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19th July, 2017.

RE: PL04.PA0045 – Waste to energy facility at Ringaskiddy

Dear Sir/Madam,

Indaver has been using the planning process to get permission to build an incineration facility on this site at Ringaskiddy for the past 14 years. Since the company lodged its first planning application with Cork County Council in June, 2003, this company has cost the Irish taxpayer dearly. My first submission to this third planning application was dated 16th March, 2016. That 17 months later, after a significant oral hearing and four deferrals on a decision, I am drafting yet another submission to this same planning application is, quite frankly, inhuman.

Much considered and valuable evidence as to why Indaver's proposed site in Ringaskiddy is the wrong one was given at last year's oral hearing. But during those five weeks in the Carrigaline Court Hotel, two fundamental things happened. The first was that the dioxin analysis submitted with Indaver's Environmental Impact Statement was found to be wrong. Information critical to the entire process that was intended to prove beyond doubt the negligible impact the proposed incinerator would have on the health of communities of Cork Harbour and further afield, was proven to be wrong.

The second fundamental thing during that oral hearing was that the Irish Air Corps said no. Twice they gave evidence stating that the plume from the proposed incinerator could interfere with helicopter flights to and from the Department of Defence's Naval Base at Haulbowline Island. The Irish Air Corps provides military support to the Irish Army and to the Irish Naval Service. They provide non-military air service support to the government. The Defence Forces exist solely to serve Irish society. Their experience and opinion is paramount.

Yet despite the special and irrefutable nature of these two fundamentals and regardless of the ongoing cost to the taxpayer, the Board has given Indaver yet further opportunity to prove its case.

1. ***“It is noted that on the final day of the oral hearing that was held in relation to the proposed development possible discrepancies in the content of Appendix 6.3 and Appendix 6.4 of the environmental impact statement accompanying the application were brought to the attention of the hearing. In these circumstances, it is considered necessary in the interests of justice and prior to An Bord Pleanála concluding an environmental impact assessment, to request that the applicant comment on and clarify any such discrepancies and, if necessary, correct any errors.”***

As a member of the community engaging appropriately in the planning process to present the case against this inappropriate development for 14 years, I find the Board’s reference to the “interests of justice” in this instance to be a tragic irony. Over six pre-planning meetings with the Board, three years of preparing this planning application, a culmination of 14 years of consultancy advice about the same site and still not being able to get the “expert” information right, the Board considers that to give the applicant opportunity to respond to what was irrefutable at the oral hearing represents justice.

Dr. Gordon Reid has undertaken in-depth analysis of the further information submitted in defence of its “possible discrepancies” by Indaver at the invitation of the Board. He is eminently qualified to carry out research in this field and his most recent findings as outlined in his submission to the Board are deeply troubling. He has identified a catalogue of ongoing inexplicable numerical “possible discrepancies”, inconsistent application of the processes which model human exposure to dioxin and unrealistic representation of the most vulnerable human being (MARI). With a transparency sadly not replicated in Indaver’s EIS, he identifies that the potential baseline dioxin exposure in Cork Harbour for the most vulnerable (MARI) individual is already 4 times the EU tolerable intake. His conclusion is that the existing level of dioxin-like toxicity in the Ringaskiddy area is already so high that, regardless of the magnitude of the contribution from the proposed Indaver facility, additional releases of any dioxin-like substance cannot be tolerated.

Few could undertake the level of analysis performed by either Dr. Reid or by Indaver’s consultants. This is a very specialised field of expertise. Yet S.I. 283 of 2012 [1] requires the Board to carry out an Environmental Impact Assessment (EIA) of Indaver’s proposed facility. Departmental guidelines [2] on the application of these regulations recognise that

“assessing the effects of a proposed development on the environment is an integral part of considering whether the development is in the interests of the proper planning and sustainable development of any area”.

In many cases, that EIA may be carried out by the Board’s Inspector. In this case, the Board’s request for further information suggests that either the Inspector’s EIA has not been acceptable to the Board or that the Board is carrying out its own EIA. Either way, the provisions of Paragraph 5.18 of the Departmental guidelines apply:

“In the event of the competent authority’s own expertise conflicting with that in the EIS, or there being conflicting expert views or opinions contained in the submissions, it will be necessary for the competent authority to resolve the issue and form its own view on the likely significant effects. This may, on occasion, require the engagement of appropriate specialist consultancy services.”

