

## **Biofuelwatch Response to Peel Energy's Addendum, 'Further Clarification with Respect to Chapter 12 (Air Quality) of the Submitted Final Statement**

### **Overview**

Whilst this response will deal with the levels of NO<sub>x</sub> from the plant, all of our concerns expressed in our original objection to this development remain.

Peel Energy has still not stated what kind of abatement technology it will use to be able to achieve NO<sub>x</sub> levels of 125mg/NM<sup>3</sup> with an ammonia slip of 15mg/NM<sup>3</sup>. Although the addendum makes references to both SNCR technology and to plants which do not use SNCR technology, it makes no commitment either way.

In the absence of any confirmation, the worst case scenario that the developer does not intend to use any abatement technology whatsoever must be presumed. Yet given the lack of information about what the presumed stack emissions are based on (i.e. the type of abatement, if any, that would be used), it remains unclear what the dispersion model is based on. Without abatement, the proposed development will clearly not be able to achieve the unusually low NO<sub>x</sub> levels. It also appears highly doubtful that they would achieve it with any abatement technology either.

We reiterate our basic concern that the additional NO<sub>2</sub> contributions will clearly not be insignificant compared to legal limits and that those legal limits are already being regularly breached in the area, which is why an AQMA designated for NO<sub>2</sub> has been declared. The power station, if approved and built, would thus impede the Council's statutory obligation to reduce NO<sub>2</sub> concentrations in the area and to reach air quality objectives. Therefore, we call on the Council to reject the proposal.

If Peel Energy was to provide proper clarification as to what abatement technology it will use, this would constitute a material planning consideration which should give rise to a fresh period of consultation.

In this context, we would like to point out that emission figures will depend not only on whether SCR, SNCR or no abatement are used but, in the case of SNCR, also on the particular technology used. We discuss this further below.

Our more detailed concerns with respect to NOx emissions levels are as follows:

**1. Peel Energy have yet to confirm which kind of abatement technology they will use**

From Section 2 of the addendum, Fichtner cites a range of sources, many of which refer to Selective Non-Catalytic Reduction technology (SNCR), and some of which do not. However, nowhere in the document does Peel Energy make a firm commitment to using SNCR technology, and so the figures which they claim show emissions levels of below 125mg/NM<sup>3</sup> may be entirely irrelevant if this technology is not used.

**2. Claims about 'low' NOx emissions at a UK biomass power station contradicted by Environment Agency figures**

On page 5-6 of the addendum, Fichtner quotes figures from the Western Bioenergy (also Western Wood Energy Plant) plant that show it produced NOx emissions levels of 160-180mg/NM<sup>3</sup> in 2009. It states, 'It is important to note that the Western Bioenergy Plant operates without SNCR ammonia injection. Although it processes clean wood rather than waste wood, it still demonstrates that low levels of NOx can be achieved from wood-fired power stations without SNCR.'

Firstly, it is worth noting that the planning documents relating to this plant (attached) indicate on page 50 (paragraph 5.6.34) that SNCR technology is used for this plant.

Second, we obtained more recent figures for NOx levels from this plant, from the 2010 'Annual Report on the Environmental Performance,' which we have attached to our response. The figures show that during 2010 the average result of 216mg/m<sup>3</sup> for NOx. Overall emissions ranged between approximately 200 and 230mg/m<sup>3</sup> throughout the year, with daily average NOx emissions ranging from 160mg/m<sup>3</sup> in May to 249mg/m<sup>3</sup> in December.

The apparent major discrepancy in NOx figures provided by Fichtner relating to the Western Bioenergy Plant, compared to official EA figures suggests to us that other claims and figures contained in the Fichtner report should also be fully scrutinised by the Council, rather than being taken at face value, particularly since they are largely based on unverified company claims.

It is also worth reemphasising that the Western Bioenergy plant processes clean wood rather than (partly treated) waste wood and that it has a far smaller capacity and effective load than the proposed Peel Energy plant in Trafford. Since 2009, the capacity of the Margam plant has been 16.4 MW (increased from a previous 14.2 MW), however in 2009/10 it was only run at an effective load of 79.9%<sup>1</sup> (the following year, the effective load was even lower).

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<sup>1</sup> [www.ref.org.uk/roc-generators/view.php?rid=R00002RAWA&tab=summary&returnurl=http%3A%2F%2Fwww.ref.org.uk%2Froc-generators%2F](http://www.ref.org.uk/roc-generators/view.php?rid=R00002RAWA&tab=summary&returnurl=http%3A%2F%2Fwww.ref.org.uk%2Froc-generators%2F)

**3. The figures that Fichtner cite which claim that low levels of NOx and ammonia are achievable are dependent on SNCR technology being used**

Fichtner goes on to cite confirmation from Andritz Energy & Environmental, which builds fluidized bed boilers, who claim to guarantee NOx emission levels of below 125mg/NM<sup>3</sup> with an ammonia slip of 10mg/NM<sup>3</sup> on the condition that SNCR technology is used (see their letter dated 30<sup>th</sup> June 2011, Appendix A).

