Application for an environmental permit Part A – About you

You will need to fill in this part A if you are applying for a new permit, applying to change an existing permit or surrender your permit, or want to transfer an existing permit to yourself. Please check that this is the latest version of the form available from our website.

You can apply online for Waste standard rules environmental permits, bespoke waste permits and bespoke Medium combustion plant permits

Apply online for an environmental permit.

Please read through this form and the guidance notes that came with it.

The form can be:

1) **saved onto a computer and then filled in. Please note that the form follows a logic that means questions will open or stay closed depending on a previous answer. So you may not be able to enter text in some boxes.**
2) **printed off and filled in by hand. Please write clearly in the answer spaces.**

Note: if you believe including information on a public register would not be in the interests of national security you must enclose a letter telling us that you have told the Secretary of State. We will not include the information in the public register unless directed otherwise.

It will take less than one hour to fill in this part of the application form.

Where you see the term 'document reference' on the form, give the document references and send the documents with the application form when you've completed it.

Contents

1 About you

Are you applying as an individual, an organisation of individuals (for example, a partnership), a company (this includes Limited Liability Partnerships) or a public body?

An individual	☐ Now go to section 2 and if you are applying for a new permit or transferring a permit for an installation or waste activity please also fill in Appendix 1
An organisation of individuals (for example, a partnership)	☐ Now go to section 3 and if you are applying for a new permit or transferring a permit for an installation or waste activity please also fill in Appendix 1
A public body	☐ Now go to section 4
A registered company or other corporate body	☑ Now go to section 5 and if you are applying for a new permit or transferring a permit for an installation or waste activity please also fill in Appendix 1

2 Applications from an individual

2a Please give us the following details

Name

Title (Mr, Mrs, Miss and so on) _____

First name _____

Last name _____

Now go to section 6

3 Applications from an organisation of individuals or charity

3a Type of organisation

For example, a charity, a partnership, a group of individuals or a club

3b Details of the organisation or charity

If you are an organisation of individuals, please give the details of the main representative below. If relevant, provide details of other members (please include their title Mr, Mrs and so on) on a separate sheet and tell us the document reference you have given this sheet

Contact name

Title (Mr, Mrs, Miss and so on)

First name

Last name

Now go to question 3c or section 6

3c Details of charity

Full name of charity

This should be the full name of the legal entity not any trading name.

3d Company registration number

If you are registered with Companies House please tell us your registration number

3e Charity Commission number

If you are registered with the Charity Commission please tell us your registration number

Now go to section 6

4 Applications from public bodies

4a Type of public body

For example, NHS trust, local authority, English county council

4b Name of the public body

4c Please give us the following details of the executive

An officer of the public body authorised to sign on your behalf

Name

Title (Mr, Mrs, Miss and so on)

First name

Last name

Position

Now go to section 6

5 Applications from companies or corporate bodies

5a Name of the company

Transwaste Recycling and Aggregates Limited

5b Company registration number

03863280

Date of registration (DD/MM/YYYY)

21/10/1999

If you are applying as a corporate organisation that is not a limited company, please provide evidence of your status and tell us below the reference you have given the document containing this evidence.

Document reference

5 Applications from companies or corporate bodies, continued

5c Please give details of the directors

If relevant, provide details of other directors and company secretary, if there is one, on a separate sheet and tell us the reference you have given this sheet.

Document reference: Supporting Documentation Form A Q.5c

Details of company secretary (if relevant) and director/s

Title (Mr, Mrs, Miss and so on)

First name

Last name

Title (Mr, Mrs, Miss and so on)

First name

Last name

Now go to section 6

6 Your address

6a Your main (registered office) address

For companies this is the address on record at Companies House.

Contact name

Title (Mr, Mrs, Miss and so on)

First name

Last name: Transwaste Recycling and Aggregates Limited

Address: Melton Waste Park
Gibson Lane
Melton
East Yorkshire

Postcode: HU14 3HH

Contact numbers, including the area code

Phone: 01482 333650

Fax: 01482 333654

Mobile

Email: enquiries@transwasteltd.co.uk

For an organisation of individuals every partner needs to give us their details, including their title Mr, Mrs and so on. So, if necessary, continue on a separate sheet and tell us below the reference you have given the sheet.

Document reference

6b Main UK business address (if different from above)

Contact name

Title (Mr, Mrs, Miss and so on)

First name: As above

Last name

Address

Postcode

6 Your address, continued

Contact numbers, including the area code

Phone

Fax

Mobile

Email

Now go to section 7

7 Contact details

7a Who can we contact about your application?

It will help us if there is someone we can contact if we have any questions about your application. The person you name should have the authority to act on your behalf.

Please add a second contact on a separate sheet if this person is not always available.

Document reference of this separate sheet

This can be someone acting as a consultant or an 'agent' for you.

Contact name

Title (Mr, Mrs, Miss and so on): Dr

First name: Amanda

Last name: Owen

Address: Environmental Visage Limited
2, Stratford Court
Stratford Road
Stroud, Gloucestershire

Postcode: GL5 4AQ

Contact numbers, including the area code

Phone: 01453 752731

Fax:

Mobile: 07970 712243

Email: AOwen@En-Visage.co.uk

7b Who can we contact about your operation (if different from question 7a)?

Contact name

Title (Mr, Mrs, Miss and so on): Mr

First name: Chris

Last name: Tute

Address: Transwaste Recycling and Aggregates Limited
Melton Waste Park, Gibson Lane
Melton
East Yorkshire

Postcode: HU14 3HH

Contact numbers, including the area code

Phone: 01482 333650

Fax: 01482 333654

Mobile: 07891 623451

Email: chris@transwasteltd.co.uk

7 Contact details, continued

7c Who can we contact about your billing or invoice?

Note: Please provide the name and address that all invoices should be sent to for your subsistence fees.

As in question 7a ☐

As in question 7b ☐

Please give details below if different from question 7a or 7b.

Contact name

Title (Mr, Mrs, Miss and so on)	Ms
First name	Claire
Last name	Hannan
Address	Transwaste Recycling and Aggregates Limited
	Melton Waste Park
	Gibson Lane, Melton
	East Yorkshire
Postcode	HU14 3HH

Contact numbers, including the area code

Phone	01482 333650
Fax	01482 333654
Mobile	
Email	claire@transwasteltd.co.uk

8 How to contact us

If you need help filling in this form, please contact the person who sent it to you or contact us as shown below.

General enquiries: 03708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 03702 422 549 (Monday to Friday, 8am to 6pm)

Email: enquiries@environment-agency.gov.uk

Website: www.gov.uk/government/organisations/environment-agency

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, please tell us how we can improve it. More information on how to do this is available at: www.gov.uk/government/organisations/environment-agency/about/complaints-procedure.

Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.

9 Where to send your application

For how many copies to send see the guidance note on part A.

For water discharges by email to PSC-WaterQuality@environment-agency.gov.uk

For waste and installations by email to PSC@environment-agency.gov.uk

For flood risk activity permits send 1 copy only to enquiries@environment-agency.gov.uk or to the local Environment Agency office for where the work is proposed to be carried out.

Or

Permitting Support, NPS Sheffield
Quadrant 2
99 Parkway Avenue
Parkway Business Park
Sheffield
S9 4WF

Feedback

(You don't have to answer this part of the form, but it will help us improve our forms if you do.)

We want to make our forms easy to fill in and our guidance notes easy to understand. Please use the space below to give us any comments you may have about this form or the guidance notes that came with it.

How long did it take you to fill in this form?

We will use your feedback to improve our forms and guidance notes, and to tell the Government how regulations could be made simpler.

Would you like a reply to your feedback?

Yes please ☐

No thank you ☐

For Environment Agency use only

Date received (DD/MM/YYYY)

Our reference number

Payment received?

No ☐

Yes ☐ Amount received

£

Appendix 1 – Date of birth information for installation and waste activities (applications for a new permit or transferring a permit) only

Date of birth information in this appendix will not be put onto our Public Register

Are you applying as an individual, an organisation of individuals (for example, a partnership) or a company (this includes Limited Liability Partnerships)?

An individual ☐ Now go to 2

An organisation of individuals (for example, a partnership) ☐ Now go to 3

A registered company or other corporate body ☐ Now go to 4

2 Applications from an individual

Please give us the following details

Name

Date of birth (DD/MM/YY)

3 Applications from an organisation of individuals or charity

Details of the organisation or charity

If you are an organisation of individuals, please give the date of birth details of the main representative below. If relevant, provide details of other members on a separate sheet and tell us the document reference you have given this sheet.

Name

Date of birth (DD/MM/YY)

Document reference

4 Applications from companies or corporate bodies

Name of the company

Please give the date of birth details for all directors and company secretary if there is one. If relevant, provide those details of other directors on a separate sheet and tell us the document reference you have given this sheet.

Details of company secretary (if relevant) and director/s

Name

Date of birth (DD/MM/YY)

Name

Date of birth (DD/MM/YY)

Name

Date of birth (DD/MM/YY)

Document reference

Application for an environmental permit
Part C2 – General – varying a bespoke permit

Fill in this part of the form, together with part A and the relevant parts of C3 to C7 and part F1 or F2, if you are applying to vary (change) the conditions or any other part of the permit. Please check that this is the latest version of the form available from our website.

You only need to give us details in this application for the parts of the permit that will be affected (for example, if you are adding a new facility or changing existing ones).

Waste operation changing to installation or vice versa?

If your changes mean that a waste operation becomes an installation (or vice versa) you also need to fill in either part C3 (waste to installation) or part C4 (installation to waste).

You do not need to resend any information from your original permit application if it is not affected by your proposed changes.

Please read through this form and the guidance notes that came with it.

The form can be:

1) saved onto a computer and then filled in. Please note that the form follows a logic that means questions will open or stay closed depending on a previous answer. So you may not be able to enter text in some boxes.
2) printed off and filled in by hand. Please write clearly in the answer spaces.

It will take less than two hours to fill in this part of the application form.

Contents

1 About the permit

Note: If you are applying to convert your existing permit to a standard permit or add a standard facility you need to fill out form C1.

1a Discussions before your application

If you have had discussions with us before your application, give us the permit reference or details on a separate sheet. Tell us below the reference you have given this extra sheet.

Permit or document reference: Discussions with site officer. No formal pre-application.

1b Permit number

What is the permit number that this application relates to? EPR/BP3792LD (current V006)

1c Site details

What is the name, address and postcode of the site?

Site name: Transwaste Recycling and Aggregates Limited

Address: Melton Waste Park
Gibson Lane
Melton
East Yorkshire

Postcode: HU14 3HH

2 About your proposed changes

2a Type of variation

What type of variation are you applying for?

Minor technical ☐
Normal variation ☐
Substantial ☑

2 About your proposed changes, continued

2b Changes or additions to existing activities

Please give us brief details in the box below. More detailed information can be given in Table 1 below.

The site has installed three x 1 MW output (1.082 MWth input) small waste incineration plant (SWIPs). Once permitted, the units will fire non-hazardous waste wood which has been pre-sorted from a mixed waste stream. In due course, the solid digestate from a neighbouring anaerobic digestion (AD) facility will also be used as a fuel in the SWIPs. The energy from the boilers is directed to three absorption chillers to cool air for the main RDF processing and storage building. The application of cool air into the building is designed to minimise the potential for odorous emissions, thereby reducing the loading on the existing ionisation abatement plant. Additionally, and once the neighbouring AD facility is developed and operational, heat from the SWIPs may be delivered to the AD plant to maintain the heat balance within that process.

Fill in Table 1 with details of all the proposed changes to current activities. In the final column of the table, give us the document reference for the proposed changes and send them to us with your filled in application form.

Fill in a separate table for each activity you are applying to vary or add. Use a separate sheet if you have a long list and send it to us with your application form. Tell us below the reference you have given this document.

Document reference: Supporting Documentation Form C2 Q.2b; Table 1

You only need to fill in one table for your mining waste operations.

2c Consolidating (combining) or updating existing permits

If your proposed change is to modernise (update) your permit, now answer 2c1; otherwise go to 2d.

If your proposed change is to consolidate (combine) a number of permits, now answer 2c2; otherwise go to 2d.

Note: In both cases we may require additional information from you about, for example, your management system. Therefore we would always advise you to talk to us before you submit any application to modernise or consolidate permits.

2c1 Do you want to have a modern style permit?

No ☐

Yes ☑

2c2 Identify all the permits you want to consolidate (combine) by listing the permit numbers in Table 2 below

Table 2 – Permit numbers

2d Treating batteries

2d Are you proposing to treat batteries?

No ☑

Yes ☐ Tell us how you will do this and send us a copy of your explanation and tell us below the reference you have given this explanation

Document reference for the explanation

2e Ship recycling

2e1 Is your activity covered by the Ship Recycling Regulations 2015? (See the guidance notes on part C2.)

No ☑

Yes ☐ Tell us how you will do this. Please send us a copy of your explanation and your facility recycling plan, and tell us below the reference numbers you have given these documents

Document reference for the explanation

Document reference for the facility recycling plan

2e2 Is this a renewal of an existing authorisation covered by the Ship Recycling Regulations 2015?

No ☑

Yes ☐ Tell us the expiry date of your existing authorisation (DD/MM/YYYY)

2 About your proposed changes, continued

Table 1 – Changes to existing activities

Fill in Table 1 with details of all the proposed changes to current activities. In the final column of the table, give us the document reference for the proposed changes and send them to us with your filled in application form.

Name	Installation schedule 1 references	Description of the installation activity	Description of waste operation	Description of the mining waste operations	Description of water discharge activity	Description of groundwater activity	Proposed changes document reference
i.e. name of installation, waste operation, mining waste operation, water discharge activity or groundwater activity							
Example – effluent unique name					Example – treated sewage effluent		
If you do not have enough room, go to the line below or send a separate document and give us the document reference here							

2 About your proposed changes, continued

2f Low impact installations (installations only)

2f1 Will any changes mean that any of the regulated facilities will become low impact installations?

No ☑ Now go to section 3

Yes ☐ If yes, tell us how you meet the conditions for a low impact installation (see the guidance notes on part C2 – Appendix 1)

Document reference

Tick the box to confirm you have filled in the low impact installation checklist in appendix 1 for each regulated facility ☐

3 Your ability as an operator

If you are applying to add waste installations or waste operations to a permit that has not previously had them, you need to fill in all of section 3.

If you are applying to consolidate (combine) two or more permits or have an updated permit you must fill in question 3d.

This section does not apply for applications to surrender a permit.

3a Relevant offences

Installations and waste operations only (see the guidance notes on part C2).

3a1 Have you, or any other relevant person, been convicted of any relevant offence?

No ☑ Now go to question 3b

Yes ☐ Please give details below

Name of the relevant person

Title (Mr, Mrs, Miss and so on)

First name

Last name

Position held at the time of the offence

Name of the court where the case was dealt with

Date of the conviction (DD/MM/YY)

Offence and penalty set

Date any appeal against the conviction will be heard (DD/MM/YYYY)

If necessary, use a separate sheet to give us details of other relevant offences and tell us below the reference number you have given the extra sheet.

Document reference

Now go to question 3b

Please also complete the details in Appendix 2.

3b Technical ability

Specified waste management activities and waste operations only (see the guidance notes on part C1).

Please indicate which of the two schemes you are using to demonstrate you are technically competent to operate your facility and the evidence you have enclosed to demonstrate this.

ESA/EU skills

I have enclosed a copy of the current Competence Management System certificate ☐

CIWM/WAMITAB scheme

Please select **one** of the following:

- I have enclosed a copy of:
  - the relevant qualification certificate/s ☑

  or
  - evidence of deemed competence ☐

  or

3 Your ability as an operator, continued

- Environment Agency assessment ☐

or

- evidence of nominated manager status under the transitional provisions for previously exempt activities ☐

and, if deemed competent or Agency-assessed, or if there is evidence of a nominated manager, or if the original qualification is over two years old:

I have enclosed a copy of the relevant current continuing competence certificate/s ☑

For each technically competent manager please give the following information. If necessary, use a separate sheet to give us these details and tell us below the document reference you have given the extra sheet.

Title (Mr, Mrs, Miss and so on)

First name

Last name

Phone

Mobile

Email

Please provide the environmental permit number/s and site address for **all** other waste activities that the proposed technically competent manager provides technical competence for, including permits held by other operators. Continue on a separate sheet as required.

Permit number	Site address	Postcode

Document reference: Supporting Documentation Form C2 Q.3b

Now go to question 3c

Please also complete the details in Appendix 2.

3c Finances

Installations, waste operations and mining waste operations only (see the guidance notes on part C2).

Please note that if you knowingly or carelessly make a statement that is false or misleading to help you get an environmental permit (for yourself or anyone else), you may be committing an offence under the Environmental Permitting (England and Wales) Regulations 2016.

Do you or any relevant person or a company in which you were a relevant person have current or past bankruptcy or insolvency proceedings against you?

No ☑

Yes ☐ Please give details below, including the required set-up costs (including infrastructure), maintenance and clean up costs for the proposed facility against which a credit check may be assessed

We may want to contact a credit reference agency for a report about your business's finances.

3 Your ability as an operator, continued

Landfill, Category A mining waste facilities and mining waste facilities for hazardous waste only

How do you plan to make financial provision (to operate a landfill or a mining waste facility you need to show us that you are financially capable of meeting the obligations of closure and aftercare)?

Renewable bonds ☐

Cash deposits with the Environment Agency ☐

Other – provide comprehensive details ☐

Document reference

Provide a cost profile and expenditure plan of your estimated costs throughout the aftercare period of your site.

Document plan reference

Now go to question 3d

3d Management systems

You must have an effective, written management system in place that identifies and reduces the risk of pollution. You may show this by using a certified scheme or your own system.

Your permit requires you (as the operator) to ensure that you manage and operate your activities in accordance with a written management system.

You need to be able to explain what happens at each site and which parts of the overall management system apply. For example, at some sites you may need to show you are carrying out additional measures to prevent pollution because they are nearer to sensitive locations than others.

You can find guidance on management systems on our website at www.gov.uk/government/organisations/environment-agency.

Tick this box to confirm that you have read the guidance and that your management system will meet our requirements ☐

What management system will you provide for your regulated facility?

ISO 14001 ☑

BS 8555 (Phases 1–5) ☐

Acorn ☐

Green dragon ☐

Own management system ☐

Please make sure you send us a summary of your management system with your application.

Document reference/s: Supporting Documentation Form C2 Q.3d

4 Consultation

Fill in 4a to 4c for installations and waste operations and 4d for installations only.

Could the waste operation or installation involve releasing any substance into any of the following?

4a A sewer managed by a sewerage undertaker?

No ☑

Yes ☐ Please name the sewerage undertaker

4b A harbour managed by a harbour authority?

No ☑

Yes ☐ Please name the harbour authority

4c Directly into relevant territorial waters or coastal waters within the sea fisheries district of a local fisheries committee?

No ☑

Yes ☐ Please name the fisheries committee

4 Consultation, continued

4d Is the installation on a site for which:

4d1 a nuclear site licence is needed under section 1 of the Nuclear Installations Act 1965?

No ☑

Yes ☐

4d2 a policy document for preventing major accidents is needed under regulation 5 of the Control of Major Accident Hazards Regulations 2015, or a safety report is needed under regulation 7 of those Regulations?

No ☑

Yes ☐

5 Supporting information

5a Provide a plan or plans for the site

See the guidance notes on part C2 for what needs to be marked on the plan.

Clearly mark the site boundary or discharge point, or both. Also include site drainage plans, site layout plans, and plant design drawings/process flow diagrams (as required). (See the guidance notes on part C2.)

Document reference/s of the plans: Supporting Documentation Form C2 Q.5a

5b Do any of the variations you plan to make need extra land to be included in the permit?

No ☑

Yes ☐ Please provide a site report for the extra land

Document report reference/s:

5c Provide a non-technical summary of your application

Document reference of the summary: Supporting Documentation Form C2 Q.5c

5d Risk of fire from sites storing combustible waste

Are you applying for an activity that includes the storage of combustible wastes?

(This applies to all activities excluding standalone water and groundwater discharges.)

No ☐ Go to question 5f

Yes ☑ Go to question 5e

5e Will your variation increase the risk of a fire occurring or increase the environmental risk if a fire occurs?

See the guidance notes on part C2.

No ☑

Yes ☐ Provide a fire prevention plan. You need to highlight any changes you have made since your pre-application discussions

Document reference of the plan:

5f Adding an installation

If you are applying to add an installation, tick the box to confirm that you have sent in a baseline report and provide a reference ☐

Document reference of the report:

6 Environmental risk assessment

If you need one, see the guidance notes on part C2.

Provide an assessment of any additional risks the proposed changes or additions to your regulated facilities poses to the environment as part of your application to vary this permit. The risk assessment must follow the methodology set out in 'Risk assessments for your environmental permit' at https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit or an equivalent method.

Document reference for the assessment: H1 Tool submitted with the application

7 How to contact us

If you need help filling in this form, please contact the person who sent it to you or contact us as shown below.

General enquiries: 03708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 03702 422 549 (Monday to Friday, 8am to 6pm)

Email: enquiries@environment-agency.gov.uk

Website: www.gov.uk/government/organisations/environment-agency

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, please tell us how we can improve it.

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Feedback

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How long did it take you to fill in this form?

We will use your feedback to improve our forms and guidance notes, and to tell the Government how regulations could be made simpler.

Would you like a reply to your feedback?

Yes please ☐

No thank you ☐

Crystal Mark 19110 Clarity approved by Plain English Campaign

For Environment Agency use only

Date received (DD/MM/YYYY)

Our reference number

Payment received?

No ☐

Yes ☐ Amount received

£

Plain English Campaign's Crystal Mark does not apply to appendix 1.

Appendix 1 – Low impact installation checklist

Installation reference				
Condition	Response			Do you meet this?
A – Management techniques	Provide references to show how your application meets A			Yes ☐ No ☐
	References			
B – Aqueous waste	Effluent created		m^3/day	Yes ☐ No ☐
C – Abatement systems	Provide references to show how your application meets C			Yes ☐ No ☐
	References			
D – Groundwater	Do you plan to release any hazardous substances or non-hazardous pollutants into the ground?		Yes ☐ No ☐	Yes ☐ No ☐
E – Producing waste	Hazardous waste		Tonnes per year	Yes ☐ No ☐
	Non-hazardous waste		Tonnes per year	
F – Using energy	Peak energy consumption		MW	Yes ☐ No ☐
G – Preventing accidents	Do you have appropriate measures to prevent spills and major releases of liquids? (See 'How to comply'.)		Yes ☐ No ☐	Yes ☐ No ☐
	Provide references to show how your application meets G			
	References			
H – Noise	Provide references to show how your application meets H			Yes ☐ No ☐
	References			
I – Emissions of polluting substances	Provide references to show how your application meets I			Yes ☐ No ☐
	References			
J – Odours	Provide references to show how your application meets J			Yes ☐ No ☐
	References			
K – History of keeping to the regulations	Say here whether you have been involved in any enforcement action as described in Compliance History Appendix 1 explanatory notes		Yes ☐ No ☐	

Appendix 2 – Date of birth information for Relevant offences and/or Technical ability questions only

Date of birth information in this appendix will not be put onto our Public Register

Have you filled in the Relevant Offences question?

Yes ☐

No ☑

Have you filled in the Technical ability question?

Yes ☑

No ☐

2 Relevant Offences - date of birth information

Please give us the following details

Name

Date of birth (DD/MM/YY)

3 Technical ability - date of birth information

Name Supporting Documentation Form C2 Appendix 2

Date of birth (DD/MM/YY)

Application for an environmental permit
Part C3 – Variation to a bespoke installation permit

Environment Agency

Fill in this part of the form, together with part A, part C2 and part F1, if you are applying to vary (change) the conditions or any other part of the permit.

Please check that this is the latest version of the form available from our website.

You only need to give us details in this application for the parts of the permit that will be affected (for example, if you are adding a new facility or making changes to existing ones).

You do not need to resend any information from your original permit application if it is not affected by your proposed changes.

Please read through this form and the guidance notes that go with it.

The form can be:

1) saved onto a computer and then filled in. Please note that the form follows a logic that means questions will open or stay closed depending on a previous answer. So you may not be able to enter text in some boxes.
2) printed off and filled in by hand. Please write clearly in the answer spaces.

It will take less than three hours to fill in this part of the application form.

Contents

1 What activities are you applying to vary?

Fill in Table 1a below with details of all the activities listed in schedule 1 or other references (see note 1) of the Environmental Permitting Regulations (EPR) and all directly associated activities (DAAs) (in separate rows), that you propose to vary.

Note: if you want to add a Medium Combustion Plant or Specified Generator (MCP/SG) to your installation please use part C2.5 instead. If you want to vary an intensive farm permit please use part C3.5 instead.

Fill in a separate table for each installation you are applying to vary. Use a separate sheet if you have a long list and send it to us with your application form. Tell us below the reference you have given the document.

Document reference: Supporting Documentation Form C3 Q1; Table 1a

1 What activities are you applying to vary?, continued

Table 1a – Types of activities

Schedule 1 listed activities						
Installation name	Schedule 1 or other references (See note 1)	Description of the activity (See note 2)	Activity capacity (See note 3)	Annex I (D codes) and Annex II (R codes) and descriptions	Hazardous waste treatment capacity (if this applies) (See note 3)	Non-hazardous waste treatment capacity (if this applies) (See note 3)
If there are not enough rows, send a separate document and give the document reference number here	Put your main activity first			For installations that take waste only	For installations that take waste only	For installations that take waste only
Directly associated activities (See note 4)						
Name of DAA If there are not enough rows, send a separate document and give the document reference number here		Description of the DAA (please identify the schedule 1 activity it serves)				
For installations that take waste (See note 5 below)		Total storage capacity				
		Annual throughput (tonnes each year)				

1 What activities are you applying to vary?, continued

Notes

1. Quote the section number, part A1 or A2 or B, then paragraph and sub paragraph number as shown in EPR part 2 of schedule 1.
2. Use the description from schedule 1 of EPR. Include any extra detail that you think would help to accurately describe what you want to do.
3. By 'capacity', we mean:

- the total incineration capacity (tonnes every hour) for waste incinerators
- the total landfill capacity (cubic metres) for landfills
- the total capacity (cubic metres) for the recovery of hazardous waste on land
- the total treatment capacity (tonnes each day) for waste treatment operations
- the total storage capacity (tonnes) for waste storage operations
- the processing and production capacity for manufacturing operations, or
- the thermal input capacity for combustion activities

4. Fill this in as a separate line and give an accurate description of any other activities associated with your schedule 1 activities. You cannot have Directly Associated Activities (DAAs) as part of a mobile plant application.
5. By 'total storage capacity', we mean the maximum amount of waste, in tonnes, you store on the site at any one time.

Types of waste accepted

For those installations that take waste, for each line in Table 1a (including DAAs), fill in a separate document to list those wastes you will accept on to the site for that activity. Give the List of Wastes catalogue code and description (see https://www.gov.uk/government/publications/waste-classification-technical-guidance).

If you need to exclude waste from your activity or facility by restricting the description, quantity, physical nature, hazardous properties, composition or characteristic of the waste, include these in the document. Send it to us with your application form.

Please provide the reference for each document.

You can use Table 1b as a template.

If you want to accept any waste with a code ending in *99*, you must provide more information and a full description of the waste in the document, (for example, detailing the source, nature and composition of the waste). Where you only want to receive specific wastes within a waste code you can provide further details of the waste you want to receive. Where a waste is dual coded you should use both codes for the waste.

Document reference of this extra information | Supporting Documentation Form C3 Q1; Table 1b

1 What activities are you applying to vary?, continued

Table 1b – Template example – types of waste accepted and restrictions

Waste code	Description of the waste
Example	Example
02 01 08*	Agrochemical waste containing hazardous substances
18 01 03*	Infectious clinical waste, not contaminated with chemicals or medicines – human healthcare (may contain sharps) for alternative treatment
17 05 03*/17 06 05*	Non-hazardous soil from construction or demolition contaminated with fragments of asbestos cement sheet

1c Recovery of hazardous waste on land

Are you applying for a waste recovery activity involving the permanent deposit of inorganic hazardous waste on land for construction or land reclamation?

No ☑ Now go to question 2

Yes ☐

Have you written a waste recovery plan (WRP) that shows that you will use waste to perform the same function as non waste materials you would have used?

No You must write a WRP to support your application.

Yes

Have we advised you during pre-application discussions that we believe the activity is waste recovery?

No

Yes

Have there been any changes to your proposal since the discussions?

No

Yes

Please send us a copy of your current waste recovery plan that complies with our guidance at https://www.gov.uk/government/publications/deposit-for-recovery-operators-environmental-permits/waste-recovery-plans-and-deposit-for-recovery-permits. You need to highlight any changes you may have made since your pre-application discussions.

Document reference

Please note that there is an additional charge for the assessment or re assessment of a waste recovery plan that must be submitted as part of this application. For the charge see https://www.gov.uk/government/publications/environmental-permitting-charges-guidance/environmental-permitting-charges-guidance

2 Point source emissions to air, water and land

Fill in Table 2 below with details of the point source emissions that result from the operating techniques at each of your installations.

Fill in one table for each installation, continuing on a separate sheet if necessary.

Table 2 – Emissions (releases)

Installation name	Supporting Documentation Form C3 Q2; Tables 2a and 2b			
Point source emissions to air				
Emission point reference and location	Source	Parameter	Quantity	Unit
Point source emissions to water (other than sewers)				
Emission point reference and location	Source	Parameter	Quantity	Unit
Point source emissions to sewers, effluent treatment plants or other transfers off site				
Emission point reference and location	Source	Parameter	Quantity	Unit
Point source emissions to land				
Emission point reference and location	Source	Parameter	Quantity	Unit

You will also need to complete application form part C6 if your variation includes changing or adding a point source emission(s) to:

- water
- groundwater or
- sewer

Supporting information

3 Operating techniques

3a Technical standards

Fill in Table 3a for each activity at the installation you refer to in Table 1a above and list the 'Best Available Techniques' you are planning to use. If you use the standards set out in the relevant BAT conclusion(s), BAT reference document(s) (BREF) and/or technical guidance(s) (TGN) there is no need to justify using them within your documents in Table 3a.

For Part A(2) activities refer to https://www.gov.uk/government/collections/integrated-pollution-prevention-and-control-sector-guidance-notes and for Part B and Schedule 14 activities see https://www.gov.uk/government/collections/local-air-pollution-prevention-and-control-lappc-process-guidance-notes

You must justify your decisions in a separate document if:

- there is no technical standard
- the technical guidance provides a choice of standards, or
- you plan to use another standard

This justification could include a reference to the Environmental Risk Assessment provided in part C2 (general bespoke permit) of the application form.

For each of the activities listed in Table 1a, the documents in Table 3a should summarise:

- the operations undertaken
- the measures you will use to control the emissions from your process, as identified in your risk assessment or the relevant BAT conclusions, BREF or technical guidance
- how you will meet other standards set out in the relevant BAT conclusions document, BREF or technical guidance

Table 3 – Technical standards

Fill in a separate table for each activity at the installation.

Installation name	Supporting Documentation Form C3 Q3; Table 3a	
Description of the schedule 1 activity or directly associated activity	Best available technique (BATC, BREF or TGN reference) (see footnote below)	Document reference (if appropriate)

* Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)

In all cases, describe the type of facility or operation you are applying for and provide site infrastructure plans, location plans and process flow diagrams or block diagrams to help describe the operations and processes undertaken. Give the document references you use for each plan, diagram and description.

Document reference: Supporting Documentation Form C3 Q3

3a1 Does your permit (in Table 1.2 Operating Techniques or similar table in the permit) have references to any of your own documents or parts of documents submitted as part of a previous application for this site?

No ☐ Now go to 3b

Yes ☑ Please tell us in a separate document what document references are no longer valid or have been superseded and why

Please also tell us below the reference number you have given the document and send it in with your application

Document reference: Supporting Documentation Form C3 Q3a1

3b General requirements

Fill in a separate Table 4 for each installation.

Table 4 – General requirements

Name of the installation	Melton Waste Park
If the technical guidance or your risk assessment shows that emissions of substances not controlled by emission limits are an important issue, send us your plan for managing them	Document reference or references Not Applicable
Where the technical guidance or your risk assessment shows that odours are an important issue, send us your odour management plan	Document reference or references Approved OMP - not resubmitted here
If the technical guidance or your risk assessment shows that noise or vibration are important issues, send us your noise or vibration management plan (or both)	Document reference or references Not Applicable

For guidance on risk assessments for your environmental permit see https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit

3c Types and amounts of raw materials

Fill in Table 5 for all schedule 1 activities. Fill in a separate table for each installation.

Table 5 – Types and amounts of raw materials

Name of the installation		Melton Waste Park		
Capacity (See note 1 below)				
Schedule 1 activity	Description of raw material and composition	Maximum amount (tonnes) (See note 2 below)	Annual throughput (tonnes each year)	Description of the use of the raw material including any main hazards (include safety data sheets)

Notes

1 By 'capacity', we mean the total storage capacity (tonnes) or total treatment capacity (tonnes each day).

2 By 'maximum amount', we mean the maximum amount of raw materials on the site at any one time.

Use a separate sheet if you have a long list of raw materials, and send it to us with your application form. Please also provide the reference of this extra sheet.

Document reference: Supporting Documentation Form C3 Q3c Table 5

3d Information for specific sectors

For some of the sectors, we need more information to be able to set appropriate conditions in the permit. This is as well as the information you may provide in sections 5, 6 and 7. For those activities listed below, you must answer the questions in the related document.

Table 6 – Questions for specific sectors

Sector	Appendix
Combustion	See the questions in appendix 1
Chemicals	See the questions in appendix 2
Incinerating waste	See the questions in appendix 3
Landfill and recovery of hazardous waste on land	See the questions in appendix 4

General information

Complete section 4 if you are proposing to change or add an emission point(s).

4 Monitoring

4a Describe the measures you use for monitoring emissions by referring to each emission point in Table 2 above

You should also describe any environmental monitoring. Tell us:

- how often you use these measures
- the methods you use
- the procedures you follow to assess the measures

Document reference: Supporting Documentation Form C3 Q4a

4b Point source emissions to air only

4b1 Has the sampling location been designed to meet BS EN 15259 clause 6.2 and 6.3?

No ☐
Yes ☑

4b2 Are the sample ports large enough for monitoring equipment and positioned in accordance with section 6 and appendix A of BS EN 15259?

No ☐
Yes ☑

4b3 Is access adjacent to the ports large enough to provide sufficient working area, support and clearance for a sample team to work safely with their equipment throughout the duration of the test?

No ☐
Yes ☑

4b4 Are the sample location(s) at least 5 HD from the stack exit

No ☐
Yes ☑

4b5 Are the sample location(s) at least 2 HD upstream from any bend or obstruction?

No ☐
Yes ☑

4b6 Are the sample location(s) at least 5 HD downstream from any bend or obstruction?

No ☐
Yes ☑

4b7 Does the sample plane have a constant cross sectional area?

No ☐
Yes ☑

4b8 If horizontal, is the duct square or rectangular (unless it is less than or equal to 0.35 m in diameter)

No ☐
Yes ☐

4b9 If you have answered 'No' to any of the questions 4b1 to 4b8 above, provide an assessment to how the standards in BS EN 15259 will be met.

Document reference of the assessment: Assessment to be made by MCERT team before monitoring

5 Environmental impact assessment

5a Have your proposals been the subject of an environmental impact assessment under Council Directive 85/337/EEC of 27 June 1985 [Environmental Impact Assessment] (EIA)?

No ☑ Now go to question 6

Yes ☐ Please provide a copy of the environmental statement and, if the procedure has been completed:

- a copy of the planning permission
- the committee report and decision on the EIA

Document reference of the copy

6 Resource efficiency and climate change

If the site is a landfill or a recovery of hazardous waste on land activity, you only need to fill in this section if the application includes gas engines.

6a Describe the basic measures for improving how energy efficient your activities are

Document reference of the description: Supporting Documentation Form 3C Q6a

6b Provide a breakdown of any changes to the energy your activities use up and create

Document reference of the description: Supporting Documentation Form 3C Q6b

6c Have you entered into, or will you enter into, a climate change levy agreement?

No ☑ Describe the specific measures you use for improving your energy efficiency

Document reference of the description: Supporting Documentation Form 3C Q6c

Yes ☐ Please give the date you entered (or the date you expect to enter) into the agreement (DD/MM/YYYY)

Please also provide documents that prove you are taking part in the agreement.

Document reference of the proof

6d Explain and justify the raw and other materials, other substances and water that you will use

Document reference of the justification: Supporting Documentation Form 3C Q6d

6e Describe how you avoid producing waste in line with Council Directive 2008/98/EC on waste

If you produce waste, describe how you recover it. If it is technically and financially impossible to recover the waste, describe how you dispose of it while avoiding or reducing any effect it has on the environment.

Document reference of the description: Supporting Documentation Form 3C Q6e

7 How to contact us

If you need help filling in this form, please contact the person who sent it to you or contact us as shown below.

General enquiries: 03708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 03702 422 549 (Monday to Friday, 8am to 6pm)

Email: enquiries@environment-agency.gov.uk

Website: https://www.gov.uk/government/organisations/environment-agency

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, please tell us how we can improve it.

Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.

Feedback

(You don't have to answer this part of the form, but it will help us improve our forms if you do.)

We want to make our forms easy to fill in and our guidance notes easy to understand. Please use the space below to give us any comments you may have about this form or the guidance notes that came with it.

How long did it take you to fill in this form?

We will use your feedback to improve our forms and guidance notes, and to tell the Government how regulations could be made simpler.

Would you like a reply to your feedback?

Yes please ☐

No thank you ☐

Crystal Mark 19107
Clarity approved by Plain English Campaign

For Environment Agency use only

Date received (DD/MM/YYYY)

Payment received?

No ☐

Yes ☐ Amount received

Our reference number

£

Plain English Campaign's Crystal Mark does not apply to appendices 1 to 4.

Appendix 1 – Specific questions for the combustion sector

1 Identify the type of fuel burned in your combustion units (including when your units are started up, shut down and run as normal). If your units are dual fuelled (that is, use two types of fuel), list both the fuels you use

Fill in a separate table for each installation.

Installation reference			
Type of fuel	When run as normal	When started up	When shut down
Coal	☐	☐	☐
Gas oil	☐	☐	☐
Heavy fuel oil	☐	☐	☐
Natural gas	☐	☐	☐
WID waste	☐	☐	☐
Biomass (see notes 1 and 2 below)	☐	☐	☐
Biomass (see notes 1 and 2 below)	☐	☐	☐
Biomass (see notes 1 and 2 below)	☐	☐	☐
Biomass (see notes 1 and 2 below)	☐	☐	☐
Biomass (see notes 1 and 2 below)	☐	☐	☐
Landfill gas	☐	☐	☐
Other	☐	☐	☐

Notes

1. Not covered by Industrial Emissions Directive 2010/75/EU.
2. 'Biomass' is referred to The Renewables Obligation Order 2002 (https://www.legislation.gov.uk/uksi/2002/914/contents/made)

Give extra information if it helps to explain the fuel you use.

Document reference

Appendix 1 – Specific questions for the combustion sector, continued

2 Give the composition range of any fuels you are currently allowed to burn in your combustion plant

Fill in a separate table for each installation, continuing on a separate sheet if necessary

Fuel use and analysis					
Installation reference					
Parameter	Unit	Fuel 1	Fuel 2	Fuel 3	Fuel 4
Maximum percentage of gross thermal input	%				
Moisture	%				
Ash	% wt/wt dry				
Sulphur	% wt/wt dry				
Chlorine	% wt/wt dry				
Arsenic	% wt/wt dry				
Cadmium	% wt/wt dry				
Carbon	% wt/wt dry				
Chromium	% wt/wt dry				
Copper	% wt/wt dry				
Hydrogen	% wt/wt dry				
Lead	% wt/wt dry				
Mercury	% wt/wt dry				
Nickel	% wt/wt dry				
Nitrogen	% wt/wt dry				
Oxygen	% wt/wt dry				
Vanadium	mg/kg dry				
Zinc	mg/kg dry				
Net calorific value	MJ/kg				

Appendix 1 – Specific questions for the combustion sector, continued

3 If NOx factors are necessary for reporting purposes (that is, if you do not need to monitor emissions), please provide the factors associated with burning the relevant fuels

Fill in a separate table for each installation.

Installation reference	
Fuel	NOx factor (kgt^{-1})
Fuel 1	
Fuel 2	
Fuel 3	
Fuel 4	

Note: kgt^{-1} means kilograms of nitrogen oxides released for each tonne of fuel burned.

4 Will your combustion plant be subject to Chapter III of the Industrial Emissions Directive 2010/75/EU?

No ☐ Now fill in application form part F

Yes ☐

5 What is your plant?

an existing one ☐ A plant licensed before 1 July 1987

a new one ☐ A plant licensed on or after 1 July 1987 but before 27 November 2002, or a plant for which an application was made before 27 November 2002 and which was put into operation before 27 November 2003

a new-new one ☐ A plant for which an application was made on or after 27 November 2002 If you run more than one type of plant or a number of the same type of plant on your installation, please list them in the table below

6 If you run more than one type of plant or a number of the same type of plant on your installation, please list them in the table below

Fill in a separate table for each installation.

Installation reference	
Type of plant	Number within installation
Existing	
New	
New-new	
Gas turbine (group A)	
Gas turbine (group B)	

Appendix 1 – Specific questions for the combustion sector, continued

7 If you run an existing plant, have you submitted a declaration for the 'limited life derogation' set out in Article 33 of Chapter III of the Industrial Emissions Directive?

No ☐ Now go to question 9

Yes ☐

8 Have you subsequently withdrawn your declaration?

No ☐

Yes ☐

9 List the existing large combustion plants (LCPs) which have annual mass allowances under the National Emission Reduction Plan (NERP), and those with emission limit values (ELVs) under the LCPD

Installation reference	
LCPs under NERP	LCPs with ELVs

10 Do you meet the monitoring requirements of Chapter III of the Industrial Emissions Directive?

No ☐

Yes ☐ Document reference

11 Are you substantially refurbishing an existing installation according to the meaning given in Article 14 of the Energy Efficiency Directive?

No ☐

Yes ☐ Now go to question 12

12 Have you carried out a cost–benefit assessment (CBA) of opportunities for cogeneration (combined heat and power) or district heating under Article 14 of the Energy Efficiency Directive?

No ☐ Please provide supporting evidence of why a CBA is not required (for example, an agreement from us)

Document reference of this evidence

Yes ☐ Please submit a copy of your CBA

Document reference of the CBA

Appendix 2 – Specific questions for the chemical sector

1 Please provide a technical description of your activities

- The description should be enough to allow us to understand:
- the process
- the main plant and equipment used for each process
- all reactions, including significant side reactions (that is, the chemistry of the process)
- the material mass flows (including by products and side streams) and the temperatures and pressures in major vessels
- the all emission control systems (both hardware and management systems), for situations which could involve releasing a significant amount of emissions – particularly the main reactions and how they are controlled
- a comparison of the indicative BATs and benchmark emission levels standards: technical guidance notes (TGNs) (see https://www.gov.uk/government/collections/technical-guidance-for-regulated-industry-sectors-environmental-permitting); additional guidance 'The production of large volume organic chemicals' (EPR 4.01); 'Speciality organic chemicals sector' (EPR 4.02); 'Inorganic chemicals sector' (EPR 4.03); and best available techniques reference documents (BREFs) for the chemical sector

Document reference

2 If you are applying for a multi-purpose plant, do you have a multi-product protocol in place to control the changes?

No ☐

Yes ☐ Provide a copy of your protocol to accompany this application

Document reference

3 Does Chapter V of the Industrial Emissions Directive (IED) apply to your activities?

No ☐

Yes ☐ Fill in the following

3a List the activities which are controlled under the IED

Installation reference	
Activities	

3b Describe how the list of activities in question 3a above meets the requirements of the IED

Document reference

Appendix 3 – Specific questions for the waste incineration sector

If you are proposing to accept clinical waste, please complete your answer to question 3a 'Technical standards' with reference to relevant parts of our healthcare waste appropriate measures guidance (see https://www.gov.uk/guidance/healthcare-waste-appropriate-measures-for-permitted-facilities)

1a Do you run incineration plants as defined by Chapter IV of the Industrial Emissions Directive (IED)?

No ☐ You do not need to answer any other questions in this appendix

Yes ☑ IED applies

1b Are you subject to IED as

An incinerator? ☑

A co-incinerator? ☐

2 Do any of the installations contain more than one incineration line?

No ☐ Now go to question 4

Yes ☑

3 How many incineration lines are there within each installation?

Fill in a separate table for each installation.

Installation reference	Transwaste - Melton Waste Park	
Number of incineration lines within the installation	3 x SWIPs (< 3 T / hour)	
Reference identifiers for each line	SWIPs 1-3. Emission Points A1, A2, A3	

You must provide the information we ask for in questions 4, 5 and 6 below in separate documents. The information must at least include all the details set out in section 2 ('Key Issues') of S5.01 'Incineration of waste: additional guidance' (under the sub heading 'European legislation and your application for an EP Permit'). See https://www.gov.uk/government/collections/technical-guidance-for-regulated-industry-sectors-environmental-permitting.

You must answer questions 7 to 13 on the form below.

4 Describe how the plant is designed, equipped and will be run to make sure it meets the requirements of IED, taking into account the categories of waste which will be incinerated

Document reference: Supporting Documentation Form C3 Appendix 3 Q4

5 Describe how the heat created during the incineration and co-incineration process is recovered as far as possible (for example, through combined heat and power, creating process steam or district heating)

Document reference: Supporting Documentation Form C3 Appendix 3 Q5

Appendix 3 – Specific questions for the waste incineration sector, continued

6 Describe how you will limit the amount and harmful effects of residues and describe how they will be recycled where this is appropriate

Document reference: Supporting Documentation Form C3 Appendix 3 Q6

For each line identified in question 3, answer questions 7 to 13 below

Question 3 identifier, if necessary: Responses apply to all SWIPS (1 - 3)

7 Do you want to take advantage of the Article 45 (1)(f) allowance (see below) if the particulates, CO or TOC continuous emission monitors (CEM) fail?

No ☐

Yes ☑ This allows 'abnormal operation' of the incineration plant under certain circumstances when the CEM for releases to air have failed. Annex VI, Part 3(2) sets maximum half hourly average release levels for particulates (150 mg/m3), CO (normal ELV) and TOC (normal ELV) during abnormal operation.

Describe the other system you use to show you keep to the requirements of Article 13(4) (for example, using another CEM, providing a portable CEM to insert if the main CEM fails, and so on).

Whilst abnormal operating conditions may be experienced from time-to-time, the SWIPs will only continue to incinerate waste for a maximum period of 4 hours uninterrupted where emission limit values are exceeded. The fuel feed will be stopped and as necessary the SWIP will be shut-down in advance of the 4 hour period where it is apparent that any required repair or correction will require more than 4 hours to facilitate. The cumulative duration of operation in such conditions over any one year shall not exceed 60 hours.

8 Do you want to replace continuous HF emission monitoring with periodic hydrogen fluoride (HF) emission monitoring by relying on continuous hydrogen chloride (HCl) monitoring as allowed by IED Annex VI, Part 6 (2.3)?

Under this you do not have to continuously monitor emissions for hydrogen fluoride if you control hydrogen chloride and keep it to a level below the HCl ELVs.

No ☐

Yes ☑ Please give your reasons for doing this

No final decision has yet been made on the CEMS system to be installed. However, it is possible that the chosen system may not measure HF as standard and as such, flexibility in the HF monitoring is requested, with either continuous HF monitoring, or continuous HCl and periodic HF monitoring being facilitated.

Appendix 3 – Specific questions for the waste incineration sector, continued

9 Do you want to replace continuous water vapour monitoring with pre-analysis drying of exhaust gas samples, as allowed by IED Annex VI, Part 6 (2.4)?

Under this you do not have to continuously monitor the amount of water vapour in the air released if the sampled exhaust gas is dried before the emissions are analysed.

No ☐

Yes ☑ Please give your reasons for doing this

No final decision has yet been made on the CEMS system to be installed. However, it is probable that the chosen system will dry the sample prior to analysis rather than reporting a measured H2O result and hence, flexibility in the H2O monitoring is requested.

10 Do you want to replace continuous hydrogen chloride (HCl) emission monitoring with periodic HCl emission monitoring, as allowed by IED Annex VI, Part 6 (2.5), first paragraph?

Under this you do not have to continuously monitor emissions for hydrogen chloride if you can prove that the emissions from this pollutant will never be higher than the ELVs allowed.

No ☑

Yes ☐ Please give your reasons for doing this

Appendix 3 – Specific questions for the waste incineration sector, continued

11 Do you want to replace continuous HF emission monitoring with periodic HF emission monitoring, as allowed by IED Annex VI, Part 6 (2.5), first paragraph?

Under this you do not have to continuously monitor emissions for hydrogen fluoride if you can prove that the emissions from this pollutant will never be higher than the ELVs allowed.

No ☑

Yes ☐ Please give your reasons for doing this

12 Do you want to replace continuous SO_2 emission monitoring with periodic sulphur dioxide (SO_2) emission monitoring, as allowed by IED Annex VI, Part 6 (2.5), first paragraph?

Under this you do not have to continuously monitor emissions for sulphur dioxide if you can prove that the emissions from this pollutant will never be higher than the ELVs allowed.

No ☑

Yes ☐ Please give your reasons for doing this

Appendix 3 – Specific questions for the waste incineration sector, continued

13 If your plant uses fluidised bed technology, do you want to apply for a derogation of the CO WID ELV to a maximum of 100 mg/m³ as an hourly average, as allowed by IED Annex VI, Part 3?

No ☐

Does not apply ☑

Yes ☐ Please give your reasons for doing this

14 Are you substantially refurbishing an existing installation according to the meaning given in Article 14 of the Energy Efficiency Directive?

No ☑

Yes ☐ Please go to question 15

Document reference of the CHP-ready assessment

15 Have you carried out a cost–benefit assessment (CBA) of opportunities for cogeneration (combined heat and power) or district heating under Article 14 of the Energy Efficiency Directive?

No ☑ Please provide supporting evidence of why a CBA is not required (for example, an agreement from us)

Document reference of this evidence: Plant are < 20 MWth individually and combined.

Yes ☐ Please submit a copy of your CBA

Document reference of the CBA

Appendix 4 – Specific questions for the landfill sector and recovery of hazardous waste on land activities

1. For the landfill sector, provide your Environmental Setting and Installation Design (ESID) report and any other risk assessments to control emissions.

For recovery of hazardous waste on land activities, provide your Environmental Setting and Site Design (ESSD) report and any other risk assessments to control emissions

Document reference

2. For recovery of hazardous waste on land activities, provide your Waste Acceptance Procedures (including Waste Acceptance Criteria)

Document reference

Refer to our guidance at
https://www.gov.uk/government/publications/deposit-for-recovery-operators-environmental-permits/waste-acceptance-procedures-for-deposit-for-recovery

3. Provide your hydrogeological risk assessment (HRA) for the site

Document reference

4. Provide your outline engineering plan for the site

Document reference

5. Provide your stability risk assessment (SRA) for the site

Document reference

6. Provide your landfill gas risk assessment (LFGRA) for the site

Document reference

We have developed guidance on these assessments and their reports which can be found at
https://www.gov.uk/government/collections/environmental-permitting-landfill-sector-technical-guidance

7. For recovery of hazardous waste on land activities, have you completed a monitoring plan for the site?

No ☐ Please refer to the section of your ESSD that explains why this is unnecessary for your site

Document reference of this evidence

Yes ☐ Document reference

8. Have you completed a proposed plan for closing the site and your procedures for looking after the site once it has closed?

No ☐ If you have answered 'no' for recovery of hazardous waste on land activities, refer to the section of your ESSD that explains why this is unnecessary for your site

Document reference of this evidence

Yes ☐ For landfill you must provide a closure and aftercare plan

Document reference

Application for an environmental permit Part E2 – Surrender application (installations, waste operations, mining waste operations, medium combustion plant/specified generator and mobile plant only)

Fill in this part of the form together with part F1, if you are surrendering all or part of your permit or applying to surrender mobile plant. Please check that this is the latest version of the form available from our website.

Please read through this form and the guidance notes that came with it.

The form can be:

1) saved onto a computer and then filled in. Please note that the form follows a logic that means questions will open or stay closed depending on a previous answer. So you may not be able to enter text in some boxes.
2) printed off and filled in by hand. Please write clearly in the answer spaces.

It will take less than two hours to fill in this form.

Contents

1 About your permit

1a Discussions before your application

If you have had discussions with us before your application, give us the permit reference number or details on a separate sheet. Tell us below the reference you have given to this extra sheet.

Permit or document reference

1b Permit number

What is the permit number that this application relates to?

EPR/BP3792LD

1c Site details

What is the name, address and postcode of the site? (but not mobile plant)

Site name

Melton Waste Park

Address

Gibson Lane
Melton
East Yorkshire

Postcode

HU14 3HH

1d Type of permit

Tick below which type of permit you are applying to surrender

A site permit ☑ Now go to section 2

Part B permit ☐ Now go to section 5

Note: if your permit is a site permit but includes a Part B activity tick both boxes.

A mobile plant permit ☐ Now go to section 6

Standalone medium combustion plant/specified generator ☐ Now go to section 7

2 About your application

2a Is this a low risk surrender application?

See guidance notes on part E2.

No ☑
Yes ☐

Please attach a copy of the evidence and give us the document reference below.

Document reference

2b Have we confirmed during discussions we have had with you before your application that this will be a low risk surrender?

No ☑
Yes ☐

Have there been any changes to your proposal since the discussions?

No ☑
Yes ☐

Please send us a copy of confirmation or a letter justifying any changes you have made since pre-application discussions. Give us the reference number you have given this document.

Document reference for the justification: N/A

2c Tick below to show whether you are applying to surrender all or part of your permit

All of permit ☐ Now go to section 4

Part of permit ☑ Now go to section 3

3 About the parts of the permit you want to surrender and the parts you want to keep

3a Fill in Table 1 below with details of all the activities you no longer operate or plan to stop operating

Fill in a separate table for each activity you are applying to surrender. Use a separate sheet if you have a long list and send it to us with your application form. Tell us below the reference you have given the extra sheet.

Document reference of the extra sheet: See Supporting Doc Form E2 Q3a. No activities for surrender

Table 1 – Parts of the permit you want to surrender

Activity reference					
Installations only			Description of the waste facility	Description of the mining waste operation	Standard facility
Schedule 1 references	Description of the activity	Directly associated activity			

3 About the parts of the permit you want to surrender and the parts you want to keep, continued

Supply

1 a map or plan identifying the part (or parts) of the permit your application relates to.

Document map or plan reference: See Figures 1 - 3 in Partial Surrender Site Condition Report

2 a map or plan identifying the part (or parts) of the permit you will be keeping (please clearly mark the new boundary).

Document map or plan reference: See Figures 1 - 3 in Partial Surrender Site Condition Report

3b Do you think you will need to apply to vary (change) any of the permit conditions as a result of surrendering part of your permit?

Note: If you are partially surrendering an area of land only it is unlikely that you will need to amend any conditions other than the site plan.

No ☑ Now go to section 4

Yes ☐ Fill in the relevant parts of C1 to C7 of the application form, giving details of how the permit conditions will need to be changed as a result of surrendering part of the permit

Document reference of these details

4 For all applications

4a Please provide a site report/baseline report/surrender report which describes the condition of the site, or the parts of the permit the application relates to

See guidance notes on part E2.

Document reference of the report: See Partial Surrender Site Condition Report; November 2024

4b Have you taken any steps on the site (or the part of the site you are surrendering) to avoid any pollution risks or to return the site to a satisfactory condition?

No ☐

Yes ☑ Describe the steps you have taken

Document reference of your explanation: See Partial Surrender Site Condition Report; November 2024

4c Does a financial provision agreement exist for this site?

This information will allow the provision to be returned or cancelled correctly on surrender of the permit.

No ☑

Yes ☐

Now fill in part F1

5 Part B permit

I want to surrender the environmental permit mentioned in section 1 above ☐

5a Tell us the date on which you want to surrender the plant (DD/MM/YYYY)

This date must be at least 20 working days from the date we receive this form.

6 Surrendering mobile plant

I want to surrender the environmental permit mentioned in section 1 above ☐

6a Tell us the date on which you want to surrender the plant (DD/MM/YYYY)

This date must be at least 20 working days from the date we receive this form.

7 Surrendering medium combustion plant/specified generator permit or part of a permit

I want to surrender the environmental permit, or part of the environmental permit, mentioned in section 1 above ☐

7a Tell us the date on which you want to surrender the whole or part of the MCP/SG (DD/MM/YYYY)

This date must be at least 20 working days from the date we receive this form.

7b Fill in table 2 below with details of the combustion units you no longer operate or plan to stop operating

Fill in a separate row for each combustion unit you are applying to surrender. Use a separate sheet if you have a long list and send it to us with your application form. Tell us below the reference number you have given the extra sheet.

Document reference of the extra sheet

Table 2 – Parts of the permit you want to surrender

	Schedule 25A	Schedule 25B	Schedule 25A/B
Activity reference			
Combustion unit identity	Location (grid reference)	Capacity (MW thermal input)	Fuel

8 How to contact us

If you need help filling in this form, please contact the person who sent it to you or contact us as shown below.

General enquiries: 03708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 03702 422 549 (Monday to Friday, 8am to 6pm)

Email: enquiries@environment-agency.gov.uk

Website: www.gov.uk/government/organisations/environment-agency

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, please tell us how we can improve it.

Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.

Feedback

(You don't have to answer this part of the form, but it will help us improve our forms if you do.)

We want to make our forms easy to fill in and our guidance notes easy to understand. Please use the space below to give us any comments you may have about this form or the guidance notes that came with it.

How long did it take you to fill in this form?

We will use your feedback to improve our forms and guidance notes, and to tell the Government how regulations could be made simpler.

Would you like a reply to your feedback?

Yes please ☐

No thank you ☐

For Environment Agency use only

Date received (DD/MM/YYYY)

Our reference number

Payment received?

No ☐

Yes ☐ Amount received

£

Application for an environmental permit Part F1 – Charges and declarations

We recommend you use an Adobe Acrobat product to complete the form. You may not be able to complete the form using different software, such as the PDF reader built into your internet browser

Fill in this part for all applications for:

- installations (excluding new permit and variation applications for intensive farming. Use application form Part B3.5 or C3.5 instead)
- waste operations
- mining waste operations
- medium combustion plant
- specified generators
- water discharges (excluding treated domestic sewage effluent discharges of up to 15 cubic metres (15m^3) a day into ground or up to 20 cubic metres (20m^3) a day to surface water)
- groundwater activities (excluding small discharges of 15m^3 per day or less if using Part B6.5 OR existing small discharges to Source Protection Zone1 if using Part B6.6)

Please check that this is the latest version of the form available from our website.

Please read through this form and the guidance notes that came with it.

The form can be:

1) saved onto a computer and then filled in.

2) printed off and filled in by hand. Please write clearly in the answer spaces.

We anticipate it will take less than 3 hours to fill in this form if you have all the necessary information available.

Contents

1 Working out charges

You must fill out this section for all applications except for waste mobile plant and Part B surrender notifications.

You have to submit an application fee with your application. For guidance on the fee and how to pay your charges, please see our charging guidance (**https://www.gov.uk/government/publications/environmental-permitting-charges-guidance**) and the current charging scheme **https://www.gov.uk/government/publications/environmental-permits-and-abstraction-licences-tables-of-charges**. You can also contact us for pre-application advice to help work out the charges.

Please note that there is an annual subsistence charge to cover the costs we incur in the ongoing regulation of the permit.

Table 1 – Type and number of facilities being applied for

For example, if you are submitting one installation application, enter the number one into the first column.

Installation	Waste	Mining waste	Medium Combustion Plant (MCP)/ Specified Generator (SG)	Water discharge	Groundwater activity
1	1				

Table 2 – General application charge (A)

Charge activity reference from the charging scheme tables	Charge activity description from the charging scheme tables	What are you applying for? For example, a new permit, minor variation, normal variation, substantial variation, surrender, low risk surrender, transfer	Amount
e.g. 1.17.3	e.g. Section 5.2 – landfill for hazardous waste	e.g. transfer application	e.g. £5,561
1.18.1	3 x SWIP units as DAA to Part A(1)	Vary BP3792LD - add 3 SWIPs	£10,089
1.16.2.3	S.5.4A(1)(b)(ii) - non - haz. pre - treat	Minor Vari to add MOI	£3,986
1.16.12	Physical Treatment of non - haz waste	Partial Surrender (low risk)	£4,758
Total A			£18,833

1 Working out charges, continued

Table 3 – Additional assessment charges (B)

Part 1.19 Charges for plans and assessments			Tick appropriate
Reference	Plan or assessment	Charge	
1.19.1	Waste recovery plan or variation or revision of a waste recovery plan.	£1,231	☐
1.19.2	Habitats assessment (except where the application activity is a flood risk activity, water discharge or groundwater activity).	£779	☐
1.19.3	Fire prevention plan (except where the application activity is a farming installation).	£1,241	☑
1.19.4	Pests management plan (except where the application activity is a farming installation).	£1,241	☐
1.19.5	Emissions management plan (except where the application activity is a farming installation).	£1,241	☐
1.19.6	Odour management plan (except where the application activity is a farming installation).	£1,246	☐
1.19.7	Noise and vibration management plan (except where the application activity is a farming installation).	£1,246	☐
1.19.8	Ammonia modelling assessment	£620	☐
1.19.9	Dust and bio-aerosol management plan.	£620	☐
1.19.10	Habitats assessment for discharges to water and groundwater activities.	£2,035	☐
1.19.11	Specific Substances Assessment for a water discharge activity to surface water.	£3,774	☐
1.19.12	Specific Substances Assessment for a groundwater activity.	£1,546	☐
1.19.13	Advertising	£500	☐
Total B			£1,241

Total charges

Add the total charges from Table 1 to the total charges from Table 2 (total A plus total B)

£20,074

2 Payment

You must fill out this section for all applications except for waste mobile plant and Part B surrender notifications.

Tick below to show how you have paid.

☐ Cheque

☐ Credit or debit card

☑ Electronic transfer (for example, BACS)

Cheques

You should make cheques payable to 'Environment Agency' and make sure they have 'A/c Payee' written across them if it is not already printed on.

2 Payment, continued

Please write the name of your company and application reference number on the back of your cheque. We will not accept cheques with a future date on them.

Credit/debit cards

If you are paying by credit or with debit card we will call you. We can accept payments by Visa, MasterCard or Maestro card only.

☐ Call me to arrange payment by debit or credit card

Electronic transfer BACS

If you choose to pay by electronic transfer, you will need to use the following information to make your payment:

Company name	Environment Agency
Company address	SSCL (Environment Agency), PO Box 797, Newport Gwent, NP10 8FZ
Bank	RBS/NatWest
Address	London Corporate Service Centre, CPB Services, 2nd Floor, 280 Bishopsgate, London EC2M 4RB
Sort code	60-70-80
Account number	10014411
Account name	EA RECEIPTS
Payment reference number	PSCAPPXXXXXYYY

You need to create your own reference number. It should begin with PSCAPPWASTE (Waste), PSCAPPINST (Installation), PSCAPPWQ (Water Quality) (to reflect the facility type) and it should include the first five letters of the company name (replacing the X's in the above reference number) and a unique numerical identifier (replacing the Y's in the above reference number). The reference number that you supply will appear on our bank statements.

You should also email your payment details and reference number to **ea_fsc_ar@gov.sscl.com**.

If you are making your payment from outside the United Kingdom, it must be in sterling. Our IBAN number is GB23NWBK60708010014411 and our SWIFTBIC number is NWBKGB2L.

If you do not quote your reference number, there may be a delay in processing your payment and application.

Provide a unique reference number for the application, i.e. do not only use the company name only

PSCAPPINSTTRANS001

State who is paying (full name and whether this is the agent/applicant/other)

Environmental Visage Limited (Agent)

Fee paid

£ 20,074

Date payment sent (DD/MM/YYYY)

20/11/2024

3 Privacy notice

The Environment Agency runs the environmental permit application service.

See **https://www.gov.uk/guidance/environmental-permits-privacy-notice** for how we use your personal information in services to support environmental permitting.

4 Confidentiality and national security

Confidentiality

We will normally put all the information in your application on a public register of environmental information. However, we may not include certain information in the public register if this is in the interests of national security, or because the information is confidential.

You can ask for information to be made confidential by enclosing a letter with your application giving your reasons. If we agree with your request, we will tell you and not include the information in the public register. If we do not agree with your request, we will let you know how to appeal against our decision, or you can withdraw your application. You can find guidance on confidentiality in 'Environmental permitting guidance: core guidance', published by Defra and available at **https://www.gov.uk/government/publications/environmental-permitting-guidance-core-guidance--2**.

Only tick the box below if you wish to claim confidentiality for parts of your application

☐ Please treat the specified information in my application as confidential

National security

You can tell the Secretary of State that you believe including information on a public register would not be in the interests of national security. You must enclose a letter with your application telling us that you have told the Secretary of State and you must still include the information in your application. We will not include the information in the public register unless the Secretary of State decides that it should be included.

You can find guidance on national security in 'Environmental permitting guidance: core guidance', published by Defra and available at **https://www.gov.uk/government/publications/environmental-permitting-guidance-core-guidance--2**

You cannot apply for national security via this application.

Now fill in section 5

5 Declaration

If you knowingly or recklessly make a statement that is false or misleading to help you get an environmental permit (for yourself or anyone else), you may be committing an offence under the Environmental Permitting (England and Wales) Regulations 2016.

A relevant person should make the declaration (see the guidance notes on part F1). An agent acting on behalf of an applicant is NOT a relevant person.

Each individual (or individual trustee) who is applying for their name to appear on the permit must complete this declaration. You will have to print a separate copy of this page for each additional individual to complete.

If you are transferring all or part of your permit, both you and the person receiving the permit must make the declaration. You must fill in the declaration directly below; the person receiving the permit must fill in the declaration under the heading 'For transfers only'.

5 Declaration, continued

Note: we will issue a letter to both current and new holders to confirm the transfer. If you are changing address we will need to send this letter to your new address; therefore please tell us your new address in a separate letter.

If you are unable to trace one or more of the current permit holders please see below under the transfers declaration.

I declare that the information in this application is true to the best of my knowledge and belief. I understand that this application may be refused or approval withdrawn if I give false or incomplete information.

If you deliberately make a statement that is false or misleading in order to get approval you may be prosecuted.

☑ Tick this box to confirm that you understand and agree with the declaration above, then fill in the details below (you do not have to provide a signature as well)

☐ I confirm that my standard facility will fully meet the rules that I have applied for (this only applies if the application includes standard facilities)

☐ Tick this box if you do not want us to use information from any ecological survey that you have supplied with your application (for further information please see the guidance notes on part F1)

Name

Title

Mr

First name

Paul

Last name

Hornshaw

on behalf of (if relevant; for example, a company or organisation and so on)

Transwaste Recycling and Aggregates Limited

Position (if relevant; for example, a company or organisation and so on)

Director

Today's date (DD/MM/YYYY)

19/11/2024

For transfers only – declaration for person receiving the permit

A relevant person should make the declaration (see the guidance notes on part F1). An agent acting on behalf of an applicant is NOT a relevant person.

I declare that the information in this application to transfer an environmental permit to me is true to the best of my knowledge and belief. I understand that this application may be refused or approval withdrawn if I give false or incomplete information.