This issue of dioxin exposure is critical to the health of the Cork Harbour environment and those who live in it. I and those whom I have the honour to represent trust that the Board will therefore treat this issue with the gravity it deserves. Whilst extending every respect to the expertise of the Board’s in-house staff, I think it reasonable to expect that their breadth of experience is unlikely to include the unusually specialised field of dioxin exposure and intake. I am also conscious that this issue pertains intimately to emissions, a characteristic of the proposed development which would be licensable by the EPA. The Memorandum of Understanding agreed between the EPA and the Board in 2014 provides for the Board’s requesting observations from the EPA on such an issue. Indeed, the Departmental guidelines on S.I. 283 of 2012 also require “detailed consultations” between the Board and the EPA during the course of considering a planning application such as this one. The guidelines advise that:

“The purpose of such consultation is to ensure that a comprehensive, holistic assessment of likely effects on the environment is carried out prior to the determination of the application by the ... Board and the determination of the licence application by the EPA”.

Because this issue of dioxin exposure and uptake is so relevant to public health, I presume that the Board would also consider it necessary to consult with the HSE or equivalent in the course of deliberating the information provided both by the applicant and the appellants.

Paragraph 5.18 of the Departmental guidelines caution that *“the conclusions of the assessment carried out by the consultants who prepared the EIS may not be accepted without analysis”*. The appellants have inherent expertise in many areas to which this planning application pertains and have engaged additional expertise to lend further weight to their concerns. That the requirements of Paragraph 5.18 of these guidelines would be upheld is of tremendous importance to the appellants and to the Cork Harbour community generally and for their comfort, I am enclosing with this submission a request under the Freedom of Information Act for:

- identification of the external expertise engaged by the Board in its assessment of this planning application and the areas of analysis for which this expertise was engaged
- date(s) on which the Board held consultations with the EPA on this planning application, minutes of the discussions which took place and the observations of the EPA
- date(s) on which the Board held consultations with the HSE on this planning application, minutes of the discussions which took place and the observations of the HSE
- copies of any/all written submissions from either the EPA or the HSE relevant to this planning application.

Many whom I represent within Cork Harbour and the wider community have expressed their deep concern about the impartiality of some members of the Board and of the EPA with regard to this planning application and incineration generally. I trust the Board will understand that the impetus for this Freedom of Information request comes from my need to be fully equipped to perform my duty in being able to reassure those members of the public thus concerned that due and adequate process is being followed.

2. *The issue of helicopter navigation safety at Haulbowline Naval Base has been brought to the attention of An Bord Pleanála in submissions by the Department of Defence to the oral hearing. You are invited to respond to the contents of the submission from the Department of Defence dated 11th May 2016 and presented on the same day to the oral hearing.*

The role of the Department of Defence and the personnel therein is described in their mission statement:

“To provide for the military defence of the state, contribute to national and international peace and security and fulfil all other roles assigned by government”.

As the Air Corps is the air component of the Permanent Defence Forces, they both deserve and receive a phenomenal respect from Irish society and I personally am deeply disturbed and upset that their opinion and expertise is belittled by both the consultants employed by Indaver. These are people who have nothing personal to gain from the refusal of the Indaver planning application, either financial or otherwise. The most they could hope to gain at a personal level is their own increased safety and they have expressed this eloquently both in written and oral submission to the Board. I accept that under procedures laid down by S.I. 283 of 2012 the Board may find itself obliged to invite rebuttal of these submissions but again, at a personal level, I find that the opinions of those willing to lay down their lives for the protection of the Irish State and its people at best, inappropriate and, at worst, sinister.

