

Submission from Abergavenny and Crickhowell Friends of the Earth

To: Ms Abigail Phillips
Clerk to the WA Petitions Committee

Welsh Assembly Petitions Committee - P-04-341 Waste and Incineration

FURTHER SUBMISSION ON BEHALF OF ABERGAVENNY & CRICKHOWELL FOE
by Rod Walters

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1. Evidence of Welsh Government bias towards Energy from Waste

The Petitions Committee was told on 27th March by John Griffiths, Minister, Jasper Roberts & Andy Rees, civil servants, that waste policy and advice to the Minister has been ‘technology neutral’.

On the contrary, there is compelling evidence of bias which has had the effect of affording every advantage to ‘energy from waste’ incineration and every disadvantage to alternative technologies:

- 1) EFW incineration is unambiguously specified in ‘Towards Zero Waste’ (2010): *“In respect of projects receiving Welsh Assembly Government funding support, the reference solution for dealing with municipal waste is to meet the recycling/composting targets set in Towards Zero Waste, treat the separated food waste via AD and recover energy from the residual waste at an energy from waste (EfW) plant.”*
- 2) Funding is made readily available for EFW but not for MBT, its main rival:
 - FOE were told in a meeting with civil servants (2007) that MBT was ineligible for funding on the grounds it comprised an ‘intermediate treatment’;
 - Both the Caerphilly MBT plant and the proposed Hirwaun MBT plant have had difficulty in obtaining Welsh Government funding;
 - By contrast, the Welsh Government’s ‘Making the Connections Programme’ has funded LA partnerships such as Prosiect Gwyrdd which favour the building of large ‘EFW’ incinerators and the proposed Prosiect Gwyrdd incinerator will receive a grant of 25% or £9,124,000 pa.
- 3) It is known that the thermal efficiency of waste incinerators, and thereby their energy generation, is optimum if they operate in CHP mode, able to supply large amounts of heat to year-round users nearby. Despite this being most achievable in small /medium-sized plants, the Welsh Government visited Covanta in the USA, who proposed an incinerator at Merthyr so large it could take waste from the whole of Wales and neighbouring parts of England. So keen was the Welsh Government on this incinerator that it undertook to provide information “on forecasted rail improvement programmes for North, Mid & South Wales to allow Covanta the ability to assess the waste capture from these areas’ and to ‘prepare a position paper on EfW making references to Covanta.’
- 4) The Welsh Government wants to categorise use of incinerator bottom ash as ‘recycling’, which would flatter the ‘green’ credentials of incineration. The Government of Scotland (SEPA) states:
“Using the bottom ash from incineration in construction products (such as aggregate and road beds) does not count towards the household waste recycling target. Incinerating resources such as paper, card, plastic and food and using the ash is not the same as ‘closed loop’ recycling of those same materials into new products.”
Welsh Government civil servants are aware of this ruling but choose to pursue their own path, which will have the further regrettable consequence of compromising national recycling figures.
- 5) The Welsh Government has promoted waste incineration to the public in every way, for example:
 - in conferences, e.g. in the “Energy from Waste in Wales 2009” conference in Cardiff (9/7/09), where Dr Andy Rees, Head of Waste Strategy Branch, Welsh Government, spoke on

“The Role of Energy from Waste in Wales” sharing a platform with Malcolm Chilton, Managing Director Covanta, speaking on “the Benefits of Energy from Waste for Wales”.

- in the dubious Public Attitudes to Waste ‘research’ carried out in Aug 2010 by Waste Awareness Wales (an arm of the Welsh Government), which claimed in its report that that people in Wales were ‘in favour of waste incineration’ when the research had only presented two options to respondents, ‘burn or bury’ and had ignored respondents’ concerns over pollution from incineration – urging instead that these should be ‘assuaged’.

2. Prosiect Gwyrdd bias towards Energy from Waste.

The Petitions Committee were also told that Prosiect Gwyrdd had been ‘technology neutral’.