Note: If you cannot trace a person or persons holding the permit you may be able to transfer the permit without their declaration as above. Please contact us to discuss this and supply evidence in your application to confirm you are unable to trace one or all of the permit holders.

If you deliberately make a statement that is false or misleading in order to get approval you may be prosecuted.

5 Declaration, continued

☐ Tick this box to confirm that you understand and agree with the declaration above, then fill in the details below (you do not have to provide a signature as well)

Name

Title

First name

Last name

on behalf of (if relevant; for example, a company or organisation and so on)

Position (if relevant; for example, a company or organisation and so on)

Today's date (DD/MM/YYYY)

Now go to section 6

6 Application checklist

You must fill in this section.

If your application is not complete, we will return it to you. If you aren't sure about what you need to send, contact us before you submit your application. For further information on pre-application advice, see **https://www.gov.uk/guidance/get-advice-before-you-apply-for-an-environmental-permit.**

You must do the following:

☑ Complete legibly all parts of the application form that are relevant to you and your activities

☑ Identify relevant supporting information in the form and send it with the application

☑ List all the documents you are sending in the table below.

☑ For new permit applications or any changes to the site plan, provide a plan that meets the standards given in the guidance note on part F1

☐ Provide a supporting letter for any claim that information is confidential

☑ Get the declaration completed by a relevant person (not an agent)

☑ Send the correct fee

6 Application checklist, continued

Continue on an extra sheet if necessary.

Question reference	Document title	Document reference
Application Forms	App. Forms A, C2, C3, and F	EP Apps and Supporting Doc
All Questions	Supporting Documentation	EP Apps and Supporting Doc
App. Form C2 Q3b	Technical Competence	Certificates - Appendix 1
App. Form C2 Q5a	Site Plans	Site Plans - Appendix 2
App. Form C2 Q5e	Fire Prevention Plan	FPP: 17/01/2023 - Appendix 3
App. Form C2 Q6	H1 Environmental Risk Assessment	Transwaste EPR_BP3792LD_H1 Tool v9.2 - WQDisabled
App. Form C3 Q3	Flue Gas Abatement System Information	Statement etc. from Justsen - Appendix 4
App. Form C3 Q3	Detailed Air Quality Assessment	Detailed AQA - Appendix 5
App. Form E2 Q4a	Partial Surrender Site Condition Report	Partial Surrender SCR - Appendix 6

Document reference

7 How to contact us

If you have difficulty filling in this form, please contact the person who sent it to you or contact us as shown below.

General enquiries: 03708 506 506 (Monday to Friday, 8am to 6pm)

Textphone: 03702 422549 (Monday to Friday, 8am to 6pm)

Email: **enquiries@environment-agency.gov.uk**

Website: **www.gov.uk/government/organisations/environment-agency**

If you are happy with our service, please tell us. It helps us to identify good practice and encourages our staff. If you're not happy with our service, please tell us how we can improve.

Please tell us if you need information in a different language or format (for example, in large print) so we can keep in touch with you more easily.

8 Where to send your application

For how many copies to send see the guidance note on part F1.

Please send your filled in application form and supporting documents to:

For water discharges and groundwater activities by email to
PSC-WaterQuality@environment-agency.gov.uk

For waste, installations, medium combustion plant and specified generators by email to
PSC@environment-agency.gov.uk

For large electronic documents (too large for email attachment) you can upload your applications to file sharing sites and send us a link to download the documents. Alternatively, you can send more than one email with documents attached.

Or by post to:

Permitting Support, NPS Sheffield
Quadrant 2
99 Parkway Avenue
Parkway Business Park
Sheffield
S9 4WF

Do you want all information to be sent to you by email?

☑ Please tick this box if you wish to have all communication about this application sent via email (we will use the details provided in the Part A form).

Feedback

(You don't have to answer this part of the form, but it will help us improve our forms if you do.)

We want to make our forms easy to fill in and our guidance notes easy to understand. Please use the space below to give us any comments you may have about this form or the guidance notes that came with it.

How long did it take you to fill in this form?

We will use your feedback to improve our forms and guidance notes.

Would you like a reply to your feedback?

☐ Yes please

☐ No thank you

For Environment Agency use only

Date received (DD/MM/YYYY)

Our reference number

Payment received?

☐ No

☐ Yes

Amount received (£)

Environmental Visage

TRANSWASTE RECYCLING AND AGGREGATES LIMITED

VARIATION OF ENVIRONMENTAL PERMIT EPR/BP3792LD

1. Application Form Part A
Question 5c – Director Details

Title	First Name	Last Name	Occupation / Role
Mr	Mark	Hornshaw	Director
Mr	Paul	Hornshaw	Director and Company Secretary
Mr	Michael	Kemish	Director

2. Application Form Part C2
Question 2b; Table 1. Changes Proposed to Transwaste Recycling and Aggregates Limited

Installation Ref.	Description of Activity	Proposed Changes
A1 S5.4 A1(b)(ii)	Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day involving pretreatment of waste for incineration or co-incineration (R3, R4, R5)	No fundamental change, although Transwaste will transfer up to 52,000 tonnes organic fraction from municipal solid waste, and up to 5,200 tonnes of green waste per annum to Melton Energy Tech Limited for use in their AD plant
Directly Associated Activities	**Description of Directly Associated Activity**	**Proposed Changes**
A2 – Storage of waste prior to treatment	Receipt and storage of non-hazardous waste pending treatment (R13)	No change
A3 – Bulking of recyclable wastes	Bulking of recyclable wastes recovered during production of SRF and RDF (R3, R4, R5, R13)	No change
A4 – Storage of SRF and RDF	Storage of baled waste following pre-treatment for incineration / co-incineration (R13)	No change
A5 – Raw materials storage	Receipt and storage of raw materials prior to use, including oil and diesel	No change
A6 – Surface water collection, storage and discharge	Collection and storage of roof and surface waters in a settlement pond prior to discharge into controlled waters	No change
Future DAAs / MOI Linkage	**Description of Directly Associated Activity / MOI Linkage**	**Proposed Changes**
A12 – SWIP and chiller plant	Three new non-hazardous SWIPs to power three new chiller units and provide heat to a third-party AD plant	This Supporting Document details the new operation
A13 – Waste fuel delivery from, and potential supply of hot water to a third-party AD facility	Connections to a third-party AD facility comprising a digestate (fuel supply) to the SWIP process and delivery of hot water via pipeworks from the SWIP to the AD plant	See this Supporting Document. Transwaste and Melton Energy Tech sites are Multi-Operator Installations (MOIs) due to synergies and technical connections
Waste Activity Ref.	**Description of Waste Activity**	**Proposed Changes**
A7 – Inert crushing and screening	Screening, crushing, blending etc. non-hazardous, inert waste (R3, R5, R13)	No change, except for area of land available to the operation
A8 – Materials Recycling Facility (MRF) and transfer station	Manual and physical sorting, baling etc. non-hazardous wastes, with < 50 tonnes per day for disposal (R3, R4, R5, R13, D9, D14, D15)	MRF building will be replaced in due course with a new facility. MRF will also accept solid digestate from neighbouring AD for screening before transfer to the chipped waste wood pile for blending and storage, as required, prior to delivery to the SWIP fuel storage containers
A9 – Green waste treatment and storage	Shredding, blending and storage of source segregated green waste (R3, R13)	No change, except for area of land available to the operation
A10 – Waste wood shredding and chipping	Shredding, blending and storage of uncontaminated wood waste (R3, R13)	No change, except for area of land available to the operation
A11 – Hazardous waste storage and transfer station	Hazardous waste (including asbestos) with treatment limited to the bulking of asbestos. (R4, R5, R13, D14, D15)	No change

Question 3 – Your Ability as an Operator

Responses are not provided within the application form as the existing Permit already regulates the site waste installation activities and hence all data has been provided previously for EPR/BP3792LD.

Data is not provided where it does not require updating.

Question 3b – Technical Competence

The site has two technically competent managers (as below). Copies of Certificates of Technical Competence are provided in Appendix 1.

Title	First Name	Last Name	Telephone	Mobile	E-mail
Mr	Chris	Tute	01482 333650	07891 623451	chris@transwasteltd.co.uk
Mr	Graham	Wildridge	01482 333650	07903 192903	graham@transwasteltd.co.uk

Chris Tute will provide technically competent management for the Transwaste site, Graham Wildridge will provide technically competent management for two businesses within the Melton Waste Park as follows:

Permit Number	Address	Postcode
EPR/BP3792LD	Transwaste Recycling and Aggregates Limited, Melton Waste Park, Gibson Lane, Melton, East Yorkshire	HU14 3HH
EPR/ZP3322SC (once Permitted)	Melton Energy Tech, Melton Waste Park, Gibson Lane, Melton, East Yorkshire	HU14 3HH

Question 3d – Management Systems

The operator continues to manage and control their operations as before, including through the application of an effective, written management system, and the use of technically competent staff, in accordance with BAT 1[1]. Where updates to the system are required to ensure full compliance with the management systems requirements of the BAT-Conclusions, these will be in place by the close of 2022.

The contents list of the current Environmental Management System (ISO14001 Certificate Number 117646; Valid to 28th May 2027), which is part of a wider, integrated system, is provided below:

Context of the organisation
Understanding the organisation and its context
Understanding the needs and expectations of interested parties
Determining the scope of the environmental management system
Environmental management system

Leadership
Leadership and commitment
Environmental policy
Organisational roles, responsibilities and authorities

Planning
Actions to address risks and opportunities
Environmental objectives and planning to achieve them

[1] References to BAT [No.] throughout this document are confirmation that the existing and / or proposed operations comply with the Waste Treatment BREF BAT-Conclusions where required, as advised to the Environment Agency (for existing operations) in previous applications and in response to the review of operations against BAT-Conclusions (2021).

Support
Resources
Competence
Awareness
Communication
Documented information

Operation
Operational planning and control
Emergency preparedness and response

Performance evaluation
Monitoring, measurements, analysis and evaluation
Internal audit
Management review

Improvement
General
Nonconformity and corrective action
Continual improvement

Question 4 – Consultation

There is no direct release into any harbour or into the relevant territorial waters or coastal waters within the sea fisheries district of a local fisheries committee, although the release of surface waters pass through an on-site settlement lagoon to an unnamed stream that flows to the Humber Estuary, which is in the jurisdiction of the North Eastern Inshore Fisheries and Conservation Authority.

Question 5a – Site Plans

See site plans provided in Appendix 2 as follows:

Figure 1 – Current Installation Boundary Diagram;
Figure 2 – Future Installation Boundary Diagram;
Figure 3 - Boundary, Emission Points and Surfacing Diagram;
Figure 4 – Site Drainage Diagram.

Question 5c – Non-Technical Summary

Transwaste Recycling and Aggregates Limited (Transwaste) operates numerous waste operations at their Melton Waste Park waste transfer and treatment facility in Melton, near Hull, East Yorkshire. Among their operations, Transwaste accepts incoming mixed wastes which are pre-treated for use in incineration or co-incineration activities. Such operations are regulated under Schedule 1, Part 2 of the Environmental Permitting Regulations and there are two processes on site which occur under this listed activity. Firstly, the production of Refuse Derived Fuel (RDF) uses municipal mixed waste sources or black bagged wastes from kerbside collections to generate a material for export off site (processed in Sheds 4 and 5). Secondly, Solid Recovered Fuel (SRF) is produced using a more source segregated material including commercial wastes, mixed plastics and packaging wastes (processed in sheds 2 and 3). Both materials are exported off site for recovery in third-party energy from waste facilities.

Both of these processes involve materials sorting using trommels, wind sifting and magnets to remove inert materials, ferrous and non-ferrous metals prior to shredding the remaining materials. Each batch is produced to meet a particular contractual standard of varying calorific value and moisture content.

In addition to the processes which pre-treat wastes to RDF and SRF, the site also engages in a number of separate waste operations. These include;

- Inert and aggregate crushing, screening and storage with associated soil storage.

- General materials recycling facility and transfer station.
- Green waste pre-treatment facility (shredding) and storage prior to composting at other sites.
- Wood waste shredding and chipping with storage.
- Hazardous waste bulking and storage.

The treatment and storage of wastes will generally take place on an impermeable surface with a sealed drainage system. Process water run-off from the areas served by sealed drainage on the site are diverted through two full retention separators working in parallel, then discharge via a settlement lagoon to an unnamed stream that flows to the Humber Estuary. This discharge is listed in the existing Permit as W1.

As waste processes can be odorous, the site maintains and strictly implements an Odour Management Plan and abates odour emissions using an ionisation process on the ventilation discharge from sheds 4 and 5 which house the most potentially odorous waste storage and RDF processing plant. Any excessively odorous waste entering the site will either be rejected and / or removed from site as soon as possible or will be moved to the sealed RDF building.

In order to reduce the potential for the waste to become odorous, the site intends to cool the ventilation air delivered to the sheds using absorption chillers which will use the heat from three Small Waste Incineration Plants (SWIPs), to chill water used as the ventilation air. The SWIPs each have an input capacity of 1.082 MW_{th}, and an output capacity of 0.95 MW_{th} and will principally burn waste wood.

Absorption chillers work on the same principles as traditional, mechanical chillers but use the latent heat of evaporation to drive a thermodynamic process that allows water to be chilled and distributed for heating, ventilation and air conditioning needs. In place of conventional refrigerants, vapourised water is usually mixed with Ammonia or, as in this case, Lithium Bromide, before heat is applied to release the refrigerant vapour from the Lithium Bromide absorbent. The refrigerant vapour then passes through a condenser, is condensed and transfers heat to the cooling tower water. The condensed refrigerant passes over evaporator tubes, removing heat from the chilled water within the tubes, once again vaporising the water refrigerant. The concentrated Lithium Bromide solution, having released the water vapour, passes into the absorber where it is ready to absorb the recirculated refrigerant vapour, diluting itself so that it can be pumped to the generator where the heat is applied and the process continues.

The boilers will each provide up to 9.9 litres per second 95 ^{o}C hot water to the chiller units which will cool the ventilation air to the waste processing sheds.

Also, within the Melton Waste Park site boundary, a third-party operator, Melton Energy Tech Limited (MET) propose to develop a dry anaerobic digestion (AD) plant, and has submitted an application for an Environmental Permit (EPR/ZP3322SC/A001). The dry AD plant, which will include two digestion tanks and associated handling, treatment and storage facilities, will be located in the south-eastern corner of the Melton Waste Park site.

Transwaste will transfer up to 52,000 tonnes organic fraction from their sorted municipal solid waste, and up to 5,200 tonnes of green waste per annum to MET for use in their AD plant.

In addition to solid digestate from the AD plant being returned to Transwaste for use, in part, to fuel the new boilers, hot water generated by the SWIPs may also be piped to the AD process in order to maintain the relevant temperature within the two digestion tanks. In this way, the SWIPs and the AD processes form individually operated and operational systems which can be integrated as required, with the AD plant providing an optional source of fuel for the SWIPs, and the SWIPs having the potential to provide heat to the AD plant, although it is noted that waste heat from the AD abatement plant, or heat from the AD plant's own natural gas fired boiler will generally be sufficient to maintain the digestion tanks at the required 52 ^{o}C.

Solid digestate will enter the Transwaste installation through the existing, or in future, the new MRF building. All of the materials recycling operations will transfer to the new building in due course, and a dedicated line will be installed to sort and screen the digestate, removing plastics, glass, grit and other contaminants. The screened fibrous residues will be transferred from the MRF to the wood shredding and screening area for manual mixing with the waste wood fuel. Once mixed, the fuel for the SWIPs will be transferred as required to the SWIP fuel storage containers.

Transwaste will be responsible for all inter-installation feedstock / fuel movements, although MET will be instrumental in dictating the timing of deliveries and collections. Due to the synergies and technical connections proposed between the two operations, the Transwaste (EPR/BP3792LD) and MET (EPR/ZP3322SC/A001) activities are to be classed as Multi-Operator Installations (MOIs).

This application therefore recognises the Permitted activities as MOIs, and also surrenders the parts of the land currently occupied by Transwaste that are no longer used for waste activities or that which will be occupied by MET.

Prior to the development of the AD plant and subsequently in addition to the use of solid digestate as a fuel, the SWIPS will be fuelled with clean recycled wood and industrial feedstock grade wood, thereby removing any reliance on any one fuel source. The latter may include construction and demolition waste and hence cannot be guaranteed to be clean, potentially including scrap wood, laminates, MDF, used wood with preservatives and coatings, or furniture wood sources, although no hazardous material will be included in the wood fuel. As the wood is not virgin timber or guaranteed to be clean and uncontaminated, it must be fired in a combustion plant which meets the requirements of a waste incineration process, including meeting strict combustion conditions and continuous monitoring requirements. The installed units are designed for such fuels.

The SWIPs and the chillers, and the activities associated with their use, such as the receipt and storage of fuel and the use of the cooled ventilation air and heat, are the only changes requested to the Permit through this current application.

The principle aim of the three SWIPs is therefore the provision of heat to site and / or third-party processes, and as such, the SWIPs form Directly Associated Activities to the MET permitted activities, providing a utilities function both to the waste pre-treatment and the dry anaerobic digestion activities. The SWIPs will be required to provide heat on a 24-hour, 7-day week basis and therefore, their operation will be continuous. However, in utilising waste as a fuel, the operation is fully compliant with the requirement of BAT-Conclusion number 22 which requires that, in order to use materials efficiently, materials use, in this case fuel, should be substituted with waste.

Question 5e – Fire Prevention Plan

The site operations work to a Fire Prevention Plan and this has previously been submitted to and agreed with the Environment Agency. The latest version (Revision 6) dated 17th January 2023 is included in Appendix 3 and includes consideration of the new SWIPs.

Form C2 Appendix 2 – Date of Birth of Technically Competent Staff

Mr Chris Tute		[redacted]	Redact DOB Information prior to upload to the public register
Mr Graham Wildridge			

3. Application Form Part C3
Question 1; Table 1a – Types of Activities

Installation Name	Transwaste Recycling and Aggregates Limited; Melton Waste Park				
Schedule 1 / Other Reference	**Description of the Activity**	**Activity Capacity**	**Annex I and II Codes**	**Hazardous Waste Capacity**	**Non-Hazardous Waste Capacity**
Activity 1 S5.4 A1(b)(ii)	Pretreatment of waste for incineration or co-incineration	200,000 tonnes (T) per annum	R3, R4, R5	N/A	1,000 T per day
Directly Associated Activities		**Activity Capacity**	**Annex I and II Codes**	**Hazardous Waste Capacity**	**Non-Hazardous Waste Capacity**
Activity 2	Storage of waste prior to treatment	200,000 T per annum as per Activity 1	R13	N/A	1,000 T per day, as per Activity 1
Activity 3	Bulking of recyclable wastes		R3, R4, R5, R13	N/A	
Activity 4	Storage of SRF and RDF		R13	N/A	
Activity 5	Raw materials storage		N/A	N/A	
Activity 6	Surface water collection, storage and discharge	780 m^3 capacity	D6	N/A	Cleaned surface and roof-water run-off only
Future DAAs / MOI Linkage		**Activity Capacity**	**Annex I and II Codes**	**Hazardous Waste Capacity**	**Non-Hazardous Waste Capacity**
Activity 12	3 x 1.082 $MW_{th(input)}$ SWIPs providing energy to air chillers to reduce odour potential, and providing heat to third-party AD processes	6,720 T per annum (internal transfers) Fuel derived from Activity A10 (wood shredding and chipping) and Activity A13 (digestate from third-party AD process)	D10	N/A	Up to 20 tonnes per day received from Activities 8 (Transwaste) and 13 (third-party supply)
Activity 13	Waste receipt and storage and supply of hot water to third-party AD plant	Up to 21,000 T solid digestate produced per annum (recyclable content removed) that can be used to fuel the SWIPs. Hot water supplied to AD plant as required	D15	N/A	Up to 75 T total solid digestate per day
Waste Activities	**Description**				
Activity 7	Inert and aggregate crushing, screening and storage with associated soil storage. Maximum 331,600 T per annum				
Activity 8	General materials recycling facility and transfer station. Maximum 75,000 T per annum				
Activity 9	Green waste pre-treatment and storage. Maximum 10,000 T per annum				
Activity 10	Wood waste shredding and chipping with storage. Maximum 130,000 T per annum				
Activity 11	Hazardous waste bulking and storage limited to asbestos waste and hazardous and non-hazardous WEEE. Maximum 3,650 T per annum				
Capacity					
Total waste storage capacity (T)	3,120 tonnes				
Annual throughput (T)	776,250 tonnes				

Activities 12 and 13 are not yet permitted at the Transwaste site. Although the three SWIPs are installed and are ready for use, any operation of the units until such time as the Permit is varied, is using virgin fuels only.

Activities 12 and 13 are shown here as future Directly Associated Activities in order to demonstrate the linkages between the Transwaste and the MET sites and to confirm the proposal for these to be Multi-Operator Installations. Irrespective of the inclusion of Activities 12 and 13 in the future, MET will be located within the Melton Waste Park, adjacent to the Transwaste site and will receive feedstock from the Transwaste operation.

Following the Environment Agency's 'Guidance on when a plant is a Co-Incineration Plant', the three new SWIPs to be installed at the Transwaste site will be classed as 'Incineration Plant'. A summary of the assessment undertaken is presented in the table below.

Is the Plant an Incinerator or a Co-Incinerator?

Question	Transwaste Plant	Response to Question and Action
Q.1 Does the plant produce material outputs?	Plant produces thermal energy for use in on site chiller units and a third-party AD plant	No – go to Q.2
Q.2 Is energy recovered?	The thermal energy is used in the wider installation process, and serves a third-party process	Yes – go to Q.3
Q.3 Is waste the principal fuel source?	Waste timber from site operations and digestate from a third-party AD plant are the fuel sources	Yes – go to Q.4
Q.4 Does the waste comprise mixed materials?	Waste timber and AD digestate are the fuel sources. Although consistent in their own type, where these may be fired together, the fuel would be considered to be mixed	Yes – go to Q.5
Q.5 Has the waste been treated to improve its fuel quality (i.e. does it comply with a set standard)	The material does receive treatment with wood being shredded and the digestate being the residue of a treatment process. However, the treatment is not designed to improve the material's quality as a fuel and therefore is not considered relevant	No - The Plant is an Incineration Plant – end of assessment.

Question 1; Table 1b – List of Wates

A single additional waste code is proposed to the list of wastes which are currently acceptable at the site, as follows:

Waste Code	Description
19 06 04	digestate from anaerobic treatment of municipal waste

The inclusion of digestate onto the list of wastes is intended to enable to use of digestate, created by the MET operated anaerobic digestion facility, also located within the Melton Waste Park, as a fuel for the Transwaste SWIPs. Coupled with the waste wood identified for treatment by shredding and chipping with storage, these materials will be used to fuel the three new SWIPs. A full list of acceptable waste fuels for the SWIPs is presented in Table 1b over page. This table should be inserted into the Permit as a new Table S2.8.

Table 1b – List of Wates

Permitted waste types and quantities of materials for use in the on-site SWIPs (A12 and A13)	
Maximum Quantities	The total aggregated quantity of hazardous and non-hazardous waste accepted at the site shall not exceed **750,350 tonnes per year**. The total quantity of waste accepted at the site (activity A8) to provide fuel for the SWIPs (activity A7) shall not exceed 7,070 tonnes per year, of which, comprising any combination of the following wastes:
Waste Code	**Description**
03	*Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard*
03 01	*wastes from wood processing and the production of panels and furniture*
03 01 01	**waste bark and cork**
15	*Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified*
15 01	*packaging (including separately collected municipal packaging waste)*
15 01 03	**wooden packaging**
17	*Construction and demolition wastes (including excavated soil from contaminated sites)*
17 02	*wood, glass and plastic*
17 02 01	**wood**
19	*Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use*
19 06	*wastes from anaerobic treatment of waste*
19 06 04	**digestate from anaerobic treatment of municipal waste**
19	*Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use*
19 12	*wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified*
19 12 07	**wood other than that mentioned in 19 12 06**
20	*Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions*
20 01	*separately collected fractions (except 15 01)*
20 01 38	**wood other than that mentioned in 20 01 37**

Question 2 - Emissions

Emissions to air from the existing processes will not change, although the introduction of three new 0.95 $MW_{th(output)}$ SWIPs will result in three new discharge points to atmosphere (A1 – A3), each of which is 22 m high. Detailed dispersion modelling has been undertaken to confirm the impact of the releases.

The SWIPs will be used to provide heat to chiller units at the site and are directly linked to the installation processes. Heat will also be provided to a neighbouring AD process as required.

Due to the fuels comprising mixed wastes, including waste wood which has consistent characteristics and could be compared to a virgin fuel, but also digestate material from the neighbouring anaerobic digestion facility which, by its mixed and treated nature is not comparable to a virgin fuel, the SWIP units are defined as incineration plant and will be subject to the following emission limit values.

Question 2; Table 2a – Emissions to Air

Installation Name	Transwaste Recycling and Aggregates Limited; Melton Waste Park			
Emission Point	**Source**	**Parameter / Pollutant**	**Quantity (incl. units)***	**Reference Period**
A1 – A3 Emissions from each discharge point	Small Waste Incineration Plant	Particulate matter	30 mg Nm^{-3}	½-hr average
		Particulate matter	10 mg Nm^{-3}	daily average
		Total Organic Carbon (TOC)	20 mg Nm^{-3}	½-hr average
		Total Organic Carbon (TOC)	10 mg Nm^{-3}	daily average
		Hydrogen Chloride	60 mg Nm^{-3}	½-hr average
		Hydrogen Chloride	10 mg Nm^{-3}	daily average
		Hydrogen Fluoride	4 mg Nm^{-3}	½-hr average
		Hydrogen Fluoride	1 mg Nm^{-3}	daily average
		Carbon Monoxide	100 mg Nm^{-3}	½-hr average
		Carbon Monoxide	50 mg Nm^{-3}	daily average
		Sulphur Dioxide	200 mg Nm^{-3}	½-hr average
		Sulphur Dioxide	50 mg Nm^{-3}	daily average
		Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	400 mg Nm^{-3}	½-hr average
		Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	200 mg Nm^{-3}	daily average
		Cadmium and Thallium and their compounds (total)	0.05 mg Nm^{-3}	Periodic: min. 30 minute; max. 8 hr
		Mercury and its compounds	0.05 mg Nm^{-3}	Periodic: min. 30 minute; max. 8 hr
		Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg Nm^{-3}	Periodic: min. 30 minute; max. 8 hr
		Dioxins and Furans (I-TEQ)	0.1 ng Nm^{-3}	Periodic: min. 30 minute; max. 8 hr

*Emissions to atmosphere are normalised (N) to standard temperature and pressure, dry, 11 % Oxygen.
There are no other changes proposed to the releases to air, and no releases proposed to sewer or land.

Table 2b – Emissions to Watercourse

There are no proposed changes to the nature or quantity of emissions to watercourse from W1 and hence the emission limits and monitoring requirements remain as per Table S3.1 of the current Permit, summarised below for completeness.

Emission Point	Source	Parameter	Limit (incl. units)	Reference Period	Monitoring Frequency	Monitoring Standard
W1 – Discharge to surface water as detailed on layout plan Grid Ref: SE9691325523	Site lagoon	Max. daily discharge	43 m^3 day^{-1}	Total daily volume	N/A	Maximum
		Max. rate of discharge	17.7 l s^{-1}	Instantaneous (spot sample)		Maximum
		Suspended solids	60 mg l^{-1}			Maximum
		pH	6 – 9			Max. and min.
		Visible oil and grease	No significant trace			No significant trace
		Ammoniacal Nitrogen	5 mg l^{-1}		Quarterly	Maximum

Although limits are set for multiple pollutants, regular monitoring and reporting is only required for Ammoniacal Nitrogen. Samples are however, taken quarterly from the water discharge point W1 for the Melton Waste Park and analysis reports pH, total suspended solids and Ammoniacal Nitrogen. A review of six analytical reports confirmed that results are generally within the limits set, although on two occasions in the results considered, total suspended solids and Ammoniacal Nitrogen exceeded the limits set.

The introduction of the SWIPs to the Melton Waste Park will have no regular effect on the discharge from the release point, which releases surface water run-off that has first been allowed to settle in a lagoon. The SWIPs and all of their infrastructure are located within a purpose-built boiler room. The fuel storage hoppers are located externally and can be covered to minimise or prevent rain ingress. Thus, the only run-off from the proposed infrastructure will be of clean roof water from the boiler room and storage hoppers. Whilst some additional vehicle movements across existing site yards and roadways will be required in order to handle the fuel which is already stored at the site, any addition to pollutant levels from this process will relate to suspended solids which will settle in the site lagoon before the discharge is released.

3. Operating Techniques

Technical Standards

Transwaste Recycling and Aggregates Limited is a well-established waste management company, which has operated their Gibson Lane facility in Melton since 2007. The Melton installation already holds an Environmental Permit (EPR/BP3792LD) for the operations currently undertaken there, and hence all Company staff whose activities could affect compliance with the Permit conditions are familiar with the requirements of the Permit and the procedures in place to ensure that the Company operations comply with Best Available Techniques (BAT).

The installation is located on a large site, with other, third-party operations existing within the site boundary known as the Melton Waste Park. At the time of this Permit variation application, a new Environmental Permit application has recently been submitted for the installation of a dry AD plant, to be operated by a third-party Company, local to the Transwaste facility. Although not currently determined, it is assumed, for the purpose of this application, that the dry AD plant will indeed be permitted and will include a link to the Transwaste operations, providing fuel in the form of digestate to the SWIP process and, as required, receiving heat from the SWIPs to maintain optimum conditions within the digestion tanks.

This application therefore seeks to incorporate three new small waste incineration plant, which will be fuelled by any combination of shredded waste wood from the Transwaste operations and solid digestate from the neighbouring AD plant. The energy from the SWIPs will be used by absorption chillers to cool the ventilation air for operational sheds 4 and 5, and will also provide heat, as required, to the neighbouring dry AD plant.

It is noted that, the Environmental Permitting Regulations define "small waste incineration plant" as a waste incineration plant or waste co-incineration plant with a capacity less than or equal to 10 tonnes per day for hazardous waste or 3 tonnes per hour for non-hazardous waste. SWIPs are principally regulated by Schedule 13 of the Environmental Permitting Regulations and are subject to the requirements specified in Chapter IV and Annex VI of the Industrial Emissions Directive (IED). The application of the Waste Incineration Best Available Techniques Reference note (BREF) and the associated BAT-Conclusions only applies to waste incineration and co-incineration plant listed in Annex I of the IED which, in the case of incineration activities include:

Disposal or recovery of waste in waste incineration plants or in waste co-incineration plants:

a) for non-hazardous waste with a capacity exceeding 3 tonnes per hour;
b) for hazardous waste with a capacity exceeding 10 tonnes per day.

As the aggregated capacity of the SWIPs to be installed at the Transwaste Recycling and Aggregates Limited facility will equate to significantly less than 1 tonne per hour, being approximately 0.255 tonnes per hour per unit, the Waste Incineration BREF and BAT-Conclusions documents do not therefore apply.

The use of some of the waste materials which enter the site for sorting and treatment, to create energy for use in cooling the ventilation air for the RDF processing shed, will minimise the odour potential of the RDF operations and will become a fundamental part of the site Odour Management Plan. Hot water will also be provided to a third-party AD process as required.

In line with the requirements of BAT 13, the potential for odour is initially minimised by ensuring waste is received, processed and dispatched quickly, with most storage and processing occurring within 48 hours and the rotation of bays ensuring a first-in-first-out operation. The only exception to this is inert and green waste, where wood can be stored (in its massive form) for up to a maximum of three months. The proposed cooling of the ventilation air to the waste processing sheds will further minimise the potential for odour to be created before any organic odour that is present is oxidised and effectively neutralised by the ionisation process, reducing the formation and release potential of odorous emissions from the process areas. In the absence of channelled emissions from the process area, the cooling and air ionisation techniques provide an effective alternative to the techniques detailed in BAT 31 for reducing emissions of organic compounds to air. Hence, the proposed combustion processes are a fundamental part of the odour control mechanisms employed at the site.

As the combustion processes will receive waste fuel, the SWIPs will be required to meet stringent emission limit values and the site operations will have to work closely to pre-defined procedures to ensure that only appropriate materials are accepted into the installation and are used within the combustion units. The specification of the SWIPs and the procedures to be applied in their operation and control are discussed in detail in this section.

The synergistic relationship between the Transwaste and Melton Energy Tech (MET) operations, defines them as Multi-Operator Installations due to MET's intended use of Transwaste material as feedstock for its anaerobic digestion plants, and the potential for the Transwaste SWIPs to receive solid digestate back from MET as fuel, before potentially providing the AD plant with hot water to maintain the optimum temperature of the digestion units (as required), and this application recognises that connection. It is also imperative that this application surrenders a portion of the Melton Waste Park installation from the Transwaste Permit, in order that MET can be located within the wider site boundary.

Plant Processes

The principal activities currently undertaken at or proposed for the Melton Waste Park, are as follows:

Activity	Status
Recovery or a mix of recovery and disposal of more than 75 T per day non-hazardous waste. Pre-treatment for incineration or co-incineration	Currently permitted and operational
Inert and aggregate crushing, screening and storage. Maximum 331,600 T per annum	Currently permitted and operational
General materials recycling facility and transfer station. Maximum 75,000 T per annum	Currently permitted and operational
Green waste pre-treatment and storage. Maximum 10,000 T per annum	Currently permitted and operational
Wood waste shredding and chipping with storage. Maximum 130,000 T per annum	Currently permitted and operational
Hazardous waste bulking and storage limited to asbestos waste and hazardous and non-hazardous WEEE. Maximum 3,650 T per annum	Currently permitted and operational
Operation of three small waste incineration plant (SWIPs) as a Directly Associated Activity to the Schedule 1 Activity (pre-treatment for incineration or co-incineration)	Requested by this variation

Transwaste also operates three 950 kW_{th} biomass boilers at the site, although outside of the installation boundary, which serve drying floors, currently drying virgin material. In future and assuming that the Melton Waste Park Anaerobic Digestion Facility is developed and incorporates a digestate dryer, these boilers will likely be used to provide heat or hot water under contract to the Melton Energy Tech Limited facility, for use in the dryer. With no direct association with the Permitted elements of the Transwaste operation, and not being a regulated activity in its own right, the operation of the three small biomass boilers is not considered further within this Permit application.

Other, third-party operators within the waste park include the following facilities:

- Forty-one 130 kW_{th} biomass boilers (installed but not currently operational and expected to be removed in due course);
- One energy recovery facility (consented but not yet developed);
- Two dry AD plant (planning consent and under development, with Environmental Permit application now submitted).

Whilst the above plant are located in the immediate vicinity of the Transwaste operations and some overlap is proposed between the Transwaste operations and the proposed AD plant, Transwaste Recycling and Aggregates Limited has no control over the third-party operations detailed above.

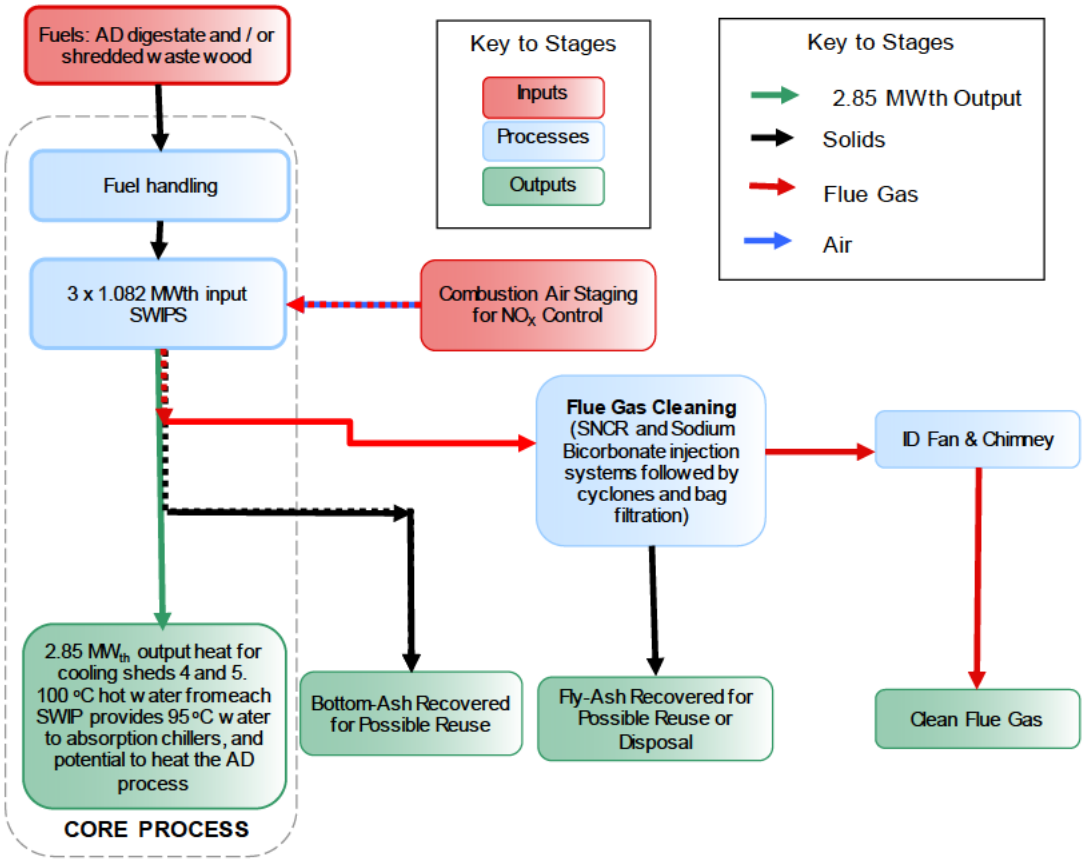
The detail of the activities associated with the Transwaste SWIPs and information on how these interact with other site operations are as follows:

- Fuel reception, storage, and handling - existing on-site activities, although in future, solid digestate will also be received from the neighbouring AD plant, and will be screened and sorted prior to mixing with waste wood as a fuel for the three SWIPs ;
- Combustion of fuel, generating 100 ^{o}C hot water for use in air chiller process and / or the third-party AD plant. Hot water from each boiler collects in dedicated 10 m^3 buffer tanks;
- Hot water passes through a heat exchanger to reduce temperature to 95 ^{o}C for the chillers, whilst heating the returning boiler water;
- Absorption chillers use heat to chill a water circuit to 5 ^{o}C before discharging into to a single 20 m^3 buffer tank. Each chiller is served by a dedicated cooling tower;
- Cold water buffer tank serves manifolded ventilation fans, passing chilled water through the system to cool the ventilation air. The water returns to the chillers at 11 ^{o}C.

- Abatement measures are included on each SWIP to minimise emissions of NO_x (Urea-based SNCR system), to minimise emissions of acid gases including SO_2, HCl and HF (Sodium Bicarbonate injection system), and to control particulate emissions (a pre-separator cyclone and a fabric-filter fitted to each plant);
- Emissions will be vented to atmosphere via 22-metre-high stacks (3 in total – one per SWIP);
- Continuous Emissions Monitoring System (CEMS); and,
- Collection of bottom ash and fly ash for subsequent utilisation or disposal.

The main activities associated with the operation of the three SWIP units are summarised in the process flow diagram (PFD) below.

FIGURE 6 PROCESS FLOW DIAGRAM



Fuel Reception, Storage and Handling

There is limited change proposed to the nature of the incoming wastes to the site, and the storage and processing of materials by the permitted waste activities. On-site processes will operate as currently, albeit an additional waste stream, the solid digestate from the proposed and neighbouring dry AD plant, will be transferred to the MRF building for screening to remove plastics, glass, grit and other contaminants, prior to mixing with waste wood fuel and transfer to the SWIP fuel stores for feeding to the boilers. In due course, this transfer will be facilitated by conveyor when the new MRF is built, adjacent to the MET boundary. However, until such time, materials will be moved by on-site vehicles.

Existing and proposed materials storage and handling techniques comply with BAT 2, 3, 4 and 5, considering waste characterisation, pre-acceptance and acceptance measures, waste tracking throughout the process and discharge from site, appropriate storage and waste segregation with suitable and sufficient storage and treatment capacities. Only compatible materials are mixed or blended and incoming solid waste is sorted to remove recyclable materials prior to use, to prevent unwanted material from entering subsequent waste treatment process(es).

Materials will be confirmed, received, stored and treated as identified in previous Permit applications, and thus will be subject to appropriate pre-acceptance, acceptance, rejection and storage processes, undertaken by trained and competent staff who are fully conversant with operational and accident / emergency procedures.

Transwaste is contracted to providing the input to the dry AD plant as sorted and screened, sub-80 mm material, and the initial assessment of the incoming materials which are drawn from mixed municipal waste sources is undertaken by Tranwaste during their receipt and processing, with MET's pre-acceptance procedures based on their contractual arrangements with Transwaste, and acceptance checks being undertaken on delivery. Transwaste drivers deliver and deposit feedstock for the dry AD plant into the MET storage bay, under the supervision of MET site operatives.

Fuels for the SWIPs will be stored in dedicated storage containers once delivered to the boiler house from the main stores across the site. Storage locations are optimised and the site has ample capacity for the waste materials it treats and handles, resulting in just-in-time delivery to the point of use.

The site maintains a Dust Management Plan and applies all appropriate techniques specified in BAT 14 to ensure that the potential for diffuse emissions to air is minimised. Similarly, and in line with the requirements of BAT 17 and 18, the site operations are managed and maintained in accordance with a Noise and Vibration Management Plan and the Company IMS. Where possible, potentially dusty and / or noisy operations are undertaken within enclosed buildings.

The fuel for the SWIPs will comprise either waste wood, or a combination of AD digestate and waste wood. Once prepared, with waste wood sources being shredded and screened, and the digestate having been screened in the MRF to remove any contaminants, the two fuel sources will be mixed and stored in a bay close to the wood shredding operation until such time as the SWIPs require more fuel. All waste and fuel storage areas and bays at the Transwaste site employ either suitable fire-break distances between piles, or appropriate fire-walls to ensure that, in the event of a fire, the potential for spread can be contained and controlled.

Each SWIP has its own fuel storage hopper, each fabricated from a shipping container, with approximately 33 m^3 capacity (approximately 5 Tonnes), and these are loaded by site staff using mobile plant to transfer the wood and digestate fuels from the main site storage areas to the boiler room. Although the three plant are located within a single boiler room, the fuel storage hoppers are located outside of, albeit adjacent to the boiler house, and are readily accessible from at least one side.

Site personnel working in the fuel storage area will be provided with relevant personal protective equipment (PPE) to minimise exposure to airborne dust generated by the handling of the fuel.

The SWIPs will each consume approximately 2,239 tonnes of fuel per annum, assuming an 8,760-hour operational period, resulting in a total site consumption of 6,716 tonnes per annum, depending on fuel density and quality. With a maximum storage capacity of 5 tonnes shredded waste wood per boiler, the fuel storage containers can hold up to 19.5 hours' supply for each unit. However, as Transwaste provides the fuel from its wider site operations, further processed waste wood can be delivered to the fuel stores at any time. The application of waste materials to substitute other fuels within the process is fully compliant with BAT 22.

Boiler Plant Description

The Justsen 1.082 $MW_{th(input)}$ biomass boilers have been designed to comply with the principles of Best Available Techniques (BAT) for the combustion of biomass-based wastes and incorporate a range of monitoring and control features to optimise combustion and the associated recovery of thermal energy from the waste wood fuel, while at the same time minimising pollutant emissions and the generation of solid residues. The boilers are designed in full compliance with the requirements of the Industrial Emissions Directive for the incineration of wastes and the key operational and control features are summarised below:

- Start-up / supporting oil burner;

- Moving grate combustion system to ensure even consumption of the fuel throughout the chamber for improved efficiency;
- Combustion air staging (primary and secondary air) to control combustion temperatures and minimise the formation of Oxides of Nitrogen (NO_x);
- Refractory lined combustion chambers to ensure the retention of flue gases at minimum 850 ºC for no less than 2 seconds, with an actual chamber volume of 6.71 m^3 and a flue gas retention time of 3.20 seconds;
- Provision of an induced draft (ID) fan to ensure stable, efficient combustion conditions;
- A 'DANSTOKER' automatic pneumatic soot-cleaning system. The fully automatic and continuous process ensures efficient and effective cleaning of the boiler economizer tubes;
- Computer control to ensure stable combustion at low and high output levels;
- Urea-based SNCR system to abate emissions of NO_x;
- Sodium Bicarbonate injection to control emissions of acid gases (SO_2, HCl and HF);
- Pre-separator cyclone and fabric-filter systems to control particulate emissions;
- Thermal efficiency of 87.8 %;
- Hot water boiler;
- 22 metre-high discharge stacks to ensure effective dispersion of pollutant emissions.
- IED-compliant continuous emissions monitoring and reporting system (CEMS) for the measurement of emissions of Oxides of Nitrogen, Sulphur Dioxide, Carbon Monoxide, Particulates, Hydrogen Chloride and Volatile Organic Compounds, in addition to Oxygen, Water Vapour, temperature and pressure for correction to IED reference conditions (11% O_2, dry and STP).

The boilers are installed in a dedicated and fully enclosed building. Transwaste retains a copy of the boiler Service and Maintenance Instructions provided by Justsen, and will ensure all relevant operational and maintenance requirements are met.

Biomass Combustion

The SWIPs are required to provide heat to the three on-site chiller units and, as required, the two, third-party AD units on a 24-hour, seven-day week basis. They will therefore operate on a largely continuous basis.

The fuel feed system of the units is made up of a screw conveyor which transfers the waste wood and solid digestate fuel from the storage hopper into the boiler. The material feed is controlled by the boiler demand and regulated by the Process Logic Control (PLC) system, delivering fuel to the stoker ready for deposit onto the grate via an auger conveyor. The stoker system includes a fire lock, providing an effective safety measure against the possibility of a flame blow-back; a fire thermostat which stops the plant in the event of counter-flow combustion occurring in the stoker; and a thermostatic water valve to cool the stoker should elevated temperatures be detected.

From the stoker, the fuel is deposited on the upper part of the water-cooled step grate. Primary air is supplied under the grate and secondary air is supplied through nozzles in the brickwork in each side of the grate. Nozzles are placed in 1 - 2 rows in a fixed height over the grate. Both primary and secondary air is adjusted to the actual load by frequency-converter controlled fans.

The fuel feed system and the combustion process within each boiler are controlled by bespoke PLC control systems which monitor the operational criteria of the plant from measured and calculated values recorded by a number of sensors throughout the boiler. The PLC therefore automates the entire control process, managing the boiler operation, raising alarms to site personnel, and shutting down the process, as necessary.

The boiler utilises a moving grate system to transfer the fuel along the length of the primary combustion zone of the boiler. Three work areas are established on the grate: the area where the fuel is received; the drying, pre-combustion and combustion area; and the area where the slag is extinguished and discharged.

A Weishaupt auxiliary oil burner is also installed in the combustion chamber of each boiler to initiate start-up and preheating, and to ensure that the combustion temperature is maintained at 850 ^{o}C at all times that fuel is in the chamber. The burners each have a maximum output of 0.57 MW, firing diesel. A single, self-bunded diesel tank serves the three burners and fuel use will be metered in order to report to OFGEM on a quarterly basis. Additionally, any activation of the auxiliary burners will be logged by the process control system and hence a detailed account of the use of any of the auxiliary burners can be retained.

Biomass fuel is introduced to the front end of the boiler where moisture is initially driven off and the temperature increases to the point of devolatilization, approximately 350 ^{o}C for biomass fuels. Primary combustion air is supplied from beneath the grates. Secondary combustion air is supplied through nozzles in the walls above the grate sections. Both primary and secondary combustion air are adjusted individually to achieve optimum combustion.

Smoke emissions from the chimney during the initial ignition phase are minimal due to the low combustion air volumetric flowrates, and control of the available Oxygen levels by the lambda probe, which in turn modulates the speed of the exhaust fan.

The burning fuel moves along the grate and the volatiles that are released are mixed with secondary air above the bed to promote complete combustion, before passing into the secondary combustion zone of the boiler. The temperature above the bed within the combustion chamber is monitored to confirm that it reaches more than 850 ^{o}C as specified by the IED and, as required, the auxiliary gas burners will automatically operate to ensure that the temperature consistently remains above 850 ^{o}C. The combustion chamber has been designed to ensure that, even during the most unfavourable conditions, the combustion gases are retained at this temperature for at least 2 seconds.

On moving down the grate, the resulting char is exposed to higher concentrations of Oxygen (a higher air:fuel ratio) to promote complete combustion of the less reactive char. The water-cooled step grate ensures that the temperature of the grate bars is kept at a constant level, thereby preventing the build-up of slag. Beneath the water-cooled step grate is an ash pit, where ash is collected and transferred via an auger which transports the ashes from the ash pit and from the cyclone and bag filter systems to a sealed metal collection container.

From the combustion chamber the hot gas passes to the boiler producing hot water with a flow temperature of 100 ^{o}C, Each boiler includes compressed air cleaning systems to prevent the build-up of slag on the water tubes. Hot water systems are fitted with expansion tanks to ensure complete and safe containment of the heated water at all stages of the process.

Flue Gas Abatement System

The flue gas abatement systems associated with the three Justsen 0.95 $MW_{th(output)}$ boilers include Selective Non-Catalytic Reduction (SNCR) systems and Sodium Bicarbonate injection systems to neutralise the exhaust gases prior to discharge to atmosphere. Particulates are collected by a pre-separator cyclone, followed by a fabric-filter system serving each SWIP.

Further to the air staging which is integral to the boiler operations, the Urea-based SNCR system abates NO_x emissions from the process. The SNCR process occurs within the combustion unit, where injection nozzles are mounted through the wall in the upper, post-combustion area of the furnace near the convective passes. The injection of Urea at this point causes mixing of the reagent and flue gas at the appropriate temperature, and results in the combustion chamber acting as the reaction vessel. The heat of the boiler provides the necessary energy for the reduction reaction to occur, and NO_x molecules are reduced to Nitrogen, Carbon Dioxide and water vapour which exit the system via the discharge flue. The Urea storage station and dosing equipment is located within a painted steel storage cabinet.

Although flame temperature control using flue gas recirculation can minimise NO_x formation from the combustion process, Justsen has confirmed that the use of flue gas recirculation is not appropriate for their small, 0.95 MW_{th} units. The statement from Justsen in Appendix 4 details that, the hybrid counter-current / cross-flow combustion design results in a large, open combustion chamber and flue gas recirculation would negatively impact the temperature and flue gas retention time of the units, should it be incorporated. However, the large combustion chamber and appropriate combustion air staging ensures a combustion temperature of at least 850 ^oC for a retention time of 3.2 seconds and the use of SNCR ensures the abatement of NO_x from the combustion gases.

Separate sorbent injection systems will dose Sodium Bicarbonate, as required, to control discharges of acid gases (SO_2, HCl and HF) to ensure that emission concentrations are minimised and remain at all times within the relevant emission limit values specified by the IED for waste incineration plant.

The injection of the sorbents into the flue gases between the pre-separator cyclone and the bag-filter promotes intimate contact with the pollutants in the exhaust, prior to collection of the spent adsorbent in the bag-filter, along with fly-ash from the process. As the sorbent and fly ash collects on the filter surfaces it acts in two ways. Firstly, pre-coating improves the collection efficiency of fine particulates by the filter systems and also improves the cake release properties. Secondly, the collected sorbents can continue to remove any pollutant levels remaining within the flue-gases as they filter past any unreacted reagent particles, promoting additional adsorption of any remaining pollutant, prior to removal and collection of the spent sorbent.

Each filter contains a total of 63 fabric bags with a total surface area of 61 m^2. The bags are made of Polyphenylene Sulphide scrim: Polytetrafluorethylene, which has a maximum operating temperature range of 120 - 180 ^oC, and the filters include a by-pass activated by a pneumatic butterfly valve in the event that the temperatures are outside of this range. However, the usual flue-gas temperature of the boiler exhausts is 160 ^oC and hence the by-passes will only be activated in emergency cases. The by-pass operates automatically.

The bag-filter elements are cleaned periodically by reverse jet action initiated by a pre-set pressure switch, monitoring the differential pressure across the filter. The dislodged material falls into the filter house hopper where it is transferred via a sealed system to a flexible bag for offsite removal. Any fault with the filter, such as a blockage or the failure of a filtration element initiates a “Critical Alarm”, which is notified to the operator on the control panel and requires action to positively confirm acceptance of the alarm, and confirmation that the issue has been corrected.

The particulate abatement systems are designed to an emission limit of less than 10 mg Nm^{-3} at 6 % Oxygen (approximately 6.6 mg Nm^{-3} at 11 % O_2) and therefore should readily meet the 10 mg Nm^{-3} STP, dry, 11 % O_2 emission limit value anticipated for the discharges.

The cleaned flue gases are then discharged to the atmosphere via the 22 m high chimney serving each boiler (A1 – A3). The induced draft fan which draws the flue gases to the chimney entrance, ensures the correct volumes and pressures pass into the stack, and hence the efflux velocity is maintained whenever the boiler is in operation. The stacks have been designed to provide effective dispersion of pollutant emissions produced by the combustion of the biomass fuel and the height of the stacks has been confirmed as appropriate through detailed atmospheric dispersion modelling. The report of the detailed modelling and air quality assessment is presented in Appendix 5.

During any shutdown of the boilers, flue-gas will continue to be discharged via the filter units until the waste biomass fuel is completely burned out, and the auxiliary oil burner can be switched off. During a controlled shutdown, the fuel feed is stopped, but the boiler continues to operate the induced draft and combustion air fans to fully burn out the fuel while the boiler is still at operational temperatures, with the auxiliary burner firing as the combustion temperature falls towards 850 ^oC. In this way, the biomass fuel completes the devolatilisation stage while the combustion chamber refractory temperatures are significantly elevated, which will ensure the complete combustion of any material evolved from the grate. While the combustion chamber temperatures are elevated, virtually no visible smoke emissions will be present and the temperature passing through the filter systems will remain above the dewpoint temperature at which point condensation of water vapour may occur. There should be no fuel remaining in the boiler by the time the auxiliary burner is switched off and the combustion chamber temperatures reduce to levels where visible smoke could otherwise be produced.

Heat Generation and Process Use

Hot water from each boiler is fed to a dedicated 10,000 litre accumulator vessel specific to each unit which then delivers water at the required 95 ^{o}C to the absorption chillers, using a circuit which is independent of the boiler system. The outlets from the accumulators are manifolded to provide a combined feed to the chiller systems, avoiding reliance on any one unit. Similarly, the 5 ^{o}C water from each chiller enters a single 20,000 litre accumulator vessel which feeds the manifolded chilled water circuit, enabling the appropriate direction of cooled air across the process areas at all times.

Additionally, and as required, hot water generated by the proposed Transwaste SWIPs may be piped to the AD process in order to maintain the relevant temperature within the two digestion tanks, resulting in further synergies between the two installations although it is noted that waste heat from the AD abatement plant will usually be used to maintain the digestion tanks at the required 52 ^{o}C and the AD plant incorporates its own natural-gas fired boiler to support the AD plant and ancillary processes. Thus, additional heating from the SWIPs may not be required.

The chiller systems are fully automated, including the use of PID controls (Proportional, Integral Derivative) which measure the chilled water temperature every five seconds and varies the steam input accordingly. The chillers also incorporate full self-diagnostics which constantly monitor their status and will automatically shut the units down should a fault occur, recording the fault condition in order that correction, maintenance or repair can be facilitated. The chilled / hot and cold-water pumps can also be started and stopped, and sequencing of the pumps ensures a controlled shut-down, facilitating a complete dilution cycle prior to stopping.

Instrumentation and Control

The three Justsen 0.95 $MW_{th(output)}$ boilers are equipped with fully modulating control systems and a number of instruments monitor temperature and Oxygen concentrations at strategic locations throughout the systems in order to facilitate appropriate control. All parameters are automatically adjusted according to the current load of the individual boiler and the system therefore ensures efficient combustion of the fuel at all times. The instruments supply data to the PLC-based process control system overseen by SCADA supervisory control. This controls the process and derives key metrics for optimisation and monitoring of the combustion process by shift personnel, alerting the operator when operational limits are encountered and automatically undertaking relevant system shut-downs where operational limits are exceeded or no intervention is forthcoming by operators.

Daily operation and maintenance of the units is undertaken by Transwaste staff, having been trained by the equipment manufacturer or an approved agent. A summary of the boiler maintenance requirements is provided below. Checks will be undertaken by trained staff of third-party engineers only:

Daily - Check the following:

1. The incineration.
2. The quantity of fuel on the grate.
3. The quantity of ash in the boiler base, soot bin and container.
4. Pilot lamps on the control panel.
5. Pilot current adjustment (manual / automatic).
6. Temperature on forward / return conductor on the boiler.
7. Flue gas temperature (160-220 °C).
8. Low pressure (vacuum) in combustion chamber (20-60 Pa).
9. Listen for unusual noises.
10. Assess evidence of smoke from the stack.

Weekly or fortnightly - Check the following:

1. Motor gears: heat, anchoring on bracket, oil control and possible secondary filling on gear.
2. Chains: normally tightened and lubricated.
3. V-belts on I.D. fan and possible silo-out feeder and stoker.
4. Level sensors and limit switch: test the functions.
5. Sprinkler system: water valve and fire thermostat are tested.

6. Fans: vibrations or an abnormal high sound level.
7. Copper tubes for draught gauge and differential pressure switch: the passage is tested.
8. The O_2 content (if measuring equipment is available), which should be between 6-12 %.
9. The quantity of ash in the bin underneath the cyclone / container. Empty as required.
10. Are there any irregularities on the boiler, pumps, valves etc.?
11. Is the quality of the boiler water / feeding water within limits?

Monthly or more frequently as required:
Cleaning of:

1. Smoke flues in boiler (if the smoke temperature has risen by 25-30 °C from the last cleaning).
2. Flue gas channels.
3. Cyclone.
4. Grate and ash pit.
5. Check fuel supply of back-up burner
6. Check the supervision and safety instructions on the system.
7. Lubrication of bearings and chains etc.

All equipment will be subject to a service contract by either the manufacturer or by an approved agent of the manufacturer. Maintenance contracts are a pre-requisite of the Renewable Heat Incentive scheme, under which the boilers are operated, and hence must be in place.

The filtration systems facilitating particulate abatement are provided with a differential pressure monitor to control the cleaning process. The process will raise 'Caution', 'Warning' or 'STOP' alarms where any measured criteria are outside of the permitted range, in order that the operator can appropriately identify and manage any issue. If the pressure monitoring detects a fault with the filter, either a blockage or the failure of a filtration element, then the PLC initiates a "Critical Alarm". The operator is advised of the issue by an appropriate alarm on the control panel and must take the necessary action to positively confirm acceptance of the alarm and confirm that the issue has been corrected.

The operation of the Justsen 0.95 $MW_{th(ouput)}$ boilers is fully automated, with normal operating conditions overseen by on-site staff. In the event of any significant faults occurring with the boiler or associated equipment such as an electrical fault or unsafe operation, the affected boiler will automatically shut down to a safe condition awaiting attendance by a trained operator to restore the boiler into service. Various safety circuits and fail-safe devices continuously monitor the boiler state and provide control and safety response to any developing issues. Interaction with the boiler is via a full colour touch screen interface, providing the operator with detailed current and historic information on operating conditions.

Due to the fully modulating controls, the systems are able to make continuous adjustments to the combustion parameters inside the combustion chambers, resulting in a drastic reduction of unscheduled stops and operator intervention times, thereby maintaining the system's stability in the face of changes in the fuel characteristics within the permitted values without requiring adjustment by a human operator.

A remote monitoring system will also be installed in order to enable access to the operating data as well as the data history and alarms remotely, by means of a switch installed directly on the panel. This also includes the possibility of remote management of the plant using Windows or Android device, so that, once authenticated, it will allow authorized users to interact with system controls.

Process Control During Abnormal Operating Conditions

The three Justsen 0.95 $MW_{th(output)}$ boilers have been designed to be fully compliant with the operational requirements of the Industrial Emissions Directive and include various alarms and fail-safe systems to ensure optimum control in the event of any abnormal operating condition. The systems will be fully compliant with Environment Agency guidance for the operation of waste incineration plant, and with the principles of Best Available Techniques (BAT) in all aspects of the design.

The Justsen boiler PLC system is configured to detect deviations from standard operating conditions and triggers a visible and audible alarm on the control panel in the event of abnormal operation. The boiler control system is able to indicate a low alarm condition, for small deviations which would not have a significant impact on emissions, and a high alarm condition for large deviations which could impact significantly on emissions.

Under the low alarm condition, the PLC controller will alert the operator, but the boiler will continue to operate. In the event that the low alarm persists without an operator responding within a defined period (typically between 4 and 24 hours depending upon the severity of the alarm), then the PLC controller will automatically shut the boiler down and will lock out in order to prevent automated restart. Under a high alarm (emergency) condition, the boiler will immediately shut down in a controlled manner as quickly as possible and will then lock-out to prevent automated restart. Both high and low alarm conditions operate independently of the operator notification, which is a secondary activity.

The alarm system will be linked via an internet connection that will allow remote access to the boiler controls. The boiler operation will be monitored by an independent biomass boiler service and maintenance company that will provide specialist services including re-commissioning, repairs, breakdown response, servicing and remote monitoring. Where required, the third-party service and maintenance company will respond to critical issues as requested by the operator, either remotely or with a visit by an Engineer. Routine alarms will usually be handled in-house by the site operator.

Operational procedures to deal with normal and abnormal operating conditions will be included within the Transwaste Recycling and Aggregates Limited Integrated Management System (IMS). The system will be updated to incorporate all necessary procedures for the operation of the SWIPs including health, safety and environmental considerations as well as incident management requirements such as dealing with fires, hazardous substances, and spill control.

Any abnormal operating conditions are only likely to occur for short periods of time as the high and low alarm shutdown sequences will ensure that abnormal conditions do not persist unnecessarily. Any short-term transient peaks in ground level pollutant concentrations that may arise during abnormal operating conditions are unlikely to be a significant threat to the health of people living and working nearby, due to the optimised height of the chimney and the effective dispersion that it provides, as demonstrated in the air quality assessment report (Appendix 5).

Relevant Transwaste Recycling and Aggregates Limited operational staff will be fully trained in the operation of the Justsen boilers and will undertake all normal operations, relevant daily checks and other regular maintenance on the plant to ensure that system operations are optimised at all times. In this way, and with the support of operational and emergency procedures, the potential for unintentional releases to occur will be minimised (BAT 21). Procedures will be produced which fully consider the operational and maintenance requirements specified in the Justsen Service and Maintenance Instructions.

In the event of any operational failure of plant at the site, a senior manager will be contacted by operational staff. The manager will decide whether operations are to continue or should be suspended prior to corrective action being taken. Serious operational failures, which result in the shutdown of the boiler, will be recorded.

As the fuel for the boilers is principally sourced from the other Transwaste operations located at the site, there is no specific requirement to cancel fuel deliveries in the event of any significant plant break-down or site emergency. The fuel is generally stored within the main waste processing and transfer station area of the site until required by the SWIPs, with excess material being sent off site for third-party use. As such, in the event that lower volumes of material are required by the SWIPs for any significant period, additional material will be sent off site to avoid an un-necessary build-up of fuel.

By way of accident prevention, no waste will be burnt on site other than in plant specifically designed for the purpose and in accordance with the relevant statutory instruments, and smoking is not permitted on site. In the event of a fire occurring, the operator / site supervisor will exercise his judgement and extinguish the fire with a suitable fire extinguisher and / or call the fire service for assistance. A record will be made of any extra-ordinary events or incidents, including fires.

None of the fuel to be fired in the SWIPs is expected to cause any adverse reactions to operational staff working with the material, and the requirements to physically handle either the shredded waste wood or the solid digestate are limited. No incompatible materials should be received or stored in connection with the SWIP operations and any such material entering the site will be rejected or quarantined for removal as soon as it is identified.

Table 3a - Technical Standards

Details of the technical standards applied at the Melton Waste Park in order to comply with the conditions specified in the Environmental Permit are as follows:

Installation Name	Transwaste Recycling and Aggregates Limited; Melton Waste Park	
Schedule 1 Activity or DAA	**Relevant Technical Guidance Note or BAT as described in BAT conclusions under IED**	**Document Reference (if appropriate)**
All Permitted Activities	Environment Agency Guidance - Develop a management system: environmental permits Environment Agency Guidance - Control and monitor emissions for your environmental permit	Information as provided within this Supporting Documentation
S 5.4 A1 (a)(ii)	BAT Conclusions / BREF for Waste Treatment / Appropriate Measures for Non-Hazardous Waste	No change to existing activities
Directly Associated Activities (DAA) A2 – A6	BAT Conclusions / BREF for Waste Treatment	No change to existing activities
Other Waste Activities A7 – A11	BAT Conclusions / BREF for Waste Treatment	No change to existing activities
DAA - Small Waste Incineration Plant (SWIP) A12 and A13	DEFRA Guidance - Incineration of waste (EPR5.01): additional guidance How to comply with your environmental permit: technical guidance for operators	Information as provided within this Supporting Documentation

Q3a1 Document References

Within Table 1.2 'Operating Techniques' of the Permit, the following documents are referenced:

Reference	Relevance
Previous Permit Application Documents	Relevant unless superseded by later submissions or this application
Dust Management Plan	Living document, superseded by updates. Current version: 1 August 2021
Odour Management Plan	Living document, superseded by updates. Current version: 12 August 2021

Q3c Types and Amounts of Raw Materials

There are no changes to existing site processes proposed by this variation and there will therefore be no change to the raw materials used across the existing activities. The information in Table 5 below, therefore refers specifically to the raw materials that will be used in the operation and control of the three new SWIPs.

Table 5 Types and Amounts of Raw Materials

Installation Name		Transwaste Recycling and Aggregates Limited; Melton Waste Park		
Material	**Daily Capacity (T)**	**Maximum Amount Stored (T)**	**Annual Throughput (T)**	**Use and Hazards**
Shredded and screened waste wood	6.5 T / SWIP 20 T / day total	15 T (99 m^3)	6,720	Stored in dedicated fuel stores. 100 % combusted within plant. Combustible material.
Solid digestate	6.5 T / SWIP 20 T / day total	15 T (99 m^3)	6,720	Stored in dedicated fuel stores. 100 % combusted within plant. Combustible material.
Diesel	-	2.7 T (3 x 1 m^3 tanks)	Dependent on system requirements for start-up / to maintain 850 ^oC	Stored in dedicated, self-bunded tanks. Fuel used in boiler auxiliary burners. 100 % combusted within plant. Explosion or fire risk in the event of leakage
Urea	Max 10 l / hr (0.262 T / SWIP) 0.786 T / day total	8 x IBCs (< 8.8 T)	Max. 290 T	NO_x abatement. pH: 7.5 – 9.5. May cause irritation (eye, skin, gastrointestinal irritation). Do not release into drains.
Sodium Bicarbonate	Est. 10 l / hr (0.0075 T / SWIP) 0.54 T / day total	12 - 46 T 21 m^3 silo usually kept 0.25 % full	Est. 200 T	Acid gas abatement. Removed by the filter system as fly ash and exported offsite.
Lithium Bromide	-	708 kg within the system	Closed loop system. Topped-up and handled by third-party engineers.	Absorbent (for chillers). May cause irritation (eyes and skin). Avoid dust formation and incompatible materials (strong oxidizing agents, strong acids). Do not release into drains. Soluble in water. Persistence is unlikely.

