

## Welcome to the H1 software

### Introduction

**This version of the database tool accompanies the IPPC Guidance version H1v6 July 2003.**

This software tool is for use with the IPPC guidance note H1 "Environmental Assessment & BAT Appraisal". The H1 guidance provides a structured methodology to demonstrate that an activity uses the Best Available Techniques, by:

- assessing the the costs and environmental benefits of options for pollution prevention and control techniques; and
- conducting an environmental assessment to demonstrate that no significant pollution is caused.

### Important Notes:

**This software tool can be used to complete most of the modules within H1. However, further information may need to be provided in the following areas:**

- detailed assessment of fate and effects, where required
- decision-making trails for the comparison and ranking of options

**This software provides a general structure for assessing costs and environmental impacts. You may need to decide the best way to apply this structure to fit the nature and pattern of your operation, in particular:**

- where load is variable, such as seasonal or demand-led operations
- where a number of processes are conducted at the same time, such as integrated operations
- where a number of products are made, with possible differences in unit operations and release points employed
- where fugitive or potential emergency releases are of particular interest

**Information in this database will be used to determine your PPC permit, therefore to get the most from this software tool, you should:**

- read the introduction to the H1 guidance, to understand the basic principles, module structure and methods
- use the HELP boxes and refer to the H1 guidance as you progress to ensure that the data you input is representative and accurate
- use the comments boxes to clarify assumptions and data sources

**Some basic instructions for using the software tool are provided in Appendix I of the H1 Guidance**



The application has been optimised for a screen resolution of 800 x 600

Version 1.8.2 31 August 2007



[www.ability-software.co.uk](http://www.ability-software.co.uk)

Welcome

---

## Reference Information

Please complete the following information:

Company Name: Biffa Waste Services Limited

Location: Newhurst Quarry, Shepshed

Permit Number: Application Reference: EPR/TP3036KB/A001

---

## Introduction to Module 1

### Module 1: Describe the Scope and Options

---

The aim of this module is to:

- state the OBJECTIVES of the assessment
- in the case of ENVIRONMENTAL ASSESSMENT of the whole installation, describe the scope of the activities to be included in the assessment;
- in the case of OPTIONS APPRAISALS, identify candidate options for BAT by considering all relevant techniques to prevent and minimise pollution and the scope of activities covered by the techniques.

**Depending on the reason for the assessment, you will need to complete different modules of the guidance. The software will automatically select the required modules according to the responses you enter.**

**NOTE: If you are going to complete more than one assessment or appraisal, make sure that you create a copy of the H1 file for each new assessment BEFORE you begin to input data. This is because Microsoft Access automatically saves changes to the current file you are using, rather than allowing you to save your changes at the end of your work.**

**TO CONTINUE WITH MODULE 1, PRESS "NEXT".**

## Describe the Objectives

Depending on the reason for the assessment, you will need to complete different modules of the guidance.

### Select the type of assessment:

- a) to conduct a costs/benefits OPTIONS APPRAISAL to determine BAT for selected releases from an installation Do modules 1,2, 3 and 4 and continue with 5 and 6 if necessary
- b) to carry out an ENVIRONMENTAL ASSESSMENT of the emissions resulting from the installation as a whole Do modules 1, 2 and 3 only

### 1.1 Briefly summarise the objectives and reason for the assessment in terms of the main environmental impacts or emissions to be controlled:

Submitted with an Environmental Permit application to operate an Energy Recovery Facility at Newhurst Quarry near Shepshed. This assessment is being undertaken to assess the potential point source emissions to air, surface water and sewer. There will be no point source discharge to groundwater or to land. The facility will accept up to 300,000 tonnes of non hazardous residual municipal solid waste and / or commercial and industrial waste. The facility will include a Combined Heat and Power Plant to recovery energy.

**List the activities included in the assessment**

This should include all the activities in your permit, broken down into the basic process steps, such as: raw materials storage, handling, processing, emission control, waste treatment etc. as appropriate. See section 1.2 of H1 for guidance and use the comments box below to provide any additional information.

Number      Activity

1	Delivery of Residual Municipal Solid Waste (rMSW) and / or Commercial and Industrial (C&I) Waste
2	Waste Storage
3	Waste Charging
4	Incineration
5	Energy Generation
6	Flue Gas Treatment
7	Bottom Ash Management
8	Fly Ash Handling
9	Raw Materials Storage and Handling

Comments: None

**module 2** **Introduction to Module 2**

**Module 2: Emissions Inventory**

---

The aim of this module is to produce an inventory of sources and releases of polluting substances from each option. This is used as the basis for the subsequent evaluation of environmental impacts.

For this module you will require information on:

- release points and sources of emissions to all media
- concentration and mass rate of emitted substances
- frequency and duration of emissions and how these relate to long term and short term effects

**IMPORTANT NOTES**

- you may need to consider a suitable method for assessment of groups of pollutants, such as VOCs, heavy metals, uncharacterised liquid effluents, etc (see H1 guidance for details).

**TO CONTINUE WITH MODULE 2, PRESS "NEXT".**

---

## Air Release Points

Please define your Release Points for Releases to Air

Are there any Air emissions?

Yes

Number	Description	Location or Grid Reference	Activity or Activities	Effective Height	Efflux Velocity	Total Flow
				metres	m/s	m3/hr
1	A1	448873, 317895	Line 1 Incinerator Stack	96.5	23.22	104292
2	A2	448873, 317890	Line 2 Incinerator Stack	96.5	23.22	104292

Comments:



## Air Emissions Inventory

Please list all Substances released to Air for each Release Point identified in the previous page.

