

Date 27 January 2023
Reference CL1015.270123.1
Website www.bury.gov.uk

Department for Operations

Dean Clapworthy
Bury Council Development Control

Dear Dean

Faith in Nature (Former Ashworth Frazer Site), Miller Street, Radcliffe, Manchester, M26 4AF, Planning Application: 68873 – Air Quality

I write regarding the above planning application. The Environment Section has received a copy of the following report:

- Air Quality Assessment, Faith in Nature, Radcliffe, Redmore Environmental, Reference: 6236r2, 29 November 2022.
- Installation Instructions Pellet Boiler P4 Pellet 8 – 105, Froling GesmbH, Reference: M0931114_en, 5/5/2014.
- Installation Instructions Wood chip boiler T4e 20-180, Froling GesmbH, Reference: M1980520_en, 15/9/2022.

The Environment Section has reviewed the above information to assess the adequacy of the Air Quality Assessment.

The application comprises the installation of the following biomass boilers:

- 6 no. new Froling P4 99kW wood pellet boilers.
- 1 no. new Froling T4e 130kW wood chip boiler.

There are already 2 no. Propel 99kW wood pellet boilers at the site, which would give a total of 9 no. boilers. Each boiler will have its own stack/chimney. Copies of the Technical Manuals for the new biomass boilers (Pellet Boiler P4 Pellet 8 -105 and Wood chip boiler T4e 20-180) have been provided.

The following boiler information is included in the air quality assessment:

Boiler No.	Location	Type	Stack height	Building height
1	Unit 5	Froling P4 100	10.5m	10.3m
2	Unit 5	Froling P4 100	10.5m	10.3m
3 (existing)	Unit 4	Propel 99kW	11.7m	10.0m
4	Unit 3A	Froling P4 100	12.2m	13.4m
5	Unit 3A	Froling P4 100	13.7m	13.4m
6	Unit 3	Froling P4 100	12.4m	12.4m
7	Unit 3	Froling P4 100	12.4m	12.4m
8 (existing)	Unit 2	Propel 99kW	8.3m	7.4m
9	Unit 2	Froling PT4e 140	8.4m	7.4m

Please confirm that these are the same boiler models as proposed in the original application.

The site is not located within an Air Quality Management Area. But is situated within a Smoke Control Area (Radcliffe No.5 Smoke Control Order 1968), within which it is an offence to emit a substantial amount of smoke from a chimney.

Air Quality Assessment Report– Stack Emissions

Baseline Conditions: The site is situated approximately 1.4km north of the Air Quality Management Area (AQMA), therefore, concentrations of NO₂ are not expected to exceed the Air Quality Objectives (AQOs) / Air Quality Limit Values (AQLVs) in this area. The nearest automatic monitoring station (Bury Radcliffe) is located approximately 1.5km south of the site. The station has not recorded any exceedances of the AQOs/AQLVs for NO₂ or PM₁₀ in the last 3 years (2019-2021). The maximum annual average concentrations recorded were 26µg/m³ NO₂ in 2019 and 18µg/m³ PM₁₀ in 2020. PM_{2.5} monitoring is not carried out in the station.

Predicted background pollution concentrations have been obtained from the DEFRA maps. Predicted background pollutant concentrations for the site for 2022 are below the AQOs/AQLVs.

Modelling: Detailed dispersion modelling has been carried out to assess the potential pollution concentrations at sensitive receptor locations. The dispersion model used is the ADMS-5 (v5.2.4.00). The model utilises hourly meteorological data to define conditions for plume rise, transport and diffusion. It estimates the concentration for each source and receptor combination for each hour of input meteorology and calculates user-selected long-term and short-term averages.

The following scenarios have been considered in the modelling assessment:

- NO₂ Long Term: Annual mean.
- NO₂ Short Term: 99.8th percentile (%ile) 1-hour mean.
- PM₁₀ Long Term: Annual mean.
- PM₁₀ Short Term: 90.4th %ile 24-hour mean.
- PM_{2.5} Long Term: Annual Mean.

The predicted concentrations are expressed as the Process Contribution (PC - biomass boiler emissions only - and Predicted Environmental Concentration (PEC - biomass boiler and background emissions). No ecological receptors were identified.

A total of 14 sensitive receptors were identified (R1 to R14) in the residential streets surrounding the site – Miller Street (R1-R3), Hardman Street (R4-R8) and Higher Ainsworth Road (R9-R14).