Neither of the supplementary reports submitted in support of the proposed incinerator leaves any doubt but that consultants employed by Indaver has little regard for the concerns of the Irish Air Corps as expressed to the Board. DBS Consulting states that issues of flight safety should not be “*mis-represented for personal, political or commercial gain*”. None is possible in the case of the Irish Air Corps. Mr. Liddy’s derogatory references, both direct and implied are multiple, typically characterised by that in Para. 8.7.1 of his submission: “... DOD has not perceived or understood the need for such an elementary safety feature at the base”. Moreover, he refers in this same paragraph to the concerns raised by the Department of Defence as being “*a result of loss of expertise and operational currency*”, as indeed noted by the Junior Minister for Defence in the Dáil. Mr. Liddy is correct in that the ongoing underfunding of the Irish Defence Forces is an insult to their *raison d’être* and consequently to Irish society. This Dáil mention to which he refers was unreferenced by Mr. Liddy. It did in fact occur on 17th May 2017 [3] and, in the course of the interchange between deputies, the Junior Minister stated that:

“Actions are underway to return a full level of air traffic control services to the Air Corps. ATC training is taking place. Regarding pilot retention, the implementation of a range of proposals, including professional and personal development, working environment, operational deployments, career advancement and terms and conditions designed to enhance retention of serving Air Corps pilots are being advanced ... In addition, the potential to attract back personnel who may have left the service is also being examined. A range of other measures is also being pursued, including increased numbers of pilot cadets in training. A cadet recruitment campaign is underway ... While these initiatives are underway, realistically it will take some time for a return to previous levels of capability in the Air Corps”.

That our Defence Forces have been under-resourced by successive governments, as have so many other layers of public service, should not be used thus opportunely.

To take either the DBS Consulting or Mr. Liddy’s reports at face value would be to fail utterly to plan for the future. Both reports discuss only the characteristics of the helicopters currently used by the Irish Air Corps. Section 10 of the DBS Consulting report deals entirely with the performance and characteristics of only the AW139. The Irish Air Corps has not always used the AW139. They retired their last Dauphin in 2005. The characteristics of the Dauphin were entirely different from those of the AW139. And equally, the helicopter type which the Air Corps will fly use to in and out of Haulbowline will change again into the future as required. The multiplicity of references to engine performance, single/twin engines, weight, crosswind and downwind operations (Paras. 7.1, 7.4, 7.9 for example) are all irrelevant for planning into the future.

Similarly, what is especially critical in the abovementioned Dáil debate of 17th May is the Junior Minister’s reference to change. The Air Corps is a body of individuals, assisted by equipment and bound by a mission. The number and ability of the individuals may vary as may the type and capability of the equipment. All that will remain consistent is that unifying mission and the certainty of fluctuation and change. In considering this planning application, I ask the Board to be mindful that it is debating the merits or otherwise of a facility with a potential 75-year lifespan. Both consultants’ reports place repeated weight on the inconvenience of the adjacent wind turbine. The lifespan of a wind turbine is typically 25 years, i.e one third of that of the proposed incinerator.

Para. 3.3 of the DBS Consulting report recognises that the main user, in terms of aviation at the Haulbowline Naval Base is the Irish Air Corp. Unmentioned, however, is that helicopters other than those of the Irish Air Corps fly over Cork Harbour. Critically, the Irish Coastguard helicopter is regularly seen performing manoeuvres over Cork Harbour. The Coastguard uses thermal imaging equipment to assist in searches. Would the position of the proposed incinerator so close to the shoreline prevent a Coastguard helicopter from running the shoreline in search of a body? That this was raised by a third party at the oral hearing (ref: Mr. Rob Bateman) but not similarly followed up on by the Board is of concern.

The condition of the pylons and cables mentioned in both consultants' reports is also checked by helicopter. Helicopters performing this task have been seen hovering over the cables running between the Ringaskiddy headland and Spike Island.

The tragic loss of Rescue116 over Blacksod Bay on 14th March last was ironically close to when the Board requested further information pertaining to helicopter safety concerns from Indaver. Again, the crew of the Sikorsky S-92 on that mission had no remit other than protection of the Irish people. Details of the Air Accident Investigation Unit's preliminary report [4] indicate that the accident occurred because the pre-programmed route being followed by the helicopter pilot was missing data charting a small island in Blacksod Bay. The specifics of this case are not comparable to Cork Harbour. What is entirely comparable however is that the tragedy occurred because of a failure to plan. This failure was outside of the control of the affected Coastguard crew. The Irish Air Corps is to be lauded, not criticised, for its precautionary approach in this instance. The benefits of this precaution may extend not just to its own helicopters but equally to the Irish Coastguard and other helicopters manoeuvring over this stretch of Cork Harbour water.