Number	Substance	Meas'ment Method	Operating Mode (if relevant)	Data relating to Long Term effects			Data relating to Short Term effects			Annual Rate tonne/yr	ELV Conc. mg/m3
				Conc.	Release Rate	Meas'ment Basis	Conc.	Release Rate	Meas'ment Basis		
				mg/m3	g/s		mg/m3	g/s			
1	Particulates	Continuous	94%	10	0.29	WID Daily Average	10.01036	0.29	WID Daily Average	9.14	10
2	Nitrogen dioxide (human health receptor)	Continuous	94%	200	5.793	WID Daily Average	199.9655	5.793	WID Daily Average	182.68	200
3	Carbon monoxide	Continuous	94%	50	1.448	WID Daily Average	49.98274	1.448	WID Daily Average	45.664	50
4	Sulphur dioxide (human health receptor)	Continuous	94%	50	1.448	WID Daily Average	49.98274	1.448	WID Daily Average	45.664	50
5	Hydrogen chloride	Continuous	94%	10	0.29	WID Daily Average	10.01036	0.29	WID Daily Average	9.14	10
6	Hydrogen fluoride (as F)	Periodic*	94%	1	0.029	WID Daily Average	1.001036	0.029	WID Daily Average	0.914	1
7	Ammonia (human health receptor)	Estimated*	94%	6	0.29	Manufacturer Guidance	6	0.29	Manufacturer Guidance	9.14	180
8	Benzene	Continuous	94%	10	0.29	WID Daily Average	10.01036	0.29	WID Daily Average	9.14	10
9	Cadmium and its compounds (as Cd)	Periodic*	94%	0.05	0.001	WID Spot Measurement	0.034518	0.001	WID Spot Measurement	1.0885	0.05
10	Mercury and compounds, except mercury alkyls, (as	Periodic*	94%	0.05	0.001	WID Spot Measurement	0.034518	0.001	WID Spot Measurement	1.0885	0.05
11	Arsenic and compounds (as As)	Periodic*	94%	0.5	0.002	WID Spot Measurement	0.069037	0.002	WID Spot Measurement	2.17715	0.5
12	Nitrogen dioxide (ecological receptor)	Continuous	94%	200	0.29	Daily Average	10.01036	0.29	Daily Average	9.14	200
13	Ammonia (ecological receptor)	Periodic*	94%	6	0.29	Manufacturer Guidance	6	0.29	Manufacturer Guidance	9.14	3
14	Sulphur dioxide (ecological receptor)	Continuous	94%	50	1.448	WID Daily Average	50	1.448	WID Daily Average	45.664	50
15	Dioxins and Furans	Periodic*	94%	1.00E-07	2.9E-09	WID Spot	1.00E-07	2.9E-09	WID Spot	9.4E-08	1.001E-07

Air Emissions Inventory Base Option, Release Point: 1 'A1'

Measurement method: \* provide detail in comments box Comments:

Notes:

- 1) Concentrations referenced to temperature 273 K, pressure 101.3 kPa, 11% oxygen, dry gas.
  - 2) The emission limit value refers to the total concentration of dioxins and furans calculated using the concept of toxic equivalence (TEQ). The following contaminants (detailed in the notes below) have been modelled in full in BATOT Appendix 7 - Air Quality Assessment.
  - 3) See BATOT (SLR Ref: 407.0034.00332/BATOT) for proposed measurement methods.
  - 4) Benzene modelled as worst case scenario for Total Organic Carbon (TOC).
  - 5) Cadmium (EAL 0.005) has been modelled as the worst case representative of WID Group 1 metals, comprising cadmium and thallium.
  - 6) Arsenic (EAL 0.02) has been modelled as worst case representative of WID Group 3 metals, comprising antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium.
-

## Air Emissions Inventory

Please list all Substances released to Air for each Release Point identified in the previous page.

Number	Substance	Meas'ment Method	Operating Mode (if relevant)	Data relating to Long Term effects			Data relating to Short Term effects			Annual Rate tonne/yr	ELV Conc. mg/m3
				Conc.	Release Rate	Meas'ment Basis	Conc.	Release Rate	Meas'ment Basis		
				mg/m3	g/s		mg/m3	g/s			
1	Particulates	Continuous	94%	10	0.29	WID Daily Average	10.01036	0.29	WID Daily Average	9.14	10
2	Nitrogen dioxide (human health receptor)	Continuous	94%	200	5.793	WID Daily Average	199.9655	5.793	WID Daily Average	182.68	200
3	Carbon monoxide	Continuous	94%	50	1.448	WID Daily Average	49.98274	1.448	WID Daily Average	45.664	50
4	Sulphur dioxide (human health receptor)	Continuous	94%	50	1.448	WID Daily Average	49.98274	1.448	WID Daily Average	45.664	50
5	Hydrogen chloride	Continuous	94%	10	0.29	WID Daily Average	10.01036	0.29	WID Daily Average	9.14	10
6	Hydrogen fluoride (as F)	Periodic*	94%	1	0.029	WID Daily Average	1	0.029	WID Daily Average	0.914	1
7	Ammonia (human health receptor)	Estimated*	94%	6	0.29	Manufacturer Guidance	6	0.29	Manufacturer Guidance	9.14	180
8	Benzene	Continuous	94%	10	0.29	WID Daily Average	10.01036	0.29	WID Daily Average	9.14	10
9	Cadmium and its compounds (as Cd)	Periodic*	94%	0.05	0.001	WID Spot Measurement	0.034518	0.001	WID Spot Measurement	1.0885	0.05
10	Mercury and compounds, except mercury alkyls, (as	Periodic*	94%	0.05	0.001	WID Spot Measurement	0.034518	0.001	WID Spot Measurement	1.0885	0.05
11	Arsenic and compounds (as As)	Periodic*	94%	0.5	0.002	WID Spot Measurement	0.069037	0.002	WID Spot Measurement	2.17715	0.5
12	Nitrogen dioxide (ecological receptor)	Continuous	94%	200	0.29	Daily Average	10.01036	0.29	Daily Average	9.14	200
13	Ammonia (ecological receptor)	Periodic*	94%	6	0.29	Manufacturer Guidance	6	0.29	Manufacturer Guidance	9.14	3
14	Dioxins and Furans	Periodic*	94%	1.00E-07	2.9E-09	WID Spot Measurement	1.00E-07	2.9E-09	WID Spot Measurement	9.4E-08	1.001E-07

Air Emissions Inventory Base Option, Release Point: 2 'A2'

Measurement method: \* provide detail in comments box Comments:

Notes:

- 1) Concentrations referenced to temperature 273 K, pressure 101.3 kPa, 11% oxygen, dry gas.
  - 2) The emission limit value refers to the total concentration of dioxins and furans calculated using the concept of toxic equivalence (TEQ). The following contaminants (detailed in the notes below) have been modelled in full in BATOT Appendix 7 - Air Quality Assessment.
  - 3) See BATOT (SLR Ref: 407.0034.00332/BATOT) for proposed measurement methods.
  - 4) Benzene modelled as worst case scenario for Total Organic Carbon (TOC).
  - 5) Cadmium (EAL 0.005) has been modelled as the worst case representative of WID Group 1 metals, comprising cadmium and thallium.
  - 6) Arsenic (EAL 0.02) has been modelled as worst case representative of WID Group 3 metals, comprising antimony, arsenic, lead, chromium, cobalt, copper, manganese, nickel and vanadium.
-

## Water Discharge Locations

Please define the Final Discharge Locations for Releases to Water

Are there any Water emissions?

