%
Chemical Specialities	0.00	0.0%	100.0%
Regional Laundry - Durban and Coastal	0.00	0.0%	100.0%
Service stations (50 % of fuel used in Durban Magisterial area is assumed to be used in Durban South)	0.00	0.0%	100.0%
Shell Chemicals	0.00	0.0%	100.0%
Natcos Tank Farm	0.00	0.0%	100.0%

<b>Particulate matter emissions summary</b>			
<b>Name</b>	<b>PM emissions- (tpa)</b>	<b>Percentage of total</b>	<b>Cumulative percentage</b>
NCP Food products	no data	0.0%	100.0%
Suncrush Ltd	no data	0.0%	100.0%
WAYNE RUBBER CO (PTY) LTD	no data	0.0%	100.0%
AECI	no data	0.0%	100.0%
Ferron Engineers	no data	0.0%	100.0%
NATYRE (Pty) Ltd	no data	0.0%	100.0%
THE PORT ENGINEER - BAYHEAD TRUCKWASH	no data	0.0%	100.0%
Corruseal Packaging Industries Pty Ltd	no data	0.0%	100.0%
Island View Industrialss Ltd	no data	0.0%	100.0%
Ulster Carpets	no data	0.0%	100.0%
DEFY INDUSTRIES / DEFY APPLIANCE PROP	no data	0.0%	100.0%
DURBAN BULK SHIPPING	no data	0.0%	100.0%
Aeroplanes	Negligable	0.0%	100.0%
<b>Total</b>	<b>5135.91</b>		

<b>CO emissions summary</b>			
<b>Name</b>	<b>CO emissions (tpa)</b>	<b>% of total</b>	<b>Cumulative percentage</b>
Gasoline vehicles	86163.84	79.1%	79.1%
Shell & Bp SA Petroleum Refineries	12266.00	11.3%	90.3%
NCP Isipingo	4744.43	4.4%	94.7%
Diesel vehicles (50 % of fuel used in Durban Magisterial area is assumed to be used in Durban South)	3554.28	3.3%	97.9%
Mondi Paper Co Ltd	516.17	0.5%	98.4%
Tongaat Hulett Refineries Ltd	291.65	0.3%	98.7%
Ships	268.00	0.2%	98.9%
Engen	208.46	0.2%	99.1%
Sasol Fibers	121.80	0.1%	99.2%
Aeroplanes	120.00	0.1%	99.3%
Dunlop SA	113.11	0.1%	99.4%
SA Ti Oxide	89.00	0.1%	99.5%
South African Breweries	82.48	0.1%	99.6%
Lever Brothers	78.12	0.1%	99.7%
Illovo Sugar (Merebank)	70.13	0.1%	99.7%
Trains (assumed to be 50 % of emissions for Durban Metropolitan Area)	32.00	0.0%	99.8%
Shell Chemicals	29.75	0.0%	99.8%
Beacon sweets	27.45	0.0%	99.8%
Crosfield SA	23.44	0.0%	99.8%
Kingsrest Tanker Wash	22.18	0.0%	99.8%
National sorgum Breweries	21.60	0.0%	99.9%
Durban Fibres	20.75	0.0%	99.9%
Beier Wool Pty Ltd	18.00	0.0%	99.9%
BB Cereals	11.07	0.0%	99.9%
Feltex Automotive Components	9.97	0.0%	99.9%
Aunde Tap (Pty) Ltd	8.90	0.0%	99.9%
S.A.CLOTHING INDUSTRIES LTD	8.21	0.0%	99.9%
M.B.GLASS	6.72	0.0%	99.9%
Cookson Chemicals (Pty) Ltd	6.28	0.0%	99.9%
DRUM SERVICES	6.16	0.0%	100.0%
WENTWORTH HOSPITAL	5.40	0.0%	100.0%
TRANSWERK	4.97	0.0%	100.0%
KING EDWARD VIII HOSPITAL	3.74	0.0%	100.0%
Industrial Oleochemical Products Pty Ltd	3.70	0.0%	100.0%
