TETRA TECH

MEMO

To:	**Matthew Woollin** Technical Specialist – Climate Charge Installations Team North & East Yorkshire Environment Agency matthew.woollin@environment-agency.gov.uk
Cc:	**Dave Barnard** Eco-Power Environmental Bankwood Processing Site, Bankwood Lane, Rossington, Doncaster, DN11 0PS Dave.Barnard@ecope.co.uk
From:	Nigel Mann
Date:	22nd February 2022
Subject:	**Biomass Boilers at Waste Drying Plant, Gibson Lane, Melton, Hull, HU14 3HH,** **Air Quality Assessment and Odour Assessment** - **Response to the EA's Comments Issued in the Email Dated 19th November 2021**

Tetra Tech Limited (Tetra Tech) (formerly WYG) have undertaken an air quality and odour assessment to support a planning application of the installation of 41 proposed Orlan Super 130 kW Biomass boilers Biomass Boilers at Waste Drying Plant, at Gibson Lane, Melton, Hull, HU14 3HH.

Air quality assessment report has firstly issued on 22nd November 2019, and subsequently the report has been revised in response to the EA's Schedule 5 Requests, the details of revisions, before this technical memo, are presented in Table below.

AIR QUALITY ASSESSMENT REPORT REVISION HISTORY

Issue	Date	Status
1	22nd November 2019	First Issue (Report reference: A115848)
2	24th January 2020	Second Issue – inclusive of (1) odour assessment for dryer floor operations; (2) Responses to the comments from Senior Environmental Control Officer of Yorkshire Council by the Investigations of potential increase of short-term impact on the receptors by the waiting traffic adjacent to the level crossing on Gibson Lane (Report reference: A115848)
3	14th February 2020	Third Issue – Minor Amendment (Report reference: A115848)
4	25th March 2021	Fourth Issue – inclusive of responses to the EA's Notice of request for more information (the 1st Schedule 5 Request, **the EA letter dated on 22/01/2021**) in respect of the air quality assessment and odour assessment (Report reference: 784-B027125)
5	23rd July 2021	Fifth Issue – inclusive of (1) Responses to the EA's Notice of request for more information (the 2nd Schedule 5 Request, **the EA letter dated on**

		22/03/2021) in respect of the air quality assessment and odour assessment (Report reference: 784-B027125); (2) Dust and particulate emission monitoring from the drying floor stacks; (3) Air dispersion modelling of particulate emission impacts from the drying floor stacks; and Revising the dispersion modelling assessment using installed Exodraft chimney fan data, in accordance with the scheduled task in Tetra Tech technical Memo titled "Response to the Environment Agency's Information Request in the email dated 28th May 2021 (No. 2)", dated 23rd June 2021.
6	14th October 2021	Sixth Issue – inclusive of Responses to the EA's Notice of request for more information (the 3rd Schedule 5 Request, **the EA letter dated on 27/09/2021**) in respect of requesting for more information on: (1) Odour Management Plan (OMP) – Issue 1 Dated 25th March 2021; (2) Emissions Management Plant (EMP – Issue 2, dated 23re July 2021; (3) Pest Management Plant (PMP) - Issue 2, dated 23rd July 2021; and Updating particulate matter impact modelling assessment by including new emission points for the operations of cooling pellets.

Objectives of This Memorandum

After reviewing the 14th October 2021 air quality report, Mr Matthew Woollin, Environmental Officer, Permitting and Support Centre, Quadrant 2, 99 Parkway Avenue, Parkway Business Park, Sheffield S9 4WF, issued a letter on 8th December 2021, requesting further information (the 4th Schedule 5 request).

The 4th Schedule 5 letter requests addition information, inclusive of Odour Management Plan (OMP), Noise Management Plan (NMP), and Emissions Management Plan (EMP).

A copy of the 4th Schedule 5 letter is presented in Annex A.

This technical memo provides the required information relevant to OMP and EMP. The NMP information will be provided separately.

This technical memo should be read in conjunction with the air quality report dated on the 14th October 2021.

Tetra Tech Responses to the EA Comments

The EA's comments are replicated in *italic* and the Tetra Tech responses to each comment are given in **blue** for the purpose of clarity below.

