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# Linden Foods Burradon

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H1 Assessment

## Facility Reference Information

Please complete the following information:

Company Name:

Location:

Permit Number:

If you have data already stored in a previous version of the H1 software you may import it by pressing the button to the right.

Import Utility

Please note that before the import can take place any data that already exists in this copy of the tool will be removed. Please also note that any 'Operating Mode' information you had entered in your Air and Water inventories will defer to the default of 100% on data import

### NOTE ON MICROSOFT ACCESS SECURITY WARNING

Depending on your security settings, you may get a security notice appearing each time the import routine connects to a table in your source database. You need to click 'Open' on this message for the Import routine to be successful. There are 18 tables to connect to in total but if you place your cursor over the 'Open' button you will be able to repeatedly click your mouse to make this process execute quickly and without too much frustration. We apologise for this inconvenience but it is an aspect of Microsoft Security provisions that are beyond our control.

## Describe the Objectives

Depending on the reason for the assessment you will need to complete different parts of the tool.

### Select the type of assessment:

- a) to carry out an ENVIRONMENTAL ASSESSMENT of the releases resulting from the facility as a whole Do Steps 1, 2 and 3 only
- b) to conduct a costs/benefits OPTIONS APPRAISAL to determine BAT or support the case for derogation under the Industrial Emission Directive. Do Steps 1,2, 3 and 4 and continue with 5 and 6 if necessary

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

To assess the environmental impact of the site from all emission, at permit variation stage

- e.g. "To appraise several candidate options for the prevention and minimisation of releases to air of NO<sub>x</sub> and SO<sub>2</sub> for a new energy from waste plant, in order to select BAT"
- or "To appraise the costs and benefits of applying indicative BAT to further control BOD discharged to water at an existing paper mill"
- or "To assess the existing environmental impact of all emissions from all activities within an installation for the production of cement, prior to investigating further controls."
- or "To assess the environmental impact of an existing discharge of treated sewage effluent on the receiving water"

## Scope of Environmental Assessment

### List the activities included in the assessment

Number      Activity

e.g. Standalone water discharge activity, raw materials handling, pre-treatment, charging, conversion, purification, waste treatment, effluent treatment, gas cleaning.

**Use the 'Add' button at the bottom left to create a new activity**

1 Slaughtering animals at a plant with a carcass production capacity of more than 50 tonnes per day.

2 To include 5th quarter, and chemical treatment of wastewater

## Describe the Candidate Options

### Identify all reasonably applicable options of techniques

You should include:

- a brief description of individual control measures or configurations of control measures selected for each option, and the activities with which they are associated (the existing base-case may conveniently be the first option).
- justification why any techniques generally applicable to the regulated facility have not been selected for assessment. (see relevant H1 annex) (This should be based on regulated facility-specific technical, not economic reasons).
- for new projects, whether any initial environmental assessment that was done at the project evaluation stage, or any screening of technology or process routes prior to this assessment, particularly where this has a bearing on environmental performance. (see H1)

**In the case of b) or c)**  
please enter your Comments here:

Option  
Number

Title

Description

e.g.

1

Permit Update

## Air Release Points

Please define your Release Points for Releases to Air

Are there any Air emissions?

Yes

Click the Add button below

Number	Description	Location or Grid Reference	Activity or Activities	Effective Height	Efflux Velocity	Total Flow
				metres	m/s	m3/hr
e.g.	A1	North stack		150	25	5,000
1	A1	Boiler Stack	Hot Water / Steam production	0	15	6782.4
2	BEP1	Boiler Stack	Hot Water	22.6	9.97	2401

## 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 (% of Year)	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			
e.g.	sulphur dioxide	Estimated*	70% load	1510	3000	annual avg	1510	3000	hourly avg	55,000	2000
1	Carbon monoxide	Periodic*	0.3%	6.0	0.011304	Estimated	6.0	0.011304	Estimated	0.0011	
2	Nitrogen Dioxide	Estimate*	0.3%	8.8	0.016579	Estimated	8.8	0.016579	Estimated	0.0016	
3	Sulphur Dioxide (24 Hour Mean)	Estimate*	0.3%	0.0	0.000009	Estimated	0.0	0.000009	Estimated	0.0000	

