

Technical Note

H1 Screening Assessment – Howdon Biomethane Upgrade Plant Air Quality and Screening Assessment

Environment Agency reference:	EPR/KP3394ZE/V006	Date:	19 December 2022
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Approved by:	Anita Manns		

1 Introduction

As requested in the 'Application: EPR/KP3394ZE/V006 - Northumbrian Water Ltd - Howdon STW - Request for further information clarification, dated 24 November 2022' an air emissions risk assessment of emissions to air of relevant substances from the biomethane upgrade plant (BUP) has been conducted using the Environment agency's H1 Risk Assessment Tool.

The screening assessment has been carried out for the emission point at the BUP. This technical note summarises the findings of the assessment, as well as outlining the information which has been inputted into the H1 tool and how these values have been derived.

The purpose of the BUP is to remove carbon dioxide (CO₂) to produce biomethane in line with the Quality Protocol specification. Prior to the biogas passing to the BUP it will pass through a filtering system which will remove contaminants such as hydrogen sulphide, and mercaptans.

To complete the assessment, the guidance 'Air emissions risk assessment for your environmental permit'¹ has been used. As stated in guidance, where existing data has not been available, either estimates based on similar operations elsewhere or worst-case estimates have been used to complete the assessment. All assumptions that have been made for these estimates are detailed in this report.

2 BUP stack parameters

2.1 Overview

Table 2.1 provides the parameters of the BUP that were used to undertake the screening assessment. All of the parameters, with the exception of the effective stack height which was calculated using the method detailed in Section 2.2 below, were provided by Northumbrian Water Limited (NWL). The emission point reference identifies where the emission point is located, and corresponds to the Site layout plan in Appendix A.

¹ <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>

Table 2.1: BUP stack parameters

Location	X 433563.37 Y 566268.81
Stack height	12m
Height of tallest building within 5L (m) ^a	15m
Effective stack height	0m
Maximum Biogas flow rate to the BUP	1900 Nm ³ /h ^b
Maximum CO ₂ off-gas rate (with trace contaminants)	733.4Nm ³ /h ^b
Internal diameter	0.45m
Efflux velocity	16m/s
Exit gas temperature	Ambient, defined as a product gas temperature of 10-20°C with a standard value of 15°C
Operational hours	24 hours a day 8300 hours a year (to take in account planned shutdowns)
Operational mode	95%

Notes: ^a See section 2.2.1 for a definition of '5L'. Building heights have been provided by NWL.

^b Reference conditions = 0.3% O₂, 20°C, dry

2.2 Calculations and assumptions

2.2.1 Effective heights

As per the guidance, the effective height of release has been treated as 0 metres when the emission point is actually released at a point that is either:

- Less than 3 metres above the ground or building on which the stack is located; or
- More than 3 metres above the ground or the building, but less than the height of the tallest building within a distance that's 5 times 'L'.

'L' is the lowest of either

- The height of the building; or
- The greatest width between 2 points at the same height of the building.

In the case of the BUP, the effective height of release has been calculated as 0, due to the emission point being greater than 3m in height above the ground and less than the height of the tallest building within a distance that's 5 times 'L'. The tallest building is considered to be the post digestion sludge tank which has a height of 15m.

2.2.2 Pollutant concentrations

Post-commissioning, the emissions anticipated from the BUP stack will typically include:

- CO₂
- Methane (slip)
- Traces of:
 - Hydrogen sulphide (H₂S)
 - Siloxanes
 - Toluene
 - Xylene

At present there are no benchmarks for emissions of CO₂, non-methane volatile organic compounds (nmVOCs), siloxanes and methane from the BUP. There are no Environmental Assessment Levels (EALs) identified for siloxane from the H1 guidance or any other published air quality guidelines Therefore, benzene has been selected as a substitute parameter to represent siloxane, as is advised in Environment Agency

guidance² when there are no other alternatives for volatile organic compounds. These concentrations are considered to be the maximum values possible and as such provide a worst-case estimate of concentrations for the assessment.

The following assumed concentrations of residual contaminants in the CO₂ off-gas (733.4Nm³/h) have been used in the H1 screening assessment:

- hydrogen sulphide 5mg/Nm³
- benzene (as a surrogate for siloxanes), toluene, xylene 1mg/Nm³ (each)

3 Screening Assessment

3.1 Assessment Criteria

The following section presents the relevant air quality standards that are applicable to the Site and that the Site will be assessed against. These are collectively described as the Environmental Quality Standards (EQS).