Q3d Information for Specific Sectors

Appendix 3 Q4 Compliance with the IED

The three biomass boilers are incineration plant as defined by Chapter IV of the Industrial Emissions Directive.

As detailed in 'Section 3 Operating Techniques' above, the SWIP biomass boilers include PLCs which control the combustion process in accordance with the measured and calculated values from a number of sensors, throughout the system. The PLCs automate the entire control process, managing the boiler operations, raising alarms to site personnel, and shutting down the process, as necessary.

The boilers include various emissions minimisation and abatement techniques.

The plant are designed, equipped, built and operated in such a way that, after the last injection of combustion air and even under the most unfavourable conditions, the combustion gas is raised to a temperature of at least 850 °C, as measured near the inner wall of the combustion chamber, and is maintained at that temperature for at least two seconds.

Each SWIP includes a gas oil fired auxiliary burner within the combustion chamber which is automatically activated should the temperature of the combustion gas fall below 850 °C. The auxiliary burners are also used during plant start-up and shut-down operations in order to ensure that those temperatures are maintained at all times that unburned waste may remain within the combustion chamber.

Within the boiler, combustion air staging minimises the formation of NO_x, with primary and secondary combustion air controlling the combustion process and rate. Air staging also assists in minimising the formation of CO and is controlled by the O_2 lambda probe when the boiler is operating across the range of firing rates.

Flue gas abatement systems include SNCR for final NO_x control, Sodium Bicarbonate injection for the reduction of acid gases and the use of a cyclone and bag filter systems in line with BAT 25 to minimise the release of particulate from the process. The use and control of the dosed abatement systems is managed automatically using the output from the CEMS system which will be installed in the final ducting or discharge stack of each SWIP. The CEMS system will maintain records of critical pollutant releases during the plant operation and inform the PLC and abatement systems in order that the plant continues to be operated efficiently and effectively to minimise pollutant release. The CEMS thereby control and maintain an inventory of the releases to atmosphere, in accordance with BAT 3.

The SWIP monitoring and control systems automatically prevent waste feed:

(a) during start-up, until the temperature of the combustion gas reaches 850 °C;
(b) whenever the combustion gas temperature might fall below 850 °C;
(c) whenever the continuous measurements show that any emission limit value is exceeded due to disturbances or failures of the waste gas cleaning devices, whilst accepting the allowable operational periods stated in Industrial Emissions Directive Article 46(6), which permits operation for up to 4 hours uninterrupted where emission limit values are exceeded, with a cumulative duration of operation in such conditions not exceeding 60 hours in any one year.

Appendix 3 Q5 Heat Recovery

The SWIP waste biomass boilers are designed to produce process heat and hot water and have a design efficiency of 87.8 %.

The three new SWIPs each have a design pressure of 6.0 bar(g) and a minimum operating pressure of 1.5 bar(g). They produce hot water at a design temperature of 110 ºC, resulting in a flow temperature of 100 ºC to the accumulation tank, and 95 °C available to the chillers. Having passed through absorption chillers to cool the ventilation air used in the process sheds, the water has a minimum return temperature to the boilers of 88 ºC.

Appendix 3 Q6 Limiting Harmful Effects of Residues

The control and efficiencies of the SWIP operation ensure that the total organic Carbon content of slag and bottom ashes is less than 3 %, or their loss on ignition is less than 5 % of the dry weight of the material, and regular analysis will be undertaken on the collected ash to demonstrate this.

Bottom-ash is a by-product of the biomass combustion process and will be stored on-site within a sealed container while awaiting collection. The fly-ash recovered by the cyclones and bag filters will be stored separately from the bottom-ash, also in sealed containers while awaiting collection. Where suitable, either type of ash may be used as a fertiliser and soil conditioner on farm-land, subject to approval by the Environment Agency and the Food Standards Agency, or as a constituent of aggregate blocks.

Typically, total ash production from wood fuel is expected to be approximately 5 % by weight, and generally the fly-ash is a small percentage of total ash production. Should the reuse or recycling of the ash be considered inappropriate, then it can be disposed to landfill as trade waste if required. However, this would be a last resort, where an alternative reuse or recovery option is not available or appropriate.

Q4 Monitoring

Q4a Measures to Monitor Emissions

The SWIPs will operate under the terms and conditions of a Schedule 13 Environmental Permit which requires compliance with the emission limits specified for waste incineration plant by the IED. An IED-compliant CEMS will be installed in the exhaust of each SWIP, to demonstrate compliance with the emission limit values.

Monitoring of discharges will be undertaken as required in accordance with BAT 7 and BAT 8. Discharges to water comprise surface water run-off only which has first been treated biologically in package treatment plant, and allowed to settle before discharge to water-course (BAT 19 and 20). Where possible, clean roof water is collected and used for damping down / cleaning the site as required. Process water is not released into the water-course, which is an un-named drain that passes to the Humber Estuary. Any process water, such as boiler, chiller or cooling tower blowdown would be removed from site for treatment and disposal. Monitoring of releases to water-course are as per the existing Permit requirements.

The following emissions will be monitored from the site discharges:

Table 4a Emission Monitoring Requirements

Emission Point	Parameter	Monitoring Frequency*	Monitoring Standard(s) or Method(s)
A1 – A3 SWIP flues Boiler house building	Particulate Matter (Total Dust)	Continuous	BS EN 14181
	Total Organic Carbon (TOC)	Continuous	BS EN 14181
	Hydrogen Chloride	Continuous	BS EN 14181
	Hydrogen Fluoride[2]	Continuous / Quarterly#	BS ISO 15713
	Sulphur Dioxide	Continuous	BS EN 14181
	Oxides of Nitrogen (NO_x as NO_2)	Continuous	BS EN 14181
	Carbon Monoxide	Continuous	BS EN 14181
	Cadmium and Thallium and	Quarterly#	BS EN 14385
	Mercury and its compounds	Quarterly#	BS EN 13211
	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds	Quarterly#	BS EN 14385
	Dioxins and Furans[3]	Quarterly#	BS EN 1948 Parts 1, 2 and 3
	Dioxin-like PCBs[4]	Quarterly#	EN 1948-4
	Ammonia	Quarterly#	BS EN 14181 or BS EN 14791
	Nitrous Oxide	Quarterly#	BS EN 14181 or BS EN ISO 21258
W1 – Discharge to water course	Ammoniacal Nitrogen	Quarterly spot sample	BS 6068-2.7 ISO 5664

* Continuous monitors will be calibrated at least annually, being assessed against appropriate extractive testing.
# Quarterly monitoring during the first year of operation followed by bi-annual monitoring thereafter.

[2] Continuous measurement of HF may be omitted if treatment stages for HCl are used which ensure that the emission limit value for HCl is not being exceeded.
[3] The emission limit value refers to the total concentration of Dioxins and Furans calculated in accordance with Part 2 of Annex VI.
[4] Either the BAT-AEL for PCDD/F or the BAT-AEL for PCDD/F and Dioxin-like PCBs applies.

Q4b Point Source Emissions to Air and Emissions Monitoring

The concentration of Oxygen is monitored continuously in the duct exiting the combustion chamber in order to monitor the combustion efficiency of the boiler at all times. The Oxygen concentration is measured using a lambda Oxygen sensor.

The lambda probe is based upon a Zirconia probe measurement technique that is used routinely for measurement of Oxygen concentrations in flue-gas associated with a wide range of combustion processes. The output from the lambda probe is monitored continuously by the PLC controller, and deviation above or below set limits initiates an adjustment to the dampers to increase / decrease the availability of combustion air to the fuel burning on the moving grate and the above-bed combustion of volatiles released by the burning of the fuel.

No assessment of the sampling locations used to measure point source emissions to air has been undertaken by source test teams at this stage. However, the sampling point requirements were considered when installing the monitoring points on the SWIP flues.

To enable compliance check monitoring to be undertaken, the chimney of each Justsen boiler has been equipped with sample ports comprising two 4" BSP sockets complete with screw caps and installed at 90 degrees to each other. The sample ports are installed at a location in each chimney that is 5 x the flue diameter downstream of the nearest bend, and more than 2 diameters from the exit of the chimney. This is in accordance with the requirements of Environment Agency Technical Guidance Note and British Standard BS-EN15259.

The location of the sample ports will ensure that a full traverse on both sampling planes can be achieved during the compliance monitoring programme that will be a condition of the Environmental Permit. Temporary sampling platforms will be erected as required to enable full and unfettered access to the sample ports by the specialist contractors appointed to undertake the compliance monitoring programme.

A continuous emissions monitoring system (CEMS) will be installed and operational for monitoring NO_x, SO_2, particulates, CO, HCl and VOCs, to demonstrate compliance with the IED emission limit values.

The applicant is currently evaluating CEMS instrument packages and has identified that they may install the Envea MIR9000 CEMS, although no final decision has been made at the time of preparing this application. Any CEMS to be installed will meet the monitoring ranges required for compliance with EU Directives and the Environment Agency's quality requirements for emissions monitoring (MCERTS), although the information provided below relates specifically to the Envea system currently being considered.

The Envea MIR-9000 analyser is a Non-Dispersive Infrared Gas Filter Correlation multi-gas analyser that is certified QAL1 to EN 15267-3 and this would be supplied with an additional Flame Ionisation Detector (FID), a heated probe and line, a Stackflow 200 Flow Probe and all additional equipment to ensure appropriate monitoring of CO, NO, NO_2, N_2O, SO_2, NH_3, HCl, CH_4, O_2, CO_2 and H_2O.

The measurable parameters and ranges are:

MEASURABLE PARAMETERS	
Pollutant	Range
HCl	0-15 / 5000
HF	0-20 / 300
NO	0-100 / 5000
NO_2	0-100 / 1000
N_2O	0-20 / 1000
NOx	0-200 / 5000
SO_2	0-75 / 5000
CO	0-75 / 1000
CH_4	0-10 / 1000
THC	0-50 / 5000
CO_2 (%)	0-10 / 100
O_2 (%)	0-10 / 25

Lowest / Highest available ranges expressed in mg m^{-3}

An Envea QAL1 forward scatter particulate CEM would also be installed, with QAL1 certification ranges of: 0 – 7.5 mg m^{-3}, 0 – 15 mg m^{-3}, 0 – 100 mg m^{-3}, and 0 – 200 mg m^{-3}.

Appropriate monitoring software will also be installed, such as the A1-CBISS CDAS MCERTS certified software, that includes PLC signal exchange for the acquisition of data from the system. Amongst other things, the CDAS software:

- Can correct data to standard conditions, dry gas and apply O_2 corrections and confidence interval adjustments;
- Can present data in tabular format as a range of averages for each parameter;
- Can configure up to four individual alarms for each average, thus allowing digital outputs to trigger warning beacons to alert users as limits are being approached;
- For WID applications CDAS Elite encompasses all the data logging requirements stipulated in the QAL2 and QAL3 sections of EN14181;
- Reports can be generated on a daily basis to indicate compliance with daily and half hourly limits; and
- Monthly reports in standard EA format can also be generated for ease of submission.

Transwaste will contract an appropriate third-party provider to install, commission and maintain all of the equipment, with service and support being integral to their proposal. The offer of service will include, although will not be limited to:

- All-inclusive contracts including all parts and labour, or bespoke contracts tailored to site specific requirements;
- Emergency out of hours call-out options including: 24/7 callout; 6-hour call-out; and with bank holiday cover available;
- Remote diagnostic capabilities for both system and software functionality;
- Up to 4 scheduled annual service and calibration visits (with all consumables used).

Although no final decision has yet been made as to the supplier of the CEMS, the installer or maintenance team, any CEMS installed will be MCERTS compliant and will meet the monitoring ranges required for compliance with the terms of the Environmental Permit. The CEMS will be fully installed, commissioned and operational prior to any waste being fired in the SWIP systems.

Other Potential Emissions

Fugitive Air Emissions

The Justsen boilers installed at the Melton Waste Park site are fully enclosed units and operate under slight negative pressure which eliminates the potential for fugitive emissions of combustion gases from the boilers. Accordingly, there are no sources of fugitive emissions associated with the operation of the boiler that are likely to affect neighbouring businesses or residents.

Minor quantities of dust may be generated during the handling of the fuel materials, although the size fraction of the shredded wood (sub - 70 mm, screened) and the damp nature of the digestate limit the dust potential. During preparation, the waste wood is processed and stored externally as currently, and the solid digestate will be treated within the MRF prior to transfer to the wood processing area for mixing and bulk storage. Once received at the SWIPs, the mixed waste wood and digestate is stored in containers. Hence, all new fuel storage operations can be enclosed and any airborne dust which may migrate from the fuel handling and storage areas will be minimal. Any dust which is created is unlikely to travel any great distance due to its relatively coarse particle size, which will result in deposition being restricted to within the confines of the site boundary.

As part of the existing site Permit, the Melton Waste Plant is also required to undertake quarterly bioaerosol monitoring. The proposals within this Permit variation application will not impact on the creation or control of bioaerosols and no changes are proposed to the existing monitoring requirements.

Odour

The Justsen SWIPs are smokeless during operation, using the latest combustion technology to ensure efficient combustion at all times. Similarly, there will be no perceptible odour associated with emissions from the chimney of the units.

The principle function of the SWIPs is to provide heat to absorption chillers in order to cool the ventilation air to sheds 4 and 5 which house the most potentially odorous waste storage and RDF processing plant, thereby minimising the potential for odour formation from these areas. The Odour Management Plan is compliant with BAT 12 and includes a requirement for daily sniff-tests to assess the levels and potential sources of odour around and local to the site operations. As required, additional sampling would be undertaken by an independent third -party and, in these cases, assessment would be made in compliance with EN 13725, as per the requirement of BAT 10.

Each fuel storage container has a volume of approximately 33 m^3, equating to 5 tonnes of shredded waste wood per container. With a feed-rate of approximately 0.27 tonnes per hour, each fuel store holds approximately 19 hours' worth of fuel, and therefore, fuel will usually be stored for very short periods before use, with daily fuel deliveries being required. In the event that a boiler is not operational either due to maintenance requirements or break-down, it is envisaged that fuel will be stored within the fuel containers for a maximum of three weeks before use. However, with such a short retention time and as the containers can be covered to minimise or prevent rain ingress, there is limited opportunity for the fuel to degrade and therefore minimal potential for any unpleasant odours associated with the reception, storage and handling of the fuel.

The combustion of the fuel will give rise to the conventional pollutants that are associated with all combustion processes, namely, Oxides of Nitrogen (NO_x), Sulphur Dioxide (SO_2), particulates, Carbon Monoxide (CO) and Volatile Organic Compounds (VOCs). The latter two are enhanced when conditions of incomplete combustion occur. However, the monitoring and control systems incorporated into the SWIPs will ensure that combustion efficiency is maximised at all times, and the formation of CO and VOCs is minimised.

Emissions to sewers, effluent treatment plants or other transfers off site

The Justsen boilers utilise dry ash removal systems which do not require any quench water and there will be no direct process emissions to controlled water arising from the SWIPs. The SWIPs produce hot water only, that is, they are not steam boilers and therefore, have no regular blow-down requirement which might otherwise require treatment and disposal.

The SWIP building incorporates comprehensive concrete hardstanding and is fully enclosed.

Fuel will be fully contained within the fuel store containers and these can be covered to prevent rain ingress. Any fuel escaping the storage container during filling would land on the ground in the immediate vicinity of the fuel stores and can be swept up and removed. All external (clean) surface water runoff drains to the site lagoon, via one of two package treatment plants before overflow into an un-named drain which feeds the Humber Estuary. The lagoon facilitates the settlement of any solids which may have passed through the treatment plant. In the event of an emergency the outlet discharge point to the lagoon can be sealed, thus preventing any firewater from entering adjacent surface waters. The lagoon can also be used in an emergency to store run-off pending subsequent analysis and discharge to tanker for off-site removal, if deemed necessary.

The usual level of the lagoon stores a maximum of 260 m^3 before over-flow via the weir. The weir can be closed and results in an additional storage capacity of 260 m^3 for fire water or emergency spill containment. The lagoon was constructed in line with CIRIA guidance. In a worst-case scenario the site Fire Prevention Plan considers that up to 540 m^3 of fire-water may need to be stored in the lagoon, the site drainage system and across the yard as necessary, although it is noted that the water stored and settling within the lagoon may form part of the fire-fighting water.

The incorporation of the three SWIPs and associated waste fuel storage facilities will not impact on the overall firewater requirement, as the materials stored and used around the boiler house equate to approximately 99 m^3, which is less than one quarter of the largest waste pile size (450 m^3), used to determine the likely fire-water requirements.

All fire-water run-off will be captured by the site drainage system. Surfaces in key operational areas have been designed and constructed to ensure that the run off of fire-water is directed to the drains. All site drains terminate in the lagoon which can be isolated from the discharge until such a time as the contents have been analysed and confirmed safe to discharge.

Q6 Resource Efficiency and Climate Change

Q6a Describe the basic measures for improving how energy efficient your activities are

The integration of the various processes within the Melton Waste Park demonstrates process efficiency across the site.

Transwaste Recycling and Aggregates Limited has installed three new, state-of-the-art 0.95 $MW_{th(output)}$ SWIPs in order to utilise an otherwise waste material (waste wood) available to them from the site waste transfer and treatment operations to produce heat, principally to be used for process odour control. The installation of three small units rather than one large one, provides flexibility in the site operations.

A third-party operator, proposes to develop a dry AD plant within the waste park local to the boiler house and, not only will the digestate from this process ultimately be fed to the Transwaste SWIPs forming part of the fuel intake, hot water from the SWIPs may also be piped to the AD process in order to maintain the relevant temperature within the two digestion tanks. In this way, the SWIPs and the AD processes form individually operated and operational systems which can, and usually will, be integrated, maximising the use of waste materials to create energy.

The efficiency of the three 0.95 $MW_{th(output)}$ SWIPs is stated by the manufacturer as 87.8 %. Transwaste Recycling and Aggregates Limited recognises that there are both environmental and financial benefits associated with the reduction and minimisation of energy usage. Even small percentage savings in energy consumption can represent considerable financial savings and environmental benefits through emission reductions. As such, and to ensure optimum operation at all times, the SWIPs will be regularly serviced and maintained by suitably trained and qualified third-party engineers.

Q6b Provide a breakdown of any changes to energy use

Energy Recovery

The three installed SWIPs are designed specifically to recover energy, via combustion, from waste biomass fuel. Each unit will generate up to 8,322 MWhr of renewable thermal energy each year, depending on the variability of the moisture content and calorific value of the biomass fuel, for use by on-site process operations. Energy is recovered from the hot combustion flue-gas in a boiler that provides 95 ºC hot water to chiller units which will cool the ventilation air to the waste processing sheds.

Energy Consumption

Each of the SWIPs is equipped with an auxiliary gas oil burner installed in the combustion chamber to enable start-up, pre-heating and to maintain the temperature in the chamber above 850 ºC as required. The auxiliary burners are each rated at a maximum output of 0.57 MW_{th} and are not expected to be used during normal operation. Once the boiler is up to initial temperature, the burners will only be used in the unlikely event of an abnormal operating condition occurring, making it necessary to support combustion with the burners.

The annual energy balance relating to the Justsen 1.082 $MW_{th(input)}$ biomass boilers is summarised in the table below and is based upon the utilisation of approximately 255 kg / hour of biomass fuel per unit (767 kg / hr total), depending upon the moisture content and calorific value of the fuel.

Energy Balance of Biomass Combustion

Energy Associated with Biomass Combustion (assuming 8,760 hours operation)	
Biomass fuel feed rate per SWIP (kg / hr)	255
Total energy input per hour, per SWIP (MWhr)	1.082
Boiler Efficiency (%)	87.8
Total energy input per year, per SWIP (MWhr)	9,478
Total energy input per year, all SWIPs (MWhr)	28,435
Total energy output per year, per SWIP (MWhr)	8,322
Total energy output per year, all SWIPs (MWhr)	24,966

Basic Energy Efficient Physical Measures

The basic, physical techniques that are incorporated into the biomass boilers include the following:

- Insulation on all hot water pipework, boiler, combustion plant (high efficiency refractory insulation);
- High-efficiency electric motors for all drives;
- An automated system (setting) of the biomass boiler to optimise combustion and thereby minimise energy consumption;
- Provision of a variable speed drive on fan motors to ensure stable, efficient combustion conditions.

As a combustion process, it is important to ensure that all connecting joints and flanges within the Justsen biomass boilers are sealed effectively to prevent the egress of combustion gases that may pose a risk to the health of the workforce. In so doing, the gas-tight containment of the process equipment minimises the escape of hot flue-gas that would otherwise reduce the overall thermal efficiency of the boiler, which could require additional supplementary fuel firing to maintain operating temperatures.

Further Energy Efficiency Requirements

Energy management techniques are incorporated into the operational procedures for the SWIPs, and these will be linked to the site Integrated Management System. Although site specific procedures are still to be prepared, the following provides a concise overview of the techniques and measures that Transwaste Recycling and Aggregates Limited may employ in the operation of the SWIP and their other site processes:

On a Continuous basis: Use of centralised PLC control panels to manage the operation of the boilers, all of the feed mechanisms and ash extraction in addition to primary and secondary air and boiler pumps. The use of this Critical Control System and of Standard Operating Procedures will ensure operators are able to identify, monitor and maintain optimum process operating conditions;

Each Shift: Hourly recording of key process conditions. The Justsen biomass boilers will have computerised systems to record trends and data. Although this over-writes every 48-hours, any important condition or variation in performance will be manually recorded from the log;

Daily: review of key energy production figures and environmental performance;

Monthly: tracking of energy efficiencies within the system and delivery of energy to the site operations.

Combustion efficiency within the SWIPs will be optimised by employing the following measures:

- Moving grate combustion system to ensure even combustion throughout the system for improved efficiency;
- Computer control to ensure stable combustion at low and high output levels, and to facilitate automatic turndown to as little as 40 % of design capacity;
- Self-cleaning heat exchanger to ensure that the biomass boiler works at optimum efficiency at all times;
- Automatic and precise Oxygen intake system to control combustion temperatures and minimise the formation of Oxides of Nitrogen.

The SWIP units have been designed to comply with the principles of Best Available Techniques (BAT) for the combustion of biomass fuels and incorporate a range of monitoring and control features to optimise combustion and the associated recovery of thermal energy from the biomass fuel, while at the same time minimising pollutant emissions and the generation of solid residues.

It is recognised that even with the above factors incorporated into the design of the SWIPs, the energy recovery efficiency of the facility may vary throughout the year. The principal reason for this is the seasonal variability in the moisture content of the biomass fuel being fed to the plant. The shredded waste wood is stored outside once prepared by Transwaste, prior to being delivered to the boiler house fuel stores and can therefore take on additional moisture prior to firing, although once in the fuel storage containers, these can be covered to avoid further rain ingress if required.

The parasitic electrical load used by each SWIP is estimated to be 21 kW (63 kW total) from an overall power requirement (at 100 % load) of approximately 38.5 kW. Electrical consumption will be minimised by employing variable speed drives for all fans, motors and pumps operating at less than full load for significant periods, including the combustion draft fans. These are automated systems managed by the PLC serving each SWIP. The design of the Justsen biomass boilers ensure that energy efficiency is optimised at all times.

Q6c Climate Change Levy Agreement

Transwaste Recycling and Aggregates Limited is not a signatory to a Climate Change Levy agreement.

The principal energy efficiency measures of the SWIP boilers have been discussed above. However, energy efficiency is an important factor of the Transwaste operations as a whole, not only to protect the profitability of the business, but also increasingly in order to demonstrate eligibility for contracts, with local council and business clients demanding energy efficiency as demonstrated through targeting and reporting.

CO_2 Emissions Reductions via the Combustion of Biomass Fuel

Each of the three installed SWIP units will produce up to 8,322 MWhr per annum of useable, renewable thermal energy generated by the combustion of waste wood and the organic fraction of the solid digestate from the neighbouring dry AD facility within the boilers. Carbon Dioxide produced from the combustion or decomposition of biogenic material (e.g. paper, wood and food waste) is classed as 'short cycle' Carbon, meaning that it was only relatively recently absorbed from the atmosphere and, conventionally, these biogenic Carbon emissions are considered separately in greenhouse gas emission assessments.

However, all Carbon Dioxide releases from the three SWIP units are considered here and, based on a CO_{2e} factor of 11.32 kg per MWhr[5] representative of wood-chip combustion, this equates to a maximum direct release of 94.205 tonnes of CO_{2e} per unit, or 282.615 tonnes CO_{2e} from all three units.

Applying a CO_{2e} factor of 207.05 kg per MWhr[5] electricity and a transmission and distribution losses factor of 18.3 kg per MWhr[5] (approximately 225.35 kg total CO_{2e} per MWhr electricity produced and distributed) to the 184 MWhr per annum electrical requirement for the operation of each SWIP, the total CO_{2e} emission from the electricity required to operate the three SWIPs would be 124.37 tonnes per year, to produce a maximum output of 24,966 MWhrs heat for use across the process.

It is noted that, whilst CO_2 emissions from the procurement and use of electricity are classed as Scope 2 (indirect) emissions, the transmission and distribution losses associated with purchased power are classed as Scope 3 emissions, associated with the corporate value chain. They are included here to fully account for the electricity emissions associated with purchased power.

Assuming a twenty-year lifetime of the boilers, the production of hot water at the site for use in cooling ventilation air and heating the third-party AD process will result in approximately 8,140 tonnes of CO_{2e} from both direct and indirect emissions.

However, these emissions represent a CO_{2e} saving of approximately 104,382 tonnes over 20 years (approximately 5,220 tonnes per year) from the emissions associated with producing the equivalent amount of usable energy by burning non-renewable fossil fuels in UK power stations, which are eliminated by the use of the SWIPs (including emissions from biomass and electrical use). This estimate is based upon the CO_{2e} emission factor of approximately 225 kg total CO_{2e} per MWhr[5] electricity produced and distributed and assumes the replacement of 3 x 8,322 MWhr per year thermal energy otherwise generated by the SWIPs (24,966 MW per annum) and represents a significant contribution towards the national CO_{2e} emissions reductions targets.

Q6d Explain and justify the raw and other materials, other substances, and water that you will use

There are no fundamental changes to the nature or relative quantity of the raw materials or water use by the main site processes proposed by this variation.

[5] https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024

The new SWIP biomass boilers require fuel (shredded waste wood, solid digestate and fuel oil for the auxiliary burner), chemicals and adsorbents used for abatement (Urea and Sodium Bicarbonate), and water for the boilers and chiller units, as well as Lithium Bromide as the refrigerant for the chillers.

Other consumables include bag-filters for the abatement process and replacement parts required during maintenance. However, all materials and substances will be used efficiently with each of the SWIPs and their associated abatement plant being fully managed and operated by the integral PLC systems. The overall aim of the new processes is to provide heating and cooling to minimise the potential for odour generation from the Transwaste Recycling and Aggregates Limited facility, and to provide locally produced hot water as required to the proposed third-part AD plant.

In line with the requirements of BAT 11, the annual consumption of water, energy and raw materials and the annual generation of wastes from across the site, is already monitored and recorded. This monitoring and recording will continue and will be extended to incorporate the SWIP operations.

Q6e Describe how you avoid producing waste in line with Council Directive 2008/98/EC on waste

The operations proposed by this variation will utilise wastes from the existing site waste management processes, potentially coupled with a small amount of local third-party waste (solid digestate) to create energy for use around the existing site and by the proposed AD plant. In utilising waste materials close to their production or treatment site to create energy for local use, the waste materials have a guaranteed energy recovery fate and require limited additional transportation from their point of production. Some new waste will also be generated by the SWIPs as follows:

- Bottom Ash – from the combustion chamber; and
- Fly Ash – including spent sorbent from the filter unit, known as Air Pollution Control Residues (APCR).

Once operational, recycling routes will be investigated for the SWIP waste streams. All possible recycling routes will be explored to avoid the use of disposal via landfill. The bottom ash and fly-ash will be collected and stored in separate sealed containers while awaiting collection for analysis prior to recovery or disposal by a suitable contractor.

Typically, total ash production from the biomass fuel is expected to be approximately 5 % by weight, therefore approximately 38 kg/hr when all units are operating under full load. There is no available information on the split between bottom-ash and fly-ash, but generally the fly-ash is a small percentage of total ash production and is estimated here to equate to a quarter of the total.

Waste Summary

Waste	EWC Code	Approx. Quantity (T / Annum)	Source
Bottom Ash	19 01 11* or 19 01 12	252	Combustion chamber
Fly Ash	19 01 13* or 19 01 14	84	Flue gas abatement system

The data above assumes continuous operation of all three SWIPs throughout the year, that is for 8,760 hours each, which results in an over-estimate of the waste creation potential as each of the SWIPs will undergo periods of maintenance each year, when they will not be operational.

Where possible, both bottom ash and fly ash will be sent for recovery (R11) being used as road aggregate or fertilizer where possible, or disposal (D1) being sent to an appropriately licensed landfill.

4. Application Form Part E2
Question 3a Parts of the Permit for Surrender

Transwaste Recycling and Aggregates Limited wishes to scope certain areas of the Melton Waste Park site out of their Melton Waste Park installation Permit. Originally the only operator at the site, separate areas of the park are now used for non-waste activities or have been / will be developed by other operators and therefore, require removing from the Transwaste Permit. These areas include:

1) An area of land to the west of the site that has been earmarked for an (as yet undeveloped) energy from waste facility. This area has largely already been scoped out of the installation boundary (V004 of the Permit 2013), although has been extended a little since the 2013 variation. Transwaste has not used this area for their own operations since it was surrendered from the Permit;
2) A small area in the south-western corner of the energy park that is still managed by Transwaste but for non-waste operations. This area has not been used for Permitted activities since May 2018;
3) The area located effectively in the south-eastern corner of the Melton Waste Park that will now become the Melton Energy Tech Limited dry AD facility.

All areas of the site that have been or are now requested to be scoped out of the Melton Waste Park installation operated by Transwaste are areas of land that have not been provided with impervious hardstanding and have therefore not been used for the processing or handling of mixed, municipal solid wastes. The areas were historically used for the storage of wrapped RDF / SRF bales, however, this ceased when the area now earmarked for an energy from waste facility was scoped out of the Permit (2013). The activities undertaken in these areas since then comprise the sorting, shredding and storage of green waste, screening and storage of aggregates, or non-waste activities.

Transwaste has never been requested to submit a Site Condition Report (SCR) for their installation. However, the area now given over to Melton Energy Tech has been investigated and an SCR was prepared for the MET Permit application. This has been used to advise a surrender SCR for the area of land now to be scoped out of the Transwaste Installation Boundary. The majority of the footprint for the energy from waste operation has already been surrendered, and the small area now dedicated to the drying of virgin materials in the south-western corner of the site has historically been used for green waste storage rather than the treatment of municipal solid wastes.

A Surrender Site Condition Report is provided in Appendix 6.

APPENDICES

Appendix 1
Certificates of Technical Competence

wamitab

Qualification Title:

WAMITAB Level 4 High Risk Operator Competence for Managing Physical and Chemical Treatment of Hazardous Waste

Qualification Accreditation Number:

601/8502/8

This Certificate is awarded to

Chris Tute

Verification date: 20/07/2021

Authorised:

Katie Cockburn
Director of Qualifications and Standards

Learner ID: 20073

Certificate No.: 5182131

Date of Issue: 23/07/2021

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00159762

Units achieved by

Chris Tute

Units gained:

		Level
A/508/0756	Maintain health and safety in the waste resource management industry	L4
F/508/0757	Manage the environmental impact of work activities	L4
F/508/0760	Manage the movement, sorting and storage of waste	L4
R/508/0861	Control work activities on a waste management facility	L4
K/508/0882	Identify and implement improvements to waste management operations	L4
M/508/0883	Control maintenance and other engineering operations	L4
T/508/0884	Procedural Compliance	L4
A/508/0885	Manage and maintain systems for responding to emergencies	L4
F/508/0886	Manage the reception of hazardous waste	L4
M/508/0978	Manage transfer and disposal from hazardous waste treatment and recovery operations	L4
H/508/0993	Manage site operations for the treatment of hazardous waste	L4
Y/508/0974	Manage an inspection visit at your site from regulatory bodies	L4

Verification date: 20/07/2021

Authorised:

Learner ID: 20073

Certificate No.: 5182131

Date of Issue: 23/07/2021

Katie Cockburn
Director of Qualifications and Standards

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00159763

CERTIFICATE OF TECHNICAL COMPETENCE

This Certificate confirms that

Chris Tute

Has demonstrated the standard of technical competence required for the management of a facility of the type set out below

Facility Type

Level 4 in Waste Management Operations -

Managing Treatment Hazardous Waste (4TMH)

Authorising Signatures:

Chief Executive Officer:

Director:

Date of Issue: 23/07/2021

Certificate No: 5182131

00159765

Operator Competence Certificate

Title:

Physical and Chemical Treatment of Hazardous Waste

This Certificate is awarded to

Chris Tute

Verification date: 20/07/2021

Authorised:

Director of Qualifications and Standards

Learner ID: 20073

Certificate No.: 5182131

Date of Issue: 23/07/2021

CIWM Chief Executive Officer

The Chartered Institution of Wastes Management

This certificate is jointly awarded by WAMITAB and the Chartered Institution of Wastes Management (CIWM) and provides evidence to meet the Operator Competence requirements of the Environmental Permitting (EP) Regulations, which came into force on 6 April 2008.

00159764

CIWM

Continuing Competence Certificate

This certificate confirms that

Christopher Tute

Has met the relevant requirements of the Continuing Competence scheme for the following award(s) which will remain current for two years from 14/07/2023

TMH Treatment - Hazardous Waste

Expiry Date: 14/07/2025

Verification date: 11/07/2023

Authorised:

Professional Services Director

Learner ID: 121693

Certificate No.: 5230008

Date of Issue: 14/07/2023

CIWM Chief Executive Officer

The Chartered Institution of Wastes Management

Scan code on reverse to authenticate that this is a genuine paper

CIWM

Continuing Competence Certificate

This certificate confirms that

Graham Wildridge

Has met the relevant requirements of the Continuing Competence scheme for the following award(s) which will remain current for two years from 14/07/2023

TMH	Treatment - Hazardous Waste
AD	Anaerobic Digestion

Expiry Date: 14/07/2025

Verification date: 11/07/2023

Authorised:

Professional Services Director

Learner ID: 130535

Certificate No.: 5230010

Date of Issue: 14/07/2023

CIWM Chief Executive Officer

The Chartered Institution of Wastes Management

Scan code on reverse to authenticate that this is a genuine paper

wamitab

Qualification Title:

WAMITAB Level 4 High Risk Operator Competence for Managing Physical and Chemical Treatment of Hazardous Waste

Qualification Accreditation Number:

601/8502/8

This Certificate is awarded to

Graham Wildridge

Verification date: 23/07/2021

Authorised:

Katie Cockburn
Director of Qualifications and Standards

Learner ID: 115116

Certificate No.: 5182132

Date of Issue: 23/07/2021

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00159766

Units achieved by

Graham Wildridge

Units gained:

		Level
A/508/0756	Maintain health and safety in the waste resource management industry	L4
F/508/0757	Manage the environmental impact of work activities	L4
F/508/0760	Manage the movement, sorting and storage of waste	L4
R/508/0861	Control work activities on a waste management facility	L4
K/508/0882	Identify and implement improvements to waste management operations	L4
M/508/0883	Control maintenance and other engineering operations	L4
T/508/0884	Procedural Compliance	L4
A/508/0885	Manage and maintain systems for responding to emergencies	L4
F/508/0886	Manage the reception of hazardous waste	L4
M/508/0978	Manage transfer and disposal from hazardous waste treatment and recovery operations	L4
H/508/0993	Manage site operations for the treatment of hazardous waste	L4
Y/508/0974	Manage an inspection visit at your site from regulatory bodies	L4

Verification date: 23/07/2021

Authorised:

Learner ID: 115116

Certificate No.: 5182132

Date of Issue: 23/07/2021

Katie Cockburn
Director of Qualifications and Standards

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CYMWYSTERAU CYMRU QUALIFICATIONS WALES
Recognised awarding body

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00159767

Operator Competence Certificate

Title:

Physical and Chemical Treatment of Hazardous Waste

This Certificate is awarded to

Graham Wildridge

Verification date: 23/07/2021

Authorised:

Director of Qualifications and Standards

Learner ID: 115116

Certificate No.: 5182132

Date of Issue: 23/07/2021

CIWM Chief Executive Officer

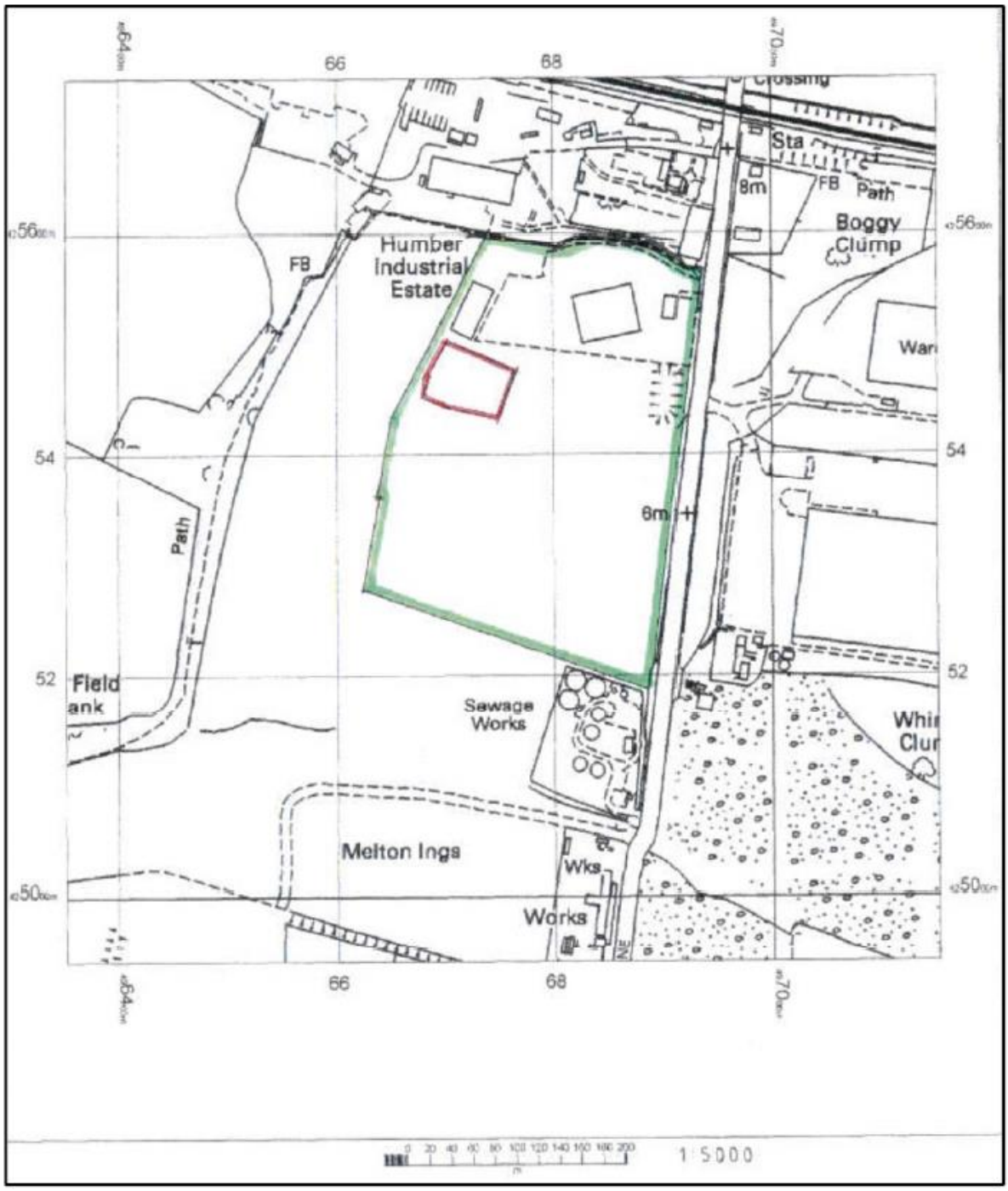
The Chartered Institution of Wastes Management

This certificate is jointly awarded by WAMITAB and the Chartered Institution of Wastes Management (CIWM) and provides evidence to meet the Operator Competence requirements of the Environmental Permitting (EP) Regulations, which came into force on 6 April 2008.

00159768

Appendix 2 – Site Plans

Figure 1 Current Installation Boundary Diagram



The red polygon was originally identified as the area to be used for a future energy from waste plant (Permit number EPR/BP3792LD/S004 in 2013). This area has not yet been developed although is planned in due course. The revised installation boundary over-leaf denotes the area now to be used by the energy from waste plant, as well as land used for other non-waste or third-party operations, and which is therefore no longer used by Transwaste for their operations.

Figure 2 Future Installation Boundary Diagram

Land removed along the western boundary is dedicated to a future energy from waste plant (to the west of Shed 5) and the operation of virgin material drying floors that is now undertaken in the south-west corner of the site.

The area originally surrendered in 2013 has not been used in any way since that time. The additional area now identified for the EfW plant has, until now, been used to store baled and wrapped RDF / SRF that has been stored over a geotextile barrier in order to ensure the protection of the land below.

The virgin material drying floors have only been used for non-waste activities or originally for green waste processing and storage.

Finally, the location of the currently proposed MET AD plant is shown on the plan and this land therefore also now requires removing from the Transwaste Permit Installation Boundary.

Figure 3 Boundary, Emission Points and Surfacing Diagram

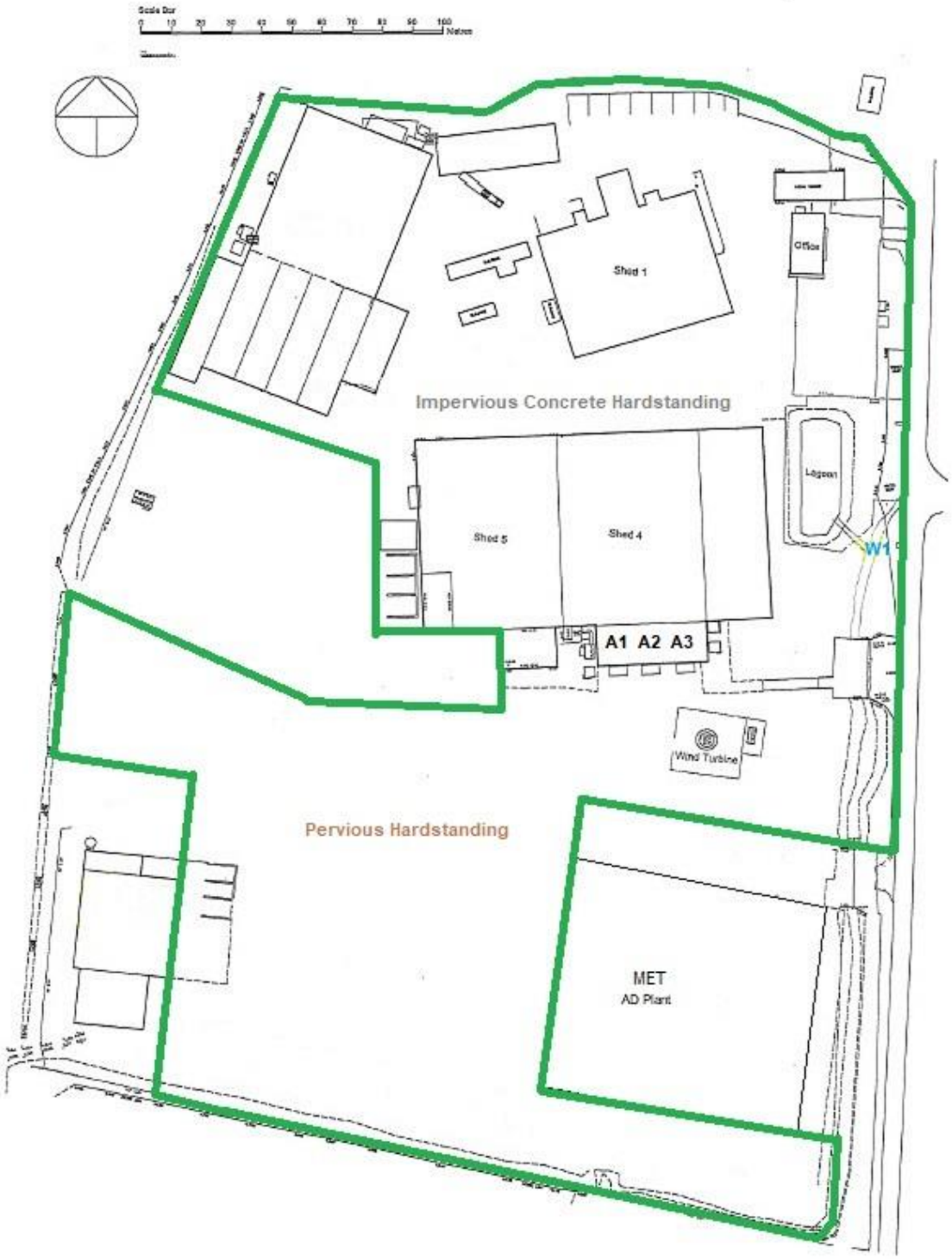
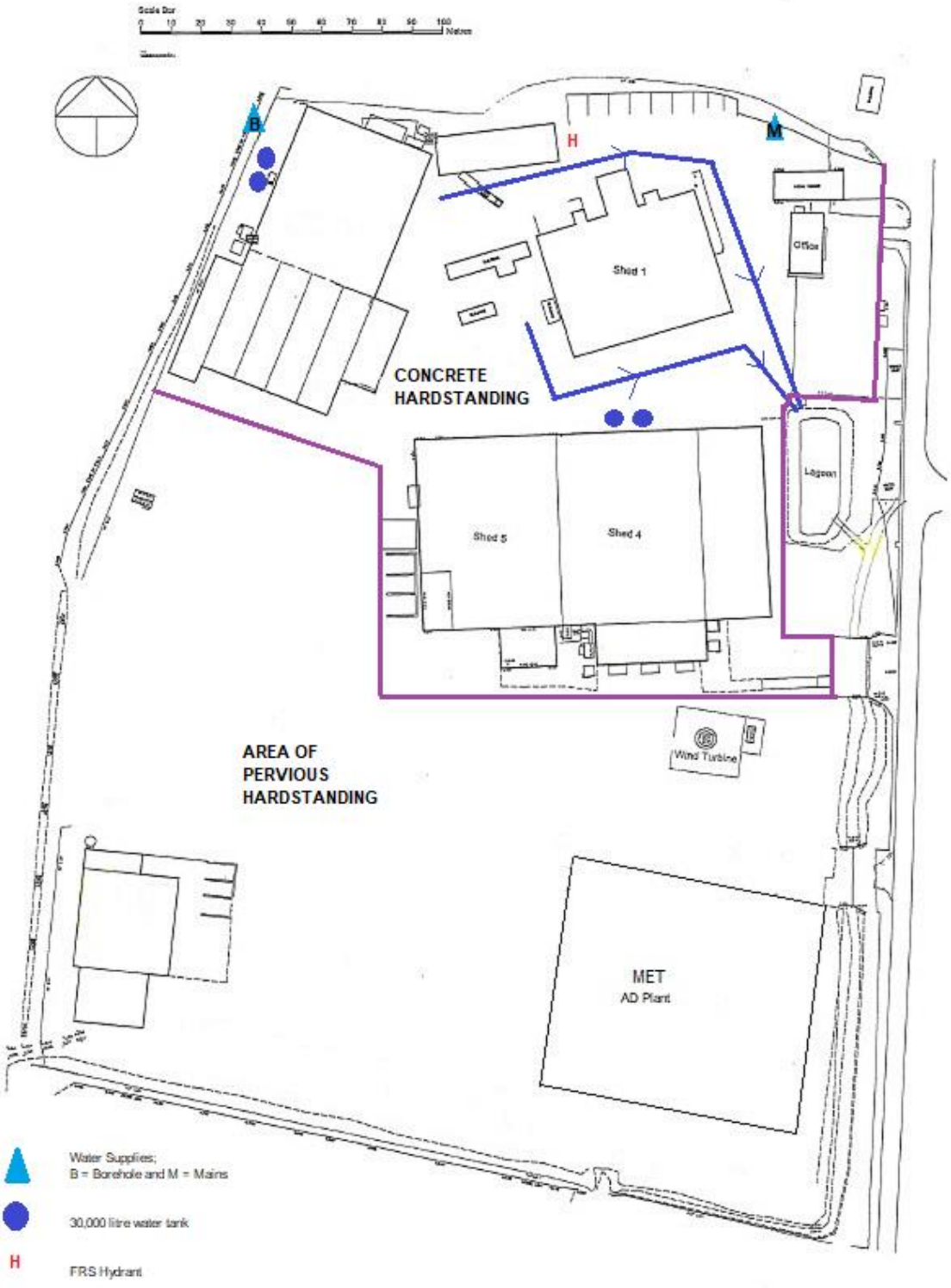


Figure 4 Site Drainage Diagram



Appendix 3
Fire Prevention Plan

Fire Prevention Plan

TRANSWASTE RECYCLING & AGGREGATES LTD

Melton Waste Park

Gibson Lane, Melton

East Yorkshire

HU14 3HH

Rev	Date	Prepared by	Signed	Approved by	Signed
1	20-08-18	Ken Westlake Chris Tute		Chris Tute	*C Tute*
2	17-09-19	Chris Tute		Chris Tute	*C Tute*
3	07-03-20	Chris Tute		Chris Tute	*C Tute*
4	29-06-20	Leon Franks Chris Tute Ken Westlake		Chris Tute	*C Tute*
5	28-07-20	Leon Franks Chris Tute Ken Westlake		Chris Tute	*C Tute*
6	17-01-23	Chris Tute Amanda Owen			

INTRODUCTION/SCOPE

This Fire Prevention Plan (FPP) is an integral part of the sites emergency procedures and is designed to meet three objectives:

- Minimise the likelihood of a fire happening
- Aim for a fire to be extinguished within 4 hours
- Minimise the spread of fire within the site and to neighbouring sites

The FPP will be read and understood by all Transwaste site management and supervision and the contents will be communicated to all applicable staff.

In addition, the FPP will be made available to the emergency services and other agencies that may rely on the contents of the plan in the course of their routine and/or emergency response duties. The FPP will also be made available to all contractors and visitors whose activities may require a need to be made aware of the contents.

Table of Contents

1 Types of combustible materials

The tables below detail combustible materials both waste and non-waste which are stored on site. The locations of these are detailed within the site plan documents in the appendices.

1.1 Combustible waste

Table 1 below is a list of wastes with the potential for combustion that may be present on site:

Table 1

Description	Combustible properties include:
Black bin (Mixed Municipal Solid Waste, MSW)	Paper/plastics/cardboard/textiles/wood/contaminated metals/plant materials/kitchen wastes
Construction & Demolition Waste (C&D)	Wood/Plastics/Rags/metals/glass/plant materials/adhesives and sealant packaging.
Segregated Plastics	Rigid plastics/PVC/HDPE type materials segregated from MSW and C&I
Wood	Scrap wood/laminates/MDF/used wood with preservatives and coatings/furniture
Processed wood for use in SWIPs	Chipped scrap wood/laminates/MDF/used wood with preservatives and coatings/furniture for use as fuel
Solid digestate for use in SWIPs	Solid digestate received from neighbouring AD plant for screening and sorting prior to transfer or blending with wood fuel for SWIPs
WEEE Waste	Batteries/Plastics – potential presence of Persistent Organic Pollutants (POPs) in waste
Green Waste	Plant materials, wood, garden waste
Refuse Derived Fuel Processed	Shredded waste in various sized fractions mainly from MSW
Solid Recovered Fuel Processed	Shredded waste in various sized fractions mainly from C&I
Baled Stored RDF Waste	Baled waste processed mainly from MSW
Gas Bottles	Waste gas bottles, propane/butane/welding gases arriving mixed with wastes
Tyres	Natural or synthetic rubber deriving from waste tyres arriving mixed with wastes

The location of these wastes on site is shown at ***Appendix 5*** – Waste Storage Locations.

1.2 Combustible materials (other than waste)

Table 2 below is a list of items other than waste with the potential for combustion that may be present on site:

Table 2

Description	Combustible properties include:
Flammable gases	Propane/Oxygen/Acetylene gas bottles full and empty utilised for maintenance activities, aerosol sprays both full and used.
Flammable liquids	Diesel/Engine Oil/Hydraulic Oil/Gear Oil/Brake fluids/Paints/Grease both full and used and empty packaging all used for maintenance and repairs.
Dust	Build-up of dust released from waste processes in all areas on a daily basis.

Combustible materials other than waste are shown at ***Appendix 6*** – Hazardous areas.

2 Using this fire prevention plan

2.1 Where the plan is kept and how staff know how to use it

This FPP forms a key part of the Integrated Management System (IMS) for the site, all staff/visitors and contractors are made aware of the sites systems and procedures during induction and periodically through various forms of communication such as notice boards and tool-box talks.

As well as electronically within the site IMS systems, master up-to-date copies of the FPP will be held in two places; one copy in the weighbridge available to the emergency services in the event of an incident. The second copy will be kept in the main office for staff and contractors to easily access the same during any incident.

Location points for copies of this FPP are shown at ***Appendix 9*** – Site Plan Fire Prevention.

This plan is written to provide instructions/actions in the event of a fire that may give rise to adverse effects on the environment and will be used with the general site emergency plan that also covers health and safety issues.

The FPP has been created in line with EA guidance and templates in order that reference to relevant information can be made quickly. Copies of the utility drawings and details of the storage of materials at the site are provided within this plan, full Materials Safety Data Sheets and copies of risk assessments are retained within the files held by the Health, Safety and Environment Manager.

This FPP forms the basis for actions taken in the event of an emergency or incident at the site, which may cause harm to the environment or have an impact on neighbours. The FPP takes into consideration the findings of the latest Fire Risk Assessments which have been completed for all areas of the site.

The FPP outlines the possible causes of fire at the site and the measures in place to minimise the potential for fire to occur, the procedures that should be followed after a fire has started, and any required decontamination of the site that will be taken before the site becomes operational again.

2.2 Testing the plan and staff training

The FPP is an integral part of the overall site emergency plans and procedures which are tested on an annual basis or following significant changes to meet the requirements of our IMS. A summary report of the response to the emergency procedures testing will be prepared and retained at the site. Previous incidents from which lessons have been learnt are integrated into this FPP and the site emergency procedures.

Staff are trained and updated on the relevant parts of the IMS and FPP as required; the site also has a number of externally trained fire marshals who will take up co-ordination duties in the event of a fire.

Specific roles & responsibilities are allocated to ensure each key member of staff understands what they need to do as part of the FPP and specific training given to meet these requirements, i.e. on using firefighting equipment, waste monitoring, water pumps etc.

The responsibility for ensuring that fire watch duties are being undertaken will ultimately be with the company directors who may delegate the responsibility to the site manager or another responsible person.

The site operates 24-hour working with site supervision, operatives and plant operators all trained and available at all times. Waste deliveries are restricted to occurring between 06.00 and 18.00 hours Monday to Friday, 06.00 and 16.00 hours on Saturdays and 08.30 to 15.00 on Sundays and Bank Holidays.

The weighbridge operators will ensure that the site entrances are unlocked, clear from traffic and available for use by the Fire and Rescue Service. In the event of a fire the staff are trained to be deployed to operate plant and assist in the firefighting operation and/or move waste to quarantine areas.

Staff responsibilities within this FPP are detailed at ***Appendix 1***

Emergency Contact details are at ***Appendix 2***

3 Fire prevention plan contents

3.1 Activities at the site

The site operates numerous waste operations 24/7. Two processes, the manufacture of RDF and SRF are permitted as Schedule 5.4 A(1) (b) (ii) activities; the production of RDF uses municipal mixed waste sources or black bagged wastes from kerbside collections to generate a material for export off site (processed in Shed 4 & 5), while SRF is produced using a more source segregated material including commercial wastes, mixed plastics and packaging wastes (processed in sheds 1 & 4). Both materials are exported off site for recovery at R1 certified Energy from Waste facilities.

Both processes involve a materials sorting process via trommels, wind sifting, eddy current separation and magnets to remove inert materials, ferrous and non-ferrous metals prior to shredding.

In addition to these primary processes, the site also engages in a number of separate waste operations. These include;

- The storage and processing of construction & demolition waste within Shed 1
- Inert and aggregate crushing, screening and storage with associated soil storage.
- General materials recycling facility and transfer station.
- Green waste pre-treatment facility (shredding) and storage prior to composting at other sites.
- Wood waste shredding and chipping with storage.
- Use of processed virgin biomass to fuel three 0.95 MW_{th} (output) boilers
- Use of waste wood and other waste-based fuels in three 1 MW_{th} (output) Small Waste Incineration Plant
- Hazardous waste bulking and storage.

All treatment and storage of wastes takes place on impermeable surfaces with a sealed drainage system terminating in an on-site lagoon to the North of the site. RDF production is undertaken in a sealed building with air an air abatement system (air ionisation technology), and SRF is processed in covered buildings with openings which are partially closed with plastic sheeting and a misting system. Any excessively odorous waste is removed from site or moved to the sealed RDF building. All waste is moved around site internally and externally utilising mobile shovel loaders and grabs.

The location of these activities is shown on the site plans detailed below.

The handling, treatment and storage of combustible wastes could potentially result in a fire at the site. Other non-waste activities that could pose a fire risk would be:

- Repairs and maintenance of plant and equipment around the processing areas of the site by in house staff or contractors.
- Repairs and maintenance of plant and equipment within the on-site workshops and garage facilities.

A detailed table of the activities control measures and mitigations is shown at ***Appendix 3***

3.1.1 Additional activities not covered by this plan

Transwaste also operate a drying floor process within the Melton Waste Park, to reduce the moisture content of the shredded wood and materials for animal bedding. The process is located in the South-West corner of the site close to the wood shredding process and comprises three 0.95 MW_{th} virgin biomass boilers and 2 x drying floors. However, the drying process is regulated under a Part B Permit by the local authority, and hence this activity is not considered further here.

3.2 Site plans

All Site plans relating to this FPP can be found within the appendixes as follows:

Appendix 4	SITE PLAN – General Site Layout
Appendix 5	SITE PLAN – Waste Storage Locations
Appendix 6	SITE PLAN – Hazardous Areas
Appendix 7	SITE PLAN – Hard Standing Areas/Drainage/Water supplies
Appendix 8	SITE PLAN – Mobile Plant Parking Areas
Appendix 9	SITE PLAN – Fire Prevention Site Plan
Appendix 10	SITE PLAN – Fire Detection Suppression Sheds 1
Appendix 11	SITE PLAN – Fire Detection Suppression Shed 4
Appendix 12	SITE PLAN – Fire Detection Suppression Shed 5
Appendix 13	SITE PLAN – Sensitive Receivers Plans

3.3 Plan of sensitive receptors near the site

Information regarding sensitive receptors is contained within ***Appendix 13.***

4 Manage common causes of fire

4.1 Arson

Working experience has shown that arson and vandalism have not been a problem on the Transwaste site, but it is recognised as a fire risk and the following arrangements are in place to control this risk.

The facility has 6ft high Palisade security fencing around the entire perimeter. There are three entrances, all manned when in use, and are provided with weighbridges and security Portakabins at each entrance. When not in use entrances are physically locked.

The site has 36 CCTV cameras with recording capability, those located in more remote areas of site are fitted with motion sensors and will follow the moving object. The site undertakes constant monitoring of the CCTV images by security personnel and there is a requirement for relevant staff to register at designated 'clocking points' to ensure the inspections are undertaken according to site procedures. This ensures that inspections reduce the risk of arson.

The camera system has fixed screens inside the monitoring office which is manned 24-hours per day and also has five remote access options for senior personnel that can be viewed via mobile devices.

4.2 Plant and equipment

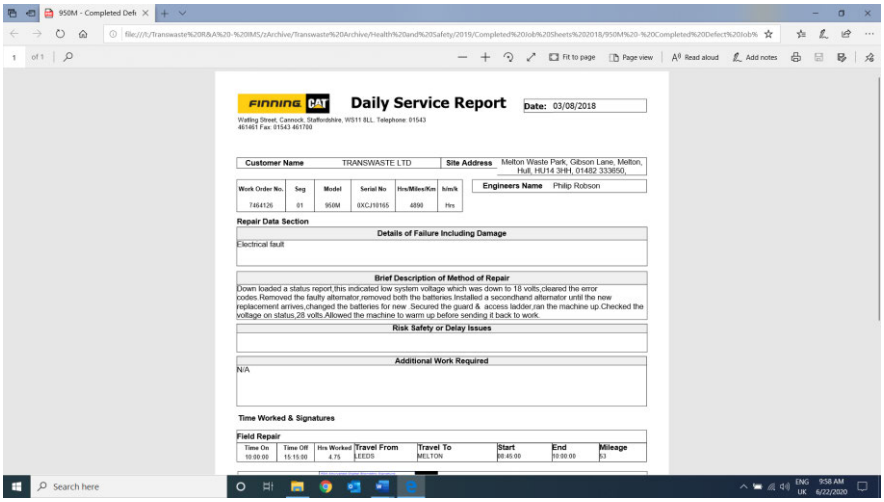
As part of the company's accredited Management System, Transwaste uses a comprehensive maintenance and inspection data base covering the following areas

- Daily check sheets completed by the operator for fixed and Mobile plant
- Service Schedules for fixed and Mobile plant
- Scheduled Inspections for fixed and Mobile plant

All plant and equipment fall under the company control of PUWER & LOLER processes procedure TWR 145 and records of all maintenance & daily checks are kept.

Where a fault is identified it will be forwarded to the site maintenance staff/or external contractors for action.

An example of a completed worksheet is shown below:



FINNING CAT **Daily Service Report** Date: 03/08/2018

Watling Street, Cannock, Staffordshire, WS11 8LL. Telephone: 01543 461461 Fax: 01543 461700

Customer Name	TRANSWASTE LTD	Site Address	Melton Waste Park, Gibson Lane, Melton, Hull, HU14 3HH, 01482 333850,

Work Order No.	Seg	Model	Serial No	Hrs/Miles/Km	h/m/k
7464126	01	950M	0XCJ10165	4890	Hrs

Engineers Name Philip Robson

Repair Data Section

Details of Failure Including Damage

Electrical fault

Brief Description of Method of Repair

Down loaded a status report,this indicated low system voltage which was down to 18 volts,cleared the error codes.Removed the faulty alternator,removed both the batteries.Installed a secondhand alternator until the new replacement arrives,changed the batteries for new .Secured the guard & access ladder,ran the machine up.Checked the voltage on status,28 volts.Allowed the machine to warm up before sending it back to work.

Risk Safety or Delay Issues

Additional Work Required

N/A

Time Worked & Signatures

Field Repair

Time On	Time Off	Hrs Worked	Travel From	Travel To	Start	End	Mileage
10:00:00	15:15:00	4.75	LEEDS	MELTON	08:45:00	10:00:00	63

Separate to fire detection and suppression for stored wastes, the sites high fire risk equipment (as defined by both the insurance company and fire authority and listed below) are also fitted with static fire detection equipment and dry powder extinguishers: -

- Mobile plant:
    - 2 x Doppstadt
    - METSO 4000M Mobile Shredder
    - Eggersmann Teuton Z55 Shredder 1 (Serial 0049)
    - Eggersmann Teuton Z55 Shredder 2 (Serial 0044)
    - Terex V20
- Fixed Plant
    - Metso static shredders in Shed 1 & 5

The plant fire detection/suppression systems are maintained under a service contract with inspections undertaken every 6 months. The site also has a service contract for the detection/suppression systems, fire hydrants, fire hoses and fire extinguishers.

When not in use or unattended all mobile plant is stored externally, outside of the sheds, on hard standing away from any combustible materials as detailed in ***Appendix 8.*** It is the last user of the plant that will assume responsibility for ensuring it is left in a safe position at least 6m from any combustible materials. If the plant is not re-used within 30 minutes, it will be the last user's responsibility to return to the plant and carry out a visual check on the plant paying particular attention to exhaust temperature to ensure it is in a safe condition.

4.3 Electrical faults including damaged or exposed electrical cables

4.3.1 Electrics certification

Electrical fixed wiring inspection is undertaken by an approved contractor as a fixed contract with an insurer stipulation that this is undertaken every two years. This recognises the possible fire hazards of the waste industry (e.g. Vermin chewing cables etc).

4.3.2 Electrical equipment maintenance arrangements

Other Electrical testing that is undertaken as part of the company Integrated Management System includes the following:

- Fire alarm testing servicing and maintenance by external contractor on an annual basis
- Fire detection & suppression system servicing and testing every 6 months by installer
- Call points tested weekly by authorised staff

- Emergency lighting annually tested and serviced by external contractor, visual inspections of status carried out by in house staff weekly.
- PAT testing of electrical equipment as required by law.

4.4 Discarded smoking materials

4.4.1 Smoking on site policies

The whole site no-smoking and this is strictly enforced, regular site inspections are undertaken for signs of on-site smoking. This is communicated to employees, contractors and visiting drivers during the site induction process. No smoking signage is also used throughout the site.

Off-site smoking facilities are provided for those who wish to smoke and immediate disciplinary action is taken against anyone found smoking on site.

4.5 Hot works safe working practices

Transwaste operates a hot works permit to work system that is utilised by both internal staff and external contractors. The supervisor of any works must make the Transwaste HSE department aware they are carrying out hot works and request a permit for a fixed period of time.

The hot works IMS procedure ensures any works undertaken is away from combustible materials, and has an appropriate fire extinguisher available, has a fire watch person during the period of the works and for a further period of 30 minutes following the works.

4.6 Industrial heaters

4.6.1 Use of industrial heaters

Because of the nature of the facility and the open aspect in the winter months, traditional large scale heating systems are ineffective and as such none are installed.

Radiant heaters, PAT tested and in good condition (which heat the person and not the environment) are used on the picking lines. At the start and end or each shift these are turned off and inspected by the operatives. This heating system is also a part of the annual electrical testing.

4.7 Hot exhausts and engine parts

4.7.1 Fire watch procedures

All Supervision, site staff and plant operators are deemed as carrying out continual ongoing fire watching during their normal duties.

In addition, at the end of each working day, time is allocated for equipment operatives to follow a set procedure to inspect plant and equipment and blow compressed air over plant and machinery to remove loose dust, fluff and combustible waste from hot exhausts, radiators and motors. Daily inspection sheets are completed each working morning and recorded by the equipment operator to ensure that this loose dust, fluff and combustible waste procedure has been followed.

4.8 Ignition sources

Beyond those described below the site has no direct ignition sources. The procedures for carrying out and monitoring hot works are detailed above. This covers welding, grinding and any other activities generating heat.

Smoking is not permitted anywhere on site.

The site has no space heaters or open flame heating systems as detailed above.

The three Small Waste incineration Plant (SWIPs) are contained in their own dedicated boiler house which includes physical fire break barriers. Combustible waste fuel is stored within dedicated containers outside of the boiler house and all other combustible materials are stored in excess of 6m from the SWIPs. The units are also fitted with automatic fire detection and suppression equipment.

4.9 Leaks and spillages of oils and fuels

The following activities have been identified as possible causes of fires:

Spillage during deliveries of fuel.

The site has one generator with a dedicated fuel tank normally located adjacent to the site garage (location shown on site plan at Appendix 6). There is also a fuel tank for the storage of diesel for mobile equipment adjacent to the main entrance (see Appendix 6). All the storage tanks are self-bunded with a capacity of 110% of the volume of the primary container. The filling of the tanks is undertaken by specialist contractors, firefighting equipment and spill kits are located adjacent to the tanks and in the event of any spillage, absorbent booms etc. will be used as required, before being drummed and removed from site for off-site disposal at an authorised and permitted facility, by an approved 3rd party contractor.