## 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 (% of Year)	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			
e.g.	sulphur dioxide	Estimated*	70% load	1510	3000	annual avg	1510	3000	hourly avg	55,000	2000
1	Particulates (PM10) (Annual Mean)	Estimate	50.0%	1.0	0.000667	Estimated	1.0	0.000667	Estimated	0.0105	
2	Sulphur Dioxide (24 Hour Mean)	Estimate	50.0%	0.8	0.000523	Estimated	0.8	0.000523	Estimated	0.0082	
3	Nitrogen Dioxide	Estimate	50.0%	250.0	0.166736	Estimated	250.0	0.166736	Estimated	2.6291	
4	Carbon monoxide	Estimate	50.0%	30.0	0.020008	Estimated	30.0	0.020008	Estimated	0.3155	
5	Nitrous oxide	Estimate	50.0%	130.0	0.086703	Estimated	130.0	0.086703	Estimated	1.3671	



## Receiving Water Body(s)

### Please define the Final Discharge Locations for Releases to Water

Are there any discharges to surface waters?   Click the Add button below

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

For discharges to sewer, this should be the point where the sewage works discharges to a surface water

**N.B. For Riverine discharges (River, Upper Estuary) you only need enter the River description and flow once. Further details of individual releases can be entered on the next page. For discharges to TRaC waters, separate Discharge Locations must be added for each release point that has a different mixing zone**

Number	Description	Final Discharge Category	Freshwater Q95 flow rate
e.g.	River Trent at Derby	R	<input type="text" value="1.5"/>
1	Seaton Burn	R <input type="button" value="v"/>	River Flow (m3/s): <input type="text" value="2.151"/>
2	River Tyne	R <input type="button" value="v"/>	River Flow (m3/s): <input type="text" value="45.263"/>

## Water Discharge/Release Details and Flow Data

Please define your Release Points for Releases to Water

Number	Description	Location or Grid Reference	Activity or Activities	Final Discharge Point	Discharge via Sewer?	Mean Effluent Flow Rate*	Max Effluent Flow Rate*
						m3/s	m3/s
e.g.	W1	Discharge from ETP into River		1	No	5	10
1	W1	Surface Water Discharge	Uncontaminated runoff	1 Seaton Burn	No	0.0003	0.0025
2	S1	Sewer Discharge Point	Process Effluent after screen	2 River Tyne	Yes	0.0004	0.0016

## Release Concentrations of Substances Present in Discharges to Water

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 Annex D for information)

Method:

Reference:

Number	Substance	Meas'ment Method	Operating Mode (% of Year)	Average Concentration in the Effluent (AA)		Maximum Concentration in the Effluent (Max)		Annual Rate kg/yr	Sewage Treatment Factor	Significant Load (PHS Only) kg/year
				Conc. $\mu\text{g/l}$	Meas'ment Basis	Conc. $\mu\text{g/l}$	Meas'ment Basis			
e.g.	chromium	Estimated*	continuous	0.20	annual avg	0.20	15 minute	380	1	1
1	Chemical Oxyg	Spot	100.0%	6500	Annual Avg	6500	Annual Avg	81.9936	1	
2	Total Suspend	Spot	100.0%	1500	Annual Avg	1500	Annual Avg	18.9216	1	
3	Non volatile m	Spot	100.0%	200	Annual Avg	200	Annual Avg	2.52288	1	

## 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 Diff
		e.g. continuous	10	15				
1 Seaton Burn	1 W1	Estimated <input type="text" value=""/> <input type="text" value=""/>	10	15	0.0	21.5	10	2

## 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?
e.g.		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
1 Seeton Burn	1 W1	Estimated <input type="text"/>	7.5	7.5	6.5	6.5	7	No <input type="text"/>

## 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
e.g.	<input type="text" value="natural gas"/>		<input type="text" value="70,000"/>	<input type="text"/>		<input type="text"/>	
1	<input type="text" value="Natural Gas"/> <input type="button" value="v"/>	direct emissions	137.818	1.00	138	0.19	26
2	<input type="text" value="Renewable Electricity (non-fossil fuel)"/> <input type="button" value="v"/>	indirect emissions	124.898		0		0

## Raw Materials

Please list all Raw Materials Consumed:

Number	Material	Annual Consumption	Units
e.g.		50,000	
1	Non-potable Water	0	tonnes/year
2	Potable water	50000	cubic m/year
3	Cattle	50000	heads of animal
4	Sheep	30000	heads of animals
5	Chemicals used	70	tonnes/year

## Waste Inventory

Please list all Waste Streams emitted:

Are there any Waste emissions?