The Environment Agency’s risk assessment guidance³ provides guidelines on Ambient Air Directive (AAD) limit values, UK air quality objectives and environmental assessment levels (EALs) that the impact should be compared against. There are currently no air quality objectives for siloxane, toluene, xylene or hydrogen sulphide, however there is a limit value for benzene, which is presented in Table 3.1 below. There are also EALs for each of the pollutants, which are presented in Table 3.2. The annual limit value and EAL for benzene are the same. Any exceedances of these EQS may result in further action needing to be taken to reduce the impact on the environment.

Table 3.1: Summary of relevant air quality objectives and AAD limit values

Pollutant	Averaging period	Limit value (µg/m ³)	Allowance (per calendar year)
Benzene (substituting siloxane)	1-hour	-	-
	Annual	5	None

The limit values apply everywhere with the exception of:

- Any locations situated within areas where members of the public do not have access and there is no fixed habitation
- In accordance with Article 2(1), on factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply
- On the carriageway of roads, and
- On the central reservations of roads except where there is normally pedestrian access to the central reservation.

Table 3.2: Summary of relevant EALs

Pollutant	Averaging period	EAL (µg/m ³)
Benzene (substituting siloxane)	1-hour	195
	Annual	5
Toluene	1-hour	8000
	Annual	1910

² Environment Agency and Defra (2022). Available online at <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>

³ [Air emissions risk assessment for your environmental permit - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit)

Pollutant	Averaging period	EAL ($\mu\text{g}/\text{m}^3$)
Xylene	1-hour	66200
	Annual	4410
Hydrogen sulphide	24-hour	150
	Annual	140

3.2 Background Concentrations

In order to assess the risk of emissions on local air quality it is necessary to add the modelled process contribution (PC) to the concentration of pollutants already present in the air (background concentration). Defra background data was used to determine the baseline concentrations of benzene already present in the area. Background concentrations for toluene, xylene and hydrogen sulphide are not available from Defra or local monitoring, and as such have not been included in this assessment.

The annual mean background concentration for benzene for 2021, the most recent available year, is $0.4\mu\text{g}/\text{m}^3$. As the background concentration is well below the relevant EQS and the closest AQMA is approximately 2.1km from the Site, it is therefore unlikely that the Site will lead to any exceedances.

3.3 Stage 1 of Assessment

The outputs from the first stage of the H1 screening assessment are displayed in Table 3.3. The PC for benzene exceeds the Environment Agency's threshold of 1% of the long-term EAL for human health but not for any of the other pollutants (toluene, xylene, hydrogen sulphide). All of the PCs, including benzene, are below the Environment Agency's threshold of 10% of the short-term EAL for human health.

Table 3.3 First stage of Assessment for the BUP Stack

Substance	Emissions rate (g/s)	EAL ($\mu\text{g}/\text{m}^3$)		PC ($\mu\text{g}/\text{m}^3$)		% of EAL	
		Long-term	Short-term	Long-term	Short-term	Long-term	Short-term
Benzene (substituting siloxane)	0.000528	5	195	0.0743	2.06	1.49	1.06
Toluene	0.000528	1,910	8,000	0.0743	2.06	0.00389	0.0258
Xylene	0.000528	4,410	66,200	0.0743	2.06	0.00169	0.00311
Hydrogen sulphide	0.002639	140	150	0.372	10.3	0.266	6.87

Note: Exceedances of the Environment Agency threshold is shown in **bold**

3.4 Stage 2 of Assessment

As the long-term PC for benzene exceeds the Environment Agency's threshold of 1% of the long-term EAL for human health, the long-term predicted environmental concentration (PEC) for benzene has been calculated by combining the PC and background concentration. As shown in Table 3.4, the long-term PEC is less than 70% of the long-term environmental standards. Therefore, no further assessment of benzene, such as detailed modelling, is required.

CO₂, methane, hydrogen sulphide and nmVOCs including siloxanes are also not substances listed in the Environment Agency guidance⁴ requiring assessment on potential impacts to designated ecological sites.