Spillages during refuelling of plant and equipment.

Site diesel is stored within self-bunded containers that also have fitted drip trays and spill kits available. The storage areas are located over impermeable concrete hardstanding and, in the event of a significant leak or spillage, the company spills clean up procedure should be instigated.

Leakages; due to faulty pipe work, valves, over-pressure, blockages, corrosion.

If or when such leakages occur, it would normally be as a result of hydraulic pipe bursts/leaks. These are repaired on site internally or via specialist contractors. The on-site mobile plant is all covered via preventative maintenance contracts/inspections. In the event of a significant leak or spillage the company Spills clean up procedure should be instigated.

Puncture; of vessels and tanks etc. due to impact – such as forklift trucks.

Fuel tanks are self-bunded and are protected with safety barriers, while oil drums and similar are stored within buildings on bunded platforms. In the event of a significant leak or spillage the company Spills clean up procedure should be instigated.

4.10 Build-up of loose combustible waste, dust and fluff

A deep clean of the site buildings takes place at least once every six months. This is to ensure that the structure of the buildings do not store an excessive build-up of loose dust, fluff and combustible waste. According to the type of material being handled within the shed routine cleaning will be done daily, weekly or monthly by blowing down with compressed air or sweeping as appropriate.

4.11 Reactions between wastes

At present, Transwaste does not treat WEEE on site. WEEE is bulked up, stored and then collected by specialist contractors for recycling. This eliminates the potential reactions between incompatible or unstable wastes, and prevents the exposure to or release of Persistent Organic Pollutants (POPs).

Lithium batteries can cause spontaneous fires and have the potential to be within all waste streams; commercial, residential, black bin and construction/demolition waste. Whilst steps are taken to remove lithium batteries from waste streams prior to entry into the treatment process, inevitably some batteries have the potential to enter the process. If this happens and batteries do enter the treatment process the affected waste is made safe by the operator discovering it, taping over the terminals and removing to the quarantine area.

4.12 Deposited hot loads

The procedure for identifying and dealing with potentially hot loads is identified below:

Upon arrival at site the weighbridge operator will check for signs of heat in the load in the form of obvious steam or smoke arising from the vehicle.

In the event of no obvious evidence of the load being hot at the weighbridge the vehicle will be directed to the reception hall where the load will be tipped into a clear space and a second inspection carried out by the shovel operator after tipping to observe for any signs of obvious heat.

In the event of no obvious evidence of the load being hot at the reception shed it will be added to the processing pile by the shovel operator who will inspect the load as he is adding it to the processing pile for any signs of combustibles such as batteries, oily rags, oil filters etc. that may present a potential for ignition in the process.

In the event of a load being identified as being potentially hot or with any sign of potential sources of ignition the same procedure will apply at all stages of the process:

- The waste will be removed to the nearest quarantine area (identified in Appendix 9)
- The waste will be spread across the quarantine area to identify heat sources/burning waste
- The waste will be damped down using a fire hose or the site fire pumps
- Thermal imaging cameras will be used to ensure no hot spots remain
- Once identified as cool by the thermal imaging cameras (no hot spots or elevated temperatures) the waste will be inspected for potential sources of any heat or ignition and these will be removed from the waste pile.
- The waste will remain in the quarantine area and will be monitored with thermal imaging cameras hourly for 24-hours before being processed

4.13 Hot and dry weather

Waste awaiting processing is stored within the buildings which have no natural light or exposure to sunlight and hence, the sheds tend to be lower in temperature than the outside. Most waste is stored on the site for a very short time and excessive heating due to extreme or prolonged periods of hot and / or dry weather is unlikely to occur. Generally, the summers in the East Riding of Yorkshire area are short, comfortable, and partly cloudy. In the event that extreme summer temperatures (30 °C or above) are experienced for three days or more, the site will ensure that processed wastes are removed from site as promptly as possible, and regular inspections of all waste storage areas (piles and bale stores) are undertaken.

Where waste is identified as being in direct sunlight for any length of time the plant operators will be instructed to pay extra vigilance to the temperature and rotate the pile more frequently. The thermal imaging camera will be used to record the surface temperature of storage piles and baled waste, whilst a temperature probe will record the sub-surface temperatures. Should the temperature probe establish a temperature in excess of 50°c during monitoring then further action will be triggered (see Section 5.3.2). Each pile and a minimum 10 % of the bale stack quantity will have its temperature monitored and details of inspections and temperatures will be documented.

5 Prevent self-combustion

5.1 General self-combustion measures

On the Transwaste site there are three main types of waste that have potential to self-combust; black bin waste, green waste and wood waste. Each waste stream is stored in a separate location in accordance with agreed pile sizes and it is recognised that in some cases natural biological processes can cause a build-up of heat.

Site general measures to prevent self-combustion include limiting storage times to the minimum possible and turning waste to prevent "hot-spots" developing and release heat.

The following management procedures (shown in Table 3) are in place to prevent self-combustion.

5.2 Manage storage time

Table 3. Processes and procedures for the management of storage time

Material	Shed	Maximum Storage Time	Monitoring / Control
Black bag (C&I) Pre-processing/processing	Shed 5	**24hrs**	➢ 24-hour CCTV ➢ Continual staff monitoring ➢ Out of hours hourly temperature monitoring using infra-red camera detectors ➢ IR3 Flame Detection
Black bin – storage awaiting baling/transport	Shed 4	**72 hours**	➢ 24-hour CCTV ➢ Continual staff monitoring ➢ Out of hours hourly temperature monitoring using infra-red camera detectors ➢ IR3 Flame Detection
Black bin – (baled RDF)	Stored externally on hard standing with sealed drains	**6 months**	➢ 24-hour CCTV ➢ Continual staff monitoring ➢ 6m fire breaks ➢ Stack sizes in line with EA guidance <450m3 ➢ See section 5.3.2 (b)
Green waste	External bays on hard standing with sealed drainage	**3 months**	➢ 24-hour CCTV ➢ Continual staff monitoring ➢ Out of hours hourly temperature monitoring using infra-red camera detectors ➢ IR3 Flame Detection ➢ Fire breaks utilised ➢ Stack sizes in line with EA guidance < 750m3
Wood waste	External bays on hard standing with sealed drainage	Varies dependant on type/process please see table 4 for further details	➢ 24-hour CCTV ➢ Continual staff monitoring ➢ Out of hours hourly temperature monitoring using infra-red camera detectors ➢ IR3 Flame Detection ➢ Fire breaks utilised ➢ Stack sizes in line with EA guidance < 750m3

Material	Shed	Maximum Storage Time	Monitoring / Control
Wood waste and solid digestate from neighbouring AD process – boiler fuel	Fuel storage containers	< 24-hours during full operation, but up to a **maximum 21 days** in the event of boiler shut-down	➢ Containerised storage, external and adjacent to the main boiler house building ➢ Continual staff monitoring ➢ Use of thermal imaging camera / temperature probe as required to assess surface and core temperatures ➢ Ready access to fire-extinguishers
SRF – processing	Processed internally	The processing plant is emptied daily. Waste may be stored in the loading area for up to a **maximum 24hrs**	➢ 24-hour CCTV ➢ Continual staff monitoring ➢ Out of hours hourly temperature monitoring using infra-red camera detectors ➢ IR3 Flame Detection
SRF - baled	Stored external on made up ground	Up to **6 months**	➢ 24-hour CCTV ➢ Continual staff monitoring ➢ 6m fire breaks ➢ Stack sizes in line with EA guidance <450m3 ➢ See section 5.3.2 (b)

In addition to the above, an automatic detection and suppression system detailed further in sections 10 & 11 is situated above the relevant internal waste storage areas in sheds 1,4 & 5.

5.2.1 Stock rotation policy

A formal documented method for tracking loose RDF/SRF waste into the system would not be reasonably practicable as waste arrives from multiple customers throughout the day and once mixed into the main pile all traceability is immediately lost for that waste.

Due to the fast-moving nature of the process the waste is not stored for any significant period of time and the layout of the facility forces the picking and processing of the oldest waste first in all cases. i.e. delivery vehicle tips waste in front of pile, shovel driver/yard man checks for non-conforming waste, potential sources of ignition etc. and once happy pushes the delivered waste to the front of the pile awaiting processing. Grab driver then picks from the rearmost portion of this pile and then loads the respective shredder and it goes on for processing and this is repeated throughout the day. In normal operations the bay is being continually emptied to maintain throughput.

5.3 Monitor and control temperature

5.3.1 Reduce the exposed metal content and proportion of 'fines'

The metal content of all materials brought on site is removed within the process via magnets and eddy current separators. Once separated this waste is stored in separate bays away from other wastes thus reducing the presence of any potentially hot wastes that could also act to initiate fires.

5.3.2 Monitoring temperature

(a) Loose Waste Piles

The bulk waste stored within the sheds would not normally require temperature monitoring due to the very short storage times involved in the process. However due to the potential risk to infrastructure, reduced manning and the unknown nature of the composition, temperature monitoring via a probe into the waste pile is carried out hourly from

6pm to 6am 7 days per week by the nightshift security operative or in his absence a nominated alternative person. Logbooks of temperature readings are kept for reference.

Staff look for signs of non-conforming items with the potential for combustion in the arriving waste, batteries, gas bottles etc. During normal operational hours Staff are looking for signs of smoke or steam arising from waste piles during all handling, treatment and storage operations to indicate there may be a build-up of temperature with the potential for fire or flames to indicate a fire has started. Staff continue to observe the operational piles throughout the day to ensure that any heat generated during treatment is sufficiently dissipated prior to storage.

Any waste pile showing obvious signs of steam or smoke arising will be reported to site supervision and the temperature probe utilised to determine the sub surface temperature whilst the pile is fire watched.

Should the temperature probe establish a temperature in excess of 50°c during non-routine or routine monitoring then action will be triggered.

Following the trigger point of over 50°c being observed the waste pile will be turned using a shovel loader in the first instance.

The waste pile will be allowed to rest for 30 minutes under the supervision of a fire watcher and then temperature tested again using the probe. Should the temperature now be below 50° and there are no further signs of obvious smoke or steam then the waste will continue to be processed.

Should the temperature still exceed 50° then it will be removed outside to a sealed surface quarantine area and spread out. Any hotspots will be identified and cooled by water using a fire hose/pump or bowser before it is introduced back into the process.

(b) Baled RDF/SRF

There may be occasions when due to availability of outlet, commercial considerations or market constraints that baled RDF/SRF may be stored for a period exceeding 3 months up to a maximum of 6 months.

All bales over 3 months in storage will be temperature monitored with both surface temperature monitoring and probe monitoring utilising 50° Celsius as an action threshold.

The RDF industry group does not recommend the routine probing of bales as this may introduce oxygen into the bale actually increasing the risk of self-combustion. Routine bale monitoring will be carried out by surface temperature readings of a minimum 10% of the bale stack quantity on a weekly basis for all bale stacks between 3 and 6 months old. Each bale stack will be identified by signage for the week produced.

Further action will be required if the surface temperature of any sampled bale exceeds 50°c. Should a bale show a surface temperature reading in excess of 50°c then that bale will be removed, and a probe test used to determine core temperature, due to the bales being stored outside in black wrap it is feasible that sunlight will heat the surface.

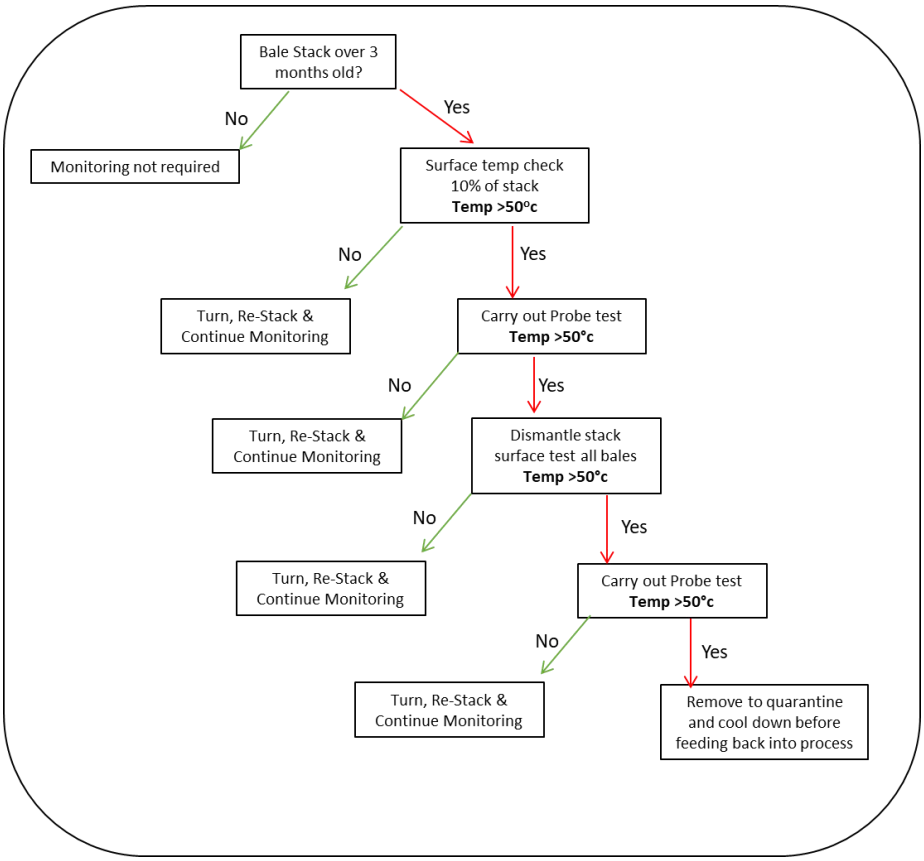
If core temperature exceeds 50°c of the sampled bale, then the pile will be dismantled, and all bales surface tested.

All bales displaying a surface temperature in excess of 50°c will be subjected to a probe test and if above 50°c internally will be moved to the quarantine area, dismantled and cooled using fire hose/bowser and allowed to dry before re-introducing to the process.

As temperature at the surface is rarely representative of that in the centre of the pile Transwaste will initially use a surface temperature measuring device but where a higher than threshold temperature is identified use a measuring probe for taking core readings. 50°c is the action trigger point in all cases. Although an external temperature of 50° on the outside of the pile could indicate a fire inside it could also be the result of a hot day/direct sunlight.

Transwaste will store bales in line with compliance guidance to a maximum volume of 450m^3 with a minimum 6m gap between piles. The bales are produced are each approximately 1m^3 . Although this equates to a maximum quantity of potentially 450 bales Transwaste will restrict pile sizes in all cases to 400 bales.

No routine temperature sampling will take place on bale stacks less than 3 months old, and such stacks will only be monitored should they show evidence of heating or where excessive ambient temperatures might be affecting the stack. For bale stacks over 3 months old a minimum of 40 bales will be subjected to temperature testing on a weekly basis, surface in the first instance then probe if required and action taken as described in the flow chart below:



5.3.3 Controlling temperature

All waste piles are routinely turned on an ongoing basis by the plant operators to prevent hotspots forming. The piles are being continually added to and removed from so a natural rotation occurs as this process is carried out. The grab operators responsible for transferring waste from the delivered piles into the shredders at the front end of the processing lines are instructed to remove waste from the rear of the delivered waste piles and work to the front ensuring a first in first out system.

All staff and plant operators have been trained via tool-box talks on waste fires and are aware of how to identify hot waste. Once identified, it will be separated from the main waste pile and removed outside to the quarantine area to allow cooling and/or damping down with water.

5.4 Waste bale storage

All bale stacks are identified by date, stating the week in which they were produced.

Bale stacks will be constructed within the recommended size guidelines contained within the EA FPP Guidance document to a maximum volume of 450m^3 with a minimum 6m gap between piles. The bales produced are each approximately 1m^3 . Although this equates to a maximum quantity of potentially 450 bales Transwaste will restrict pile sizes in all cases to 400 bales.

As some areas of the Transwaste site do not include impermeable surfacing, and until such time as these wider areas of the site can be concreted and facilitated with drainage to capture and contain surface water run-off, SRF bales which cannot be stored on a concreted area and which are already wrapped in multi-layers of black plastic will be stored in an area covered with a plastic membrane. The use of a plastic membrane to create a temporary storage bund over areas of pervious ground is a short-term measure, which will enable the capture of any run-off from around the bales.

6 Manage waste piles

6.1 Maximum pile sizes for the waste site

Information detailing waste types, volumes and turnaround times is shown in Table 4. Each waste is cross referenced with the site plan at **Appendix 5.**

Table 4 Waste storage volumes and times

Waste stream	Location	How stored	Max. length / m	Max. width / m	Max. height / m	Volume / m^3	Particle size (See key below)	Max. time stored
Sweepings	A	Bay	6	6	2	24	B/C	7 days
Metals	B	Bay	6	6	2	24	A /B	7 days
Metals	C	Bay	6	6	2	24	A /B	7 days
PVC	D	Bay	6	6	2	24	A	7 days
Hard Plastics	E	Bay	6	6	2	24	A	7days
Wood	F	Bay	6	6	2	24	A/B	7 days
Brick & Block	G	Bay	6	6	2	24	A/B	7 days
Fines from C&D Waste	H	Bay	10	8	3	240	C	14 days
Electrical Cable	I	40yd Ro Ro	6.2	2.4	2.5	30	A	30 days
WEEE	J	40yd Ro Ro	6.2	2.4	2.5	30	A	30 days
Non-ferrous	K	40yd Ro Ro	6.2	2.4	2.5	30	A/B	30 days
Asbestos	L	40yd Ro Ro	6.2	2.4	2.5	30	A	30 days
Light mixed plastics	M	Pile	10	5	4	200	A/B	72 hours
Construction & Demolition Waste (Pre-process)	N	Pile	10	10	4.5	450	A	72 hours
C&I “black bag” (Pre-process/processing)	O	Pile	10	10	4.5	450	A/B/C	24 hours
Oversize from process	P	Pile	10	6	3	180	B	72 hours
Plasterboard	Q	Bay	12	6	3	216	A	28 days
Bio-Mass	R	Bay	12	4	3	144	B	48 hours
Bio-mass	S	Bay	12	4	3	144	B	48 hours
Pre-processed wood	T	Bay	8	8	4	256	A	28 days
Pre-processed wood	U	Bay	8	8	4	256	A	28 days
Pre-processed wood	V	Bay	8	8	4	256	A	28 days
Pre-processed wood	W	Bay	8	8	4	256	A	28 days

Waste stream	Location	How stored	Max. length / m	Max. width / m	Max. height / m	Volume / m^3	Particle size (See key below)	Max. time stored
Processed Wood	X	Bay	8	6	4	192	A/B	21 Days
Processed Wood	Y	Bay	8	6	4	192	A/B	21 Days
Processed Wood	Z	Bay	8	6	4	192	A/B	21 Days
Processed Wood	AA	Bay	8	6	4	192	A/B	21 Days
Green waste	BB	Bay	8	6	4	192	A/B	3 months
Green waste	CC	Bay	8	6	4	192	A/B	3 months
Green waste	DD	Bay	8	6	4	192	A/B	3 months
Green waste	EE	Bay	8	6	4	192	A/B	3 months
Green waste	FF	Bay	8	6	4	192	A/B	3 months
Baled RDF	GG	Piles	10	10	4.5	450	B	6 months
Baled SRF	GG	Piles	10	10	4.5	450	B	6 months
Loose processed SRF	HH	Piles	10	10	4.5	450	B	72 hours
Process Fines from black bag waste	JJ	Bay	4	4	3	48	C	72 hours
SWIP fuel stores (wood and solid digestate) - Three containers	KK	Containers	6	2.4	2.6	33 (internal vol. / unit) 99 (total)	A/B	21 Days

Key:
A = Loose and more than 150mm
B = 30 to 150mm or Baled
C = Less than 30mm

6.2 Storing waste materials in their largest form

Waste is stored on site in its largest pre-processed form for the longest possible time within allowable permitted timescales. The operation is fast moving and all processed shredded waste is either baled or removed from site in short timescales to allow continued operation of the process. In all cases dwell times are kept to the absolute minimum within operational and permit constraints.

7 Where maximum pile sizes do not apply

7.1 Waste stored in containers

7.1.1 Types of containers we are using

The following waste types are stored in containers the locations of which are shown on the site plan at *Appendix 5*.

Waste Type	Container Type	Max. Volume
Loose Cardboard	Roll-on/Roll-off	33 m^3
WEEE Waste	Roll-on/Roll-off	33 m^3
Non-ferrous metals	Roll-on/Roll-off	33 m^3
Asbestos	Roll-on/Roll-off	33 m^3
Electrical Cable	Roll-on/Roll-off	33 m^3
SWIP fuel stores (wood and solid digestate) - Three containers	Dedicated, fixed fuel store fabricated from shipping containers	33 m^3 x 3 = 99 m^3

7.1.2 Accessibility of containers

The Roll-on/Roll-off containers are stored on hard standing easily accessible in case of fire or emergency with fire-fighting equipment (hoses/extinguishers) nearby. All plant operators, drivers and yard staff are in radio contact with each other and the main office/control room.

The fuel stores are located on elevated frames to facilitate boiler fuel feed, but are easily accessible in case of fire or emergency with fire-fighting equipment (hoses/extinguishers) nearby. All plant operators, drivers and yard staff are in radio contact with each other and the main office/control room.

7.1.3 Moving containers in a fire

In the event of a fire breaking out in one of the Roll-on/Roll-off containers that cannot be dealt with in situ it can easily be moved to a place of safety utilising the nearest available vehicle or heavy plant.

8 Prevent fire spreading

8.1 Separation distances

Wherever possible waste will be stored in dedicated bays with firewall separation and each bay containing combustible waste will be separated by an adjacent bay containing “non-combustible wastes”. In any instances where combustible waste is not stored in a dedicated bay with fire separation walls it will be stored with a minimum 6m separation from other wastes, buildings, plant and the site perimeter as per EA guidance.

The site manager or nominated responsible person will ensure this is monitored on a daily basis and where non-compliance is identified remedial action will be put into place immediately.

8.2 Fire walls construction standards

8.2.1 Main Processing Sheds 4 & 5

The buildings are constructed from a Steel Portal frame construction with a concrete floor. The walls consist of 6 metre internal and external concrete panels and fixed steel coated external cladding to the side walls and fixed steel coated roof panels. The buildings are large open plan with large doorways (12 metre x 8 metre) at the front and sides of the buildings.

8.2.2 Main processing Shed 1

The building is of steel portal frame construction with a concrete floor. The walls consist of 6 metre internal and external concrete panels and fixed steel coated external cladding to the side walls and fixed steel coated roof panels. The building is of an open plan nature with two large open bays at the front for the entrance & exit of various vehicle types & a fire exit for operatives at the rear of the building.

Because of the nature of the wastes and the related treatment activities, the high-risk areas for fire spreading are between sheds 4 and 5, and in order to reduce this risk, the walls separating the sheds (constructed of 150mm pre-cast concrete panels) are classed as a fire wall and the gap between the sheds (600mm) is filled with sand.

8.2.3 SWIP boiler house

The building is of steel portal frame construction with a concrete floor. The boiler house is fully enclosed to all sides, and the fuel for the process is stored externally in three x 33 m3 metal containers, one dedicated to each SWIP.

External walls are constructed from metal cladding. All floors are concrete, and the roof is of a metal domed design.

8.2.4 Storage bays internal & external

The general site layout plan at Appendix 4 details the location of the bays in conjunction with the table at Figure 4 in Section 6.1

Waste storage bays are constructed in two ways utilising either Concrete “Lego” type blocks or Concrete interlocking walling.

Transwaste Concrete Lego Blocks Specification is as follows:

Class A1 fire resistant in accordance with clause 4.3.4.4 of EN 13369.

4.3.4.4 Reaction to fire Concrete products made with maximum 1 % organic materials in the concrete composition (by mass or volume whichever is the more onerous) may be declared as reaction to fire class A1 without the need for testing.

The blocks DO NOT contain any recycled or waste materials and are therefore Class A1 fire resistant in accordance with clause 4.3.4.4 of EN 13369.

Transwaste interlocking cast pre-stressed wall panels used for retaining materials or walling are manufactured to EN 14992:2007+A1:2012

The manufacturing process does not contain any recycled or waste materials and are therefore Class A1 fire resistant in accordance with clause 4.3.4.4 of EN 13369.

In both cases the interlocking of the blocks and walling negates the need for any further sealing of joints.

Baled RDF and SRF are stored in the area marked on the site plan at ***Appendix 5*** and according to Environment Agency, HSE and FPP guidance.

All baled RDF and SRF will be stored in individual stacks no greater than 450m3 with a minimum 6m fire break in-between each stack.

8.3 Storing waste in bays

Bays are utilised to store some wastes on site as identified Table 4 within the "managing waste piles" section of this FPP. Where waste is stored in bays it will be done in line with the FPP guidance points:

All wastes will be stored in line with the maximum times detailed in 6.1, it will be the site managers responsibility to ensure this is achieved.

Stock rotation on waste bays is as laid out in 6.1 and no combustible wastes will be stored in bays for a time exceeding this including any seasonal variations.

The waste storage times in section 6.1 for waste stored in bays falls well within the EA guidance for stored wastes.

9 Quarantine area

9.1 Quarantine area location and size

The site quarantine area is marked on site plans and is situated on hard standing with sealed drainage draining to the lagoon. This ensures that any fire water can be collected and controlled. In the event of waste requiring quarantine the lagoon drain valve will be closed and the water tested by an accredited laboratory prior to release/re-opening of the valve. In the event of the water failing the test parameters it will be removed by a vacuum tanker and disposed of at a permitted facility.

The size of the quarantine area is 20m x 10m and is based on the largest potential volume of dealing with wastes either identified as being hot on delivery up to the largest bulk deliver vehicle, articulated walking floor or ejector or from waste bays/piles where waste needs removing to a safe area.

Any fires arising within the larger volume piles in the main sheds will be dealt with by the fixed detection & suppression systems in its location.

Loads arriving to site are not routinely measured for temperature. The weighbridge operator(s) will visually inspect the arriving vehicle and if there are obvious signs of heat build-up in the load, (smoke or steam) the vehicle will be diverted to the quarantine area of the yard or another suitable sealed area to tip away from other wastes. See section 4.12 for procedure.

Prior to combining incoming loads with existing waste piles, the traffic marshals/plant operators will carry out a second visual inspection and the same procedure as above will be followed if the load is suspected to be hot or on fire.

In all cases the load will be tipped away from other combustible materials and spread to establish the level of hazard. The segregated waste will be cooled with the use of the site fire hoses or bowser until it is deemed safe to be returned for processing.

9.2 How to use the quarantine area if there is a fire

In the event of a fire, waste identified above that is in the vicinity of the fire but that can be safely accessed will be removed to the quarantine areas in order to reduce the spread of fire.

9.3 Procedure to remove material stored temporarily if there is a fire

In the aftermath of a fire, any waste that has been affected by the fire event will be stored within a container or containers in the designated quarantine area pending analysis. Upon analysis this waste will be managed in accordance with best practice in the light of analyses results received. In the interim, should the quarantine area be required for other use, the containerised material temporarily stored there can be moved efficiently in order to maintain the accessibility and operability of the quarantine area.

10 Detecting fires

10.1 Detection systems in use

10.1.1 Sheds 1,4 and 5

In addition to all personnel maintaining continual fire watch, as communicated/trained via tool-box talk training, the site has 36 CCTV cameras all capable of recording. The cameras within each of the processing sheds are located in high risk areas i.e. over waste storage areas and fixed machines in order to facilitate early detection of fires. Site security personnel continually look at the output from the CCTVs while 'clocking points' have been identified for security to log into during physical inspections at night. This ensures that the inspections are undertaken in accordance with procedures and in the interests of efficient fire detection.

The camera system has fixed screens inside the office and also has five remove accesses for senior personnel. This remote access can be viewed via laptops and mobile phones.

For all wastes stored less than 3 months these visual inspections are continually carried out by all staff. As detailed above Transwaste has full site CCTV coverage from the Operations room to monitor the conditions of stored waste. The Operations room is manned 24/7.

All staff have been briefed on recognising the early signs of waste heating and are continually watching for this during their day to day activities and report any suspected heating of waste to site supervision immediately. During night shift and weekends at times of reduced manning the site security operative conducts hourly walkarounds and visual fire checks are part of their duties.

Transwaste has two scenarios that have been identified as potentially higher risk. Bulk stored waste inside sheds awaiting processing overnight and stored baled RDF/SRF exceeding 3 months storage. All other wastes are subjected to visual inspection only via staff vigilance and/or CCTV coverage.

All mobile plant is fitted with automated fire detection equipment in engine compartments. Fixed plant is also fitted with automated fire detection equipment in motor compartments. The detection equipment fitted in both mobile and fixed plant machinery has the ability to detect and extinguish any fire using in built retardant materials. Site boilers include fire-locks to avoid the potential for flame blow-back into the fuel feed and storage facilities.

In addition to the above Sheds 1, 4 and 5 have IR3 Infra-red flame detection placed at high level covering all waste pile storage/processing areas. Upon activation or following manual intervention the panel will be activated, the alarm will be sounded and the automatic suppression will commence.

Following discussions and several site visits Transwaste and our Fire detection/suppression partners, Fireshield Ltd, it was decided upon Intelligent IR3 Flame detectors rather than thermal image detectors which measure surface temperature.

Flame detection was chosen over thermal imaging due to the nature of the environment within the sheds that could cause false triggers or poor detection due to other heat sources (machinery etc.) thermal convection currents, draughts, and wind. As a flame is a positive indication of a fire this will prevent false triggering of the suppression system which is a common risk with thermal imaging reducing the environmental impact a full fire suppression event creates.

The flame detection system is sensitive to low frequency flickering infra-red radiation emitted by flames during combustion rather than surface temperature and are responsive to a 0.3m x 0.3m flame event up to certified minimum distance of 25 metres away at which point the automatic suppression system is triggered and begins a deluge pattern over the detected area.

10.2 Certification for the systems

The fire detection system has been installed by Fireshield Ltd. And all associated components and installation are a UKAS accredited solution which are stringently tested by UKAS accredited 3rd party laboratories. (LPCB, VdS, Bureaux Veritas, FM)

The verified system is installed into sheds 1, 4, 5.

11 Suppressing fires

11.1 Suppression systems in use

11.1.1 Sheds 1, 4 and 5

Once activated by the IR3 flame detectors or via a manual input the panel activates FS D1200 firefighting monitors (cannons) into the relevant zone with a flow rate of 1000+ l/m and radius of up to 45 metres at 360 degrees. The monitors will be fed by VdS approved pumps, a main pump and a standby pump fed from 2 x 30,000 litre storage tanks.

A class A wetting agent is added to the water to increase efficiency extinguishing fires more quickly whilst utilising less water.

Remote control joysticks are available at each location to allow the monitors to be manually directed to the fire if required.

Detailed layouts of the detection suppression system in these areas are shown at *Appendices 10/11/12*

11.1.2 SWIP boiler house

No automatic fire detection or suppression systems are employed within the boiler house, although each of the SWIP stoker systems include a fire lock, providing an effective safety measure against the possibility of a flame blow-back; a fire thermostat which stops the plant in the event of counter-flow combustion occurring in the stoker; and a thermostatic water valve to cool the stoker should elevated temperatures be detected. As such, the process is protected against uncontrolled, emergency combustion and, with external containerised fuel storage, no automatic fire detection and suppression systems are included in the boiler house building itself. However, staff are present during the working day and security staff inspect the building when operational staff are not available. Fire detection and control are therefore managed by staff and Transwaste has provided suitable and sufficient fire-extinguishers in line with insurance and process requirements.

11.2 Certification for the systems

The fire detection system components are a UKAS accredited solution which are stringently tested by UKAS accredited 3rd part laboratories. (LPCB, VdS, Bureaux Veritas, FM)

The verified system is currently installed into sheds 1, 4, 5.

Transwaste also maintains a service contract for the fire hydrants, fire hoses and fire extinguishers available for use around the site.

12 Firefighting techniques

12.1 Active firefighting

Where it is safe to do so, the first step is to use the existing plant and machinery to move waste (not on fire) away from the fire, to prevent it from spreading. Currently, Transwaste has six loading shovels and three excavators and staff have been trained to deal with fires on site.

Key staff have been assigned roles and responsibilities as part of the site emergency plans and will assume these responsibilities as soon as the alarm is raised. These are detailed under staff responsibilities in the table at Appendix 1

The site has multiple fire hoses and a fire hydrant system – please see the site plan at ***Appendix 6.***

The water supply is accessible to both staff and the fire brigade and used to extinguish and prevent the spread of the fire.

13 Water supplies

13.1 Available water supply

This Fire Prevention Plan has been established acknowledging that a fire will initiate in a single shed before spreading and that the amount of fire water required will be that to extinguish the amount of waste stored within a single shed. In initial discussions with the Fire Service they indicated that the supply on site would be sufficient to supply seven fire tenders.

FPP guidance requires a flow rate of 2,000 litres per minute for three hours for a pile of size 300m^3. This equates to a total volume of 360,000 litres, or 540,000 litres for a 450 m^3 pile. However, as water supplies to site are not limited by time or volume, flow rate is the key factor.

At present, the site is supplied with the following water resource:

- Mains fed water - The site is supplied by a 50mm water supply equivalent to 170 litres/ min.
- Bore water supply and tank - The site is also supplied by a 200mm bore water pump with flow rate of 6057 litres per minute, the bore water supply can be accessed by connections at the North side of the site as indicated in ***Appendix 4.*** The connections were specified by Humberside Fire and Rescue to suit the two types of potential appliance that may be in attendance.
- Firewater storage tanks 2 x 30,000 litres located at side of Shed 4 for Fireshield systems
- On site lagoon (260,000 litres over 3h = 1,444 litres/min); and
- Stream running through the site, not accounted for in calculations.

13.2 The calculation for our required water supply is:

Other than green waste, the maximum pile size on site is 450m3. Therefore, according to FPP guidance this will require a flow rate of 3000 litres per minute and given the supplies indicated above (7671 litres/min) this required flow rate is exceeded by a factor of approximately 2.5. A maximum pile size of 750 m^3 green waste might require 5,000 litres/min which is still well within the available flow-rate.

This supply is accessible in all areas of the site and therefore could be used equally for suppression of fires in the green waste or woodchip storage areas as in the sheds.

14 Managing fire water

14.1 Containing the run-off from fire water

The on-site lagoon has been designed to contain a total capacity to hold up to 260,000 litres of fire water run-off and is constructed in line with CIRIA guidance. Transwaste recognises that in a worst-case scenario up to 540,000 litres of water may need to be stored.

All fire-water run off will be captured by the site drainage systems and is transferred into the site lagoon. All surfaces have been designed and constructed such that fire-water will be directed to the drains. All site drains terminate in the lagoon which can be isolated from its discharge until such a time as the contents have been analysed and confirmed safe to release.

In the event of analyses showing the fire waters to be contaminated arrangements will be made to pump the waters to a suitable tanker for subsequent removal and disposal at a permitted facility. Transwaste have several local service providers for this that have arrangements in place for emergency call out. The numbers of the waste management company(s) who deal with the site's hazardous wastes are detailed in Contacts Listing of the Emergency Plan (copied in *Appendix 2*).

When fire waters have been released as appropriate or otherwise removed, discussions will be undertaken with the Environment Agency and the Water Company to determine whether any additional protective actions could have been taken by the site to reduce the effect of the fire water. Consideration will be given to the need to undertake any monitoring of contamination to land or water, and the site will undertake work requested by the regulators and emergency services to investigate and improve the cause and effects of the incident. Clean up operations will then be carried out in order that the site is returned to the condition that it was in prior to the fire, and in order that no further contamination could potentially be discharged to surface water or foul water drains. It is noted that the soils around the site are slightly acid, loamy and clayey soils with impeded drainage. The superficial drift has a secondary aquifer classification. However, there is no aquifer in the bedrock beneath the site.

Any used spillage kits, protective equipment or first aid kits must be replenished immediately and spent fire extinguishers should be replaced, in order that any future incidents can be dealt with effectively.

The Melton site has a sealed top water drainage system, whereby the sites surface water first goes through two Klargesters and then into an adjacent pond/lagoon to facilitate the settlement of solids. The lagoon area collects all the surface water which then drains into the adjoining dyke (when the discharge depth of water is reached). In the event of an emergency, the outlet discharge point to the lagoon can be sealed, thus preventing any firewater from entering adjacent surface waters. The lagoon can also be used in an emergency to store run-off pending subsequent analysis and removal for off-site treatment and disposal, if deemed necessary. The lagoon has a normal operational capacity of 260 m^3 to the point of the weir. When the weir is closed off, the lagoon has an additional 260 m^3 capacity which can be used to store fire-water. Although the weir plate requires fitting manually at present, the site is moving to an automatic / emergency closure by the middle of 2023.

15 During and after an incident

15.1 Dealing with issues during a fire

In the event of a fire arising the key staff allocated emergency responsibilities will assume their roles.

Initially the weighbridge will be responsible for stopping any waste deliveries to the site or that part of the site affected by fire. Vehicles will be requested to utilise on street parking and/or the lorry park until they receive the 'All Clear' to proceed/divert or return to their originating location.

Once they have attended site, the Fire and Rescue Service adopts control of the site and ultimate authority. Transwaste staff will however remain on hand to provide any assistance and information required, including the provision of this Fire Prevention Plan as required.

Transwaste have several local options for diverting waste to including it's own Foster Street location in Hull.

Once the severity and potential effect of the fire is known the transport department will make the necessary arrangements to divert any waste as necessary.

All non-emergency/non-essential persons will be refused entry to site until the full scope of the emergency is assessed by the on-site management team.

15.2 Notifying residents and businesses

Transwaste will take guidance from the attending emergency services on the severity and potential impact the incident may have on neighbouring residents and businesses.

Emergency procedures will generally be communicated to residents that may be affected through local media channels and via the consistent answering of any enquiries to site regarding any such incident.

Any formal communication regarding the incident will be done via the company's Sales & marketing team under guidance from the directors.

15.3 Clearing and decontamination after a fire

A clean up or disposal operation may be necessary, and consideration must be given to any contamination which may have been caused to air, land or water. This may include the release of gases, mists or particulate to air, or contaminated waters to drain or land. The use of quarantine areas for wastes storage in the aftermath of a fire has been discussed above (Section 9).

Any necessary reports to the regulators (Environment Agency or HSE) and Water Company or any relevant utility suppliers should be produced which detail the nature of the incident, the cause, the outcome, any emergency preventative measures taken, and any corrective measures proposed at this stage. These reports are made by a COTC holder for the site.

A full investigation should be made into the incident which confirms the information above where necessary and which assesses the suitability of any suggested corrective measures. Once corrective measures have been deemed appropriate, these should be implemented immediately.

Any used spillage kits, protective equipment or first aid kits should be replenished and spent fire extinguishers must be replaced as soon as it is safe to do so.

15.4 Making the site operational after a fire

Once any emergency/fire has been controlled and the site is no longer considered to be on an emergency footing, and as advised by the Fire and Rescue Service, the directors will give the 'All Clear', and everyday activities will resume where possible. Continuation of normal operation may be hampered by the unavailability of equipment or materials, and it is the responsibility of the operations Director to ensure that the site is able to resume its activities as soon as possible, either using site facilities or purchasing supplies or services from other companies.

16 APPENDIXES

Appendix 1	Staff Responsibilities in an emergency
Appendix 2	Emergency Contacts
Appendix 3	Site Activities & Control Measures
Appendix 4	SITE PLAN – General Site Layout
Appendix 5	SITE PLAN – Waste Storage Locations
Appendix 6	SITE PLAN – Hazardous Areas/Non-Wastes Combustible Materials
Appendix 7	SITE PLAN – Surfacing, Drainage and Water Supplies
Appendix 8	SITE PLAN – Mobile Plant Parking Areas
Appendix 9	SITE PLAN – Fire Prevention Site Plan
Appendix 10	SITE PLAN – Detection Suppression Sheds 1
Appendix 11	SITE PLAN – Detection Suppression Sheds 4
Appendix 12	SITE PLAN – Detection Suppression Sheds 5
Appendix 13	SITE PLAN – Sensitive Receivers Plans

Appendix 1 STAFF RESPONSIBILITIES IN AN EMERGENCY

During an emergency situation, staff at Melton will undertake the following roles:

Emergency Role	Responsibility
Responsible Persons (Site Manger)/Fire Marshals	To maintain overall charge of the site during any emergency situation, and during the period of restoration to routine control. Deploy trained staff to carry out pollution control, spill kits and closing of sluices etc. This person must direct the Emergency Management Team in their roles during an emergency situation and must manage the necessary communication links between the company, emergency services, adjacent sites, regulators and service providers.
Plant Operators	Assist where it is safe to do so in removing waste from the fire area to quarantine.
Out of hours security	Contact the FRS in the event of a fire alarm being raised on site out of hours. Deploy out of hour staff to assist where it is safe to do so in removing wastes out of hours Contact the responsible persons in order of hierarchy to assist with the response out of hours.
Health, Safety and Environment Manager	To assist in managing any emergency situation, and to undertake the responsibilities of the Emergency Controller in his absence.
Emergency Management Team Mark Hornshaw Paul Hornshaw Bruce Pritchard	To provide the first line of support in the event of a Fire or Environmental incident. Detailed Knowledge of the site infrastructure and safe shut down of all plant and equipment Members are trained in basic firefighting and first aid as well as spillage procedures and safe working methods.

Appendix 2 EMERGENCY CONTACTS

Emergency Services (Fire, Ambulance, Police)	999
Local Police (Humberside Police Authority)	01482 220787
Local Fire (Humberside Fire and rescue Services)	01482 565333
Local Hospital (Hull Royal Infirmary see attached plan for directions)	01482 328541
Environment Incident Hot line	0800 80 70 60 (24hr)
Environment Agency	01904 825802
Health and Safety Executive (Information Line)	0845 3450055
Water and Sewer provider (Yorkshire Water)	08457 145145 (24hr)
Electricity Supplier NPower Yorkshire LTD	0800 073 4000
Central Networks East	0800 056 8090
Yorkshire Electricity Distribution	0800 375 675
Yorkshire Water Bradford	0845 124 2424

Specialist clean-up and Hazardous Waste Management Contractors;

Future Industrial Services Limited

Colt Business Park

Witty Street

Hull

HU3 4TT 24hr call out 01482 214244

Appendix 3 Summary of Transwaste Site Activities and Associated Fire Risks

The following table identifies the different materials processed, their associated fire hazards and risks, together with relevant mitigating measures and resultant magnitude of risk.

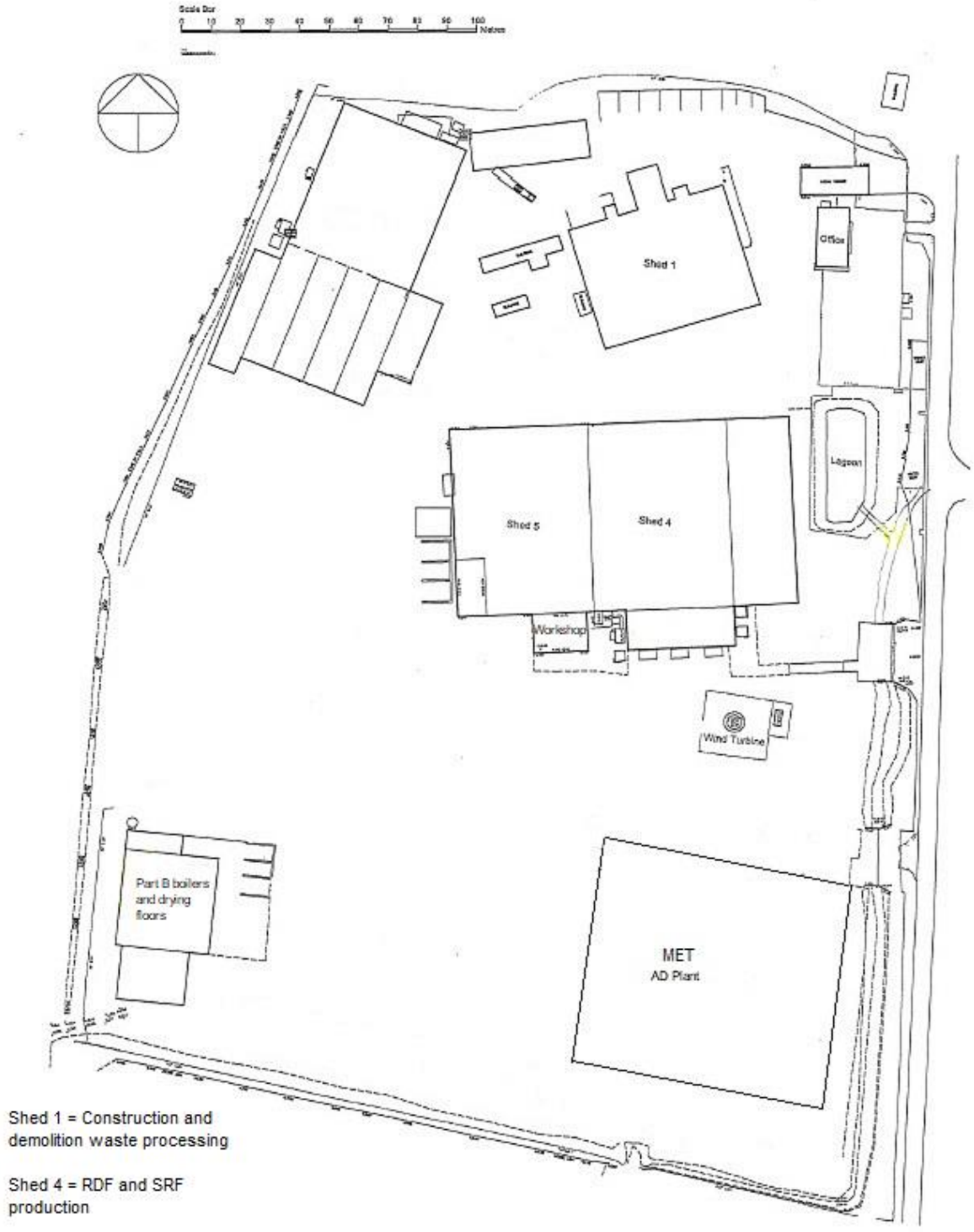
Area	Activity	Type of Waste	Hazard (level of magnitude)	Mitigating Measures	Residual Risk
Office	General administration	Bin waste / paper	Fire could be initiated through electrical fault (Low)	Smoking is not allowed on premises. Area is managed 24-hours per day, 7-days per week and is covered with fire detection systems.	Very Low
Shed 1	Sorting, segregation and picking lines	Commercial, construction and demolition waste plus fragmeter waste	Fire could be initiated by hot incoming wastes (Low)	Waste acceptance procedures designed to identify and remove high risk wastes. Area covered by a 24-hour camera system and regular inspection by security staff out of hours. Fire detection system installed across waste storage area.	Low
Shed 2	Sorting and segregation	Commercial and industrial	Fire could be initiated by hot incoming wastes (Medium)	Waste acceptance procedures designed to identify and remove high risk wastes. Area covered by a 24-hour camera system and regular inspection by security staff out of hours.	Low
Shed 3	Processing SRF	Commercial, construction and demolition waste plus industrial waste	Fire could be initiated by hot incoming wastes (Medium)	Waste acceptance procedures designed to identify and remove high risk wastes. Area covered by a 24-hour camera system and regular inspection by security staff out of hours.	Low
Shed 4	Storage and processing of RDF	Non-recyclable (black bin bag) wastes	Content of black bin waste has potential to self-ignite and may include batteries, fire alarms and other electrical goods which may pass through the shredding machine (High)	Area covered by a 24-hour camera system and regular inspection by security staff out of hours with daily inspections by staff. Chilled ventilation air maintains a cool temperature and temperature monitoring is in place using infra-red camera detectors. Rotation of waste (first in first out principle), resulting in limited storage time. Sprinkler system installed across waste storage area.	Medium

Area	Activity	Type of Waste	Hazard (level of magnitude)	Mitigating Measures	Residual Risk
Shed 5	Processing of RDF	Non-recyclable (black bin bag) wastes	Content of black bin waste has potential to self-ignite and may include batteries, fire alarms and other electrical goods which may pass through the shredding machine (High)	Area covered by a 24-hour camera system and regular inspection by security staff out of hours. Area covered by a 24-hour camera system and regular inspection by security staff out of hours with daily inspections by staff. Chilled ventilation air maintains a cool temperature and temperature monitoring is in place using infra-red camera detectors. Site combustion plant including SWIPS are fitted with automatic shut-down systems in case of fire. All combustion plant feedstock is stored separately and externally to the combustion units. Site stores fire-water for use in an emergency.	Medium
Green Waste	Storage of green waste before transfer from site	'Green Waste' (organic wastes, including vegetation)	Green waste has the potential to self-ignite if stored for prolonged periods (Medium)	Area covered by a 24-hour camera system and regular inspection by security staff out of hours. Area covered by a 24-hour camera system and regular inspection by security staff out of hours with daily inspections by staff. Unacceptable / contaminative wastes will be removed and rejected in accordance with was acceptance and rejection procedures. Temperature monitoring is in place using infra-red camera detectors in accordance with good practice. Rotation of waste (first in first out principle), resulting in limited storage time. Waste is stored in accordance with maximum pile sizes (750 cubic metres) and in separated bays, with fire-fighting water available in the vicinity.	Low

Area	Activity	Type of Waste	Hazard (level of magnitude)	Mitigating Measures	Residual Risk
Wood Storage Area	Treatment and storage of wood	Chipped wood	Fires have been known to start in stored woodchip piles. This can be initiated by contaminants, especially in stockpiles with a low turnover rate (Medium)	Area covered by a 24-hour camera system and regular inspection by security staff out of hours. Area covered by a 24-hour camera system and regular inspection by security staff out of hours with daily inspections by staff. Unacceptable / contaminative wastes will be removed and rejected in accordance with was acceptance and rejection procedures. Temperature monitoring is in place using infra-red camera detectors in accordance with good practice. Rotation of waste (first in first out principle), resulting in limited storage time. Waste is stored in accordance with maximum pile sizes (750 cubic metres) and in separated bays, with fire-fighting water available in the vicinity.	Low
Storage of baled waste	Storage of SRF	Plastics, cardboard, paper and insulation etc.	Wastes with high calorific value (medium)	Area managed 24 hours by camera system. First in first out principle used. For a fire there must be a fuel (the waste) an ignition source and oxygen. Baled waste is compressed and then wrapped which has the effect of eliminating oxygen, while the high density of the bale means that it is difficult to self-ignite.	Low
Storage of baled waste	Storage of RDF	Black bin (bag) waste	Wastes with a lower calorific value than SRF as a result of higher moisture content (Low)	Area managed 24 hours by camera system. First in first out principle used. For a fire there must be a fuel (the waste) an ignition source and oxygen. Baled waste is compressed and then wrapped which has the effect of eliminating oxygen, while the high density of the bale means that it is difficult to self-ignite.	Low
Hard Plastics	Stored in separate bays	High calorific value	These wastes have a low potential for self-ignition as a very large amounts of energy are required to exceed combustion point (Low)	Area managed 24 hours by camera system. First in first out principle used. Waste is stored in accordance with maximum pile sizes (750 cubic metres).	Low

Area	Activity	Type of Waste	Hazard (level of magnitude)	Mitigating Measures	Residual Risk
Textiles	Stored in separate bays	Various types of textiles all with a high calorific value	These wastes have a low potential for self-ignition as a very large amounts of energy are required to exceed combustion point (Low)	Area managed 24-hours by camera system. First in first out principle used. Difficult to self-ignite. Waste is stored in accordance with maximum pile sizes (750 cubic metres).	(Low)
WEEE	Storage only	Electronic equipment - computers, fridges, TV, fridges etc.	These wastes have a low potential for self-ignition as a very large amounts of energy are required to exceed combustion point (Low)	Storage of wastes only - no processing or treatment undertaken. Area managed 24-hours by camera system. First in first out principle used. Waste is stored in accordance with maximum pile sizes (750 cubic metres).	(Low)

Appendix 4 General Site Layout

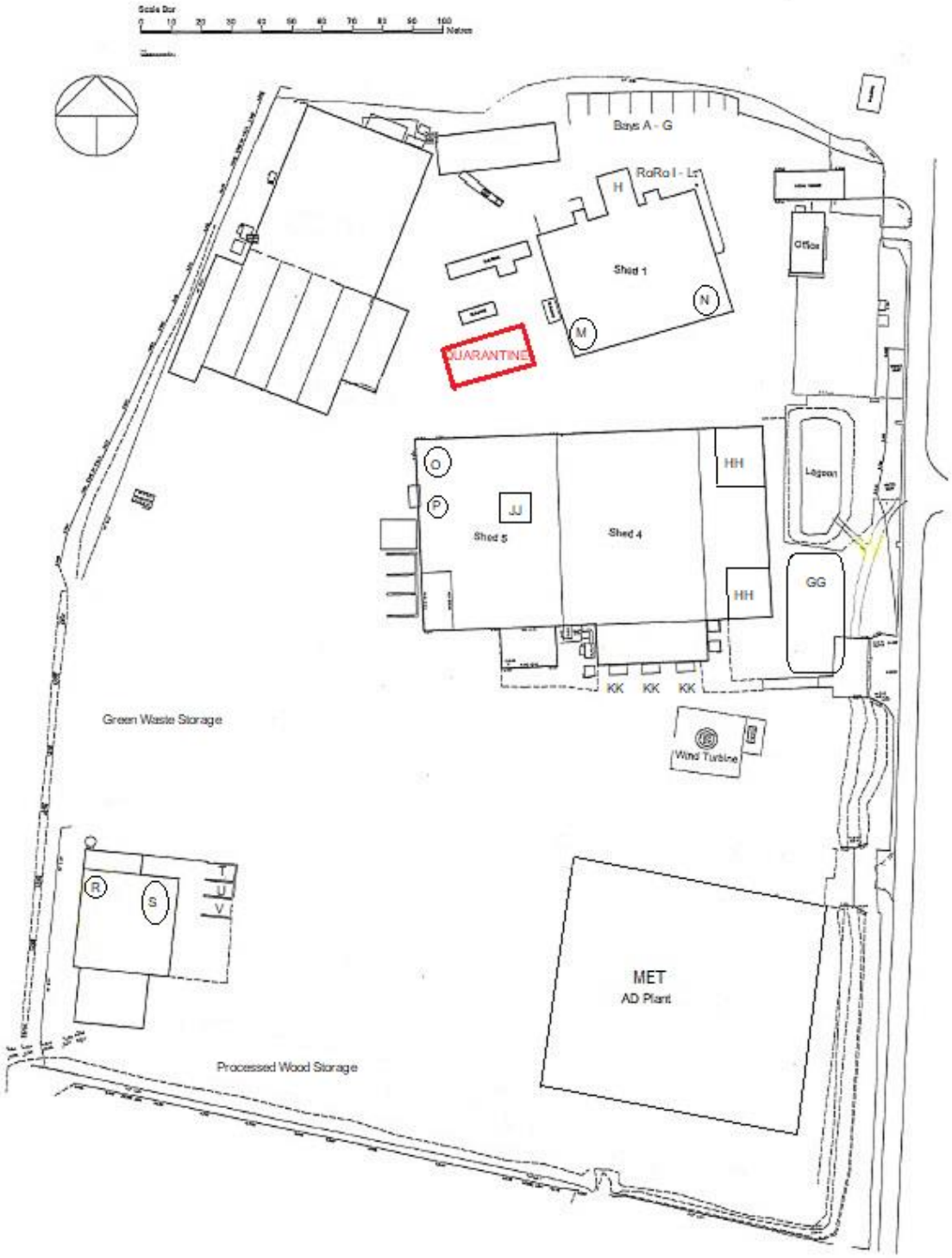


Shed 1 = Construction and demolition waste processing

Shed 4 = RDF and SRF production

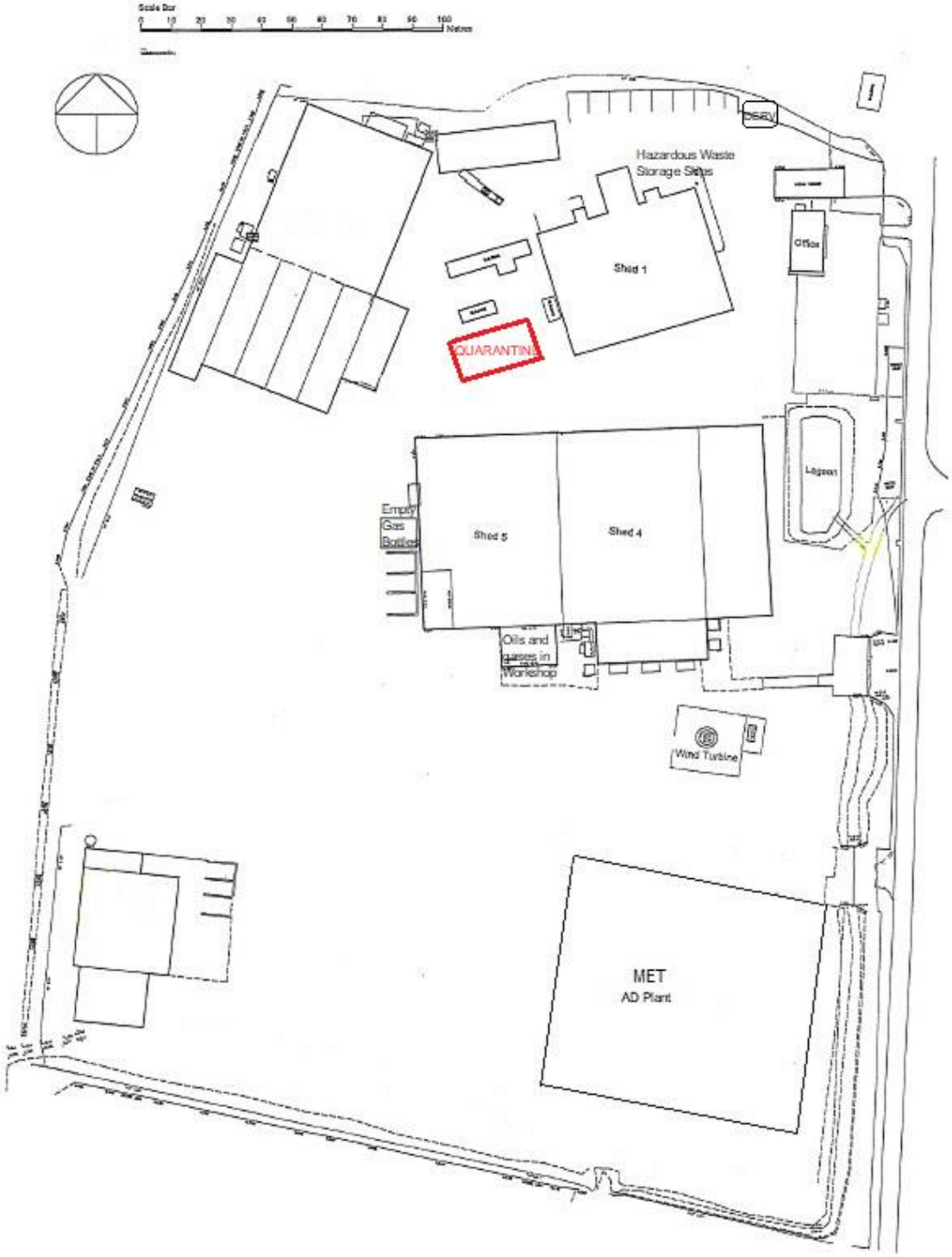
Shed 5 = Black bag (commercial waste) processing

Appendix 5 Waste Storage Locations

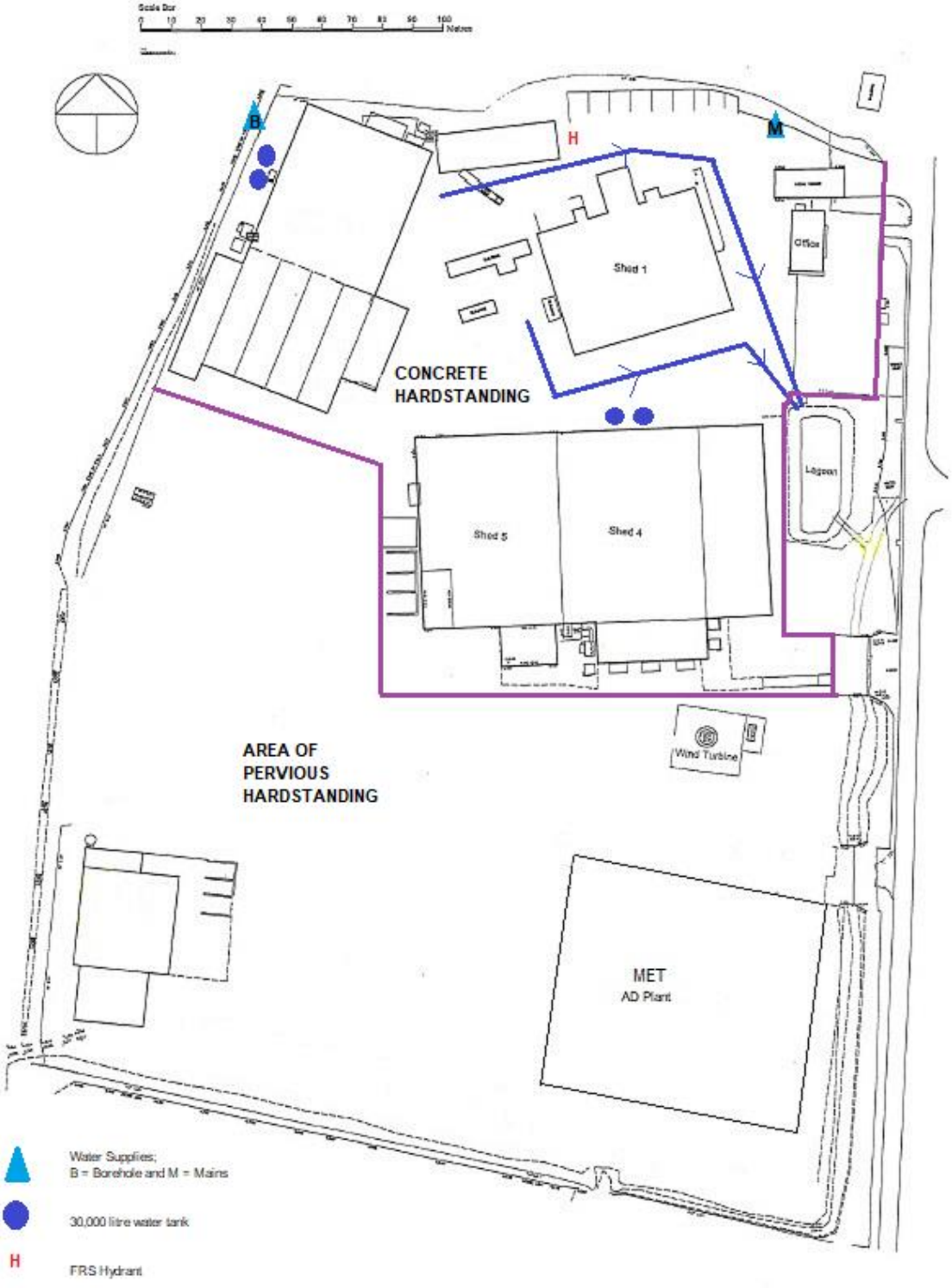


Waste stream	Location	How stored
Sweepings	A	Bay
Metals	B	Bay
Metals	C	Bay
PVC	D	Bay
Hard Plastics	E	Bay
Wood	F	Bay
Brick & Block	G	Bay
Fines from C&D Waste	H	Bay
Electrical Cable	I	40yd Ro Ro
WEEE	J	40yd Ro Ro
Non-ferrous	K	40yd Ro Ro
Asbestos	L	40yd Ro Ro
Light mixed plastics	M	Pile
Construction & Demolition Waste (Pre-process)	N	Pile
C&I "black bag" (Pre-process/processing)	O	Pile
Oversize from process	P	Pile
Plasterboard	Q	Bay
Bio-Mass	R	Bay
Bio-mass	S	Bay
Pre-processed wood	T	Bay
Pre-processed wood	U	Bay
Pre-processed wood	V	Bay
Pre-processed wood	W	Bay
Processed Wood	X	Bay
Processed Wood	Y	Bay
Processed Wood	Z	Bay
Processed Wood	AA	Bay
Green waste	BB	Bay
Green waste	CC	Bay
Green waste	DD	Bay
Green waste	EE	Bay
Green waste	FF	Bay
Baled RDF	GG	Piles
Baled SRF	GG	Piles
Loose processed SRF	HH	Piles
Process Fines from black bag waste	JJ	Bay
SWIP fuel stores (wood and solid digestate) - Three containers	KK	Containers

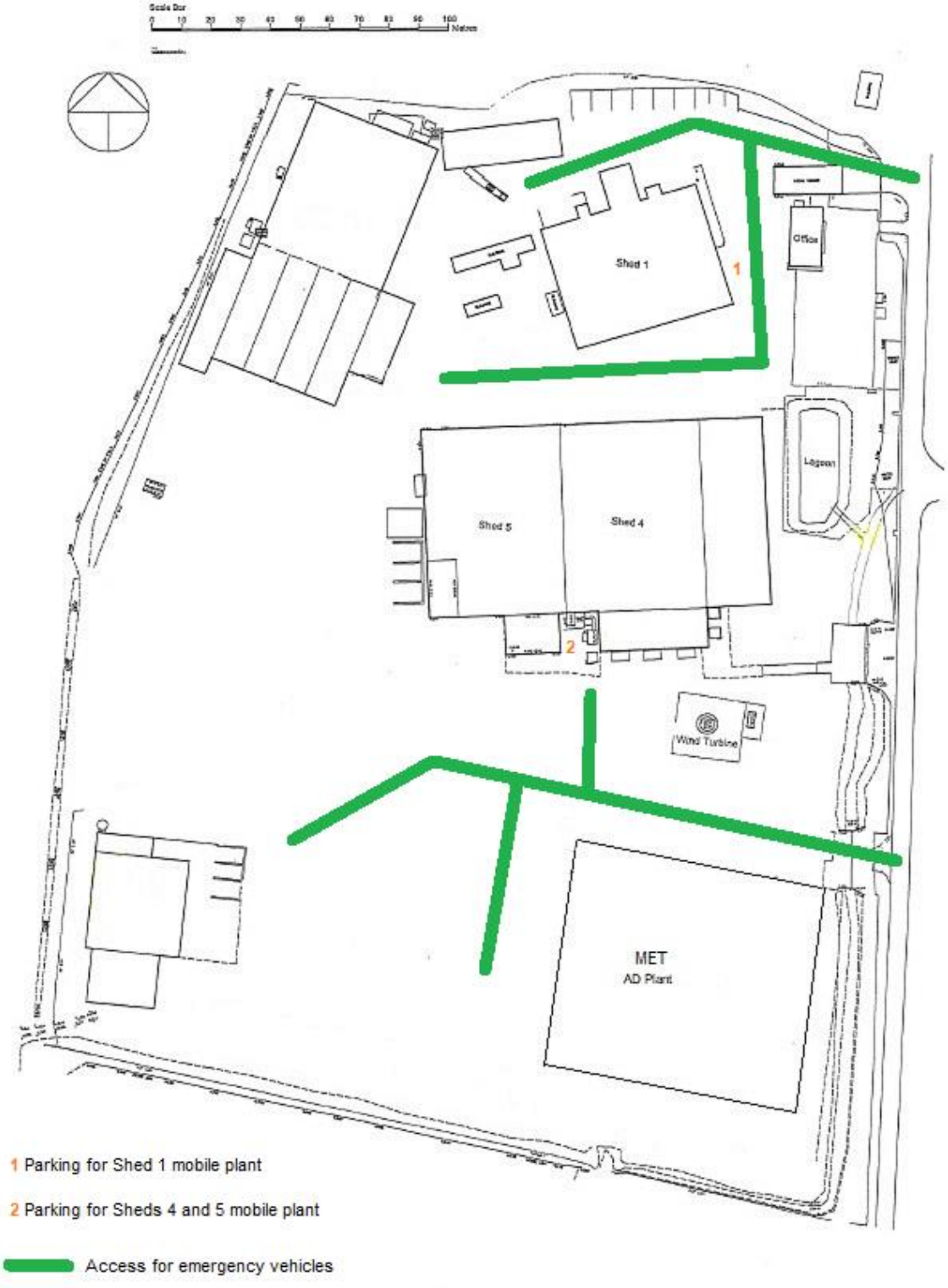
Appendix 6 Hazardous Areas/Non-Wastes Combustible Materials



