

Dear Mr Calabrese,

**Re: Application by Nexterra and Balfour Beatty for a biomass gasifier in Avonmouth, Ref 14/03210/F**

I am writing on behalf of the UK/US campaign organisation Biofuelwatch to object to the Nexterra/Balfour Beatty planning application for an 11 MWe waste wood gasifier next to Chittening Trading Estate in Avonmouth.

Our grounds for objection relate to:

- 1) Uncorroborated claims in the planning application which, if they cannot be corroborated, would put compliance with site selection planning requirements and also the traffic assessment into question;
- 2) Lack of credible evidence that the development complies with the waste hierarchy principle set out in national and regional planning policy and in the EU Waste Framework Directive (under which the plant would fall);
- 3) Site selection and planning rationale tied to the long-term continuation and potential upscaling of operations by Boomeco, who already had one license suspended by the Environment Agency this year and whose contribution to dust emissions is being investigated at present;
- 4) Concerns about the 'baseline' pollution figure chosen for the Air Quality Assessment and thus about the reliability of the findings;
- 5) Low efficiency of the plant which we believe contradicts the sustainable development principle set out in the National Planning Policy Framework.

Before discussing the planning grounds for our objection in detail, we would first like to comment on the ***nature of the proposed development***.

The proposal is not for a standard biomass combustion plant but for a biomass gasifier, one which is to burn Grade C waste wood and which thereby will fall within the remit of the Waste Incineration Directive and the Waste Framework Directive. Biomass gasification is not a mature technology – it is a technology beset with serious technical/operational challenges which in other places have resulted in serious exceedences of permitted air emissions and in fires and explosions.

So far, not one biomass gasifier above 1 MW has been successfully operated in the UK. The largest one built in the UK was a 10 MW biomass gasifier near Eggborough in 2001 – this had to be closed after a mere eight days of operation due to technical as well as economic problems. A 3 MW waste wood gasifier in Stoke of Trent was commissioned in 2008 but it was closed down in November 2011 and during the period it was operational, it only ran at 1% of its capacity – clearly an unsuccessful scheme.

The Non-Technical Summary states: "*Although Nexterra are relatively new to the UK, they have eight operational biomass gasification plants in North America*". This is not correct. One of their eight gasifiers was located at the University of South Carolina - it exploded and has not been operational since 2010<sup>1</sup>. Another Nexterra gasifier, in Tennessee, had to be closed down because vital parts had corroded in less than 18

---

<sup>1</sup> [http://missoulain.com/news/local/south-carolina-biomass-explosion-raises-questions-about-safety-of-um/article\\_5de7a9c6-f793-11e0-9c16-001cc4c03286.html](http://missoulain.com/news/local/south-carolina-biomass-explosion-raises-questions-about-safety-of-um/article_5de7a9c6-f793-11e0-9c16-001cc4c03286.html).

months<sup>2</sup>. One of the eight North American plants referred to is still under construction<sup>3</sup>. And none of the operating plants is designed to produce electricity.

There have been serious problems with other biomass gasifiers, too: According to a report commissioned by the German government, around 50 biomass (wood) gasifiers were installed in Germany between 2000 and 2010 ([www.gvepinternational.org/sites/default/files/resources/gtz2010-en-small-scale-electricity-generation-from-biomass-part-i.pdf](http://www.gvepinternational.org/sites/default/files/resources/gtz2010-en-small-scale-electricity-generation-from-biomass-part-i.pdf)). The authors of the report found that *"some of these plants never worked according to plan. Many have been taken out of operation after some months of trial. Some plants went up in flames and developers went bankrupt. The few plants that achieved more or less continuous operation were operating under special circumstances: They were part of university research programmes or were operated by the developers themselves. Moreover, in almost all cases about one to two years of adaptation were necessary."* A 2012 industry article in Germany reported that the number of biomass gasifiers in Germany nonetheless keeps growing but that further research was required, that there were no off-the-shelf plans and that technical problems persisted, including problems with processing and cleaning the syngas, which is often too high in tar for safe combustion (<http://www.erneuerbareenergien.de/boom-beim-anlagenbau/150/406/54825/>).

Another German industry article ([www.energy20.net/pi/index.php?StoryID=1392&articleID=167043](http://www.energy20.net/pi/index.php?StoryID=1392&articleID=167043)) emphasises that *"the use of gasification technology at all scales discussed is a far from being an unproblematic, everyday technology."* It points out that small scale gasification tends to have relatively low efficiency, the plants are often not stable, toxic emissions are usually too high, gas scrubbing is often insufficient, constant supervision is needed in many cases and often a technical service is required. According to the authors, the major challenge is optimising the whole system from combustion to waste disposal while meeting legal requirements, such as emission limits.