Yes

Use the 'Add' button below to list all final discharge points.

For releases to sewer, this should be the point of discharge from the sewage treatment works.

Number	Description	Final Discharge Category
--------	-------------	--------------------------

1 Surface Water emission to Shortcliffe Brook

R

River Flow (m3/s):

0.021

## Water Release Points

Please define your Release Points for Releases to Water

Number	Description	Location or Grid Reference	Activity or Activities	Discharge	Effluent	Final Discharge Point
				via Sewer?	Flow Rate	
					m3/s	
1	SW1	Surface Water Discharge	Surface Water Discharge	No	0.00087	1 Surface Water emission to Shortcliffe Brook

Comments:

Annual average flow of Shortcliffe Brook = 0.021m3/s (derived from FEH catchment descriptors. SAAR (714mm) x Area (2.14km2) x SPRHOST (standard % run off 44.19).

Effluent Flow rate = 0.00087m3/s (derived from site area (4.69ha - planning) x SAAR (714mm) x run off coefficient (82%). - source: SLR FRA, 2009

Surface water from roads, car parking and external hard standing areas will drain via interceptor to the surface water attenuation lagoon located to the south of the site. The water will then be discharged to the nearby Shortcliffe Brook via the existing culvert. As detailed in the EP application there will be a surface water monitoring point at the lagoon, and in the case of contamination a shut off valve at the lagoon will contain contaminated water on site prior to disposal at a suitably licensed facility.

## Water Emissions Inventory

Please list all Substances released to Water for each Release Point identified in the previous page.

Which type of assessment method are you using? Continue with the method below.  
(See help box & H1 Section 3.5 for information)

Method:

Reference:

Number	Substance	Meas'ment Method	Operating Mode (if relevant)	Data relating to Long Term effects			Data relating to Short Term effects			Annual Rate kg/yr	Benchmark Conc. mg/l
				Conc. mg/l	Release Rate g/s	Meas'ment Basis	Conc. mg/l	Release Rate g/s	Meas'ment Basis		
1	Suspended solids	Periodic*		50	0.0435	Assumed Trigger	50	2.065	Assumed Trigger	1371.82	6.21
2	pH	Periodic*		7			7		Assumed Trigger		

Comments: Concentrations (LT & ST) are proposed emission limits - standard

Average site discharge = 0.87l/s - derived from effluent flow rate (assumed to be annual average discharge calculated from annual average rainfall (714mm) x catchment area (46900m<sup>2</sup>) multiplied by run off coefficient 0.82 (as per FRA) / 365 / 24 / 60 / 60.

Release Rate LT = 0.0435 = average site discharge (0.87) x 50 (conc) / 1000

Release Rate ST = 2.065 = 41.3, 30yr Greenfield Rate Run Off (maximum design discharge) x 50 (conc) / 1000

Annual Rate = 1371.816kg/y = derived from long term release rate (g/s) x 60 x 60 x 24 x 365 / 1000

Benchmark Concentration = average of all mean SS records for surface waters within 2km of the site taken from Table 10.7 of ES Chapter 10, SLR planning application 2009.

As detailed, the water will have passed through an interceptor prior to entering the attenuation lagoon. The only potential contaminant is therefore suspended solids.

## Water Temperature

Where relevant, please enter temperature of effluent for each release point.

This table is to check that the effluent is acceptable, i.e. within the required temperature range. It is not used to make relative judgement between options.

Discharge Location	Release Point	Measurement Method	High Normal Rate	High Peak Rate	Max Temp. Difference	Benchmarks		
						Max Summer	Max Winter	Max Temp
1 Surface Water emission t	1 SW1	Continuous				21.5	10	2

Comments:



## Water pH

Where relevant, please enter pH of effluent for each release point.

This table is to check that the effluent is acceptable, i.e. within the required pH range. It is not used to make relative judgement between options.

Discharge Location	Release Point	Measurement Method	High Normal Rate	High Peak Rate	Low Normal Rate	Low Peak Rate	pH of Receiving Water	Do artificial variations caused by effluent exceed 0.5pH units?
1 Surface Water emission t	1 SW1	Periodic*	7.733	7.733	7.733	7.733	7.733	No

Comments: pH of effluent & receiving water assumed = average of all mean pH records for surface waters within 2km of the site taken from Table 10.7 of ES Chapter 10, SLR planning application 2009.

## Energy Consumption

### Please list all Energy Sources and Annual Consumption

Select energy sources by Clicking on 'Add' and using the pull-down list.

Number	Energy Sources		Delivered MWh/yr	Conversion Factor	Primary MWh/yr	CO2 Factor	CO2 tonne/yr
1	Electricity from public supply	indirect emissions	1300	2.60	3,380	0.17	561
2	Gas oil	direct emissions	1496	1.00	1,496	0.25	374
3	Other Fuel	direct emissions	832000	1.00	832,000	0.25	208,000

Comments:

## Raw Materials

Please list all Raw Materials Consumed:

Number	Material	Annual Consumption	Units
1	rMSW and / or C&I waste	300000	tonnes/year
2	Sodium bicarbonate	5000	tonnes/year
3	Ammonia solution	800	tonnes/year
4	Activated carbon	91	tonnes/year
5	Fuel oil	150000	tonnes/year
6	Oil	0.5	cubic m/year
7	Grease	0.5	tonnes/year

Comments: Boilet Water Treatment Chemical TBC at the commissioning stage following choice of Boiler.





**Waste Inventory****Please list all Waste Streams emitted:**Are there any Waste Hazard emissions 

Number	Waste Stream	Hazard Category	Mass tonne/yr
1	Incinerator Bottom Ash	non-hazardous	75,000
2	Air Pollution Control Residues (APCR)	hazardous	9,000
3	Recovered Metals	inert	15,000

Comments: |All figures are approximate |

## Performance Indicators

Enter consumption data to determine your performance indicators

Which of the following parameters do you use for calculating your performance:

Please describe and justify your choice:

Basic Consumption Data:

	Name	Annual Quantity	Units
Amount of Product:	<input type="text" value="Electricity (net exp)"/>	<input type="text" value="26"/>	<input type="text" value="Mwe"/>
Main Raw Material:	<input type="text" value="Waste (Non Hazar)"/>	<input type="text" value="300,000.00"/>	<input type="text" value="tonnes per year"/>
Potable Water:	<input type="text"/>	<input type="text"/>	<input type="text" value="m3"/>
Non Potable Water:	<input type="text"/>	<input type="text"/>	<input type="text" value="m3"/>
Energy:	<input type="text"/>	<input type="text" value="834,796.00"/>	<input type="text" value="MWh"/>
Waste: Inert:	<input type="text"/>	<input type="text" value="14,996.00"/>	<input type="text" value="tonne"/>
Hazardous:	<input type="text"/>	<input type="text" value="8,997.00"/>	<input type="text" value="tonne"/>
Non Hazardous:	<input type="text"/>	<input type="text" value="74,978.00"/>	<input type="text" value="tonne"/>

