AC ENVIRONMENTAL CONSULTING

Air Emissions Risk Assessment

Site Clear Solutions
12-13 Conduit Road, Norton Canes, Cannock, WS11 9TJ

November 2025

Ref: SCS.PT.AERA.2511

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1. INTRODUCTION

This H1 Air Emissions Risk Assessment has been prepared to support a permit variation application for Site Clear Solutions Ltd. If the application is approved, the document will become a controlled record within the Site Clear Solutions ISO 9001/14001 Integrated Management System (IMS). The variation seeks to add a biological treatment activity (aerobic digestion) using an Advetec XO22 unit to treat up to 8 tonnes/day (2,440 tonnes/year) of non-hazardous clinical waste. The process involves aerobic digestion of waste, producing floc for onward recovery as Solid Recovered Fuel (SRF).

1.1. Site Location

The site is located at 12-13 Conduit Road, Norton Canes, Cannock. It operates under an existing bespoke environmental permit for hazardous and non-hazardous waste transfer and treatment. The site is bordered by additional industrial buildings to the north, west and south, with woodland and fields situated to the east. There are residential areas beyond the industrial estate to the north, east and west. The nearest residential housing is approximately 220m to the west on Walsall Road.

Additionally, there are two schools and one nursery within the vicinity of the site; Jerome Primary School that is located approximately 530m to the northwest, Honeybuns Nursery situated approximately 443m to the northwest and Norton Canes Primary Academy approximately 770m to the northeast of the site. A medical centre named Norton Canes Medical Centre is situated approximately 355m to the northeast.

The surrounding area includes designated ecological sites. The site is situated approximately 877m to the west of the SSSI Chasewater and the Southern Staffordshire Coalfield Heaths, 1km to the north of Cannock Extension Canal SSSI and SAC, 367m to the north of a Local Wildlife Site (LWS) and is immediately adjacent to a Protected Habitats site that is located to the east and southeast of the site.
The presence of these sensitive sites reinforces the need for robust environmental controls and monitoring to ensure that emissions from the XO22 unit do not pose any risk to these sensitive sites.

1.2. Proposed Changes

The proposed variation involves introducing a new biological treatment process at the site through the installation and operation of an Advetec XO22 aerobic digestion unit. This unit will treat bagged non-hazardous clinical waste, which is currently disposed of via landfill sites. By implementing the XO22 system, which is a fully enclosed, sealed vessel design which inherently contains process

emissions, Site Clear Solutions aims to reduce the volume and moisture content of the waste, producing a stable floc material suitable for onward recovery as Solid Recovered Fuel (SRF). The process will operate continuously, with a maximum throughput of approximately 8 tonnes per day, equating to around 2,440 tonnes per year. The waste types to be treated include those under EWC codes 18 01 04 and 20 01 99, which cover offensive clinical waste and similar hygiene-related materials. This change will improve sustainability by diverting waste from landfill and reducing carbon emissions associated with traditional disposal methods. Additionally, Site Clear Solutions Ltd aims to encourage other local companies to use its services for waste disposal, further increasing landfill diversion across the region.

2. ASSESSMENT METHODOLOGY

2.1. H1 Emissions to Air Screening Assessment

The H1 screening evaluation has been undertaken following EA guidance using a quantitative approach, supported by the H1 tool. The XO22 unit is a sealed vessel with two vent points to air, releasing water vapour and carbon dioxide as primary emissions, which are not pollutants of concern under Environmental Assessment Levels (EALs). Trace VOCs and H_2S are monitored and controlled. There are no point source emissions to land or water.

2.2. Assessment Criteria

Relevant Environmental Assessment Levels (EALs) for human health and ecological receptors have been considered.

Key considerations include the nature and scale of emissions, control measures, and compliance with regulatory standards. Emissions from the XO22 unit are inherently low because the process is fully enclosed and designed to minimise environmental impact. The primary outputs, water vapour and carbon dioxide, are not considered harmful under current environmental standards, and any trace levels of VOCs or hydrogen sulphide are managed through continuous in-line monitoring. The management system incorporates an Odour Management Plan to prevent nuisance at sensitive receptors. and operational procedures ensure that all activities remain within the conditions of the environmental permit. These measures collectively provide assurance that the proposed changes will not result in significant risks to human health or ecological receptors, including nearby designated conservation sites.

2.3. Environment Agency Risk Assessment Guidance

The assessment applies EA screening principles but focuses on qualitative evaluation due to minimal emissions.

