



From: judi knights [REDACTED]
Sent: Wednesday, January 31, 2024 9:45 PM
To: COUTINHO, Claire C <[REDACTED]>
Subject: Detail on energy usage, Medworth EfW CHP

Dear Claire Coutinho, Secretary of State,

MEDWORTH ENERGY FROM WASTE CHP, WISBECH, EN010110

I have this evening sent my submission email off to the Planning Inspectorate regarding the above

proposal, having been asked by them to do so and am grateful for the time extension given.

I am sure you will get to see the Planning Inspectorate site with all the submissions, but I feel to attach my submission here too, for your kind attention, giving more detail regarding the energy usage of the facility, on a day to day basis (which appears not to have been taken into account by the developers).

Many thanks.

Kind regards,

Judi Knights

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Judi Knights – interested party no 20033381
Planning Inquiry for Medworth Energy from Waste [EFW] CHP Facility, Wisbech
– EN010110

Whilst it is the case that large incinerators (which this is) seem to offer large amounts of energy production and greater likelihood of being seen as necessary significant infrastructure and so be 'passed', they are not efficient when not at full capacity - which is just one of the problems with the monster sized incinerators, such as the one proposed - one of the biggest in Europe - and may be why it is envisaged by MVV, the company in question, that waste be brought from so very far afield to Wisbech for burning.

In recent years, so many huge incinerators have been built in Europe including the UK, that there is over-capacity. For instance, in 2021 Denmark's climate minister, Dan Jorgensen is quoted in Politico, *'Today, we import waste with a high content of plastic in order to [use the excess] capacity at the incineration plants, with increasing CO2 emission as a result'*. Less recycling can occur as a result and valuable resources are burned.

It is unclear from the proposal documentation exactly how much waste would be burned. Originally, MVV had looked to build a 700,000 tonne per annum facility, which was then scaled down to 625,000 tonnes, but it appears they have scaled down their facility to a lower capacity:

'approximately 523,500 tonnes per annum (at the design capacity of 33.2 tph assuming 7,884 hours availability). The EfW CHP Facility will have a gross electrical output of 60MWe (design when operation in fully condensing mode), and a parasitic load of 5MWe with the balance exported to the local electricity grid. Therefore, the EfW CHP Facility will export approximately 55 MWe in full condensing mode'.

A retired maths teacher I emailed this to replied:

'I really could not understand the maths used in the executive summary! E.g They quote dealing with 523,000 of waste per year at a capacity of 33.2 tonnes per hour. They are allowing 7,884 hours per year of operational time – presumably there are non-operational hours for clearance, loading, maintenance etc. 7,884 x 33.2 comes out at 261,748 tonnes of waste not 523,000. Are they planning two burners not one?'

Looking at the documentation there would indeed be two burners. Is it the case that by setting things out in this way, looking at just half what is being burnt by considering just one of the burners, that they have accidentally missed out some of the parasitic load for the electricity use?

It is not mentioned how much energy the proposal would require overall, compared to how much energy it would produce on a day to day basis, as not all the electricity requirements of the proposal are taken into account. Ash from

the grate following combustion, namely incinerator bottom ash, IBA cannot be ignored. The electricity for IBA processing to stabilise it needs to come from somewhere. IBA equates to 23.5-26% of the waste input so MVV's 523,500 tonnes per annum of burned waste would mean between 123,022 and 136,110 tonnes per annum of IBA, which in tons per annum would be between 135,608 and 150,035 US tons, so an average of 142,821 US tons IBA. Syc et al 2020, write that the power needed to process IBA is anything between 3kWh-15kWh per US ton. So, MVV's electricity needed to process the IBA would be between 428,463 kWh and 2,142,315kWh per annum. Therefore this needs to be added to the parasitic load of the proposal as a whole, It also must not be forgotten that the **IBA needs removing from the site and that would require yet more electricity, assuming HGVs will need to run on electricity from 2040, as is policy at present.** Therefore the figures need revisiting for how much net power would be generated. Where would the HGV's take the IBA? There seems to be no mention of this. It is not out of the question it would go to Whittlesey, which I believe would be the closest location, and which in the past year or two has been trying to get an IBA processing site built and running.