Specific Consumption per Mwe of Electricity (net export to Nationa

Production Efficiency:	<input type="text" value="0.00"/>	<input type="text" value="Mwe/tonnes per y"/>
Potable Water:	<input type="text"/>	<input type="text" value="m3"/>
Non Potable Water:	<input type="text"/>	<input type="text" value="m3"/>
Energy:	<input type="text" value="32,356.43"/>	<input type="text" value="MWh"/>
Waste: Inert:	<input type="text" value="581.24"/>	<input type="text" value="tonne"/>
Hazardous:	<input type="text" value="348.72"/>	<input type="text" value="tonne"/>
Non Hazardous:	<input type="text" value="2,906.12"/>	<input type="text" value="tonne"/>

## Introduction to Module 3

### Module 3: Quantify Impacts

---

The aim of this module is to quantify the effects on the environment of the emissions listed in the inventory in module 2. This guidance provides methods for assessing the ten main environmental considerations of most relevance to the PPC regime. Your emissions may not result in effects to all ten of these considerations, and the module allows you to screen out any that are not relevant.

The emissions you entered in module 2 are automatically brought forward for assessment into each environmental consideration that is relevant for that type of emission (e.g. an emission may have more than one type of effect).

This module allows you to screen out any emissions that are insignificant, and to identify those emissions where further, detailed assessment of the potential environmental impact may be required.

#### **IMPORTANT NOTE**

**This software tool only completes PART of the requirements for module 3, as described above. Depending upon the degree of risk to the environment presented by the emissions, the operator may need to do further, detailed assessment of the potential effects using methodologies that are not provided here. This information should be submitted separately, as indicated within this module.**

**TO CONTINUE WITH MODULE 3, PRESS "NEXT".**



## Identify Relevant Impacts

Identify any environmental impacts that are not relevant to this assessment by deselecting from the list below:

Emissions in  
Module 2?

Justification for omission

Yes	<input checked="" type="checkbox"/> Air	
Yes	<input checked="" type="checkbox"/> Deposition from Air to Land	
Yes	<input checked="" type="checkbox"/> Water	
No	<input type="checkbox"/> Noise	See 407.0034.00332/H1P1 and Section 5 of EP application (Noise Assessment)
No	<input type="checkbox"/> Odour	See 407.0034.00332/H1P1
Yes	<input checked="" type="checkbox"/> Waste Hazard	
-	<input type="checkbox"/> Accidents	See 407.0034.00332/H1P1 and 407.0034.00332/BATOT
Yes	<input type="checkbox"/> Visual	See Section 5 of EP application (Landscape & Visual Impact Assessment)
Yes	<input checked="" type="checkbox"/> Ozone Creation	
Yes	<input checked="" type="checkbox"/> Global Warming	

If you have deselected an environmental impact as not relevant to this assessment, no further assessment of this impact will be carried out and associated assessment pages will be hidden

**Describe the Quality of the Environment:**

Provide a brief description of the main local factors that may influence the importance of the impact of emissions in the surrounding environment

**Air Quality**

Are there any Environmental Quality Standards relating to substances released from the activities, which may be at risk due to additional contribution from the activity ?  
(Environmental Quality Standards for air and water are described in IPPC Technical Guidance Notes)

Relevant EQSs that have been considered during detailed modelling are as detailed in the Air Quality Assessment which is appended to the BATOT document - SLR Reference 407.0034.00332/BATOT, Appendix 7

Are there any Local Air Quality Management Plans applicable to releases from the activity?

The site is not in an Air Quality Management Zone. The nearest AQMZ are detailed in the H1 Part 1 Environmental Risk Assessment - SLR Reference 407.0034.00332/H1P1

**Water Quality & Resources**

Are there any Environmental Quality Standards relating to substances released from the activities, which may be at risk due to additional contribution from the activity?

Any process water generated at the facility will be treated on site, taken off site by tanker to a suitably licensed facility or discharged to sewer. Clean surface water from hard standing areas will be routed via an interceptor to the settlement lagoon at the south of the site. From here the water will be discharged to Shortcliffe Brook. There will be no direct discharge to Groundwater.

Are proposals to abstract water satisfactory in order to obtain an abstraction licence?

Not Applicable

Is the activity located in a groundwater vulnerable zone (for activities with direct releases to land only)?

Not Applicable

**Proximity to Sensitive Receptors**

Is public annoyance likely to be an issue for noise, odour or plume visibility ?

Fugitive emissions and impact on sensitive receptors are addressed in the H1 Part 1 Environmental Risk Assessment - SLR Reference 407.0034.00332/H1P1. The assessment concludes that mitigation and control measures in place at the site to control emissions should suffice to protect nearby residential, commercial and industrial receptors from annoyance.

Are there any wildlife habitats, eg Special Areas of Conservation, or Special Protection Areas, likely to be affected by releases from the activity? (Description of requirements of Habitats Directive is provided in IPPC Technical Guidance Notes)

A list of nearby SSSI and European Sites including SPA is included in the EP Application, Section 1 Appendix 4. The site is located adjacent to a SSSI (Newhurst Quarry). The Air Quality Assessment - SLR Reference 407.0034.00332/BATOT, Appendix 7 - assesses the impact of deposition at ecological receptors.

## 3.3.1 Air Impacts

### Calculate Process Contributions of Emissions to Air

This table estimates the Process Contribution (PC), calculated as the maximum ground level concentration for each emission listed in the inventory, according to the release point parameters input earlier. If you have more accurate data obtained through dispersion modelling, this may be entered as indicated and will be used instead of the estimated PC.