Yes



Click the Add button below

Number	Waste Stream	Mass tonne/yr	Category of Waste	Disposal/Recovery Option
e.g.	ETP sludge		non-hazardous	
2	Cardboard/Plastic	150	other non-hazardous	Other Recycling (R3;R4;R5;R11 and R12)
1	Paunch Manure & Straw	10,000	biodegradable non-hazardous	Landspreading (R10)
3	Dewatered Sludge WWTP	2,000	biodegradable non-hazardous	Landspreading (R10)



## 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:

Energy Efficiency: kWh/Animal Unit

Basic Consumption Data:

	Name	Annual Quantity	Units
Amount of Product:	<input type="text" value="Total energy use"/>	<input type="text" value="2,819,315"/>	<input type="text" value="kWh"/>
Main Raw Material:	<input type="text" value="Cattle/Sheep"/>	<input type="text" value="31,824.00"/>	<input type="text" value="Animal Unit"/>
Potable Water:		<input type="text" value="50,000.00"/>	<input type="text" value="m3"/>
Non Potable Water:		<input type="text" value="0.00"/>	<input type="text" value="m3"/>
Energy:		<input type="text" value="262.72"/>	<input type="text" value="MWh"/>
Waste: Inert:		<input type="text"/>	<input type="text" value="tonne"/>
Hazardous:		<input type="text"/>	<input type="text" value="tonne"/>
Stable Non-reactive Hazardous:		<input type="text"/>	<input type="text" value="tonne"/>
Biodegradable Non-hazardous:		<input type="text" value="12,000.00"/>	<input type="text" value="tonne"/>
Other Non-hazardous:		<input type="text" value="150.00"/>	<input type="text" value="tonne"/>

Specific Consumption per kWh of Total energy use:

Production Efficiency:	<input type="text" value="88.59"/>	<input type="text" value="kWh/Animal Unit"/>
Potable Water:	<input type="text" value="0.02"/>	<input type="text" value="m3"/>
Non Potable Water:	<input type="text" value="0.00"/>	<input type="text" value="m3"/>
Energy:	<input type="text" value="0.00"/>	<input type="text" value="MWh"/>
Waste: Inert:	<input type="text"/>	<input type="text" value="tonne"/>
Hazardous:	<input type="text"/>	<input type="text" value="tonne"/>
Stable Non-reactive Hazardous:	<input type="text"/>	<input type="text" value="tonne"/>
Biodegradable Non-hazardous:	<input type="text" value="0.00"/>	<input type="text" value="tonne"/>
Other Non-hazardous:	<input type="text" value="0.00"/>	<input type="text" value="tonne"/>

## Identify Relevant Impacts

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

Releases in  
Part 2?

Justification for omission

Yes	<input checked="" type="checkbox"/> Air	
Yes	<input type="checkbox"/> Deposition from Air to Land	Detailed modelling is not warranted as this is a small, low risk release
Yes	<input checked="" type="checkbox"/> Water	
Yes	<input checked="" type="checkbox"/> Waste	
Yes	<input type="checkbox"/> Visual	Site has existing planning permissions: none of the emissions cause visual impact
Yes	<input checked="" type="checkbox"/> Ozone Creation	
Yes	<input checked="" type="checkbox"/> Global Warming	

## Local Environmental Quality

### 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 EPR Technical Guidance Notes)

No

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

No

#### 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?

No

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

N/A - no borehole on site

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

N/A

#### Proximity to Sensitive Receptors

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

Neighbours are present within 50m of the boundary who could be affected by odour - however an odour management plan is in place. Plume visibility is not an issue