That company's claims, however, are not backed up by any verified/independent emission figures, i.e. ones from the Environment Agency or an equivalent body in another country. Nor do they even supply their own data: their claim of 125mg/NM<sup>3</sup> with an ammonia slip of 10mg/NM<sup>3</sup> is based on a letter, but they have not actually got any direct operational data that shows this has in fact been achieved. Furthermore, the fluidised bed boiler technology is substantially different from what Peel Energy propose to use.

**4. As indicated above, if SNCR was used, the results can be expected to vary greatly according to the particular technology used and will also depend significantly on the consistency of the feedstock and on whether optimal temperatures can be guaranteed at all times.**

SNCR produces different results based on which kind of technology is used, and what kind of fuel is combusted in the plant. M Javed et al have reviewed a number of different kinds of SNCR technology and note that scientists have reported achievements of NOx emissions levels of between 125mg/NM<sup>3</sup> and 1020mg/NM<sup>3</sup><sup>2</sup> depending on the technology used.

In von der Heide's paper<sup>3</sup>, (which Fichtner refer to in Section 2.2 of their addendum) he notes that ordinary SNCR technology achieves NOx emissions of 200mg/NM<sup>3</sup>.

Von der Heide notes that the chemical reaction in SNCR technology only works within a narrow temperature range. However, where waste is incinerated, he states, as will be the case in this proposed development, the varying nature of the composition of the fuel can typically result in temperature variations within the furnace of up to 150 degrees C.<sup>4</sup> To accommodate for this, waste combustion plants seeking to achieve NOx levels of below 200mg/NM<sup>3</sup> must have different injection points installed at different levels of the furnace, so that ammonia/urea can be injected from different heights according to the varying temperatures within the furnace.

Peel Energy has not confirmed whether they would install such different injection points.

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<sup>2</sup> M Javed et al, 'Control of combustion-generated nitrogen oxides by selective non-catalytic reduction' *Journal of Environmental Management* 83 (2007) 251–289, page 256

<sup>3</sup> B von der Heide, 'SNCR Process: Best Available Technology for NOx Reduction in Waste To Energy Plants' available at [http://www.ms-umwelt.de/english/downloads/SNCR-Best\\_Available\\_Technology\\_for\\_NOx\\_Reduction\\_in\\_Waste\\_To\\_Energy\\_Plants.pdf](http://www.ms-umwelt.de/english/downloads/SNCR-Best_Available_Technology_for_NOx_Reduction_in_Waste_To_Energy_Plants.pdf)

<sup>4</sup> Ibid., page 11

Von der Heide also notes that in order to achieve NOx emissions levels of below 200mg/NM<sup>3</sup>, technologies using acoustic gas measurement systems must be used. Again, although Peel Energy refers to von der Heide's paper, they do not state that they intend to implement this technology at BREP.

Further, Peel Energy has not confirmed whether it would be using ammonia injections or urea injections. Using ammonia injections is generally understood to give rise to a larger ammonia slip. Theoretical achievements under controlled ideal conditions, however, tend to be different from ones that can be guaranteed in an actual power station burning different types of wood with different chemicals, moisture content, etc.

#### **5. Claims about NOx emissions achieved by B&W Volund**

Again, the claims made about NOx emissions achieved by B&W Volund are unverified and they do not say what type of biomass power station technology they relate to either. Deducing emission figures with SNCR from unverified data about emissions in a waste to energy plant of an unknown technology without SNCR does not appear credible to us, particularly when the company could have cited official figures from Environment Agency or US EPA websites about real power station emissions. The B&W Volund website shows that they build power plants with a range of different technologies.<sup>5</sup> They appear to be focussing particularly on biomass gasification, which is very different from the biomass combustion technology proposed by Peel Energy. We have seen nothing in the report to rule out those figures relating to gasification, not ordinary combustion.<sup>6</sup>

#### **6. Conclusions**

The ambiguity surrounding **how** Peel Energy proposes to achieve NOx emissions levels of 125mg/nm<sup>3</sup> remain. The addendum submitted by Fichtner, based on industry figures and which makes no concrete commitment, simply raises further doubts that NOx emissions this low, particularly in the case of processing waste wood, are realistically intended or indeed achievable. Independently verified figures from the Western Bioenergy Plant that we obtained demonstrate that NOx levels are typically much higher than the levels that Peel has quoted, for a smaller plant which processes clean wood using best available technology. On the basis that Trafford is an AQMA and that the Council is under a statutory obligation to work towards lowering levels of NOx in the area, we very much hope that this proposal to be rejected.

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<sup>5</sup> [http://www.volund.dk/climate/our\\_waste\\_technology\\_concept](http://www.volund.dk/climate/our_waste_technology_concept)

<sup>6</sup> [http://www.energy-daily.com/reports/BW\\_Volund\\_To\\_Supply\\_Biomass\\_Gasification\\_Plants\\_In\\_Italy\\_999.html](http://www.energy-daily.com/reports/BW_Volund_To_Supply_Biomass_Gasification_Plants_In_Italy_999.html)