Number	Substance	Long Term			Short Term		
		EAL µg/m3	PC µg/m3	* Modelled PC µg/m3	EAL µg/m3	PC µg/m3	Modelled PC µg/m3
1	Particulates	40	0.0726	0.031	50	5.49	0.11
2	Nitrogen dioxide (human health receptor)	40	1.46	0.435	200	110	12.628
3	Carbon monoxide	350	0.363		10000	27.5	9.846
4	Sulphur dioxide (human health receptor)	50	0.363	0.155	267	27.5	1.854
5	Hydrogen chloride	20	0.0726	0.031	800	5.49	3.963
6	Hydrogen fluoride (as F)		0.00726		250	0.549	0.396
7	Ammonia (human health receptor)	180	0.0726	0.031	2500	5.49	15.694
8	Benzene	16.25	0.0726	0.031	208	5.49	3.963
9	Cadmium and its compounds (as Cd)	0.005	0.000251	0.000076	1.5	0.0190	0.0091
10	Mercury and compounds, except mercury alkyls, (as	0.25	0.000251	0.000154	7.5	0.0190	0.0198
11	Arsenic and compounds (as As)	0.2	0.000501	0.00017	15	0.0379	0.022
12	Nitrogen dioxide (ecological receptor)	30	0.0726	0.435		5.49	12.628
13	Ammonia (ecological receptor)	8	0.0726	0.031	3300	5.49	15.694
15	Sulphur dioxide (ecological receptor)	20	0.363	0.155		27.5	1.854

Note that the Process Contribution shown for each substance is the sum of the individual process contributions of each point from which the substance is emitted. Process Contributions obtained from modelling data should incorporate all relevant release points and flow conditions.

\* State the location of any detailed air dispersion modelling and also the main assumptions:

Comments:

Detailed air dispersion modelling has been undertaken and is appended to the BATOT document - SLR Reference 407.0034.00332/BATOT, Appendix 7.

## 3.3.2 Air Impact Screening

## Screen out Insignificant Emissions to Air

This page displays the Process Contribution as a proportion of the EAL or EQS. Emissions with PCs that are less than the criteria indicated may be screened from further assessment as they are likely to have an insignificant impact.

Number	Substance	Long Term EAL µg/m3	Short Term EAL µg/m3	Long Term			Short Term		
				PC µg/m3	% PC of EAL %	> 1% of EAL?	PC µg/m3	% PC of EAL %	> 10% of EAL?
1	Particulates	40.0	50.0	0.0311	0.0776	No	0.111	0.221	No
2	Nitrogen dioxide (human health receptor)	40.0	200	0.436	1.09	Yes	12.7	6.32	No
3	Carbon monoxide	350	10,000	0.363	0.104	No	9.85	0.0985	No
4	Sulphur dioxide (human health receptor)	50.0	267	0.156	0.311	No	1.86	0.695	No
5	Hydrogen chloride	20.0	800	0.0311	0.156	No	3.97	0.496	No
6	Hydrogen fluoride (as F)	-	250	0.00726	-		0.397	0.159	No
7	Ammonia (human health receptor)	180	2,500	0.0311	0.0173	No	15.7	0.628	No
8	Benzene	16.3	208	0.0311	0.191	No	3.97	1.91	No
9	Cadmium and its compounds (as Cd)	0.00500	1.51	0.00007600	1.53	Yes	0.00911	0.607	No
10	Mercury and compounds, except mercury alkyls, (as	0.251	7.51	0.000155	0.0617	No	0.0199	0.265	No
11	Arsenic and compounds (as As)	0.201	15.0	0.000171	0.0851	No	0.0220	0.147	No
12	Nitrogen dioxide (ecological receptor)	30.0	-	0.436	1.46	Yes	12.7	-	
13	Ammonia (ecological receptor)	8.00	3,300	0.0311	0.388	No	15.7	0.476	No
15	Sulphur dioxide (ecological receptor)	20.0	-	0.156	0.776	No	1.86	-	

Air Impact Screening Base Option

## 3.3.3 Air Impact Modelling

## Identify need for Detailed Modelling of Emissions to Air

This page displays the Process Contributions in relation to the background pollutant levels and the EAL or EQS. You should use this information to decide whether to conduct detailed modelling. Note that releases that are insignificant are not shown as they are screened from further assessment. Also complete this page if you have already done detailed modelling.

Number	Substance	Air Bkgrnd Conc. µg/m3	PC µg/m3	Long Term			Short Term	
				% PC of headroom (EAL -	PEC µg/m3	% PEC of EAL %	PC µg/m3	% PC of headroom (EAL - Bkgrnd)
2	Nitrogen dioxide (human health receptor)	30.6	0.436	4.63	31.0	77.6	12.7	9.10
9	Cadmium and its compounds (as Cd)	0.00014	0.00007600	1.57	0.000217	4.32	0.00911	0.607
12	Nitrogen dioxide (ecological receptor)	30.6	0.436	-72.4	31.0	103	12.7	-

See guidelines in H1 section 3.3.3 and respond to the following

Describe here the justification for whether detailed modelling is, or is not required for any of the releases. Refer to the guidelines in H1 section 3.3.3

Detailed Modelling is required to gain a better understanding of actual ground level concentrations of individual contaminants. Detailed air dispersion modelling has been undertaken and is appended to the BATOT document - SLR Reference 407.0034.00332/BATOT, Appendix 7.

Describe source of background information:

NO<sub>2</sub> µg/m<sup>3</sup> - CBC Loughborough real-time monitor (2007)  
Cadmium ng/m<sup>3</sup> - DEFRA Metals network - Beaconhill 2008

Document Reference of detailed modelling work:

Detailed air dispersion modelling has been undertaken and is appended to the BATOT document - SLR Reference 407.0034.00332/BATOT, Appendix 7.

### 3.4 Deposition to Land from Air

With reference to H1 Section 3.4, describe assessment of deposition below:

Decision whether to screen as insignificant

Number	Substance	% PC of EAL %	Insignificant?	Reason (See section 3.4.1 of H1)
1	Particulates	0.0776	Yes	
2	Nitrogen dioxide (human health receptor)	1.09	No	Detailed air dispersion modelling has been undertaken and is appended to the BATOT document - SLR Reference 407.0034.00332/BATOT, Appendix 7. It considers the impact of deposition to land of all the above contaminants.
3	Carbon monoxide	0.104	Yes	
4	Sulphur dioxide (human health receptor)	0.311	Yes	
5	Hydrogen chloride	0.156	Yes	
6	Hydrogen fluoride (as F)	-	Yes	
7	Ammonia (human health receptor)	0.0173	Yes	
8	Benzene	0.191	Yes	



Deposition to Land from Air Base Option

9	Cadmium and its compounds (as Cd)	1.53	No	Detailed air dispersion modelling has been undertaken and is appended to the BATOT document - SLR Reference 407.0034.00332/BATOT, Appendix 7. It considers the impact of deposition to land of all the above contaminants.
10	Mercury and compounds, except mercury alkyls, (as	0.0617	Yes	
11	Arsenic and compounds (as As)	0.0851	Yes	
12	Nitrogen dioxide (ecological receptor)	1.46	No	Detailed air dispersion modelling has been undertaken and is appended to the BATOT document - SLR Reference 407.0034.00332/BATOT, Appendix 7. It considers the impact of deposition to land of all the above contaminants.
13	Ammonia (ecological receptor)	0.388	Yes	
14	Dioxins and Furans	-	No	
15	Sulphur dioxide (ecological receptor)	0.776	No	

For those emissions not screened as insignificant, describe the location of any further assessment here:

Detailed air dispersion modelling has been undertaken and is appended to the BATOT document - SLR Reference 407.0034.00332/BATOT, Appendix 7. It considers the impact of deposition to land of all the above contaminants.