⁴ Environment Agency and Defra (2022). Available online at <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>

Table 3.4 Second Stage of Assessment for the BUP Stack

Substance	Background concentration (µg/m ³)	PC (µg/m ³)	% of headroom (EAL- Background)	PEC (µg/m ³)	% of EAL
		Long-term			
Benzene (substituting siloxane)	0.4	0.0743	1.62	0.475	9.49

Based on the findings above, it can be concluded the BUP presents an insignificant impact on local air quality. Stack emissions testing will be undertaken post-commissioning to confirm the very low concentrations of trace contaminants in the BUP off-gas emitted to air.

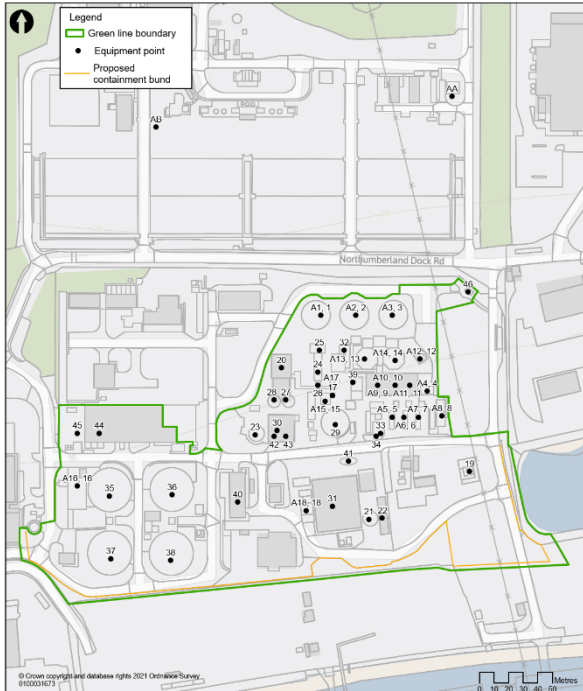
The approaches and relevant operational procedures that will form part of the Environmental Management System (EMS) are considered to adequately address the emissions to air from the BUP. On this basis, an Emissions Management Plan (EMP) for the BUP is not required.

4 Summary

The application to include the BUP to the permit will not increase the risk posed by air emissions as it presents an insignificant impact on local air quality. The H1 screening tool does not account for the distances between the receptors and the emission sources and only presents the maximum predicted pollutant concentrations at any location. Therefore, actual pollutant concentrations are likely to be lower than the predicted outputs of the H1 tool at sensitive receptors, as a result of dispersion over the distance between the emission point and the receptor locations.

Additionally, it is noted in the H1 Software Tool user guide that predicted ground level concentrations are pessimistic and are, therefore, likely to overestimate actual concentrations. The PC values presented from the H1 output are, therefore, very conservative.

A. Site Layout Plan



Emissions Ref	Emissions Points	Asset Ref	Asset	X	Y
A1	Advanced anaerobic digester 1- Whessoe valve	1	Advanced anaerobic digester 1	433580	566390
A2	Advanced anaerobic digester 2- Whessoe valve	2	Advanced anaerobic digester 2	433604	566390
A3	Advanced anaerobic digester 3- Whessoe valve	3	Advanced anaerobic digester 3	433629	566390
A4	CHP and boiler stack	4	CHP and boiler stack	433653	566338
A5	CHP engine 1 - bursting disc (exhaust gas)	5	CHP engine 1	433629	566320
A6	CHP engine 2 - bursting disc (exhaust gas)	6	CHP engine 2	433637	566320
A7	CHP engine 3 - bursting disc (exhaust gas)	7	CHP engine 3	433647	566320
A8	Natural gas engine	8	Natural gas engine	433663	566321
A9	Composite boiler 1 - Boiler safety valve, Economiser safety valve and Safety valve	9	Composite boiler 1	433619	566342
A10	Composite boiler 2 - Boiler safety valve, Economiser safety valve and Safety valve	10	Composite boiler 2	433631	566342
A11	Composite boiler 3 - Boiler safety valve, Economiser safety valve and Safety valve	11	Composite boiler 3	433641	566342
A12	Flare stack	12	Flare	433648	566360
A13	Gas bag holder 1	13	Gas bag holder 1	433610	566360
A14	Gas bag holder 2	14	Gas bag holder 2	433631	566359
A15	AD boiler	15	Boiler	433583	566331
A16	Odour control unit 1	16	Odour control unit 1	433413	566273
A17	Odour control unit 2	17	Odour control unit 2	433588	566335
A18	Odour control unit 3	18	Odour control unit 3	433570	566256
AA	Inlet works			433670	566540
AB	Effluent discharge			433667	566519
		19	Biogas upgrade plant	433682	566283
		20	Cake reception building	433553	566394
		21	Cave Site	433613	566250
		22	Cake loading area	433622	566251
		23	Screened sludge buffer tank	433535	566308
		24	TIIP reactors	433578	566351
		25	TIIP flash tanks	433579	566366
		26	TIIP pulper	433578	566342
		27	TIIP buffer tanks (feed silos) 1	433556	566332
		28	TIIP buffer tanks (feed silos) 2	433548	566332
		29	Post digestion storage tank	433590	566315
		30	Dewatering building and Centrifuges (x2)	433550	566311
		31	Final stage dewatering building and Centrifuges (x2)	433588	566259
		32	Back-up generator	433546	566386
		33	Fuel oil storage tank	433621	566309
		34	Gas engine lubricant/ Waste oil tank	433618	566307
		35	Strategic sludge storage tank 1	433435	566266
		36	Strategic sludge storage tank 2	433478	566267
		37	Strategic sludge storage tank 3	433436	566223
		38	Strategic sludge storage tank 4	433477	566222
		39	Water treatment plant (boilers)	433602	566344
		40	Imported sludge reception building	433523	566262
		41	General waste bins (x2)	433599	566290
		42	Screening skip 1	433548	566307
		43	Screening skip 2	433556	566307
		44	Drum Incinerators	433428	566300
		45	Thickened sludge dry tanks (x2)	433413	566309
		46	Grid entry unit	433681	566406