Shave and Gibson	3.05	0.0%	100.0%
Frame Textile mill	2.96	0.0%	100.0%
Albany Bakeries Ltd	2.55	0.0%	100.0%
PAPERKEM	1.96	0.0%	100.0%
RECKITT & COLMAN	1.62	0.0%	100.0%
Drumco	1.62	0.0%	100.0%
Downtown Drycleaners	1.55	0.0%	100.0%
Colas East (Pty) Ltd	1.47	0.0%	100.0%
Bayer (SA) (Pty) Ltd	1.45	0.0%	100.0%
City Steam Laundry	1.44	0.0%	100.0%
Hermes Laundry works	1.05	0.0%	100.0%

<b>CO emissions summary</b>			
<b>Name</b>	<b>CO emissions (tpa)</b>	<b>% of total</b>	<b>Cumulative percentage</b>
Bevcan	0.95	0.0%	100.0%
Caltex Oil SA (Pty) Ltd	0.82	0.0%	100.0%
FFS refineries	0.77	0.0%	100.0%
Kingsdale Steam Laundry	0.72	0.0%	100.0%
Castrol SA Pty Ltd	0.67	0.0%	100.0%
Cray Valley Products	0.60	0.0%	100.0%
DIVPAC	0.57	0.0%	100.0%
GWYNEIRA TEXTILES	0.48	0.0%	100.0%
Plascon paints	0.40	0.0%	100.0%
Non Ferrous metals	0.36	0.0%	100.0%
Springbok Laundry	0.36	0.0%	100.0%
Revertex Chemicals	0.30	0.0%	100.0%
DISTILLERS CORPORATION Ltd	0.30	0.0%	100.0%
Plascon IPC	0.26	0.0%	100.0%
TANKER SERVICES	0.25	0.0%	100.0%
Castrol SA Pty Ltd	0.23	0.0%	100.0%
DURBAN CLOTHING MANUFACTURERS	0.22	0.0%	100.0%
Kenprint (Pty) Ltd	0.20	0.0%	100.0%
Hoescht SA (Pty) Ltd	0.19	0.0%	100.0%
Bayside Distillers	0.18	0.0%	100.0%
Everite Ltd	0.17	0.0%	100.0%
TOTAL SA	0.15	0.0%	100.0%
Cargo Carriers Natal (Pty) Ltd	0.14	0.0%	100.0%
Blue Ribbon bakery	0.13	0.0%	100.0%
Chemical Specialities	0.13	0.0%	100.0%
Genrec Engineering - Elgin Works	0.12	0.0%	100.0%
Dunlop Slazenger	0.11	0.0%	100.0%
Cladwell Clothing Manufacturer	0.10	0.0%	100.0%
Casual Clothing Pty Ltd	0.08	0.0%	100.0%
van Ommeren Tank Terminal South Africa (Pty) Ltd	0.06	0.0%	100.0%
Enviroserv	0.06	0.0%	100.0%
BLENDCOR (SHELL & B.P.)	0.05	0.0%	100.0%
UNITRANS NATAL	0.04	0.0%	100.0%
Quality Products Pty Ltd	0.04	0.0%	100.0%
Javellin Trucking	0.04	0.0%	100.0%
Microsteel (Pty) Ltd	0.02	0.0%	100.0%
Divpak paper products	0.02	0.0%	100.0%
The Van Dyk Carpets Company	0.02	0.0%	100.0%
Service stations (50 % of fuel used in Durban Magisterial area is assumed to be used in Durban South)	0.00	0.0%	100.0%
Unifoods	0.00	0.0%	100.0%
Coates Brothers	0.00	0.0%	100.0%
Alpha Stone & ReadyMix (Isipingo plant)	0.00	0.0%	100.0%
Southern Sewage works	0.00	0.0%	100.0%
Island View Tank Farm (Cutler Complex)	0.00	0.0%	100.0%
Premier milling	0.00	0.0%	100.0%

<b>CO emissions summary</b>			
<b>Name</b>	<b>CO emissions (tpa)</b>	<b>% of total</b>	<b>Cumulative percentage</b>
Bluff Mechanical Appliance	0.00	0.0%	100.0%
Natal Portland Cement	0.00	0.0%	100.0%