**module 3**  
**3.5.1 Water Impacts**

**Calculate Process Contributions of Emissions to Water**

This table estimates the Process Contribution, calculated after dilution into the relevant surface water type for each emission to water listed in the inventory, according to the release point parameters input earlier. If you have more accurate data obtained through dilution modelling, this may be entered as indicated and will be used instead of the estimated PC.

Substance	Long Term			Short Term		
	EAL	PC	Modelled PC	EAL	PC	Modelled PC
	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
pH (Surface Water emission to Shortcliffe Brook)		278			278	
Suspended solids (Surface Water emission to Shortcliffe Brook)		1,989			1,989	

Note that the Process Contribution shown for each substance is the sum of the individual process contributions of each point from which the substance is emitted. Process Contributions obtained from modelling data should incorporate all relevant release points and flow conditions.

\* If you have valid dispersion modelling data available - please enter it here

Comments: No EAL available for these determinands.  
Emissions to surface water will be controlled by an Environment Agency Permit Condition.





**See guidelines in H1 section 3.5.6 and respond to the following**

---

Describe here the justification for whether detailed modelling is, or is not required for any of the releases. Refer to the guidelines in H1 section 3.5.6

Describe source of background information:

Describe location of detailed modelling work:

## Photochemical Ozone Creation Impacts

Number	Substance	Annual Rate tonne/yr	POCP Value per tonne	POCP
8	Benzene	18.28	21.8	398.50
3	Carbon monoxide	91.33	2.7	246.59
12	Nitrogen dioxide (ecological receptor)	18.28	2.8	51.18
2	Nitrogen dioxide (human health receptor)	365.36	2.8	1,023.01
15	Sulphur dioxide (ecological receptor)	91.33	4.8	438.37
4	Sulphur dioxide (human health receptor)	91.33	4.8	438.37
			Total:	2,596.03

Comments:

## Global Warming Potential Impacts

Substance	Source	Annual Rate tonne/yr	GWP Value per tonne	Annual GWP
C02 Energy: direct	direct emissions	833,496.00	1.00	208,374.00
C02 Energy: indirect	indirect emissions	1,300.00	1.00	561.08
			Total:	208,935.08

Comments:

## Waste Hazard and Disposal Impacts

Number	Waste Stream	Final treatment or disposal method	Transport	Pre-Treatment		Post-Treatment			
				Hazard	Mass	Hazard	Mass		
1	Incinerator Botto	recycling	3	1	0-10 miles	non-hazardous	75,000	no residue	
2	Air Pollution Contr	non-inert landfill	30	5	101-200 miles	hazardous	9,000	hazardous	8,997
3	Recovered Metals	recycling	3	4	51-100 miles	inert	15,000	no residue	

Comments: The distances above are indicative of potential recipients of each waste stream. Biffa will maintain dialogue with a range of providers of waste services and recycling facilities to ensure that the most suitable option is adopted upon commencement of operations. Refer to the Residue Management Plan submitted with this Environmental Permit Application - SLR Reference 407.0034.00332/RMP.



## Waste Hazard Screening and Impacts

Number	Waste Stream	Screen Out?	Reason for Screening	Hazard Score	Disposal / Treatment Score
1	Incinerator Botto	Yes	Recycling is the preferred option - IBA Facility on site		0
2	Air Pollution Contr	Yes	Landfill. Recycling options to be reviewed on a regular basis	0	0
3	Recovered Metals	Yes	Recycling represents BAT		0
				<b>0</b>	<b>0</b>

Comments:

## Summary Tables

Print or Preview summary tables:

Choose a summary table

- Air
- Deposition from Air to Land
- Water
- Waste Hazard
- Ozone Creation
- Global Warming

Preview

Print

## Summary Tables

Print or Preview summary tables:

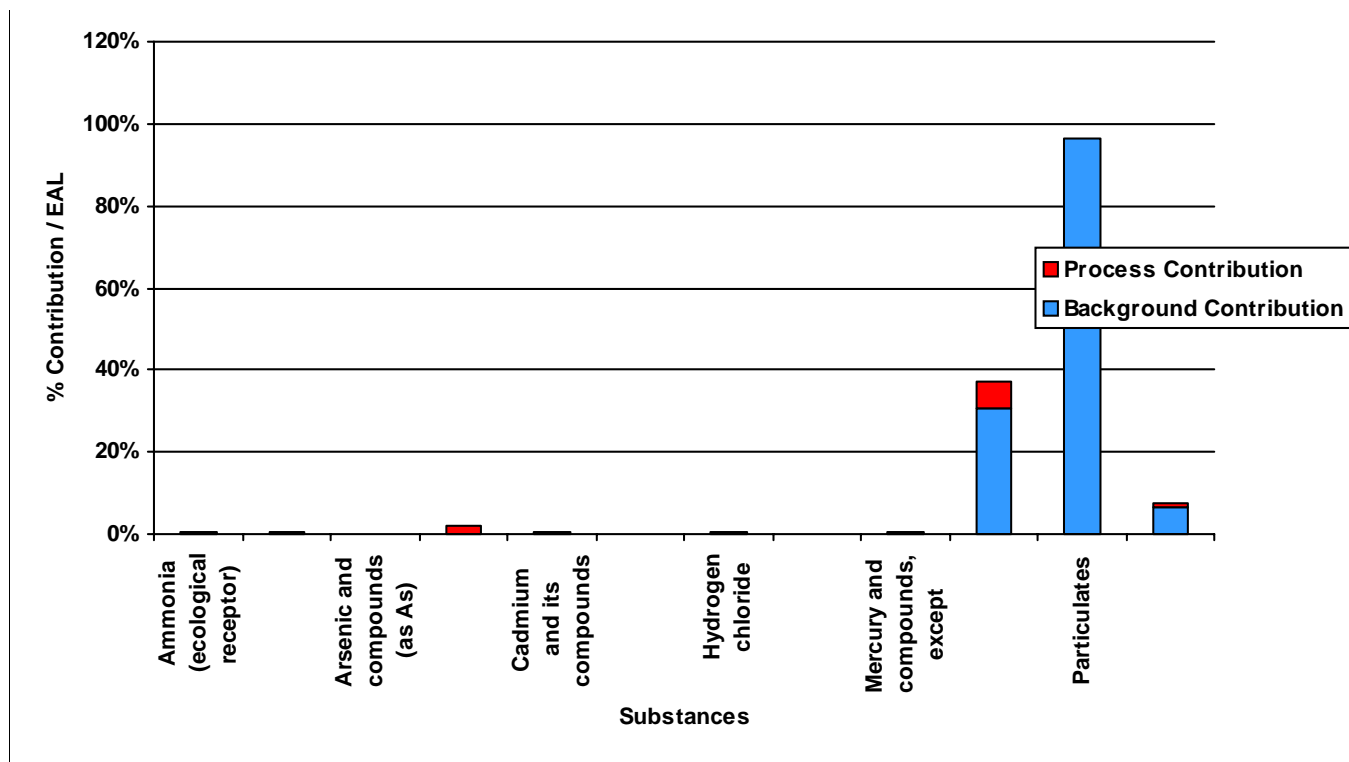
Choose a summary table

- Air
- Deposition from Air to Land
- Water
- Waste Hazard
- Ozone Creation
- Global Warming