Title Howden STC Site Layout Plan		Mott MacDonald House 8-10 Sydenham Road Croydon T +44 (0)20 8774 2000 W mottmac.com					
Date	Drawn	Checked	Approved	Scale at A4	Drawing Number	Status	Rev
06/12/22	M Pinney	WJ Goh	A Manns	1:2,100	100105164_MSD_SitelayoutPlan_HOW	INF	03



B. H1 Screening Tool

Reference Information
Go To: Reference Information
Clear All Data

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.

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 eventones 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.

Introduction, Step 1
Go To: Introduction, Step 1
Clear All Data

Introduction to Step 1

Step 1: Describe the Scope and Options

The aim of this step is to:

- state the OBJECTIVES of the assessment
- in the case of ENVIRONMENTAL ASSESSMENT of the whole facility, 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 STEP 1, PRESS "NEXT".

Describe the Objectives
Go To: Describe the Objectives
Clear All Data

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:

e.g.

or

or

or

Scope of Environmental Assessment

<< Back Next >> Go To: Scope of Environmental Assessment Clear All Data

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
1	Upgrade of biogas from the Advanced Anaerobic Digestion Plant to biomethane in the Biomethane Upgrade Plant

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

Activities: Add Delete

Comments:

Candidate Options

<< Back Next >> Go To: Candidate Options Clear All Data

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.		

Once a series of options have been generated for the proposed project, it is recommended that the Operator discuss these with the local Regulator to check both parties agree that the options are satisfactory. This may save the Operator from spending resources on assessment of options which are unlikely to meet the required environmental performance.

List the main activity or activities to which the release control option Number 1 (Base-Case) is/are applicable and any other activities that will be affected by the candidate control option on the main activity.

Options: Add Delete

Activity	Details
*	

Step 2 - Emissions Inventory

Introduction to Step 2

Step 2: Emissions Inventory

The aim of this Step 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 Step you will require information on:

- release points and sources of emissions to air, water (inc. sewer) or land
- concentration and mass rate of released substances
- frequency and duration of releases 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 "Grouping air emissions" in Annex F).

TO CONTINUE WITH STEP 2, PRESS "NEXT".