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 EPR Technical Guidance Notes)

Within 10km of the site there is one SAC (Northumbria Coast) and one RAMSAR site (Northumbria Coast), however these are unlikely to be affected as the air emission is from a small, low risk release - a gas-fired boiler with a thermal input less than 20MW

## 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	PC	• Modelled PC	EAL	PC	• Modelled PC
		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>
1	Particulates (PM10) (Annual Mean)	40	0.00129			0.0929	
1	Carbon monoxide		0.0435		10000	46.9	
2	Sulphur Dioxide (24 Hour Mean)		0.00101		125	0.109	
3	Nitrogen Dioxide	40	0.328	2.6	200	87.9	17.1

## Air Impact Screening Stage One

### 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		Long Term			Short Term		
		EAL	EAL	PC	% PC of EAL	> 1% of EAL?	PC	% PC of EAL	> 10% of EAL?
		µg/m3	µg/m3	µg/m3	%		µg/m3	%	
1	Particulates (PM10) (µg/m3)	40.0	-	0.00129	0.00321	No	0.0929	-	
1	Carbon monoxide	-	10,000	0.0435	-		46.9	0.469	No
2	Sulphur Dioxide (24 H)	-	125	0.00101	-		0.109	0.0871	No
3	Nitrogen Dioxide	40.0	200	2.61	6.51	Yes	17.2	8.56	No

## Air Impact Modelling Stage Two Screening

### 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 Bkgmd Conc. µg/m3	Long Term				Short Term			
			PC µg/m3	% PC of headroom (EAL - Bkgmd)	PEC mg/m3	% PEC of EAL	% PEC of EAL >=70?	PC µg/m3	% PC of headroom (EAL - Bkgmd)	% PC of headroom >=20?
		e.g.	12							
3	Nitrogen Dioxide	19.012	2.61	12.4	21.7	54.0	No	17.2	10.6	No

## Air Impact Modelling Assessment

See guidelines in H1 Annex F section entitled "Decide if you need detailed air modelling."

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

Detailed modelling is not warranted as this is a small, low risk release - a gas-fired boiler with a thermal input less than 20MW]

Describe source of background information:

North Tyneside Council - Estimated Background Air Pollution Maps (base year 2018) downloaded from <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>

Document Reference of detailed modelling work:

N/A

## Water Impacts - Fresh Water Releases

### Apply Test 1 (See Guidance) and Calculate Process Contributions of Emissions to Water

This table applies Test 1 and also estimates the Process Contribution for Freshwater releases, this is 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. Any releases which 'Pass' Test 1 are screened out at this point.

Substance	Annual Avg EQS			MAC EQS		
	Release µg/l	EQS µg/l	Release conc < 10% EQS Test 1	Release µg/l	MAC µg/l	Release conc < 10% EQS Test 1
e.g.			Test 1			Test 1
[S1] Chemical Oxygen Demand (River Tyne)	6500.0000		N/A	6500.0000		N/A
[S1] Non volatile matter extractable by 40/60 petroleum (River Tyne)	200.0000		N/A	200.0000		N/A
[S1] Total Suspended Solids (River Tyne)	1500.0000		N/A	1500.0000		N/A

## Water Impact Modelling Assessment

### See guidelines in H1 Annex D 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 Annex D.

Not required. Existing consent to discharge in place - N1162/V4 Northumbrian Water

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
e.g.				
1	Carbon monoxide	0.00	2.7	0.00
2	Sulphur Dioxide (24 Hour Mean)	0.01	4.8	0.04
3	Nitrogen Dioxide	2.63	2.8	7.36
4	Carbon monoxide	0.32	2.7	0.85
2	Nitrogen Dioxide	0.00	2.8	0.00
3	Sulphur Dioxide (24 Hour Mean)	0.00	4.8	0.00