Odour Management Plan (OMP)

EA Schedule 5 Question No.1:

1. *How were the proposed air extraction rates derived and how does this relate to the capacity of the building, answers should respond as a minimum to the points given here.*

<u>Reason:</u> We would expect to see a clear rationale behind the air extraction rate and building capacity i.e. what is the building volume and how does this relate to air changes per hour under different extraction scenarios namely:

- *The dust extraction system is connected to the areas of the treatment shed where we would expect to see maximum odour potential. Other than dust being removed from the extracted air there is no proposal to treat to reduce odour therefore the dust extraction system is a potential odour source. This would be exacerbated during dry periods when waste will need less drying and therefore the dust extraction system would be the primary means of maintaining negative pressure.*
- *It is not clear when the dust extraction system will be in use i.e. if it is only during active waste treatment then when waste is stored but not being treated the extraction system may not be in use and the building will not be under negative pressure (such as during the night).*

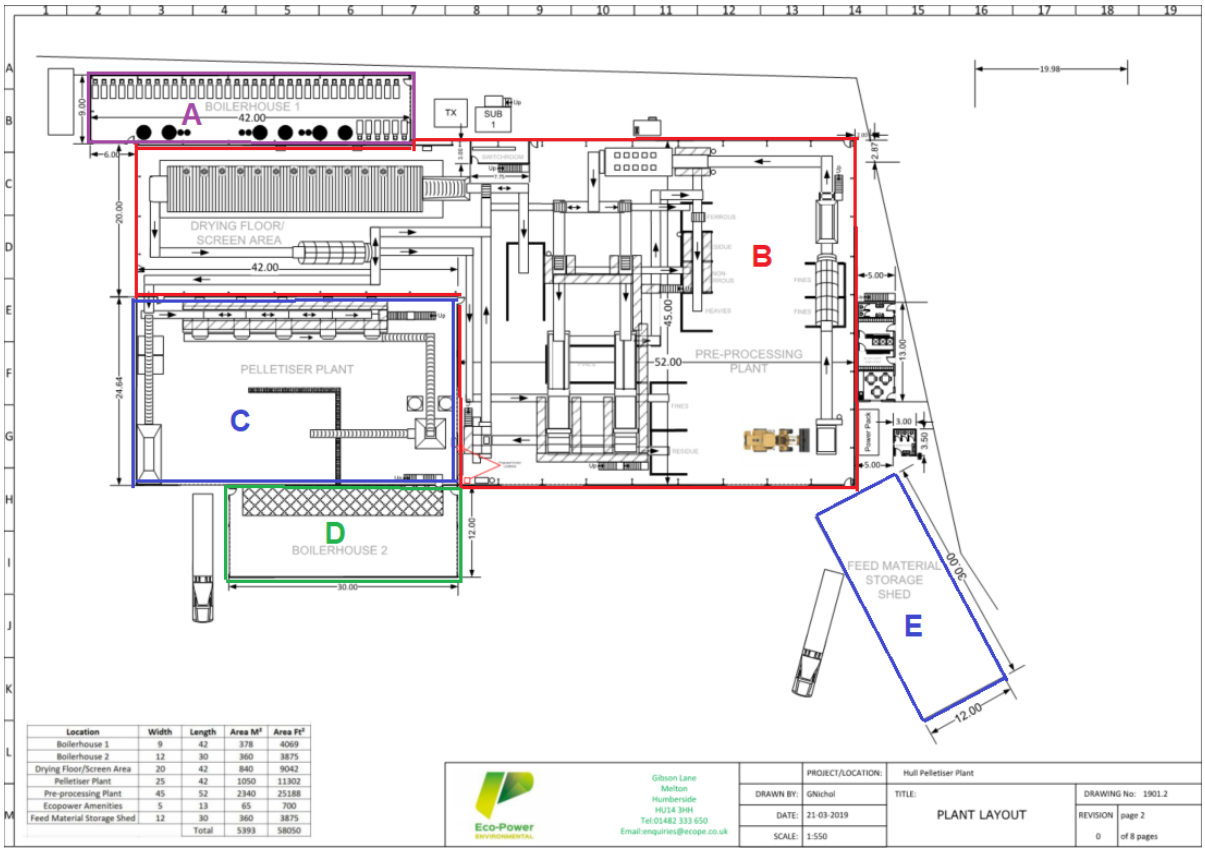
Tetra Tech Response 1:

Air extraction rate:

The plant is divided into 5 separated areas as shown in Figure 1 below.

- Area A: Boiler House 1
- Area B: Drying Floor Area and Pre-Processing Area;
- Area C: Pelletiser Plant;
- Area D: Boiler House 2 – It becomes a storage area; and
- Area E: Storage Shed areas.

