

Kate Green MP  
Morris Hall  
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M41 9AD

27<sup>th</sup> September 2010

Dear Kate

### **Barton Renewable Energy Plant (BREP)**

Thank you for your letter of 22 September 2010 seeking further clarification on a number of points relating to our proposals for the Barton Renewable Energy Plant (BREP). We are grateful for your continued interest in the proposals and trust the following will go some way to reassure you and your constituents.

### **Emissions**

- **Is it correct that burning biomass releases mostly PM1 size particles, and that these are most dangerous to health?**

It is not correct to state that the burning of biomass releases mostly PM1 size particles. The filtration technology to be used is similar to that used on municipal waste incinerators and it will have a similar level of performance.

A number of analyses of the size distribution of particulate matter in the flue gases from a modern Waste Incineration Directive (WID) Compliant scheme have been carried out in the UK. The most comprehensive was carried out at the SELCHP EfW (Energy from Waste) facility in Lewisham and the results are shown in the table below. This shows the size distribution of the particles in a sample of flue gases on the discharge side of the bag filters.

Table 1 - Size Distribution of Particles in Flue Gas from UK Energy from Waste Plant		
Size range microns	% in range	%<range
<0.36	0%	0%
0.36 - 0.55	9.5%	9.5%
0.55 - 0.85	4.8%	14.3%
0.85 - 1.75	4.8%	19.1%
1.75 - 2.8	14.3%	33.4%
2.8 - 4.1	14.3%	47.7%
4.1 - 6.0	33.3%	81.0%
6.0 - 9.2	9.5%	90.5%
>9.2	9.5%	100.0%

The table shows the proportion of the particles which passed through a screen of a defined dimension. The results demonstrate:

- That the majority (62%) of the particulate matter was in the size range 1.75 to 6.0 microns;

- ii) That only 33% of the emitted particulate occurs in the sub  $PM_{2.8}$  fraction. (It is reported that 90% of the particulates in vehicle emissions are in the sub  $PM_{2.8}$  size range.<sup>1</sup>); and
- iii) That around 15% of the emitted particulate occurs in the sub- $PM_{0.85}$  fraction

At first sight, it might appear strange that there are no particles below 0.36 microns in the cleaned flue gases. However, two separation principles apply within the bag filters:

- i) Absolute filtration – particles larger than the holes in the filter obviously cannot pass;
- ii) Adsorption – a layer of particles called “filter cake” builds up on the surface of the filter material which consists of reagents (lime and activated carbon) and reaction products. This layer is essential to the proper functioning of the flue gas treatment system. Within this layer, the final acid gas neutralisation and the absorption of heavy metals and complex organic compounds takes place.

(<sup>1</sup> Table 3.1 on P12 of Report of the Airborne Particles Expert Group ‘Source Apportionment of Airborne Particulate Matter in the United Kingdom, January 1999.’)

It is the second reaction which accounts for the capture of the smaller particles which are adsorbed onto the surface of the particles in the filter cake. The smaller the particle, the greater the probability that it will be adsorbed onto another particle.

The latest European Directive on Air Quality sets a target value for concentrations of  $PM_{2.5}$  (of which  $PM_1$  are a subset) and this has been included in the latest UK Air Quality Strategy. This is set at a level to protect human health. The contribution of the emissions from the proposed Barton plant will be less than 1% of this target value. This will be demonstrated in the Air Quality Assessment which will accompany the planning application.

- **What calculation has been made of the additional emission effects of using solid recovered fuel which will contain a range of contaminants?**

The plant will clean the emissions to the same level (Waste Incineration Directive emission limits) regardless of whether fuel is virgin wood, reclaimed wood or solid recovered fuel.

- **Can you comment further on the nature of the emissions – it’s been suggested that a “cocktail of metal vapours” will be released, with harmful effects on health.**

A “cocktail of metal vapours” with “harmful effects on health” will not be released from the plant. The emissions that remain following treatment are at very low concentrations. The impact of these emissions has been assessed by comparing the contribution to human intake with health standards set to protect human health both through European Legislation and Local Authority Standards. The standards which are set for dioxins in particular are based on a Tolerable Daily Intake, which is the intake which a human could receive every day without adverse health effects. This allows for the continuous exposure to very low levels of chemicals, such as the human body is exposed to every day anyway. Standards for metals are also based on a safe daily tolerance level. The standards set take account of younger and older people.

- **What information do you have about potential emissions that will result from the newly approved methane plant, and what will be the cumulative effect of the emissions from this plant and BREP?**

The planning application for the recently consented coal bed methane extraction details the air quality impacts of that proposal. This indicated that emissions from the scheme would not be



released in sufficient quantities to raise the concentrations of pollutants nor have an impact on air quality objectives.