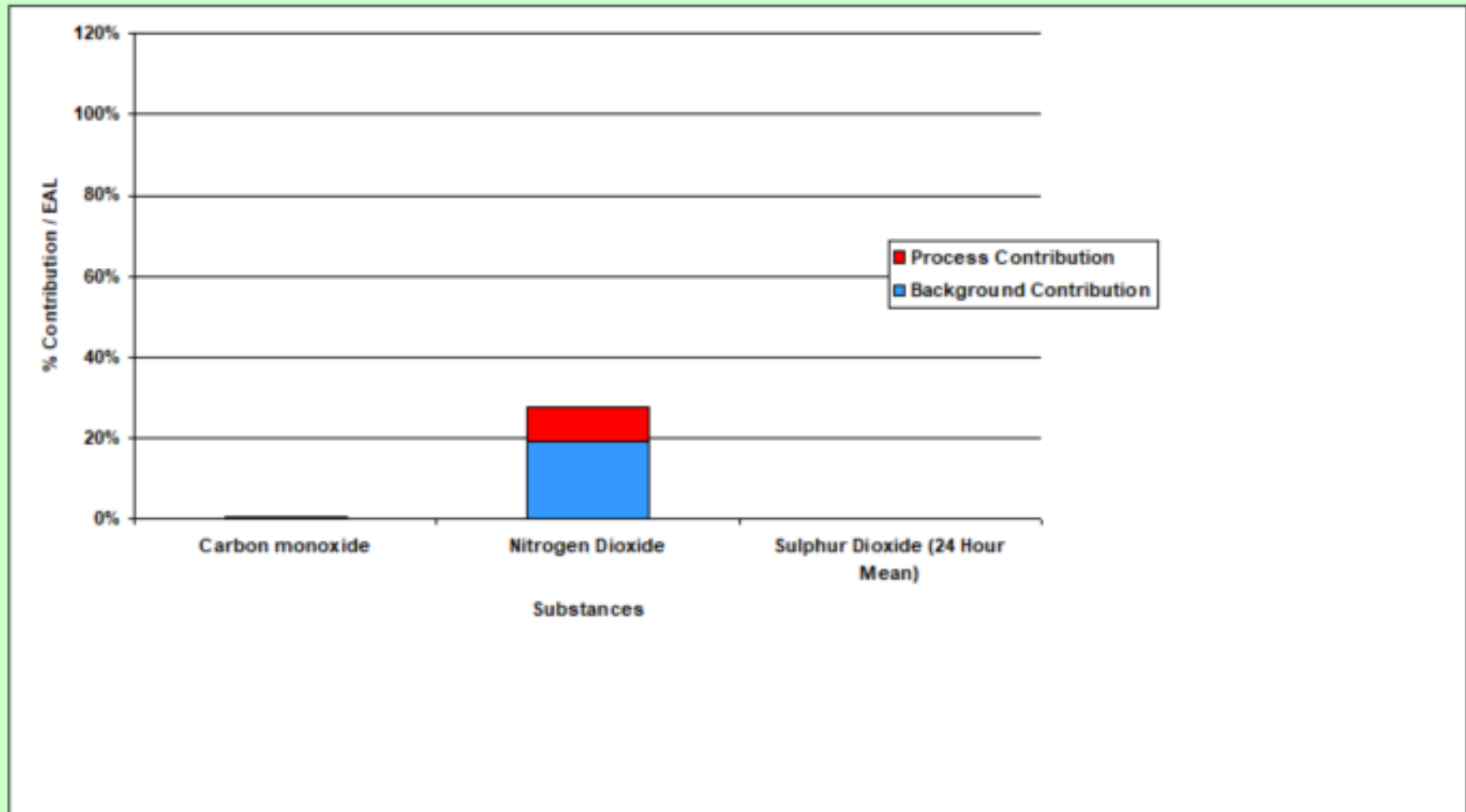
## Global Warming Potential Impacts

Substance	Source	Annual Rate MWh/yr	GWP Value per tonne	Annual GWP
CO2 Energy: direct	direct emissions	137.82	1.00	26.19
CO2 Energy: indirect	indirect emissions	124.90	1.00	
Nitrous oxide Process: direct	BEP1	1.37	310.00	423.81

