

Biomass Boiler Information Request Form¹ – to accompany a planning application

In common with other types of combustion appliances, biomass boilers are potentially a source of air pollution. Pollutants associated with biomass combustion include particulate matter (PM₁₀/PM_{2.5}) and nitrogen oxides (NO_x) emissions. These pollution emissions can have an impact on local air quality and affect human health. It is essential that any new biomass boilers meet certain emission control requirements in order to protect local air quality.

In order to approve a planning application associated with a biomass boiler, the following information below must be supplied to the local authority.

The operation of a biomass boiler may require regulation under the Clean Air Act 1993 or the Environmental Permitting Regulations (EPR) depending on the type of biomass fuel and the size of the boiler, as detailed in Appendix 1.

1. Development Details

a) Planning Application Reference	SMD/2024/0087
b) Name of Site	The Woodyard, Off Draycott Cross Road, Brook Houses, Cheadle
c) Address where boiler(s) will be located	The Woodyard, Off Draycott Cross Road, Brook Houses, Cheadle
d) Person completing form	Mark Gellatly
e) Contact telephone number	07973 830934
f) Date	17.04.2024

¹ Form based on template by Environmental Protection UK (EPUK), 2009 Biomass_Boiler_Information_Request_Template.doc

2. Particulars of the Boiler

This information on the basic design of the system will help us assess the emissions performance. Biomass boilers often produce relatively high emissions when lightly loaded, hence the question regarding an accumulation tank (heat store). The boiler manufacturer and/ or installer should be able to help you provide this information.

g)	Describe the proposed biomass boiler including make, model, manufacturer, thermal capacity (kw/MW), efficiency, maximum rate of fuel consumption (kg/hr or m ³ /hr).
	Glen Farrow 295 206 kW Nominal Output 30kg/h
h)	Describe the boiler combustion system and how combustion will be optimised and controlled.
	Partial gasification boiler controlled by a PLC
i)	Describe the fuel feed system.
	Manual Loading System
j)	Provide details of the abatement equipment in place for controlling particulate matter (fly ash) emissions.
	N/A
k)	How does the biomass boiler deal with variable heat loads - is the boiler linked to an accumulation tank?
	The Biomass boiler can modulate through a range of outputs ensuring that variable heat loads are covered as efficiently as possible.
l)	Is the biomass boiler an exempt appliance in accordance with the Clean Air Act 1993? If <u>yes</u> , provide evidence to demonstrate the biomass boiler has been tested and certified as an exempt appliance (for example a link to the appliance on the UK Smoke Control Areas website https://smokecontrol.defra.gov.uk/appliances.php) If <u>no</u> , it must be clearly stated how applicant proposes to get the biomass boiler certified.
	It is exempt and attached is the clean air certificate

3. Boiler Operation and Maintenance

System efficiency and emissions performance very much depend upon regular maintenance. Your installer should be able to recommend a suitable maintenance schedule.

m)	Describe arrangements for cleaning and de-ashing the boiler.
Monthly cleaning & de-ashing & annual servicing by a HEATAS Engineer	
n)	Provide details of the maintenance schedule associated with boiler, abatement equipment and stack. This should include frequency of boiler inspection and servicing by a trained boiler engineer.
The entire system will be regularly inspected as per the manufacturers recommendations. The onsite technician will be trained to a level that ensures he/she can deal with day to day operation of the plant. The biomass system as a whole including all flues and vertical stacks will be serviced, cleaned and maintained as necessary annually by a qualified biomass engineer.	
o)	Describe how incidences of boiler or abatement system failure are identified and mitigated.
The PLC has error reporting onboard which will enable the site technician to have early notification of attention needed to the biomass system to ensure a high level of operation. Should ash extract systems fail or the efficiency of combustion fall to low levels, the boiler PLC has the ability to shut down the system until the fault has been rectified and the boiler can be re-lit.	