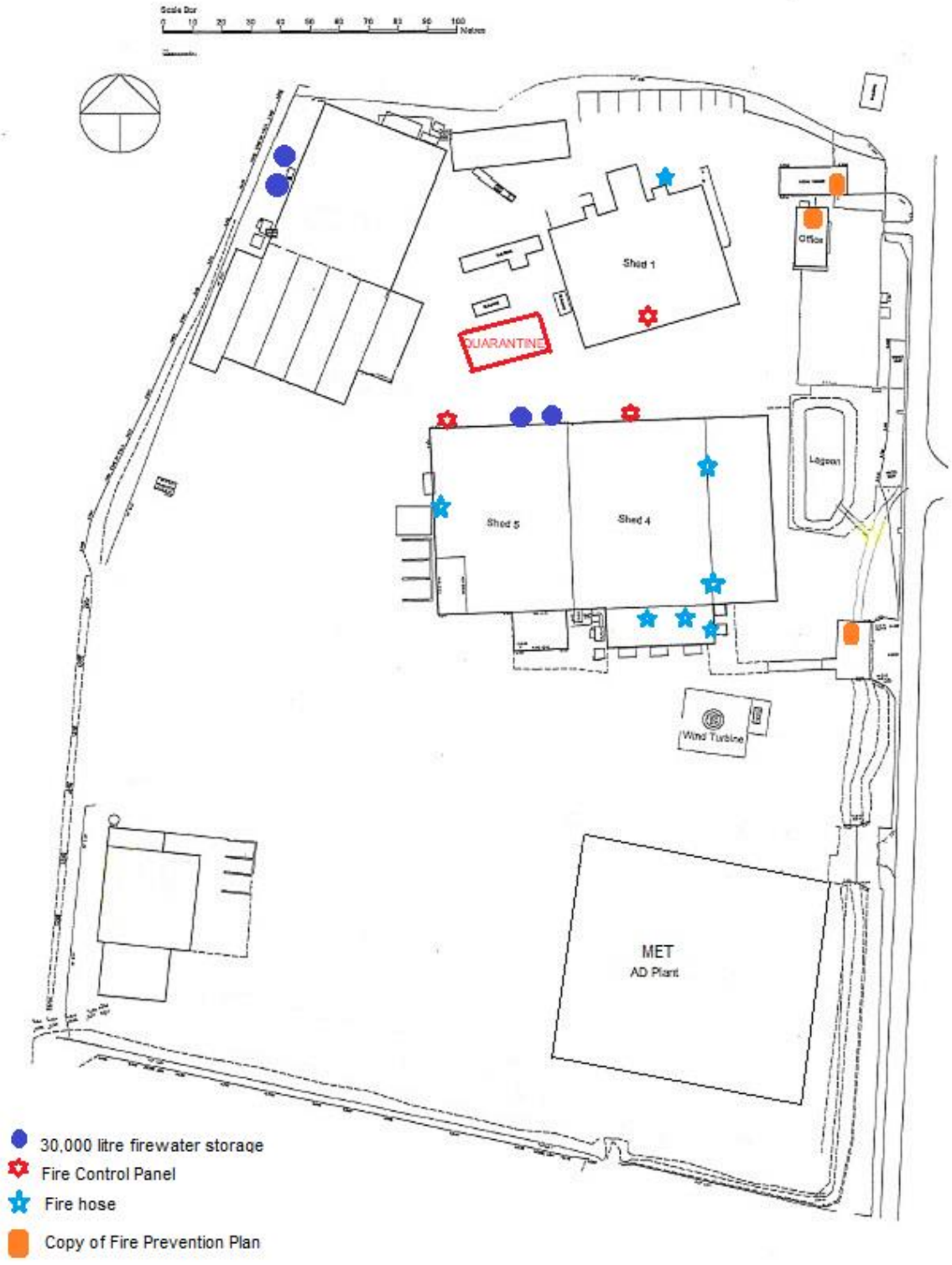
Appendix 7 Surfacing, Drainage and Water Supplies



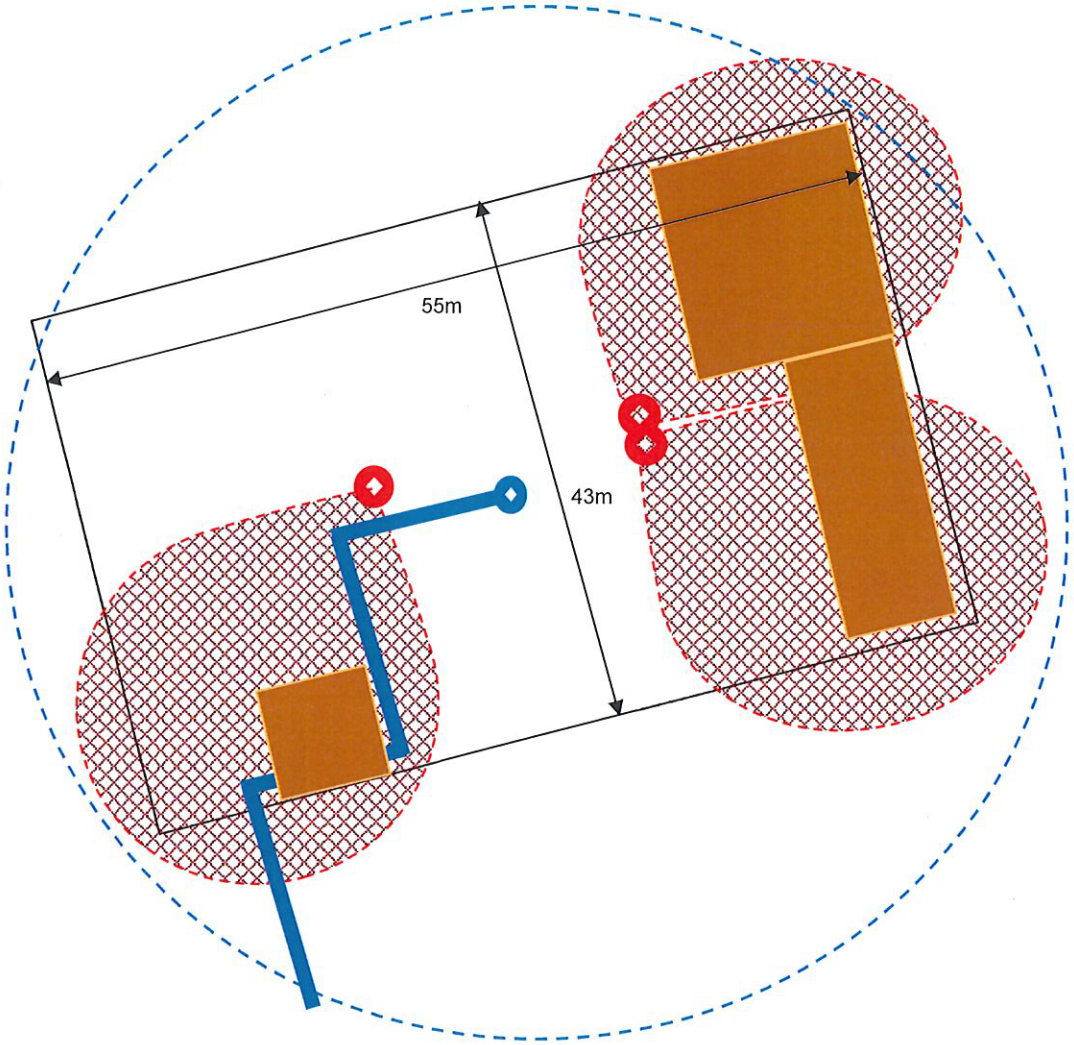
Appendix 8 Mobile Plant Parking Areas



Appendix 9 Fire Prevention Site Plan



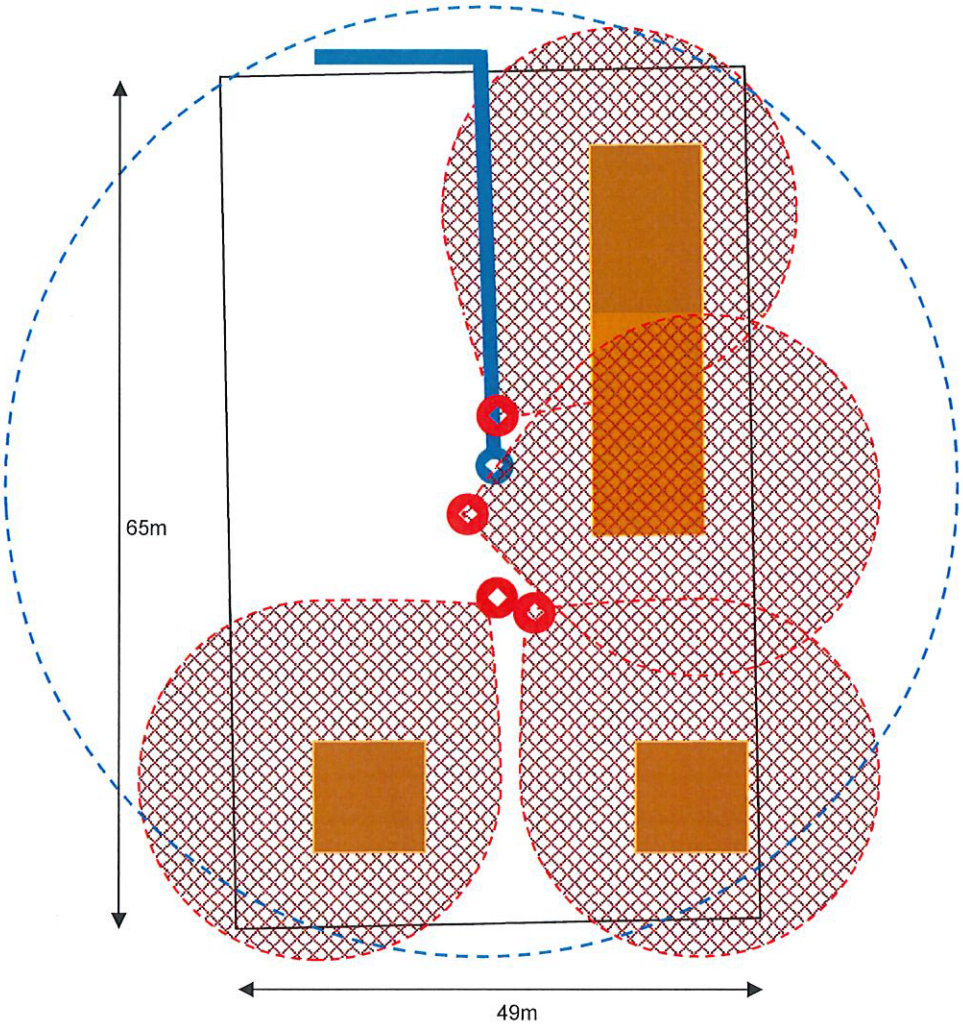
Appendix 10
SITE PLAN – Fire Detection Suppression Shed 1



Key:

	IR Sensor
	Cannon
	IR Sensor range
	Cannon Range
	Stored Waste
	Water Supply

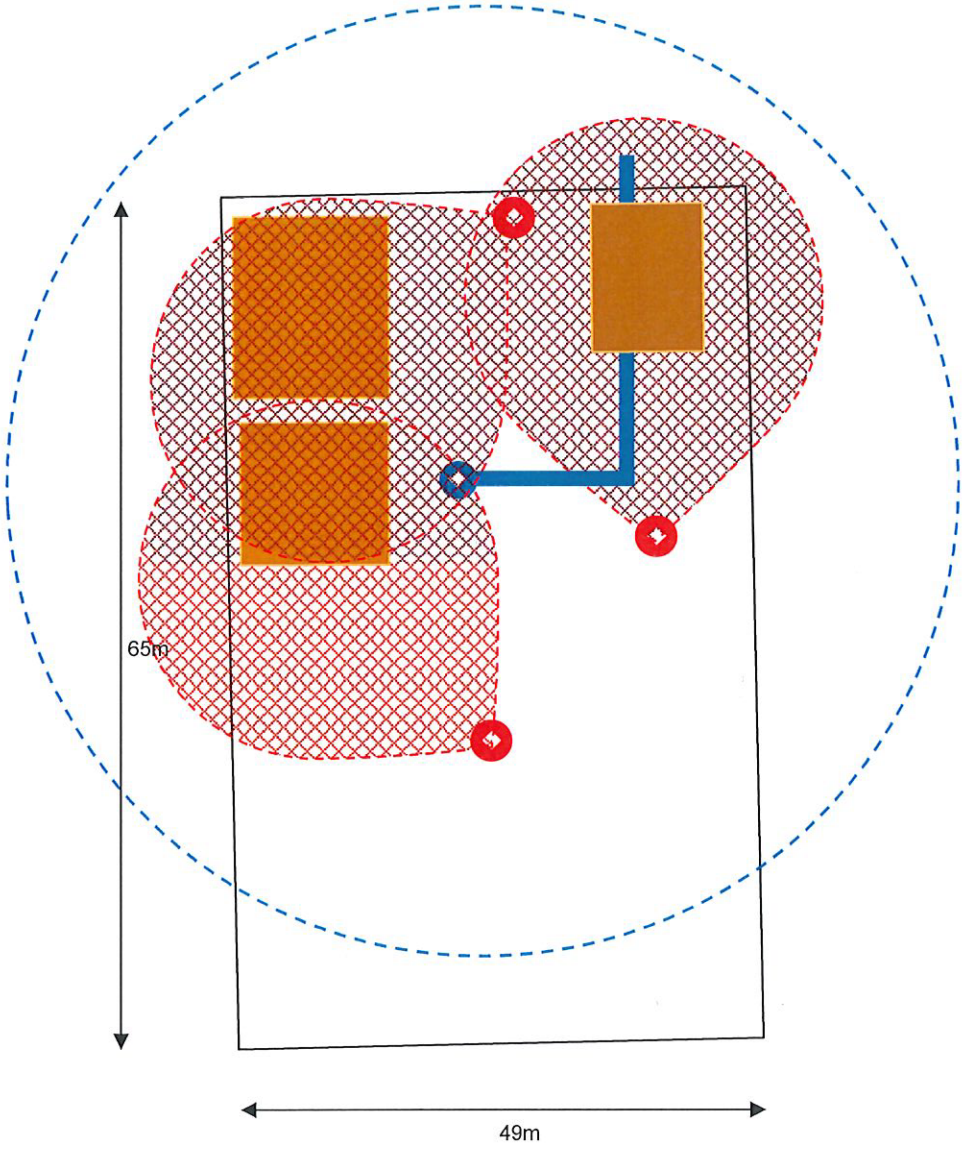
Appendix 11
SITE PLAN – Fire Detection Suppression Shed 4



Key:

	IR Sensor
	Cannon
	IR Sensor range
	Cannon Range
	Stored Waste
	Water Supply

Appendix 12
SITE PLAN – Fire Detection Suppression Shed 5



Key:

	IR Sensor
	Cannon
	IR Sensor range
	Cannon Range
	Stored Waste
	Water Supply

Appendix 13 Sensitive Receivers Plans

The site and its relationship to the broader environment is shown within Figure 1 and includes those features within a 1 km radius; a more detailed scale drawing (Figure 3) provides further detail on the key adjacent receptors within this 1 km radius, whilst Figure 2 shows the wind rose for the nearest weather station and identifies that the prevailing wind is from the South-West.

Figure 1 The Location of Transwaste Limited and the Surrounding Environment

Imagery courtesy of Google Earth 2023.

Figure 2 2019 Windrose for the Leconfield Airfield Measurement Station

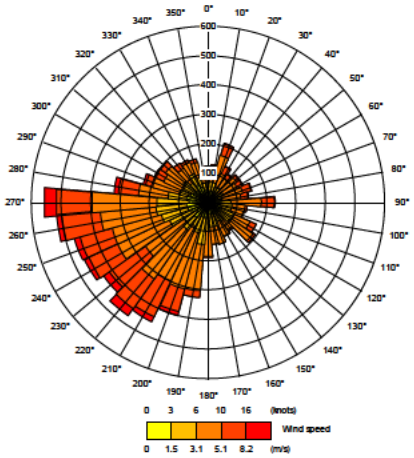
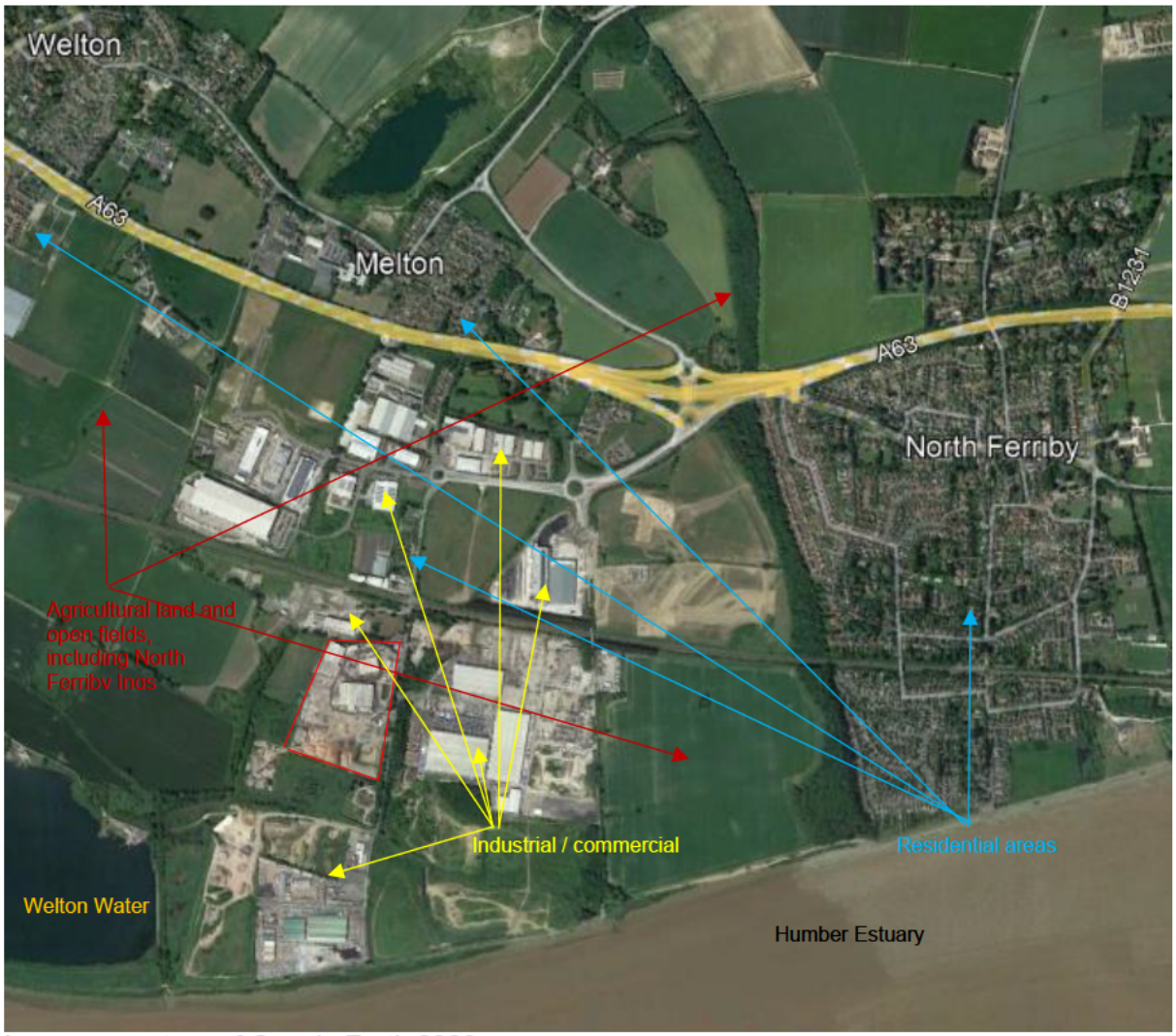


Figure 3 Site Boundary in Relation to Local Receptors



Imagery courtesy of Google Earth 2023.

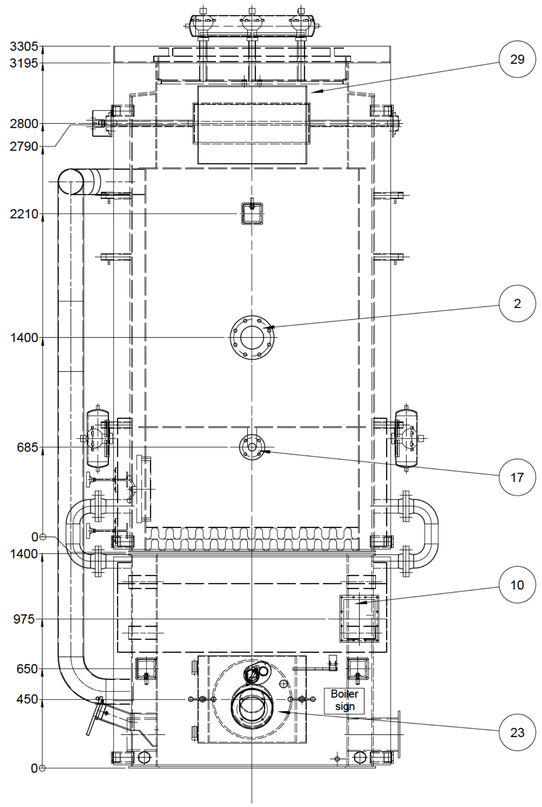
A general summary of surrounding land uses is shown within Table 1, whilst specific receptors and their proximity to the site are shown within Table 2. The Melton Waste Park which includes the Transwaste Limited operation is marked with a red border.

Table 1. Summary of Surrounding Land Uses.

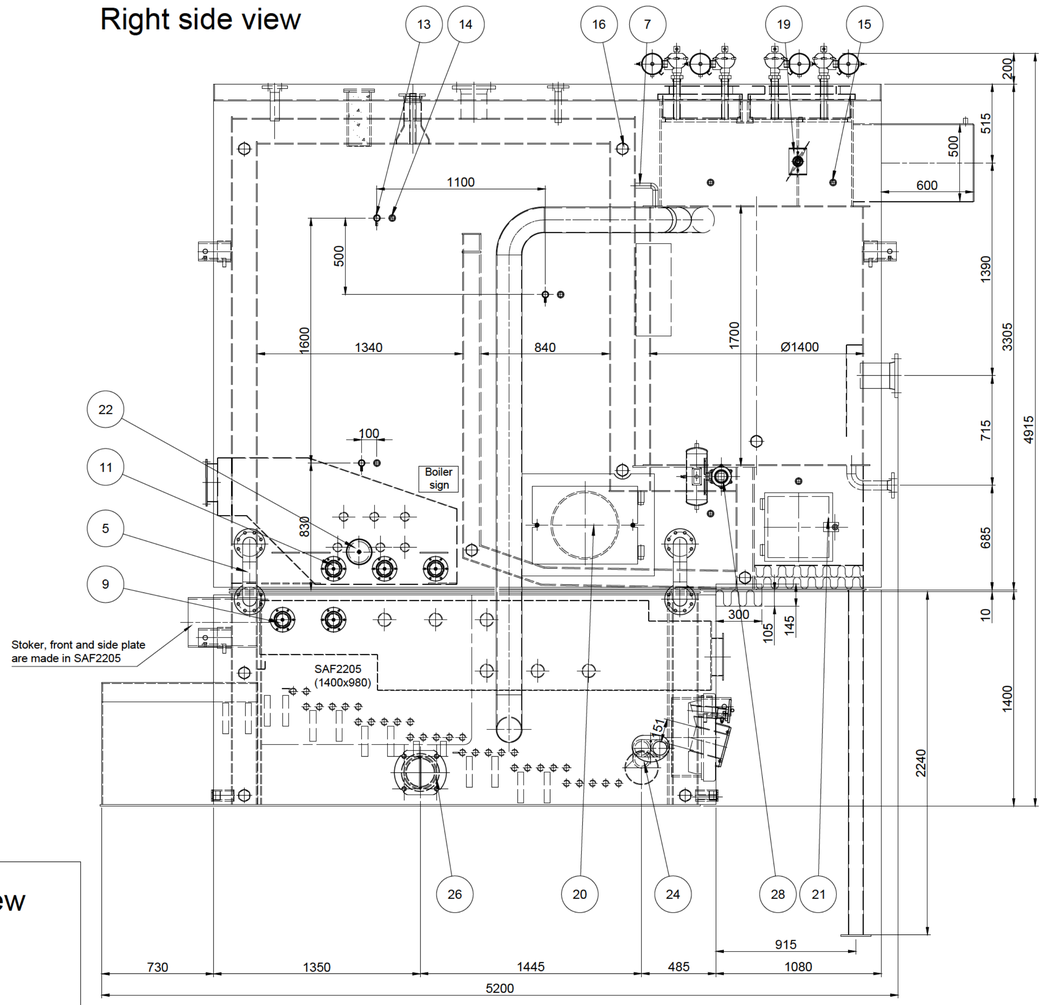
Location Relative to Transwaste Limited	Receptors
North	Railway line, industrial units, A63 road network, residential housing and South Hunsley School and Sixth Form College (in Melton), Melton Park, open fields, agricultural land and Melton Bottom Chalk Pit, Melton Bottom Local Wildlife Site
South	Open field, industrial units and the Humber Estuary (approx. 800m distant).
East	Industrial units, agricultural land and North Ferriby Ings
West	Agricultural land, Welton Waters Adventure Centre, Welton Water Sports Club, fields

Appendix 4
Documentation from Justsen

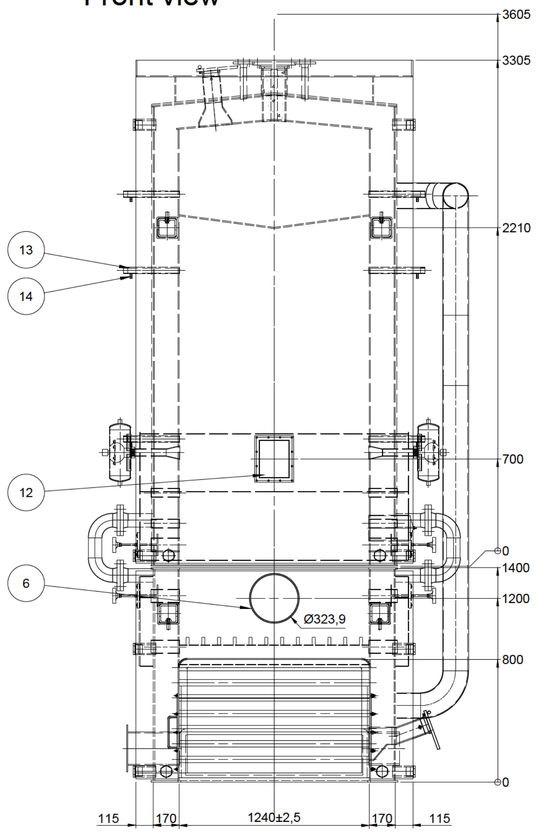
Back view



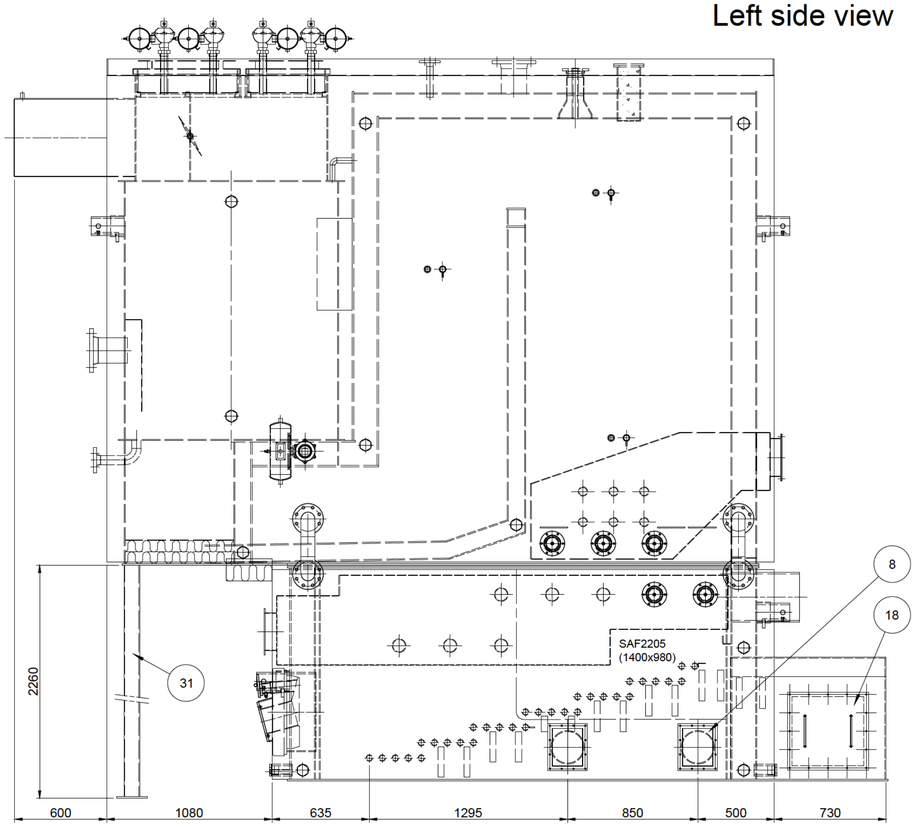
Right side view



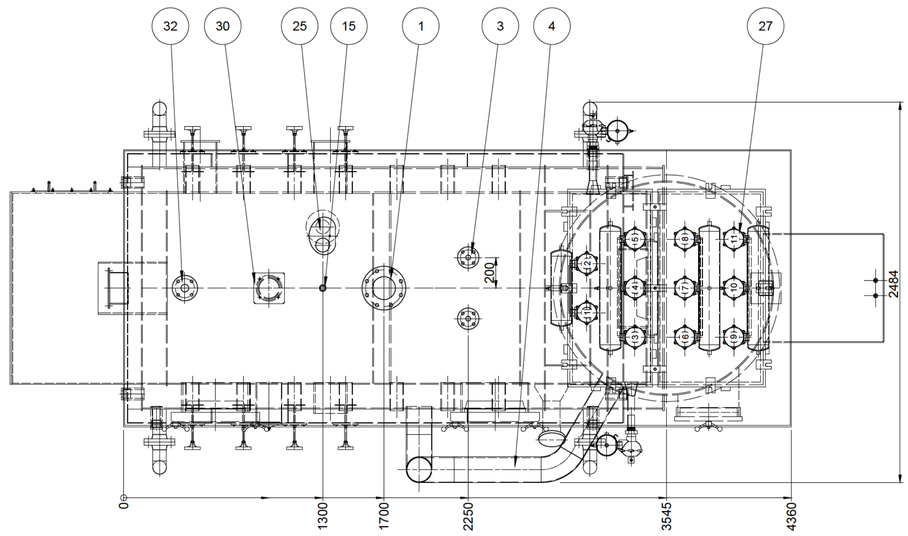
Front view



Left side view



Top view



Item	Qty	Description	Material	Standard
32	1	Branch for Low low level (Optional)		
31	1	Support		
30	1	Opening for top Support burner (CLOSED)		WL20/2-C
29	1	Outlet for smokegas	700x350	
28	2	Tube for Chockblast 1 pass	3"	
27	11	Chockblast top		
26	1	Inspectin door / Cleaning door	Ø200	
25	1	OBS top	3"	
24	1	OBS side angled	3"	
23	1	Inspectin door incl. OBS and support burner	Ø500	WL 40Z-A
22	1	Tube for Ignition	Ø140	
21	1	Inspectin door / Cleaning door	400x400	
20	1	Inspectin door / Cleaning door	Ø425	
19	1	Baffer plate between 1 an 2 pass		
18	1	Inspectin door / Cleaning door	470x450	
17	2	Drain	DN50	PN16
16	30	Inspection muff	2"	
15	6	Measuring muff	1" RG	
14	6	Measuring muff for DeNox	1" RG	
13	6	Connection for DeNox	1 1/4" RG	
12	1	Connection of airbox for center air	250x200	
11	6	Tertiary air nozzles incl. adjustments Center	Ø88,9	
10	1	Connection of airbox for secundary air	250x200	
9	14	Secundary air nozzles	Ø88,9	
8	2	Primary air nozzles with flange	Ø219,1	
7	1	Air Branch	3/4"	
6	1	Stoker tube	Ø323,9	
5	4	Connection tube between top and bottom	DN80	PN16
4	1	Connection tube for flow	Ø168,3	
3	2	Flange for safty-valve	DN32	PN16
2	1	Flange for return	DN150	PN16
1	1	Flange for flow	DN150	PN16

Danstoker a.s
Industrivej Nord 13, DK-7400 Herning
Tlf.: +45 99 28 71 00, Fax: +45 99 28 71 11

Målforhold: 1:20

INIT:	DATO:	KONTR:	DATO:
KDJ	01-10-2020		

Arrangement drawing

Type: WID 1,0 MW

Design pressure : 6,0 baro
Test pressure : Acc. to PED 2014/68/EU
Max. temperature : 110°C

A1-180-0443

Tolerancer iht. EN/ISO 13920-1 Class C
Alle mål mod isolering 15mm

#	Date	Revision	Name

Justsen Energiteknik A/S
Grimhøjvej 11
8220 Brabrand, Denmark
Tel +45 86 260 500
justsen@justsen.dk
www.justsen.dk

Environmental Visage Limited
Stroud House, Russell Street
Stroud
Gloucestershire GL5 3AN

Att. Dr. Amanda Owen

Our ref.: LA
Your ref.:
Order no.: O3404/O3408
Date: 06.03.2023

STATEMENT REGARDING DESIGN PHILOSOPHY AND THE ABSENSE OF FLUE GAS RECIRCULATION on Justsen Components for Hot Water Boiler System type JWB 1.0 MW – 6.0 bar(g), 110 ℃, delivered under order numbers O3404 and O3408 for Transwaste.

Justsen Components for Hot Water Boiler System type JWB 1.0 MW – 6.0 bar(g), 110 ℃

Flue gas recirculation: The purpose of flue gas recirculation is to cool down the temperature in the combustion zones due to the low Oxygen content in the flue gases. A flue gas at 160 °C with an Ozygen content of approx. 7% by volume will have significant cooling effect from the inert flue gas Nitrogen (N_2), as 3 times more flue gas is needed to supply the same amount of Oxygen for the combustion.

The cooling of the combustion temperature by means of flue gas recirculation will have the benefit of minimizing creation of thermal NO_X (reaction of combustion air Nitrogen reacting with Oxygen to form NO. Thermal NO_X is typically created at flame front temperatures above 1,300 °C. The calculated adiabatic temperature of the combustion at $NCV_{AS\ RECEIVED}$ of 4.23 kWh/kg and a Lambda value of 1.48 is estimated to be 1,490 °C.

The real flame front temperatures are based on experience on a system equipped with a Justsen Water-Cooled Grate System estimated to be 200-300 oC below the adiabatic temperature of the combustion and therefore below the threshold of thermal NO_X creation.

The attached arrangement drawing of the pressure vessels shows the open design between the combustions zones and the radiation part of the boiler. This design is a hybrid between a counter-current and a cross-flow combusiotn design. The flue gases generated are not forced through a narrow gap between the upper part of the grate and a suspended arch, necessitating flue gas recirculation.

The total combustion chamber volume after the last addition of combustion air and before the outlet of the combustion chamber is 6.71 m^3 corresponding to a flue gas retention time of 3.20 seconds at 850 °C. This 60% overdimensioning is due to the flue gases entering the after combustion zone at an estimated 1,050 °C and therefore being more voluminous.

The conclusion is therefore that flue gas recirculation will have a negative effect on the temperature, flue gas retention time and the usage of support burners due to the bespoke internal design of the combustion chamber and after combustion chamber.

LA

System data:

The system data below are assuming no supporting oil burner in operation to maintain the guaranteed temperature 850 °C for 2 seconds in the after combustion chamber. Justsen is taking no responsibility for the load on the oil burner. However, it is estimated to be in the range 10-40% of the combustion capacity depending on where in the capacity diagram the boiler system is operated. This corresponds to the wood waste fuel consumption decreasing by the corresponding value.

Max. heating output:	1.0 MW
Design pressure:	6.0 bar(g)
Min. operating pressure:	1.5 bar(g)
Design temperature:	110 °C
Flow temperature:	105 °C
Min. return temperature:	90 °C
Air surplus factor (Lambda) at 100% load:	1.48 at MCR*
O_2, dry at 100% load:	7.0% at MCR*
Adiabatic temperature:	1,490 °C at MCR* (estimated)
Flue gas temperature, radiation part inlet:	1,050 °C at MCR* (estimated)
Flue gas temperature, radiation part outlet:	900 °C at MCR* (estimated)
Flue gas temperature, boiler outlet:	160 °C at MCR* (estimated)
Min. flue gas temperature, system outlet:	135 °C
Thermal efficiency at 100% load:	87.8%
Fuel consumption at 100% load:	269 kg/h
Combustion capacity at 100% load:	1,138 kW
Grate length:	2,450 mm (7 fixed steps, 6 moving steps)
Grate width:	1,240 mm (1 row of 3 hydraulic cylindres)
Ratio length vs. width:	1.98:1
Grate area:	3.04 m^2
Thermal grate load:	375 kW/m^2
Grate load:	89 $kg/h/m^2$
Combustion air amount, wet:	1,620 Nm^3/h = 1,739 m^3/h at 20 °C
Flue gas amount, wet:	1,835 Nm^3/h = 2,910 m^3/h at 160 °C
Flue gas moisture by weight:	7.94%
Combustion chamber volume*:	6.71 m^3
Flue gas retention time*:	3.20 s

*) Measured after the last addition of combustion air and before the first boiler tube pass at an average flue gas temperature of 850 °C.

Reference values*:

Fuel temperature:	20 °C
Ambient air temperature:	20 °C
Relative air humidity:	35%
Fouling factor:	0.0030 m^2 k/w

*) Forms the basis for thermal calculations and should not be confused with allowed values.

Design fuel: Wood waste grade C.

Data:		
	- calorific value (H_{awf}*):	5.31 kWh/kg = 19.117 MJ/kg
	- net calorific value (H_u):	4.23 kWh/kg = 15.235 MJ/kg
	- water:	16.6% based on total weight
	- ash:	1.9 based on dry weight
	- Hydrogen (H):	5.86% based on dry weight
	- Carbon (C):	49.87% based on dry weight
	- Sulphur (S):	0.06% based on dry weight
	- Nitrogen (N):	0.97% based on dry weight
	- Chlorine (Cl):	approx. 0.02% based on dry weight
	- Potassium (K):	approx. 0.10% based on dry weight
	- particle size distribution:	ÖNORM M 7133 G50
	- max. length of particles:	120 mm
	- expected density:	150 kg/m^3

*) Ash and water free.

Emission data: No emission guarantee given as emission control equipment are outside Justsen scope of supply. However, Justsen does guarantee 850 °C for 2 seconds according to system data on page 3-4.

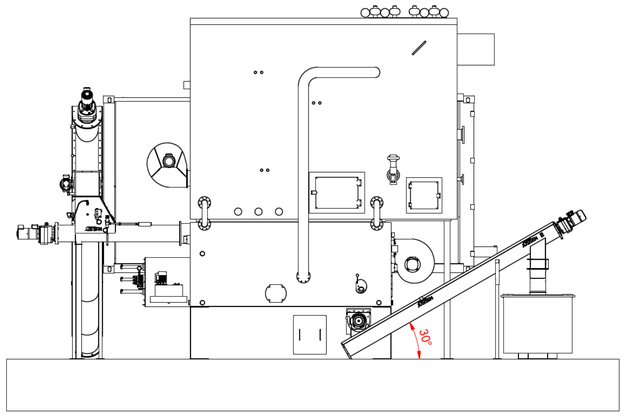
Technical norms: Pressure parts designed and manufactured according to EN 12952 or EN 12953 and The Pressure Systems Safety Regulations 2000 (PSSR).

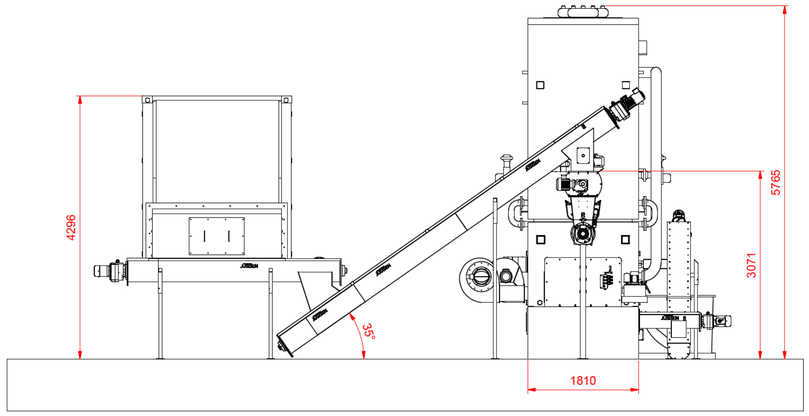
Moving parts designed and manufactured according to EU Machinery Directive 2006/42/EC.

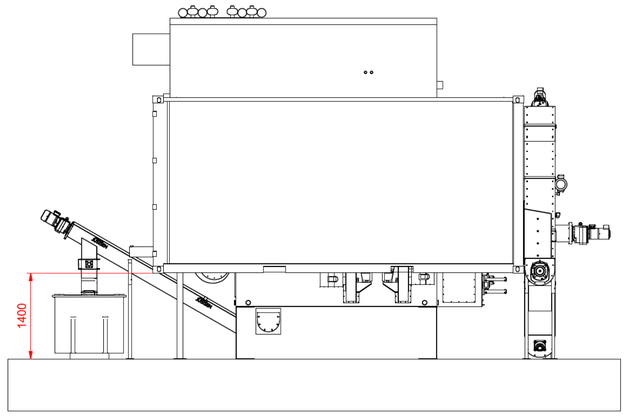
Brabrand 06.03.2023
Justsen Energiteknik A/S

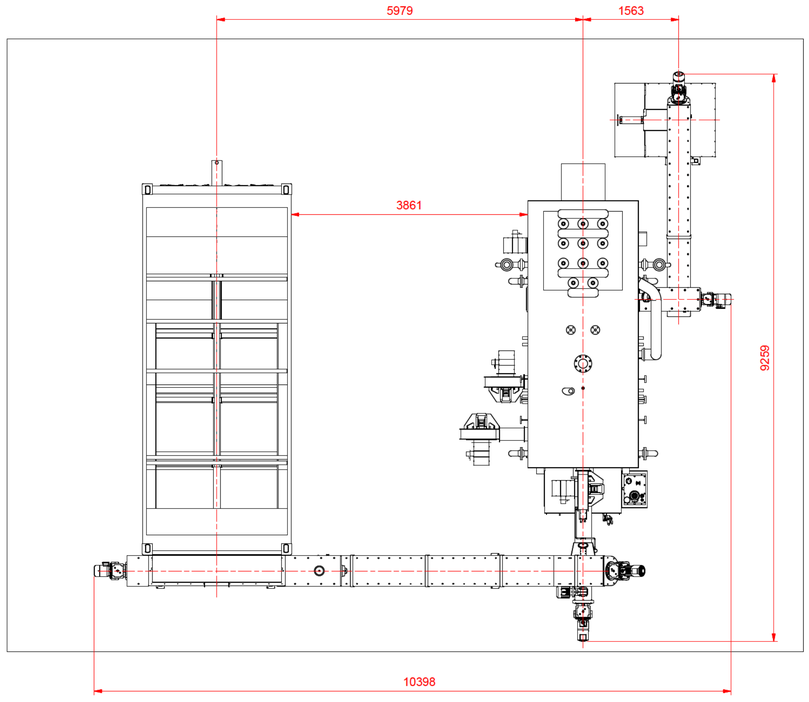
Lars Justsen,CSO

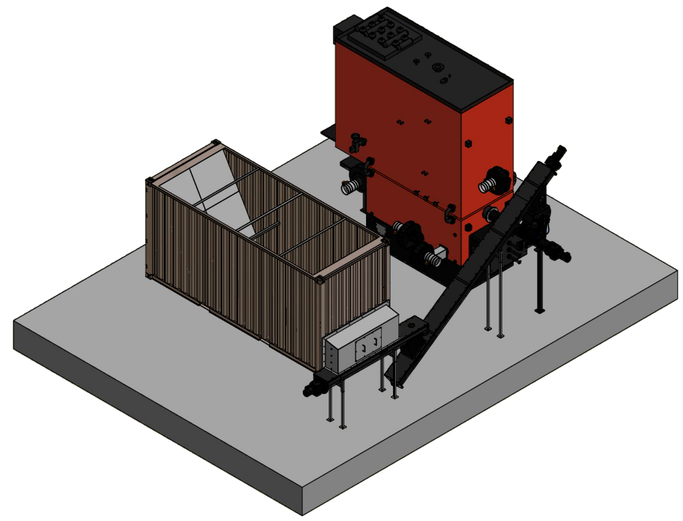
JUSTSEN ENERGITEKNIK A/S · CVR: DK75631812 ·











Reservations are made for design changes

Tolerance DS/ISO 2768-mk

JUSTSEN Energiteknik A/S Grimhøjvej 11, DK-8220 Brabrand P: +45 86 26 05 00 justsen@justsen.dk www.justsen.dk twitter.com/justsenEnergi www.facebook.com/JustsenEnergiteknikAS	Initial: ML	App: ML	
	Design date: 24-09-2020	Approval date: 02-10-2020	
	Scale: 1 : 50	Format: A1	
Layout	Designation: Assembly		
AHS Renewables - Biowood -1.0 MW	Drawing nr.: O3408-1.00-01	Rev: A	

Appendix 5
Detailed Air Quality Assessment for Three Small Waste Incineration Plant at Transwaste Limited's Melton Site

Environmental Visage

DETAILED AIR QUALITY ASSESSMENT FOR THREE SMALL WASTE INCINERATION PLANT AT TRANSWASTE LIMITED'S MELTON SITE

TRANSWASTE LIMITED
GIBSON LANE
MELTON
HU14 3HH

Report Issue No: 2
Report Date: April 2024
Report Author: Amanda Owen

Registered in England and Wales no. 4907297. Registered office: c/o SLS Accountants, 78 Draycott, Cam, Glos, GL11 5DH

Executive Summary

Detailed atmospheric dispersion modelling has been undertaken of emissions to atmosphere from three small waste incineration plant (SWIPs) that Transwaste Limited has installed at their site off Gibson Lane, Melton, East Riding of Yorkshire. Modelling was undertaken for the three new 0.95 MW_{th} boilers, and a cumulative assessment included emissions from an energy recovery facility (ERF), three 0.95 MW_{th} biomass boilers, a small gas fired boiler and a ventilation air discharge point, also located or planned for development at the site, albeit Transwaste does not operate all of the plant themselves.

Modelling of emissions from the three SWIPS, either alone or in combination with the other units at the site, was undertaken for a scenario that is expected to represent normal operating conditions at maximum output, discharging emissions to atmosphere via dedicated chimneys. Emissions and discharge data for the SWIPs were provided by the boiler manufacturer, Justsen; Biomass Boiler Servicing and Maintenance Limited (BBSM) and Ebtech Energy Services Limited (Ebtech) as the boiler maintenance and project co-ordinators for the installation, while the data for the other units was obtained from the most recently available air quality assessment reports, prepared to support planning applications for the various units.

The modelling was undertaken using ADMS Version 6 and incorporated local conditions such as meteorology, terrain and surface roughness factors, along with data to incorporate the effect of the two local wind turbines. Meteorological data was taken from Leconfield Airfield for the years 2018 to 2022 and was used to determine maximum process contributions across a 4 km x 4 km modelled grid with results reported at 20-metre intervals, as well as at nearby specific receptor locations.

The model predicted that the majority of pollutant contributions from the new SWIP boilers could readily be screened as insignificant at both the maximum modelled location and at the discrete modelled receptors, or were confirmed to not be significant at the secondary assessment stage.

Further consideration was required for some species when modelling the SWIPs cumulatively with other processes located at or proposed for the Melton Waste Park, including the assessment of total VOCs, the individual species of which were considered as a fraction of the total, and confirmation on the location and extent of any pollutant levels that could not readily be screened. None of the cumulative process contributions exceeded their relevant assessment level when considering individual pollutants, although those that were assessed as a combined release could suggest elevated levels when comparing the total against a single pollutant assessment level.

At the modelled discrete sensitive receptors, the pollutant concentrations from the SWIPs operating in isolation almost consistently screened as insignificant at the initial assessment stage, with all pollutants screening at the secondary assessment stage. Cumulative contributions were naturally higher but, despite not necessarily screening at the initial assessment stage, all were screened as not significant.

Contributions to local air quality monitoring points were largely screened as insignificant with only one location (S29) recording a SWIP process contribution of more than 1 % although with a PEC of less than 44 %, the overall impact at this point is not considered to be significant. Whilst not all of the contributions from the cumulative assessment could be screened, especially when applying the background concentrations from 2019, it is unlikely that the PEC at any of the locations would exceed the AQS when considering the 2022 background concentrations plus the cumulative discharges.

The impact on the nearby Humber Estuary designated ecological habitat, of emissions from the three SWIPs was shown to be insignificant in relation to guidance provided by the Environment Agency and Natural England. Cumulative process contributions to Critical Levels screened at either the initial or secondary assessment stage, although cumulative contributions to Critical Loads were not so readily screened. Contributions of both nutrient Nitrogen (three receptor locations) and acid deposition (two locations of the three modelled) amounted to more than 1 % of the Critical Loads. However, the contribution from the SWIPs in isolation was immediately screened as insignificant, and the exceedance of a Critical Load is not a quantitative estimate of damage to a particular habitat, instead representing the potential for damage to occur.

Overall, detailed modelling of emissions from the three SWIPs confirms that, when taken in isolation the potential impact on local air quality from their operation is largely screened as insignificant, and the cumulative impact of the boilers with other existing and proposed plant will also be small.

Contents

Issue and Revision Record

Issue	Date	Author	Review / Authorise	Description
Draft	29/12/2023	Amanda Owen		Draft
1	30/12/2023	Amanda Owen	ENVISAGE	V1 for Issue
2	26/04/2024	Amanda Owen	ENVISAGE	Updated EALs

1. Introduction

Transwaste Limited has installed three 0.95 MW_{th} ($_{output}$) small waste incineration plant (SWIP) boilers at their site off Gibson Lane, Melton, East Riding of Yorkshire. The units require an Environmental Permit to be in place prior to their operation and this air quality assessment has been prepared to inform the Permit application submission.

In order to prepare the air quality assessment, detailed atmospheric dispersion modelling was undertaken of emissions to atmosphere from the three new units, and a cumulative assessment was undertaken to include emissions from an energy recovery facility (ERF), three 950 kW_{th} biomass boilers, a small gas fired boiler and a ventilation air release point, all of which do or will operate on the same site, albeit Transwaste is not the sole operator at the site. The existence of and potential emissions from forty-one small biomass boilers within a dedicated building at the Melton Waste Park have been discounted in this assessment as the Operator is no longer a tenant at the site and it is considered highly unlikely that these units will operate in the future.

The three 950 kW_{th} biomass boilers are operated by Transwaste and burn virgin wood chip to provide process heating for the drying of on-site wood chip. The small gas-fired boiler will provide heat to the new dry-AD plant due to be installed at the Melton Waste Park, to be operated by Melton Energy Tech. (MET). The abated ventilation air discharge stack also serves this process. The third-party operated ERF is also yet to be developed but will, in future, utilise some of the RDF and SRF produced by Transwaste to generate electricity for export to the National Grid.

The three smaller, low temperature SWIPs will be used to produce cooling air to be piped to the waste storage sheds, thereby minimising odour potential. As such, it is expected that the boilers will be used more in the summer months than during the winter, although this assessment has considered continuous operation.

Detailed atmospheric dispersion modelling of the process emissions from the boilers, either alone or in combination with the other units at the site, was undertaken for a scenario that is expected to represent normal operating conditions at maximum output and discharging emissions to atmosphere via dedicated chimneys. The objective of the modelling exercise was to assess the potential impact on local air quality of process emissions from all of the on-site combustion plant in terms of ground level concentrations of pollutants designated by Air Quality Regulations and other relevant Environmental Assessment Levels (EALs) recommended by the Environment Agency. Emissions and discharge data for the SWIPs were provided by Justsen, BBSM and Ebtech as the technology providers, boiler support contractors and project co-ordinators for the SWIPs, while data for the other units was obtained from recent air quality assessment reports, prepared to support planning applications for the various units.

This report describes the data used, the methodology adopted, assumptions made, and the results generated by the model.

1.1 ADMS Model

The modelling software used was ADMS Version 6, one of a range of atmospheric dispersion models available for assessing the impact on local air quality of pollutant emissions to atmosphere. Those used routinely in the UK for this sort of application include United States Environmental Protection Agency (US-EPA) models such as AERMOD, and the ADMS models developed in the UK by Cambridge Environmental Research Consultants (CERC)[1].

The ADMS model uses two parameters to describe the atmospheric boundary layer, namely the boundary layer height (h) and the Monin-Obukhov Length (L_{MO}), and a skewed Gaussian concentration distribution to calculate dispersion under convective conditions. The model can be used to assess ambient pollutant concentrations arising from a wide variety of emissions sources associated with an industrial process. It can be used for initial screening or more refined determination of ground level pollutant concentrations on either a short-term basis (up to 24-hour averages) or longer term (up to annual averages).

1.2 Modelling Uncertainty

Atmospheric dispersion modelling is not a precise science and results can be impacted by a variety of factors such as:

- Model uncertainty - due to limitations in the dispersion algorithms incorporated into the model and their ability to replicate “real life” situations;
- Data uncertainty - due to potential errors associated with emission estimates, discharge characteristics, land use characteristics and the relevance of the meteorological data to a particular location; and,
- Variability - randomness of measurements used.

CERC models are continually validated against available measured data obtained from real world situations, field campaigns and wind tunnel experiments. Validation of the ADMS dispersion models has been performed using many experimental datasets that test different aspects of the models, for instance: ground / high level sources, passive and buoyant releases, buildings, complex terrain, chemistry, deposition and plume visibility. These studies are both short-term as well as annual, and involve tracer gases or specific pollutants of interest.

Potential uncertainties in model results derived from the current study have been minimised as far as practicable, and a series of worst-case assumptions have been applied to the input data in order to provide a robust assessment. This included the following:

- Selection of the dispersion model - ADMS 6 is a commonly used atmospheric dispersion model and results have been verified through a number of inter-comparison studies to ensure that model predictions are as accurate as possible;
- Meteorological data - Modelling was undertaken using hourly average meteorological data from the nearby Leconfield Airfield measurement station which is considered to be the most representative of local conditions;
- Plant operation – Discharge conditions were based upon process information provided by Justsen, BBSM and Ebtech, and are considered to be representative of process operations at the Transwaste Limited site;
- Receptor locations - A 4 km x 4 km Cartesian Grid with 20-metre grid-spacing was utilised in the model in order to calculate the maximum predicted concentrations in the vicinity of the site. Specific receptor locations were also included in the model to provide detailed assessment at these discrete sensitive locations; and,
- Variability - All model inputs are as accurate as possible and worst-case conditions were considered as necessary in order to ensure a robust assessment of potential ground level pollutant concentrations.

Results were considered in the context of the Air Quality Standards (AQS) Regulations objective values and relevant Environmental Assessment Levels (EALs) recommended by the Environment Agency. The application of the above measures to reduce uncertainty and the use of a series of worst-case assumptions relating to the operational performance of the process should result in a model accuracy of an acceptable level.

1.3 Air Quality Standards and Environmental Assessment Levels

In the UK, limit values, targets, and air quality standards (AQS) and objectives for major pollutants are described in The Air Quality Strategy. In addition, the Environment Agency provide environmental assessment levels (EALs) for other pollutants. The results of the modelling were considered in the context of these limits, targets, objectives and assessment levels, as summarised in Table 1 over page.

Table 1 Air Quality Standards and Environmental Assessment Levels

Substance	Assessment Level	Averaging time	Specific Receptors	Regulatory Source
Nitrogen Dioxide	200 µg m^{-3} with up to 18 exceedances (99.79th %)	1 hour mean	Human health / AQ	AQ and AQS Regulations (L)
Nitrogen Dioxide	40 µg m^{-3}	Annual mean	Human health / AQ	AQ and AQS Regulations (L)
Oxides of Nitrogen (expressed as Nitrogen Dioxide)	75 µg m^{-3}	Daily mean	Conservation / Habitats	Critical Level
Oxides of Nitrogen (expressed as Nitrogen Dioxide)	30 µg m^{-3}	Annual mean	Conservation / Habitats	Critical Level
Sulphur Dioxide	266 µg m^{-3} with up to 35 exceedances (99.9th %)	15 minute mean	Human health / AQ	AQ Regulations (O)
Sulphur Dioxide	350 µg m^{-3} with up to 24 exceedances (99.73rd %)	1 hour mean	Human health / AQ	AQ Regulations (L)
Sulphur Dioxide	125 µg m^{-3} with up to 3 exceedances (99.18th %)	24 hour mean	Human health / AQ	AQ Regulations (L)
Sulphur Dioxide	10 µg m^{-3} where lichens or bryophytes are present, 20 micrograms per cubic metre where they're not	Annual mean	Conservation / Habitats	Critical Level
Ammonia	2,500 µg m^{-3}	1 hour mean	Human health / AQ	EAL
Ammonia	180 µg m^{-3}	Annual mean	Human health / AQ	EAL
Ammonia	1 µg m^{-3} where lichens or bryophytes (including mosses, liverworts and hornworts) are present, 3 micrograms per cubic metre where they're not	Annual mean	Conservation / Habitats	Critical Level
Hydrogen Chloride	750 µg m^{-3}	1 hour mean	Human health / AQ	EAL
Hydrogen Fluoride	160 µg m^{-3}	1 hour mean	Human health / AQ	EAL
Hydrogen Fluoride	16 µg m^{-3}	Monthly mean	Human health / AQ	EAL
Hydrogen Fluoride	0.5 µg m^{-3}	Weekly mean	Conservation / Habitats	Critical Level
Hydrogen Fluoride	5 µg m^{-3}	Daily mean	Conservation / Habitats	Critical Level
Particulates (PM_{10})	50 µg m^{-3} with up to 35 exceedances (90.41st %)	24 hour mean	Human health / AQ	AQ and AQS Regulations (L)
Particulates (PM_{10})	40 µg m^{-3}	Annual mean	Human health / AQ	AQ and AQS Regulations (L)
Particulates ($PM_{2.5}$)	20 µg m^{-3}	Annual	Human health / AQ	AQS Regulations (L)
Particulates ($PM_{2.5}$)	10 µg m^{-3}	Annual from 2040	Human health / AQ	Env. Target 2040

Substance	Assessment Level	Averaging time	Specific Receptors	Regulatory Source
1,3-Butadiene	2.25 µg m^{-3}	Running annual mean	Human health / AQ	AQ Regulations (O)
1,3-Butadiene	2.25 µg m^{-3}	24 hour mean	Human health / AQ	EAL
Benzene	5 µg m^{-3}	Annual mean	Human health / AQ	AQ Regulations (L)
Benzene	30 µg m^{-3}	24 hour mean	Human health / AQ	EAL
Carbon Monoxide	10 mg m^{-3}	Max. 8 hour running mean in any daily period	Human health / AQ	AQ Regulations (L)
Cadmium	5 ng m^{-3}	Annual mean	Human health / AQ	AQS Regulations (T)
Cadmium	30 ng m^{-3}	24 hour mean	Human health / AQ	EAL
Mercury and compounds	0.6 µg m^{-3}	1 hour mean	Human health / AQ	EAL
Mercury and compounds	0.06 µg m^{-3}	24 hour mean	Human health / AQ	EAL
Lead	0.5 µg m^{-3}	Annual mean	Human health / AQ	AQ and AQS Regulations (L)
Lead	0.25 µg m^{-3}	Annual mean	Human health / AQ	AQ Regulations (O)
Arsenic	6 ng m^{-3}	Annual mean	Human health / AQ	AQS Regulations (T)
Antimony and compounds	150 µg m^{-3}	1 hour mean	Human health / AQ	EAL
Antimony and compounds	5 µg m^{-3}	Annual mean	Human health / AQ	EAL
Chromium (III) and Chromium (III) compounds	2 µg m^{-3}	24 hour mean	Human health / AQ	EAL
Chromium VI	0.00025 µg m^{-3}	Annual mean	Human health / AQ	EAL
Copper and its compounds	0.05 µg m^{-3}	24 hour mean	Human health / AQ	EAL
Manganese and compounds	1,500 µg m^{-3}	1 hour mean	Human health / AQ	EAL
Manganese and compounds	0.15 µg m^{-3}	Annual mean	Human health / AQ	EAL
Nickel and its compounds	0.7 µg m^{-3}	1 hour mean	Human health / AQ	EAL
Nickel	0.02 µg m^{-3}	Annual mean	Human health / AQ	AQS Regulations (T)
Vanadium	1 µg m^{-3}	24 hour mean	Human health / AQ	EAL
Polyaromatic Hydrocarbons (benzo(a)pyrene)	1 ng m^{-3}	Annual mean	Human health / AQ	AQS Regulations (T)
Polyaromatic Hydrocarbons (benzo(a)pyrene)	0.25 ng m^{-3}	Annual mean	Human health / AQ	AQS Regulations (O)
Polychlorinated Biphenyls (PCBs)	6 µg m^{-3}	1 hour mean	Human health / AQ	EAL
Polychlorinated Biphenyls (PCBs)	0.2 µg m^{-3}	Annual mean	Human health / AQ	EAL

Key to Table 1:

AQ Regulations	Air Quality (England) Regulations 2000 (as amended)[2]
AQS Regulations	Air Quality Standards Regulations 2010 Limit or Target Values and UK Air Quality Strategy Objectives[3]
Critical Level	Not habitat specific but cover broad vegetation types
EAL	Environmental Assessment Levels[4]
Env. Target 2040	The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[5]
(L)	Limit Value
(O)	Objective Value
(T)	Target Value

Note: Although assessment levels are available for various species of volatile organic compounds, including 1,3-Butadiene, Environment Agency guidance[4] states that if the individual composition of substances within the total VOC release is not known, the unknown species should be treated as Benzene in the risk assessment, as is the case in this assessment.

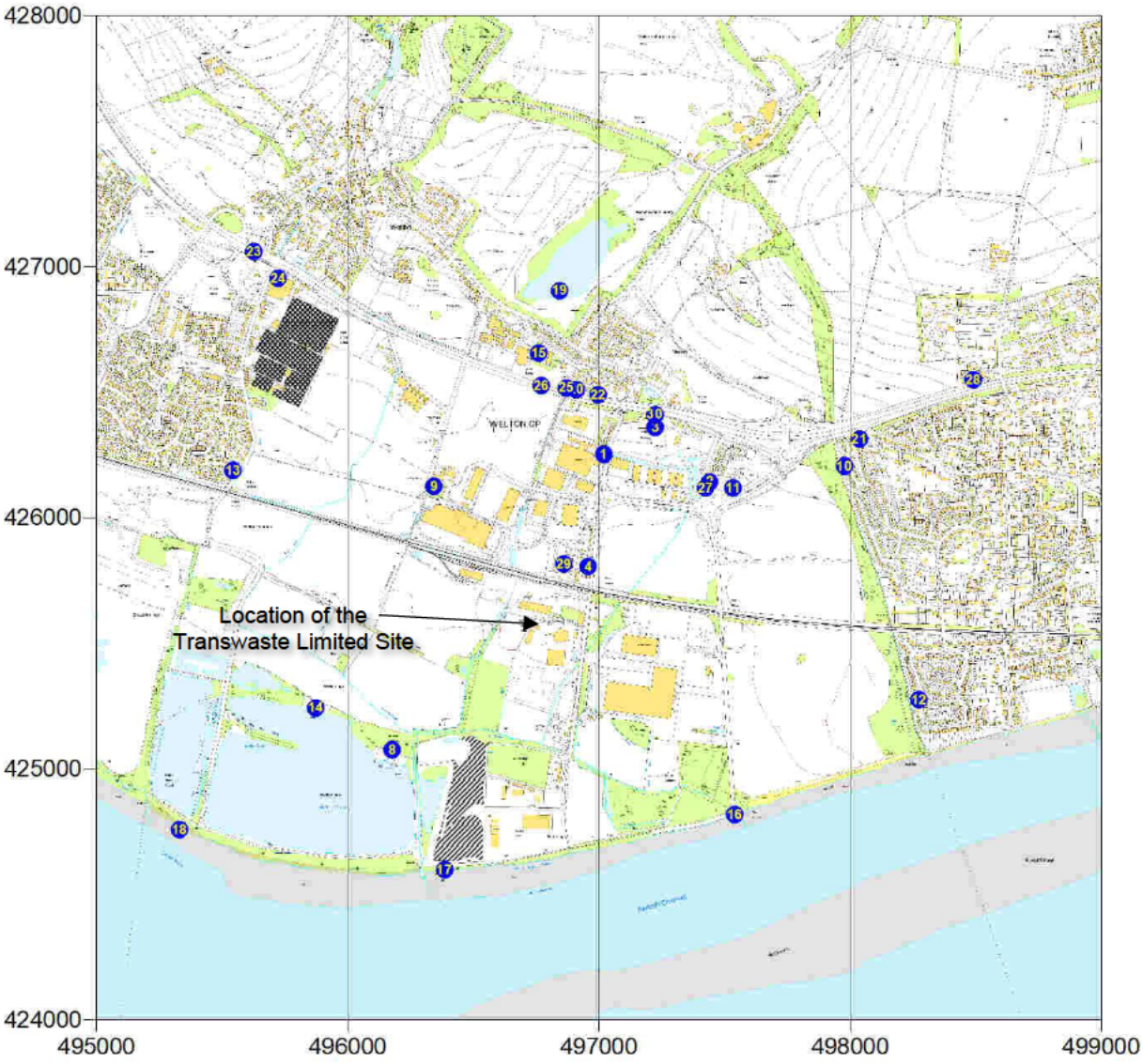
2. Modelling Input Data

A summary of the input data used within the model is provided in this Section.