Air Release Points Base Option

Air Release Points

Please define your Release Points for Releases to Air

Are there any Air emissions? Yes No Click the Add button below

Number	Description	Location or Grid Reference	Activity or Activities	Effective Height metres	Efflux Velocity m/s	Total Flow m3/hr
1	BUP	X 439563 37 Y 566268 81	Upgrade of biogas to biomethane	0	16	1900

Release Points:

Comments:

Air Emissions Inventory Base Option

Air Emissions Inventory

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

Number	Substance	Measurement 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. mg/m3	Release Rate g/s	Measurement Basis	Conc. mg/m3	Release Rate g/s	Measurement Basis		
1	Benzene	Estimated	95.0%	1.0	0.000528	annual avera	1.0	0.000628	annual avera	0.0158	1.00
2	Toluene	Estimated	95.0%	1.0	0.000528	annual avera	1.0	0.000628	annual avera	0.0158	1.00
3	Xylene, o-, m-, p- or mixed isomers	Estimated	95.0%	1.0	0.000528	annual avera	1.0	0.000628	annual avera	0.0158	1.00
4	Hydrogen sulphide	Estimated	95.0%	5.0	0.002639	annual avera	5.0	0.002639	annual avera	7.9058990	5.00

Measurement method: * provide detail in comments box

Substances:

Comments:

Water Discharge Locations

<< Back Next >> Go To: Water Discharge Locations Clear All Data

Receiving Water Body(s)

Please define the Final Discharge Locations for Releases to Water

Are there any discharges to surface waters?

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	1.5

Discharge Locations:

Energy Consumption Base Option

<< Back Next >> Go To: Energy Consumption Clear All Data

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.	natural gas	70,000				

Energy Sources:

Comments:

Raw Materials Base Option

<< Back Next >> Go To: Raw Materials Clear All Data

Raw Materials

Please list all Raw Materials Consumed:

Number	Material	Annual Consumption	Units
e.g.		50,000	
1	Non-potable Water		tonnes/year
2	Potable water		tonnes/year

Raw Materials:

Comments:

Waste Inventory Base Option

Waste Inventory

Waste Inventory

Please list all Waste Streams emitted:

Are there any Waste emissions?

Number	Waste Stream	Mass tonne/yr	Category of Waste	Disposal/Recovery Option
e.g.	ETP sludge		non-hazardous	

Waste Streams: Add Delete Copy

Comments:

Performance Indicators Base Option

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			Specific Consumption per of:	
Name	Annual Quantity	Units		
Amount of Product:	<input type="text"/>	<input type="text"/>	Production Efficiency:	<input type="text"/> /
Main Raw Material:	<input type="text"/>	<input type="text"/>	Potable Water:	<input type="text"/> m3
Potable Water:	<input type="text"/>	m3	Non Potable Water:	<input type="text"/> m3
Non Potable Water:	<input type="text"/>	m3	Energy:	<input type="text"/> MWh
Energy:	<input type="text"/>	MWh	Waste: Inert:	<input type="text"/> tonne
Waste: Inert:	<input type="text"/>	tonne	Hazardous:	<input type="text"/> tonne
Hazardous:	<input type="text"/>	tonne	Stable Non-reactive Hazardous:	<input type="text"/> tonne
Stable Non-reactive Hazardous:	<input type="text"/>	tonne	Biodegradable Non-hazardous:	<input type="text"/> tonne
Biodegradable Non-hazardous:	<input type="text"/>	tonne	Other Non-hazardous:	<input type="text"/> tonne
Other Non-hazardous:	<input type="text"/>	tonne		

Shipping Tool

Step 3 - Quantify Impacts

Step 3 - Quantify Impacts

Introduction to Step 3

Step 3: Quantify Impacts

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

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

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

IMPORTANT NOTE

This software tool only completes part of the requirements for Step 3, as described above. Depending upon the degree of risk to the environment presented by the releases, 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 part of the tool.

TO CONTINUE WITH STEP 3, PRESS "NEXT".

Identify relevant impacts

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	Assessment is for air emissions only.
No	<input type="checkbox"/> Water	Assessment is for air emissions only.
No	<input type="checkbox"/> Waste	Assessment is for air emissions only.
Yes	<input type="checkbox"/> Visual	Assessment is for air emissions only.
Yes	<input type="checkbox"/> Ozone Creation	Assessment is for air emissions only.
Yes	<input type="checkbox"/> Global Warming	Assessment is for air emissions only.

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.

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)

Ambient air quality standards benzene, toluene, xylene 1-hour and annual Hydrogen sulphide 24 hour and annual

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

N/A

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?

N/A

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

N/A

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?

N/A

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)

No, pollutants are not substances listed in the Environment Agency guidance requiring assessment on potential impacts to designated ecological sites (<https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit>).