Mr. Liddy's report speaks of the relatively small size of the proposed incinerator stack (ref: Para. 6.29.3), making the extraordinary claim that "all Irish stacks are small in comparison with the large facilities in the USA". This is, of course, not the case. Incinerators in the US display a vast range in size ranging from large ones such as those in Delaware and Detroit processing 1.2 million and 1 million tonnes per annum respectively to small ones such as those in Polk County and Barron County with an annual processing capacity of 25,000 and 36,500 tonnes respectively. The Indaver facility proposes a throughput of 240,000 tpa so it lies comfortably somewhere between.

But in this what is of far greater concern is that such professed absolutes rule out the occurrence of plumes from the proposed facility other than that which is expected. Images below illustrate a range of recent fires in incinerators.



Covanta Fairfax County incinerator: Fire Feb., 2016 (938,000 tpa)



Indaver, Antwerp: Fire 2016



El Dorado incinerator, Arkansas: Fire 2005 (140,000 tpa)



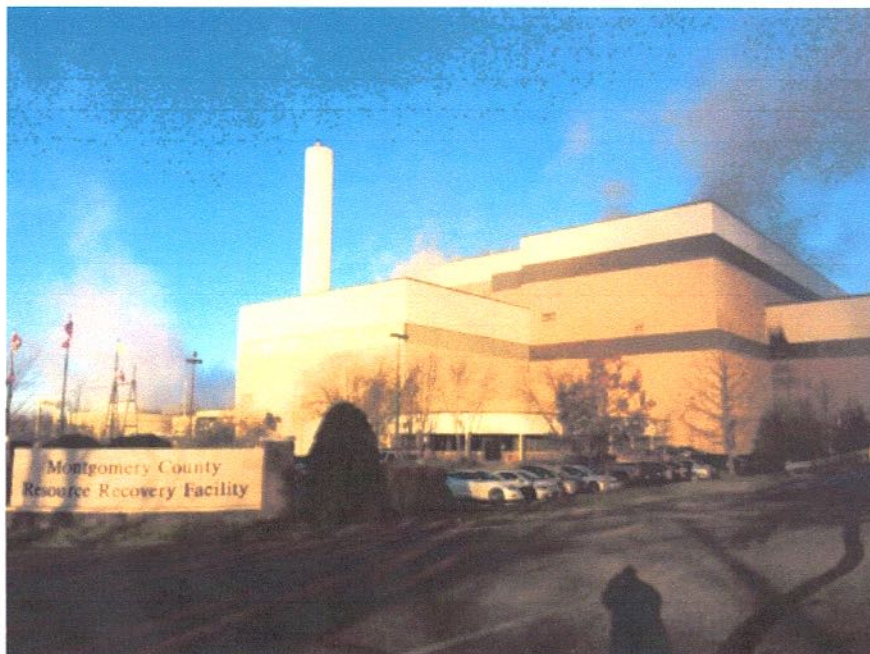
Ajax incinerator, Durham, Canada: Fire Oct., 2016 (140,000 tpa)



Tuas incinerator, Singapore: Fire Feb., 2017 (1m tpa)

Not merely are major plume-generating incidents such as these illustrated above unplanned for, the consequent plumes in no way conform to the characteristics of the plume predicted by either of Indaver's consultants' reports. Should a helicopter be operating in close proximity when an incident such as this might occur, it is difficult to predict other than a very grim outcome.

Significant incidents such as these do not happen regularly. But what do occur far more regularly are fires in the waste bunker of incinerators. One such broke out in the incinerator serving Maryland, Montgomery, Alabama late last year. It burned for some two weeks before firefighters successfully got it under control.