Figure 1 Plant Layout with Divided Areas



Area A and Area B are separated by a wall. Area B and Area C are also separated by walls.

The air exchange rate for the Area A boiler house has not been calculated and presented as it is only housing the boilers and wood logs. The wood logs materials have low potential for dust or odour emissions.

The air exchange rate for Area B and Area C has been calculated as below.

Area B – Drying Floor Area and Pre-Processing Area

Building Volume Calculations

Drying Floor:

- Building Length = 42 m
- Building Width = 20 m
- Building Height = 8.2 to 9.25 m
- Building Volume = 42 x 20 x 9.25 = 7,770 m^3
- Estimated Occupied Space (e.g., by equipment, materials): 30%
- Net Building Volume: 5439 m^3

Pre-Processing Plant

- Building Length = 52m

- Building Width = 45 m
- Building Height = 12.15 m
- Building Volume = 52 x 45 x 12.15 = 29,250 m^3
- Estimated Occupied Space (e.g., by equipment, materials): 30%
- Net Building Volume: 20,475 m^3

Total Net Volume: 5439 + 20475 = 25,914 m^3

Air Exhausted out

Number of drying floor stacks: 13

Each stack flow rate: 5086 m^3/hr

Total drying floor stack volume: 13 x 5086 = 66,118 m^3/hr

Air from the dust extraction system: 70,000 m^3/hr

Total air volume exhausted out: 66,118 + 70,000 = 136,118 m^3/hr

The estimated air exchange rate: 136,118 / 25,914 = 5.25 air exchange rate per hour

Therefore, when the drying floor and the dust extraction system are in operation, the estimated air exchange rate is approximately 5 air exchange rate per hour

Area C – Pelletiser Plant Area

Building Volume Calculations

- Building Length = 42 m
- Building Width = 25 m
- Building Height = 8.2 to 9.25 m
- Building Volume = 42 x 25 x 9.25 = 9712.5 m^3
- Estimated Occupied Space (e.g., by equipment, materials): 30%
- Net Building Volume: 6799 m^3

Air Exhausted out

Air volume in the cooler exhaust stack: 40,000 m^3/hr

The estimated air exchange rate: 40,000 / 6799 = 5.88 air exchange rate per hour

Therefore, when the cooling of the SRF pellets is in operation, the estimated air exchange rate is approximately 6 air exchange rate per hour.

- *The dust extraction system is connected to the areas of the treatment shed where we would expect to see maximum odour potential. Other than dust being removed from the extracted air there is no proposal to treat to reduce odour therefore the dust extraction system is a potential odour source. This would be exacerbated during dry periods when waste will need less drying and therefore the dust extraction system would be the primary means of maintaining negative pressure.*

Tetra Tech Response:

The waste feedstock is dry mixed recycling residues consisting of packing waste plastic films, paper fibres and plastic bottles, ferrous and nonferrous metals. The site does not process any municipal waste or any waste that has an organic or putrescible content and therefore the treated waste feedstock have low odour potential and have no odour issues as a result.

Incoming materials will have a moisture content of 18-20% in summer and incoming materials will have a moisture content up to 25% in winter. The final products will have 10 -11% of moisture.

Drying floor, dust extraction system and pellet cooling will be running as 24/7, with twice a day for one hour for cleaning and maintenance and a 12-hour shut down every week on Monday. During the dry period when waste will need less drying but the number of boilers running are kept same during the summer and winter. A reduced heat requirement will be achieved by controlling/reducing the wood load to the boilers, for example, winter every 15 minutes and summer every 20 minutes.

Therefore, both the drying floor and the dust extraction system would be the means of maintaining negative pressure when they are in operations.

- *It is not clear when the dust extraction system will be in use i.e. if it is only during active waste treatment then when waste is stored but not being treated the extraction system may not be in use and the building will not be under negative pressure (such as during the night).*

Tetra Tech Response:

Drying floor, dust extraction system and pellet cooling will be in operation at same time. Drying floor, dust extraction system and pellet cooling will be running as 24/7, with twice a day for one hour for cleaning and maintenance and a 12-hour shut down every week on Monday.

When they are not in operations, the building will not be under negative pressure for a short period. As the treated materials have low odour potential and it is unlikely causing an odour issue.