2.1 Site Location and Local Setting

The Transwaste Limited site is located off Gibson Lane, in Melton, East Riding of Yorkshire, at Ordnance Survey Co-ordinates SE 967 254. Land use in the vicinity of the development site is predominantly industrial / commercial, with farmland farther afield. The nearest residential properties are on Gibson Lane, approximately 400 metres to the north of the chimneys of the new SWIPs. Specific receptors included in the model are shown by the blue circles on the plan below and represent locations where members of the general public may be present for significant periods of time, either through residence or occupation. Additional receptors, representing nearby ecological habitats (receptor numbers 16 – 19), and locations in the vicinity where air quality monitoring is undertaken by East Riding of Yorkshire Council (receptor numbers 20 - 30), were also included in the model. Figure 1 shows the local setting of the Transwaste Limited site.

Figure 1 The Local Setting Showing the Location of the Transwaste Site and Modelled Receptors



2.2 Plant Details

The ADMS model requires emission sources to be defined in terms of dimensions, location and physical characteristics of temperature and velocity. This modelling study has been carried out to assess the potential impact on local air quality due to releases of atmospheric pollutants from the chimneys associated with three new SWIPs at the Transwaste Limited site. A cumulative impact assessment was also undertaken to consider the combined impact of emissions from other sources across the site.

2.3 Emissions Data

The operation of the SWIP boilers will be regulated by the Environment Agency in line with the conditions of a Small Waste Incineration Plant (SWIP) requiring compliance with Best Available Techniques (BAT) and the Associated Emission Levels (BAT-AELs) specified in the Industrial Emissions Directive (IED)[6].

Details of the release characteristics for the SWIPs were therefore in-line with the BAT-AELs specified for new plant in the IED. Process data for the energy recovery facility were drawn from earlier modelling assessments prepared for the planning application for the process[7]. The modelled source and emissions data for the three SWIPs and the additional modelled processes, are summarised in Tables 2 and Table 3 respectively.

Table 2 Emission Source Parameters; Discharge Per Flue

Parameter	3 x 0.95 MW_{th} SWIP Boilers	3 x Kalvis 0.95 MW_{th} Biomass Boilers	1.5 MW_{th} Gas Boiler	Ventilation Air Discharge	Energy Recovery Facility
Number of Units	3	3	1	1	1
Stack Height (m)	22	11	6.25	15	55
Stack Diameter (m)	0.3	0.48	0.3	1.2	1.98
Efflux Temperature (° C)	160	182.6	202	Ambient	150
Flue gas Volumetric Flowrate (Nm^3/s)*	0.635	0.415	0.416#	N/A	52
Oxygen Content (% v/v dry)	7	8.43	2.1	Ambient	4.97
Moisture Content (% v/v)	12	15~	Not specified	Ambient	18.11
Flue gas Volumetric Flowrate (Am^3/s)	0.815	0.974	0.937#	17.32	61.14
Efflux Velocity ($m\ s^{-1}$)	11.53	5.4	13.26	15.31	19.86

* Where provided, volumetric flowrate is referenced to standard temperature and pressure, dry and 3 % O_2 for gas firing, 6 % O_2 for biomass fuel, or 11 % O_2 for waste firing respectively.
~ Moisture content assumed by WYG in earlier report[8], and refers to a GLA air quality report of Biomass and CHP Emission standards, March 2013
# Actual and normalised volumetric flowrates provided in the boiler specification.

The discharge points of the three new SWIPs are located at the following grid references:

496831, 425402.5
496842, 425402.25
496854, 425401.8

Table 3 Modelled Emissions Data; Mass Emission Per Flue (g s^{-1})

Substance	3 x 0.95 MW_{th} SWIP Boilers		Energy Recovery Facility	
Concentration / Mass	**mg Nm^{-3}**	**g s^{-1}**	**mg Nm^{-3}**	**g s^{-1}**
Nitrogen Oxides (as NO_2)	200	0.127	120	6.24
Carbon Monoxide (CO)	50	0.03176	50	2.60
Particulates (PM_{10})	10	0.00635	5	0.260
VOCs	10	0.00635	10	0.520
SO_2	50	0.03176	30	1.560
Ammonia	10	0.00635	10	0.520
HCl	10	0.00635	6	0.312
HF	1	0.00064	1	0.052
Cadmium and Thallium	0.05	0.000032	0.02	0.00104
Mercury	0.05	0.000032	0.02	0.00104
Group 3 Metals	0.5	0.00032	0.3	0.01560
Dioxins and Furans	1.00×10^{-07}	6.4×10^{-11}	0.00000004	2.08×10^{-09}
Poly Chlorinated Biphenyls (PCBs)	6.00×10^{-08}	3.8×10^{-11}	0.00000006	3.12×10^{-09}
Polycyclic Aromatic Hydrocarbons (PAH)	0.001	6.4×10^{-07}	0.001	0.000052

Substance	3 x Kalvis 0.95 MW_{th} Biomass Boilers		1.5 MW_{th} Gas Boiler		Ventilation Air Discharge	
Concentration / Mass	**mg Nm^{-3}**	**g s^{-1}**	**mg Nm^{-3}**	**g s^{-1}**	**mg Nm^{-3}**	**g s^{-1}**
Nitrogen Oxides (as NO_2)	600	0.249	100	0.0416		
Carbon Monoxide (CO)	375	0.156				
Particulates (PM_{10})	90	0.037			5	0.0866
VOCs	30	0.012			40	0.6928
Ammonia					3.8	0.066

The pollutant emission rates calculated for these conditions represent a worst-case scenario under normal operating conditions with emissions throughout the year at the maximum levels understood to be included in existing Permits, or which are expected to be included as conditions in new plant Permits.

It is noted that the Energy Recovery Facility is not yet built and there is some expectation that it may be several years before it is commissioned. As such, the proposed discharges to atmosphere have been calculated in line with the BAT-AELs specified for new plant in the BAT-Conclusions document[9], and therefore differ from the mass releases included in earlier, third party, modelling.

2.4 Atmospheric Chemistry

Emissions of NO_x will comprise contributions of Nitric Oxide (NO) and Nitrogen Dioxide (NO_2). Air quality assessments are made against the concentration of NO_2, although assessments for the impact on vegetation are made against the concentrations of NO_x as NO_2. As emissions of NO_2 are only ever a proportion of the total emissions of NO_x, an allowance for the quantity of NO_2 in NO_x has to be made. The following procedure recommended by the Environment Agency was used to calculate annual average and hourly average NO_2 ground-level concentrations from the reported annual average NO_x concentrations:

Emissions of Oxides of Nitrogen should be recorded as Nitrogen Dioxide because Nitrogen Oxide converts to Nitrogen Dioxide over time:

- For short-term process contributions (PC) and predicted environmental concentrations (PEC), assume only 50 % of emissions of Oxides of Nitrogen convert to Nitrogen Dioxide in the environment;
- For long-term PCs and PECs, assume all Oxides of Nitrogen convert to Nitrogen Dioxide.

Further guidance[10] from the Air Quality Monitoring and Assessment Unit regarding the preparation of dispersion models for Environmental Permitting specifically, goes on to clarify that:

For combustion processes where no more than 10 % of Nitrogen Oxides are emitted as Nitrogen Dioxide, you can assume worst case conversion ratios to Nitrogen Dioxide of:

- 35 % for short-term average concentrations
- 70 % for long-term average concentrations

This assessment followed a step-wise approach to the modelling of Nitrogen Dioxide.
Despite the recognition that only a portion of the discharge comprises NO_2, this method may still overestimate concentrations of NO_2 in close proximity to the site as the conversion of NO_x to NO_2 is unlikely to be instantaneous, requiring the mixing of the plume with ambient air and its associated oxidant species such as Ozone (O_3) etc.

In addition to the influence of atmospheric chemistry on some pollutants, it is possible to run the model such that the effects of deposition on the modelled concentrations are discounted from the vapour phase process contributions. In running a model with 'no plume depletion', levels of deposited pollutants can be calculated at the same time as the vapour phase contributions, with the latter being identical to those that would be predicted when deposition is not considered. Without this additional aspect to the modelling files, concentrations in the plume are depleted by the regular deposition of pollutant across the grid, and lower vapour concentrations are therefore predicted. As such, modelling with no plume depletion represents a conservative case, and was applied to the Transwaste Limited site model.

2.5 Meteorological Data

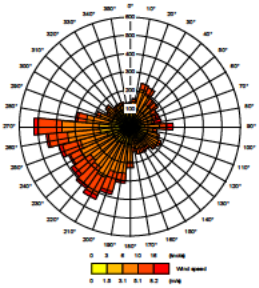
Hourly averaged meteorological data from the Leconfield measurement station, located approximately 17.2 km to the north, north-east of the Transwaste Limited site, was applied to the models. The Leconfield site is non-coastal and has a difference in elevation of 10 – 12 m lower than the modelled location. Five years' of data for 2018 to 2022 were used in the detailed modelling assessment and the wind roses from the data applied are shown in Figure 2.

All meteorological data used in the assessment were provided by Atmospheric Dispersion Modelling (ADM) Limited, which is an accredited distributor of meteorological data within the UK. The data indicate the prevailing wind being from the south-west quadrant, and the application of multiple years' of data enables the effects of inter-annual variations to be taken into account.

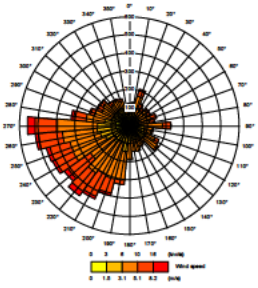
The meteorological data included within the model incorporated the nine parameters defined below:

Parameter	Description
YEAR	Year of observation
TDAY	Julian Day (1 to 366) of observation
THOUR	Hour of Observation
T0C	Temperature (º C)
U	Wind speed (m s^{-1})
PHI	Wind Direction (nearest 10 degrees)
P	Precipitation (mm)
CL	Cloud cover (Oktas)
RHUM	Relative Humidity (%)

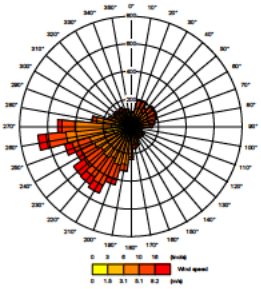
Figure 2 Wind Roses for the Leconfield Airfield Measurement Station



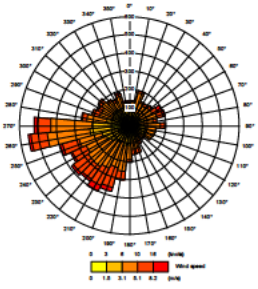
2018 Wind Rose



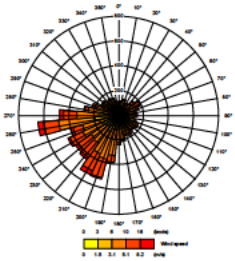
2019 Wind Rose



2020 Wind Rose



2021 Wind Rose



2022 Wind Rose

2.6 Local Environmental Conditions

Local environmental conditions describe the factors that might influence the dispersion process (such as nearby structures, sharply rising terrain, etc.) and also describe the locations at which pollutant concentrations are to be predicted. These include:

Surface Roughness

Surface roughness defines the amount of near-ground turbulence that occurs as a consequence of surface features, such as land use (i.e. agriculture, water bodies, urbanisation, open parkland, woodland, etc.). Agricultural areas may have a surface roughness of approximately 0.2m to 0.3m whereas large cities and woodlands may have a roughness of 1 to 1.5m.

Land use along Gibson Lane in the immediate vicinity of the development is predominantly industrial and commercial, with open, agricultural fields to the west, and a mixture of agricultural areas, villages and small towns in the wider area. The Humber Estuary is to the south of the site, and the presence of mixed land uses and the river estuary in relatively close proximity to the site and within the modelled grid, prompted the use of a spatially variable surface roughness file to accurately detail the surface roughness across the area.

Additionally, a surface roughness of 0.2 m was applied to describe the Leconfield meteorological monitoring location, which is a roughness relevant to areas akin to open agricultural areas such as that surrounding Leconfield.

Nearby Buildings and Structures

The proximity of solid structures, such as buildings, to an emission source can affect the dispersion of a plume emitted from an adjacent stack, particularly in the vicinity of that structure. The effects of this were included into the model based on the data presented in Table 4, and graphically in Figure 3.

The two most southerly discharge points in Figure 4 (marked by red circles) represent the MET boiler emission point and the release point from the pressure swing adsorption column, the latter of which has not been modelled here.

Table 4 Modelled Building Data

Building	Height (m)	Width (m)	Length / Diameter (m)	Orientation (Degrees N)
ERF Building	24	12	44	116
SWIP Building	12.5	63.9	68.5	93
ERF Building 1	24	15	54	26
ERF Building 2	24	12	44	116
SWIP Building 1	12.5	25.7	63.9	3
Transwaste Boiler Building	6.7	31.8	40.11	10
SWIP Building 2	6.7	13	19.5	93
SWIP Building 3	8.3	15	30	93
SWIP Building 4	9.5	64.7	22	93
Gas Dome	15.02	---	20	---
AD Units	11	28	46.91	94
Gas Boiler 1	2.9	2.44	8.29	94
Gas Boiler 2	5.4	2.44	4.2	94
MET Waste Reception	10.45	26	52	94
Dewatering / Press Building	13.5	52.5	10	94
Dryer Building	9.05	20	38	94
Ammonia Scrubber Unit	9.2	---	4	---
Sulphuric Acid Tank	6.5	---	3.4	---

Figure 3 Site Layout as Modelled

Ordnance Survey on behalf of the Controller of His Majesty's Stationary Office, © Crown Copyright 100055158 (2024) Environmental Visage Limited

Sensitivity of Building Inputs

Although considered wholly appropriate to include the site buildings such that any down-wash effects would be appropriately modelled, a sensitivity analysis was prepared during earlier modelling for the MET installation[11], to determine the impact of modelling without the site buildings included. The impact of removing the buildings from the MET model is detailed below, considering the MET process contributions of Nitrogen Dioxide as an example.

NO_x as NO_2	Buildings Included	No Buildings
Maximum Annual Average (NO_2 = 100 % NO_x)	3.20	2.64
Maximum Hourly Average (NO_2 = 50 % NO_x)	20.92	10.01

As would be expected, removing the detail of the buildings from the assessment, thereby naturally removing the potential for any negative effects of building down-wash, is beneficial to the dispersion of the plume and thereby results in lower process contributions. However, the Melton Waste Park does include some relatively significant structures and in order to present the most comprehensive and conservative case the model should include these. Data on the site buildings were therefore included in each of the detailed modelling runs.

Wind Turbines

Two, Enercon E82 (2.3 MW_e) wind turbines, both with a hub height of 78 m and a rotor diameter of 82 m, giving a total turbine height of 119 m, are located at the Transwaste Limited site, at grid references 496859, 425371 and 496569, 425237, located approximately 30 metres to the south, and 355 m to the south-west of the SWIP emission points.

The disturbance of air flow caused by a wind turbine can significantly impact the dispersion of emissions from process plant and as such, the ADMS model has the capability to model the effects of wind turbines on dispersion. The model calculates changes in the flow field due to the rotation of a wind turbine, and then calculates how this modified flow field affects dispersion of emissions from nearby sources. An "Additional Input" *"AAI"* wind turbine data file was therefore created for inclusion within the model, specifying the location of each of the turbines and the wind velocity / thrust coefficient data of the turbines.

Due to the location of the turbines in the vicinity of the Transwaste Limited operations, wind turbine data was included as a standard feature in each of the model runs and scenarios, as the presence of the turbines could be expected to generally impact on the process discharges.

Local Terrain

Local terrain can affect wind flow patterns and, consequently, can affect the dispersion of atmospheric pollutants. The effects of terrain are not normally noticeable where the gradient is less than 10 % (otherwise described as a 1:10 slope). Ordnance Survey mapping for the area generally shows the absence of significant terrain in the immediate vicinity of the Facility although the land does rise from approximately 1.5 km north of the site, on the northern side of the A63.

As such, an initial sensitivity check was run during previous modelling of the MET dry AD facility to confirm the effects of incorporating terrain data into the modelling exercise.

Sensitivity of Local Terrain

Although considered wholly appropriate to include detailed information on the local terrain in order that the effects of the raised bank would be incorporated into the model, a sensitivity analysis was prepared during earlier modelling of the MET installation, to determine the impact of modelling without terrain effects included. The impact of modelling without any information on the local terrain is detailed below, using the resultant process contributions of NO_x as NO_2, as an example.

NO_x as NO_2	**Terrain Included**	**No Terrain**
Maximum Annual Average (NO_2 = 100 % NO_x)	3.20	2.61
99.79th % Hourly Average (NO_2 = 50 % NO_x)	20.92	16.62

A slight difference was reported when modelling with and without the terrain data, with the inclusion of terrain influencing the modelling results and resulting in slightly higher process contributions. Hence, a spatially variable terrain file was included within the assessment in order to ensure the most accurate representation of local conditions. Similar differences were reported for all other modelled pollutants and averaging periods.

Coastal Effects

The effect of a coastline on the dispersion of emissions will generally only be significant for discharges from elevated point sources that are within a few kilometres (up to a maximum of 5 km) of the coast. ADMS 6 has the ability to model the effects of a coastline, although additional data such as terrain and surface roughness files, and information on local buildings and other infrastructure such as wind turbines cannot be modelled at the same time.

Although located less than 600 m from the banks of the Humber Estuary, the Transwaste Limited site is over 30 km from the coastline at its nearest point, and approximately 45 km from the mouth of the Humber. As such, it was not appropriate to model coastal effects.

Output Grid

When setting up a receptor grid it is important to ensure that there are sufficient receptor points to be able to accurately predict the magnitude and location of the maximum process contribution. If the grid of receptor points is too widely spaced, the maximum concentration may be missed. Modelling of the Facility was undertaken using a 4 km x 4 km grid with 20-metre grid spacing.

Fifteen specific receptors, representing nearby residential properties or locations where people may congregate for significant periods of time, were entered into the model, in addition to data on four nearby sensitive ecological receptors and eleven nearby locations where East Riding of Yorkshire Council undertakes NO_2 air quality monitoring, as shown in the following table.

Receptors 16 – 18, identified as E1 to E3, represent nearby locations within the Humber Estuary, a National Site Network ecological habitat, which is situated within 10 km of the Transwaste Limited site. The Humber Estuary is classified as a Ramsar Site, Special Protection Area (SPA), Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI). Receptor 19 (E4) is the nearest point within the Melton Bottom Chalk Pit SSSI, less than 2 km from the Transwaste Limited site, but which is designated for its geological significance, and so was excluded from the detailed ecological assessment. Discrete receptors Auto 1 and 2, and those with the "S" prefix represent locations where East Riding of Yorkshire Council undertakes air quality monitoring.

Details of the sensitive receptor locations are presented in the following table.

Table 5 Specific Receptors Included in Detailed Modelling

Receptor	X	Y	Distance (m)	Receptor Name
1	497020	426254	872	52, Gibson Lane South, Welton, Melton
2	497441	426144	974	21, Brickyard Lane, Welton, Melton
3	497224	426360	1,040	A63, Welton, Melton
4	496958	425806	426	100, Gibson Lane South, Welton, Melton
5	497541	424818	948	Brickyard Lane, Welton, Melton
6	496385	424598	912	Welton Water Sailing Club, Common Lane, Welton
7	495330	424758	1,608	Welton, Melton
8	496177	425075	707	Welton Water Sailing Club, Common Lane, Welton
9	496344	426126	849	Heron Foods, Lowfield Lane, Welton, Melton
10	497976	426205	1,420	79, Plantation Drive, North Ferriby
11	497534	426120	1,021	The Sandpiper, Grange Close, Welton, Melton
12	498274	425275	1,480	75, Southfield Drive, North Ferriby
13	495543	426190	1,479	Kingscroft Drive, Welton
14	495873	425243	942	Welton Water Adventure Centre, Common Lane, Welton
15	496759	426657	1,248	South Hunsley School, East Dale Road, Welton, Melton
16 (E1)	497541	424818	948	Humber Estuary SPA, SAC, Ramsar, SSSI
17 (E2)	496385	424598	912	Humber Estuary SPA, SAC, Ramsar, SSSI
18 (E3)	495330	424758	1,608	Humber Estuary SPA, SAC, Ramsar, SSSI
19 (E4)	496844	426905	1,496	Melton Bottom Chalk Pit SSSI
20 (Auto 1)	496909	426511	1,106	21 Reynolds Close, Melton
21 (Auto 2)	498036	426313	1,531	Melton Road, North Ferriby
22 (S28)	496997	426490	1,098	A63/Gibson Lane North, Welton
23 (S35)	495626	427060	2,025	A63 East (The Old Foundry), Welton
24 (S45)	495723	426954	1,883	A63 West (Pool Bank Farm), Welton
25 (S55)	496871	426518	1,110	Reynolds Close (No.17), Melton
26 (A56)	496771	426527	1,117	A63 East (Shell Grand Dale)
27 (S63)	497423	426118	943	23 Brickyard Lane, Melton
28 (S67)	498492	426550	2,040	Woodgates Lane (No.35), North Ferriby
29 (S71)	496860	425815	409	100 Gibson Lane, Melton
30 (S72)	497222	426411	1,086	A63 West (Melton Grange), Melton

Background Air Quality

Estimates of background concentrations for NO_2, PM_{10}, $PM_{2.5}$, CO, Benzene and 1,3-Butadiene are provided on DEFRA's 2018 Background Mapping Data website[12] at a resolution of 1 km x 1 km grid spacing. The development site is located within an area under the jurisdiction of East Riding of Yorkshire Council, and data were obtained for the locality around the Transwaste Limited site for 2024, which is the anticipated year of Permitting and operation of the SWIPs, with the data being extrapolated from the 2018 base data. The data show that estimates for background concentrations of the above pollutants, without any process contribution from the new boilers, but taking into account existing plant which have been in operation for more than 12 months, are well within their respective Air Quality Standards.

Data for the grid square immediately adjacent to the Transwaste Limited site (grid reference 496500,425500) were used to provide the basis for assessment for the general area around the site, relative to existing background concentrations. The air quality assessment for the SWIP boilers was based upon the estimated background concentrations for 2024 as follows.

Table 6 Background Air Quality Data in the Vicinity of the Development Site (2024)

Pollutant	Annual Average Concentration (µg m^{-3})
Nitrogen Dioxide	7.70
Particulate Matter (as PM_{10})	13.79
Particulate Matter (as $PM_{2.5}$)	7.64
Carbon Monoxide*	0.138
Benzene*	0.183
Estimated concentrations at grid reference 496500, 425500	

* CO and Benzene are adjusted to 2024 data from the 2001 DEFRA background map estimates.

The DEFRA Background Maps 2018 website indicates that ambient pollutant concentrations in the vicinity of the Transwaste Limited site are typical of what might be expected in a rural location.

East Riding of Yorkshire Council also undertakes air quality monitoring across the area in connection with its Local Air Quality Management obligations. Annual data from nearby monitoring stations and NO_2 diffusion tube monitoring locations for 2019 to 2022 (where available) showed the following trends in annual average NO_2 concentrations[13].

Table 7 Annual Average NO_2 Concentrations at Nearby Automatic and Diffusion Tube Monitoring Locations (µg m^{-3})

Receptor	2019	2020	2021	2022
20 (Auto 1)			18.3	16.3
21 (Auto 2)				12.6
22 (S28)	41	31.5	33.1	32.9
23 (S35)	40	30	33.4	32.4
24 (S45)	29	21.8	25.3	23.7
25 (S55)	21	16.7	18.3	16.8
26 (A56)	35	24.4	30.7	27.3
27 (S63)			15.7	16.3
28 (S67)	29	21.8	23.2	22.3
29 (S71)	17	19.2	22.8	20.6
30 (S72)	31	25.1	27	23.9

Although measured background levels are seen to be elevated and representative of the urban environment that they are located in, levels are generally reducing over time at the majority of the monitoring locations detailed. Located within the modelled grid, the monitoring locations were included as specific receptors in the model and, in order to discount any impact of Covid lockdown periods, the measured 2019 data was applied where available. Data from 2022 was applied for locations where monitoring was not being undertaken in 2019.

Other pollutants are monitored at fewer locations around the country and hence, the nearest and most appropriate monitoring location may be some distance from the modelling site. Several pollutant species are measured relatively locally at Scunthorpe, while background levels for Ammonia and HCl were obtained from the national monitoring network site at Caenby, which is located approximately 36 km to the south of the Melton Waste Park. Mercury is currently only measured at one site in England and therefore, although the Chilbolton Observatory is located approximately 300 km south of the Transwaste site, in Hampshire, background data has been applied from these measurements. Toxic organic micro-pollutants are also measured at only a few locations across the country, and it is therefore appropriate to apply a calculated background level that represents the average rural background (or urban as appropriate) when assessing these pollutants.

Table 8 Additional Background Air Quality Data Applied in Assessment

Pollutant	Network	Site Location and Type	Date	Concentration	Units
Ammonia	UKEAP: National Ammonia	Caenby; Rural Background	2022	1.39	µg m^{-3}
Arsenic	Heavy Metals	Scunthorpe Low Santon; Urban Ind.	2022	0.0009	µg m^{-3}
Cadmium	Heavy Metals	Scunthorpe Low Santon; Urban Ind.	2022	0.64	ng m^{-3}
Chromium (total)	Heavy Metals	Scunthorpe Low Santon; Urban Ind.	2022	0.0046	µg m^{-3}
$Chromium^{(VI)}$	Assumed to constitute 20 % of total Chromium			0.00092	µg m^{-3}
Cobalt	Heavy Metals	Scunthorpe Low Santon; Urban Ind.	2022	0.00026	µg m^{-3}
Copper	Heavy Metals	Scunthorpe Low Santon; Urban Ind.	2022	0.011	µg m^{-3}
Dioxins and Furans	Toxic Organic Micro-Pollutants	Average Rural Background	2016	7.88	fg m^{-3}
Hydrogen Chloride	Acid Gas Network	Caenby; Rural Background	2015	0.17	µg m^{-3}
Lead	Heavy Metals	Scunthorpe Low Santon; Urban Ind.	2019	0.023	µg m^{-3}
Manganese	Heavy Metals	Scunthorpe Low Santon; Urban Ind.	2021	0.1	µg m^{-3}
Mercury	UKEAP Automatic Mercury	Chilbolton Observatory; Rural Background	2022	0.0015	µg m^{-3}
Nickel	Heavy Metals	Scunthorpe Low Santon; Urban Ind.	2019	0.0014	µg m^{-3}
Polychlorinated Biphenyls (PCB)	Toxic Organic Micro-Pollutants	Average Rural Background	2018	14.10	pg m^{-3}
Polycyclic Aromatic Hydrocarbons (PAH)	PAH Network	Scunthorpe Low Santon; Urban Ind.	2022	0.51	ng m^{-3}
Sulphur Dioxide	Background Maps 2001	496500,425500	2001	5.58	µg m^{-3}
Vanadium	Heavy Metals	Scunthorpe Low Santon; Urban Ind.	2021	0.013	µg m^{-3}

2.7 Model Default Values Applied

The following values were retained as the default inputs defined by the model, in the absence of any site-specific data for the site location or the meteorological measurement station:

Surface Albedo; 0.23 representing an area of non-snow covered land.

Priestley-Taylor Parameter; 1 representing moist grassland.

Minimum Monin-Obukhov Length; 1 m.

3. Detailed Modelling – Air Quality Assessment

3.1 Modelled Parameters

Detailed atmospheric dispersion modelling of emissions from the three new SWIP boilers at Transwaste Limited was undertaken on the basis of the data in Tables 2 and 3. The process contributions resulting from pollutant emissions were assessed in line with the Air Quality Standards Regulations and their objective limits, or against specific pollutant EALs detailed in Environment Agency guidance.

The results from detailed modelling of the normal operational case are presented in the following sections. Results are presented in terms of the maximum process contribution (PC) at the point of maximum impact, when considering five-years' worth of meteorological conditions, as well as the predicted environmental concentration (PEC) taking into account the PC and the estimated background concentration for the area.

3.2 Determining Significance

The UK Government, via the Environment Agency, provides guidance for screening the significance of air quality impacts associated with the operation of industrial processes[4].

For long-term impacts, the guidance recommends a 1 % insignificance threshold relative to a long-term AQS or EAL of the substance being studied, with a corresponding 10 % insignificance threshold for the assessment of short-term impacts.

If both of these criteria are met, there is no requirement to do any further assessment of the substance and its impact is screened as insignificant.

If the initial criteria are not met, a second stage screening assessment is undertaken to determine the impact of the predicted environmental concentration (PEC). The PEC is the sum of the process contribution (PC) plus the appropriate background concentration. The second stage screening assessment states that if:

- the short-term PC is less than 20 % of the short-term environmental standard minus twice the long-term background concentration; and
- the long-term PEC is less than 70 % of the long-term environmental standard,

there is no requirement to do any further assessment of the substance and its impact is screened as not significant.

In each of the results tables, figures in bold represent results which cannot immediately be screened as either insignificant or not significant.

3.3 Nitrogen Dioxide (NO_2)

The results of the NO_2 modelling are presented in Table 9. The data presented are for both the maximum process contribution (PC) and the predicted environmental concentration (PEC) for NO_2 and are based upon the maximum values for the 2018 to 2022 meteorological data. The PEC values in Table 9 take into account the estimated background NO_2 concentration for 2024 of 7.7 µg m^{-3}, and conversion of the NO_x released from the processes at the site is based upon empirical formulae recommended by the Environment Agency; 50 % conversion for short-term assessment and 100 % conversion for long-term assessment. Results are presented for both the new boilers in isolation, and in-combination with other existing and planned operations on and around the site.

The model predicts that the maximum reported values (annual average process contributions) occur within the Transwaste Limited site boundary and reduce steadily with distance from the site.

Table 9 Results from Detailed Assessment for Nitrogen Dioxide

Statistic	Exceedance Threshold (µg m^{-3})	Concentration (µg m^{-3})	Percentage of the AQS
SWIP Boilers Only			
Annual (PC)	40	4.03	**10 %**
Annual (PEC)		11.73	29 %
Hourly Average 99.79% (PC)	200	31.07	**15.5 %**
Hourly Average 99.79% (PEC)		46.47	23.23 %
Hourly Average 99.79% (PC)	AQS – (2 * Background) 184.6	31.07	16.83 %
Cumulative Impact			
Annual (PC)	40	21.1	**53 %**
Annual (PEC)		28.79	**72 %**
Hourly Average 99.79% (PC)	200	120.1	**60 %**
Hourly Average 99.79% (PEC)		135.49	67.75 %
Hourly Average 99.79% (PC)	AQS – (2 * Background) 184.6	120.1	**65.06 %**

Data in Table 9 assumes that long-term contributions of NO_2 equate to 100 % NO_x, whilst short-term contributions equate to 50 % of the NO_x level.

The results from modelling predict that when the three new SWIP boilers are operational, the maximum annual average NO_2 PEC, taking account of the process contribution and the background NO_2 concentration for the locality, would be approximately 11.73 µg m^{-3}, or about 29 % of the 40 µg m^{-3} annual objective value, and can therefore be screened as not significant at the secondary assessment stage, despite the process contribution equating to approximately 10 % of the AQS.

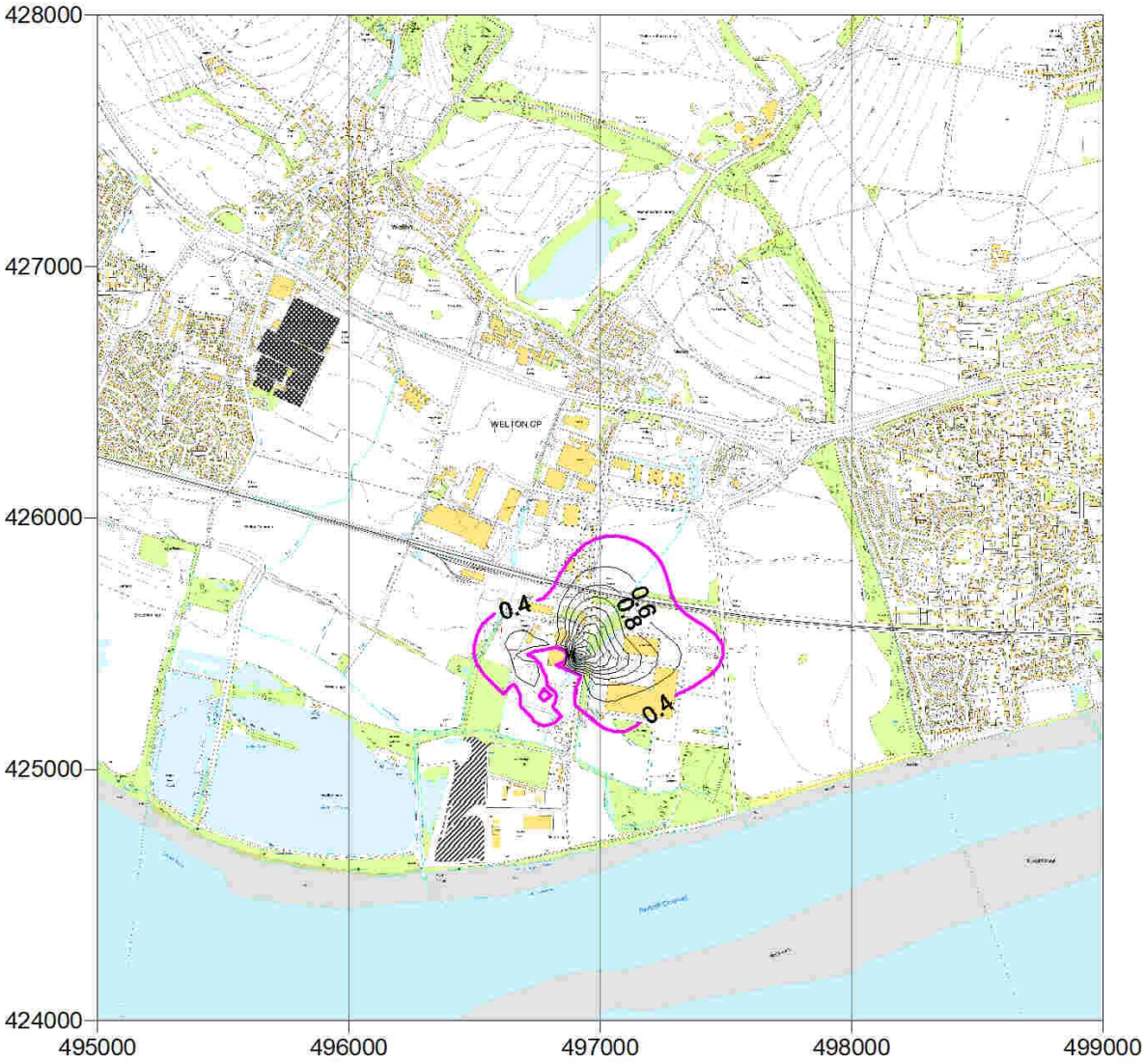
The cumulative annual average PC of all of the combustion and incineration activities which could be undertaken at the site equate to more than 50 % of the AQS however, and therefore cannot immediately be screened as insignificant. Nor can the contributions be screened as not significant when assuming that NO_2 equates to 100 % of the NO_x release. Reducing the NO_2 PC to 70 % of the total NO_x however, the PEC of 22.47 µg m^{-3} equates to 56 % of the AQS and therefore, remaining within 70 % of the assessment level, is deemed to be not significant.

Detailed consideration of the modelled results confirms that, even when assuming that the cumulative process contribution of NO_2 reflects 100 % of the NO_x release, only one gridded point (grid reference 496700, 425360) cannot readily be considered to not be significant, with all other PECs remaining within 70 % of the air quality standard. As the maximum predicted concentrations occur within the site boundary, whether the new SWIP boilers or the cumulative impacts are under consideration, these maximum contributions do not occur at a sensitive receptor, where concentrations are seen to be significantly lower (see Section 4).

Table 9 above does not include any assessment of the maximum process contribution of NO_x against the Environmental Assessment Level specified for the protection of ecosystems. This is appropriate as the maximum predicted concentrations occur within the site boundary rather than at any sensitive ecological receptor, where concentrations are seen to be significantly lower. However, a full assessment of the impact on sensitive ecological receptors can be found in Section 6.

The annual average process contribution for NO_2, associated with the operation of the SWIP boilers is presented graphically in the following figure.

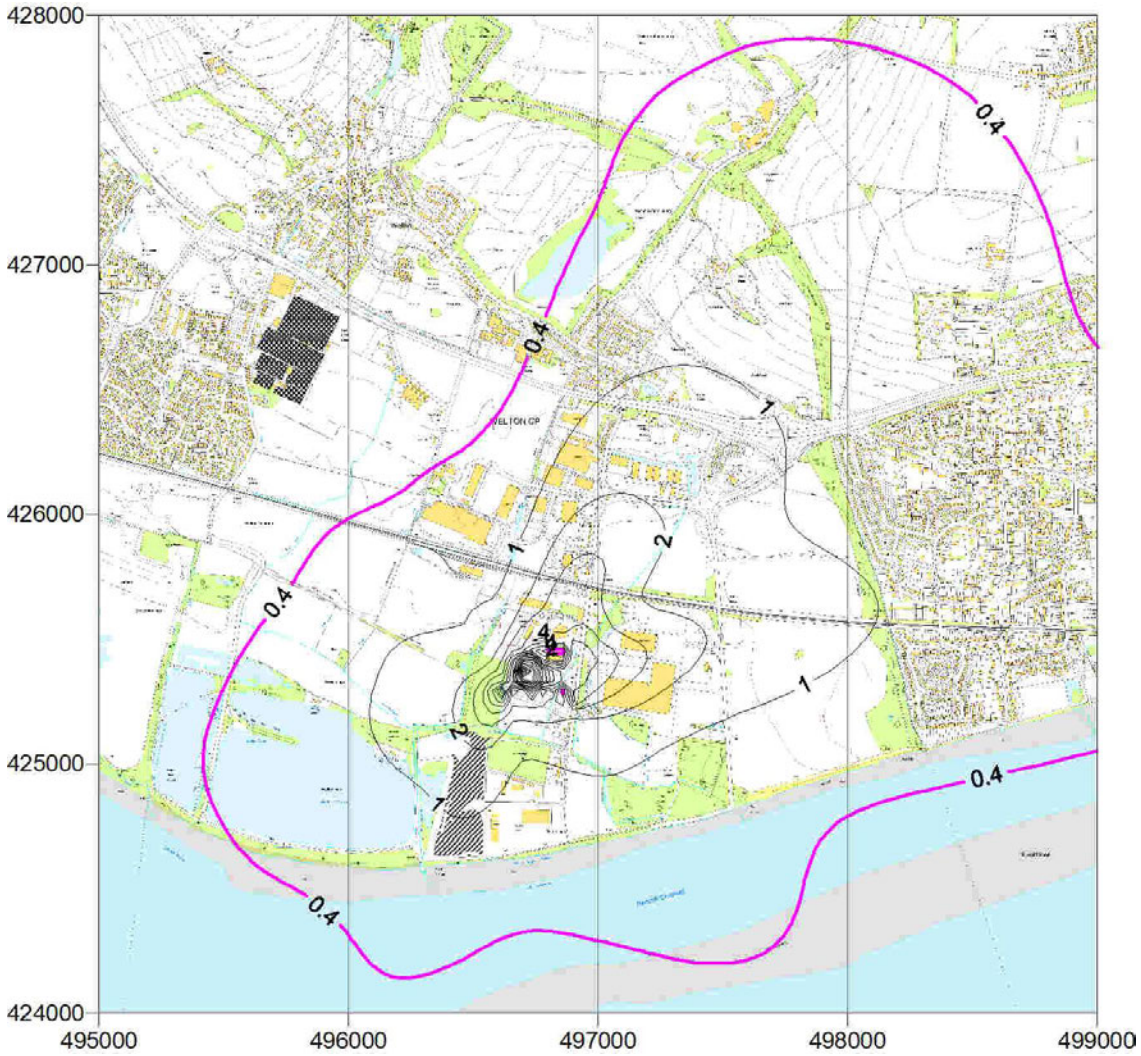
Figure 4 Maximum Annual Average Process Contribution for NO_2 (as 100 % NO_x) from the Three SWIP Boilers; 2019 Meteorological Data



The 0.4 µg m^{-3} contour line, highlighted in magenta, represents an increase equivalent to 1 % of the annual AQS objective value (40 µg m^{-3}) above the background. Therefore, in all areas outside this contour, the process contribution may be regarded as insignificant in relation to Environment Agency guidance. The area which cannot be screened as insignificant mainly includes commercial and industrial premises in the vicinity of the site. Annual average NO_2 process contributions at nearby residential properties are predicted to be less than 1 % of the AQS objective value and are therefore insignificant. The one exception to this is the nearest residential properties on Gibson Lane (Receptor 4) where the annual average NO_2 process contribution is predicted to equate to 1.6 % of the AQS objective value for the SWIPs in isolation, increasing to 8.4 % of the AQS when considered in combination with other processes. However, even when considering the cumulative impact at this most local receptor, the annual average PEC equates to 25 % of the AQS and can be screened as not significant (see Section 4 for details).

Figure 5 below presents the annual average impact of the cumulative operations, assuming that all of the plant located at the site are operating continually throughout the year, which is likely to be an overestimate of the actual operating conditions, and assuming that NO_x emissions convert fully to NO_2. It is noted that the 0.4 µg m^{-3} contour line, again highlighted in magenta, extends much further and covers many more residential properties than the operation of the three new boilers in isolation. That said, and as noted in the discussion above, the PEC screens as not significant at the secondary assessment stage, with the exception of a single modelled location within the site boundary.

Figure 5 Maximum Annual Average Process Contribution for NO_2 (as 100 % NO_x) with all Plant Operating Concurrently; 2020 Meteorological Data



Ordnance Survey on behalf of the Controller of His Majesty's Stationery Office, © Crown Copyright 100055158 Environmental Visage Limited (2024)

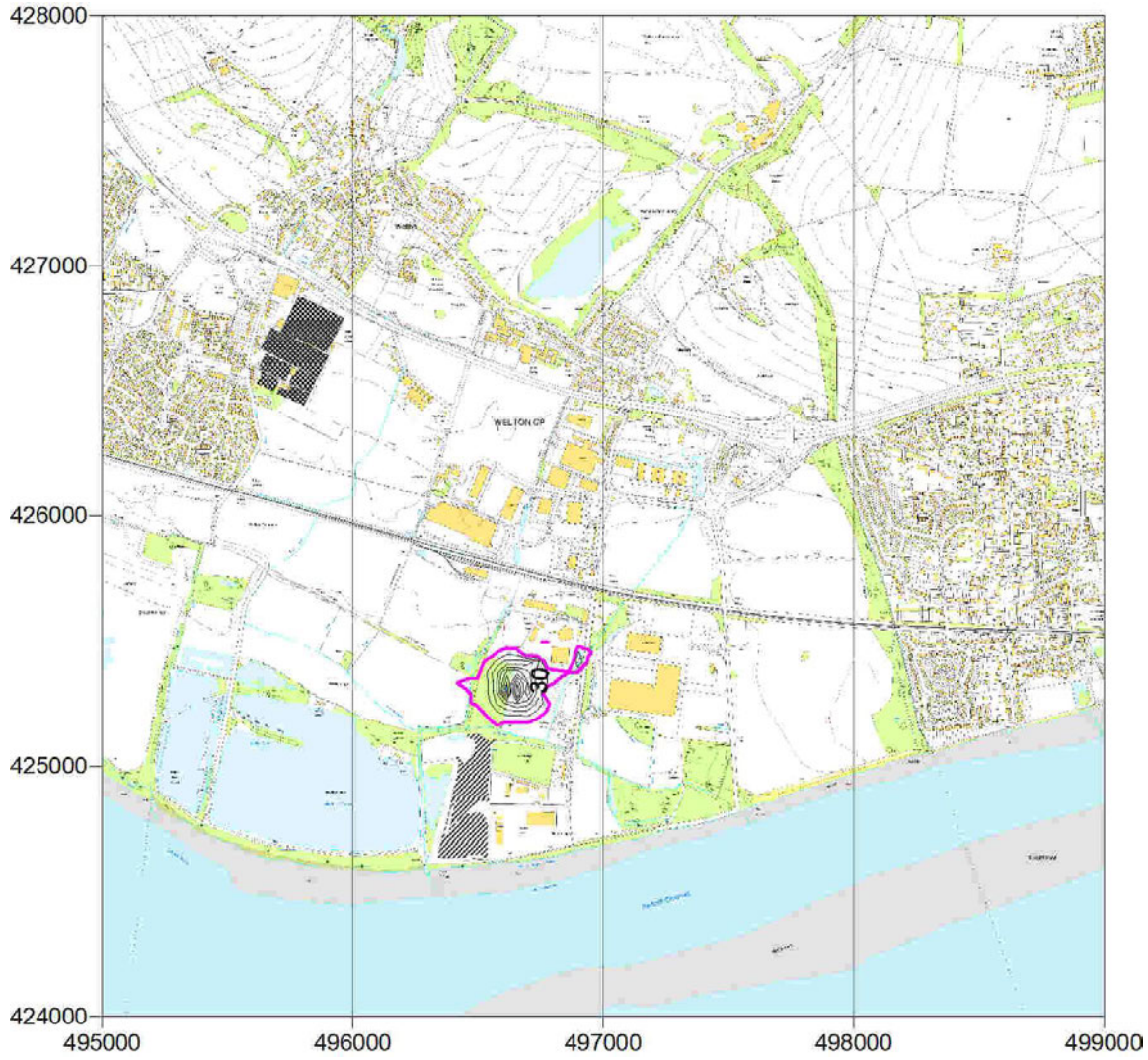
The maximum hourly average NO_2 PC associated with emissions from the three new boilers was predicted to be approximately 31.07 µg m^{-3}, expressed as the 99.79th percentile value and, as this equates to approximately 15.5 % of the AQS, the contribution cannot immediately be screened as insignificant. However, with a PC that equates to less than 20 % of the short-term assessment level minus twice the long-term background, the impact of emissions screens at the secondary assessment stage. Cumulative impacts cannot be screened whether assuming that NO_2 equates to 50 % or 35 % of the NO_x emission. However, as shown in Figure 6 over page, the extent of any elevated contribution is small, and the contribution becomes insignificant in the immediate vicinity of the site.

Detailed consideration of the modelling results confirms that, across the entire modelled grid (4 km x 4 km with results reported at 20-metre intervals) only 47 gridded points cannot ultimately be screened as not being significant.

Each of the elevated results that cannot be screened occurs either within the site boundary or immediately south or west of the Melton Waste Park. None of these areas are expected to be regularly frequented by members of the general public, and, with a maximum, cumulative, on-site predicted environmental concentration equating to less than 68 % of the short-term air quality standard, the AQS is unlikely to be exceeded at any point across the modelled grid, despite not necessarily being screened.

Consideration of the impact at the nearby sensitive receptors is presented in Section 4 and provides additional assessment of the overall impact of cumulative NO_2 emissions.

Figure 6 99.79th Percentile Hourly Average Process Contribution for NO_2 (as 35 % NO_x) with all Plant Operating Concurrently; 2022 Meteorological Data



3.4 Particulates (PM_{10})

The results from detailed modelling of Particulates (PM_{10}) are shown in Table 10 and are presented in the context of the process contribution and the resultant predicted environmental concentration, taking into account the annual average background concentration of 13.787 µg m^{-3}. The assessment assumes that all of the particulate emissions are less than 10 µm in size (PM_{10}), which may overestimate the significance of the particulate emission as there will be particles of greater size fractions in the overall emissions.

Table 10 Maximum Process Contribution for Particulates (PM_{10})

Statistic	Exceedance Threshold (µg m^{-3})	Process Contribution (µg m^{-3})	Percentage of the AQS
SWIP Boilers Only			
Annual (PC)	40	0.199	0.5 %
24-Hourly Average 90.41 % (PC)	50	0.58	1.2 %
Cumulative Impact			
Annual PC	40	3.24	**8 %**
Annual PEC		17.03	43 %
24-Hourly Average 90.41 % (PC)	50	9.02	**18 %**
24-Hourly Average 90.41 % (PEC)		36.59	**73.2 %**
24-Hourly Average 90.41 % (PC)	AQS – (2 * Background) 22.426	9.02	**40.2 %**

Detailed modelling predicted that the maximum annual average PC for particulates (PM_{10}) due to emissions from the three new SWIP boilers at the Transwaste Limited site is likely to be approximately 0.2 µg m^{-3}, which is about 0.5 % of the 40 µg m^{-3} AQS objective value, and can therefore be screened as insignificant. When considering the cumulative impact of all of the potential operations across the site, the PC rises to approximately 3.24 µg m^{-3}, equivalent to approximately 8 % of the AQS and is therefore not immediately screened. However, when including the 13.787 µg m^{-3} background in order to consider the overall environmental concentration, the PEC equates to 43 % of the AQS and can therefore be screened as not significant at the secondary assessment stage.

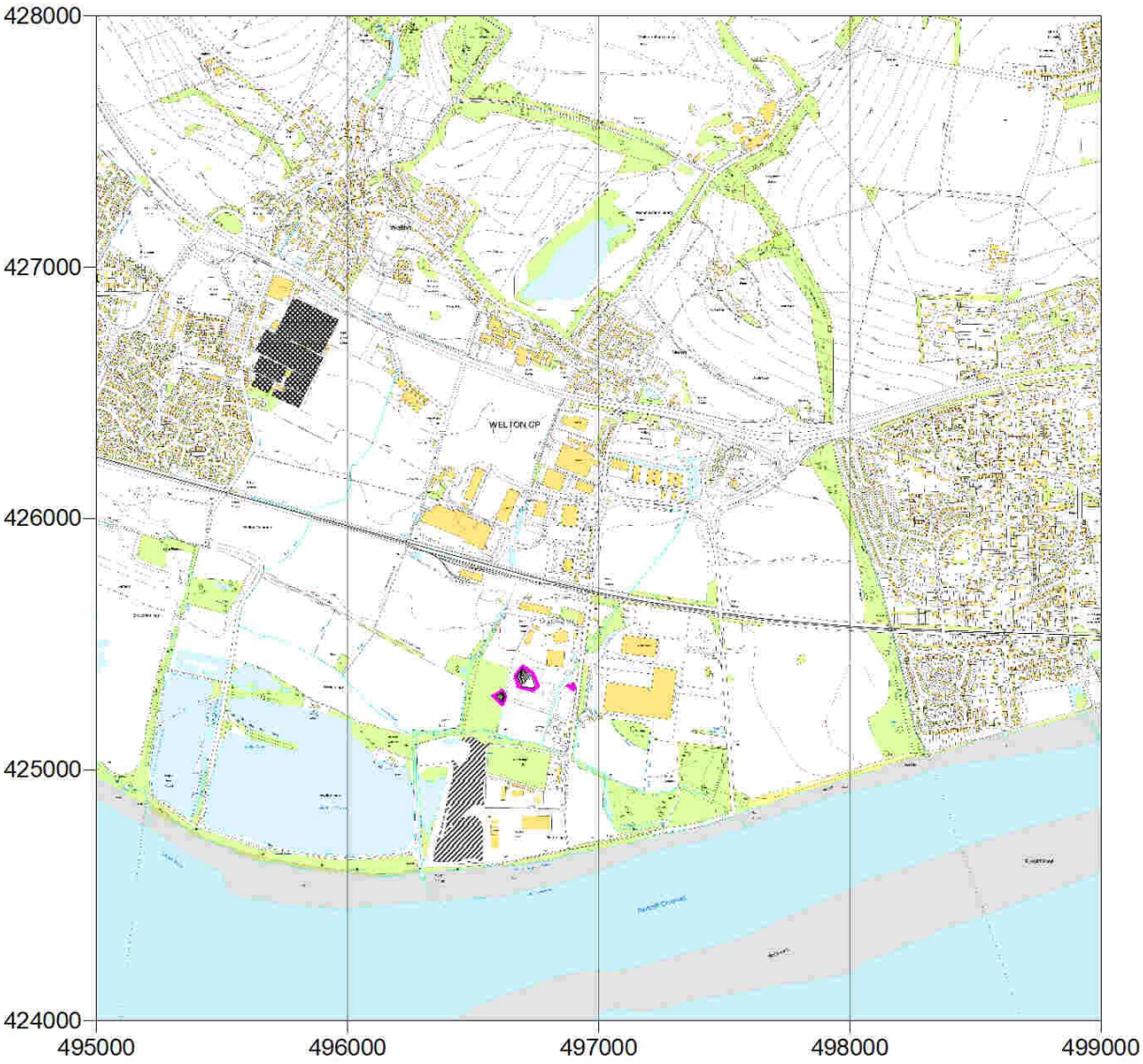
The maximum daily average PC under normal operating conditions of the three new boilers was predicted to be about 0.58 µg m^{-3}, expressed as the 90.41st percentile value, equivalent to approximately 1.2 % of the 50 µg m^{-3} daily average objective value. As such, the contribution of the SWIPs can be immediately screened as insignificant when considered in isolation and no further assessment is required.

When considering the cumulative impact, the PC equates to 18 % of the AQS and cannot be automatically screened as insignificant. Indeed, assessing the PC in relation to the short-term assessment level of the AQS minus twice the long-term background value, the cumulative impact still cannot be screened, as it equates to more than 40 % of the short-term assessment level.

However, further detailed consideration of the gridded results confirms that only 46 of the 40,401 results (0.11 %) would not be described as not significant at the secondary assessment stage, and the cumulative isopleth in Figure 7 over page confirms that these elevated levels would occur within or very close to the site boundary. It is also noted that the assessment assumes that all of the particulate released from each of the processes is sufficiently small to be categorised as PM_{10}, which is likely an over-estimate of the contribution of smaller particulate matter from the total.

The nature of the local area makes it unlikely that any member of the general public might be present in locations around the Melton Waste Park for a 24-hour period and, with a maximum, cumulative, on-site predicted environmental concentration equating to a little over 40 % of the short-term air quality standard, the AQS is unlikely to be exceeded at any point across the modelled grid, despite not necessarily being screened.

Figure 7 90.41st Percentile 24-Hourly Average Process Contribution of Particulate Matter as PM_{10} with all Plant Operating Concurrently 2020 Meteorological Data



3.5 Particulates ($PM_{2.5}$)

The Air Quality Standards Regulations 2010 (as amended) set a target of 20 µg m^{-3} $PM_{2.5}$ to be met by 2020. A new target[5] has recently been issued and ultimately requires a background level of 10 µg m^{-3} $PM_{2.5}$ to be met by 2040. Hence, both assessment levels, current and future are considered here.

Modelling was undertaken assuming that all of the particulate matter released from the Facility was $PM_{2.5}$, and so represents an absolute worst-case scenario. The assessment was based upon a worst-case assumption for emissions of particulates at a continuous discharge value of 5 mg Nm^{-3}.

The results from the detailed modelling of particulates as $PM_{2.5}$ are reported in Table 11 and are presented in the context of the annual average PC and PEC Concentration, taking into account DEFRA's current estimated annual average background concentration for 2024 of 7.64 µg m^{-3}.

Table 11 Modelling Predictions for Particulates ($PM_{2.5}$)

Statistic	Exceedance Threshold (µg m^{-3})	Averaging Period	Process Contribution (µg m^{-3})	Percentage of the AQS
SWIP Boilers Only				
Annual Average (PC)	20 (current)	Annual	0.2016	1 %
Annual Average (PEC)			7.84	39 %
Annual Average (PC)	10 (by 2040)	Annual	0.2016	**2 %**
Annual Average (PEC)			5.7	57 %
Cumulative Impact				
Annual Average (PC)	20 (current)	Annual	3.24	**16 %**
Annual Average (PEC)			10.88	54 %
Annual Average (PC)	10 (by 2040)	Annual	3.24	**32 %**
Annual Average (PEC)			8.74	**87 %**

It is noted that, in addition to the target value for background concentrations, the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[5] also sets a population exposure reduction target, requiring a 35 % reduction in population exposure by 2040, compared to a base year of 2018. The DEFRA estimated background level for the local area in 2018 was 8.46 µg m^{-3}, and therefore, the 2040 background, at which the reduced background target level is effective, is expected to be approximately 5.5 µg m^{-3}.

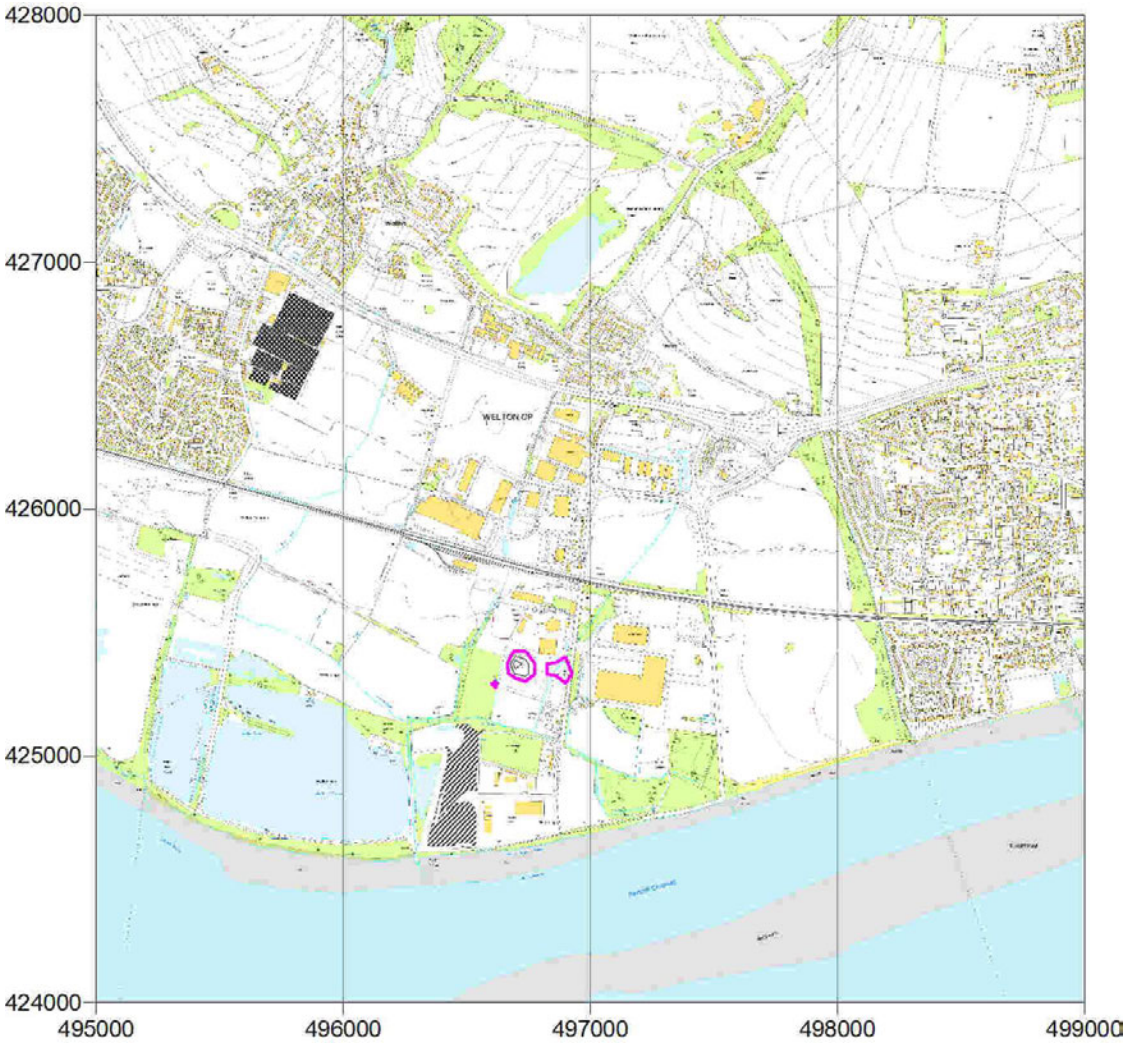
The results from modelling particulates, applying the conservative assumption that the total particulate emission is of $PM_{2.5}$, predicted that the maximum annual average PC associated with emissions from the SWIPs was likely to equate to approximately 1 % of the current 20 µg m^{-3} target value, and 2 % of the future 10 µg m^{-3} target value. Contributions of $PM_{2.5}$ from the process may not therefore, immediately be screened as insignificant in the future, in relation to Environment Agency guidance.

Taking the 2024 background concentration into consideration with the process contribution predicted by modelling, the maximum annual average predicted environmental concentration for $PM_{2.5}$ for the Facility was estimated to be approximately 7.84 µg m^{-3}, or 10.88 µg m^{-3} cumulatively and therefore screen at the secondary assessment stage when considering the current assessment levels. Although the three SWIPs also screen as not significant when modelled alone and assessed against the future assessment level, the cumulative contributions cannot be screened.

The cumulative annual average PEC anticipated in 2040 would be 8.74 µg m^{-3}, or approximately 87 % of the target value, and hence, cannot be described as not significant when assessing against the target (2040) value.

Fifty-four of the 40,401 grided results (0.13 %) cannot be described as not significant at the secondary assessment stage, and the cumulative isopleth in Figure 8 over page confirms that these elevated levels would occur within or close to the site boundary. Figure 8 therefore depicts the area where, when considered with the calculated background for 2040, the PEC cannot be screened. However, as none of the areas within the magenta isopleths would be considered to be sensitive receptor locations for an annual average exposure period and, with a maximum, cumulative, on-site predicted environmental concentration that remains within the future assessment level, despite the conservative nature of the assessment, it is considered unlikely that the target value would be exceeded at any point across the modelled grid, despite not necessarily being screened.

Figure 8 Area of Particulate Matter Contributions as $PM_{2.5}$ that Cannot be Screened with all Plant Operating Concurrently; 2020 Meteorological Data



3.6 Carbon Monoxide (CO)

Table 12 presents the results of modelling Carbon Monoxide emissions from the three new SWIP boilers, both in isolation and in combination with other combustion and incineration plants at the site.

Table 12 Maximum Process Contribution for Carbon Monoxide

Statistic	Exceedance Threshold (mg m^{-3})	Process Contribution (mg m^{-3})	Percentage of the AQS
SWIP Boilers Only			
8-Hour Rolling Average PC (100 %)	10	0.01	0.1 %
Cumulative Impact			
8-Hour Rolling Average PC (100 %)	10	0.13	1.3 %

The results from the detailed modelling of CO emissions from the plant at the Transwaste Limited site indicate that the maximum 8 hour rolling average process contribution of the SWIPs, either alone or cumulatively with other potential emissions from across the Melton Waste Park would remain well within 10 % of the short-term assessment level. Accordingly, impacts of CO emissions on local air quality across the grid and at nearby residential receptors from the Melton Waste Park operations can be screened as insignificant in relation to Environment Agency guidance.

3.7 Sulphur Dioxide (SO_2)

The results from detailed modelling of Sulphur Dioxide associated with emissions from the three new SWIP boilers, both in isolation and in combination with other combustion and incineration plants at the site, are presented in the following table.

Table 13 Maximum Process Contribution of Sulphur Dioxide (SO_2)

Statistic	Exceedance Threshold ($\mu g\ m^{-3}$)	Process Contribution ($\mu g\ m^{-3}$)	Percentage of the AQS
SWIP Boilers Only			
Annual Average (PC)	20	1.009	**5 %**
15-Minute Average 99.9 % (PC)	266	16.89	6.3 %
Hourly Average 99.73 % (PC)	350	15.48	4.4 %
24-Hourly Average 99.18 % (PC)	125	5.91	4.7 %
Cumulative Impact			
Annual Average (PC)	20	1.014	**5.1 %**
15-Minute Average 99.9 % (PC)	266	16.89	6.3 %
Hourly Average 99.73 % (PC)	350	15.48	4.4 %
24-Hourly Average 99.18 % (PC)	125	5.91	4.7 %

Table 13 above includes an assessment of the maximum annual average process contribution of SO_2 against the Environmental Assessment Level specified for the protection of ecosystems. However, these maximum predicted concentrations occur within the site boundary rather than at any sensitive ecological receptor, where concentrations are seen to be significantly lower. An assessment of the impact on sensitive ecological receptors can be found in Section 6.

The results from detailed modelling of emissions of SO_2 from the new SWIPs predicted that each of the short-term process contributions equate to less than 10 % of their respective AQS objective values and can be screened out as insignificant in accordance with Environment Agency guidance.

3.8 Volatile Organic Compounds (VOCs)

The results from detailed modelling of total VOCs are presented in the Table below and results are compared with the AQS objective value for Benzene.

Table 14 Maximum Process Contribution for VOCs as Benzene

Statistic	Exceedance Threshold (µg m^{-3})	Process Contribution (µg m^{-3})	Percentage of the AQS
SWIP Boilers Only			
Annual Average (PC)	5	0.202	**4 %**
Annual Average (PEC)		0.38	8 %
24-Hourly Average (PC)	30	1.46	4.88 %
24-Hourly Average (PEC)		1.83	6.10 %
24-Hourly Average (PC)	EAL – (2 * Background) 29.634	1.46	4.94 %
Cumulative Impact			
Annual Average (PC)	5	11.39	**228 %**
Annual Average (PEC)		11.58	**232 %**
24-Hourly Average (PC)	30	82.63	**275 %**
24-Hourly Average (PEC)		83	**277 %**
24-Hourly Average (PC)	EAL – (2 * Background) 29.634	82.63	**279 %**

There are no assessment levels for total VOC emissions as they comprise a mixture of organic compounds, although Benzene and 1,3 Butadiene, which are both VOC species, do have air quality limit and objective values respectively associated with them. There is no information available about the proportion of Benzene or 1,3-Butadiene that may be present in the VOC emission from the Facility, although, each is likely to be a small percentage of the total. Therefore, and in line with Environment Agency guidance, as the individual composition of substances within the total VOC release is not known, the total VOC release has been treated as Benzene and is compared to the Benzene annual average limit value (5 µg m^{-3}) and the short-term assessment level (30 µg m^{-3}).

The model predicted a maximum annual average process contribution of approximately 0.2 µg m^{-3} for total VOC emissions from the three new SWIP boilers, which represents approximately 4 % of the Benzene AQS limit value.

The estimated local background concentration for Benzene from the DEFRA 2001 Background Maps[7] (extrapolated to 2024) is 0.183 µg m^{-3}, so the resultant predicted environmental concentration will be approximately 0.38 µg m^{-3}, or 8 % of the AQS limit value, and screens as not significant in relation to Environment Agency guidance. The short-term process contribution from the three SWIPs also screens as insignificant, remaining within 10 % of the 24-hour AQS target value.

When considering the cumulative impact from other local combustion and incineration plant located at the site, the PC increases substantially to 11.39 µg m^{-3}, or 228 % of the annual average AQS for Benzene. However, as each VOC species will only be a small percentage of the total, considering species against a single assessment level results in an overly conservative approach. The results in Table 15 therefore assume that Benzene may make up 5 % of the total VOC release and considers the cumulative results against the long and short-term assessment levels.

Table 15 Maximum Cumulative Process Contribution for VOCs as Benzene

Pollutant	Statistic	Exceedance Threshold (µg m^{-3})	Averaging Period	5 % of Total Process Contribution (µg m^{-3})	Percentage of the AQS
Benzene	Annual Average (PC)	5	Annual	0.57	**11.4 %**
	Annual Average (PEC)			0.75	15.1 %
	24-Hourly Average 100% (PC)	30	24-hr	4.1	**13.8 %**
	24-Hourly Average 100% (PEC)			4.5	15 %
	Revised ST Assessment Level	(EAL - 2 * Background) 29.634	24-hr	4.1	13.9 %

When assuming that Benzene actually constitutes 5 % of the total VOC emissions from the processes, the model predicted a maximum annual average cumulative process contribution of approximately 0.57 µg m^{-3}. This equates to approximately 11.4 % of the Benzene assessment level. Although not immediately screened as insignificant, the application of the relevant estimated background concentrations in the area (0.183 µg m^{-3} Benzene) results in the PEC of Benzene remaining within 70 % of the assessment level and, as such they are not considered to be significant.