NCP Food products	0.00	0.0%	100.0%
Alpha Stone & ReadyMix (Coedmore plant)	0.00	0.0%	100.0%
Natcos Tank Farm	0.00	0.0%	100.0%
Chemical Specialities	0.00	0.0%	100.0%
SASKO (Pty) Ltd	0.00	0.0%	100.0%
TOYOTA AUTOMOTIVE COMPONENTS	0.00	0.0%	100.0%
Chemical Specialities	0.00	0.0%	100.0%
Regional Laundry - Durban and Coastal	0.00	0.0%	100.0%
AECI	no data	0.0%	100.0%
Ulster Carpets	no data	0.0%	100.0%
Corruseal Packaging Industries Pty Ltd	no data	0.0%	100.0%
Island View Industrialss Ltd	no data	0.0%	100.0%
Ferron Engineers	no data	0.0%	100.0%
DEFY INDUSTRIES / DEFY APPLIANCE PROP	no data	0.0%	100.0%
DURBAN BULK SHIPPING	no data	0.0%	100.0%
NATYRE (Pty) Ltd	no data	0.0%	100.0%
WAYNE RUBBER CO (PTY) LTD	no data	0.0%	100.0%
THE PORT ENGINEER - BAYHEAD TRUCKWASH	no data	0.0%	100.0%
Suncrush Ltd	no data	0.0%	100.0%
<b>Total</b>	<b>108988.80</b>		

<b>NOx emissions summary</b>			
<b>Name</b>	<b>NOx emissions (tpa)</b>	<b>% of total</b>	<b>Cumulative percentage</b>
Diesel vehicles	6866.53	36.3%	36.3%
Gasoline vehicles	4657.52	24.6%	60.8%
Ships	1815.00	9.6%	70.4%
Shell & Bp SA Petroleum Refineries	1459.79	7.7%	78.1%
Engen	1402.86	7.4%	85.5%
Mondi Paper Co Ltd	715.41	3.8%	89.3%
Tongaat Hulett Refineries Ltd	364.56	1.9%	91.2%
Trains (assumed to be 50 % of emissions for Durban Metropolitan Area)	213.00	1.1%	92.4%
Aeroplanes	160.00	0.8%	93.2%
Sasol Fibers	152.25	0.8%	94.0%
Dunlop SA	141.39	0.7%	94.8%
SA Ti Oxide	108.00	0.6%	95.3%
South African Breweries	103.45	0.5%	95.9%
Lever Brothers	97.65	0.5%	96.4%
Illovo Sugar (Merebank)	87.66	0.5%	96.8%
Cookson Chemicals (Pty) Ltd	75.75	0.4%	97.2%
Industrial Oleochemical Products Pty Ltd	40.55	0.2%	97.5%
M.B.GLASS	39.36	0.2%	97.7%
Beacon sweets	38.37	0.2%	97.9%
Crosfield SA	36.67	0.2%	98.1%
Durban Fibres	33.60	0.2%	98.2%
Frame Textile mill	29.07	0.2%	98.4%
Kingsrest Tanker Wash	27.72	0.1%	98.5%
National sorgum Breweries	27.00	0.1%	98.7%
Beier Wool Pty Ltd	22.50	0.1%	98.8%
BB Cereals	16.89	0.1%	98.9%
Colas East (Pty) Ltd	16.16	0.1%	99.0%
Aunde Tap (Pty) Ltd	13.70	0.1%	99.1%
Feltex Automotive Components	12.63	0.1%	99.1%
NCP Isipingo	11.72	0.1%	99.2%
DRUM SERVICES	11.56	0.1%	99.2%
S.A.CLOTHING INDUSTRIES LTD	10.26	0.1%	99.3%
Shave and Gibson	9.16	0.0%	99.3%
Caltex Oil SA (Pty) Ltd	8.93	0.0%	99.4%
Castrol SA Pty Ltd	7.39	0.0%	99.4%
WENTWORTH HOSPITAL	6.75	0.0%	99.5%
Cray Valley Products	6.60	0.0%	99.5%
TRANSWERK	6.21	0.0%	99.5%
Bayer (SA) (Pty) Ltd	5.79	0.0%	99.6%
Bevcan	5.59	0.0%	99.6%
GWYNEIRA TEXTILES	5.23	0.0%	99.6%