**1) Uncorroborated claims in the planning application which, if they cannot be corroborated, would put compliance with site selection planning requirements and also the traffic assessment into question:**

According to the Environmental Statement, the key reason why the developer selected this site is the proximity to Boomeco, who are to chip and supply all of the wood for the proposed plant. The document states:

*"Wood waste currently accepted at the Boomeco site is shredded and then transported for temporary storage at Bristol Docks prior to onward transport to Central Europe and in particular Sweden as feedstock for waste to energy facilities. The proposed development will enable the waste wood to be treated close to its point of origin and it will increase recovery levels with the resultant energy exported to the National Grid."*

Despite extensive web searches, we have been unable to find any evidence to corroborate the claim that Boomeco is currently supplying waste wood to Swedish waste incinerators. We are well aware of Boomeco's contract with North Somerset Council for the supply of waste to the Mälarenergi district heating facility in Västerås, Sweden. This, however, is exclusively for Refuse Derived Fuel, with North Somerset's contract explicitly stating that it must not contain any wood<sup>4</sup>.

---

<sup>2</sup> [www.washingtontimes.com/news/2014/aug/25/oak-ridge-biomass-steam-plant-already-closed/0](http://www.washingtontimes.com/news/2014/aug/25/oak-ridge-biomass-steam-plant-already-closed/0)

<sup>3</sup> <http://www.nexterra.ca/files/us-veterans-affairs.php>

<sup>4</sup> <http://apps.n-somerset.gov.uk/cairo/docs/doc25443.htm>

We are aware that Boomeco has a contract with Bristol City Council to sort and shred 6,000 tonnes of waste wood a year. However, the proposed gasifier would require 75,000 of woodchips a year, more than 12 times as much. Furthermore, Bristol City Council has been cited in the media stating that around 90% of the 6,000 tonnes taken by Boomeco would subsequently be used for chipboard manufacturing<sup>5</sup>. Even if it was found that Boomeco is currently exporting significant quantities of waste wood chips, it would be important to establish whether they might be bound by long-term supply contracts, in which case the demand from Nexterra/Balfour Beatty would still be additional and therefore require a very significant upscaling of Boomeco's existing operations.

If the claim about diverting waste wood that would otherwise be exported for incineration cannot be corroborated then this would undermine a key reason for the site selection. It would also invalidate the transport assessment, which claims that existing HGV traffic would be reduced not increased once the plant was operational. And it would put compatibility with local and national waste-related planning policy into serious doubt.

## **2) Lack of credible evidence that the development complies with the waste hierarchy principle:**

As discussed under point (1) above, we can find no corroboration for the claim that the waste wood that would be burned by the proposed gasifier would otherwise be exported to energy to waste plants abroad, specifically in Sweden. We also note that, according to a media quote by Bristol City Council, 90% of the waste wood that Boomeco is contracted to acquire from the Council is currently used by the wood panel industry.

Burning waste wood that would otherwise be used for different purposes, such as wood panel production, would contravene the waste hierarchy principle. That principle is contained in the EU Waste Framework Directive, in the National Planning Policy for Waste, the Waste Management Plan for England and in the West of England Joint Waste Core Strategy.

Grade C waste wood, which is to be burned by the gasifier, includes Grade A and Grade B waste wood, i.e. waste wood suitable for industrial use, such as panel board manufacture<sup>6</sup>. The Wood Panel Industry Federation has warned that their industry's jobs – over 10,000 in the UK – are at serious risk from competition for suitable wood from biomass power plants<sup>7</sup>. They also point out that panel board manufacturing plants depend on sourcing wood from within a 150-200 mile radius. Avonmouth is just over 80 miles from one of the six panel board plants in the UK – Norbord's plant in South Molton. This suggests that the proposed gasifier could very well compete with existing industries' use of waste wood, breaching the waste hierarchy principle.

## **2) Site selection and planning rationale tied to the long-term continuation and potential upscaling of operations by Boomeco:**

The proposed development is tied to the long-term continuation and, as shown above, potentially very significant upscaling of Boomeco's woodchipping and wood chip storage operations at Chittening Industrial Estate. There are serious local concerns about Boomeco's existing operations in Avonmouth. Boomeco's license to store RDF bales was

---

<sup>5</sup> <http://www.letsrecycle.com/news/latest-news/bristol-to-keep-close-eye-on-boomeco-wood-deal/>

<sup>6</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/82571/consult-wood-waste-researchreview-20120731.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82571/consult-wood-waste-researchreview-20120731.pdf)

<sup>7</sup>

[http://www.makewoodwork.co.uk/GalleryEntries/Manifesto\\_and\\_Reports/Documents/WPIF\\_Response\\_to\\_Further\\_CfD\\_Allocation\\_Consultation\\_June\\_2014.pdf](http://www.makewoodwork.co.uk/GalleryEntries/Manifesto_and_Reports/Documents/WPIF_Response_to_Further_CfD_Allocation_Consultation_June_2014.pdf)

temporarily suspended by the Environment Agency earlier this year after it had led to a major fly infestation in the area.