Montgomery, Alabama: Waste bunker fire, 2016

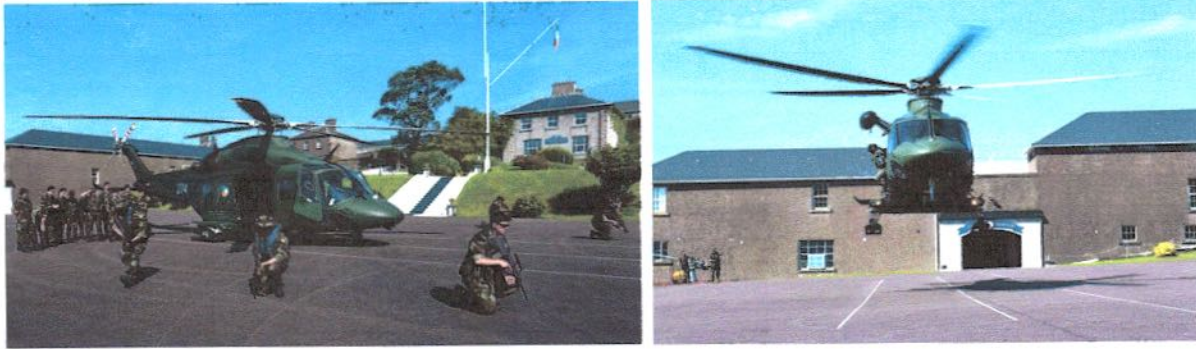
Although the waste bunker may be contained within the incinerator building, the smoke from a fire in the waste bunker is not. It is emitted through a multiplicity of emergency smoke vents in the roof of the bunker. Those embedded in the roof of the bunker of the proposed Indaver facility are shown in Architecture Drawing 1434-210 of the planning application. The HAZID report submitted as Appendix 6.1 to the EIS describes waste bunker fire scenarios, commenting that for more developed bunker fire scenarios, “a figure of 300°C has been used for the smoke plume from the intermediate fire and 500°C for the fully developed fire”. Temperatures such as these have not been assessed in either the DBS Consulting or Mr. Liddy’s reports.

Also evident in Drawing 1434-210 are the 4 No. smoke vents in the roof of the tipping hall, the 4 No. smoke vents in the roof of the flue gas cleaning void, the 6 No. smoke vents in the roof of the steam condensate cycle void and the 6 No. smoke vents in the bottom ash storage hall. I believe I am correct in saying that the potential for explosion of bottom ash has not been addressed either in the EIS or since. When in storage, bottom ash can release hydrogen, the build-up of which can result in an explosion. The Swedish experience with bottom ash explosions has been quite well documented by Arm et al. [5].

A waste transfer station was an intrinsic part of Indaver’s planning applications in both 2003 and 2008. Significant Seveso implications were associated therewith. Whilst I appreciate the Board must have regard only to the application which is before it, it is most relevant in this case that it was not until its pre-planning of 11th September 2015 with the Board that Indaver decided the proposed 15,000 tonne waste transfer station would no longer be part of the 2016 planning application. At that same meeting, they advised that they “may revisit it as a separate application in the future”. The Strategic Infrastructure Act makes it considerably easier to include subsequent project variations such as this; they become merely a material alteration to the original planning permission. But in this case, were the waste transfer station to handle the profiles of waste proposed in 2003 and 2008, it would be an unreasonable risk so close to the only entrance/exit to Ireland’s only Naval Base. This is surely truly relevant to forward land-use planning. I can accept that a transfer station would be inherently useful adjacent to a waste incinerator. However, with the potential dangers such a transfer station might pose, it would be utterly inappropriate in this location. The impact of accidents arising therefrom on Irish Air Corps helicopters or any other helicopters have not been considered at this stage of planning. To examine them down the line through a material alteration would be project splitting, particularly when it is known now that the waste transfer station is more than a possibility.

I mention such potential for unplanned thermal experiences in the vicinity of the proposed Indaver plant because both the further information submitted by both Dr. Porter and Indaver’s two aviation consultants explores merely the predicted scenario of a constant plume. Para. 6.26.3 of Mr. Liddy’s report states that “the dangerous section of the plume only extends for 3.5 metres in all directions and in all weather conditions”. It is difficult to reconcile this statement with the above images. The reality is that incinerators, by their nature, deal with an inconsistent variable influent waste stream, some constituents of which can react in unexpected ways. As has been evidenced by incinerator accidents elsewhere, the consequences could potentially be significantly negative for the Department of Defence and to disregard them at this stage of the proposed project would indeed be failing to plan.