The short-term PC of Benzene equates to approximately 13.8 % of the 24-hour average assessment level when assuming that Benzene constitutes only 5 % of the total VOC release, but remains within 20 % of the EAL when considering either the PEC or the assessment of the PC against the revised short-term assessment level. Only 9 of the 40,401 gridded results (0.022 %) are not immediately screened as insignificant and these occur within the boundary of the Melton Waste Park, or along the roadway immediately adjacent to the site, neither of which are locations where 24-hour exposure is likely to occur. As such the short-term impacts are also deemed not to be significant.

Plots of the predicted, cumulative long and short-term distribution of VOCs are presented in Figures 9 and 10 that follow and show the point at which the contribution to Benzene levels (magenta isopleth) would become insignificant.

Figure 9 Annual Average Cumulative Process Contribution of VOC (µg m^{-3}); 2020 Meteorological Conditions. Magenta Isopleth Denotes the Point of Insignificance for Benzene

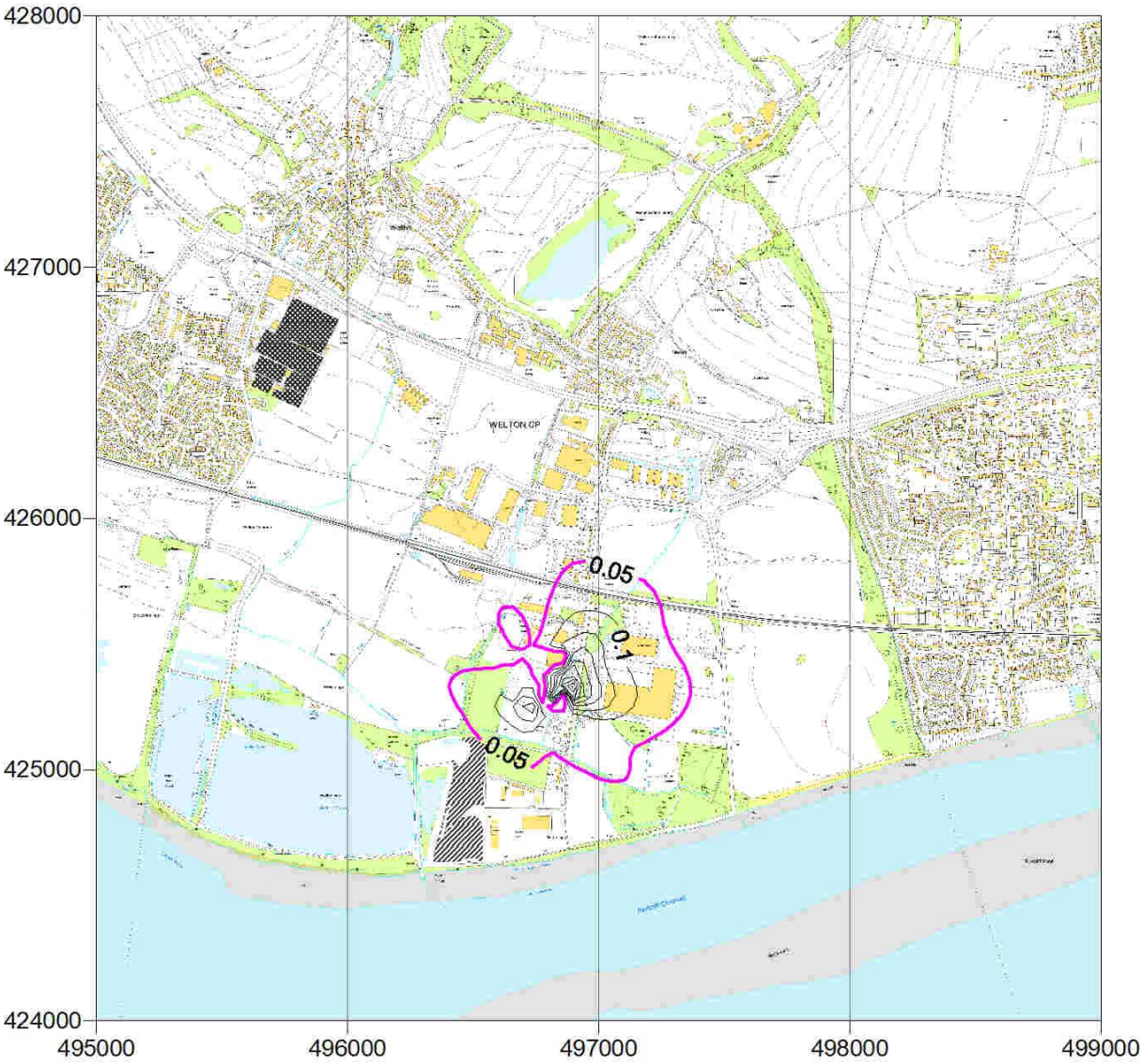
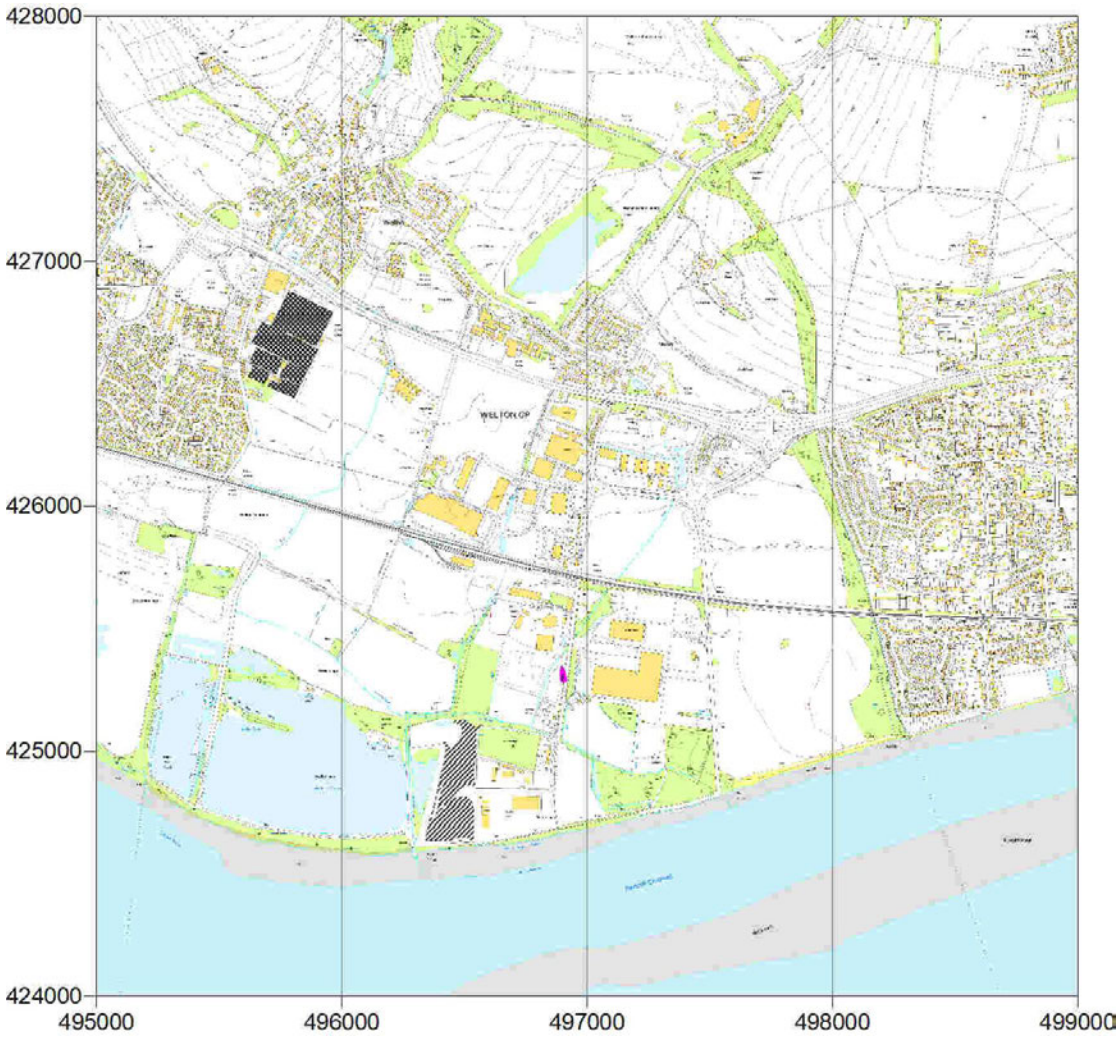


Figure 10 24-Hour Average Cumulative Process Contribution of Benzene (µg m^{-3}); 2021 Meteorological Conditions. Magenta Isopleth Denotes the Point of Insignificance



3.9 Ammonia

The results from detailed modelling of Ammonia are presented in the Table below.

Table 16 Maximum Process Contribution for Ammonia

Statistic	Exceedance Threshold (µg m^{-3})	Process Contribution (µg m^{-3})	Percentage of the EAL
SWIP Boilers Only			
Annual Average (PC)	180	0.202	0.1 %
Hourly Average 100 % (PC)	2,500	5.77	0.2 %
Cumulative Impact			
Annual Average (PC)	180	1.09	0.6 %
Hourly Average 100 % (PC)	2,500	24.69	0.99 %

Different Environmental Assessment Levels exist for Ammonia depending on whether the protection of human health or the environment is the driving factor. The data in Table 16 is assessed against the EALs for the protection of human health and, with process contributions equating to a fraction of 1 % of both the long and short-term EALs, can immediately be screened as insignificant.

Further consideration is given to the impacts of Ammonia on sensitive ecological receptors in Section 6.

3.10 Hydrogen Chloride (HCl)

The results from detailed modelling of HCl are presented in the following Table.

Table 17 Maximum Process Contribution for Hydrogen Chloride

Statistic	Exceedance Threshold (µg m^{-3})	Process Contribution (µg m^{-3})	Percentage of the EAL
SWIP Boilers Only			
Hourly Average 100 % (PC)	750	5.77	0.77 %
Cumulative Impact			
Hourly Average 100 % (PC)	750	5.77	0.77 %

There is no Air Quality Standard for HCl and the assessment level was therefore based upon Environment Agency guidance for short-term (1-hour) assessments. The Environment Agency guidance does not recommend a long-term EAL for HCl, therefore the results relate solely to the hourly average process contribution.

Detailed modelling predicts a maximum hourly average PC for HCl when modelling the three new SWIP boilers in isolation or cumulatively with other processes within the Melton Waste Park, of approximately 5.77 µg m^{-3}. Equating to less than 1 percent of the EAL of 750 µg m^{-3}, the contribution of emissions from the site is insignificant in relation to Environment Agency guidance. Accordingly, emissions of HCl do not require further assessment, although deposition impacts on ecological receptors are considered in Section 6.

3.11 Hydrogen Fluoride (HF)

The results from detailed modelling of Hydrogen Fluoride are presented in the following Table.

Table 18 Maximum Process Contribution for Hydrogen Fluoride

Statistic	Exceedance Threshold (µg m^{-3})	Process Contribution (µg m^{-3})	Percentage of the EAL
SWIP Boilers Only			
Annual Average (PC)	16	0.0203	0.13 %
Hourly Average 100 % (PC)	160	0.58	0.36 %
Cumulative Impact			
Annual Average (PC)	16	0.0205	0.13 %
Hourly Average 100 % (PC)	160	0.62	0.39 %

Detailed modelling predicted that both the annual average (assessed against the monthly average EAL) and the maximum hourly average process contributions for HF associated with emissions from the new boilers would be a fraction of 1 % of the EAL and are therefore screened as insignificant in relation to Environment Agency guidance.

The cumulative impact of emissions from all existing and proposed plant at the site increase slightly but continue to represent small contributions to the EALs and are screened as insignificant. The results indicate that emissions of HF are unlikely to have a significant impact on air quality in the vicinity of the site and the overall impact on local human health and the environment may be described as negligible.

Accordingly, emissions of HF do not require further assessment, although deposition impacts on ecological receptors are considered in Section 6.

3.12 Cadmium and Thallium (Cd and Tl)

The results from detailed modelling of Cadmium and Thallium are presented in the following table and, in the absence of an assessment level for Thallium, are reported on the basis that all of the emissions occur as Cadmium. The background concentration for Cadmium (0.64 ng m^{-3} measured at Scunthorpe Low Santon in 2022) is applied when calculating the PEC.

Table 19 Maximum Process Contribution for Cadmium and Thallium

Statistic	Exceedance Threshold (ng m^{-3})	Process Contribution (ng m^{-3})	Percentage of the AQS
SWIP Boilers Only			
Annual Average (PC)	5	1.017	**20.3 %**
Annual Average (PEC)		1.66	33.1 %
24-Hourly Average (PC)	30	7.37	**24.6 %**
24-Hourly Average (PEC)		8.65	**28.85 %**
24-Hourly Average (PC)	EAL – (2 * Background) 28.72	7.37	**25.67 %**
Cumulative Impact			
Annual Average (PC)	5	1.020	**20.4 %**
Annual Average (PEC)		1.66	33.2 %
24-Hourly Average (PC)	30	7.37	**24.6 %**
24-Hourly Average (PEC)		8.65	**28.85 %**
24-Hourly Average (PC)	EAL – (2 * Background) 28.72	7.37	**25.67 %**

The Air Quality Standards Regulations (England) 2010 specify a target value of 5 ng m^{-3} for Cadmium as an annual average in the PM_{10} fraction of particulate emissions. However, no information is available on the Cadmium content of any PM_{10} emissions that may be emitted from the SWIPs. Therefore, as a worst-case assessment it was assumed that all of the Cadmium and Thallium emissions were associated with the PM_{10} release, and that emissions were totally as Cadmium.

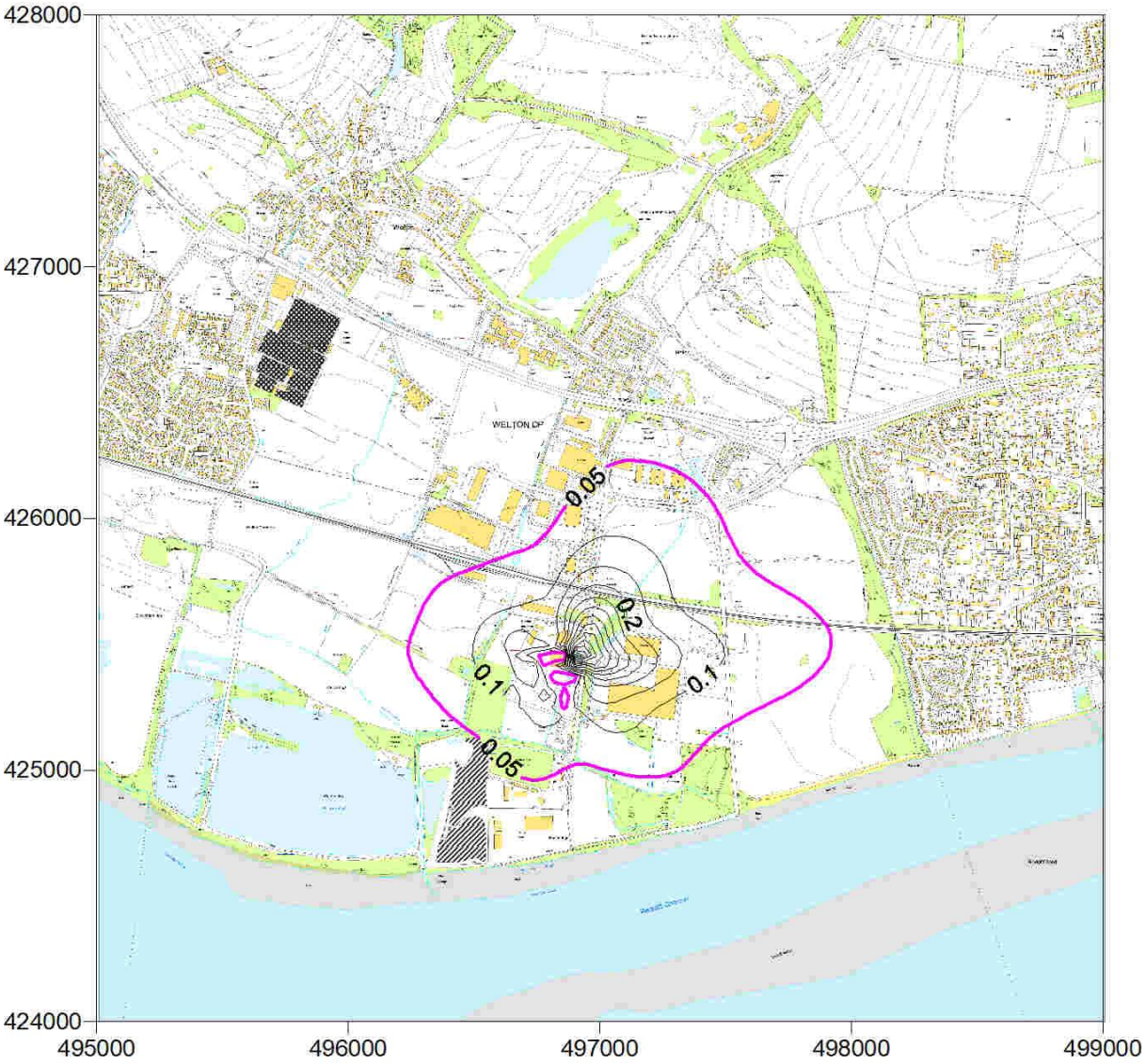
Detailed modelling predicts annual average process contributions for Cadmium of a little over 1 ng m^{-3} (or about 20 % of the AQS objective) whether modelling the three new boilers in isolation or with other local sources. Although not immediately screened as insignificant, data from the Heavy Metals Monitoring Network urban industrial measurement station at Scunthorpe Low Santon[14], show that the annual average Cadmium concentration in 2022 was 0.64 ng m^{-3}. This measurement station is located approximately 13 km to the south of the site and is the nearest monitoring point that could be considered representative of conditions around the Transwaste Limited site.

The resulting maximum predicted environmental concentration value for Cadmium associated with the operations around the Melton Waste Park is therefore approximately 1.7 ng m^{-3}, or about 33 % of the AQS objective value, and in line with Environment Agency guidance does not require further assessment.

It should be noted that the emissions data for Cadmium used in modelling were derived from the IED emission limit value for the combined emissions of both Cadmium and Thallium, and it is assumed that all of the emission was as Cadmium. Therefore, the value used in the assessment overestimates the situation for Cadmium significantly.

Despite this, the isopleth diagram shown in Figure 11 depicts the anticipated pattern of dispersion when the emissions from the three SWIPs are plotted over a map of the local area. The magenta isopleth denotes the 1 % point of insignificance, and therefore, in all areas outside of this contour line, the impact of emissions of Cadmium and Thallium can immediately be screened as insignificant. Within the coloured contour, the overall PEC is screened at the secondary assessment stage.

Figure 11 Maximum Annual Average Process Contribution of Cadmium (ng m^{-3}) from the Three SWIP Boilers; 2019 Meteorological Data



The short-term (24-hour) average process contribution of Cadmium was predicted to equate to approximately 24.6 % of the EAL. Being over 20 % of the short-term assessment level, the contribution would not screen at either the initial or secondary assessment stage. However, the emission limit value for Cadmium from incineration processes actually considers a combined release of Cadmium and Thallium. Therefore, assuming that the Cadmium release equates to 50 % of the total, the contribution from the process (approximately 3.69 ng m^{-3}) equates to approximately 12.3 % of the EAL, or 12.84 % of the short-term EAL minus twice the existing background. As such and with the PC remaining within 20 % of the revised short-term EAL, the overall potential impact of contributions of Cadmium are deemed to not be significant.

3.13 Mercury and its Compounds (Hg)

The results from detailed modelling of Mercury and its compounds are presented in the following table.

Table 20 Maximum Process Contribution for Mercury and its Compounds

Statistic	Exceedance Threshold (µg m^{-3})	Process Contribution (µg m^{-3})	Percentage of the EAL
SWIP Boilers Only			
Hourly Average (PC)	0.6	0.029	4.8 %
Hourly Average (PEC)		0.032	5.34 %
24-Hourly Average 100% (PC)	0.06	0.007	**12.3 %**
24-Hourly Average 100% (PEC)		0.104	17.29 %
Revised ST Assessment Level	(EAL - 2 * Background) 0.057	0.007	12.94 %
Cumulative Impact			
Hourly Average (PC)	0.6	0.029	4.8 %
Hourly Average (PEC)		0.032	5.34 %
24-Hourly Average 100% (PC)	0.06	0.007	**12.3 %**
24-Hourly Average 100% (PEC)		0.104	17.29 %
Revised ST Assessment Level	(EAL - 2 * Background) 0.057	0.007	12.94 %

Detailed modelling predicted that the maximum hourly average process contributions for Mercury whether modelling the three SWIP boilers in isolation or in combination with the other plant installed or proposed at the site, would equate to less than 5 % of the Environmental Assessment Levels and are therefore screened as insignificant in relation to Environment Agency guidance.

Although not immediately screened, the maximum 24-hourly average predicted environmental concentration and consideration of the PC against the revised short-term assessment level for Mercury confirm that the contributions from the Melton Waste Park will not have any significant impact on local air quality in the vicinity of the site. As such, the overall potential impact on human health receptors may be described as negligible and emissions of Mercury do not require further assessment.

3.14 Group 3 Metals

The IED stipulates a combined emission limit for Group 3 metals including Antimony (Sb), Arsenic (As), Lead (Pb), Chromium (Cr), Cobalt (Co), Copper (Cu), Manganese (Mn), Nickel (Ni), and Vanadium (V).

The Environment Agency has issued guidance on metals impact assessments[15] and recommends a stepwise approach to the assessment of Group 3 metals. The guidance is applicable for use when assessing the impact of Municipal Waste Incineration (MSW) and waste wood co-incineration facilities and is therefore appropriate for the assessment of the SWIPs. The first step is based upon the assumption that each of the nine metal species is emitted as the total release of Group 3 metals. The results from this initial screening assessment are presented below, and detail the cumulative impacts, as the difference between these and the SWIP-only results is negligible.

Table 21 Maximum Annual Average Process Contribution for Group 3 Metals – Step 1 Screening

Metal	Exceedance Threshold (µg m^{-3})	Approximate Concentration (µg m^{-3})	Percentage of the EAL
Antimony (Annual)	5	0.0102	0.20 %
Antimony (Hourly)	150	0.29	0.19 %
Arsenic	0.006	0.0102	**170 %**
Chromium(III) (24-Hour)	2	0.074	3.7 %
Chromium(VI)	0.00025	0.0102	**4,080 %**
Cobalt	0.2*	0.0102	**5.10 %**
Copper (24-Hour)	0.05	0.074	**148 %**
Lead (objective value)	0.25	0.0102	**4.08 %**
Manganese (Annual)	0.15	0.0102	**6.80 %**
Manganese (Hourly)	1500	0.29	0.02 %
Nickel (Annual)	0.02	0.0102	**51 %**
Nickel (Hourly)	0.7	0.29	**41.43 %**
Vanadium (24-Hour)	1	0.074	7.4 %

As previously, figures in bold represent results which cannot immediately be screened as insignificant. It is noted * that in the absence of current guidance, and to provide an indicative assessment for Cobalt, the exceedance threshold is based on guidance, now withdrawn, provided by the Environment Agency in IPPC H1.

The Environment Agency guidance on metals assessment requires that where the PC of any metal exceeds 1 % of a long-term or 10 % of a short-term environmental standard, the PEC should be compared against the environmental standard. Table 22 therefore provides this assessment with background data for Arsenic, Chromium (total), Cobalt, Copper, Lead, Manganese and Nickel being drawn from the Scunthorpe Low Santon monitoring data for heavy metals in 2022.

The Environment Agency guidance on metals assessment requires that where the PEC is greater than 100 % of the environmental standard, further consideration is required, and the results in Table 22 demonstrate that the contributions of Arsenic, Chromium(VI) and Copper therefore continue to require further assessment.

Table 22 Calculation and Screening of the Predicted Environmental Concentration of Metals

Metal	Background Concentration (µg m^{-3})	PEC (µg m^{-3})	Percentage of the EAL
Arsenic	0.0009	0.0111	**185 %**
Chromium(VI)	0.00092	0.01112	**4,448 %**
Cobalt	0.00026	0.01046	5.2 %
Copper (24-Hour)	0.022	0.096	**192 %**
Lead	0.023	0.0332	13 %
Manganese (Annual)	0.1	0.1102	73 %
Nickel (Annual)	0.0014	0.0116	58 %
Nickel (Hourly)	0.0028	0.2928	42 %

Background levels of Chromium(VI) assumed to be 20 % of total Chromium background (0.0046 µg m^{-3}).

The final, 'case specific' screening recommended by the Environment Agency, uses measured emissions data from operational MSW incineration and waste wood co-incineration plant to assess the likely contributions of individual metal species to the total. On the basis of measurements undertaken at facilities between 2007 and 2015, the Environment Agency published the contributions of each metal species to the limit value, for use in calculating the likely release of species whose PC were greater than 1 % of the long-term assessment level in Step 1.

The maximum measured concentrations can be calculated as percentage contributions to the BAT-AELs specified for Group 3 metals in the IED (0.5 mg Nm^{-3}), as the modelled emission levels from the SWIPs. Table 23 below therefore demonstrates the percentage contribution of the measured values for each species, aligned to the original BAT-AELs.

Table 23 Percentage Contribution of Species for the Step 2 Assessment of Group 3 Metals

Metal	Maximum Measured Concentration (mg Nm^{-3})	Percentage Contribution to 0.5 mg Nm^{-3} ELV
Antimony	0.0115	2.3 %
Arsenic	0.025	5 %
Chromium(VI)	0.00013	0.03 %
Cobalt	0.0056	1.1 %
Copper	0.029	5.8 %
Lead	0.0503	10.1 %
Manganese	0.060	12 %
Nickel	0.220	44 %
Vanadium	0.006	1.2 %

In the first instance, the Step 2 screening assessment should be based upon the maximum emissions and resultant percentage contributions as specified in the above table, and the measured data from the nearest Heavy Metals Monitoring Network site, in this case at Scunthorpe Low Santon. A similar assessment of PC and PEC values should be applied as in Step 1. Therefore, the calculated percentage contributions were applied to the total annual average process contribution of 0.0102 µg m^{-3} for Arsenic and Chromium(VI) and 0.074 µg m^{-3} for Copper and the results for the predicted environmental concentrations are presented in the following table.

Table 24 Maximum Annual Average Predicted Environmental Concentrations for Arsenic and Chromium^{VI} and 24-Hour Average for Copper – Step 2 Screening

Metal	Exceedance Threshold (µg m^{-3})	PC (µg m^{-3})	Percentage of the AQS/EAL	Background Concentration (µg m^{-3})	PEC (µg m^{-3})	Percentage of the AQS/EAL
Arsenic	0.006	0.00051	**8.5%**	0.0009	0.00141	24 %
Chromium(VI)	0.00025	0.0000031	**1.2%**	0.00092	0.000923	369 %
Copper (24-Hour)	0.05	0.00429	8.6%	0.022	0.026292	53 %

Background levels of Chromium(VI) assumed to be 20 % of total Chromium background (0.0046 µg m^{-3}).

As can be seen, the short-term PC of Copper remains within 10 % of the assessment level and therefore can be readily screened through this second stage assessment. Although the PC of Arsenic is greater than 1 % of the EAL, the PEC remains within the AQS, equating to 24 % of the total. Contributions of Arsenic are therefore considered not to be significant.

The PC of Chromium(VI) also remains slightly above 1 % of the EAL, although the resultant PEC which includes a background concentration estimated from total Chromium measured in 2022 at the Scunthorpe Low Santon equates to 369 % of the EAL, due to the high background concentration, which in itself equates to more than 368 % of the assessment level. Chromium(VI) does not therefore screen as insignificant when considering the maximum predicted process contribution from five years' worth of modelling.

Detailed analysis of the modelling results confirms that, of 40,401 gridded points across the modelled 4 km x 4 km grid, only 3 points (0.0074 %) would record a PC of Chromium(VI) of more than 1 % of the EAL and each of these contributions occurs within the site boundary, with contributions at all sensitive receptors therefore screening as insignificant.

Additionally, although the PC of Chromium$^{(VI)}$ equates to more than 1 % of the assessment level when comparing against the maximum recorded percentage process contribution, the mean and minimum levels reported in the Environment Agency metals guidance[15] equate to 0.01 % and 0.0005 % of the total metals contribution respectively and, with levels of Chromium equating to only 1.2 % of the EAL when the maximum contribution is assumed, would screen as insignificant should either of these lower contributions be applied.

Therefore, accounting for the conservative nature of the overall assessment, and the state-of-the-art nature of the new plant when compared to the measured data from the Environment Agency guidance, it is anticipated that the actual contribution of Chromium$^{(VI)}$ from the three new boilers would likely remain within 1 % of the EAL, and contributions of all metals can ultimately be considered not to be significant.

3.15 Polycyclic Aromatic Hydrocarbons (PAH as B[a]P)

Although measured discharges of total PAH identified in the 2019 Best Available Techniques Reference Note reported concentrations of up to 0.05 mg Nm^{-3} (50,000 ng Nm^{-3}) from incineration processes, emissions of Benzo[a]Pyrene (B[a]P) were reported to a maximum of 0.001 mg Nm^{-3} (1,000 ng Nm^{-3}). There is no BAT-AEL specified for PAH in the BREF or BAT-Conclusions document. However, the Air Quality Standards Regulations (England) 2010 specify a target value of 0.25 ng m^{-3} for B[a]P and there is an additional European obligation to limit total ambient PAH to 1 ng m^{-3} as an annual average in the PM_{10} fraction.

No information is available on the PAH content of any PM_{10} emissions that may be emitted from the SWIPs or that which is already present in the environment. Within this assessment therefore, the lower of the two target values has been applied and considers emissions of B[a]P, at 0.001 mg Nm^{-3}, rather than total PAH discharges, although it is noted that background data is representative of Benzo[a]Pyrene from PAH solid phase sampling.

The results from detailed modelling of Benzo[a]Pyrene (for PAH) are presented in Table 25 below.

Table 25 Maximum Process Contribution for Benzo[a]Pyrene (ng m^{-3})

Statistic	Exceedance Threshold (ng m^{-3})	Process Contribution (ng m^{-3})	Percentage of the AQS
SWIP Boilers Only			
Annual Average (PC)	0.25	0.0202	**8.1 %**
Annual Average (PEC)		0.53	**212.1 %**
Cumulative Impact			
Annual Average (PC)	0.25	0.0204	**8.1 %**
Annual Average (PEC		0.53	**212.1 %**

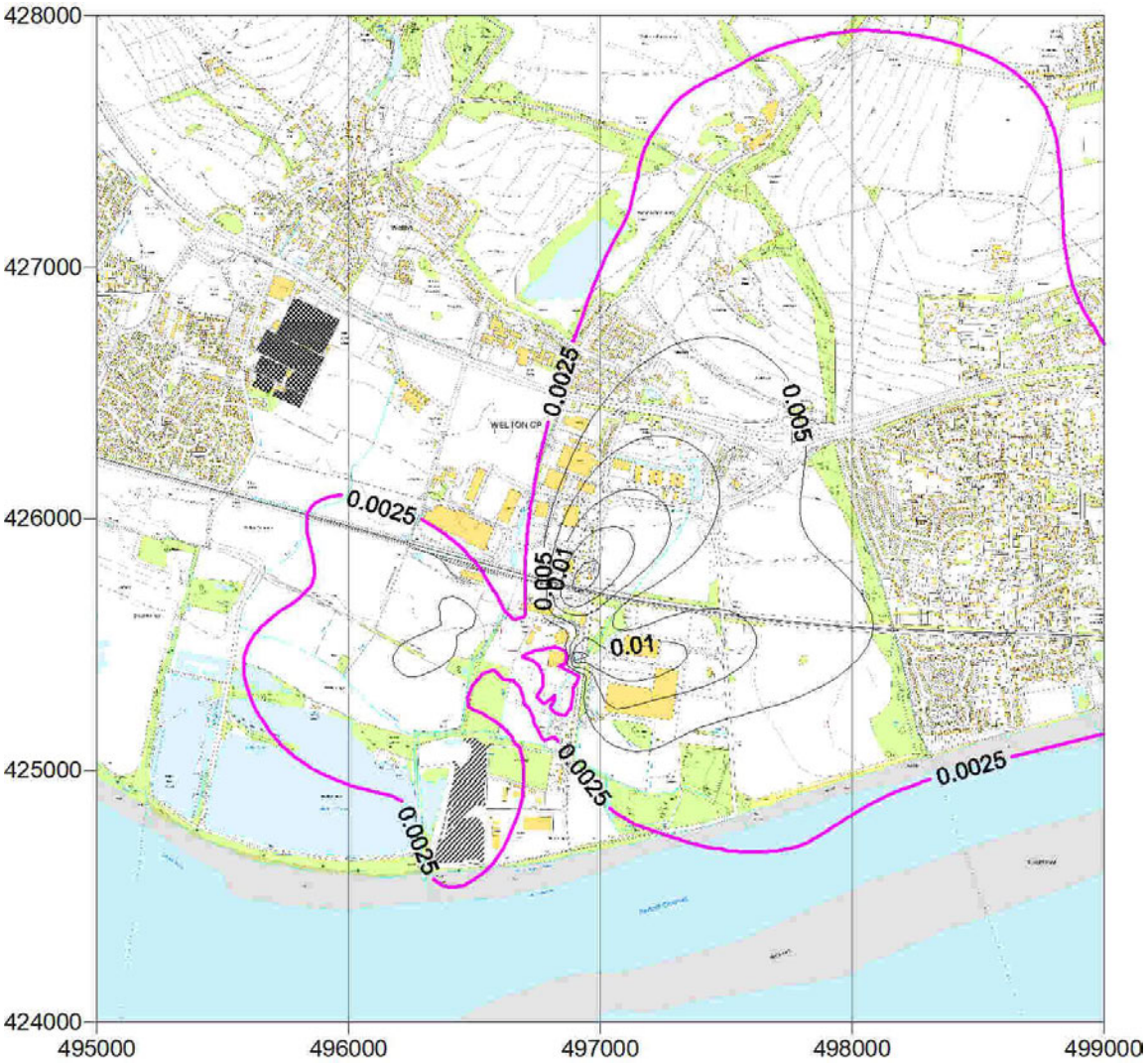
Detailed modelling predicts a maximum annual average process contribution for B[a]P equating to approximately 8.1 % of the EAL for Benzo[a]Pyrene whether modelling the new SWIPs in isolation or in combination with other local sources. As the annual average process contributions are in excess of the Environment Agency's 1 % insignificance threshold, they cannot immediately be screened as insignificant and, due to the high background B[a]P concentration measured at the Scunthorpe Low Santon site, equating to 204 % of the EAL in 2022, the PEC cannot be screened at the secondary assessment stage.

It is noted that the monitoring stations located around Scunthorpe reported the highest levels of PAH as B[a]P from the 23 monitoring stations measuring PAH levels around the country in 2022, due to the urban industrial nature of the area. The Scunthorpe Low Santon site is located close to a Tarmac plant and the Scunthorpe steel works and hence is unlikely to accurately reflect the background in the less industrial area around Melton. Indeed, the interactive map from the UK-Air website, as copied in Figure 12, confirms much lower concentrations in the local area (0.1 ng m^{-3} and below), compared with the elevated background around Scunthorpe, highlighted in orange.

Application of a background concentration of 0.1 ng m^{-3} results in a PEC of approximately 0.12 ng m^{-3}, or 48 % of the AQS objective value and would therefore be considered not to be significant at the secondary assessment stage.

Figure 12 UK Ambient Air Quality Interactive Map Benzo[a]Pyrene Annual Mean

Figure 13 Maximum Annual Average Process Contribution for B[a]P (ng m^{-3}) with all Plant Operating Concurrently; 2019 Meteorological Data



Although the area that cannot be screened as insignificant extends some distance over the local area, the more elevated concentrations (process contributions of 2 % of objective level or more) occur much closer to the Melton Waste Park. Coupled with an existing background of 0.1 ng m^{-3} or less as suggested by the interactive map of ambient air quality, the PEC across the area screens as not significant at the secondary assessment stage. However, as the maximum reported process contribution cannot be screened as insignificant, further consideration of the impact of PAH emissions at nearby sensitive receptors is presented in Section 4.

3.16 Dioxins and Furans, and Poly Chlorinated Biphenyls

The results from detailed modelling of Dioxins and Furans are presented in the following table.

Table 26 Maximum Process Contribution for Dioxins and Furans

Statistic	Process Contribution (µg m^{-3})
SWIP Boilers Only	
Annual Average (PC)	2.017 x 10^{-09}
Hourly Average 100 % (PC)	5.77 x 10^{-08}
Cumulative Impact	
Annual Average (PC)	2.024 x 10^{-09}
Hourly Average 100 % (PC)	5.77 x 10^{-08}

There is a general concern within the population at large about the potential health effects associated with exposure to Dioxins and Furans in the emissions from industrial processes. However, there are no Air Quality Standards or Environmental Assessment Levels for Dioxins.

The maximum annual PC for Dioxins associated with emissions from the SWIP boilers at the IED ELV of 0.1 ng Nm^{-3} was approximately 2.02 fg m^{-3}, at the point of maximum process contribution, which occurs within the site boundary, approximately 58 m to the north-east of the nearest SWIP release point, and does not therefore occur at a point of long-term human exposure. The maximum cumulative hourly average PC for Dioxins was predicted to be approximately 58 fg m^{-3}, also occurring within the site boundary, approximately 42 metres to the south-west of the nearest SWIP release point and, similar to the annual average contribution, is not a location of any sensitive human health receptor. Emissions of Dioxins from the SWIP boilers are not expected to significantly increase the airborne concentration or deposition rate of Dioxins and Furans over what may be currently experienced in the locality.

It should be noted that the emissions profile of the SWIPs was based on the long-term ELV of 0.1 ng Nm^{-3} prescribed for Dioxins and Furans in the Industrial Emissions Directive and supporting guidance notes for small incineration plant. The new boilers will operate in compliance with emissions standards specified by the IED, and Dioxin emissions are expected to generally be below the emission limit value, this being the maximum allowable discharge.

When considering contributions of Poly Chlorinated Biphenyls, the IED and supporting guidance notes specify a limit for a combined Dioxin, Furan and PCB release (0.06 ng Nm^{-3}) from large scale incineration plant which is much lower than the long-term Dioxin and Furan ELV applied to the SWIPs from the IED (0.1 ng Nm^{-3}) as detailed above. The results from the detailed modelling of the combined release are presented in Table 27.

Table 27 Maximum Process Contribution for Dioxins, Furans and PCBs

Statistic	Exceedance Threshold (µg m^{-3})	Process Contribution (µg m^{-3})	Percentage of the AQS
SWIP Boilers Only			
Annual Average (PC)	0.2	1.21 x 10^{-09}	0.0000006 %
Hourly Average 100 % (PC)	6	3.46 x 10^{-08}	0.0000006 %
Cumulative Impact			
Annual Average (PC)	0.2	1.22 x 10^{-09}	0.0000006 %
Hourly Average 100 % (PC)	6	3.70 x 10^{-08}	0.0000006 %

Despite being modelled as a combined release of Dioxins, Furans and PCBs, the detailed modelling predicted that both the annual average and the maximum hourly average process contributions for PCBs associated with the emissions from the SWIP boilers, whether operating in isolation or in combination with other plant in the immediate vicinity would be a fraction of 1 % of the Environmental Assessment Levels and are therefore screened as insignificant in relation to Environment Agency guidance. Predicted concentrations were so low as to be unlikely to be measurable with any degree of confidence and are unlikely to have a significant impact on local air quality in the vicinity of the site. Accordingly, emissions of PCBs do not require further assessment.

3.17 Deposition of Metals to Land

Some substances can have an impact when absorbed by soil and leaves and thus, Environmental Assessment Levels have been set for deposition rates. Metals were modelled as non-reactive species and their total (wet and dry) deposition levels are reported in the second column of Table 28. Where multiple species are considered under a single emission limit value, the deposition level of each species has been calculated using the anticipated percentage contribution previously detailed in Table 23. As a worst-case, the emission level of Cadmium and Thallium is assumed to comprise Cadmium only. Column three then converts the deposition per second to total deposition per day for assessment against the EAL.

Table 28 Results of Metals Deposition and Assessment of Impact

Species	Modelled Deposition ($\mu g\ m^{-2}\ s^{-1}$)	Daily Deposition ($mg\ m^{-2}\ day^{-1}$)	EAL ($mg\ m^{-2}\ day^{-1}$)	% EAL
Arsenic	2.49×10^{-05}	0.0022	0.02	**10.76 %**
Cadmium	3.34×10^{-05}	0.0029	0.009	**32.05 %**
Chromium	1.49×10^{-05}	0.000013	1.5	0.001 %
Copper	2.89×10^{-05}	0.0025	0.25	1.00 %
Lead	5.03×10^{-05}	0.0043	1.1	0.40 %
Mercury	3.34×10^{-05}	0.0029	0.004	**72.12 %**
Nickel	2.19×10^{-04}	0.0189	0.11	**17.21 %**

Of the seven metal species considered, three are immediately screened as insignificant.

Although Arsenic, Cadmium, Mercury and Nickel cannot be screened as insignificant, deposition of each species remains within the assessment level. Mercury contributes most substantially to its EAL with a PC of more than 72 %. However, detailed analysis of the gridded deposition results confirm that the deposited contributions of metals reduce quickly with distance from the Melton Waste Park. Analysis of the levels of deposited Mercury confirm that the PC exceeds 70 % of the assessment level at one point only, and only five of the 40,401 gridded points (0.012 %) report deposits equating to more than 20 % of the assessment level. All of these locations are within the Melton Waste Park boundary and will therefore have no significant impact on areas dedicated to nature or agriculture. Therefore, although levels of deposited metals may not screen as insignificant and with contributions equating to less than 20 % of the assessment level at all areas outside of the Melton Waste Park boundary, contributions of deposited metals are unlikely to result in any significant impact on undeveloped land, agricultural areas or gardens in the locality.

4. Air Quality Impact at Human Health Receptors

The ADMS model was also set up to calculate the impact of emissions at fifteen specific human health receptors in the vicinity of the Transwaste Limited site. The locations of these receptors were shown in Figure 1, and they represent locations where members of the general public may be present for extended periods of time, either through residence in a particular area, or as a result of their employment. The results of all pollutant species which cannot immediately be screened as insignificant when considering the maximum modelled process contribution across the gridded area are summarised in the following tables. As in previous results tables, the maximum modelled results from five-years' of meteorological conditions are presented, and figures in bold text denote contributions which cannot immediately be screened as insignificant.

Table 29 Results from Detailed Assessment for Nitrogen Dioxide and Particulates (as PM_{10}) at Specific Receptors

Receptor	Annual Average NO_2 PC (µg m^{-3})	Hourly Average NO_2 PC (µg m^{-3})	Annual Average PM_{10} PC (µg m^{-3})	Daily Average PM_{10} PC (µg m^{-3})
SWIP Boilers Only				
1	0.1969	2.31	0.0099	0.0307
2	0.1953	1.92	0.0099	0.0253
3	0.1814	1.91	0.0092	0.0254
4	**0.6522**	4.91	0.0331	0.0980
5	0.1298	2.12	0.0067	0.0214
6	0.0909	1.75	0.0046	0.0189
7	0.0382	1.09	0.0019	0.0078
8	0.1189	2.47	0.0060	0.0227
9	0.0975	1.97	0.0049	0.0178
10	0.0962	1.10	0.0048	0.0128
11	0.1698	1.79	0.0086	0.0233
12	0.1245	1.29	0.0065	0.0197
13	0.0582	1.19	0.0029	0.0111
14	0.0930	1.99	0.0049	0.0192
15	0.0701	1.46	0.0035	0.0111
Cumulative Impact				
1	**1.6243**	7.01	0.1683	0.4946
2	**1.4593**	6.21	0.1421	0.3835
3	**1.4228**	6.20	0.1380	0.3848
4	**3.3461**	12.03	**0.4173**	1.1513
5	**0.8485**	10.38	0.1661	0.5770
6	**0.8948**	10.05	0.1146	0.4210
7	0.3621	4.96	0.0389	0.1600
8	**1.0875**	12.09	0.1378	0.5616
9	**0.6426**	8.17	0.1088	0.3834
10	**0.7876**	4.35	0.0811	0.2171
11	**1.3163**	6.51	0.1301	0.3494
12	**0.7482**	5.86	0.0961	0.2835
13	**0.4674**	6.30	0.0649	0.2252
14	**0.7684**	7.62	0.0924	0.3555
15	**0.4784**	5.11	0.0665	0.2227

Table 30 Results from Detailed Assessment for Particulates (as $PM_{2.5}$), VOCs (as Benzene and 1,3-Butadiene), and PAH at Specific Receptors

Receptor	Annual Average $PM_{2.5}$ PC (µg m^{-3})	24-Hour Average VOC PC 5 % as Benzene (µg m^{-3})	Annual Average VOC PC 5 % as 1,3-Butadiene (µg m^{-3})	Annual Average PAH PC (ng m^{-3})
SWIP Boilers Only				
1	0.0098	0.0054	0.00049	0.0010
2	0.0097	0.0038	0.00049	0.0010
3	0.0090	0.0038	0.00045	0.0009
4	0.0326	0.0125	0.00163*****	**0.0033**
5	0.0065	0.0041	0.00032	0.0006
6	0.0045	0.0028	0.00023	0.0005
7	0.0019	0.0018	0.00010	0.0002
8	0.0059	0.0054	0.00030	0.0006
9	0.0049	0.0030	0.00024	0.0005
10	0.0048	0.0016	0.00024	0.0005
11	0.0085	0.0035	0.00042	0.0008
12	0.0063	0.0025	0.00031	0.0006
13	0.0028	0.0022	0.00015	0.0003
14	0.0047	0.0030	0.00023	0.0005
15	0.0035	0.0022	0.00018	0.0004
Cumulative Impact				
1	0.1654	0.2830	**0.0267**	**0.0092**
2	0.1392	0.1745	**0.0240**	**0.0087**
3	0.1363	0.1611	0.0219	**0.0084**
4	**0.4099**	0.5515	**0.0731**	**0.0165**
5	0.1570	0.4010	**0.0355**	**0.0030**
6	0.1116	0.2104	0.0167	**0.0039**
7	0.0376	0.0769	0.0061	0.0021
8	0.1347	0.2549	0.0206	**0.0052**
9	0.1021	0.3121	0.0188	0.0023
10	0.0788	0.0962	0.0132	**0.0046**
11	0.1273	0.1777	0.0221	**0.0077**
12	0.0927	0.1665	0.0170	**0.0037**
13	0.0618	0.1908	0.0110	**0.0021**
14	0.0905	0.1670	0.0146	**0.0038**
15	0.0642	0.1208	0.0103	0.0020

* Contribution from 100 % VOC as 1,3-Butadiene would equate to 1.45 % of the assessment level and hence would not immediately be screened if the total VOC release comprised only 1,3-Butadiene.

Contributions of cumulative total VOCs as a single species would not screen as insignificant at the majority of receptors, although most screen when assuming that no species is likely to equate to more than 5 % of the total.

Table 31 Results from Detailed Assessment for Cadmium, Mercury and Lead at Specific Receptors

Receptor	Annual Average Cadmium PC (ng m^{-3})	24-Hour Average Mercury PC (µg m^{-3})	Annual Average Lead PC (µg m^{-3}) Comparing Limit	Annual Average Lead PC (µg m^{-3}) Comparing Objective
SWIP Boilers Only				
1	0.0496	0.00054	0.00050	0.00050
2	0.0492	0.00039	0.00049	0.00049
3	0.0457	0.00039	0.00046	0.00046
4	**0.1643**	0.00126	0.00164	0.00164
5	0.0327	0.00041	0.00033	0.00033
6	0.0229	0.00028	0.00023	0.00023
7	0.0096	0.00018	0.00010	0.00010
8	0.0300	0.00055	0.00030	0.00030
9	0.0246	0.00030	0.00025	0.00025
10	0.0242	0.00016	0.00024	0.00024
11	0.0428	0.00036	0.00043	0.00043
12	0.0314	0.00025	0.00031	0.00031
13	0.0147	0.00022	0.00015	0.00015
14	0.0234	0.00030	0.00023	0.00023
15	0.0177	0.00022	0.00018	0.00018
Cumulative Impact				
1	**0.2138**	0.00152	**0.0030**	0.0030
2	**0.2012**	0.00140	**0.0028**	0.0028
3	**0.1948**	0.00122	**0.0027**	0.0027
4	**0.4291**	0.00241	**0.0056**	**0.0056**
5	**0.0802**	0.00091	0.0010	0.0010
6	**0.0909**	0.00131	0.0012	0.0012
7	0.0460	0.00097	0.0007	0.0007
8	**0.1195**	0.00191	0.0017	0.0017
9	**0.0612**	0.00130	0.0008	0.0008
10	**0.1062**	0.00075	0.0015	0.0015
11	**0.1795**	0.00132	0.0025	0.0025
12	**0.0908**	0.00069	0.0012	0.0012
13	**0.0508**	0.00078	0.0007	0.0007
14	**0.0886**	0.00173	0.0012	0.0012
15	**0.0497**	0.00072	0.0007	0.0007

When considering the contribution from the new SWIP boilers in isolation, the process contribution of each pollutant is screened as insignificant at almost all of the modelled human health receptors. Annual average process contributions of Nitrogen Dioxide (as 100 % NO_x), and PAH as Benzo[a]Pyrene equate to a fraction over 1 % (< 2 %) of the relevant assessment levels at Receptor 4, and the annual average PC of Cadmium equates to 3.3 % of the assessment level. Each of these pollutants go on to screen as not significant at the secondary assessment stage, remaining within 70 % of their relevant assessment level as follows:

Table 32 Secondary Assessment Stage of Contributions from SWIPs at Receptor Number 4

Pollutant	PC (ng m^{-3}) (*µg m^{-3})	Background (ng m^{-3}) (*µg m^{-3})	PEC (ng m^{-3}) (*µg m^{-3})	PEC as a % of Assessment Level
Nitrogen Dioxide*	0.6522	7.7	8.3522	21 %
Cadmium	0.1643	0.64	0.8043	16 %
PAH (as Benzo[a]Pyrene)	0.0033	0.1	0.103	41 %

When considering the cumulative impact of emissions from the new SWIPs and other existing or planned operations around the site, fewer of the pollutants immediately screen as insignificant, with annual average contributions of NO_2, particulates (as both PM_{10} and $PM_{2.5}$), VOC, PAH, Cadmium and Lead not screening as insignificant at one or more receptors, although as the contribution of Lead is actually representative of all Group 3 metals, the reported contribution is naturally an over-estimate and in reality, the Lead PC at all receptors would likely remain within 1 % of the EAL.

Despite not screening as insignificant at the initial assessment stage, the contributions at each receptor are naturally lower than the maximum gridded contributions reported throughout Section 3, and as such, where the maximum contributions of pollutants screened as not significant at the secondary assessment stage in Section 3, they will screen again at the sensitive receptors.

Due to the high existing background Benzo[a]Pyrene concentration reported for Scunthorpe Low Santon, which already exceeds the assessment level, the PAH PEC would not be screened if the Scunthorpe background were applied. However, when applying the more generic background of 0.1 ng m^{-3} drawn from the interactive map around the Melton area, the cumulative predicted environmental concentration of PAH as Benzo[a]Pyrene can be screened as not significant.

5. Air Quality Impact at Air Quality Monitoring Receptors

The ADMS model was also set up to calculate the impact of emissions from the SWIP boilers at eleven nearby specific receptors where East Riding of Yorkshire Council undertakes air quality monitoring. The results are summarised in the following table, and detail the impact on background NO_2 concentrations, of emissions of NO_x from the combustion plant at the Transwaste Limited site.

Table 33 Results from Detailed Assessment for Nitrogen Dioxide at Nearby Air Quality Monitoring Locations

Receptor	Annual Average PC (µg m^{-3})	Percentage of the AQS	Existing Background (2019 / 2022*)	Annual Average PEC (µg m^{-3})	Percentage of the AQS
SWIP Boilers Only					
20 (Auto 1)	0.1061	0.3 %	16.3*	16.41	41.0 %
21 (Auto 2)	0.0853	0.2 %	12.6*	12.69	31.7 %
22 (S28)	0.1274	0.3 %	**41**	**41.13**	**102.8 %**
23 (S35)	0.0314	0.1 %	**40**	**40.03**	**100.1 %**
24 (S45)	0.0343	0.1 %	29	29.03	**72.6 %**
25 (S55)	0.0980	0.2 %	21	21.10	52.7 %
26 (A56)	0.0822	0.2 %	35	35.08	**87.7 %**
27 (S63)	0.2053	0.5 %	16.3*	16.51	41.3 %
28 (S67)	0.0546	0.1 %	29	29.05	**72.6 %**
29 (S71)	0.4553	**1.1 %**	17	17.46	43.6 %
30 (S72)	0.1686	0.4 %	31	31.17	**77.9 %**
Cumulative Impact					
20 (Auto 1)	**0.879**	**2.2 %**	16.3*	17.18	42.9 %
21 (Auto 2)	**0.741**	**1.9 %**	12.6*	13.34	33.4 %
22 (S28)	**1.088**	**2.7 %**	**41**	**42.09**	**105.2 %**
23 (S35)	0.244	0.6 %	**40**	**40.24**	**100.6 %**
24 (S45)	0.262	0.7 %	29	29.26	**73.2 %**
25 (S55)	**0.786**	**2.0 %**	21	21.79	54.5 %
26 (A56)	**0.577**	**1.4 %**	35	35.58	**88.9 %**
27 (S63)	**1.511**	**3.8 %**	16.3*	17.81	44.5 %
28 (S67)	**0.512**	**1.3 %**	29	29.51	**73.8 %**
29 (S71)	**3.138**	**7.8 %**	17	20.14	50.3 %
30 (S72)	**1.350**	**3.4 %**	31	32.35	**80.9 %**

The results show that the increase in annual average NO_2 concentrations from the SWIP boilers at nearby locations where monitoring is undertaken, is between about 0.1 % and about 1.1 % of the AQS objective value, with ten of the eleven results immediately screening as insignificant. Two of the existing background concentrations from 2019 measurements already are at or exceed the AQS objective value, although contributions from the SWIPs at these locations are insignificant.

The cumulative contributions are somewhat higher, ranging from 0.6 % to approximately 7.8 % of the AQS and suggest that the predicted environmental concentration in six of the monitoring locations may also not readily screen as being not significant. However, only the two locations that were already at or exceeding the AQS are reported to exceed the assessment level, when applying the background data from 2019. Were the 2022 background data to be applied to all sites, the most substantial PEC at Receptor Number 22 (33.99 µg m^{-3} from a background concentration of 32.9 µg m^{-3}) would equate to approximately 85 % of the assessment level and, noting the assumption within Table 33 that 100 % of the NO_x contribution converts to long-term NO_2 rather than the more likely conversion of 70 %, it is unlikely that the air quality assessment level will actually be exceeded at this or any of the other locations.

6. Impact of Emissions on Nearby Ecological Receptors

Three receptor locations were incorporated into the ADMS model representing nearby locations within the Humber Estuary Ramsar Site, SPA, SAC and SSSI. There is one other SSSI within 2 km of the site, namely the Melton Bottom Chalk Pit SSSI which is designated for its geological significance, and so was excluded from the ecological assessment, as pollutant contributions should have no significant impact on that receptor.

Sensitive ecological receptors may have various Critical Levels and / or Critical Loads specified for their protection.

Critical Levels relate to the gaseous concentration of a pollutant in the air and are defined as **"**concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such as human beings, plants, ecosystems or materials, may occur according to present knowledge**".**

Critical Loads relate to the quantity of pollutant deposited from the air onto the sensitive ecological receptor and are defined as "a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge**".**

The Humber Estuary has various Critical Levels and Critical Loads assigned to it, although not all areas are sensitive to all pollutants. For example, Critical Levels are specified for most relevant species (NO_x, Ammonia and SO_2) although the Special Protected Area status of the site has no Critical Level for SO_2, meaning that the sensitive SPA features are not impacted by SO_2 contributions. Similarly, whilst all areas include a Critical Load for nutrient Nitrogen deposits, sensitivity to acid deposits only impact on the SPA features, with no sensitivity to acid and therefore no Critical Load specified for the SSSI or SAC features.

The Critical Levels and Critical Loads for each receptor are specified in the assessment tables that follow.

6.1 Assessment Relative to Critical Level Values

Annual average and daily average process contributions for NO_x, and annual average PC for Ammonia and SO_2 were calculated by the ADMS model for each of the ecological receptors, and the predicted increases were compared against their respective Critical Level values. The results are presented in Table 34 over page.

As can be seen in Table 34, the process contributions from the operation of the new SWIP boilers in isolation at the locations identified within the Humber Estuary all screen as insignificant in relation to Environment Agency guidance, that is equating to less than 1 % of the long-term and less than 10 % of the short-term Critical Levels. When considering the cumulative impact, fewer of the contributions immediately screen as insignificant, although the remaining contributions screen at the secondary assessment stage. As such, it can be demonstrated that, even when considering the cumulative impact of local emissions, the contributions to the Humber Estuary in the vicinity of the Transwaste Limited site remain below those at which direct adverse effects may occur according to present knowledge.

Table 34 Critical Levels Assessment for Oxides of Nitrogen (NO_x), Ammonia (NH_3) and Sulphur Dioxide (SO_2)

SWIP Boilers Only	Receptor 16	Receptor 17	Receptor 18
Annual Average NO_x PC (µg m^{-3})	0.130	0.091	0.038
Critical Level	30	30	30
Percentage of the Critical Level	0.43 %	0.30 %	0.13 %
24-Hourly Average NO_x PC (µg m^{-3})	1.627	1.102	0.722
Critical Level	75	75	75
Percentage of the Critical Level	2.17 %	1.47 %	0.96 %
Annual Average NH_3 PC (µg m^{-3})	0.00649	0.00455	0.00191
Critical Level	3	3	3
Percentage of the Critical Level	0.22 %	0.15 %	0.06 %
Annual Average SO_2 PC (µg m^{-3})	0.032	0.023	0.010
Critical Level	20	20	20
Percentage of the Critical Level	0.16 %	0.11 %	0.05 %
Cumulative Impact	**Receptor 16**	**Receptor 17**	**Receptor 18**
Annual Average NO_x PC (µg m^{-3})	0.848	0.895	0.362
Critical Level	30	30	30
Percentage of the Critical Level	**2.83 %**	**2.98 %**	**1.21 %**
Location Specific Background (µg m^{-3})	10.5	10.5	10.5
Predicted Environmental Concentration (µg m^{-3})	11.348	11.395	10.862
Percentage of the Critical Level	38 %	38 %	36 %
24-Hourly Average NO_x PC (µg m^{-3})	7.592	10.352	6.363
Critical Level	75	75	75
Percentage of the Critical Level	**10.1 %**	**13.8 %**	8.5 %
Location Specific Short-Term Background (µg m^{-3})	21	21	21
Critical Level Minus Short-Term Background	54	54	54
PC as Percentage of the Critical Level	14 %	19 %	12 %
Annual Average NH_3 PC (µg m^{-3})	0.0933	0.0650	0.0294
Critical Level	3	3	3
Percentage of the Critical Level	**3.11 %**	**2.17 %**	0.98 %
Location Specific Background (µg m^{-3})	2	2	2
Predicted Environmental Concentration (µg m^{-3})	2.0933	2.0650	2.0294
Percentage of the Critical Level	70 %	69 %	68 %
Annual Average SO_2 PC (µg m^{-3})	0.104	0.125	0.065
Critical Level	20	20	20
Percentage of the Critical Level	0.52 %	0.62 %	0.33 %

6.2 Assessment Relative to Site-Specific Critical Load Values

The results in Table 35 present the contributions to levels of nutrient Nitrogen and acid deposition at the three modelled receptor points representing the sensitive Humber Estuary. The dry deposition flux conversion factors identified in the Environment Agency technical guidance on modelling for an appropriate assessment[16] have been applied directly to dry deposition levels of Ammonia and Sulphur Dioxide; to 70 % of the deposited levels of NO_x, as NO does not deposit at any significant rate; and to total (wet and dry) deposition rates of HCl and HF (calculated conversion factor for HF of 15.77) in order to represent the total deposition of these species which are more susceptible to wash-out.

Results for nutrient Nitrogen deposition combine the contributions to nutrient Nitrogen from both Nitrogen Dioxide and Ammonia.

Results for acid deposition are made up of a Nitrogen based portion of acid (from NO_2 and NH_3) and a Sulphur / Hydrogen based portion of acid, combining acid deposition from SO_2, HCl and HF emissions. Once the individual Nitrogen and Sulphur / Hydrogen based contributions are calculated, these are combined to report total acid deposition in keq ha^{-1} $year^{-1}$, for comparison against the Critical Load values.

Although Critical Loads are specified for acid deposits at the Humber Estuary, the APIS website notes that there is no expected negative impact due to the broad species habitat. Despite this, the results in Table 35 are compared against the most stringent Critical Loads identified for the Humber Estuary.

Table 35 Critical Loads Assessment for the Deposition of Nutrient Nitrogen and Acid at the Humber Estuary

SWIP Boilers Only	Receptor 16	Receptor 17	Receptor 18
Deposited Nutrient Nitrogen (kg N ha^{-1} $year^{-1}$)	0.0468	0.0328	0.0138
Lowest Nutrient Nitrogen Critical Load (kg N ha^{-1} $year^{-1}$)	10	10	10
Percentage Contribution to Critical Load	0.47%	0.33%	0.14%
Nitrogen Based Acid Deposition (keq ha^{-1} $year^{-1}$)	0.0033	0.0023	0.0010
Lowest N Based Critical Load (keq ha^{-1} $year^{-1}$)	0.856	0.856	0.856
Percentage Contribution to Critical Load	0.39%	0.27%	0.11%
S / H Based Acid Deposition (keq ha^{-1} $year^{-1}$)	0.0054	0.0039	0.0016
Lowest S / H Based Critical Load (keq ha^{-1} $year^{-1}$)	4	4	4
Percentage Contribution to Critical Load	0.14%	0.10%	0.04%
Total Acid Deposition (keq ha^{-1} $year^{-1}$)	0.0088	0.0063	0.0026
Lowest Acid Deposition Critical Load (keq ha^{-1} $year^{-1}$)	4.856	4.856	4.856
Percentage Contribution to Critical Load	0.18%	0.13%	0.05%
Cumulative Impact	**Receptor 16**	**Receptor 17**	**Receptor 18**
Deposited Nutrient Nitrogen (kg N ha^{-1} $year^{-1}$)	0.5706	0.4280	0.1892
Lowest Nutrient Nitrogen Critical Load (kg N ha^{-1} $year^{-1}$)	10	10	10
Percentage Contribution to Critical Load	**5.71%**	**4.28%**	**1.89%**
Nearest Background (kg N ha^{-1} $year^{-1}$)	18.2	18.2	18.2
Predicted Environmental Concentration (kg N ha^{-1} $year^{-1}$)	18.77	18.63	18.39
Percentage Contribution to Lowest Critical Load	**187.71%**	**186.28%**	**183.89%**
Percentage Contribution to Highest Critical Load (20 kg N ha^{-1} $year^{-1}$)	**93.85%**	**93.14%**	**91.95%**
Nitrogen Based Acid Deposition (keq ha^{-1} $year^{-1}$)	0.0406	0.0305	0.0135
Lowest N Based Critical Load (keq ha^{-1} $year^{-1}$)	0.856	0.856	0.856
Percentage Contribution to Critical Load	**4.74%**	**3.56%**	**1.57%**
S / H Based Acid Deposition (keq ha^{-1} $year^{-1}$)	0.0190	0.0237	0.0123
Lowest S / H Based Critical Load (keq ha^{-1} $year^{-1}$)	4	4	4
Percentage Contribution to Critical Load	0.48%	0.59%	0.31%
Total Acid Deposition (keq ha^{-1} $year^{-1}$)	0.0596	0.0542	0.0258
Lowest Acid Deposition Critical Load (keq ha^{-1} $year^{-1}$)	4.856	4.856	4.856
Percentage Contribution to Critical Load	**1.23%**	**1.12%**	0.53%
Nearest Background (keq ha^{-1} $year^{-1}$)	1.3	1.3	1.3
Predicted Environmental Concentration (keq ha^{-1} $year^{-1}$)	1.36	1.35	1.33
Percentage Contribution to Critical Load	28%	28%	27%

Contributions to nutrient Nitrogen and acid deposition from the SWIPs operating in isolation are below 1 % of the total Critical Loads and therefore immediately screen as insignificant.

Cumulative impacts are not generally screened as insignificant, with contributions of nutrient Nitrogen and acid deposition usually equating to more than 1 % of the relevant Critical Load. It is noted however, that the lowest stated Critical Load from each range has been applied in the assessment presented in Table 35 and this is not necessarily relevant to each of the modelled locations. Crucially, the APIS website notes that there is no expected negative impact from acid deposition due to the broad species habitat that comprises the Humber Estuary and, when applying local background figures for deposited Nitrogen and acid, Nitrogen levels remain within the higher Critical Load and acid contributions remain within 70 % of the lower critical load.

Exceedance of a Critical Load is not a quantitative estimate of damage to a particular habitat but represents the potential for damage to occur. With insignificant contributions from the SWIP boilers when modelled in isolation, and cumulative contributions of less than 6 % Nitrogen and less than 1.25 % acid deposition, the incremental increase in deposition attributable to the Melton Waste Park operations is unlikely to have any significant effect on the integrity of the ecological habitat sites.

7. Conclusions

Detailed atmospheric dispersion modelling has been undertaken of emissions to atmosphere from three small waste incineration plant that have been installed at the Transwaste Limited site, off Gibson Lane, Melton, East Riding of Yorkshire. Modelling was undertaken for the three new 0.95 MW_{th} units, along with cumulative modelling of the new plant with emissions from an energy recovery facility (ERF), three 0.95 MW_{th} biomass boilers, a 1.5 MW_{th} gas fired boiler and an abated ventilation air discharge point, all of which operate on the same site. All plant were assumed to discharge at their maximum permissible levels during normal operating conditions via dedicated discharge points. Emissions from all units were assumed to occur concurrently and continually throughout the year.

The modelling was undertaken using ADMS Version 6 and incorporated local conditions such as meteorology, terrain and surface roughness factors, along with data to incorporate the effect of the two local wind turbines. Meteorological data was taken from Leconfield Airfield for the years 2018 to 2022 and was used to determine maximum process contributions across a 4 km x 4 km modelled grid with results reported at 20-metre intervals, as well as at nearby specific receptor locations.