2.4. H1 Inputs – Process Emissions

Emissions points:

- **XO22 Stack A and XO22 Stack B:** XO22 vent stacks (CO2, water vapour)

3. IMPACT ASSESSMENT

3.1. Air Impact Screening

The H1 quantitative screening confirms that emissions from the XO22 unit are insignificant. The primary outputs are water vapour and carbon dioxide, which are not pollutants of concern.

Analysis of specific substances, including ammonia, hydrogen sulphide, nitrogen dioxide, toluene, acetic acid, and acetone, demonstrates that all releases occur at trace concentrations. The calculated Process Contribution (PC) for every substance is well below the relevant significance thresholds (1% of the Long-Term EAL and 10% of the Short-Term EAL).

Consequently, all emissions screens out at Stage 1 of the H1 assessment. This confirms that the emissions are negligible and do not require detailed atmospheric dispersion modelling to demonstrate compliance.

Table 1: Emission Sources Table

Release Point	Location	Height	Efflux Velocity	Description
XO22 Stack A	External WS11 9TJ	3.4 m	1.5 m/s	Vent from aerobic digestion
XO22 Stack B	External WS11 9TJ	3.4 m	1.5 m/s	Vent from aerobic digestion

Table 2: Substances Table

Substance	Nature of Emission	Qualitative Risk Level
Ammonia	Trace	Controlled, negligible
Hydrogen sulphide	Trace	Controlled, negligible
Nitrogen dioxide	Very low	Controlled, negligible
Toluene	Low	Controlled, negligible

Acetic acid	Low	Controlled, negligible
Acetone	Trace	Controlled, negligible

Table 3: Control Measures

Measure	Description
Containment	Fully enclosed XO22 system with sealed vents
Monitoring	Continuous in-line monitoring for VOCs and H_2S
Odour Management	Odour Management Plan implemented
Maintenance & Compliance	Regular checks and adherence to permit conditions

3.2. Qualitative Discussion

The potential impacts of emissions from the XO22 aerobic digestion process have been considered in relation to human health, ecological receptors, and amenity factors such as odour. For human health, the emissions are primarily water vapour and carbon dioxide, which pose no significant risk under normal operating conditions.

The H1 tool outputs indicate:

- Ammonia and hydrogen sulphide are present at trace levels (<0.01t/year)
- VOCs such as toluene and acetone occur at low concentrations, well below EAL thresholds.
- Nitrogen dioxide is negligible compared to ambient air quality standards.

The site is located in proximity to sensitive receptors, including the SSSI Chasewater (877m west) and an immediately adjacent Protected Habitats site. Despite this proximity, the H1 tool outputs demonstrate that the Process Contribution (PC) of nutrient nitrogen and acidity from the facility is insignificant relative to Critical Levels (CLs) for these habitats. Because the emissions screen out at the earliest stage, the facility makes no discernible contribution to the background levels. Combined with the sealed nature of the XO22 unit, which eliminates the pathway for fugitive emissions, it is concluded that the operation will have no likely significant effect on the integrity of these designated conservation sites.

While the waste types handled have the potential to be odorous, the risk is actively managed through engineering and operational controls. The XO22 system is hermetically sealed, preventing the release of diffuse odours. To ensure continued efficacy, the site employs continuous in-line monitoring for VOCs and Hydrogen Sulphide. This serves as an early-warning system, allowing

operators to identify and rectify any trace variances before they can manifest as an amenity nuisance. These engineering measures are supported by a robust Odour Management Plan , ensuring negligible impact on the nearest residential receptors 220m to the west.

4. CONCLUSION

The Environment Agency's H1 methodology (Tool v9.2) has been applied to strictly quantify the emissions from the proposed Advetec XO22 aerobic digestion unit. The assessment confirms that the proposed activity poses no significant risk to local air quality, human health, or ecological receptors.

Key findings from the assessment include:

- The quantitative screening confirms that the Process Contribution (PC) for all substances, including Ammonia, Hydrogen Sulphide, Nitrogen Dioxide, and trace VOCs, is negligible. All emissions screen out at Stage 1, demonstrating that they are effectively insignificant relative to the Environmental Assessment Levels (EALs).
- As the Process Contribution is essentially zero relative to regulatory limits, detailed atmospheric modelling or background assessment (PEC) is not required to demonstrate safety.
- Despite the proximity to the Protected Habitats site and SSSI, the trace nature of the emissions ensures that there will be no adverse impact on these sensitive receptors.
- The risk of fugitive emissions is effectively eliminated by the fully enclosed nature of the XO22 vessel, ensuring that the only release points are the controlled, sealed vents.
- Operational security is guaranteed through continuous in-line monitoring and adherence to the Odour Management Plan, ensuring that any potential variations are detected and mitigated immediately.