The DBS Consulting report, in particular, is based largely on assumptions. It notes that there are no established procedures in the public domain for operations at Haulbowline (Para. 5.2). It comments that there are no statistics in the public domain detailing the current level of activity at the Haulbowline Naval Base (Para. 6.7). It assumes separation standards in relation to military regulations (Para. 6.11). Mr. Liddy claims that the Main Square is used mainly for “overnight parking of the helicopter” as local instruction “appears” to be to use the football field as the operational helipad. However, the Main Square is used for more, as evidenced by the photographs below of a recent Naval Service NCO Course in helicopter drills. More photographs from this course are available at:



The reality is that nobody knows procedures for flights in and around Haulbowline Island as the Irish Air Corps does. DBS Consulting leans heavily on CAA advice in its report has having been “*adopted by airspace regulators around the world as best practice*”. In 2013, the CAA, renewable energy stakeholders and planning experts all collaborated to collate best practice guidance for planning authorities in considering proposals for wind turbines [6]. This collection of expertise advises that when mitigation in relation to the impact of wind turbines on aviation is required:

“The identification of appropriate mitigations must remain the reserve of the aviation stakeholder, in consultation with the developer. It is the aviation operator who best understands their requirement ...”.

Whilst in this case the proposal is for an incinerator rather than a wind turbine, that bottom line remains the same: the Irish Air Corps best understands what the Irish Air Corps needs.

3. Request for additional information: Plume Modelling Assessment

What is distressing me perhaps even more than my abovementioned concerns is that both the DBS Consulting and Mr. Liddy’s aviation reports are based on the findings of Dr. Porter as outlined in the (undated) Plume Modelling Assessment performed for this Further Information Request. These findings are that the risk heights for all parameters of concern (velocity, temperature, oxygen depletion) are limited to 3.5 metres in all directions from the stack top.

These findings were derived by using the modelling tool ADMS-5. By contrast, the modelling tool used in Chapter 8 of the EIS was AERMOD. In fact, in Section 8.2 of the EIS, Dr. Porter advised that:

“Based on guidance from the USEPA, the most appropriate regulatory model for the current application is the AERMOD model”.

Reasonable detail was provided in the EIS as to the critical model inputs. This most recent Plume Modelling Assessment provides no explanation as to why AERMOD is no longer the most appropriate regulatory model for the current application, nor does it provide any indication as to the critical model inputs.

CERC, who developed ADMS-5, have made comparisons between AERMOD and ADMS-5. They have found that the models have significant differences “*both in the meteorological preprocessors and dispersion algorithms which result in very different predictions of pollutant concentrations*” [7]. A similarly comparative exercise has been undertaken by BRE Ltd. on behalf of the UK Environment Agency [8]. Despite the similarity in structure in the basic dispersion calculations in both AERMOD and

ADMS-5, the study found significant differences in calculated pollutant concentrations between the models. They found the meteorological preprocessors in both models produced markedly different estimates of boundary layer depth and Monin-Obukhov length, both of which are critical model inputs. It gives much advice but that which is most important here is that whilst advanced models such as both AERMOD and ADMS-5 are undeniably useful, they “appear to need using with some caution and understanding of the uncertainties in their behaviour”.

Essentially, the future of the Irish Naval Base is potentially seriously affected by the results of the modelling presented in an eight-page report. At a minimum, it would have been helpful to have an explanation as to why the model type used in responding to the Board’s Request for Further Information differed from that declared in the EIS as being most applicable and in view of the sensitivities of these models, it would seem essential to have provided the parameters input to this new model.

The responses of both Indaver’s aviation consultants have raised yet further significant concerns about an issue briefly discussed during the oral hearing. Third parties expressed concern about the proximity of the wind turbine to the proposed incinerator stack. Dr. Porter’s evidence to the oral hearing (repeated from Section 8.2.4 of the EIS) was that “given the plume concentrations expected at a distance of 400 m from the facility, the impact of the DePuy turbine will not be significant and will not lead to an exceedance of the ambient air quality standards in the region” (ref: 24th April, 2016).

But both the DPS Consulting report and Mr. Liddy’s report refer to the velocity deficit area behind the wind turbine. Both, referring to CAA research, indicate that this velocity deficit area extends to 5D. The DePuy turbine has a diameter of 100 metres (a figure not mentioned in the EIS at all) and so the velocity deficit area extends to 500 metres behind it. This, as pointed out by both consultants, places the Indaver site directly in the velocity deficit area of the wind turbine. In this space, the kinetic energy is taken from the air and the wind speed is reduced. Moreover, that near wake depends on the “thrust generated by the wind turbine rotor, the tip velocity ratio, wind direction and speed, turbulence level in free stream, weather condition and the geometry of the wind turbine” [9]. None of these parameters was mentioned in the EIS either. And both consultants additionally refer to the turbulence created in a zone 16D from the wind turbine (although the CAA does caution that the definition of this zone is still in research). In other words, wind turbines affect local wind conditions and airflow.