EA Schedule 5 Question No.2:

2. *As the negative pressure system relies in part on extraction of air for use in the biomass boilers what happens if there is no or minimal drying taking place? Answers should as a minimum respond to the points given here.*

   <u>Reason</u>: Impacts of reliance on the use of extracting air using the biomass boilers include:

   - *Shed not always under negative pressure i.e. waste processing can take place without the biomass boilers being in use?*
   - *Waste will tend to be drier in summer resulting in less need to dry/use biomass boilers therefore peak odour potential coincides with those times when drying will be at a minimum;*
   - *The schedule 5 response (14th October 2021) assumes that all 41 boilers will be in use to provide negative pressure whereas the air quality modelling assumes 35 boilers will be a normal operation scenario;*

- *Reliance on the use of the biomass boilers to treat odorous air could mean that the boilers are used when there is no demand for heat for drying, this would not be an efficient use of energy/resources;*
- *What happens when the site is closed i.e. as waste processing doesn't take place out of hours then the drying line/boilers will not be in use, but waste may be present in the treatment shed without air extraction taking place i.e. not under negative pressure?*

Tetra Tech Response 2:

- *Shed not under negative pressure i.e. waste processing can take place without the biomass boilers being in use;"*

  Drying floor, dust extraction system and pellet cooling will be in operation at same time. When drying floor, dust extraction system and pellet cooling are not in operation, the building will not be under negative pressure for a short period. As the treated materials have low odour potential and it is unlikely causing an odour issue.

- *"Waste will tend to be drier in summer resulting in less need to dry/use biomass boilers therefore peak odour potential coincides with those times when drying will be at a minimum;"*

The treated materials have low odour potential and the low odour emission potential remain similar between summer and winter.

- *"The schedule 5 response (14th October 2021) assumes that all 41 boilers will be in use to provide negative pressure whereas the air quality modelling assumes 35 boilers will be a normal operation scenario;"*

Section 5.4 of "The schedule 5 response (14th October 2021)" presented that:

Two operations scenarios have been assessed for Eco-Power's biomass boilers.

(1) Scenario 1 – normal operation scenario. The design heat demand of the associated Eco-Power drying plant only requires 35 Orlan Super 130 kW_{th} biomass boilers to be operate at any one time.
(2) Scenario 2 – theoretical worst-case scenario. It is theoretically possible for all 41 Orlan Super 130 kW_{th} biomass boilers to operate and this scenario is to provide a worst-case assessment.

The assumption that all 41 boilers are in operations was taken to produce a worst-case impact assessment and cumulative assessment of PM_{10} and NO_2 emissions in modelling.

In reality, 35 boilers will be in operation.

- *Reliance on the use of the biomass boilers to treat odorous air could mean that the boilers are used when there is no demand for heat for drying, this would not be an efficient use of energy/resources;*

  Area A (Boiler House 1) and Area B (Drying Floor Area and Pre-Processing Area) are separated by a wall. As Area A is only housing the boilers and wood logs, the wood logs materials have low potential for dust or odour emissions.

The biomass boilers in Area A will not be used to treat any potential odorous air within the Area B Drying Floor Area and Pre-Processing Area. Air within Area B will be exhausted out by both drying floor fan systems and a dust extraction system (a Econotube T598/40x12L). As the treated materials have low odour potential it is unlikely to cause an odour issue. However, if any odour issue at the site boundary is identified to be caused by the odour emissions from the drying floor stacks and dust extract system outlet, further investigations of odour emissions from those two sources will be undertaken (for example, odour sampling/monitoring at the drying floor stacks and dust extract system to be undertaken). If required, mitigation measures to control odour will be applied to drying floor stacks and the dust extract system, and this can be imposed as a permit improvement condition to mitigate the odour adverse effects.

- *"What happens when the site is closed i.e. as waste processing doesn't take place out of hours then the drying line/boilers will not be in use, but waste may be present in the treatment shed without air extraction taking place i.e. not under negative pressure?"*

Twice a day for one hour for cleaning and maintenance and a 12-hour shut down every week on Monday, the plant will be not under negative pressure. As the treated materials have low odour potential and it is unlikely causing an odour issue.

EA Schedule 5 Question No.3:

3. *How is the biomass boiler room connected to main shed?*
   "Reason: For maximum benefit for odour control the air intakes for the boiler room would be over the waste reception/initial treatment areas."

Tetra Tech Response 3:

The biomass boiler room 1 (Area A) and the main shed (Area B) are separated by a wall. The heated air is conveyed to the drying floor by pipes through the wall. The intake air for the boiler room 1 is not taken from the main shed.

The biomass boiler 2 is a storage area.

EA Schedule 5 Question No.4:

4. *How do you control air intake into the reception shed?*

   "Reason: To maximise boiler efficiency you need to ensure a consistent supply of air, if the air is provided from the treatment shed how can this be controlled if the doors are closed?"