KING EDWARD VIII HOSPITAL	4.68	0.0%	99.6%
Albany Bakeries Ltd	4.63	0.0%	99.7%
Plascon paints	4.34	0.0%	99.7%
DIVPAC	3.36	0.0%	99.7%
Revertex Chemicals	3.34	0.0%	99.7%
PAPERKEM	3.34	0.0%	99.7%
DISTILLERS CORPORATION Ltd	3.30	0.0%	99.8%
FFS refineries	3.08	0.0%	99.8%
TANKER SERVICES	2.77	0.0%	99.8%
Castrol SA Pty Ltd	2.53	0.0%	99.8%

NOx emissions summary			
Name	NOx emissions (tpa)	% of total	Cumulative percentage
DURBAN CLOTHING MANUFACTURERS	2.46	0.0%	99.8%
Kenprint (Pty) Ltd	2.18	0.0%	99.8%
Hoescht SA (Pty) Ltd	2.06	0.0%	99.8%
RECKITT & COLMAN	2.03	0.0%	99.9%
Drumco	2.03	0.0%	99.9%
Bayside Distillers	1.98	0.0%	99.9%
Downtown Drycleaners	1.94	0.0%	99.9%
Everite Ltd	1.90	0.0%	99.9%
City Steam Laundry	1.80	0.0%	99.9%
TOTAL SA	1.55	0.0%	99.9%
Cargo Carriers Natal (Pty) Ltd	1.53	0.0%	99.9%
Shell Chemicals	1.49	0.0%	99.9%
Non Ferrous metals	1.44	0.0%	99.9%
Chemical Specialities	1.40	0.0%	99.9%
Hermes Laundry works	1.31	0.0%	100.0%
Genrec Engineering - Elgin Works	1.27	0.0%	100.0%
Dunlop Slazenger	1.16	0.0%	100.0%
Cladwell Clothing Manufacturer	1.02	0.0%	100.0%
Casual Clothing Pty Ltd	0.92	0.0%	100.0%
Kingsdale Steam Laundry	0.90	0.0%	100.0%
van Ommeren Tank Terminal South Africa (Pty) Ltd	0.71	0.0%	100.0%
Envirosev	0.61	0.0%	100.0%
BLENDCOR (SHELL & B.P.)	0.55	0.0%	100.0%
Blue Ribbon bakery	0.52	0.0%	100.0%
Springbok Laundry	0.45	0.0%	100.0%
Quality Products Pty Ltd	0.42	0.0%	100.0%
UNITRANS NATAL	0.17	0.0%	100.0%
Microsteel (Pty) Ltd	0.14	0.0%	100.0%
Javellin Trucking	0.14	0.0%	100.0%
Divpak paper products	0.12	0.0%	100.0%
The Van Dyk Carpets Company	0.12	0.0%	100.0%
Plascon IPC	0.03	0.0%	100.0%
Service stations (50 % of fuel used in Durban Magisterial area is assumed to be used in Durban South)	0.00	0.0%	100.0%
Bluff Mechanical Appliance	0.00	0.0%	100.0%
Natcos Tank Farm	0.00	0.0%	100.0%
SASKO (Pty) Ltd	0.00	0.0%	100.0%
NCP Food products	0.00	0.0%	100.0%
Regional Laundry - Durban and Coastal	0.00	0.0%	100.0%
Coates Brothers	0.00	0.0%	100.0%
Unifoods	0.00	0.0%	100.0%
Premier milling	0.00	0.0%	100.0%
TOYOTA AUTOMOTIVE COMPONENTS	0.00	0.0%	100.0%
Natal Portland Cement	0.00	0.0%	100.0%
Alpha Stone & ReadyMix (Coedmore plant)	0.00	0.0%	100.0%
Alpha Stone & ReadyMix (Isipingo plant)	0.00	0.0%	100.0%
Chemical Specialities	0.00	0.0%	100.0%
Southern Sewage works	0.00	0.0%	100.0%
Island View Tank Farm (Cutler Complex)	0.00	0.0%	100.0%
Chemical Specialities	0.00	0.0%	100.0%
Suncrush Ltd	no data	0.0%	100.0%
WAYNE RUBBER CO (PTY) LTD	no data	0.0%	100.0%

