

11/11/2022

To: Mary Pappon  
Consents Planner

From: Nicholas Browne  
Air Quality Specialist

Subject: Technical Audit – Response to Section 92 Information

**RM22-0076:** 6-month trial discharge of contaminants to air from an anaerobic-thermal-reduction pyrolysis plant for industrial recycling activities;

**RM22-0128:** Discharge to air from a Bonfiglioli Shredder and Metals Separation System;

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## **A. Introduction**

A technical audit of the application was undertaken by Air Matters and the findings were detailed in the Memorandum dated 17 May 2022. This original audit provided specific responses to questions from the Council's Planning Officer along with a number of suggested information requests.

In response to this, further information was provided by the applicant ('Section 92 Response') on 5 July 2022 and forwarded to Air Matters for comment. Some further clarification questions were asked in a memo dated 12 August 2022 with responses received from the applicant ('Response to further s92 questions raised by Air Matters Review') dated 12 October 2022. A meeting was held 18 August 2022 to clarify a few of these additional points. This Memo provides an assessment of all of the supplied information.

## **B. Reviewed Documents**

- Original consent application including the AEE and applicable appendixes;
- Section 92 response memorandum dated 5 July 2022 (Mitchell Daysh Limited);
- Response to further questions raised by Air Matters Review dated 12 October 2022 (Mitchel Daysh Limited).

## **C. Review Comments**

### **Question 1 & 2**

*How many tests of the pyrolysis plant will be conducted in the six-month consent period and what will be the proportion of load to no load tests?*

It was recommended that a condition is included in the consent, if granted, that limits the total tests to 36 and load tests to no greater than 80% of total tests.

However, after discussion in the 18<sup>th</sup> August meeting it was agreed that emission limits will be set for the trial pyrolysis plant. These limits will form part of a consent condition places a criteria around the quality of the discharge from the site.

### **Question 3**

*What fuel will the ATR Plant be powered with during no-load tests?*

The applicant has noted the ATR will be powered by mains electricity for the pumps, fans and motors.

The first no-load tests will be powered by diesel, fuel oil or LPG. Once a loaded test has been complete all combustion emissions will be from pyrolysis oil.

The emission limits will be the driver behind ensuring discharges into air meet certain criteria.

### **Question 4**

*What is the expected composition of the syn-gas generated? If unknown, will this form one of the tests?*

The composition of the syn-gas is unknown but the applicant has provided emission limits based on those already proposed (VOCs, acids, dioxins & furans, particulates, discharge temperature and volumetric discharge) as well as those contaminants suggested by myself.

The applicant's response to Question 8 details the emission limits proposed for the trial and these have formed part of the Sampling and Management Plan (S&MP).

Several testing locations are also detailed in the S&MP throughout the ATR process and abatement system. This detail will form part of the consent condition.

The following contaminants and test method are proposed by the applicant. This satisfies the question and statement around sampling an insufficient range of potential contaminants into air.

Parameter	Test Method	Stack test requirements
Particulates (PM <sub>10</sub> )	USEPA Method 5	3 x 60 minutes
Halides – HCl and HF	USEPA Method 26a	3 x 60 minutes
VOC (as total organic carbon)	USEPA Method 18	3 x 60 minutes
Sulphur dioxide (SO <sub>2</sub> )	USEPA Method 6	3 x 60 minutes
Nitrogen oxides (as NO <sub>2</sub> )	USEPA Method 7c	3 x 60 minutes
CO	USEPA Method	3 x 60 minutes
Metals – Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V, Hg, Cd, Tl	USEPA Method 29	3 x 120 minutes
Aldehydes	USEPA Methods 0011	3 x 60 minutes
Poly aromatic hydrocarbons (PAH)	USEPA Method 23	3 x 120 minutes
Dioxins and Furans (as I-TEQ)	USEPA Method 23	3 x 360 minutes

It was requested that the applicant carries out stack testing regularly throughout the trial to capture enough data to be used to confirm that the discharges are within the proposed emission limits but also to capture sufficient data to carry out an assessment of effects for the discharges into air over a longer term. As per the applicant provided information above a consent condition should be included that requires tests on the listed parameters, test method and minimum number of stack tests spread throughout the trial. The detail of how this will be achieved can be detailed in the S&MP and this is expected to be a live document that may change right up to the start of and throughout the trial.