The SRF pellet cooling system has an extraction rate (assuming cooling is taking place) of 40,000m$_3$/hr. Provide a response to the points given here:

- *What consideration has been given to this extraction system acting as an odour source?*
- *How would negative pressure in this area of the shed interact with the other air extraction methods?*

Reason: A number of extraction systems are described some of which could act as odour sources and interact resulting in unplanned consequences by impacting on each other.

Tetra Tech Response 4:

For the reception shed, there are no louvres installed but there are 4 large doors that ensure fresh air intake.

For boiler house 1, when the doors are closed there are louvres all around the boiler house walls so air flow is not an issue.

The boiler house 1 air is not taken from the treatment shed.

"The SRF pellet cooling system has an extraction rate (assuming cooling is taking place) of 40,000m^3/hr. Dust extraction will be achieved via cyclone filters. Can you explain?"

As discussed in Table 1-2 of October 2021 report: "2 cyclones are fitted before the air exhausts to take out any particles, this material is collected into two Intermediate Bulk Containers (IBCs) and is put back into the system and is pelletised".

It is planned to install fibric filter after cyclones to make the dust emission for cooling stack to meet BAT AEL limit of 2-5 mg/cubic meter.

- *"What consideration has been given to this extraction system acting as an odour source?"*

  The SRF pellet has a very low odour potential, and it will not pose an odour issue.

- *"How would negative pressure in this area of the shed interact with the other air extraction methods?"*

  The SRF pellet plant area and the main shed are separated by walls with a door between them, and when door is closed, they are under different negative pressures.

EA Schedule 5 Question No.5:

5. *Provide further details as to how the site will be managed so as to ensure the waste inputs/treatment management techniques ensure that the parameters of the odour modelling for the drying activity remain within the scenario selected for the modelling.*

   Reason: An odour benchmark of 212 odour units per cubic metre has been used to model impacts from the drying line (page 136 of Schedule 5 response dated 14th October 2021). This benchmark results in an acceptable level of potential odour from this process at the sensitive receptors. However, if more odorous wastes were to be dried then this could result in a higher actual benchmark. The schedule 5 issued 22nd March 2021 queried what control measures were in place to limit odour potential to the benchmark used in the modelling. The answer provided on page 32 of the schedule 5 response from 14th October 2021 does not provide enough detail to answer this query. An actual benchmark above the figure quoted could result in an off-site odour issue.

Tetra Tech Response 5:

"Reason: An odour benchmark of 212 odour units per cubic metre has been used to model impacts from the drying line (page 136 of Schedule 5 response dated 14th October 2021). This benchmark results in an acceptable level of potential odour from this process at the sensitive receptors. However, if more odorous wastes were to be dried then this could result in a higher actual benchmark."

A higher odour emission value of 500 OU_E/m^3 (more than double of the 212 OU_E/m^3) for the drying floor operations has been used in the assessment, as presented in Table 9-4 on the page 136/137 of Schedule 5 response dated 14th October 2021. Further discussion was provided in '**Tetra Tech (Tt) Response (17)'** and '**Tetra Tech (Tt) Response (18)'** on page 159 of the Schedule 5 response dated 14th October 2021.

The waste feedstock is dry mixed recycling residues consisting of packing waste plastic films, paper fibres and plastic bottles, ferrous and nonferrous metals. The site does not process any municipal waste or any waste that has an organic or putrescible content and therefore, the treated waste feedstock have low odour potential, so an odour emission value of 500 OU_E/m^3 (more than double of the 212 OU_E/m^3) for the drying floor operations is to produce a worst-case assessment.

"The schedule 5 issued 22nd March 2021 queried what control measures were in place to limit odour potential to the benchmark used in the modelling. The answer provided on page 32 of the schedule 5 response from 14th October 2021 does not provide enough detail to answer this query. An actual benchmark above the figure quoted could result in an off-site odour issue".

The techniques discussed in '**Tetra Tech (Tt) Response (39)'** on the page 31 of Schedule 5 response dated 14th October 2021 include:

- Set up and implement waste characterisation and pre-acceptance procedures:

  The procedures aim to ensure the technical suitability of waste treatment operations for a particular waste prior to the arrival of the waste at the plant. They include procedures to collect information about the waste input and may include waste sampling and characterisation to achieve sufficient knowledge of the waste composition. Waste pre-acceptance procedures are risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).