<b>NOx emissions summary</b>			
<b>Name</b>	<b>NOx emissions (tpa)</b>	<b>% of total</b>	<b>Cumulative percentage</b>
THE PORT ENGINEER - BAYHEAD TRUCKWASH	no data	0.0%	100.0%
NATYRE (Pty) Ltd	no data	0.0%	100.0%
Corruseal Packaging Industries Pty Ltd	no data	0.0%	100.0%
Ulster Carpets	no data	0.0%	100.0%
AECI	no data	0.0%	100.0%
Ferron Engineers	no data	0.0%	100.0%
Island View Industrialss Ltd	no data	0.0%	100.0%
DURBAN BULK SHIPPING	no data	0.0%	100.0%
DEFY INDUSTRIES / DEFY APPLIANCE PROP	no data	0.0%	100.0%
<b>Total</b>	<b>18941.92</b>		

<b>SO2 emissions summary</b>			
<b>Name</b>	<b>SOx emissions (tpa)</b>	<b>% of total</b>	<b>Cumulative percentage</b>
Shell & Bp SA Petroleum Refineries	14391.57	34.7%	34.7%
Engen	13020.59	31.4%	66.1%
Mondi Paper Co Ltd	3100.46	7.5%	73.6%
Tongaat Hulett Refineries Ltd	2333.16	5.6%	79.2%
Diesel vehicles	1002.13	2.4%	81.6%
Ships	850.00	2.0%	83.7%
Dunlop SA	754.08	1.8%	85.5%
South African Breweries	573.92	1.4%	86.9%
Lever Brothers	520.80	1.3%	88.1%
Sasol Fibers	503.44	1.2%	89.3%
Illovo Sugar (Merebank)	467.52	1.1%	90.5%
AECI	450.00	1.1%	91.6%
Industrial Oleochemical Products Pty Ltd	336.42	0.8%	92.4%
SA Ti Oxide	243.00	0.6%	93.0%
Frame Textile mill	229.82	0.6%	93.5%
Crosfield SA	227.35	0.5%	94.1%
Gasoline vehicles (50 % of fuel used in Durban Magisterial area is assumed to be used in Durban South)	222.32	0.5%	94.6%
Beacon sweets	186.91	0.5%	95.0%
Durban Fibres	152.56	0.4%	95.4%
Colas East (Pty) Ltd	147.96	0.4%	95.8%
Kingsrest Tanker Wash	147.84	0.4%	96.1%
National sorgum Breweries	144.00	0.3%	96.5%
Cookson Chemicals (Pty) Ltd	138.49	0.3%	96.8%
Beier Wool Pty Ltd	120.00	0.3%	97.1%
Aunde Tap (Pty) Ltd	110.69	0.3%	97.4%
DRUM SERVICES	78.29	0.2%	97.5%
BB Cereals	72.48	0.2%	97.7%
Castrol SA Pty Ltd	67.69	0.2%	97.9%
Feltex Automotive Components	66.20	0.2%	98.0%
Caltex Oil SA (Pty) Ltd	62.64	0.2%	98.2%
Cray Valley Products	60.44	0.1%	98.3%
S.A.CLOTHING INDUSTRIES LTD	54.72	0.1%	98.5%
GWYNEIRA TEXTILES	47.87	0.1%	98.6%
WENTWORTH HOSPITAL	36.00	0.1%	98.7%
NCP Isipingo	35.52	0.1%	98.8%
TRANSWERK	33.12	0.1%	98.8%
Trains (assumed to be 50 % of emissions for Durban Metropolitan Area)	32.00	0.1%	98.9%
Shave and Gibson	30.53	0.1%	99.0%
DISTILLERS CORPORATION Ltd	30.22	0.1%	99.1%
TANKER SERVICES	25.38	0.1%	99.1%
KING EDWARD VIII HOSPITAL	24.96	0.1%	99.2%
Castrol SA Pty Ltd	23.21	0.1%	99.2%
DURBAN CLOTHING MANUFACTURERS	22.54	0.1%	99.3%
Revertex Chemicals	22.26	0.1%	99.4%

<b>SO2 emissions summary</b>			