There is evidence to the contrary:

- 1) **Prosiect Gwyrdd visited an incinerator LA partnership before even the formal memorandum of understanding had been signed:** The formal Memorandum of Understanding was signed in July 2007. The Prosiect Gwyrdd Steering Committee had already visited Project Integra in Jan 2007 – an ‘energy from waste’ LA partnership in Hampshire having Veolia (shortlisted by Prosiect Gwyrdd) as their contractor.
- 2) **Cardiff, short of landfill space, in July 2007 specifically connected Prosiect Gwyrdd to ‘Energy from Waste’:** “It is recommended that Prosiect Gwyrdd... is taken forward to deliver the alternative residual waste treatment solution”...“This conclusion confirms that the principles of the benefits and solutions offered by the proposed EfW have been recognised by the Council.” (Executive Business Meeting Minutes 5th Jul 2007)
- 3) **At the same time, Viridor announced its plans for a Cardiff incinerator:** Whether by coincidence or not, plans were revealed by Viridor at the same time for “a new plant that turns waste into energy” at Cardiff Bay, which Dan Cooke, external affairs manager for Viridor, said would “take waste from five local authorities – Cardiff, the Vale of Glamorgan, Newport, Caerphilly and Monmouthshire.” (South Wales Echo Sept 2007.)
- 4) **Prosiect Gwyrdd’s Outline Business Case was based on waste incineration:** Prosiect Gwyrdd’s Outline Business Case, submitted to the Welsh Government to secure funding, was based on ‘energy from waste’ as its reference technology.
- 5) **Prosiect Gwyrdd made an all-incinerator short-list, rejecting all alternatives:** In December 2010, Prosiect Gwyrdd revealed its all-incinerator short list. To account for the absence of alternative technologies, Prosiect Gwyrdd has either denied that such technologies came forward with bids or criticised the technologies concerned. There are at least thirty waste treatment plants in the UK other than incinerators which are operational or with planning permission, some of whom unsuccessfully applied for Prosiect Gwyrdd (see sec 6.)

3. “Waste incineration has a positive carbon footprint”

It was claimed to the Petitions Committee that Waste Incineration ‘has a positive carbon footprint.’

- 1) Such a claim rests on assumptions made by the Environment Agency’s Waste and Resources Assessment Tool for the Environment (WRATE). The fallibility of such assessment tools is well documented. A Eunomia and EnviroCentre study carried out for the Greater London Authority in 2008 came to precisely the opposite conclusion: “incineration scenarios modelled were amongst the worst performing” in climate change terms.” Which is right, the WRATE assessment or the Eunomia & EnviroCentre study? It clearly depends on what assumptions are fed into the model.
- 2) Confidence in the WRATE model is undermined by the fact that the Environment Agency openly supports ‘Energy from Waste’ as can be seen in its web-site:

The main route for municipal waste disposal in the UK has traditionally been landfill.We must urgently find affordable ways of managing municipal waste that cannot be recycled, and maximise its use as a resource. We believe that recovering energy from waste can contribute to a balanced energy policy. <http://www.environment-agency.gov.uk/research/library/position/103220.aspx> (Feb 2012)

- 3) The central consideration in assessing carbon footprint ought to be carbon emissions. Here, the facts are unambiguous. Without including biogenic carbon, incinerators emit more CO₂ than an average fossil fuel power station, typically between 0.7 and 1.3 tonnes of CO₂ equivalent per tonne of waste. Is this acceptable at a time of increasing concern over climate change?
- 4) Incineration supporters (and WRATE) claim that incinerator emissions are offset by energy generated, which 'replaces the burning of fossil fuels'. Even if one grants the validity of discounting emissions in this way, the actual amount of 'offsetting' would hinge on whether, additional to electricity, outlets can be guaranteed for the majority of the heat generated. Outside areas such as Scandinavia that have a high demand for heat, this can be problematic. Proposed incinerators make expansive promises in this direction, but only one or two incinerators in the UK have actually done so. The offsetting claim is further contradicted by the fact that, by 2025, Wales aims to be producing 100% of its electricity through renewable sources. Over the 25-year life of an incinerator contract, therefore, the 'displacing fossil fuels' claim is increasingly nullified.
- 5) Waste incineration has arrogated to itself the term "Energy from Waste" implying that it is especially able to recover energy from waste. In fact, incinerators do not generate energy efficiently. This is because incinerators use steam turbines from which a lot of heat is lost. Unless they operate in CHP mode and are able to find guaranteed year-round customers for the heat, efficiency will be low. Indeed, the Minister's statement to the Petitions Committee on 27th March that the energy efficiency of incinerators is 'on track' implies that improvements are needed.
- 6) An MBT plant at Avonmouth will use pyrolysis & gasification to generate energy. Unlike mass-burn incineration, pyrolysis & gasification will treat only the final residues ("refuse-derived fuel") of the MBT process. The pyrolysis stage involves heating the fuel in the absence of oxygen, converting it into a 'syngas' and carbon-rich char. The char is then gasified using high-temperature steam with the controlled addition of air. The gas from pyrolysis & gasification can generate energy more efficiently than incineration since it uses a gas engine (& potentially a fuel cell). Energy can also be efficiently generated using the biogas obtained from anaerobic digestion.