- Set up and implement waste acceptance procedures:

  Acceptance procedures aim to confirm the characteristics of the waste, as identified in the pre-acceptance stage. These procedures define the elements to be verified upon the arrival of the waste at the plant as well as the waste acceptance and rejection criteria. They may include waste sampling, inspection and analysis. Waste acceptance procedures are risk-based considering, for example, the hazardous properties of the waste, the risks posed by the waste in terms of process safety, occupational safety and environmental impact, as well as the information provided by the previous waste holder(s).

In addition to the techniques presented above, the following control measures will be in place to limit odour potential to the benchmark used in the modelling:

- Adequate storage capacity. Measures are taken to avoid accumulation of waste, such as:
  - The maximum waste storage capacity is clearly established and not exceeded taking into account the characteristics of the wastes (e.g., regarding the risk of fire) and the treatment capacity;

- The quantity of waste stored is regularly monitored against the maximum allowed storage capacity;
- The maximum residence time of waste is clearly established.

- Safe storage operation. This includes measures such as:
  - Equipment used for loading, unloading and storing waste is clearly documented and labelled;
  - Wastes known to be sensitive to heat, light, air, water, etc. are protected from such ambient conditions;
  - Containers and drums are fit for purpose and stored securely.
- Cleaning and maintenance of drying floor system and drying floor areas to prevent the waste cumulations and potential odour generations. The cleaning and maintenance activities will be taking place twice a day for one hour for cleaning and maintenance and a 12-hour shut down every week on Monday.

The combination of the treated waste feedstock being low odour potential, the implemention of good waste pre-acceptance and acceptance procedures, and the cleaning and maintenance of drying floor system, will limit the odour rate emissions to those utilized in any odour model used to understand risk.

Noise Management Plan (NMP)

The responses to the EA Schedule 5 Question No.6 to No.9 are presented separately.

Emissions Management Plan (EMP)

EA Schedule 5 Question No.10:

You must use appropriate measures to make sure that you collect, extract and direct all process emissions to an appropriate abatement system for treatment before release. To reduce point source emissions to air (for example dust and odorous compounds) from the treatment of waste, you must use an appropriate combination of abatement techniques. Or you must demonstrate to us that your alternative abatement is equally effective. This is both an appropriate measure and BAT, see BAT 14 and 25.

10. Explain why cyclone filters are proposed to minimise dust from the cooling of SRF pellets and why the dust emission limit proposed was selected.

"Reason: Dust management for the pellet cooling is proposed to me cyclone filters with a suggested emission limit of 10mg/cubic metre. BAT25 considers cyclone filters to be a preliminary treatment for course dust and BAT would be one or a combination of treatment methods (such as cyclone plus bag filter). There is no justification provided for why this was not considered and the BAT AEL of 2-5mg not pursued instead."

Tetra Tech Response 10:

The pellet cooling uses cyclone filters first. It is planned to install fibric filter after cyclones to make the dust emission for cooling stack to meet BAT AEL limit of 2-5 mg/cubic meter.

EA Schedule 5 Question No.11:

11. *Explain why an emission limit of 10mg/cubic metre was selected for emissions from the dust extraction system proposed for the treatment shed.*

"Reason: Dust management for the extraction system for the treatment shed is a fabric filter but an emission limit of 10mg/cubic metre is proposed. The BAT AEL is approaching 10mg when a fabric filter is not applicable. As a fabric filter is proposed then the emission limit value should be in the 2-5mg region."

Tetra Tech Response 11:

It is stated in the October 2021 report: "The manufacture of the Econotube T598/40x12L system has confirmed that the Econotube filters supplied to Eco Power were designed to operate and achieve emission levels less than 10mg/m^3 when the filters are maintained in good working order and operated on the duty for which they were supplied."

Contact with the manufacturer confirmed that it is expected the concentration is below 5mg/m^3. A recently installed system that was tested, had emissions of under 1mg/m^3.

Therefore, the emission limit value will be set in the 2-5mg/m^3 region as per BAT8.

EA Schedule 5 Question No.11:

12. *Clarify what the monitoring frequency will be dust emitted from the dust management and pellet cooling emission points*

"Reason: BAT8 for dust monitoring is 6 monthly and would apply to these emission points."

Tetra Tech Response 11:

The monitoring will include dust monitoring at the outlet of Econotube dust extraction system and the cooler stack.

Frequency: BAT 8 requires "*once every six months*". However, BAT 8 further states: "*(1) Monitoring frequencies may be reduced if the emission levels are proven to be sufficiently stable*."