<b>Name</b>	<b>SOx emissions (tpa)</b>	<b>% of total</b>	<b>Cumulative percentage</b>
Kenprint (Pty) Ltd	19.95	0.0%	99.4%
Bayer (SA) (Pty) Ltd	19.29	0.0%	99.4%
Hoescht SA (Pty) Ltd	18.86	0.0%	99.5%
Bayside Distillers	18.13	0.0%	99.5%
PAPERKEM	18.09	0.0%	99.6%
Everite Ltd	17.41	0.0%	99.6%
Plascon paints	16.86	0.0%	99.7%
Albany Bakeries Ltd	14.58	0.0%	99.7%
Chemical Specialities	12.16	0.0%	99.7%
Non Ferrous metals	12.00	0.0%	99.8%
RECKITT & COLMAN	10.80	0.0%	99.8%
Drumco	10.80	0.0%	99.8%
Dunlop Slazenger	10.58	0.0%	99.8%
Downtown Drycleaners	10.32	0.0%	99.9%
City Steam Laundry	9.60	0.0%	99.9%
Casual Clothing Pty Ltd	8.46	0.0%	99.9%
Hermes Laundry works	7.00	0.0%	99.9%
van Ommeren Tank Terminal South Africa (Pty) Ltd	6.53	0.0%	99.9%
Aeroplanes	6.00	0.0%	99.9%
BLENDCOR (SHELL & B.P.)	5.08	0.0%	100.0%
Kingsdale Steam Laundry	4.80	0.0%	100.0%
Springbok Laundry	2.40	0.0%	100.0%
FFS refineries	1.57	0.0%	100.0%
TOTAL SA	1.46	0.0%	100.0%
Cargo Carriers Natal (Pty) Ltd	1.44	0.0%	100.0%
Genrec Engineering - Elgin Works	1.20	0.0%	100.0%
Cladwell Clothing Manufacturer	0.96	0.0%	100.0%
Enviroserv	0.58	0.0%	100.0%
Quality Products Pty Ltd	0.40	0.0%	100.0%
Shell Chemicals	0.35	0.0%	100.0%
Plascon IPC	0.28	0.0%	100.0%
Blue Ribbon bakery	0.26	0.0%	100.0%
UNITRANS NATAL	0.09	0.0%	100.0%
Javellin Trucking	0.07	0.0%	100.0%
Regional Laundry - Durban and Coastal	0.00	0.0%	100.0%
Coates Brothers	0.00	0.0%	100.0%
Island View Tank Farm (Cutler Complex)	0.00	0.0%	100.0%
Alpha Stone & ReadyMix (Coedmore plant)	0.00	0.0%	100.0%
Alpha Stone & ReadyMix (Isipingo plant)	0.00	0.0%	100.0%
Southern Sewage works	0.00	0.0%	100.0%
Premier milling	0.00	0.0%	100.0%
Bluff Mechanical Appliance	0.00	0.0%	100.0%
Chemical Specialities	0.00	0.0%	100.0%
Chemical Specialities	0.00	0.0%	100.0%
The Van Dyk Carpets Company	0.00	0.0%	100.0%
Microsteel (Pty) Ltd	0.00	0.0%	100.0%

<b>SO2 emissions summary</b>			
<b>Name</b>	<b>SOx emissions (tpa)</b>	<b>% of total</b>	<b>Cumulative percentage</b>
Service stations (50 % of fuel used in Durban Magisterial area is assumed to be used in Durban South)	0.00	0.0%	100.0%
Natal Portland Cement	0.00	0.0%	100.0%
Divpak paper products	0.00	0.0%	100.0%
M.B.GLASS	0.00	0.0%	100.0%
NCP Food products	0.00	0.0%	100.0%
SASKO (Pty) Ltd	0.00	0.0%	100.0%
Natcos Tank Farm	0.00	0.0%	100.0%
Bevcan	0.00	0.0%	100.0%
TOYOTA AUTOMOTIVE COMPONENTS	0.00	0.0%	100.0%
Unifoods	0.00	0.0%	100.0%
DIVPAC	0.00	0.0%	100.0%
NATYRE (Pty) Ltd	no data	0.0%	100.0%
Suncrush Ltd	no data	0.0%	100.0%
Ferron Engineers	no data	0.0%	100.0%