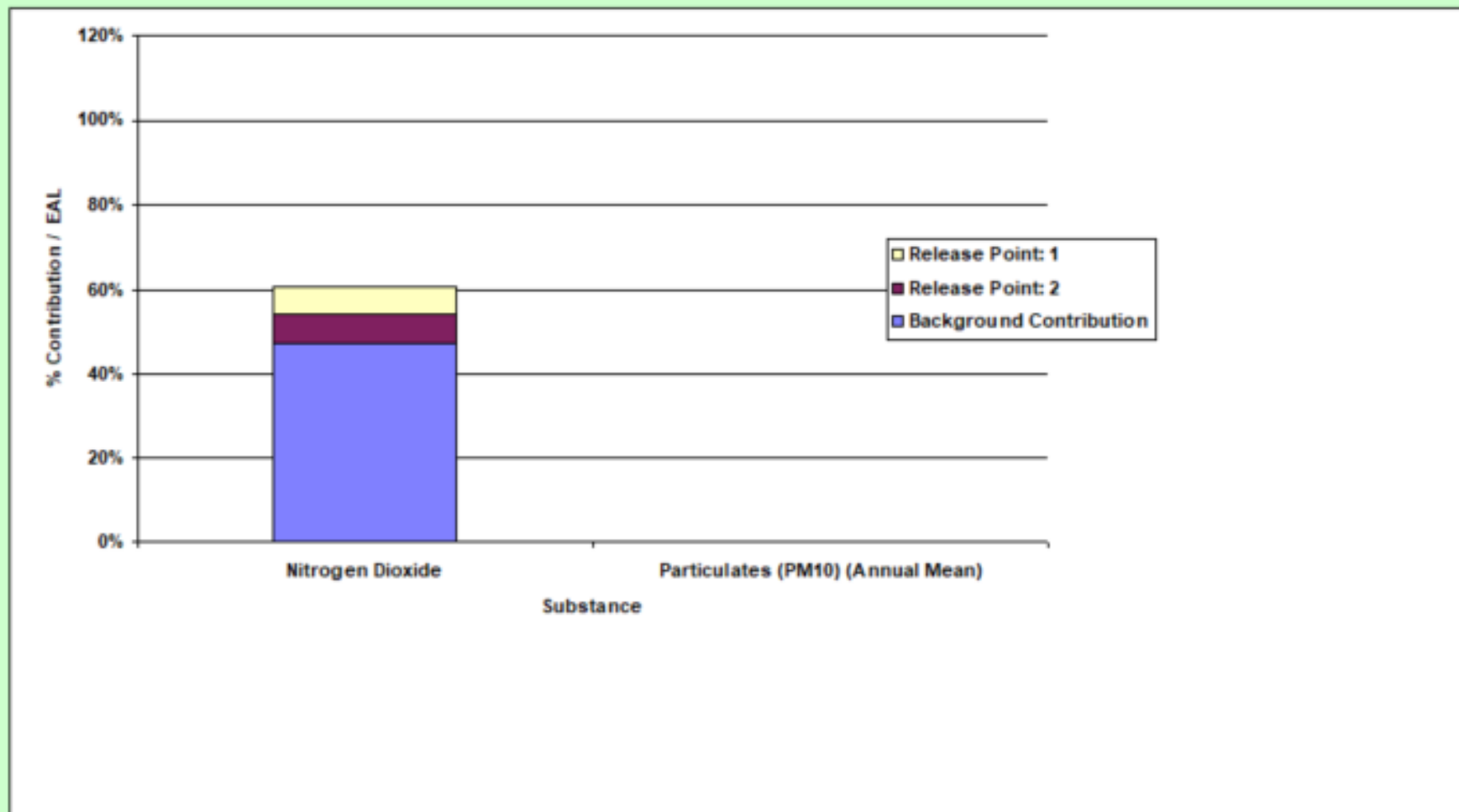
## Waste Impact Score Calculation

Number	Waste Stream	Mass	Final treatment or disposal method	(Score)	Waste Type	(Score)	Impact Score
e.g.	ETP sludge	1300	non-inert landfill		non-hazardous		
2	Cardboard/Plastic	150	Other Recycling (R3:R4:R5:R11 and R12)	3	other non-hazardous	2	900
3	Dewatered Sludge WWTP	2,000	Landspreading (R10)	4	biodegradable non-hazarc	4	32000
1	Pouch Manure & Straw	10,000	Landspreading (R10)	4	biodegradable non-hazarc	4	160000