4. "Incineration does not threaten Waste Reduction & Recycling"

"25-year contracts to feed incinerators in Wales would not threaten waste reduction and recycling programmes" it was claimed to the Petitions Committee on 27th March,

- 1) Promoters of waste incineration produce one set of figures from Europe to justify their claim that waste reduction and recycling programmes would not be affected and opponents of incineration supply an opposite set of figures to contradict it. However, published UK Municipal Solid Waste statistics in Nov 2010 showed clearly that none of the top five UK incinerator authorities rank in the top 100 recycling authorities.
- 2) Councils locked into long (typically 25-year) contracts to supply incinerators have seen recycling directly suffering:
 - In 1995, Cleveland County Council signed a contract for an incinerator. A 'shortfall' in the first year led to penalties of £147,000. A representative was quoted as saying "essentially we are into waste maximisation... constrained from doing even a modest amount of recycling."
 - "Project Integra" in Hampshire, visited by Prosiect Gwyrdd, has three incinerators. It was reported in 2006 that the contractor Veolia was topping them up with recyclables to help meet shortfalls in intake of household waste. "We do take material from household waste recycling centres if there is a shortfall of black bag waste" admitted Project Integra Director, Steve Read. [News item in: www.letsrecycle.com]

- 3) To attain high thermal efficiency incinerators need combustibles like paper and plastics in the feedstock. Incineration is thereby in clear conflict with waste reduction and recycling programmes which aim to remove these substances.
- 4) Incinerator-building companies claim they only burn 'non-recyclable waste'. But until Wales's 70% 2025 recycling target is met and even after it has been reached, quantities of recyclable municipal waste would inevitably be fed into incinerators if built. Incinerators can in any case burn recyclables in commercial and industrial waste which comprises approximately one quarter of all waste and is as yet lightly regulated compared to municipal waste.
- 5) Contrary to modular technologies like MBT, incinerators do no recycling other than recovery of some metals from their bottom ash. As seen in section 1(4) above, the Welsh Government want to categorise use of incinerator bottom ash in construction as recycling. It is correctly stated by the Scottish Government that "incinerating resources such as paper, card, plastic and food and using the ash is not the same as 'closed loop' recycling of those same materials into new products."

5. "No significant health impact"

The authorities state that *"adverse health effects from modern, well regulated municipal waste incinerators are likely to be very small, if detectable"..... and that emissions "make only a very small contribution to local concentrations of air pollutants"*.

UK authorities have historically had a tendency to deny health impact or risk from an industrial process until it is proven beyond all doubt. Is one therefore to have confidence in the above statement?