Particulate monitoring at the outlet of the Econotube dust extraction system and the cooler stack will be undertaken 6 monthly. The frequency will be reviewed and can be reduced to biannually (every 2 years) if the emission levels are stable.

Yours sincerely

for **TETRA TECH LIMITED**

NIGEL MANN

Director

Annex A Notice of request for more information – Schedule 5 Issued on 08/12/2021

Environment Agency

Notice of request for more information

The Environmental Permitting (England & Wales) Regulations 2016

Company Director
Eco-Power Environmental (Hull) Ltd
Bankwood Lane Industrial Estate
Bankwood Lane
Rossington
Doncaster
South Yorkshire
DN11 0PS

Application number: EPR/MP3107PP/A001

The Environment Agency, in exercise of its powers under paragraph 4 of Part 1 of Schedule 5 of the above Regulations, requires you to provide the information detailed in the attached schedule. The information is required in order to determine your application for a permit duly made 21st October 2020.

Send the information to either the email or postal address below by 18/02/2022.If we do not receive this information by the date specified then we may treat your application as having been withdrawn or it may be refused. If this happens you may lose your application fee.

Email address: psc@environment-agency.gov.uk.

Postal address:
Permitting and Support Centre
Quadrant 2
99 Parkway Avenue
Parkway Business Park
Sheffield
S9 4WF

Name	Date
Matthew Woollin	08/12/2021

Authorised on behalf of the Environment Agency

LIT 11958 V2

1

Notes

These notes do not form part of this notice.

Please note that we charge £1,200 where we have to send a third or subsequent information notice in relation to the same issue. We consider this to be the third notice on the issues covered in this notice in relation to odour and emissions management. This is the second notice in relation to the issues covered in this notice in relation to noise management.

Schedule

Odour Management Plan (OMP) – schedule 5 response dated 14th October 2021

For the proposed activity enclosing activities within buildings would be an appropriate measure for preventing and minimising emissions of pollution, given that an appropriately designed building will reduce a range of types of pollutants, in particular, noise, dust and odour. The air inside the enclosed building must be maintained under negative pressure, or you must install a localised extraction system that extracts dirty air from sources of pollution within the building.

Enclosed buildings must be ventilated to provide a safe working environment for employees. Your building's ventilation system must be properly designed and effective in order for the building to provide adequate containment and prevent fugitive emissions and unacceptable noise. You must use appropriate measures to make sure that you collect, extract and direct all process emissions to an appropriate abatement system (usually a combination of abatement techniques) for treatment before release.

See guidance on appropriate measures:

www.gov.uk/guidance/non-hazardous-and-inert-waste-appropriate-measures-for-permitted-facilities

See explanation of BAT:

https://eippcb.jrc.ec.europa.eu/reference/waste-treatment-0

1. How were the proposed air extraction rates derived and how does this relate to the capacity of the building, answers should respond as a minimum to the points given here.

   Reason: We would expect to see a clear rationale behind the air extraction rate and building capacity i.e. what is the building volume and how does this relate to air changes per hour under different extraction scenarios namely:

   - *The dust extraction system is connected to the areas of the treatment shed where we would expect to see maximum odour potential. Other than dust being removed from the extracted air there is no proposal to treat to reduce odour therefore the dust extraction system is a potential odour source. This would be exacerbated during dry periods when waste will need less drying and therefore the dust extraction system would be the primary means of maintaining negative pressure.*

   - *It is not clear when the dust extraction system will be in use i.e. if it is only during active waste treatment then when waste is stored but not being treated the extraction system may not be in use and the building will not be under negative pressure (such as during the night).*

2. As the negative pressure system relies in part on extraction of air for use in the biomass boilers what happens if there is no or minimal drying taking place? Answers should as a minimum respond to the points given here.

   Reason: Impacts of reliance on the use of extracting air using the biomass boilers include:
   - *Shed not always under negative pressure i.e. waste processing can take place without the biomass boilers being in use?*

- *Waste will tend to be drier in summer resulting in less need to dry/use biomass boilers therefore peak odour potential coincides with those times when drying will be at a minimum;*
- *The schedule 5 response (14th October 2021) assumes that all 41 boilers will be in use to provide negative pressure whereas the air quality modelling assumes 35 boilers will be a normal operation scenario;*
- *Reliance on the use of the biomass boilers to treat odorous air could mean that the boilers are used when there is no demand for heat for drying, this would not be an efficient use of energy/resources;*
- *What happens when the site is closed i.e. as waste processing doesn't take place out of hours then the drying line/boilers will not be in use but waste may be present in the treatment shed without air extraction taking place i.e. not under negative pressure?*

3. How is the biomass boiler room connected to main shed?

   Reason: For maximum benefit for odour control the air intakes for the boiler room would be over the waste reception/initial treatment areas.