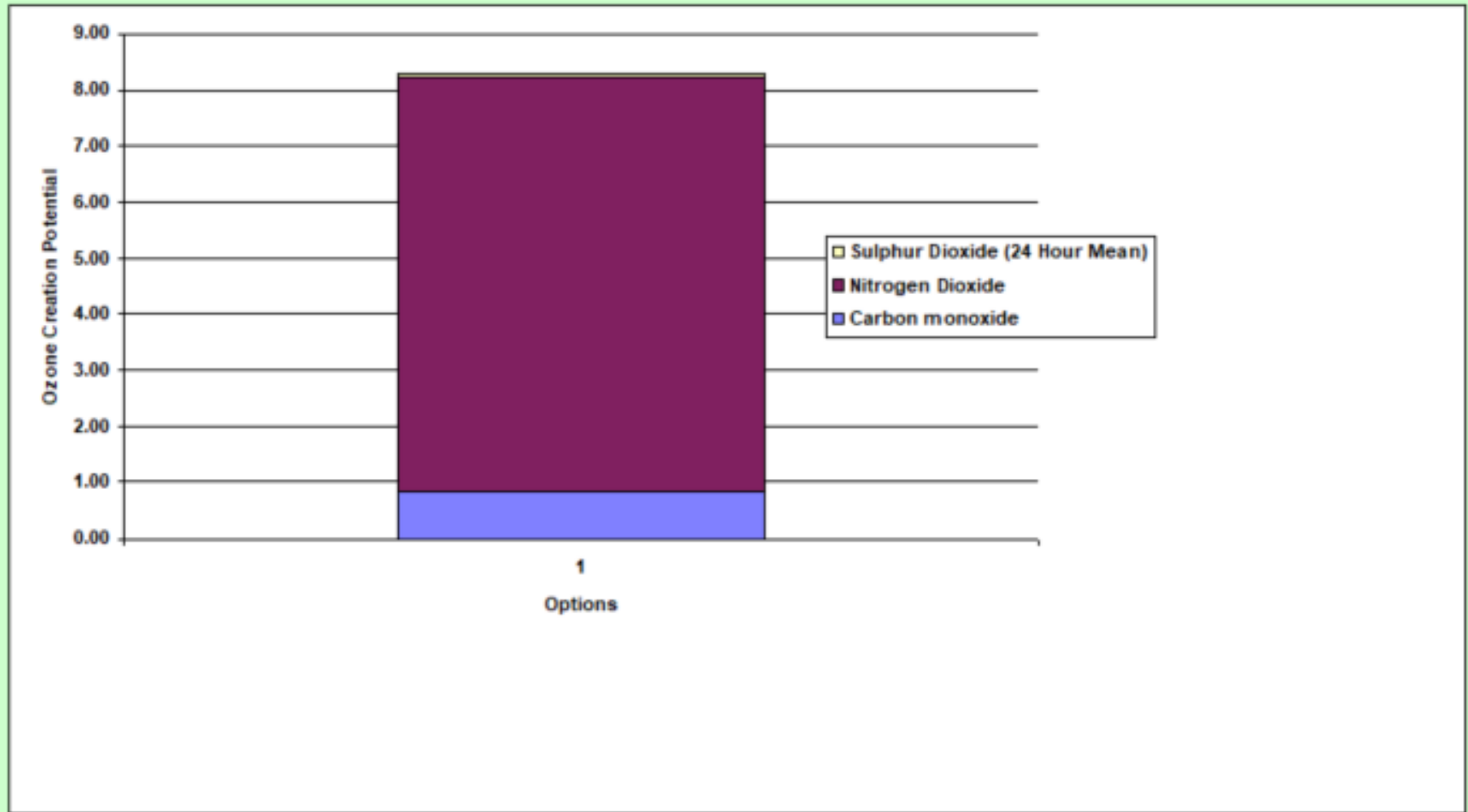
## Air Short Term Effects - Comparison by Substance