The applicant has provided emission limits and this will be addressed in Question 8.

#### Question 5

*Does the combustion of fuel (LPG or syn-gas etc) trigger any rules in the regional plan? Provide details.*

The application defaults to **discretionary activity** under AIR-R15 (24) which allows the Council to set consent conditions specifically to avoid, remedy or mitigate any effects of the 'fuel burning equipment'. Assessment under AIR-R8 is not needed.

#### Question 6

*Where is the exhaust from the ATR Plant? What height does it exhaust at?*

A condition of consent should be included requiring a minimum exhaust height of 14m and that this includes a minimum clearance of 3m above other the nearest structure onsite. The stack discharge should also have an un-impinged vertical discharge.

### **Question 7**

*During carbon black size reduction and separation what controls are provided around dust? Provide detail on the controls used and the expected process.*

The dust control system has been confirmed as a baghouse that will filter black carbon from the airstream. Emission limits and stack testing have been proposed for this source.

This satisfies this question and suggested conditions will provide a check that emissions are indeed less than minor as described by the applicant.

### **Question 8**

*Provide more detail on the wet scrubbers and pre-scrubber used to control emissions from the syn- gas combustion. Management of this process is critical to controlling discharges and no detail has been provided on this.*

Maximum emission limits for relevant contaminants have been provided by the applicant. Upon review these appear appropriate. These limits need to be included in a consent condition requiring that they are met.

In addition to the stack testing being completed a consent condition should be included that requires the applicant to assess the effects of the measured discharge as well as whether they meet the emission limits set in this consent. The assessment of effects is limited to date so assessing the ground level effects from the emission levels will ensure that effects are indeed less than minor. This is considered appropriate considering it is a six month direction consent.

The Site Management Plan is to include some criteria around the scrubbers to be used. This information should include monitoring and operational levels for pH, temperature, and flow. This information is suggested to be kept in the management plan to enable flexibility and because this detail is probably unknown at this stage.

### **Question 9a**

*How is oil loading carried out?*

A full description is provided and describes it as a closed system of collecting oil and filling tankers for removal offsite. No indication on odour has been provided from this activity.

The applicant has confirmed that offsite odour assessments will take place using a FIDOL assessment process. The Good Practise Guide for Assessing and Managing Odour details an assessment process that should be followed when undertaking this assessment.

**Question 9b & 9c**

*What is the expected odour emission from this process and how will odour be controlled?*

No odour is expected to be released. Field observations by the applicant will be carried out to confirm this during this trial consent.

It is recommended that the well-established 'no offensive or objectionable odour beyond the site boundary' consent condition is included.

**Question 10**

*Provide a draft monitoring program. This is to include, but not limited to, where the samples are to be taken, methods used for collection and analysis and analytes to be identified (especially VOCs).*

This has now been covered by the applicant in the S&MP document provided. The test methods and limits proposed are deemed acceptable for this short term consent.

**Question 11**

*No assessment on amenity (odour and nuisance dust) has been provided. Consider the amenity effects from the operation on the local environment. Detail controls proposed to alleviate any identified amenity effects.*

Given the trial nature of the process it is possible that the ATR plant will create odour and dust emissions. Consent conditions to mitigate these potential effects are the standard no offensive discharges beyond site boundary as mentioned above.