4. How do you control air intake into the reception shed?

   Reason: To maximise boiler efficiency you need to ensure a consistent supply of air, if the air is provided from the treatment shed how can this be controlled if the doors are closed?

   The SRF pellet cooling system has an extraction rate (assuming cooling is taking place) of 40,000m3/hr. Provide a response to the points given here:
   - What consideration has been given to this extraction system acting as an odour source?
   - How would negative pressure in this area of the shed interact with the other air extraction methods?

   Reason: A number of extraction systems are described some of which could act as odour sources and interact resulting in unplanned consequences by impacting on each other.

5. Provide further details as to how the site will be managed so as to ensure the waste inputs/treatment management techniques ensure that the parameters of the odour modelling for the drying activity remain within the scenario selected for the modelling.

   Reason: An odour benchmark of 212 odour units per cubic metre has been used to model impacts from the drying line (page 136 of Schedule 5 response dated 14th October 2021). This benchmark results in an acceptable level of potential odour from this process at the sensitive receptors. However, if more odorous wastes were to be dried then this could result in a higher actual benchmark. The schedule 5 issued 22nd March 2021 queried what control measures were in place to limit odour potential to the benchmark used in the modelling. The answer provided on page 32 of the schedule 5 response from 14th October 2021 does not provide enough detail to answer this query. An actual benchmark above the figure quoted could result in an off-site odour issue.

Noise Management Plan (NMP) – Issue 2, dated 13th September 2021

We require a revised noise management plan which has been amended to address the requirements of the questions below. Please refer to our updated online noise guidance:

https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits/noise-and-vibration-management-environmental-permits

6. Supply appendices 1-4.

   Reason: A full review of NMP was not able to be completed.

7. Conduct a BS4142 noise survey off site.

   Reason: Appendix 5 references in 4.0 Noise Survey that BS 7445-1: 2003 was used. Within the above guidance it states that BS4142 should be used and although this is referenced in appendix 5, this is done via a modelling programme. Eco Power is already sited, therefore an on-site survey should be conducted to BS4142.

8. Conduct BS4142 survey with representative weather conditions and operational times.

   Reason: Within section 4.0 – the survey was primarily conducted during weekend hours and a southerly wind direction.

9. Provide measurement data for the building with both the doors open and shut.

   Reason: Although within the NMP it states noise attenuation from the building has not been applied, it is still Best Available Technique (BAT) to have doors shut. By recording the data for doors open and shut, it can be determined whether the process can be conducted without noise pollution with the doors open.

Further noise guidance can be found here:

Noise impact assessments involving calculations or modelling - GOV.UK (www.gov.uk)

Emissions management Plan (EMP) – schedule 5 response dated 14th October 2021

You must use appropriate measures to make sure that you collect, extract and direct all process emissions to an appropriate abatement system for treatment before release. To reduce point source emissions to air (for example dust and odorous compounds) from the treatment of waste, you must use an appropriate combination of abatement techniques. Or you must demonstrate to us that your alternative abatement is equally effective. This is both an appropriate measure and BAT, see BAT 14 and 25.

10. Explain why cyclone filters are proposed to minimise dust from the cooling of SRF pellets and why the dust emission limit proposed was selected.

    Reason: Dust management for the pellet cooling is proposed to be cyclone filters with a suggested emission limit of 10mg/cubic metre. BAT 25 considers cyclone filters to be a preliminary treatment for course dust and BAT would be one or a combination of treatment methods (such as cyclone plus bag filter). There is no justification provided for why this was not considered and the BAT AEL of 2-5mg not pursued instead.

11. Explain why an emission limit of 10mg/cubic metre was selected for emissions from the dust extraction system proposed for the treatment shed.

    Reason: Dust management for the extraction system for the treatment shed is a fabric filter but an emission limit of 10mg/cubic metre is proposed. BAT 25 AEL is approaching 10mg

when a fabric filter is not applicable. As a fabric filter is proposed then the emission limit value should be in the 2-5mg region.

12. Clarify what the monitoring frequency will be dust emitted from the dust management and pellet cooling emission points.

Reason: BAT 8 for dust monitoring is 6monthly and would apply to these emission points.