4. Boiler Stack Details

The design of the stack greatly affects how pollutants produced in the boiler disperse over the surrounding area. Where the area is heavily built up, or has existing air quality issues, dispersion becomes more complicated and a computer modelling technique known as dispersion modelling will probably be required. Your installer should be able to provide most of the details and make a calculation on stack height and design. When dispersion modelling is required you or your installer may need to engage a specialist consultant.

p)	Identify the height of the boiler exhaust stack above ground. Evidence shall be presented to demonstrate that predicted emission concentrations associated with the calculated stack height do not have a significant impact on the air quality objectives for NO ₂ and PM ₁₀ . It will be necessary to obtain background concentrations of NO ₂ and PM ₁₀ for the proposed location of the biomass boiler. If the location already exceeds the air quality objectives the options for potential increases to pollution emissions need careful assessment. The boiler exhaust stack height should be calculated using dispersion modelling software such as ADMS 4 or Aermid.
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The boiler exhaust stack heights will be a minimum 5.5m above ground level to ensure a proper draw on the boiler and dispersal of emissions. Considering the rural location of the installation, it is not anticipated that the boilers will cause any concerning increase levels of NO₂ or PM₁₀.

We understand the locality is of no concern to SMDC with regards to air quality.

The attached emissions certificate demonstrates the boilers are efficient and clean.

q) Identify stack internal diameter (m).

200mm internal diameter

r) Provide maximum particulate matter and nitrogen oxides emission rates (mg/m³ or g/hr) to standard reference conditions (6% oxygen, 273K, 101.3kPa).

PM 7.4 GJ

Nox 11.5 GJ

s) Identify the exhaust gas efflux velocity (m/s) and discharge temperature in °C

3m/s

t) Provide the grid reference of boiler exhaust stack.

SJ989422

Easting 398921 Northing 342266

5. Fuel Details

Emissions from a biomass boiler depend greatly on the type and quality of the fuel used. Reasonable guarantees are therefore needed that the fuel is compatible with the boiler, is of a high quality and that quality will be assured for a reasonable period of time. Your fuel supplier and installer should be able to provide this information.

u) Describe the fuel specification including origin, type of wood (chips, pellet, briquettes), nitrogen, moisture, ash content (%).

The fuel used will be virgin wood as per BSL Standards and will be less than 25% mc

v) Does the fuel comply with European or equivalent fuel quality standards such as CEN/TS 335 or ONORM?

Yes, EN14961-5 compliant
w) Describe what fuel quality control procedures will be adopted to guarantee constant fuel quality from your supplier.
We shall only use fuel supplied from the Biomass Suppliers List [BSL] who have been externally accredited and included on the BSL by OFGEM/Woodsure
x) Provide evidence to demonstrate that the biomass boiler combustion system is applicable to the fuel specification.
See attached emissions certificate
y) Identify where and how fuel will be stored on site (e.g. bunker or silo).
Fuel for these boilers will be stored in a dry bunker
z) Describe how fuel will be unloaded from the delivery vehicle into the storage facility and what control measures will be in place to reduce particulate matter emissions to atmosphere.
The fuel will be delivered the same way it is currently, by a log truck off loading on the site in a designated area and stacked as per [BSL] requirements.
aa) Identify the type of fuel delivery vehicle and provide evidence to demonstrate that there is sufficient space for the fuel delivery vehicle to access the site. How frequent will the fuel deliveries be?
The log truck with onboard crane will deliver as it is currently doing for the existing business, as shown on Proposed Site Layout dwg. No.594-SP2A
bb) Are there noise issues to note related to the fuel store re-filling procedures?
There are no noise issues related to fuel deliveries or bunker.
cc) How will any mould or other odours from the fuel store be managed?
As the timber fuel is so dry, there will be no issues arising regarding mould or odour.

6. Building Details

The height and distance of neighbouring buildings will determine their exposure to emissions from the biomass boiler, and therefore the height of the stack needed. Your architect should be able to provide this information.

dd)	Record the distance of adjacent buildings from boiler exhaust stack.
1.0m distance	
ee)	Record the height of adjacent buildings from boiler exhaust stack.
3.9m to 4.6m	
ff)	Record the dimensions of building to which the boiler exhaust stack is attached.
Flues are free standing and not attached to building.	
gg)	Indicate the distance from the boiler exhaust stack to the nearest fan assisted intakes and openable windows.
Not applicable.	
hh)	Has there been a noise assessment for any motor driven fuel feed mechanism, with both internal and external noise propagation in mind?
Not applicable.	