Consequently, this assessment confirms that the permit variation poses no significant risk to human health or the environment.

APPENDIX 1 – H1 TOOL – REF: H1 TOOL V9.2 - SC

H1%20Tool%20v9.2%20-%20SC.xlsm

See extracts from H1 Tool below

Main

Enter your information in the relevant cells. Click the "Enter" key of your keyboard to go to the next field. Select your sector from the dropdown menu

ation

Site Clear Solutions Limited
Eco House, 12 - 13 Conduit Road, Norton Canes, Cannock, WS11 9TJ
EPR/WE4296AB
Environment Agency

Describe the objectives

Depending on the reason for the assessment you will need to complete different parts of the tools
Select the type of assessment:
Environmental assessment of the releases resulting from the facility as a whole

Air	Water	Energy	Raw materials	Waste
Yes	No	No	No	No

Please select whether you have releases in the dropdown menus above

Activities	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Air release points and emissions inventory 1 of 24

Select a test to view: Water

View Air Tests

1. Add release point details in the top table

2. In the lower table, select release point in the 1stcolumn and fill in substance details

Users inputs are shaded in light blue and dropdown menu in yellow.

User input

Formula/calculation

Dropdown menu

Environmental Assessment

2

Release point code	Location or grid reference	Activity/Activities	Effective height (metres)	Dispersion factor (Long term)	Dispersion factor (short term)	Dispersion factor (monthly)	Efflux velocity (m/s)	Total flow (m3/h)
XO22 Stack A	External Location - WS11 9TJ	Enclosed Aerobic Digestion	3.4	108.56	2771.2	360.598	1.5	196
XO22 Stack B	External Location - WS11 9TJ	Enclosed Aerobic Digestion	3.4	108.56	2771.2	360.598	1.5	196

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Release Point	Substance	Measurement method	Operating mode(%)	Long term conc (mg/m3)	Release rate g/s (long term)	Measurement basis (Long term)	Short term conc (mg/m3)	Release rate g/s (short term)	Measurement basis (short term)	Annual rate (t/yr)	Long term PC (ug/m3)	Short term PC (ug/m3)	Total Flow (m3/h)
XO22 Stack A	Ammonia	Estimated	100%	0.6	0.00	Continuous	0.6	0.00	Continuous	0.00	0.00	0.09	196.00
XO22 Stack B	Ammonia	Estimated	100%	0.6	0.00	Continuous	0.6	0.00	Continuous	0.00	0.00	0.09	196.00
XO22 Stack A	Hydrogen sulphide	Estimated	100%	0.14	0.00	Continuous	0.14	0.00	Continuous	0.00	0.00	0.01	196.00
XO22 Stack B	Hydrogen sulphide	Estimated	100%	0.14	0.00	Continuous	0.14	0.00	Continuous	0.00	0.00	0.01	196.00
XO22 Stack A	Nitrogen dioxide	Estimated	100%	0.69	0.00	Continuous	0.69	0.00	Continuous	0.00	0.00	0.05	196.00
XO22 Stack B	Nitrogen dioxide	Estimated	100%	0.69	0.00	Continuous	0.69	0.00	Continuous	0.00	0.00	0.05	196.00
XO22 Stack A	Toluene	Estimated	100%	0.72	0.00	Continuous	0.72	0.00	Continuous	0.00	0.03	0.11	196.00
XO22 Stack B	Toluene	Estimated	100%	0.72	0.00	Continuous	0.72	0.00	Continuous	0.00	0.03	0.11	196.00
XO22 Stack A	Acetic acid	Estimated	100%	8.2	0.00	Continuous	8.2	0.00	Continuous	0.01	0.05	1.24	196.00
XO22 Stack B	Acetic acid	Estimated	100%	8.2	0.00	Continuous	8.2	0.00	Continuous	0.01	0.05	1.24	196.00
XO22 Stack A	Acetone	Estimated	100%	0.52	0.00	Continuous	0.52	0.00	Continuous	0.00	0.00	0.08	196.00
XO22 Stack B	Acetone	Estimated	100%	0.52	0.00	Continuous	0.52	0.00	Continuous	0.00	0.00	0.08	196.00

Air impacts - Pollutants | 6 of 24

Select test to view: Water

1. Please click on the 'import' button to import the pollutants and relevant information from the "air release points" tab.