**Question 12**

*The Shredder emissions need to be modelled so that ground level effects can be assessed. This requires that stack testing is completed on the current Shredder in Te Puke, if this same Shredder is to be used at the new site. An assessment of effects then needs to be carried out using the stack testing data and dispersion modelling for the new site. Stack testing should include particulate (TSP, PM10) and metals. Please note that any modelling should include three years of meteorological data.*

The applicant has modelled particulate emissions from the shredder in the proposed location using CALPUFF. This is an appropriate model. Only one year of meteorological data has been used where it would be more robust to use three years of data.

The modelling indicates particularly low ground level concentrations at the nearest sensitive receptors meaning that effects are less than minor even considering a background concentration of particulate, which has not been discussed by the applicant.

Regular stack testing of emissions should be required from the shredder stack. A mass emission limit and concentration limit should be included as a consent condition.

These should be 0.03 g/s for each of PM<sub>10</sub> and PM<sub>2.5</sub> with a maximum concentration for each set at 170 mg/m<sup>3</sup>. These limits are based on the information provided by the applicant.

**Question 13**

*Provide more detail on the enclosure around the Shredder, the bagfilter and wet scrubber used to control emissions. What is the expected output? How efficient are they? What management steps are there to ensure they are running effectively?*

The management plans are considered the best place to set out the steps to manage fugitive emissions from the whole site including the shredder operations.

The general no offensive or objectionable condition will suffice as a tool to ensure that these processes are effective.

**Question 14**

*Draft Site Management Plan should be provided to understand the processes proposed to be in place to control all emissions from the site. This will need to be updated once underway.*

Drafts of the management plans have been provided but final versions of these will need to be submitted to Council for review and certification before commencement of the activity.

**Question 15**

*An assessment of PM<sub>2.5</sub> from both shredding and pyrolysis is required.*

An assumption that all PM<sub>10</sub> is PM<sub>2.5</sub> is conservative and an acceptable way to assess effects.

There are limitations with the method of PM<sub>2.5</sub> stack testing around moisture saturation, which means this cannot happen in this instance.

**Department of Conservation Consultation**

As agreed in the meeting on the 18<sup>th</sup> August no consultation is required. This comment was only a suggestion and not a requirement.....



**Nicholas Browne**

**Air Matters Ltd**

### **Additional detail for Management Plans**

After discussion with MetalCo and their consultants the following detail is being requested to be included in the Management Plans upon their submission.

- Follow the guidance in the Ministry for the Environment, Good Practise Guides for dust and odour. There is detail within the appendices of these documents that provide an indication of minimum information required to address Air Quality issues in management plans.
- In particular the following needs to be addressed:
  - Complaints – detail a procedure of handling and investigating any complaints received.
  - Process description – emission sources identified – the EMP for the shredder has some detail around this but the ATR EMP needs this detail added.
  - Method of control – as above, with Shredder EMP having some of this detail but more needed in ATR EMP. Refer to GPG for the detail needs to be included.
  - Monitoring – Additional detail needed in the EMPs or in separate SOPs. The detail needs to go into the monitoring process including who, where, how and what type of detail.
  - List or tabulate responsibilities for each different role by daily/weekly/monthly tasks. Include this in a simple table for staff and management to reference. This will likely be a compliance item for council officers to check when visiting site to show proof of regular management of controls.
  - The “Dust/Particulate Management” items listed within section 5.7.1 of each EMP identify what is going to happen but these are the items that need to be elaborated on in terms how, when and why.
    - For example,
      - *“The use of a water cart during dry weather to keep access and haul roads damp”.* Is the water cart permanently onsite? How do you define dry weather? How much water needs to be applied? Have the haul roads been defined/identified?
      - *“Areas outside of the primary ATR Plant Building will be periodically inspected for signs of any dust / particulate.”* How often is periodically? Who does this inspection? How does this person tell if dust levels are too high?
      - The equipment used is kept clean and maintained in first class operating condition. What does this relate to? How is it determined that cleaning or maintenance is needed? Is there a regular schedule for cleaning and maintenance?