**What assessment has been made of the likelihood and impact of pesticides on nearby crops being vaporised?**

No such assessment has been made. We cannot conceive of a mechanism which would lead to this effect. By the time that the dispersed flue gases reach the ground, there would be no impact on temperatures.

- **What is the risk of emissions entering the food chain (eg food processing plants on Trafford Park)?**

The standards which are set for dioxins in particular are based on a Tolerable Daily Intake, which is the intake which a human could receive every day without adverse health effects. This allows for the continuous exposure to very low levels of chemicals, such as the human body is exposed to every day anyway. Standards for metals are also based on a safe daily tolerance level. By complying with these standards the proposals do not pose a risk in this regard.

- **In your letter to me, you advised that the Environment Agency would measure emissions. I understand there are different measurement methodologies – can you advise what methodology will be used in this case?**

The plant would be equipped with a Continuous Emissions Monitoring System (CEMS), which would measure the following substances continuously: Oxygen; Carbon-monoxide; Oxides of nitrogen; Volatile organic compounds; particulate matter; Hydrogen Chloride; and Sulphur dioxide.

The precise make and model of the monitoring system has not yet been determined, but it is likely that most of the substances would be measured using a Fourier Transform Infra-Red (FTIR) system, with a Flame Ionisation Detector (FID) being used for volatile organic compounds and a cross-duct opacimeter being used for particulate matter. All of the monitoring equipment would comply with relevant European standards and would be certified under the Environment Agency's MCERTS scheme. The MCERTS scheme is the Environment Agency's Monitoring Certification Scheme. It provides a framework within which environmental measurements can be made in accordance with the Agency's quality requirements.

It is important to note that carbon monoxide, oxides of nitrogen, volatile organic compounds, particulate matter, hydrogen chloride and sulphur dioxide are monitored continuously and the very low levels of heavy metals and dioxins such as PCBs and PAHs are analysed by the Environment Agency in an independent laboratory. The Environment Agency also carries out regular scheduled and unscheduled site inspections and operator audits of all power plants like BREP.

### **Filters**

- **I am informed that bag filters filter out 99% of PM10s, 70% of PM2.5s, and 10% of PM1s. Clearly you are expecting significantly better performance from the filters you will be using, and you referred in your letter to me to studies done for the US Environmental Protection Agency. Can you provide details of these studies, and can you advise what sort of filters you will be using?**

The figures which have been quoted to you have been asserted elsewhere. To our knowledge, no evidence has been supplied to support them. It is likely that some form of PTFE filter bag will be used.

The US EPA studies are called "Environmental Technology Verification Studies" and are carried out by companies engaged by the Air Pollution Control Technology Centre, which is part of the US EPA, not by the manufacturers of the product. In the studies, a volume of air with a known contamination level is passed through a sample of the filtration material and the removal rate is calculated.

- **It's been suggested the filters you are proposing to use have so far only been used in coal fired power stations, where mostly PM5s are produced. What evidence is available that the filters will be adequate to deal with smaller particles?**

Please see our earlier responses. The filters will be the same as those used in existing and emerging municipal waste incineration plants and the evidence shows that these filters are effective in dealing with smaller particles.

### Health

- **What evidence has been examined on the health impacts of what you propose? (A number of points on this have been raised with me which I am taking up with the Environment Agency, as I believe some of the queries relate to regulatory matters - a copy of my letter to them is enclosed for your reference).**

During the last 10 years, around 350 biomass power plants with a capacity of more than 3,000 MW came into operation in the European Union. The UK is seriously lagging behind the rest of Europe with this technology currently having only several operating plants whilst countries like Sweden are currently generating around 32% of their electricity from biomass fuelled power plants.

The main plants in the UK are:

- Slough Heat and Power with a capacity of 101MWe
- Steven's Croft, Lockerbie at 44 MWe
- Other operational plants include Ely, Cambridgeshire and Thetford, Norfolk
- There is planning permission at Markinch in Fife for a 45 MWe plant
- In England and Wales a range of S36 consents have been granted in various locations including at Port Talbot, Wales, 350MWe; Avonmouth, Bristol, 100MWe ; Tilbury, Essex, 60MWe; Stallingborough, near Grimsby, 65MWe

Listed below are quotes from a number of government departments and agencies that reference the possibility of health impacts from plants such as BREP.