7. Plans

ii)	Have you attached a site plan showing the location of the boiler room, fuel storage area and the access and exit route for fuel delivery vehicles with this form?
Yes see dwg No.594-SP2A	
jj)	Have you attached a site plan showing the position of the boiler exhaust stack, fan assisted intake air vents and nearest openable windows to this form?
Yes se dwg No.594-SP2A, there are no opening windows or air intakes.	

8. Return this form with your planning application to:

Environmental Health
Staffordshire Moorlands District Council
Fowlchurch Depot, Fowlchurch Road, Leek
Staffordshire Moorlands, ST13 6BH.

Appendix 1 Regulatory Regimes

The Clean Air Act (CAA) and the Environmental Permitting Regulations (EPR):

The operation of a biomass boiler may require regulation under the Clean Air Act 1993 or the Environmental Permitting Regulations (EPR) which implements the retained EU Law, including the Industrial Emission Directive (IED), the Waste Incineration Directive (WID) and the Medium Combustion Plant Directive (MCPD), depending on the type of biomass fuel and the size of the boiler, as detailed in Table 1.

A formal application for a permit must be made to Staffordshire Moorlands District Council or the Environment Agency, in order to operate a biomass boiler that falls under the EPR.

Table 1 Regulation of biomass plant

Fuel Scenario	Plant Size	Pollution Regulation applicable	Regulator
1. Biomass fuels e.g. coppice willow, and fuel residues of a similar nature arising from the manufacture of these fuels	<20 MWth	Clean Air Act (see note d below)	Local Authority
	20-50 MWth	LA-PPC (Part B PPC)	Local Authority
	>50 MWth	EPR (Part A1)	Environment Agency
2. Waste or waste derived biomass exempted from WID, and fuel residues of a similar nature arising from their manufacture	<0.4 MWth and < 45.4 kg/hr	Clean Air Act	Local Authority
	0.4 - 3 MWth and 45.4 - 1000 kg/hr	LA-PPC (Part B PPC)	Local Authority
	> 3 MWth and/or 1000 kg/hr	EPR (Part A1)	Environment Agency
	> 50 MWth	EPR (Part A1)	Environment Agency
3. Waste or waste derived biomass to which WID applies	< 3 MWth	WID applies. LA-PPC (Part A2)	Local Authority
	> 3 MWth	WID applies. PPC (Part A).	Environment Agency

Table Source: reproduced from EPUK, 2009. Biomass and Air Quality Guidance for Local Authorities (England and Wales) Draft Guidance Document for Consultation April 2009. Available at https://www.environmental-protection.org.uk/wp-content/uploads/2013/07/Biomass_and_Air_Quality_Guidance.pdf

MCPD – The above Table 1 does not yet take into account the impact of MCPD. Where plant is between 1MWth and 50MWth regardless of the type of fuel used, you must read the following guidance: <https://www.gov.uk/guidance/medium-combustion-plant-when-you-need-a-permit>

Notes:

- a) The above is true for stand-alone combustion plant and incinerators. However, if the combustion is associated with an activity that is subject to Local Authority control, then the waste burning plant will remain under Local Authority control provided it is below 50 MW.
- b) All plant rating is thermal capacity.

c) Biomass fuels generally fall into three categories, depending on whether the fuel is classified as waste, and whether it falls under the WID:

- 1) Virgin' fuels – e.g. fuels derived from fresh timber
- 2) Waste or waste derived fuels, exempt from WID – e.g. agriculture residues
- 3) Waste or waste derived fuels, covered by WID – e.g. treated wood waste.

d) Leek, Biddulph and Brown Edge are designated Smoke Control Areas, and as such appliances either must burn authorised 'smokeless' fuels or, the appliance needs to have been assessed and exempted by Defra for use in a smoke control area. Emission limits for exempted appliances are detailed in BS PD 6434, which covers residential combustion (about <44kW output). Emission limits for 'grit and dust' are applied to larger appliances (about >240 kW output) irrespective of whether they are located in a smoke control area. Assessment of emissions from appliances about >44kW for CAA exemption is generally by interpolation between the BS PD 6434 limits and the grit and dust emission limits. Further information on the SMDC smoke control areas can be found here: <https://www.staffs Moorlands.gov.uk/article/1093/Smoke-control-areas>