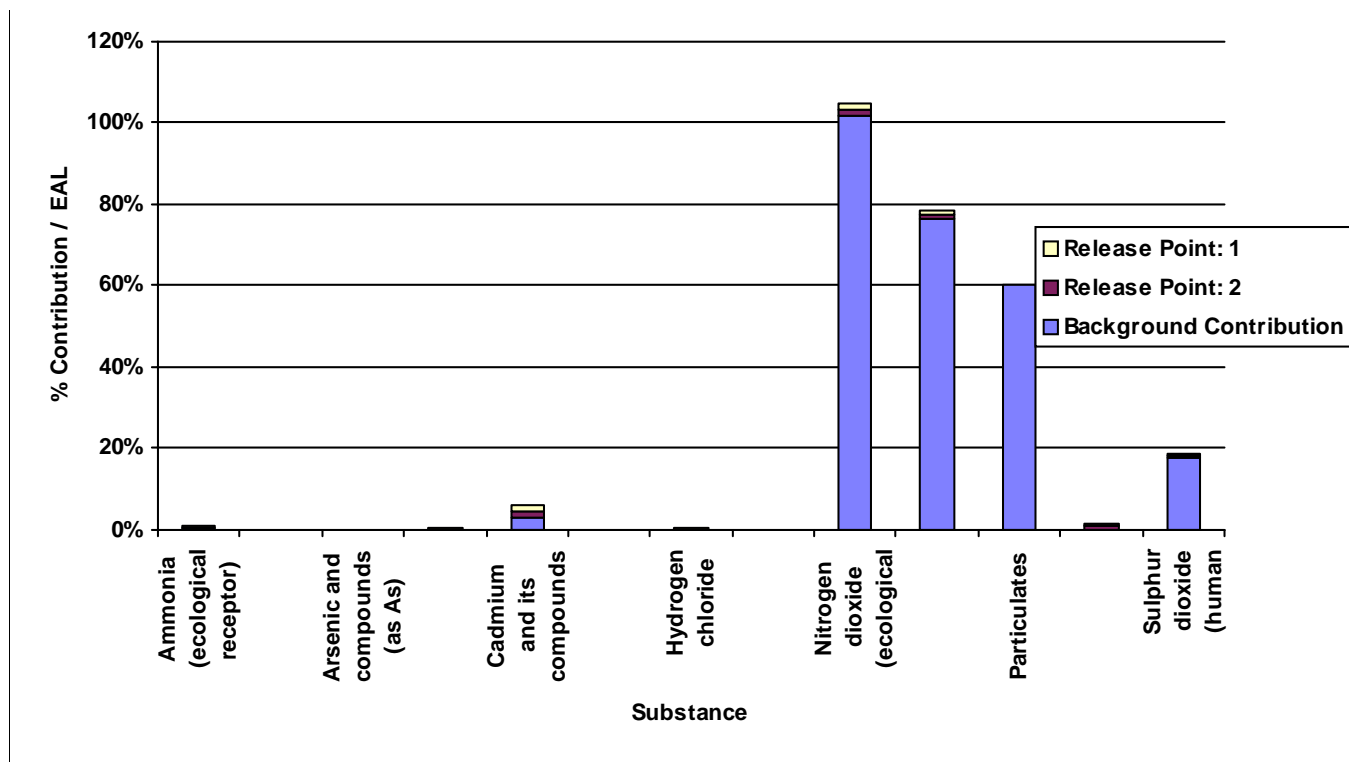
Preview

Print

## Air Short Term Effects - Comparison by Substance



## Air Long Term Effects - Comparison by Substance



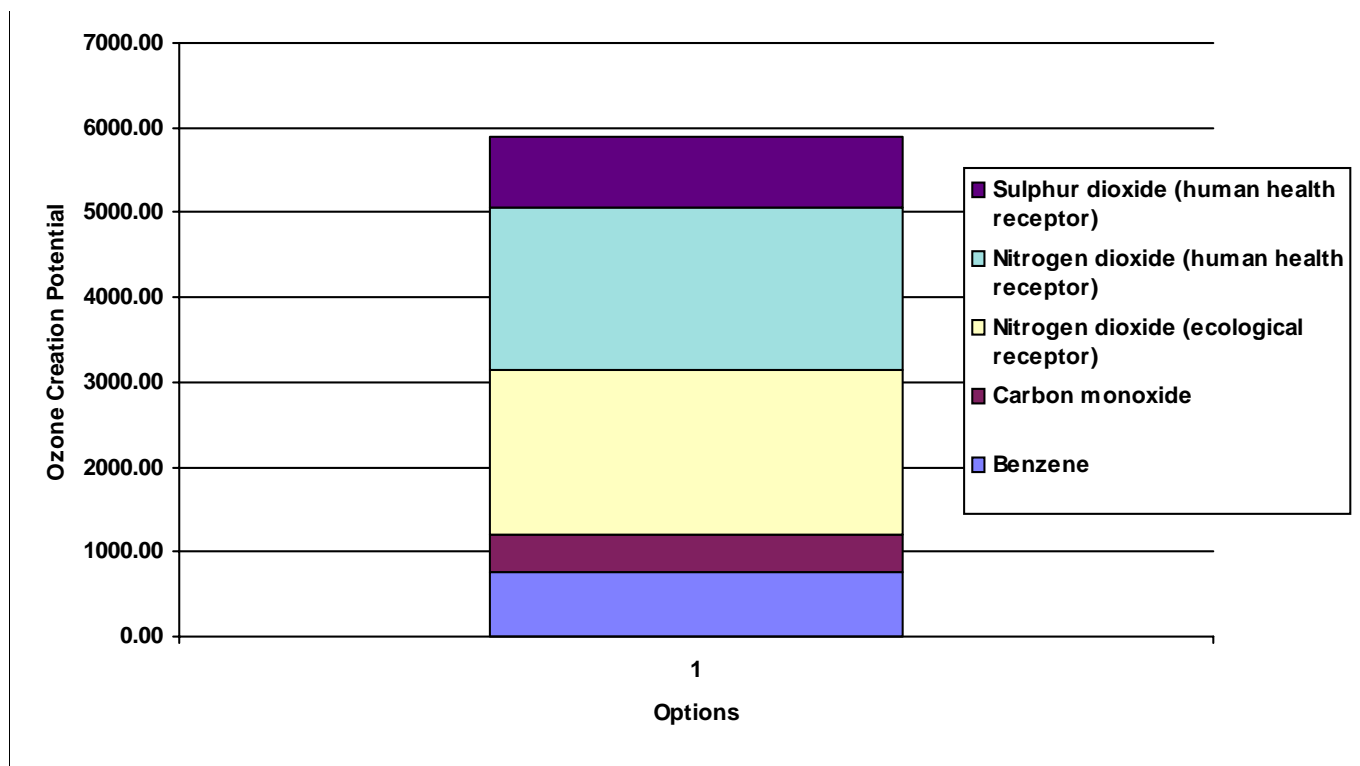
## Short Term Water - Substance Comparison

No Data Available

## Water Long Term Effects - Comparison by Substance

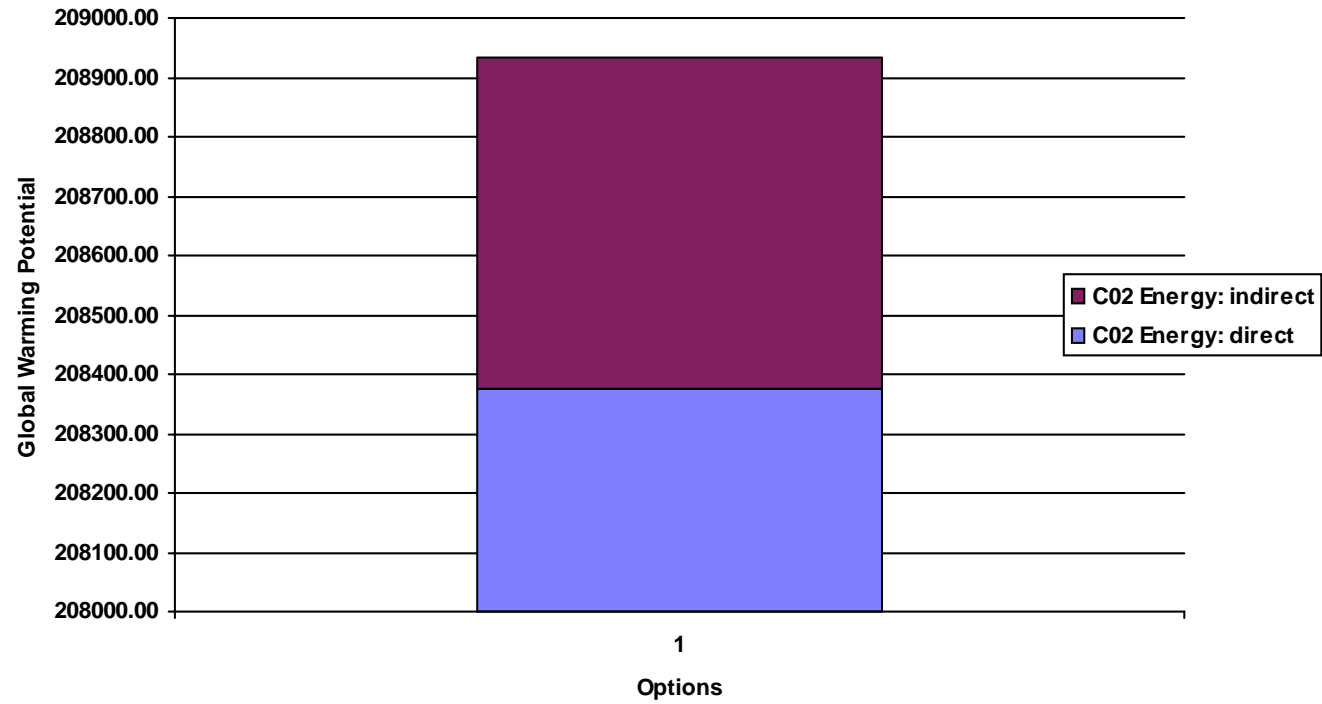
No Data Available

### Ozone Creation - Substance Comparison





## Global Warming - Substance Comparison



## Waste Hazard - Option Comparison

No Data Available

## Summary of Environmental Assessment

You have now completed all of the steps in this software for the environmental assessment. This will provide you with:

- an inventory of all emissions sources and substances emitted from your activities
- an information trail of how the impacts of these emissions have been assessed
- a summary of the impacts

You now need to use this information to confirm whether the emissions are acceptable, i.e. that they do not cause significant pollution to occur, by responding below:

Do any of the emissions exceed any of the following:

Statutory Emission limit values:	<input type="checkbox"/> No	If yes, identify the substances concerned and improvements that are needed to at least meet the statutory requirement
Environmental Quality Standards (air and water):	<input type="checkbox"/> No	If yes, identify the substances concerned, the contribution from the activities and investigate whether further detailed fate and effect modelling and/or pollution controls are needed. Ensure that the relevant EQS reference conditions are applied.
Environmental Assessment Levels:	<input type="checkbox"/> No	If yes, identify the substances concerned, the contribution from the activities and investigate whether further detailed fate and effect modelling and/or pollution controls are needed.

Use the box below to provide further information on any of the above to which you have responded 'Yes':

Finally, print all of the information and submit with your application. Remember to include any supplementary information and reports that you have had made reference to during the assessment procedure.