- 1) The statement would seem to contain an implication that modern incinerators do not breach emission standards. In fact, modern incinerators have frequently done so since 2006, including those at Wolverhampton, Hanford, Dudley, Dundee, Nottingham, Sheffield & Stoke to name but a few. In 2006 the Staffs CC Hanford incinerator breached its emission limits 40 times. In 2006 the incinerator at Dudley had over 50 emission breaches. In Nov 2007, the Dundee incinerator was in breach of emission limits for particulates, dioxins, furans & metals. The next year it again breached limits for dioxins & furans. To such cases could be added Covanta (courted by the Welsh Government and shortlisted for Prosiect Gwyrdd) which was reported to have been fined for releasing cancer-forming chemicals in 2009 and again in 2011.
- 2) The statement would also seem to admit that older generations of incinerators did pollute, which does not increase one's confidence in the UK authorities, since predecessors of the Environment Agency would have been responsible for permitting and regulating them.
- 3) Emissions from 'modern incinerators' have almost certainly been worse, since the breaches refer only to those substances that were monitored and measured. Until recently, monitoring did not specifically extend to fine & ultra-fine particles [PM2.5s & PM0.1s]. Such finer particles are acknowledged even by Veolia in their Newport planning application (chapter 6) to be a health risk. They were not until recently, however, separately monitored. The Environment Agency had been saying previous to this that there was little or no escape of fine and ultra-fine particles and no health risk. Now they have conceded there is a health risk and have started to measure PM2.5s should we believe them when they say fine and ultra-fine particles are being accurately monitored and well regulated? Have they the equipment to reliably do so?
- 4) When FOE (in connection with the Covanta incinerator) asked the Environment Agency in Wales in 2011 what proportions of PM2.5s (fine particles) and PM0.1s (ultra-fine particles) are captured by standard incinerator pollution abatement equipment, they replied "it was difficult to give firm figures because of variable factors and that if FOE was concerned about the efficiency of the filters at the Covanta plant they could contact the operator and request plant-specific data." In other words, they didn't know and didn't seem over concerned that they did not know.
- 5) We understand that regulation depends partly on monitoring provided by the incinerator company. Granted that the monitoring should in theory meet stringent standards, does it do so in

practice? Is there a possibility that an incinerator company can manipulate the data? A whistle-blower at an incinerator in Greater Manchester (now owned by Viridor) alleges 'routine falsification of pollution-monitoring records'.

- 6) Research has shown that emissions increase substantially as equipment ages, during break-down and during start-up and shut-down of incinerators. Is the Environment Agency sure that accurate monitoring data is recorded at these times?
- 7) The authorities assure the public that any fine & ultra-fine particulate matter escaping from incinerators makes "a very small contribution to local concentrations of air pollutants". Research carried out at a town in Sweden in 2007 flatly contradicts this. It identified a new incinerator as the single most significant source of PM_{2.5}s using x-ray technology *"The research used dispersive x-ray fluorescence analysis of airborne particles which has previously been shown to be a powerful technique for identifying key elements or elemental ratios for identification of important sources of air pollution."* Did the research quoted by the authorities use such technology?
- 8) As well as emissions to air, concern has been expressed about handling, transport & disposal of incinerator ash – particularly flue ash, known to contain highly toxic substances such as dioxins and heavy metals. Disposal of this toxic fly ash has a record of being poorly regulated. Pollutants buried in landfill sites have been known to seep out, polluting local water sources. Accidents are also a possibility when moving toxic ash on lengthy road journeys to special landfill sites. The Environment Agency are responsible for monitoring such sites and in theory for monitoring transport. In 2008 toxic dust was found to have been escaping from the Wingmoor Farm Hazardous Waste disposal Site at Bishops Cleeve after initial denials by the site operators and the Environment Agency. Has the Welsh government considered that if waste incinerators are to be built in Wales, they must provide for such hazardous waste disposal sites in Wales?

6. Other technologies

Civil servants and Prosiect Gwyrdd 'rubbish' alternative technologies.

The best available alternative to mass-burn incinerators may currently be modular waste plants containing mechanical or autoclave modules to recover recyclables, biological modules to treat organic waste streams and advanced thermal modules to recover energy from residues. Such plants would be flexible – able to respond to changes in waste volume and composition – would have much lower carbon and toxic emissions and would be able to deliver energy from waste more efficiently than incineration.

MBT was identified by the UK Committee on Climate Change (Dec 2008) as having "significant potential" to reduce greenhouse gas emissions. It is incomprehensible why civil servants responsible for waste policy in Wales are so hostile towards it.

We understand that the MBT plant at Avonmouth has cost a fraction of an incinerator to build and has only a 10-year contract. At the end of 10 years it will be able to restructure and incorporate latest technologies such as plasma gasification. Why should Local Authorities tie themselves in 25-year minimum contracts to mass-burn incinerators, to technology that, as well as being an environmental hazard and threatening waste reduction and recycling programmes, will quickly become obsolete?