That there are indeed localised effects from wind turbines has been confirmed by Roy [10]. He found that wind farms generate statistically significant impacts on near-surface air temperature, humidity and heat fluxes which are not confined to the area around the wind farm but extend for up to 18 – 23 km downwind. More recent research by Harris et al. [11] has concluded that wind farms can cause surface warming at night-time. Yet another study has found that by capturing the energy of the wind, turbines affect parameters of the atmospheric boundary layer such as surface roughness, thereby potentially impacting on the spread and diffusion of pollutant [12]. Debnath et al. [13] consider that the tower heights and rotor diameters of current utility-scale wind turbines is so significant that they often cover the entire atmospheric boundary layer and so effect on it is unavoidable [14]. Moreover, Bhaganagar et al. [13] also found that the stability of the atmospheric boundary layer affects the structure of the wind turbine wake.

Mr. Liddy (Para. 8.1) is eloquent in his description of how the single wind turbine at Ringaskiddy can affect the local atmospheric boundary layer in its wake. He says that it can:

“create major dangerous turbulence, 100 metres in diameter, extending 500 meters downwind, and a zone of significant turbulence extending 1600 meters downwind ... It can, in certain meteorological conditions, produce a local misting effect, again extending several hundred meters ...”

Particulate matter entrained in the atmospheric airflow can be deposited out of that airflow by precipitation. Deposition by misting of the kind which Mr. Liddy describes is called occult deposition.

Numerical studies have found that over a four-hour period, weak precipitation with an intensity less than 0.1 mm/h is able to remove 50 – 80% of the below-cloud aerosol [14]. Dollard et al. [15] studied the impact of occult precipitation on deposition in upland areas, concluding that occult deposition could increase annual wet deposition estimates of pollutants by up to 20%. So if one has a pollutant source in the near wake of a significant turbine, it follows that the behaviour of the plume and its constituents will indeed be affected by the proximity of that turbine.

This prompts further study of the Fletcher and Brown work on which Dr. Porter’s evidence to the oral hearing depended [16]. What is critical about this work is that it was designed to examine the interactions between a gas plume and a wind turbine when the gas plume is upwind of the turbine. Specifically, it reported on simulations in which the flue stack was located two rotor diameters upwind of a wind turbine producing a jet of gas with a mean speed of 1.5 times the local wind speed. In this scenario, it identifies that:

“the velocity deficit that exists within the wake will lead to the pollutants being concentrated downwind of the turbine and could possibly enhance locally the fallout and subsequent deposition of particulates that are transported within the plume”.

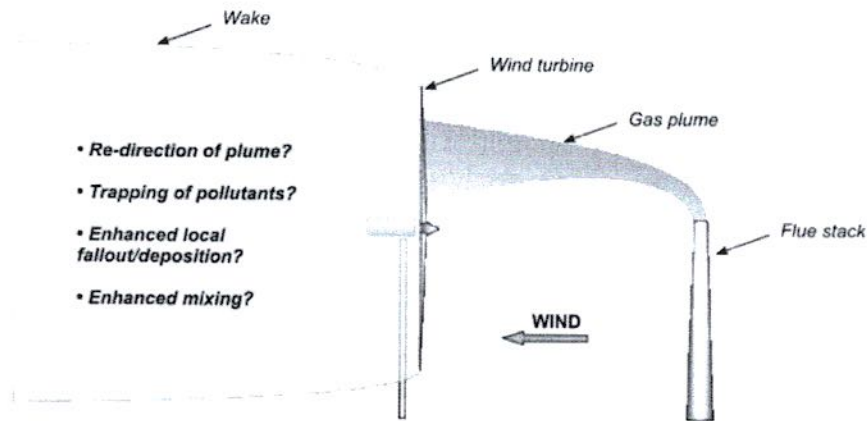


Figure 1. Schematic highlighting some of the potential problems that may arise from the gas plume – wind turbine interaction indicated. Note that the distance between the wind turbine and the flue stack is very much contracted compared to typical practice.