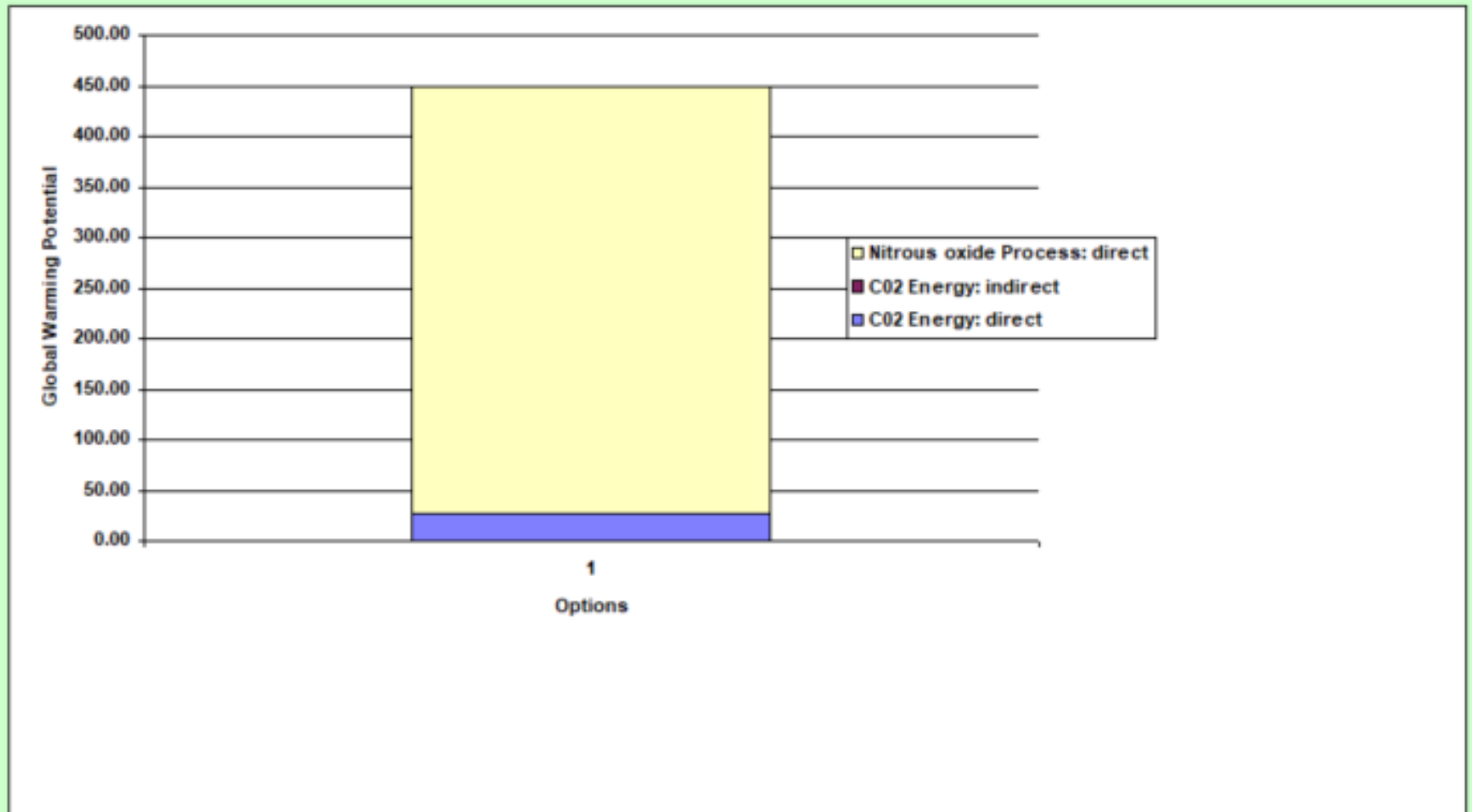
## Air Long Term Effects - Comparison by Substance



## Ozone Creation - Substance Comparison



## Global Warming - Substance Comparison



## Waste - Option Comparison