Each year from Wisbech there would be 142,821 US tons on average of IBA, which is 129,565 tonnes. Dividing this by 365 means there would be 354.97 tonnes per day IBA. An HGV might carry 25 tonnes of IBA, so there would need to be 14 journeys per day from Wisbech to the IBA processing site at Whittlesey, which is 16 miles away, and counting the return journeys also means 28x16=448 miles/day. This could use up a lot of Kilowatt hours of electricity, especially with the traffic jams which occur so often on the roads in and around Wisbech. Would the incinerator need to supply that power? Electric HGVs (especially if tipper lorries) are likely to be very expensive to buy upfront and to run, especially with the need to charge them, taking up hours at a time. The cost for IBA processing/removal could be prohibitive. Has anyone done calculations yet, or even for the years preceding the fuel ban? Regulators may say they do not demand calculations or need to know what will become of the IBA, but someone has to figure it out, sooner rather than later I believe.

Unlike MVV, most other companies process their IBA on site over several weeks to stabilise it, before disposal or limited use as IBA Aggregate, IBAA. It was once used for concrete or roads, but in recent years it has been found IBAA concrete can contain bubbles, weakening it, and IBAA roads could crack. Apart from pipe fill, there are few uses for it. MVV in the UK has had a problem with its IBA from the start:

By the time MVV's first UK incinerator, in Plymouth, was operational, **MVV did not have an effective plan to deal with the IBA produced.** After local uproar, MVV contracted Dutch company Rocksolid to arrange to have their IBA transported to Holland by boat for processing and disposal, with Rocksolid being paid on a monthly basis. MVV said it was not a permanent solution as they could not fulfil condition 8 of their planning permission by not recycling the IBA for local infrastructure and ensuring a landfill diversion factor of at least 95%.

2017 – 6th January - An article, by Scottish Housing News, a few months later, said that MVV were planning to build **another incinerator**, this time on the Dundee recycling site, [DERL], siting it close to the existing Baldovie incinerator, which was then in other hands. However, it seems, from piecing information together, that MVV wasn't allowed to build, as it was deemed the expected emissions could have a cumulative and detrimental effect on air quality in combination with the existing Baldovie incinerator. MVV appeared to change tack. They would now seek to run the Baldovie incinerator.

13th January – Meanwhile, IBA from MVV's Plymouth incinerator was being regularly taken and, presumably disposed of, in the Netherlands, by Rocksolid. This fateful day the IBA waited in the ship's hold, having been loaded over the previous day or so in heavy rain. Hatches were then battened down, but before the ship even left port, aluminium in the incinerator bottom ash, having got wet, reacted with calcium hydroxide in the ash, forming Aluminium Hydroxide, which gave off hydrogen gas, which can easily ignite if there is a source of ignition - which there was. The ensuing explosions blew the extremely heavy locks off the hatches, and blew the hatches open. The resulting fire reached a temperature of 1000 degrees Celsius. The chief engineer, in the hold at the time, sustained first degree burns to his face and second degree to the rest of his body, and had to be cut out of his coat, which had melted to his skin. He was airlifted to hospital and survived. An investigation began to be carried out by the Marine Accident Investigation Branch (MAIB), which would months later publish their findings.

24th March - Just two months after the explosions, **MVV received permission to run the Baldovie incinerator** in Dundee. MVV apparently had problems with compliance with the emission levels.

27th November - MVV, still wondering what to do with their IBA from their first incinerator, in Plymouth, hoped to get permission to process it at the Chelson Meadow Transfer Station. The Plymouth Herald wrote that 'a year long commotion could come to an end if plans are accepted to use Chelson Meadow Transfer Station to process incinerator waste'.

December 2017 - the MAIB (Marine Accident Investigation Branch) published the results of their inquiry into what happened to cause the explosion on the ship carrying IBA. Because IBA had been classified as 'non-hazardous' by industry/regulators it had been accepted onto the ship without anyone on the ship being aware that it might be hazardous under certain conditions, and without considering that it is not homogenous but heterogenous, differing in its composition depending on what is being burnt on any particular day. It was found that MVV had not properly sorted the waste. It was also found that unless there is ventilation that wet IBA's hydrogen production could pose a danger if there was an ignition source.

2018 – spring – Permission was declined for MVV to process its IBA at Chelson Meadow Transfer Station.

29th March – MVV, having non-compliance with their emissions from the Baldovie incinerator in Dundee turned their attention to retiring it, **seeking permission to build a new incinerator** on the DERL estate in Dundee, saying that they would dismantle the Baldovie incinerator. (MVV, in the form of MEB Environment Baldovie Ltd, applied to have a Permit to officially vary the Pollution Prevention Control (PPC) Permit of the Baldovie EfW incinerator Permit No PPC/A/1003157, swapping it in effect for the operation of an EfW CHP facility located to the south side of the current installation building [the Baldovie]. They said it would replace the existing MEB EfW facility [the Baldovie ...also known as DERL EfW facility] – as they said *'The existing facility is close to the end of its economic life and is unable to operate in CHP mode.'*)