Model input and emissions data for the 9 no. biomass boilers were provided by Treco Limited (the supplier) and included: stack position and location, stack height (8.3m to 13.7m), stack diameter (0.2m), exhaust gas temperature (117-165°C), exhaust gas efflux velocity (2.01-2.99 m/s), NO_x emission concentration (150g/GJ), PM emission

concentration (30g/GJ), NO_x emission rate (0.0148g/s) and PM emission rate (0.0030 g/s).

In order to model worst-case scenario conditions, it has been assumed that all boilers will operate for 3000 hours per year (it is anticipated that the boilers will operate for 2500 hours (Unit 2 only) and 2000 hours (remainder of boilers)).

NO_x to NO₂ has been converted assuming 70% conversion from NO_x to NO₂ for annual means and 35% conversion for 1-hour concentrations based upon EA guidance.

OS Terrain 50 data was used in the model for the site and surrounding area. Structures and buildings can interrupt wind flows and cause higher ground-level concentrations close to the source. The six buildings on the site (Units 1, 2, 3, 3A, 4 and 5) and one external building have been considered. The building heights range from 7.4m to 26.3m.

Meteorological data was supplied by Atmospheric Dispersion Modelling Ltd for Manchester Airport observation station (25km to the south).

A roughness length (z₀) of 0.5m was used within the model for the morphology of the area around the site (suggested within ADMS-5 as being suitable for 'parkland, open suburbia') A z₀ of 0.2m was used to describe the meteorological site (Manchester Airport), as ADMS-5 suggests this is suitable for 'agricultural' areas (min).

The Monin-Obukhov length provides a measure of the stability of the atmosphere. A minimum Monin-Obukhov length of 30m was used as ADMS-5 suggests this as being suitable for 'mixed urban/industrial' areas.

Annual mean NO₂ and PM₁₀ concentrations from the Bury Radcliffe automatic station for 2019 have been used as background concentrations (data from 2020 and 2021 is considered atypical due to the Covid-19 pandemic). Defra background concentration maps were used for PM_{2.5} as the Radcliffe station does not monitor for PM_{2.5}.

Modelling Results: The modelled predicted concentrations at the sensitive receptors are as follows:

- **NO₂ Long Term: Annual Mean** - Predicted annual mean concentrations for NO₂ (years 2017 to 2021) were below the AQO of 40µg/m³ at all sensitive receptors (maximum concentrations for each sensitive receptor ranged from 26.12 to 27.62µg/m³).
- **NO₂ Short Term: 99.8th percentile (%ile) 1-hour Mean** – Predicted 1-hour mean concentrations for NO₂ (years 2017 to 2021) were below the AQO of 200µg/m³ at all sensitive receptors (maximum concentrations for each sensitive receptor ranged from 56.53 to 66.12µg/m³).
- **PM₁₀ Long Term: Annual Mean** - Predicted annual mean concentrations for NO₂ (years 2017 to 2021) were below the AQO of 40µg/m³ at all sensitive receptors (maximum concentrations for each sensitive receptor ranged from 17.03 to 17.47µg/m³).

- **PM₁₀ Sort Term: 90.4th %ile 24-hour Mean** – Predicted 1-hour mean concentrations for NO₂ (years 2017 to 2021) were below the AQO of 50µg/m³ at all sensitive receptors (maximum concentrations for each sensitive receptor ranged from 34.32 to 36.98µg/m³).
- **PM_{2.5} Long Term: Annual Mean** - Predicted annual mean concentrations for NO₂ (years 2017 to 2021) were below the AQLV of 20µg/m³ at all sensitive receptors (maximum concentrations for each sensitive receptor ranged from 7.92 to 8.36µg/m³).

Impact Significance: Based on the modelled predicted concentrations for NO₂, PM₁₀ and PM_{2.5}, the impact on air quality of the redevelopment was considered negligible and therefore, based on the IAQM and EPUK Guidance, 'not significant'.

This assessment appears reasonable. However, this Section has the following comments to make:

- The site is located within a Smoke Control Area (Radcliffe No.5 Smoke Control Order 1968). Any biomass boiler operated in a Smoke Control Area must be an exempt appliance.

Please provide evidence that the two new boiler types (Froling P4 99kW / 94 100 and Froling T4e 130kW / PT4e 140) and existing boiler model (Propel 99kW – no model code given) are listed as an exempt appliance on the Defra website: <https://smokecontrol.defra.gov.uk/search.php?type=appliances>.