DURBAN BULK SHIPPING	no data	0.0%	100.0%
THE PORT ENGINEER - BAYHEAD TRUCKWASH	no data	0.0%	100.0%
Corruseal Packaging Industries Pty Ltd	no data	0.0%	100.0%
Island View Industrialss Ltd	no data	0.0%	100.0%
Ulster Carpets	no data	0.0%	100.0%
DEFY INDUSTRIES / DEFY APPLIANCE PROP	no data	0.0%	100.0%
WAYNE RUBBER CO (PTY) LTD	no data	0.0%	100.0%
<b>Total</b>	<b>41469.46</b>		

TOC emissions summary			
Name	TOC emissions (tpa)	% of total	Cumulative percentage
Gasoline vehicles	15084.72	48.0%	48.0%
Shell & Bp SA Petroleum Refineries	4441.19	14.1%	62.2%
Engen	3291.15	10.5%	72.7%
Island View Tank Farm (Cutler Complex)	3283.92	10.5%	83.1%
NCP Isipingo	1629.99	5.2%	88.3%
Diesel vehicles	1303.78	4.2%	92.5%
Service stations	783.06	2.5%	95.0%
Bevcan	397.64	1.3%	96.2%
Ships	339.00	1.1%	97.3%
Plascon paints	292.14	0.9%	98.2%
DIVPAC	215.39	0.7%	98.9%
Cray Valley Products	72.09	0.2%	99.1%
Chemical Specialities	44.71	0.1%	99.3%
TOYOTA AUTOMOTIVE COMPONENTS	38.88	0.1%	99.4%
Aeroplanes	29.00	0.1%	99.5%
Coates Brothers	27.89	0.1%	99.6%
Plascon IPC	27.77	0.1%	99.7%
Durban Fibres	14.87	0.0%	99.7%
Trains (assumed to be 50 % of emissions for Durban Metropolitan Area)	14.50	0.0%	99.8%
Chemical Specialities	14.10	0.0%	99.8%
Mondi Paper Co Ltd	12.61	0.0%	99.9%
Sasol Fibers	7.63	0.0%	99.9%
Shell Chemicals	6.40	0.0%	99.9%
Tongaat Hulett Refineries Ltd	5.35	0.0%	99.9%
South African Breweries	5.00	0.0%	99.9%
Chemical Specialities	2.16	0.0%	99.9%
Dunlop SA	2.07	0.0%	99.9%
Industrial Oleochemical Products Pty Ltd	1.60	0.0%	100.0%
SA Ti Oxide	1.58	0.0%	100.0%
Lever Brothers	1.43	0.0%	100.0%
Illovo Sugar (Merebank)	1.29	0.0%	100.0%
Frame Textile mill	1.14	0.0%	100.0%
M.B.GLASS	0.98	0.0%	100.0%
Shave and Gibson	0.76	0.0%	100.0%
Crosfield SA	0.76	0.0%	100.0%
Colas East (Pty) Ltd	0.67	0.0%	100.0%
Beacon sweets	0.63	0.0%	100.0%
Kingsrest Tanker Wash	0.41	0.0%	100.0%
National sorgum Breweries	0.40	0.0%	100.0%
Beier Wool Pty Ltd	0.33	0.0%	100.0%
Caltex Oil SA (Pty) Ltd	0.33	0.0%	100.0%
Castrol SA Pty Ltd	0.31	0.0%	100.0%
DRUM SERVICES	0.29	0.0%	100.0%
Aunde Tap (Pty) Ltd	0.28	0.0%	100.0%
BB Cereals	0.27	0.0%	100.0%
GWYNEIRA TEXTILES	0.22	0.0%	100.0%
Feltex Automotive Components	0.19	0.0%	100.0%
S.A.CLOTHING INDUSTRIES LTD	0.15	0.0%	100.0%
Revertex Chemicals	0.14	0.0%	100.0%
DISTILLERS CORPORATION Ltd	0.14	0.0%	100.0%

TOC emissions summary			
Name	TOC emissions (tpa)	% of total	Cumulative percentage
TANKER SERVICES	0.11	0.0%	100.0%
Castrol SA Pty Ltd	0.11	0.0%	100.0%