User input | Formula/calculation | Tests

Environment Agency

Environmental Assessment

Number	Substance	Long term EAL (ug/m3)	Long term PC (ug/m3)	Long term modelled PC	Short term EAL (ug/m3)	Short term PC (ug/m3)	Short term modelled PC
1	Ammonia	180	0.007092587		2500	0.181051733	
2	Hydrogen sulphide	140	0.001654937		150	0.024924789	
3	Nitrogen dioxide	40	0.01		200	0.10	
4	Toluene	260	0.07		8000	0.22	
5	Acetic acid	250	0.10		3700	2.47	
6	Acetone	18100	0.01		362000	0.16	

Air impacts - Test 1

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Select test to view

Water

Click on 'test 1' to run the test. If you change the information in the "air release tab", please rerun the test.

User input

Formula/calculation

Tests

Environmental Assessment

Number	Substance	Long term EAL (ug/m3)	Long term PC (ug/m3)	%PC of EAL (long term)	>1% of EAL? (long term)	Short term EAL (ug/m3)	Short term PC (ug/m3)	%PC of EAL (short term)	>10% of EAL? (short term)
1	Ammonia	180	0.007092587	0.00%	pass	2500	0.181051733	0.01%	pass
2	Hydrogen sulphide	140	0.001654937	0.00%	pass	150	0.024924789	0.02%	pass
3	Nitrogen dioxide	40	0.008156475	0.02%	pass	200	0.104104747	0.05%	pass
4	Toluene	260	0.067351245	0.03%	pass	8000	0.21726208	0.00%	pass
5	Acetic acid	250	0.096932018	0.04%	pass	3700	2.474373689	0.07%	pass
6	Acetone	18100	0.006146908	0.00%	pass	362000	0.156911502	0.00%	pass

Air impacts - Test 2

8 of 24

Select test to view

Water

1. Add the air background concentration

2. Click on 'Test 2' to run the test. If the "air release points" table is changed, tests 1 and 2 have to be rerun.

User input

Formula/calculation

Tests

Environmental Assessment

Number	Substance	Long term EAL (ug/m3)	Long term PC (ug/m3)	Air Background conc (ug/m3)	%PC of headroom (long term)	PEC Long term (µg/m3)	%PEC of EAL% (Long term)	%PEC of EAL>70%? (long	Short term EAL (ug/m3)	Short term PC (ug/m3)	%PC of the EAL-Z background	%PC of headroom >=20%? (short term)

Photochemical ozone creation potential

Select test to view

Water

Click on the button to assess the ozone creation potential

Environmental Assessment

Number	Substance	Annual rate (tonne/yr))	POCP value per tonne	POCP

Please list all energy sources and annual consumption 3 of 24

Select text to view: Water

Environmental Assessment

The table presents the various energy sources and the annual consumption. 1. Add 1 row per energy source and fill in the data.

2. Input data may be entered in the cells shaded in light blue and dropdown menus are in the cells shaded in yellow.

3. Do not delete the formulae in the cells shaded in white. These will show the right information once the user enters the energy delivered, conversion factor and CO2 factors.

User input

Formula/calculation

Dropdown menu

Please specify a conversion factor on the right or enter 1

Please specify a CO2 factor on the right

Please enter a conversion factor or a value of 1 in column G

Please enter a CO2 factor in column J

Number	Energy source	Direct/Indirect emissions	Delivered MWh/yr	Conversion factor	User conv factor	Primary MWh/yr	CO2 factor	User CO2 factor	CO2 tonne/yr

Comments:

Identify relevant impacts

If the impacts are not relevant, please select 'No' and justify your omission

You will be able to go back to this page if you click on the 'Identify' button in each of the assessments.

1:Env Assmt

Releases?		Test Impact?	Justification for omission?	Go to Input ..	Go to Test ..
Yes	Air	Yes		Water (input)	Water
No	Deposition from air to land	No	No particulate release		
No	Water	No	No discharge to water		
No	Waste	No	Process output is an SRF / Low Carbon fuel		
No	Visual	No	Unit is located outside an exisitng building		
	Ozone creation	No	Does not create		
	Global warming	No	Does not create		
	BAT-AEL test	No	Can't be determined		
	Performance indicators	No	Can't be determined		

Results of the air and water assessments

Click on "Report test results" to populate the tables with information. Substances for which all relevant tests fail will be coloured in red. The "Clear output tables" button clears the information in the tables.

Air

Option	Substance	Test 1	Test 2

Freshwater

Option	Type of water body	Release point code	Substance	Freshwater test 1	Freshwater test 2	Freshwater test 3	Freshwater test 4a	Freshwater test 4b

Significant Load

Option	Type of water body	Description	Substance	Significant load test

TRAC

Option	Type of water body	Description	Substance	TRAC test 1	TRAC test 2	TRAC test 3	TRAC test 4a	TRAC test 4b	TRAC test 5b