The model predicted that the majority of pollutant process contributions were either screened as insignificant, or could be considered to not be significant at both the maximum modelled location and at the discrete modelled receptors denoting sensitive locations in the vicinity, when modelling the SWIPs in isolation. Although contributions and environmental concentrations increased with the cumulative assessment, and not all were able to be screened, the location and extent of the areas where the potential impact could not be screened as not significant was limited to areas of the Melton Waste Park or the immediate vicinity and would not be considered to be a relevant receptor location for the pollutants and averaging periods considered.

Process contributions of total VOCs were screened when considering the SWIPs operating in isolation, although could not be screened when undertaking cumulative modelling. However, as a release of total VOC comprises many different compound species, the assessment considered the impact of a likely maximum contribution of any single compound equating to 5 % of the total VOC release, and was screened at that stage.

Although contributions of most metal species were ultimately screened, detailed analysis of the modelling results confirmed that approximately 0.0074 % of the modelled results would record a PC of $Chromium^{(VI)}$ of more than 1 % of the EAL, and would not be screened as insignificant due to the already elevated estimated background concentration. However, the process contributions equate to a maximum of 1.2 % of the assessment level and each of the contributions above 1 % occurs within the site boundary. Process contributions at all sensitive receptors are much lower and would ultimately screen as not significant.

Contributions of PAH as Benzo[a]Pyrene amounted to approximately 8 % of the very low assessment level at the point of maximum contribution, but were screened as not significant when applying a generic background level from the DEFRA interactive background maps of 0.1 ng m^{-3}. The nearest PAH monitoring station is located in Scunthorpe and was discounted for use as the relevant background due to the locally elevated concentrations in the Scunthorpe area.

At the discrete sensitive receptors that were modelled, the pollutant concentrations from the SWIPs operating in isolation almost consistently screened as insignificant at the initial assessment stage, with all pollutants screening at the secondary assessment stage. Cumulative contributions were naturally higher but, despite not necessarily screening at the initial assessment stage, were screened as not significant at the second stage assessment, at all receptor locations.

East Riding of Yorkshire Council undertakes air quality monitoring across their jurisdiction and the model incorporated eleven of the nearby monitoring points as specific receptors in the study. Contributions of NO_x as NO_2 from the operation of the SWIP boilers immediately screened as insignificant at all but one location, and the PEC at this point (Receptor Number 29) is sufficiently low as to be deemed to not be significant. Whilst not all of the contributions from the cumulative assessment could be screened, it is unlikely that the PEC at any of the locations would exceed the AQS when considering the 2022 background concentrations plus the cumulative discharges.

The impact on the nearby Humber Estuary designated ecological habitat, of emissions from the three SWIP boilers was shown to be insignificant in relation to guidance provided by the Environment Agency. Cumulative process contributions to Critical Levels screened at either the initial or secondary assessment stage, although cumulative contributions to Critical Loads were not so readily screened, with the contributions of both nutrient Nitrogen and acid deposition (at two of the three modelled locations) equating to more than 1 % of the Critical Loads.

It is noted however, that the exceedance of a Critical Load is not a quantitative estimate of damage to a particular habitat, but instead represents the potential for damage to occur. With insignificant contributions from the SWIP boilers, and cumulative contributions of less than 6 % nutrient Nitrogen when compared against the lower Critical Load for the Estuary, and less than 1.25 % acid deposition, the incremental increase in deposition attributable to the operations around the Transwaste Limited site is small and is unlikely to have any significant effect on the integrity of the ecological habitat sites.

The overall conclusion from detailed modelling of emissions from the three SWIP boilers is that, when taken in isolation the potential impact on local air quality from their operation is largely screened as insignificant. The cumulative impact of the SWIP boilers with other existing and proposed plant will be small and will not have a significant impact on the health of people living and working nearby, or on the surrounding environment as a whole.

8. References

[1] Cambridge Environmental Research Limited, ADMS Version 5 User Guide, November 2016

[2] The Air Quality (England) Regulations 2000 SI 2000 No. 928 (as amended)

[3] Air Quality Standards (England) Regulations 2010 SI 2010 No. 1001 (as amended)

[4] https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit

[5] The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

[6] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (Recast). 2010L0075 — EN — 06.01.2011

[7] HRS Energy Melton Energy from Waste Plant. Air Quality Assessment for Planning Variation. WSP Report Number 70042100-001. January 2018

[8] Eco-Power Environmental Ltd. Biomass Boilers at Waste Drying Plant, Gibson Lane, Melton, Hull, HU14 3HH. Air Quality Assessment and Odour Assessment. WYG; January 2020

[9] Commission Implementing Decision (EU) 2019/2010 of 12 November 2019 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration. L 312/55 3.12.2019

[10] https://www.gov.uk/guidance/environmental-permitting-air-dispersion-modelling-reports

[11] Detailed Air Quality Assessment for the Dry Anaerobic Digestion Facility at Melton Energy Tech. Issue 1. December 2023. Environmental Visage Limited

[12] https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

[13] East Riding of Yorkshire 2023 Air Quality Annual Status Report (ASR). June 2023

[14] https://uk-air.defra.gov.uk/data

[15] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/532474/LIT_7349.pdf

[16] Technical guidance on detailed modelling approach for an appropriate assessment for emissions to air. AQTAG06. Updated Version Approved March 2014.

Appendix 6
Surrender Site Condition Report for Area of Melton Waste Park to be Surrendered from Transwaste Limited's Permit (EPR/BP3792LD) for the Incorporation of the Melton Energy Tech Limited Dry AD Plant

Environmental Visage

PARTIAL SURRENDER SITE CONDITION REPORT; MELTON WASTE PARK TRANSWASTE RECYCLING AND AGGREGATES LIMITED

GIBSON LANE, MELTON, HULL

Report Issue No: 1
Report Date: November 2024
Report Author: Amanda Owen

Registered in England and Wales no. 4907297. Registered office: c/o SLS Accountants, 78 Draycott, Cam, Glos, GL11 5DH

Executive Summary

This Site Condition Report details the status of the land and groundwater around the Melton Waste Park, some of which is due to be surrendered from the Melton Waste Park Permit (EPR/BP3792LD) for use by other operators or for non-waste activities.

The Melton Waste Park is situated off Gibson Lane in Melton, East Yorkshire. The majority of the site has been operated by Transwaste Recycling and Aggregates Limited since 2007. However, in 2013, an area of land was surrendered from within the main site to facilitate the development of an energy from waste facility. Since then, other areas of the Melton Waste Park have also been scoped out of the Transwaste waste operational areas, including the south-western corner of the site which is now operated by Transwaste but for non-waste activities only, and most recently, the south-eastern corner of the Melton Waste Park that will now be taken over and operated by Melton Energy Tech Limited (MET), through the installation of the Melton Waste Park Anaerobic Digestion Facility (dry AD facility).

This Partial Surrender Site Condition Report removes those areas from the wider Melton Waste Park installation boundary and confirms that, although some evidence of historical pollution was identified at the site prior to development of the MET dry AD facility, a conceptual site model prepared by Resource and Environmental Consultants Limited considered that the potential for any significant impact was unlikely and the overall risk to the environment was low, as the clayey nature of the underlying Alluvium would reduce the potential vertical migration of contaminants. Samples taken from the adjacent water course demonstrated that it had not been significantly impacted by the levels of hydrocarbons and PAH identified in the soils and groundwater.

Additionally, the excavation of soils and replacement with chalk to create a foundation for the dry AD facility process plant, coupled with the installation of comprehensive hardstanding across areas where pollution has the potential to occur in the future, should ensure that, subject to on-going maintenance of the site infrastructure, the potential for pollution of the land, groundwater or local water courses to occur, will be minimal going forward.

Contents

Issue and Revision Record

Issue	Date	Author	Review / Authorise	Description
DRAFT	20/08/2024	A. Owen		Draft for Client review
1	11/11/2024	A. Owen	ENVISAGE	Issue 1

1. Site Details

Name of the applicant: Transwaste Recycling and Aggregates Limited

Installation: Melton Waste Park, Environmental Permit Number EPR/BP3792LD

Activity address: Melton Waste Park, Gibson Lane, Melton, HU14 3HH

National grid reference: 496811 425426 (SE 96811 25426)

The Melton Waste Park has been operated by Transwaste Recycling and Aggregates Limited (Transwaste) since 2007. The installation accepts incoming mixed wastes which are pre-treated for use in incineration or co-incineration activities.

In addition to the processes which pre-treat wastes to RDF and SRF, the site also engages in a number of separate waste operations. These include;

- Inert and aggregate crushing, screening and storage with associated soil storage.
- General materials recycling facility and transfer station.
- Green waste pre-treatment facility (shredding) and storage prior to composting at other sites.
- Wood waste shredding and chipping with storage.
- Hazardous waste bulking and storage.

In February 2011, a Phase I Site Condition Report was prepared for the Transwaste Melton Waste Park facility by Resource and Environmental Consultants Limited (REC). This was the first reported assessment of the condition of the land and water quality of the site.

In 2013, an area of the installation footprint was surrendered with the intention of developing an energy from waste facility that would be operated by a third-party. This development project is still moving forward, although has not yet been developed.

Another area of the site, in the south-west corner of the waste park has been given over to non-waste activities and as such can also be scoped out of the installation boundary.

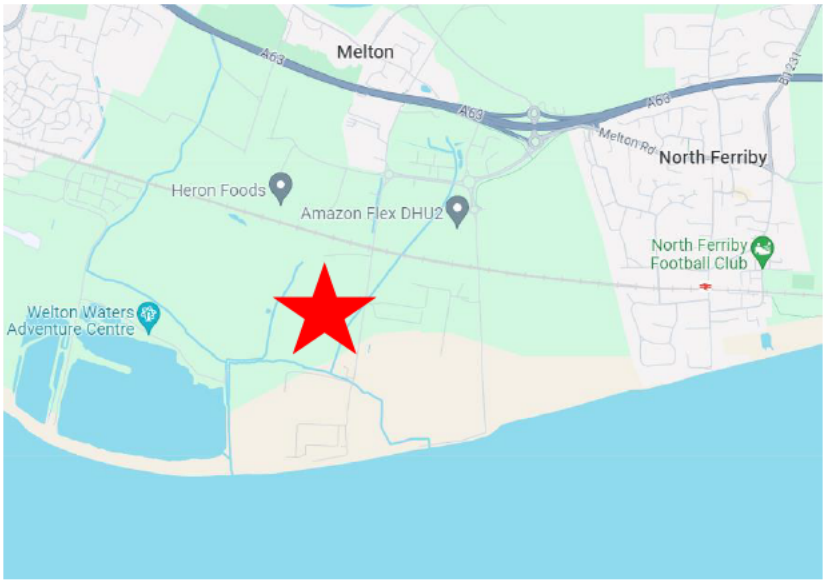
The latest change to the installation boundary is the removal of an area of land in the south-eastern corner of the Melton Waste Park to facilitate the development of the Melton Waste Park Anaerobic Digestion Facility that will be operated by Melton Energy Tech Limited (MET). This Partial Surrender Site Condition Report has been prepared in order to re-draw the footprint of the Melton Waste Park boundary, taking account of the areas now to be operated by other Companies or that are no longer dedicated to waste activities.

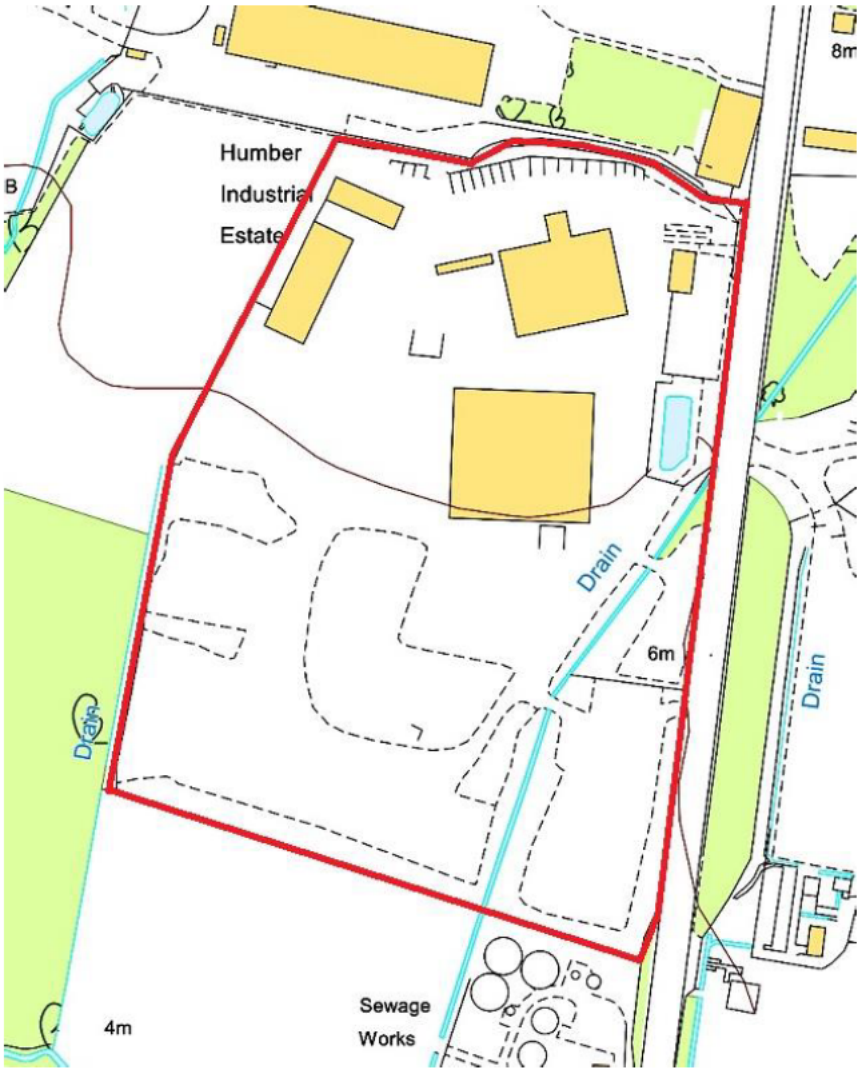
In January 2020, an 'Environmental Permit Baseline Assessment' was prepared by Resource and Environmental Consultants Limited for the area of the Melton Waste Park that is to be used by Melton Energy Tech Limited for their dry AD plant (see Appendix 1). The report has informed this Site Condition Report.

A location plan is shown over page, with the site marked within the local area by a red star, and the outline of the area known as the Melton Waste Park marked on the more detailed image. The following site plans are then presented in the Figures section of this report:

- The current Installation Boundary (taken from EPR/BP3793LD/V006);
- The future Installation Boundary;
- Installation - the location and nature of the site activities and the area covered by the site condition report, including infrastructure details.

Melton Waste Park Site Location Plan





2. Condition of the Land at Permit Issue

The first site condition report to be prepared for the Melton Waste Park was the 2011 REC report. This described, the environmental setting of the site is as follows:

The site was considered to be situated in a moderately sensitive environmental setting with respect to the nearby groundwater abstractions within the superficial drift zone. The southern area of the site contained three substantial land drains all flowing to the Humber estuary and potentially impacting on the estuary's nature conservation designations. The site was also partly situated on a flood risk zone with a possibility of site wastes entering the local hydrological features during a flood risk event.

Geological Setting

The site is underlain by:

Devensian Glacial Till, located primarily in the north and centre of the site, with **Alluvium Deposits** associated with the adjacent land drains to the east and west of site boundaries and along the southern section of the site. The Glacial Till deposits primarily consist of Clay with some lenses of Silt, whilst the Alluvium consists of bands of Clay, Silt, Sand and Gravel. The Alluvium is likely to be important to the base-flow of local surface watercourses.

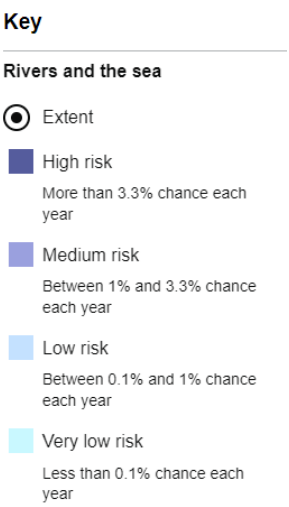
Brattingham Member comprising interbedded sequences of Sandstone and Siltstone.

The stratum beneath the site was confirmed in 2016 when bored piling works was undertaken at the site for the installation of two wind turbines. Twenty-four rotary bored piles were installed over two turbine base locations, and the geology encountered at the site was confirmed as being gravelly Sand over stiff Clay over Mudstone / Siltstone. Groundwater was struck at some, but not all locations.

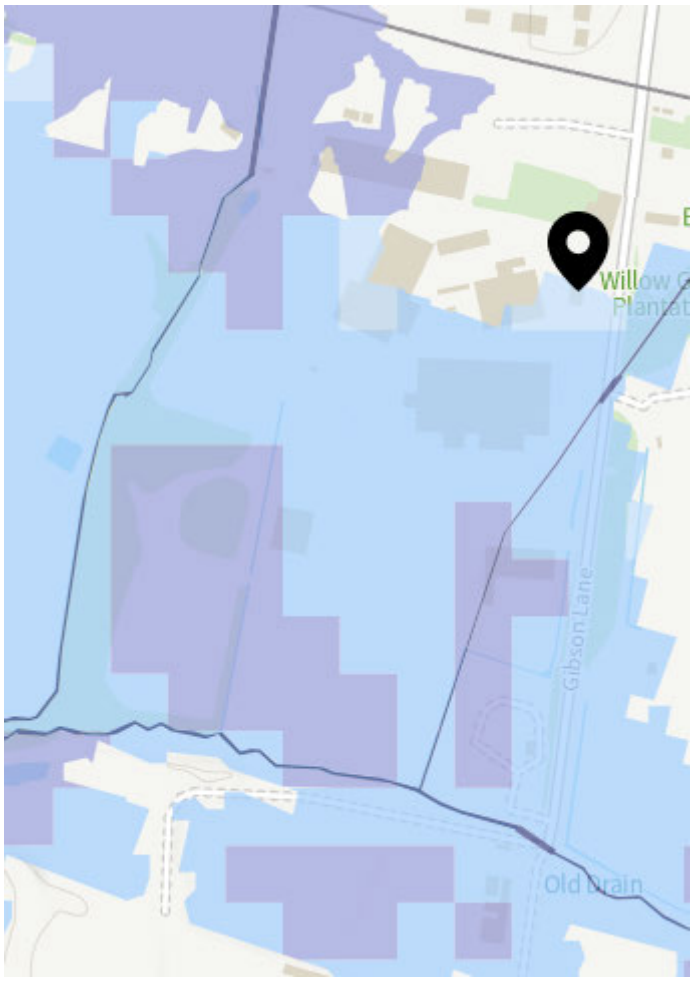
Hydrology

The nearest surface water feature is a small inland drain between 2 and 2.8 m in width located along the eastern and southern borders of the site and flowing southwards towards the River Humber. This is currently shown to traverse the site but was re-routed in 2015 / 2016.

The Environment Agency long-term flood risk assessment suggests that there is a very low risk of flooding from rivers or the sea (less than 0.1 % per year). However, this summary is not property specific and the flood map over page suggests a low to medium risk across the site. As shown in the key below, a low risk of flooding means that each year, there is a chance of flooding of 0.1 – 1 %. A medium risk increases this chance to between 1 % and 3.3 %, and the area of the site that will be occupied by the dry AD plant and associated infrastructure is classed as being at low to medium risk of flooding from rivers and the sea.

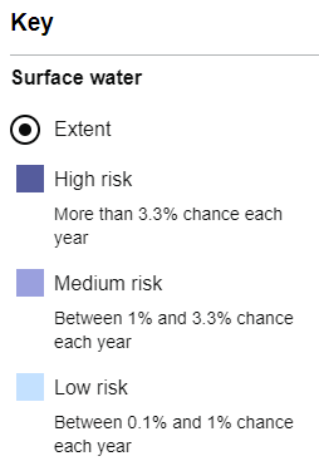


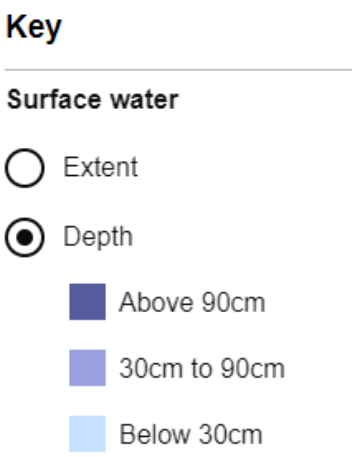
Extent of Flooding from Rivers and the Sea at the Melton Waste Park



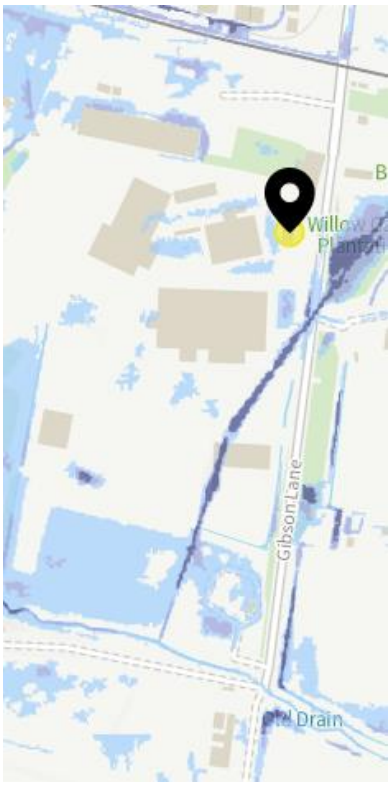
Environment Agency mapping also confirms a low overall annual probability of flooding from surface water, relating to a chance of flooding of between 0.1 % and 1 %, although again, mapping suggests that there is a low to medium risk area traversing the site (see key below and mapping over page).

However, this considers the original route of the water course which now follows the eastern and southern boundaries of the site and thus, it is anticipated that any impact in the area of this historical drainage run will now flow around the site boundary to the east and south. The majority of the site area is not at risk of flooding with pockets of low risk across the site, and with some key, low lying areas, including the site lagoon, having small areas of medium or high risk potential for flooding.



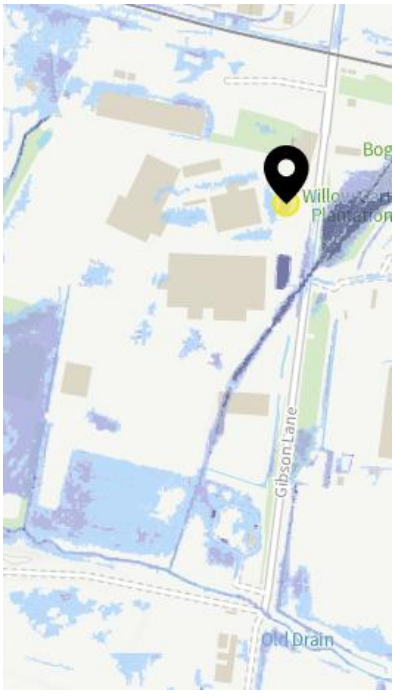


Extent of Surface Water Flooding at Melton Energy Tech



The plan below shows the likely depth of any surface water flooding during a low risk event. This is an event that is unlikely to occur but one that will result in the deepest flood waters across the site, and again, is shown to intersect the MET site along the line of the original drain, now rerouted to the boundary drain. The maximum predicted depth of surface water flooding is over 900 mm but this should be readily contained within the site lagoon and the new drainage channel. Yard areas may be exposed to a maximum depth of 900 mm in small, localised areas, with the majority of the site remaining unaffected by flooding.

Depth of Surface Water Flooding at Melton Energy Tech

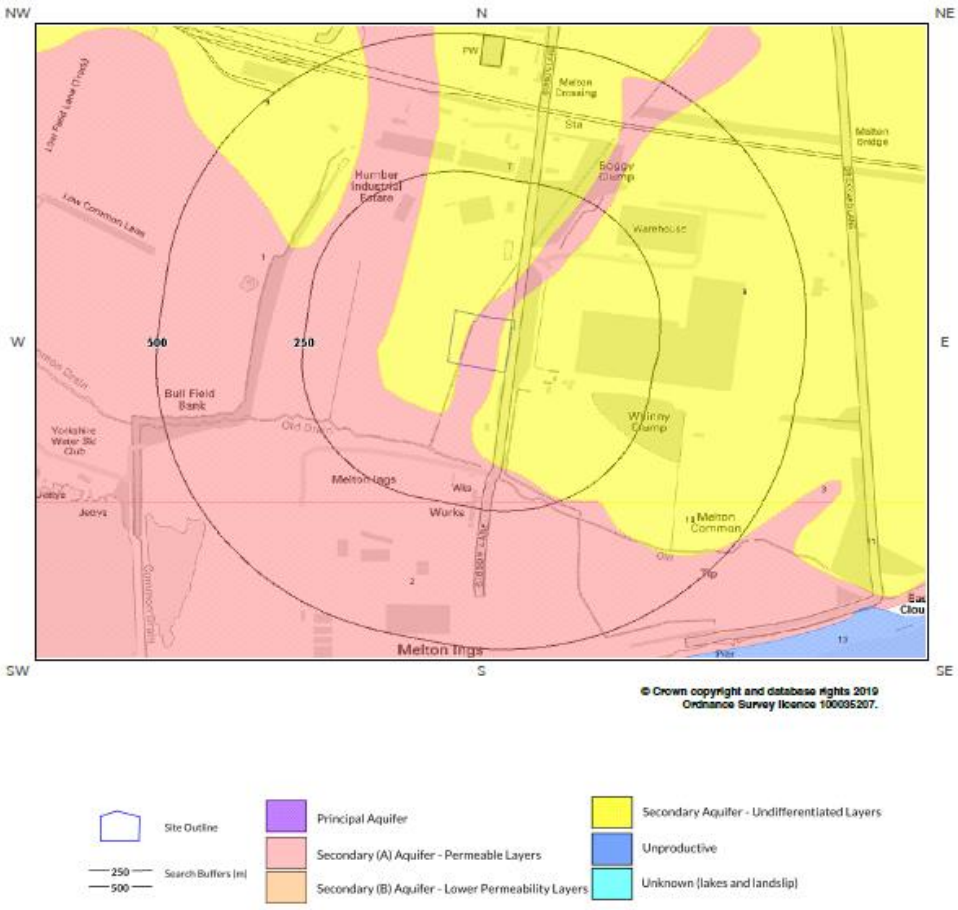


Anecdotal evidence from Transwaste staff suggests that the site has not flooded since their adoption of the site in 2007, and the re-routing of the intersecting drainage channel should minimise the potential for any flooding of the operational areas to occur. Coupled with the fact that only localised areas of the site are predicted to potentially be exposed to surface water flooding with the main site access points remaining clear and more significant levels of surface water flooding being experienced by land to the south and south-west of the Melton Waste Park, it is considered that the potential for the release of debris and pollutants to the environment due to flooding at the site, will be minimal.

Hydrogeology

The superficial deposits at the site are designated as a Secondary Aquifer as shown in the below with some permeable layers (Secondary (A)), and some undifferentiated layers. The bedrock at the site is unproductive of groundwater.

Groundwater in Superficial Geology



Additionally, the site is located within 50 m of a groundwater flooding susceptibility area for superficial deposits flooding associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers.

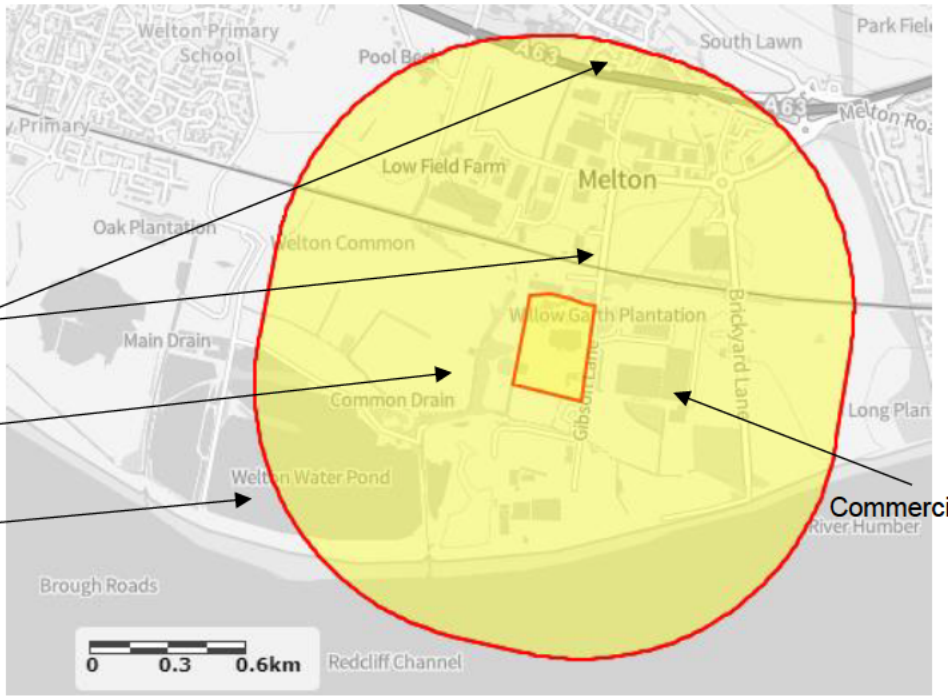
As a consequence of the geological, hydrological and hydrogeological features in the vicinity, the site is considered to be of moderate sensitivity.

Local Receptors

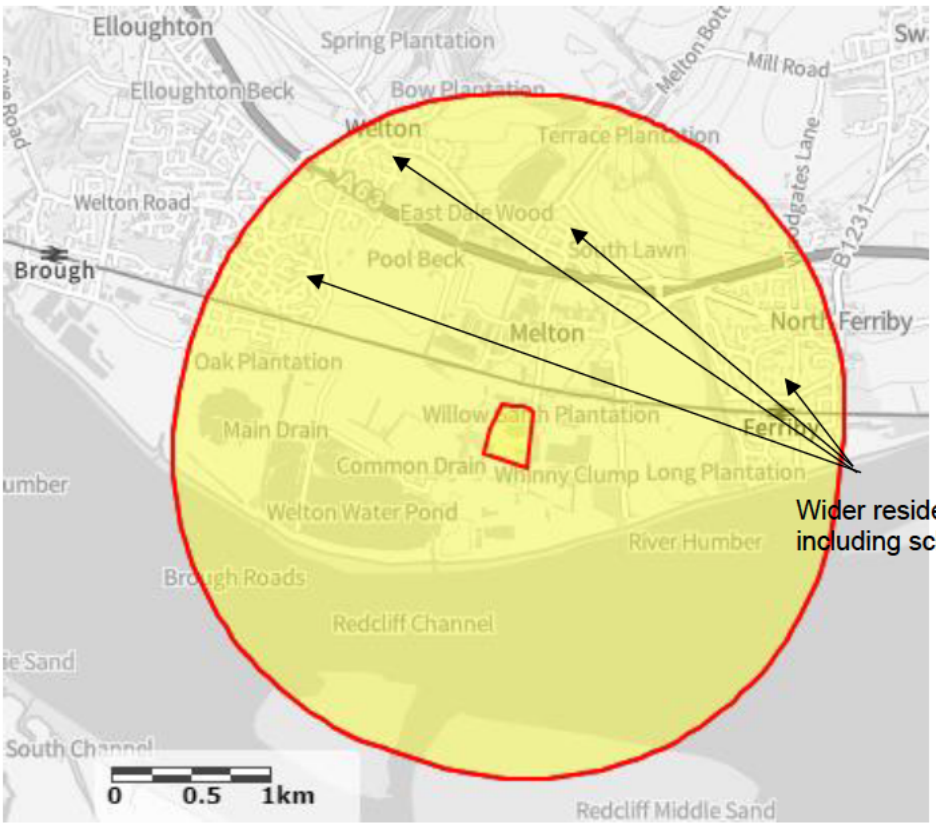
The human health receptors in the locality are show in the images over page and include residential areas, schools, workplaces, farms and leisure facilities within 2 km, reducing to mainly workplaces, farms and leisure facilities within 1 km of the site.

Also within 2 km of the site is the Humber Estuary Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site, and the Melton Bottom Chalk Pit SSSI.

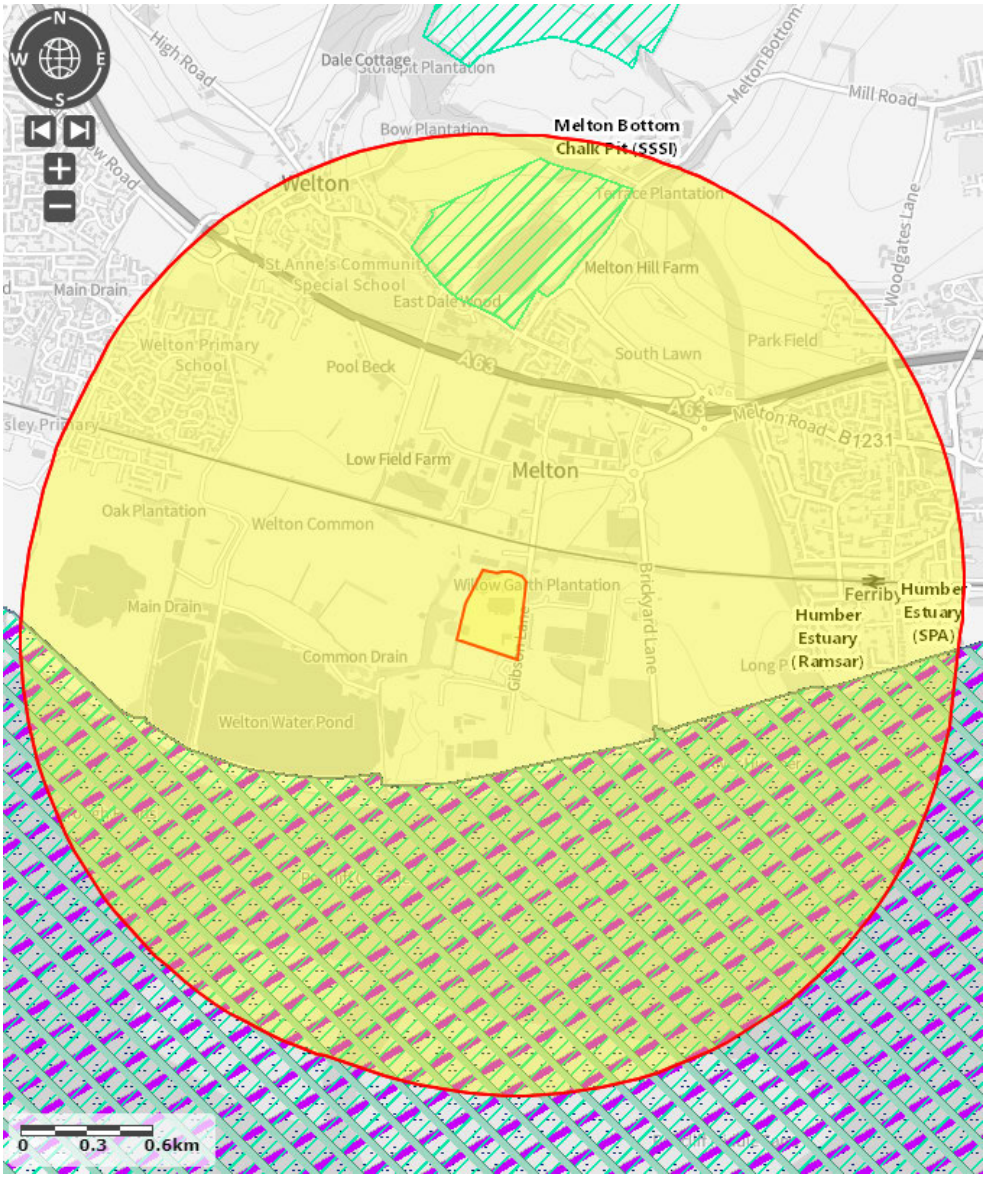
Sensitive Human Health Receptors Within 1 km of the MET Dry AD Plant



Sensitive Human Health Receptors Within 2 km of the MET Dry AD Plant



Sensitive Ecological Receptors Within 2 km of the MET Dry AD Plant



Development of the Site and Pollution History

Development

Transwaste developed and has occupied and operated the Melton Waste Park since 2007. Prior to this time, the land was common agricultural land within the flood zone of the Humber Estuary. The site has an overall area of approximately 8.67 hectares, and the facility is located approximately 550 m north of the Humber Estuary, 150 m south of the Melton rail crossing and 900 m south of the A63.

The immediate locality is used largely for industrial or commercial activities, although the wider area is relatively rural including agricultural activities, villages and small towns, with the Humber Estuary to the south. The local commercial activities have largely developed since 2000, although the Melton area has been home to mineral and metals industries for decades, including the former Capper Pass smelting works, which is a known source of contamination in the area.

Pollution

In June 2011, Resource and Environmental Consultants Limited (REC) prepared a Site Condition Report (SCR) for the Transwaste site (REC Report: 60002p1r1, Issued: February 2011). The details of this report are summarised below.

The report was a Phase I assessment only, with no sampling being undertaken, but which considered the site infrastructure and operations at the time, when Transwaste held a Standard Rules Permit. Within the original SCR, the site location map showed two boundary lines around the site, one to the north in grey and the second to the south in red. The grey line bounded the area of the site where the main infrastructure and buildings were located at the time and this area was covered in concrete hardstanding. The red boundary represented the area of the site that was, at the time, undeveloped and was proposed for use to store additional waste materials. Both areas were considered in full within the SCR.

At the time of the original SCR, which was effectively the condition of the land at Permit issue, it was considered that the potential for significant migratory contamination to the Transwaste facility from surrounding sites was unlikely, and this is still considered to be the case from the current local and Permitted operations.

In 2013, an area of land was surrendered from within the main site to facilitate the development of an energy from waste facility. This area is still to be developed although the project is still progressing. The area was inspected by the Environment Agency prior to surrender (Compliance Assessment Report ID: I/121210/65528 from December 2012), and the revised Permit (EPR/BP3792LD/S004) was issued on 22nd January 2013. The footprint of the area has expanded slightly from that which was originally scoped out of the Melton Waste Park installation boundary and hence is re-drawn in the future installation boundary diagram included within this report. No further quantitative assessment of the land quality has been provided here.

In January 2020, Resource and Environmental Consultants Limited (REC) prepared an Environmental Permit Baseline Assessment of the area of land now dedicated to the dry AD facility to be operated by MET. Seven window samples were drilled although five of these refused at obstructions at between 0.55 and 0.7 m depth. The other two boreholes, WS 102 and 103 were drilled to 5 m depth and groundwater monitoring pipes were installed.

Made Ground was encountered during the investigation as grey gravelly Clays and Sands to a maximum proven depth of 3.20 m below ground level, in WS103. Sand was generally fine to coarse. Gravel was generally angular to subrounded fine to coarse concrete, brick and crushed aggregate.

Alluvium deposits consisting of grey fibrous clay were also encountered within WS 102 and WS 103 at a minimum depth of 2.70m below ground level and a maximum depth of 3.20m below ground level respectively.

Soil samples were obtained from the exploratory holes and the Made Ground samples showed laboratory evidence of impact from hydrocarbons and Polycyclic Aromatic Hydrocarbons (PAH), particularly from WS 102 at a depth of 1.0 m below ground level. The sample of groundwater taken from WS 103 also showed the presence of a number of PAH fractions.

No evidence of hydrocarbons or PAH was encountered in either the upstream or downstream surface water sample taken from the adjacent brook. The shallow and localised extent of the contamination suggests that this may have occurred from site operations.

As the dry AD process had not been developed at the time of the site investigation, the historic contamination found was not related to the process now proposed and, in the absence of earlier quantified investigations, would be assumed to have come from the Transwaste operations. The results of the study did note the potential for subsurface vertical and lateral migration of hydrocarbons and PAH in groundwater, through the Made Ground, and potentially to the sensitive Alluvium (Secondary A Aquifer) receptor or into surface water features. However, the potential for such an occurrence was considered unlikely and the overall risk rating was low as the clayey nature of the underlying Alluvium would reduce the potential for the vertical migration of contaminants, and samples taken from the water course demonstrated that it had not been significantly impacted.

This is the area of land that is now proposed for surrender from the Permit, although, other small areas of the site have already been dedicated to other uses, either relating to non-waste activities, in areas that have previously only managed green waste operations, or which are due to be Permitted separately by future activities.

Additionally, although the investigation identified some contamination at the site, the area now being developed to locate the dry AD plant has been excavated to facilitate a 7 m foundation, comprising 6 m below ground level and 1 m above for the new plant. Therefore, any historical soil contamination within 6 m of the original ground level has now been removed and replaced with a chalk foundation and this includes the area where WS 102 was drilled. No further assessment of this land is therefore proposed prior to surrender, as the land is considered to be in a suitable and satisfactory state.

Supporting Information

As both of the REC reports (2011 and 2020) have previously been submitted to the Environment Agency and in light of the summaries provided above, they are not included in full within this report.

3. Permitted Activities

Permitted Activities

The Transwaste Melton Waste Park installation accepts incoming mixed wastes which are pre-treated for use in incineration or co-incineration activities.

In addition to the processes which pre-treat wastes to RDF and SRF, the site also engages in a number of separate waste operations. These include;

- Inert and aggregate crushing, screening and storage with associated soil storage.
- General materials recycling facility and transfer station.
- Green waste pre-treatment facility (shredding) and storage prior to composting at other sites.
- Wood waste shredding and chipping with storage.
- Hazardous waste bulking and storage.

No change is proposed in the overall site operations, although some areas of land originally included within the installation boundary are now scoped out for other processes.

The current and future Installation Boundary diagram in the Figures section of this report highlight the areas of land that will and will no longer fall within the Transwaste operations.

Non-Permitted Activities Undertaken

In addition to the Permitted operations, some areas of the wider site are used for non-waste activities and hence are not included within the permitted installation boundary. This includes the area to the south-west of the site. However, there are no, non-permitted activities undertaken within the installation boundary.

Environmental Risk and Protective Measures

The potential risks to the environment associated with the Melton Waste Park operation can be summarised as follows:

- Spillage or loss of containment of waste or raw materials including oils and diesel from vehicles and plant;
- Potential for odour or dust creation and nuisance;
- Potential for fire or explosion to occur.

However, the site operates to the conditions of their Environmental Permit and has appropriate infrastructure in the main processing areas of the site. Staff are trained in their roles and work to operational procedures. Additionally, Transwaste maintains accident and emergency procedures, spill response procedures, and other management plans such as dust and odour management and a fire prevention plan.

Physical infrastructure measures included at the site comprise:

- Enclosed process buildings for all municipal solid waste (MSW) receipt, treatment and handling. Comprehensive hardstanding and purpose-built infrastructure are in place and are regularly maintained.
- Comprehensive hardstanding extends across the northern portion of the Melton Waste Park and therefore incorporates the roadways for incoming and outgoing wastes. Only green waste, wood and aggregate, or prepared, baled and wrapped RDF / SRF is stored in areas that are not provided with comprehensive, impervious surfacing. RDF / SRF bales are stored on a geotextile layer where these would otherwise be located on areas of porous hardstanding.
- Drainage from across the surfaced portion of the site is directed to the site settlement lagoon, via two full retention separators working in parallel, before controlled discharge to the boundary water course (W1), that ultimately flows to the River Humber.
- Dust and odour management controls including the use of screens and ionisation of the building ventilation air.

All process and surface water run-off from the areas served by sealed drainage on the site pass through one of two, full retention separators working in parallel, then via the site settlement lagoon prior to discharge at emission point W1. In the event of an emergency the outlet discharge point to the lagoon can be sealed, thus preventing any firewater or other contaminants from entering adjacent surface waters. The site has experienced a small number of fires in the past, due to the nature of the wastes that are accepted. However, these have always occurred within the processing sheds or in the yard, and the fire emergency plan has been successfully implemented, with the site lagoon outlet being closed to contain all firewater and potential contamination.

The lagoon can also be used in an emergency to store run-off pending subsequent analysis and discharge to tanker for off-site removal, if deemed necessary. The settlement lagoon has a capacity of up to 1.5 million litres and was constructed in line with CIRIA guidance.

Where new process areas are proposed, suitable infrastructure such as impermeable hardstanding and drainage is provided in the area.

Operational and maintenance measures are available to staff through an on-line portal and include:

- A daily, documented inspection by the technically competent manager.
- Weekly cleaning schedules undertaken and documented by operators.
- Strict housekeeping and hygiene procedures.
- Documented monthly inspection of infrastructure.
- Planned preventative maintenance system for all plant and operational equipment.
- Any issues or incidents are reported to line managers and to the technically competent manager and the appropriate response is actioned.
- Spillage procedures; accident and emergency procedures; non-conformance reporting of any issue including equipment breakdown, damage to infrastructure, evidence of pollution etc.

4. Changes to the Activity

The only change to the site activities currently proposed, is the partial surrender of some of the land previously included within the installation boundary to enable the development of the Melton Waste Park Anaerobic Digestion Facility by MET. This operation includes technical connections to the Transwaste operations and as such, the site will become a multi-operator installation.

The extent of other areas that are now scoped out of the Transwaste installation boundary are also confirmed. These areas have been surrendered to facilitate the development of a proposed energy from waste facility to be located within the overall site boundary, and to scope out non-waste activities undertaken at the site.

5. Measures Taken to Protect the Land

As detailed in Section 3 above the site includes comprehensive impervious hardstanding where required to prevent or minimise the potential for pollution to occur with secondary protection measures provided to primary containers where necessary.

Only areas used for the treatment and storage of green waste or aggregates have porous hardstanding and, where any porous hardstanding areas are required to store baled and wrapped RDF / SRF, a geotextile barrier is laid before storage is permitted.

All potentially polluting materials (e.g. raw materials, maintenance oils and fluids etc.) are stored appropriately with secondary containment as required in order to prevent their escape to the environment in the event of a spillage or other incident.

6. Pollution Incidents that may have had an Impact on the Land, and their Remediation

The site has been operational since 2007. No significant environmental issues are reported to have occurred, with any incidents managed appropriately and spillages cleared efficiently and effectively. Some fires have also occurred at the site. However, the activation of the emergency action plan, spillage procedures and / or the fire emergency plan as required, have minimised the potential for environmental impacts to occur and would prompt any necessary clean-up and remediation actions as soon as possible from the point of any occurrence. Procedures at the site dictate that a detailed record of any accidents or incidents which have the potential to result in land, water or groundwater pollution shall be made, with any incidents managed and spillages cleared immediately.

Although the REC Environmental Permit Baseline Assessment from January 2020 identified some evidence of historic contamination in the area now to be surrendered for development by MET, this was removed during the development of the plant foundation and no pollution incidents have been recorded across the Melton Energy Tech site since that time.

Other areas of the site that are to be surrendered have been used for the treatment and storage of green waste or aggregates only or have stored baled and wrapped RDF / SRF over a geotextile barrier.

Across all site areas, where the potential is identified for any contamination to have occurred, a full investigation will be facilitated and the Environment Agency will be informed. Any required remediation will be confirmed and actioned and any improvements to site processes or procedures in order to prevent recurrence will be implemented.

7. Soil Gas and Water Quality Monitoring (where undertaken)

Transwaste undertakes twice yearly sampling of their water discharge from the site lagoon. Results are often below the laboratory levels of detection for each pollutant species and have been consistently within the Permitted levels for at least two years.

EPR/ BP3792LD also requires the *'Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.'*

Whilst Transwaste does undertake an on-going and systematic appraisal of the risk of contamination from their operations, a single soil and groundwater sample were taken at the site in June 2024. The results are provided in Appendix 1 and confirm that contaminant levels within the ground water were well within the Permitted levels. The report suggests that all detectable contaminants within the soils were also within the Permitted levels. However, there are no specified pollutant concentrations identified within the Permit for soils. As such, and where relevant, an assessment has been made against available soil guideline values (SGVs).

SGVs are scientifically based generic assessment criteria that can be used to simplify the assessment of human health risks arising from long-term and on-site exposure to chemical contamination in soil. SGVs are a screening tool for the generic quantitative risk assessment of land contamination. Where representative soil concentrations of contaminants on a site are at or below the SGV it can be assumed that it is very unlikely that a significant possibility of significant harm exists.

The SGVs available for the pollutants analysed from the 2024 soil sample are provided below. The results of analysis are stated in brackets.

Pollutant	Soil Guideline Value for Commercial Sites (mg kg^{-1} dry weight)
Arsenic	640 (0.027 mg kg^{-1})
Cadmium	230 (0.0001 mg kg^{-1})
Mercury (elemental)*	26 (0.00005 mg kg^{-1})
Nickel*	1,800 (0.035 mg kg^{-1})
Total Phenols	3,200 (0.0001 mg kg^{-1})

*This soil guideline value report has been withdrawn

The results of analysis confirm very low levels of contaminants in the soil sample when compared against the SGVs.

In addition to a small number of soil and ground water samples that have been taken from the site over the years, Transwaste undertakes an on-going and systematic appraisal of the risk of contamination from their operations. Regular visual inspections of site infrastructure are made and documented, with any required improvements or repairs actioned as soon as practicable.

Inspection reports and incident records and investigations are reviewed by Company management at least annually to ensure that any appropriate identified improvements have been made and are effective.

8. Decommissioning and Removal of Pollution Risk

Although some historic contamination was identified at the site during the intrusive investigation undertaken in January 2020, this has now been removed from the area to be developed by MET, by way of installing the plant foundation. As such, any contamination from this area has already been removed from site and the land beneath the MET development, which is that to be surrendered by Transwaste, has been returned to a suitable and satisfactory condition.

Other areas of the site that are no longer used for waste activities by Transwaste, including the area already surrendered and the extension of that area for the development of an energy from waste facility, and the location of the area originally used for green waste screening, processing and storage which is now dedicated to non-waste activities and is to be scoped out of the installation boundary, have limited potential for contamination to have occurred due to the limited activities that have been undertaken in these areas and with any baled and wrapped RDF / SRF storage recently having been situated over a geotextile barrier. As such, the risk of any pollution in these areas is minimal and no further sampling is proposed nor remediation required.

9. Reference and Remediation Data (where relevant)

Information on the latest soil and ground water samples undertaken at the site have been provided in Appendix 1.

Earlier Phase I and II reports prepared by REC have previously been submitted to the Environment Agency and are not provided again here.

The land beneath the area now surrendered for the MET development was excavated in 2022 to facilitate a 7 m foundation, comprising 6 m below ground level and 1 m above for the new plant. Therefore, any historical soil contamination within 6 m of the original ground level has now been removed and replaced with a chalk foundation. No further remediation is required.

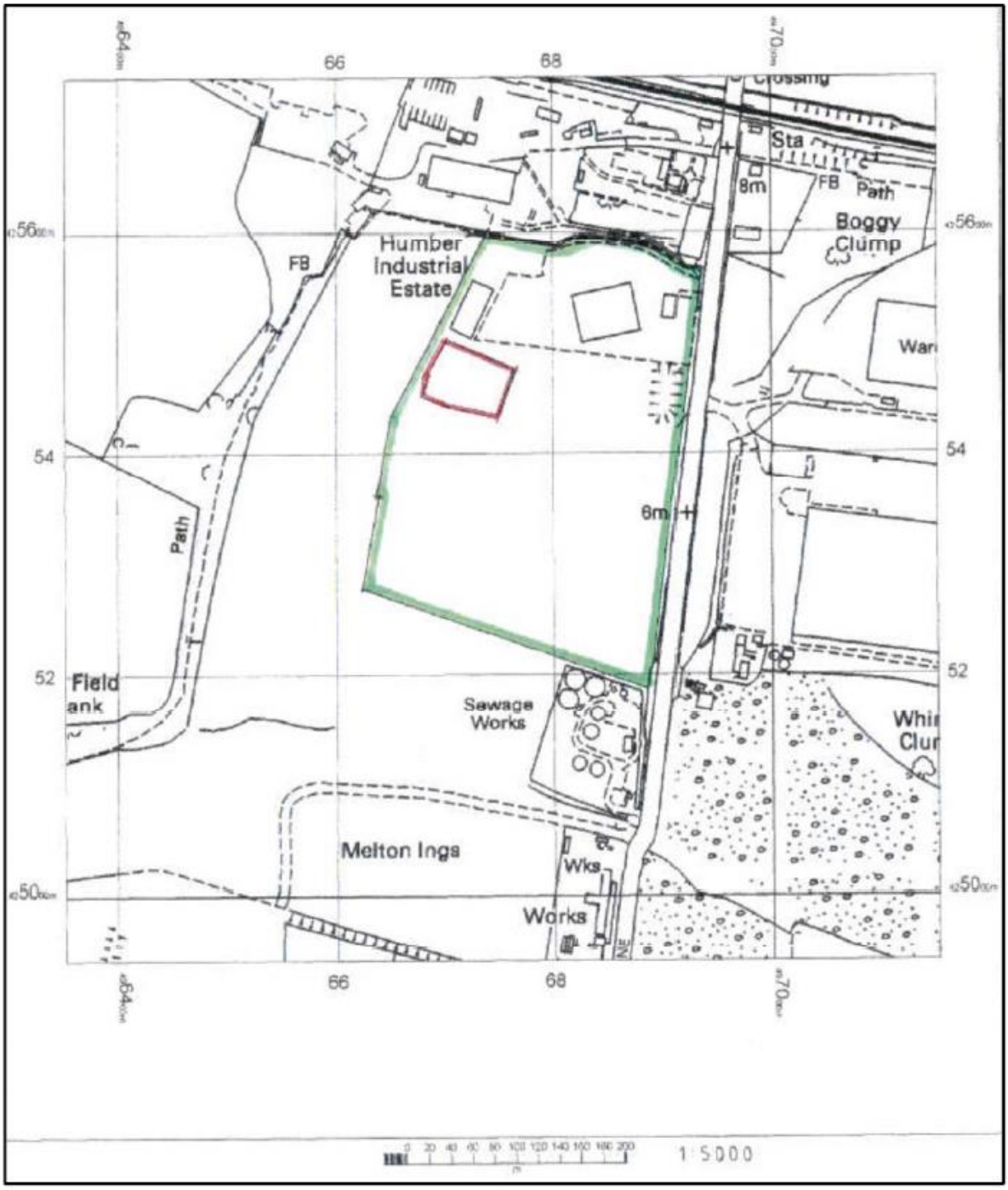
10. Statement of Site Condition

Although some historic contamination was identified at the site during intrusive sampling undertaken in January 2020, the impacted soils identified have now been removed from site and have been replaced with a chalk foundation beneath the new dry AD plant to be operated by Melton Energy Tech.

Therefore, there should be no significant level of contamination present in the area now being surrendered in order to facilitate the MET development and Transwaste has returned this area to a satisfactory state. The other areas noted as no longer being used as part of the Company's waste operations have been used for activities that are unlikely to be polluting, and / or have been protected from any potential leakages where waste has been stored by the use of a geotextile barrier beneath the RDF / SRF bales. As such, these areas are believed to remain in a satisfactory state and are also requested for removal from the main Melton Waste Park Environmental Permit (EPR/BP3793LD).

FIGURES

Figure 1 Current Permitted Site Boundary
Transwaste Recycling and Aggregates Limited
Melton Waste Park



The red polygon was originally identified as the area to be used for a future energy from waste plant (Permit number EPR/BP3792LD/S004 in 2013). This area has not yet been developed although is planned in due course. The revised installation boundary over-leaf denotes the area now to be used by the energy from waste plant, and which is therefore no longer used by Transwaste for their operations.

Figure 2 Future Permitted Site Boundary
Transwaste Recycling and Aggregates Limited
Melton Waste Park

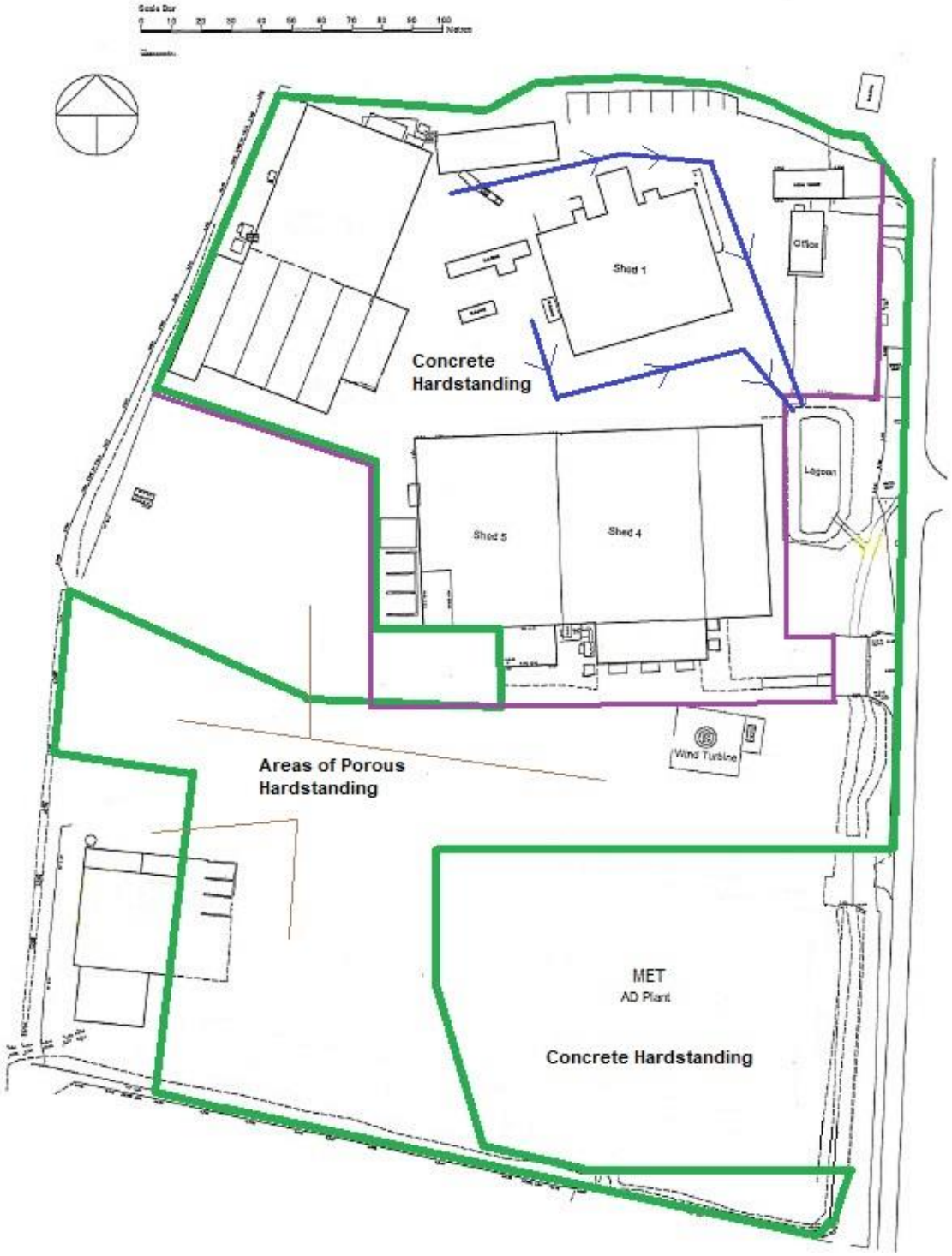
Land removed along the western boundary is dedicated to a future energy from waste plant (to the west of Shed 5) and the operation of virgin material drying floors that is now undertaken in the south-west corner of the site.

The area originally surrendered in 2013 has not been used in any way since that time. The additional area now identified for the EfW plant has, until now, been used to store baled and wrapped RDF / SRF that has been stored over a geotextile barrier in order to ensure the protection of the land below.

The virgin material drying floors have only been used for non-waste activities or originally for green waste processing and storage.

Finally, the location of the currently proposed MET AD plant is shown on the plan and this land therefore also now requires removing from the Transwaste Permit Installation Boundary.

Figure 3 Installation and Surfacing Infrastructure
Transwaste Recycling and Aggregates Limited
Melton Waste Park



APPENDIX 1

Rogers Geotechnical Services Limited
Soil and Groundwater Report; 24th June 2024

Our Ref C4364/24/E/6698_Final
11th July 2024

Transwaste,
Gibson Lane,
Melton,
North Ferriby,
East Riding of Yorkshire,
HU14 3HH

For the attention of Graham Wildridge,

Ref: Soil and water sampling as well as subsequent testing at Transwaste, Melton.

Dear Graham,

Further to the site visit to carry out soil and water sampling, please find attached the site plan showing the sampling locations and the completed testing results. Additionally, a comparison between the testing results and the environmental permit set limits is also appended.

It should be appreciated that the testing results show that all determinands tested fall below the limits set by the Environment Agency Permit numbered EPR/BP3792LD.

We trust that this information is of interest and should you have any other requirements do not hesitate to contact us.

For Rogers Geotechnical Services Ltd,

Yours Faithfully

Steven Hale BSc
Geo-environmental Technician

Notes:

RGS Environmental Geotechnical Specialists

Rogers Geotechnical Services Ltd

Offices 1 & 2, Barncliffe Business Park,
Near Bank,
Shelley,
Huddersfield,
HD8 8LU

Telephone: 0843 50 66 87
www.rogersgeotech.co.uk

Client:

Transwaste

Job Number:

C4364/24/E/6698

Project Details:

Transwaste, Melton

Scale: Not to scale - reference only

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	24-18574-1
Initial Date of Issue:	10-Jul-2024
Re-Issue Details:	
Client	Rogers Geotechnical Services Ltd
Client Address:	Offices 1&2, Barncliffe Business Park Near Bank Shelley Huddersfield West Yorkshire HD8 8LU
Contact(s):	Harry Letch
Project	C4364 Transwaste

Quotation No.:		**Date Received:**	12-Jun-2024
Order No.:		**Date Instructed:**	12-Jun-2024
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	18-Jun-2024
Date Approved:	10-Jul-2024	**Subcon Results Due:**	03-Jul-2024

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: C4364 Transwaste

Client: Rogers Geotechnical Services Ltd				**Chemtest Job No.:**		24-18574
Quotation No.:				**Chemtest Sample ID.:**		1820026
				Sample Location:		TP02
				Sample Type:		SOIL
				Top Depth (m):		2.6
				Date Sampled:		06-Jun-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Cadmium		M	2455	mg/kg	0.10	< 0.10
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50
Copper		M	2455	mg/kg	0.50	21
Mercury		M	2455	mg/kg	0.05	< 0.05
Nickel		M	2455	mg/kg	0.50	35
Lead		M	2455	mg/kg	0.50	21
Zinc		M	2455	mg/kg	0.50	53
Arsenic		M	2455	mg/kg	0.5	27
Cyanide (Free)		M	2300	mg/kg	0.50	< 0.50
Total Phenols		M	2920	mg/kg	0.10	< 0.10
Moisture		N	2030	%	0.020	18
Soil Colour		N	2040		N/A	Brown
Other Material		N	2040		N/A	Stones
Soil Texture		N	2040		N/A	Clay
Chromium		M	2455	mg/kg	0.5	39
Total Organic Carbon		M	2625	%	0.20	0.36
Total TPH >C6-C40	EH_1D_Total	M	2670	mg/kg	10	< 10
AOX (Subcon)		SN		µg/g	5.0	< 5.0

Results - Water

Project: C4364 Transwaste

Client: Rogers Geotechnical Services Ltd				**Chemtest Job No.:**		24-18574
Quotation No.:				**Chemtest Sample ID.:**		1820027
				Sample Location:		Standpipe 1
				Sample Type:		WATER
				Sample Sub Type:		
				Top Depth (m):		6.0
				Date Sampled:		06-Jun-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Chromium (Hexavalent)		U	1490	µg/l	20	[B] < 20
Cyanide (Free)		U	1300	mg/l	0.050	< 0.050
Total Phenols		U	1920	mg/l	0.030	< 0.030
Suspended Solids At 105C		U	1030	mg/l	5.0	22
Phosphorus (Dissolved)		N	1220	mg/l	0.020	0.024
Arsenic (Dissolved)		U	1455	µg/l	0.20	0.49
Cadmium (Dissolved)		U	1455	µg/l	0.11	< 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50	7.7
Copper (Dissolved)		U	1455	µg/l	0.50	1.3
Mercury (Dissolved)		U	1455	µg/l	0.05	< 0.05
Nickel (Dissolved)		U	1455	µg/l	0.50	< 0.50
Lead (Dissolved)		U	1455	µg/l	0.50	< 0.50
Zinc (Dissolved)		U	1455	µg/l	2.5	9.7
Total Organic Carbon		U	1610	mg/l	2.0	3.5
Total TPH >C6-C40	EH_1D_Total	U	1670	µg/l	10	< 10
Resorcinol		U	1920	mg/l	0.0050	< 0.0050
Phenol		U	1920	mg/l	0.0050	< 0.0050
Cresols		U	1920	mg/l	0.0050	< 0.0050
Xylenols		U	1920	mg/l	0.0050	< 0.0050
1-Naphthol		N	1920	mg/l	0.0050	< 0.0050
Trimethylphenols		U	1920	mg/l	0.0050	< 0.0050
AOX (Subcon)		SN		mg/l	0.0	0.0

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1820027			Standpipe 1	06-Jun-2024	B	Coloured Winchester 1000ml
1820027			Standpipe 1	06-Jun-2024	B	EPA Vial 40ml

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1030	Total Suspended Solids	Total suspended solids	Filtration of a mixed sample through a standard glass fibre filter and determination of the mass of residue retained dried at 105°C.	SW
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW PL LE DW GW
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	PL GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	PL GW
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.
Any comments or interpretations are outside the scope of UKAS accreditation.
The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.
Uncertainty of measurement for the determinands tested are available upon request .
None of the results in this report have been recovery corrected.
All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at ≤ 30°C prior to analysis.
All Asbestos testing is performed at the indicated laboratory .
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.
All water samples will be retained for 14 days from the date of receipt.
Charges may apply to extended sample storage.

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Job Number:	C4364/24/E/6698
Job Name:	Transwaste, Melton
Client	Transwaste

Determinand	**Environment Agency Permit Limits**	**Location**	
		TP02	**Standpipe 1**
Total Organic Carbon (TOC)	100 mg/l	**0.36 mg/kg**	**3.5 mg/l**
Total Suspended Solids (TSS)	60 mg/l	**Cannot test**	**22 mg/l**
Hydrogen Oil Index (HOI)	10000 µg/l	**< 10 µg/kg**	**< 10 µg/l**
Total Phosphorous (Total P)	3 mg/l	**Cannot test**	**0.024 mg/l**
Phenol index	0.3 mg/l	**< 0.1 mg/kg**	**< 0.03 mg/l**
Free Cyanide (CN-)	0.1 mg/l	**< 0.5 mg/kg**	**< 0.05 mg/l**
Adsorbable organically bound halogens (AOX)	1 mg/l	**< 5 mg/kg**	**0.0 mg/l**
Arsenic (As)	500 µg/l	**27 µg/kg**	**0.49 µg/l**
Cadmium (Cd)	500 µg/l	**< 0.1 µg/kg**	**< 0.11 µg/l**
Chromium (Cr)	150 µg/l	**39 µg/kg**	**7.7 µg/l**
Copper (Cu)	500 µg/l	**21 µg/kg**	**1.3 µg/l**
Lead (Pb)	100 µg/l	**21 µg/kg**	**< 0.5 µg/l**
Nickel (Ni)	500 µg/l	**35 µg/kg**	**< 0.5 µg/l**
Zinc (Zn)	1000 µg/l	**53 µg/kg**	**9.7 µg/l**
Mecruy (Hg)	5 µg/l	**< 0.05 µg/kg**	**< 0.05 µg/l**
Hexavalent Chromium (Cr (VI))	100 µg/l	**< 0.50 µg/kg**	**< 20 µg/l**