DURBAN CLOTHING MANUFACTURERS	0.10	0.0%	100.0%
WENTWORTH HOSPITAL	0.10	0.0%	100.0%
TRANSWERK	0.09	0.0%	100.0%
Kenprint (Pty) Ltd	0.09	0.0%	100.0%
Bayer (SA) (Pty) Ltd	0.09	0.0%	100.0%
Cookson Chemicals (Pty) Ltd	0.09	0.0%	100.0%
Hoescht SA (Pty) Ltd	0.09	0.0%	100.0%
Bayside Distillers	0.08	0.0%	100.0%
Everite Ltd	0.08	0.0%	100.0%
Albany Bakeries Ltd	0.07	0.0%	100.0%
KING EDWARD VIII HOSPITAL	0.07	0.0%	100.0%
PAPERKEM	0.07	0.0%	100.0%
Dunlop Slazenger	0.05	0.0%	100.0%
FFS refineries	0.05	0.0%	100.0%
Casual Clothing Pty Ltd	0.04	0.0%	100.0%
TOTAL SA	0.04	0.0%	100.0%
Cargo Carriers Natal (Pty) Ltd	0.04	0.0%	100.0%
Genrec Engineering - Elgin Works	0.03	0.0%	100.0%
RECKITT & COLMAN	0.03	0.0%	100.0%
Drumco	0.03	0.0%	100.0%
van Ommeren Tank Terminal South Africa (Pty) Ltd	0.03	0.0%	100.0%
Downtown Drycleaners	0.03	0.0%	100.0%
City Steam Laundry	0.03	0.0%	100.0%
Cladwell Clothing Manufacturer	0.02	0.0%	100.0%
BLENDCOR (SHELL & B.P.)	0.02	0.0%	100.0%
Non Ferrous metals	0.02	0.0%	100.0%
Hermes Laundry works	0.02	0.0%	100.0%
Enviroserv	0.01	0.0%	100.0%
Kingsdale Steam Laundry	0.01	0.0%	100.0%
Quality Products Pty Ltd	0.01	0.0%	100.0%
Blue Ribbon bakery	0.01	0.0%	100.0%
Springbok Laundry	0.01	0.0%	100.0%
Microsteel (Pty) Ltd	0.00	0.0%	100.0%
Divpak paper products	0.00	0.0%	100.0%
The Van Dyk Carpets Company	0.00	0.0%	100.0%
UNITRANS NATAL	0.00	0.0%	100.0%
Javellin Trucking	0.00	0.0%	100.0%
Regional Laundry - Durban and Coastal	0.00	0.0%	100.0%
Alpha Stone & ReadyMix (Coedmore plant)	0.00	0.0%	100.0%
Alpha Stone & ReadyMix (Isipingo plant)	0.00	0.0%	100.0%
Bluff Mechanical Appliance	0.00	0.0%	100.0%
NCP Food products	0.00	0.0%	100.0%
Natal Portland Cement	0.00	0.0%	100.0%
Natcos Tank Farm	No data	0.0%	100.0%
DURBAN BULK SHIPPING	no data	0.0%	100.0%
Corruseal Packaging Industries Pty Ltd	no data	0.0%	100.0%
Island View Industrialss Ltd	no data	0.0%	100.0%
AECI	no data	0.0%	100.0%

<b>TOC emissions summary</b>			
<b>Name</b>	<b>TOC emissions (tpa)</b>	<b>% of total</b>	<b>Cumulative percentage</b>
Ulster Carpets	no data	0.0%	100.0%
DEFY INDUSTRIES / DEFY APPLIANCE PROP	no data	0.0%	100.0%
Suncrush Ltd	no data	0.0%	100.0%
Southern Sewage works	no data	0.0%	100.0%
Ferron Engineers	no data	0.0%	100.0%
THE PORT ENGINEER - BAYHEAD TRUCKWASH	no data	0.0%	100.0%
NATYRE (Pty) Ltd	no data	0.0%	100.0%
Unifoods	no data	0.0%	100.0%
Premier milling	no data	0.0%	100.0%
WAYNE RUBBER CO (PTY) LTD	no data	0.0%	100.0%
SASKO (Pty) Ltd	no data	0.0%	100.0%
<b>Total</b>	<b>31403.05</b>		