At present, there are more than 100 MBT plants with a throughput of about 10 million tonnes per year operational in Italy. Venice, Florence, Rome and Naples are the most prominent cities using MBT systems. In the last two cities, new large-scale facilities have been constructed. In all, some 25% of MSW is handled via MBT in Italy.

In the UK, there are at least 30 waste plants other than incinerators operational or with planning permission in the UK. They include:

<i>Newcastle</i>	<i>MBT</i>	<i>Operational (SITA)</i>
<i>Carlisle</i>	<i>MBT</i>	<i>Under construction (SHANKS)</i>
<i>Dumfries & Galloway</i>	<i>MBT</i>	<i>Operational (SHANKS)</i>
<i>Rainham</i>	<i>MBT</i>	<i>Operational (SHANKS)</i>
<i>Cheshire</i>	<i>MBT</i>	<i>Planning Approval (VIRIDOR)</i>
<i>Westbury, Wiltshire</i>	<i>MBT</i>	<i>Under construction (HILLS)</i>
<i>Avonmouth</i>	<i>MBT</i>	<i>Operational (NEW EARTH)</i>
<i>Southwark</i>	<i>MBT</i>	<i>Planning Approval (VEOLIA)</i>
<i>Leicester</i>	<i>MBT</i>	<i>Operational (BIFFA)</i>
<i>Leyland, Lancashire</i>	<i>MBT</i>	<i>Operational (GLOBAL RENEWABLES)</i>
<i>Thornton, Lancs</i>	<i>MBT</i>	<i>Under Construction (GLOBAL RENEWABLES)</i>
<i>Colchester, Essex</i>	<i>MBT</i>	<i>Planning Approval (GENT FAIRHEAD)</i>
<i>Greater Manchester</i>	<i>MBT</i>	<i>Operational (VIRIDOR LAING)</i>
<i>Western Isles</i>	<i>MBT</i>	<i>Operational (EARTH TECH)</i>
<i>Sutton, South London</i>	<i>MBT</i>	<i>Under construction (VIRIDOR)</i>
<i>West Sussex</i>	<i>MBT</i>	<i>Contract signed (BIFFA)</i>
<i>Barrow</i>	<i>MBT</i>	<i>Under construction (SHANKS)</i>
<i>Newham</i>	<i>MBT</i>	<i>Operational (SHANKS)</i>
<i>Canford, Dorset</i>	<i>MBT</i>	<i>Operational (NEW EARTH)</i>
<i>Cambridgeshire</i>	<i>MBT</i>	<i>Operational (DONARBON)</i>
<i>Durham</i>	<i>MBT</i>	<i>Operational (PREMIER)</i>
<i>Dargavel, Dumfries</i>	<i>Gasification</i>	<i>Operational</i>
<i>Huyton, Merseyside</i>	<i>Autoclave & MBT</i>	<i>Operational</i>
<i>Widnes</i>	<i>MBT</i>	<i>Planning Permission (NEW EARTH)</i>
<i>Avonmouth</i>	<i>Pyrolysis & Gasification</i>	<i>Planning Permission (NEW EARTH)</i>
<i>Fermanagh</i>	<i>MBT</i>	<i>Planning Permission</i>
<i>North Lanarkshire</i>	<i>MBT</i>	<i>Planning Permission (WRG)</i>
<i>Falkirk</i>	<i>MBT</i>	<i>Contract signed (OAKTECH)</i>
<i>Newport, Gwent</i>	<i>Gasification</i>	<i>Planning Permission (BIOGEN)</i>
<i>Irvine, Ayrshire</i>	<i>Gasification</i>	<i>Planning Permission (BIOGEN)</i>
<i>Isle of Wight</i>	<i>Gasification</i>	<i>Operational (ENERGOS)</i>
<i>Knowsley, Merseyside</i>	<i>Gasification</i>	<i>Planning Permission</i>
<i>Dagenham</i>	<i>Gasification</i>	<i>Under construction (BIOSSENCE)</i>
<i>Hirwaun</i>	<i>MBT including AD & Plasma Gasification Planning Permission (ENVIROPARKS)</i>	

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