At present, the Environment Agency is carrying out monitoring of dust levels and emissions at Avonmouth, following a series of local complaints. They are seeking to establish what the levels of dust pollution are and where dust is being generated. Wood chipping and wood chip storage can be very significant sources of wood dust emissions. However the EA only started their investigations in August and will not be in a position to analyse and report the results until late November at the earliest<sup>8</sup>. If dust levels in the area were found to be above EA guidance and if Boomeco were found to be the major contributor to such dust pollution, then the EA might well take enforcement action. Approving a power plant which depends on Boomeco's continued and potentially much upscaled ongoing operations before the EA has reported on the results of their Avonmouth dust monitoring would seem highly problematic to us.

#### **4) Concerns about assumptions made about 'background pollution' levels in the Air Quality Assessment and thus about the validity of the conclusions:**

The developers' Air Quality Assessment concludes that the biomass gasifier would not cause or aggravate any exceedances of the Air Quality Standard – either by itself or when viewed cumulatively together with six other consented new developments within a 2km radius.

Their conclusion relies on the assumption that existing levels of pollution – including NO<sub>2</sub> – in Avonmouth are well within legal limits.

We share the concerns raised by local residents that there are no continuous monitors in Avonmouth and that the current level of air pollution in the area is therefore largely unknown. We cannot see how the impacts of this and other polluting developments can be adequately assessed without accurate monitoring data.

For the purpose of the Air Quality Assessment, the developers' consultant has assumed that background levels around the site are the same as those at the St Paul's AURN monitoring station – around 8 miles from Chittening Industrial Estate. There is no way of knowing whether the levels at the two sites are similar or whether those in Avonmouth – due to the level of industrial activity and shipping at the port – might be far higher.

The developers cite readings from NO<sub>2</sub> diffusion tubes in or near Avonmouth which are within legal limits. However, according to Bristol City Council's Air Quality Progress Report 2013<sup>9</sup>, there are six diffusion tubes in Avonmouth and three of those show annual average NO<sub>2</sub> levels which are in excess of 40 µg/m<sup>3</sup>, i.e. in excess of the legal Air Quality Standard.

We are aware of another Local Authority (Dundee City Council) which delayed a decision on a biomass power station application pending ambient air quality data collection and monitoring by the applicant<sup>10</sup> (following which they voted to oppose the application on air quality grounds). ***We believe that Bristol City Council cannot adequately determine the impacts of the proposed plant on air quality without first***

---

<sup>8</sup> <https://www.gov.uk/government/publications/avonmouth-fly-and-dust-issues/avonmouth-fly-and-dust-issues>

<sup>9</sup>

[http://www.bristol.gov.uk/sites/default/files/documents/environment/air\\_quality/Bristol%20City%20Council%20AQ%20Progress%20Report\\_2013v1%20orig.pdf](http://www.bristol.gov.uk/sites/default/files/documents/environment/air_quality/Bristol%20City%20Council%20AQ%20Progress%20Report_2013v1%20orig.pdf)

<sup>10</sup> <http://www.forthenergy.co.uk/assets/dundee/dundee-non-technical-summary.pdf>

***carrying out – or insisting that the applicant carries out – local ambient air quality monitoring.***

**5) Low efficiency of the plant which we believe contradicts the sustainable development principle set out in the National Planning Policy Framework:**

From the figures contained in the planning documents we have calculated that the net efficiency of the proposed plant would be 24% (assuming that the plant would operate for a maximum of 8000 hours a year). There is no credible heat supply proposal, let alone a commitment to supply heat which would increase the plant's efficiency.

Efficient biomass combined heat and power or heat-only systems can achieve 70-80% or greater efficiency levels. Some electricity-only biomass power stations can achieve 35% efficiency – not a high level but significantly higher than that of the proposed gasifier.

24% efficiency means that 76% of the energy contained in the wood will be wasted entirely as uncaptured heat. Low efficiency means that the environmental impacts, including transport and air pollution, per unit of energy will be disproportionately and unnecessarily large. We believe that this contradicts the principle of sustainable development.

Best regards,

Almuth Ernsting  
Biofuelwatch Co-Director