*Studies into the health of communities living near to incinerators have not found any convincing links between incinerator emissions and adverse effects on public health. The Environment Agency work with health authorities and the Health Protection Agency to investigate local concerns and regulate all waste facilities, including energy from waste incinerators, to prevent or minimise any risks to the environment or health. Cuts in emissions over the past decade have greatly reduced any potential health risks.*

(Environment Agency, 2009)

*Incinerators emit pollutants into the environment but provided they comply with modern regulatory requirements, such as the Waste Incineration Directive (of which the Barton Renewable Energy Plant will), they should contribute little to the concentrations of monitored*



*pollutants in ambient air. Epidemiological studies, and risk estimates based on estimated exposures, indicate that the emissions from such incinerators have little effect on health.*

(Health Protection Agency, 2005)

*There is a body of scientific evidence strongly indicating that contemporary waste management practices including incineration, have at most, a minor effect on human health and the environment, there are no grounds for adopting the 'precautionary principle' to restrict the introduction of new incinerators.*

(Response to the British Society for Ecological Medicine report The Health Effects of Waste Incinerators. Health Protection Agency, 2006)

*The Health Protection Agency has reviewed research undertaken to examine the suggested links between emissions from municipal waste incinerators and effects on health. While it is not possible to rule out adverse health effects from modern, well regulated municipal waste incinerators with complete certainty, any potential damage to the health of those living close-by is likely to be very small, if detectable. This view is based on detailed assessments of the effects of air pollutants on health and on the fact that modern and well managed municipal waste incinerators make only a very small contribution to local concentrations of air pollutants. The Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment has reviewed recent data and has concluded that there is no need to change its previous advice, namely that any potential risk of cancer due to residency near to municipal waste incinerators is exceedingly low and probably not measurable by the most modern techniques. Since any possible health effects are likely to be very small, if detectable, studies of public health around modern, well managed municipal waste incinerators are not recommended.*

(Health Protection Agency, "The Impact on Health of Emissions to Air from Municipal Waste Incinerators", 2009)

## **Fuel**

- **What fuel will be used to power the plant?**

It is intended that the plant will be predominantly fuelled by reclaimed wood (circa 70%). In addition to this other renewable biomass fuels that will be included will be forestry brash, coppiced virgin wood from sustainable sources, bio-crops and other biomass fractions where available (25-30%).

As part of the accreditation process for the plant these fuels must be approved through OFGEM's sustainability criteria. Peel Energy will work to the Renewable Energy Directive Mandatory Sustainability criteria for biomass fuels. To ensure that the plant remains flexible to potential other fuel sources its technology will be capable of accepting a small proportion (5%) of Solid Recovered Fuel.

- **Where is the wood coming from – will you be able to source all your biomass needs from within the UK?**

Market Studies (WRAP 2009) indicate that 4.6 million tonnes of reclaimed wood are available per annum in the UK. The North West (NW) of England is one of the highest generators of reclaimed wood with 550,000 tonnes per annum (WRAP 2009). As indicated above approximately 70% of the proposed schemes fuel demand will be from reclaimed wood which equates to approximately 140,000 tonnes per annum from the local NW market. The other proportion of the fuel mix is also anticipated to be sourced in the NW area such as the transportation costs. Peel is actively assessing its own and partners' land portfolio for

opportunities to sustainably harvest energy crops. We would expect to source all of the biomass fuel needs for this plant from within the UK and predominantly in the NW area.

- **Will the proportion of solid recovered fuel increase?**

To qualify as a biomass plant the fuel input must be maintained above a level of 90% by biomass energy content. This ensures that the level of Solid Recovered Fuel will not increase.

- **Will sewage sludge be burned?**

Peel has no plans to introduce sewage sludge as a fuel into this scheme.

#### **Transport**

- **Will the same lorries be used both to bring in the raw materials and take away toxic ash?**

The same lorries will not be used to transport fuel to the site and take away both the inert bottom ash or the residues from the filtration systems. Biomass fuel is typically transported in high sided wagons whereas the ash and residues are typically transported in sealed wagons. As you are aware, the proposals include for the provision of a berthing facility immediately adjacent to the site on the Manchester Ship Canal such that as the supply chain matures deliveries can be removed from the highway network.

#### **Public Meeting**

I confirm that to date we have not received an invitation to attend the public meeting being organised by the Breathe Clean Air group on the evening of 6 October. It is not our policy to attend such events but we are prepared to engage in to organised and controlled briefings of councillors and key stakeholders who can then feed back to the community. We trust you will agree that such events can be more productive and allow for more open discussion between the parties.

It is also important to note that whilst some members of your constituency have concerns (and we are more than willing to address these concerns), there are also a number that support the scheme. We have undertaken significant consultation with statutory bodies and the local community which has included holding a two day exhibition which had almost 200 attendees. Formal feedback from the exhibition indicates that 48% of those that completed feedback forms supported our biomass proposals.

We believe you will find these responses of use and look forward to having another opportunity to meet with yourself to discuss the scheme.

Yours sincerely

A handwritten signature in dark ink that reads "Jonathan England".

Jonathan England  
Development Director