- In order to avoid down draught or down wash created by the chimney itself, or by buildings and the likelihood of the ground level concentration of combustion products becoming prejudicial to health, or creating an odour/nuisance, the height of any chimney/stack installed would be expected to be at least higher than the apex of the building.
- Poor quality fuels can lead to increased emissions and odours. Therefore, it is recommended that only high-quality fuels are used, which comply with BS EN ISO 17225. It is recommended that only ENplus certified wood pellets are used.
- In order to ensure that there is no future impact on local air quality or odour/nuisance created, regular maintenance of the biomass boiler should be undertaken to ensure that emissions stay within manufacturers stated limits. A copy of the proposed maintenance programme and the manufacturer's manual will be required.

Odour Assessment

Based on information supplied by Treco Ltd (the supplier of biomass boilers), the consultant considers that the risks to surrounding residential and site users from potential odours is not significant. This is because Treco Ltd have stated that 'any smoke/odour emissions are anticipated to be short in duration and limited to a ten

minute interval during start up and shut down periods'. In addition, the height of the stacks will promote effective dispersion of smoke/odours.

However, as mentioned above, if a stack terminates below the apex of the building, there is an increased chance that down draught or down wash created by the chimney itself, or by buildings, could lead to increased emission levels or odours at ground level. Therefore, we would expect the height of any chimney/stack installed to be at least higher than the apex of the building. Based on the information supplied in the Air Quality Assessment, the stack for boiler No. 4 (unit 3A) will not be above the height of the building.

The operation of the boiler should not cause any odours to be present at the nearest odour sensitive property, such as residential properties.

Clean Air Act 1993

The Clean Air Act 1993 is the primary regulatory legislation for smaller biomass burning plant that fall outside the Environmental Permitting system.

The Act contains powers regarding the control of emissions from larger domestic and industrial boilers. If boilers have a maximum rated fuel consumption of greater than 45.4kg/hr (approximately equivalent of 100-220Kw heat input), grit and dust arrestment plant maybe required. No dark smoke must be emitted from the chimney. Biomass is not classed as an authorised fuel and therefore, any biomass boiler operated in a smoke control area must be an exempt appliance.

Building Control Regulations

The position and height of the stacks must meet the requirements set out in Approved Document J.

Medium Combustion Plant Directive

This Directive places requirements on combustion plant with a thermal input of between 1 and 50MW, to be registered with the Environment Agency and meet emissions certain emission limit values for NO_x, dust and SO₂. Based on the information submitted, the total thermal input of the biomass boilers would be 940kW, just below the 1MW limit. Since the thermal input is near the threshold, we would recommend that the EA are consulted: [Medium combustion plant: when you need a permit - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/medium-combustion-plant-when-you-need-a-permit).

Conclusion

In order for this Section to be satisfied that this development will not impact local air quality, following information needs to be submitted to the Council for approval:

- (i) Confirmation of the make and model of the biomass boilers to be installed and the thermal input (kW) and maximum fuel consumption/burn rate (kg/hr) for each boiler type.

- (ii) Please provide evidence that the two new boiler types and existing boiler model are listed as an exempt appliance on the Defra website.
- (iii) Copies of the proposed preventative maintenance programme and the manufacturer's manuals for the biomass boilers.

The above information will be required by planning conditions, if permission is granted.

Recommended Conditions

In line with the National Planning Policy Framework, we recommend that the following conditions are placed on any grant of permission:

Air Quality – Biomass Boiler Conditions

- Only the approved exempted appliances – *[Insert boiler types]* - listed on the DEFRA approved list shall be installed and operated.
- The only fuel used shall be the wood pellets *[Insert boiler types]* and wood chips *[Insert boiler types]* which comply with BS EN ISO 17225.
- The appliances shall be installed, maintained and used in accordance with plans and specifications submitted to and approved by the Council *[insert reference of Preventative Maintenance Plan]* and in accordance with installation and service manuals.
- Operation of the boiler shall not cause any odours to be present at the nearest odour sensitive property.
- Notwithstanding the plans submitted, the height of the chimney/flues shall be at least the height of the apex of the buildings within which they are installed.

Reason. To protect the air quality in the locality pursuant to Policy EN7/1 - Atmospheric Pollution of the Bury Unitary Development Plan and Section 10 of the National Planning Policy Framework.

Please do not hesitate to contact me if you require any clarification of the above.

Yours sincerely



Rebecca Jones
Environmental Protection Officer

Privacy Policy: Please visit www.bury.gov.uk/privacy to read our recently updated Privacy Policy which explains how Bury Council uses and shares your personal data to give you the best possible experience across our services.



Follow us on