Whilst constructing their new incinerator alongside the Baldovie incinerator, **MVV discovered apparently that the Baldovie incinerator could work effectively after all, and so wouldn't need dismantling.** SEPA [Scottish Environmental Protection Agency] said **MVV could run both incinerators in parallel (giving the Baldovie a reprieve for ten more years).**

(SEPA published a document after this, saying of the Baldovie incinerator [the older, Fluidized Bed incinerator], *'...the FB plan is now running more continuously and efficiently, and no longer has the constant issues with compliance and shutdowns for maintenance...The Operator has taken the decision to run the existing FB plant for up to 10 more years, in parallel with the new MG [moving grate] plant, which is currently under construction, to help with any short to medium term capacity shortfall, locally or nationally. The existing Permit...does not allow for both plants to operate at the same time...This is purely because the MG plant was initially being constructed purely to replace the existing FB plant, as part of the Angus and Dundee Waste Strategy, driven by the local authority. The air dispersion modelling for the purpose of that previous variation had therefore not taken into account both plants operating for consideration of the impacts on air quality, as once the new MG plant was fully operational, the FB plant was going to be de-commissioned...Planning Condition 17..also stipulated that the existing EFW plant and the new EFW CHP plant may not both burn waste at the same time. An application to change this was made to DCC at the same time as the PPC application and an amendment to Condition 17 was agreed by DCC on 09 November 2020 allowing for parallel operation up to 31 January 2031.'*)

So, extra emissions, and extra IBA needing a place to go.

11th September 2018 - Angus Council (tied together with Dundee Council in a contract with MVV) approved a planning application by DJ Laing Homes for processed 'non-hazardous' **IBA from the DERL site in Dundee, to be deposited on agricultural land** adjoining the Petterden Den Landfill Site, Tealing, and so creating a **10m high 'upfill'**, which would be landscaped on top. Any runoff water from the unsealed surface would be monitored by MVV and results passed to the Scottish Environmental Protection Agency, SEPA. **MVV was reported as saying 'At present while the IBAA treatment process is successful, at this point in time the scope is very limited for subsequent use of post treated material...SEPA national policy staff are currently working to develop and issue**

a regulatory position statement on the use of Incinerated Bottom Ash Aggregate (IBAA) within the construction industry’.

12th June 2019 - RockSolid applied to process IBA on behalf of MVV at Hill Barton Business Park, Exeter (most of the IBA to come from MVV’s Plymouth incinerator). They said **‘Previous locations to manage the IBA have not been forthcoming and the material is currently sent to the Netherlands for processing’**.

3rd December 2019 - Even before there was a decision on where MVV’s IBA from its Plymouth incinerator, built years earlier, could go, **MVV submitted a scoping report to the Planning Inspectorate for yet another incinerator, one of the biggest in Europe, this time in the town of Wisbech, Cambridgeshire (namely this Medworth EfW CHP facility)**.

24th December 2019 - RockSolid received a permit to process up to 100,000 tonnes per annum IBA (60,000 tpa from MVV’s Plymouth incinerator) at Hill Barton Business Park, Exeter. IBA was to be stored outside in 10m high piles till ready for processing inside, when the doors of the plant were to remain closed.

4th June 2020 - MVV won its appeal against liability for the shipping explosion as the Plymouth IBA was legally no longer their responsibility once it had left their premises, having been handed over to RockSolid.

Summer 2021 - MVV’s scoping report for their Wisbech incinerator was publicly available.

Present Day – MVV’s attempts to reassure the public have done nothing to ease concerns. Looking at the IBA situation, could it accumulate in Wisbech – over weeks/months/years? Even if MVV were able to have their IBA accepted somewhere, would they have a carrier? Even if they did, in recent years there has been difficulty with finding enough HGV drivers, and what would happen if there were a lack of fuel at service stations? It appears from the proposal documentation that they have looked at **requisitioning** nearby land for the time the incinerator would be in use, and have said that the land would be **returned to the owners afterwards**. Is it possible IBA is to be stored on the land with all that could entail? The economy locally is dependent on keeping farms and soil in good order and having confidence in the safety and saleability of the produce. There would be little to no confidence that the land would be free of contamination given the issues experienced with lining materials on land for IBA.

Potential for harm

I believe that numerous lives would be blighted by this proposed huge incinerator in Algores Way in the town of Wisbech, so very close to schoolchildren, patients, clinicians, residents, shop workers, shoppers (assuming they still wanted to shop there) and business workers. It is hugely concerning, not least because MVV’s UK chief, Paul Carey seems unaware of the emissions that would be coming out of the incinerator chimney stacks. He claims that the

emissions would be 'clean'. Yet, MVV's own emissions listing for the Inquiry includes amongst other things **mercury, cadmium, arsenic, and hydrogen fluoride**.