Scenario considered by Fletcher and Brown (2010)

The distance between the Ringaskiddy turbine and the proposed Indaver stack is 3.89 times the rotor diameter; the relationship between the velocity of the plume and the local wind speed has never been studied. So conditions on the ground in Ringaskiddy are different from those simulated by Fletcher and Brown. Fletcher and Brown also identify that the variations in both temperature and molecular weight of the plume with respect to the ambient air must be modelled if the effect of plume buoyancy on the turbine is to be accurately predicted. This has not been done either. Moreover, pollutant concentration downwind of the turbine is strongly sensitive to where the flue stack is located relative to the rotor axis and to the thrust co-efficient of the turbine. Again, these parameters have not been discussed with respect to the Ringaskiddy situation in the EIS. What is of significant concern if the findings of Fletcher and Brown were to be reciprocated in the interaction between the proposed Indaver stack and the Ringaskiddy turbine, is that the zone of maximum deposition behind the turbine would be the Loughbeg SPA. This was a consideration not discussed either in the EIS or with the National Parks and Wildlife Service.

Fletcher and Brown’s overall conclusion was that:

“environmental protection agencies are justified in their concerns regarding the placement of wind turbines near to industrial plants”.

All this points to one fact: Dr. Porter's evidence to the oral hearing that the proximity of the wind turbine is irrelevant to the proposed Indaver facility is, at best, unproven and at worst, wrong. Fletcher and Brown did not study the consequences for dispersion of a plume downwind of a turbine, a scenario raised by both the DBS Consulting and Mr. Liddy's reports. DBS Consulting and Mr. Liddy have very much corroborated many concerns expressed by third parties that the proximity of the wind turbine would indeed affect the dispersion of the Indaver plume. The ADMS-5 modelling tool includes an option for allowing for the effect on dispersion of one or more horizontal-axis three-bladed wind turbines in the neighbourhood of an emission source [17]. AERMOD does not seem to have that same capability. Dr. Porter doesn't identify whether he used this option when using ADMS-5 to calculate risk heights in his response to the Board's Request for Further Information. He has by implication made it clear that he did not consider it relevant when using AERMOD to predict the impact of pollutants in the Indaver plume on the receiving environment.

This has massive implications for the validity of the air quality studies in the EIS, for the impact of the proposed Indaver facility on the well-being of the adjacent Loughbeg SPA and for the impact of pollutant dispersion on human health that cannot be discounted.

4. Conclusions

- Those expert in the field disagree significantly and fundamentally about the degree to which residents of Cork Harbour are currently exposed to dioxin and dioxin-like compounds and to the extent the proposed Indaver facility would exacerbate that current situation.
- There is but one Naval Base in Ireland. It has been on Haulbowline Island for some 200 years. Forward planning for its protection and preservation is paramount. There are many sites which can accommodate an incinerator if it is required.
- The Irish Air Corps are not the only ones who currently fly helicopters over the waters around Haulbowline Island or the Indaver site. The Coastguard is a critical stakeholder in the Cork Harbour airspace and their ability to continue their selfless task unhindered must be protected.
- Nothing in this Further Information response evaluates the safety of adjacent aircraft in the event of an accident or unpredicted emission.
- The methodology by which risk heights to aircraft is evaluated in the Further Information response is fundamentally and unexplainedly different to the methodology depended on in the EIS to predict pollutant dispersion.
- The effect of the wind turbine situated adjacent to the Indaver site on dispersion of pollutants from the proposed incinerator stack has not been adequately evaluated. The effect on pollutant dispersion has been considered by Indaver's consultants only for when the wind is blowing from the north. It has never been considered for when the wind is blowing from the prevailing direction, i.e. southwest. That the turbine does have an effect on dispersal has been confirmed by Indaver's own aviation consultants and confirmed by much scientific research. This raises massive uncertainty with regard to the entire pollution dispersion modelling performed in the planning application.

Should the Board choose to grant planning permission to Indaver for its proposed incineration plant at Ringaskiddy, it will signal a new Ireland in which the opinion of consultants hired by a developer takes supremacy over the unbiased opinion of personnel who devote their lives to public service through our

designated national bodies. This is not an Ireland I would wish my children to grow old in. I ask the Board to refuse this planning application.

Yours faithfully,



Marcia D'Alton, B.E., M.Eng.Sc.
Independent Member, Cork County Council

References

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