Air Impacts Base Option

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/m ³	PC µg/m ³	* Modelled PC µg/m ³	EAL µg/m ³	PC µg/m ³	* Modelled PC µg/m ³
1	Benzene	5	0.0743		195	2.06	
2	Toluene	1910	0.0743		8000	2.06	
3	Xylene, o-, m-, p- or mixed isomers	4410	0.0743		66200	2.06	
4	Hydrogen sulphide	140	0.372		160	10.3	

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:

Air Impact Screening Base Option

Go To: **Air Impact Screening**

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			Short Term		
		EAL µg/m ³	EAL µg/m ³	PC µg/m ³	> 1% of EAL?	PC µg/m ³	> 10% of EAL?
1	Benzene	5.00	195	0.0743	1.49	Yes	No
2	Toluene	1.910	8.000	0.0743	0.00389	No	No
3	Xylene, o-, m-, p- or m	4.410	66.200	0.0743	0.00169	No	No
4	Hydrogen sulphide	140	150	0.372	0.266	No	No

Air Impact Modelling Base Option

Go To: **Air Impact Modelling**

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 Bkgnd Conc. µg/m ³	Long Term				Short Term			
			PC µg/m ³	% PC of headroom (EAL - Bkgnd)	PEC mg/m ³	% PEC of EAL >=70?	PC µg/m ³	% PC of headroom (EAL - Bkgnd)	% PC of headroom >=20?	
1	Benzene	e.g. 12 0.4	0.0743	1.62	0.475	9.49	No	2.06	1.06	No

Air Impact Modelling Assessment

Go To: **Air Impact Modelling Assessment**

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

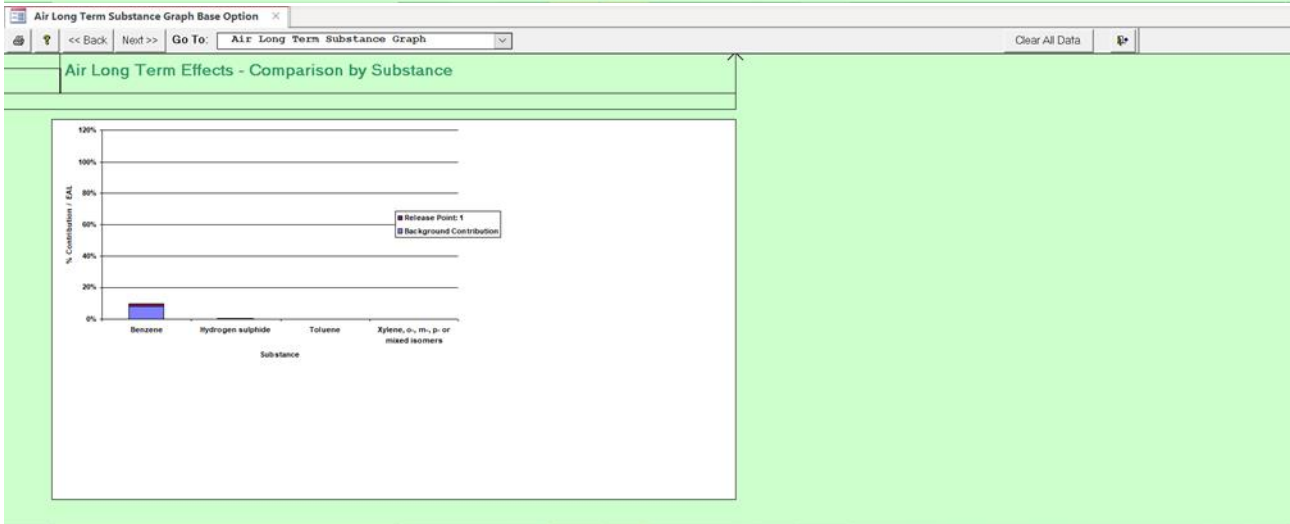
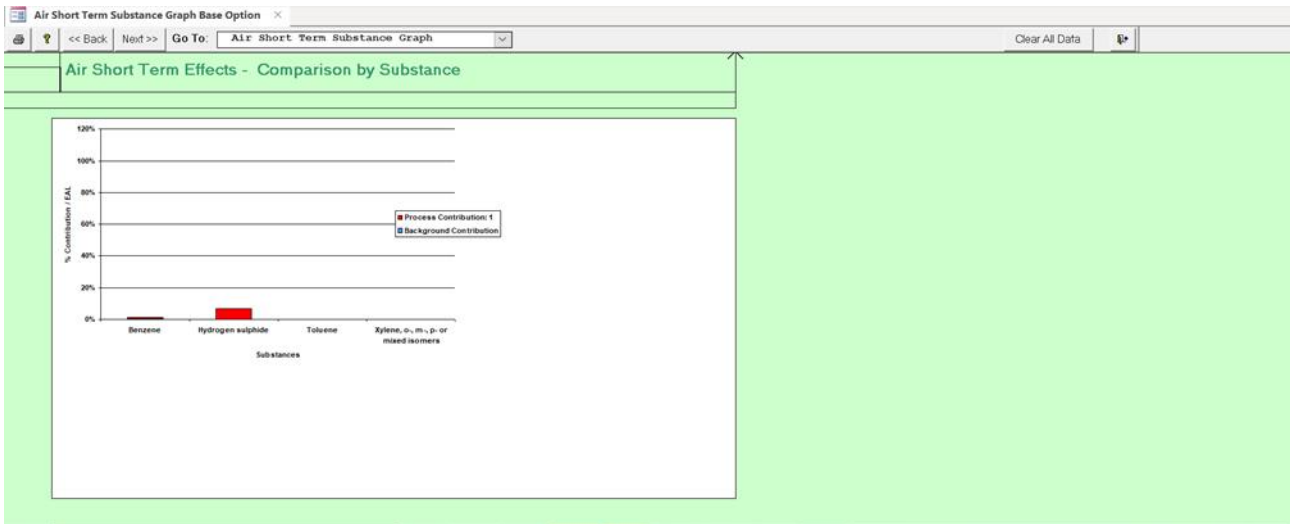
Describe source of background information:

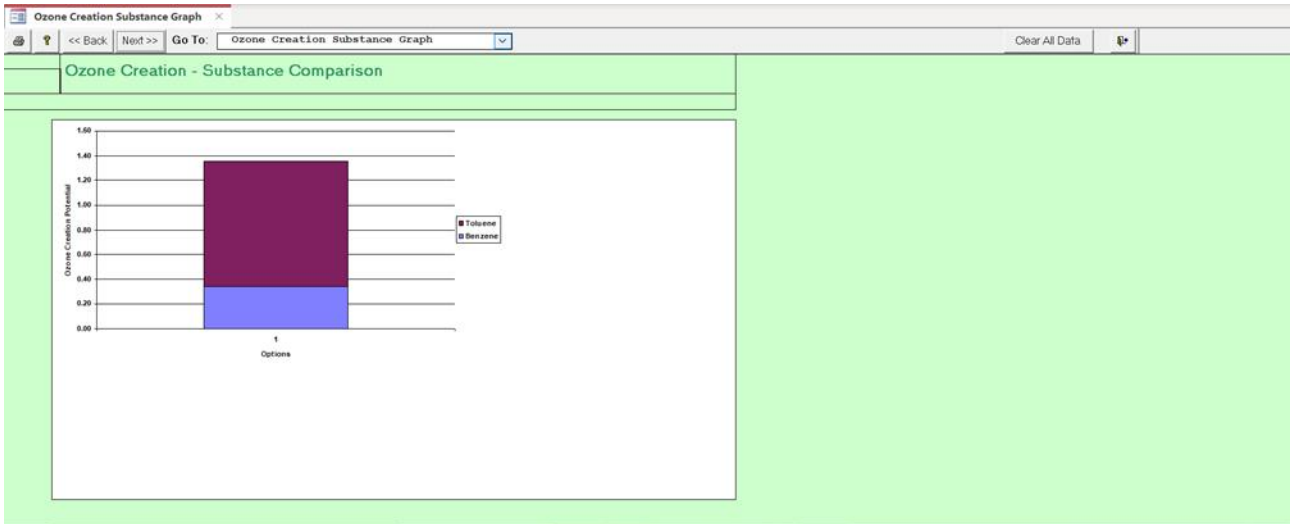
Document Reference of detailed modelling work:

All pollutants considered have been screened out and as such detailed modelling is not required.

Background data for benzene has been obtained from <https://uk-air.defra.gov.uk/data/pqm-data>.

N/A





Summary of Environmental Assessment

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: No Yes. If yes, identify the substances concerned and improvements that are needed to at least meet the statutory requirement

Environmental Quality Standards (air and water): No Yes. 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: No Yes. 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.