Regarding emissions from the facility, cumulative effects are supposed to be considered. Whilst MVV appear to have looked at and listed some future planning applications, there does not appear to be figures in the application given for the background concentration of current pollutants in the locality. Figures for 'background' have been plucked from other parts of the UK, as is often the case, and allowed. **However, it's the local concentration of pollutants that need to be taken into account.**

Whittlesey, 16 miles away from Wisbech, already suffers from smelly pollution from a large chimney at the old brickworks. The brickworks has been known historically to produce large amounts of hydrogen fluoride, HF, but there is nowadays no obligation to measure the levels in the vicinity, as many years ago the government of the time deemed it 'too expensive' to measure HF. HF is one of the acknowledged pollutants from the proposal. The actual level of HF emissions from the proposal would not be known for sure, as MVV's Continuous Emissions Monitoring System, CEMS, of flue gas, would not be regularly checking for HF, apparently, just every so often.

In very small quantities fluoride can help teeth and bones, but it is now known that once a certain level is reached that the opposite can occur. HF is used for glass etching amongst other things. Even small increments can be harmful. Another of its problems is that it can prevent magnesium's useful effects. Magnesium is needed for over 300 processes in the body. According to research by Sun et al 2016, fluoride pollution causes an increase in the body's production of a gene product known as Endothelin -1 (ET-1), which is described as the most powerful vasoconstrictor ever known, and so greatly increases blood pressure. Li et al 2012 detail how Endothelin-1 can cause Pulmonary Hypertension. Since the application for the proposal was made, in 2019, a research paper has come out by Maheshwari et al 2020, entitled 'Fluoride enhances generation of reactive oxygen and nitrogen species, oxidizes haemoglobin, lowers antioxidant power and inhibits transmembrane electron transport in isolated human blood cells'. And this is just one of the many pollutants acknowledged to be emitted.

MVV have failed to send a long promised emissions contour map to show where the concentration of (pollutant-carrying) particles would fall, promised at one of their earliest meetings after being requested by a member of the public. They will know that the incinerator filters commonly used are not very effective at capturing the ultrafine particle size, which is the most harmful as it can more easily be carried into the body. It is hardly surprising that MVV don't feel they need to provide the emissions contour map, and feel confident everything will go ahead as they will know that it is standard practise for the health consultee to be asked their opinion on the safety or otherwise of an incinerator, and that it has become standard practise for that consultee to defer to the regulator for their opinion, and the following 'reassurance' is given for them to give out by the regulator, for them to use, almost word for word, for many years now:

'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'

The reason the health consultee is supposed to be consulted is because, they were expected to offer their own expertise. It seems they always now provide a standard answer - regardless of how large the incinerator, or whether or not anyone is checking each item being burnt, and regardless of whether or not the planned temperature is suitable or not for preventing denovo dioxin formation following combustion.

A few years ago a huge amount of shredded automotive residue was discovered, illegally buried in a pit at the Whittlesey brickworks, and which continued. Would this form part of the Commercial waste for the incinerator? Tyres are not easy to burn and in order to prevent denovo dioxin production from them they require a very high temperature, a lot higher than the 850 degrees Celsius the incinerator is planned to reach.

There have been very few studies on potential effects from UK incinerators and not all were done with the knowledge of where particles begin to 'ground' and how far particles can travel. They can travel a lot further than previously thought, especially the finer fraction particles, which can travel many, many miles, depending on weather conditions. Where health effects were being looked for in the past was not always the right place and patterns of ill health were easily missed. It is hard to hide the rising cancer rate nowadays, with one in every two people. Over the years incinerators have been built in many, many places in the UK. Is it not possible that there could be a link? It is known that cancers can take sometimes ten or twenty years or so to be noticeable, and, there appears to be a link between some cancers and magnesium lack (which for example can be brought on by HF).

The ambient air quality is generally unknown, as particle monitoring generally relies on PM10 monitors, which are less effective at being able to measure the smaller size fractions (such as Particulate Matter of the 2 micron size and under - even if all particles of ten microns and below is supposedly able to be drawn in and measured). Even the monitors made for the smaller sized particles, the PM2.5 monitors, (meant for everything 2.5 microns and below), unless they are fitted with a cyclone device to suck them in, then the finest size particles can be buffeted away as they near the entrance.

I believe this proposal would be a big mistake, and that it goes against common sense. I ask please that it not be given the go-ahead.