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TECHNICAL NOTE

To:	Conor Jones	From:	Edward Porter
Company:	Indaver Ireland	Date:	25/01/23

Subject: Revised Volume Flows – Air Modelling Update

Conor,

Please find enclosed the air modelling technical note based on a comparison between the 2019 EIAR assessment, which used a volume flow of 183,700 Nm^3/hr and the current assessment which uses a revised volume flow of 200,000 Nm^3/hr.

In summary, the conclusions of this technical note in relation to the revised volume flows remain unchanged from the conclusions outlined in the Air Quality Chapter of the 2019 EIAR.

Kind regards

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Air Modelling Assessment Of The Revision To The Volume Flow From 183,700 Nm^3/hr to 200,000 Nm^3/hr

The EIAR assessment for the Carranstown WTE facility, undertaken in 2019, was based on a maximum volume flow of 183,700 Nm^3/hr. The current assessment has been updated to allow for an updated volume flow of 200,000 Nm^3/hr.

The air dispersion modelling study follows the same methodology and approach as the 2019 EIAR study and thus for brevity the full modelling report has not been reproduced. Instead the minor impact of the change to volume flow has been highlighted and it has been confirmed that any changes are a small fraction of the ambient limit values.

The input data to the AERMOD model was the same as the previous 2019 assessment with the exception of the following:

- The maximum normalised volume flow was increased from 183,700 Nm^3/hr to 200,000 Nm^3/hr,
- Meteorological data from Dublin Airport has been updated from years 2014 – 2018 to 2017 – 2021.

It should also be noted that the actual model algorithm was updated between the two modelling periods. In 2019 the model version was AERMOD (Version 19191) whilst in 2023 the model version was AERMOD (Version 22112). This should lead to some minor changes in model results.

The ambient air modelling concentration for each modelled parameter for both the 2019 assessment and the current assessment is outlined below in Table 1. Based on the maximum volume flow scenario, the ambient air concentrations increase by between <0.01% - 4.0% of the ambient air quality standard between the 2019 EIAR assessment and the current assessment. However, all results are fully in compliance with all relevant ambient air quality standards for both volume flow scenarios.

An assessment has also been undertaken at a volume flow based on 75% of the proposed maximum volume flow. The ambient air modelling concentration based on 75% of the updated volume flow (equivalent to 150,000 Nm^3/hr) for each modelled parameter is outlined below in Table 2. Based on 75% of the maximum volume flow scenario, the ambient air concentrations decreases by between 0.01% - 1.9% of the ambient air quality standard compared to the maximum volume flow scenario. Moreover, all results are fully in compliance with all relevant ambient air quality standards.

In summary, the conclusions of this technical note in relation to the revised volume flows remain unchanged from the conclusions outlined in the Air Quality Chapter of the 2019 EIAR.

Table 1 Predicted Environmental Concentration (PEC) For Each Modelled Parameter For The Current Assessment And The 2019 EIAR At Maixmum Volume Flow.

Compound	Background	Process Contribution (mg/m^3) 2019 EIAR Assessment	Process Contribution (mg/m^3) Current Assessment	Variation (mg/m^3)	Predicted Environmental Concentration (mg/m^3)	Limit Value (mg/m^3)	PEC as a % of the Ambient Limit	Variation as a % of the Ambient Limit
NO_2 (1-Hr)	26	20.65	28.67	8.02	54.67	200	27.3%	4.01%
NO_2 (Ann)	13	0.77	1.01	0.238	14.01	40	35.0%	0.60%
NO_X (Ann)	25	1.03	1.34	0.314	26.34	30	87.8%	1.05%
SO_2 (1-Hr)	6.4	18.97	24.11	5.14	30.51	350	8.7%	1.47%
SO_2 (24-Hr)	5.7	2.08	2.31	0.226	8.01	125	6.4%	0.18%
PM_{10} (24-Hr)	20	0.16	0.20	0.040	20.20	50	40.4%	0.08%
PM_{10} (Ann)	20	0.0513	0.0672	0.016	20.07	40	50.2%	0.04%
$PM_{2.5}$ (Ann)	14	0.0513	0.0672	0.016	14.07	25	56.3%	0.06%
CO (8-hr)	600	13.91	14.08	0.173	614.1	10,000	6.1%	0.00%
Benzene (Ann)	0.2	0.05	0.07	0.017	0.27	5	5.3%	0.34%
HCl (1-hr)	0.01	3.46	4.33	0.873	4.34	100	4.3%	0.87%
HF (1-hr)	0.005	0.23	0.29	0.059	0.294	3	9.8%	1.96%
Hg (Ann)	0.0015	0.00026	0.00034	0.000	0.0018	1	0.2%	0.008%
Cd (Ann)	0.001	0.00026	0.00034	0.00008	0.0013	0.005	26.7%	1.52%
As (Ann)	0.001	0.00028	0.00036	0.00008	0.0014	0.006	22.7%	1.38%

Table 2 Predicted Environmental Concentration (PEC) For Each Modelled Parameter For The Proposed Maximum Volume Flow And At 75% Of The Proposed Maximum Volume Flow Scenarios.

Compound	Background	Process Contribution (mg/m^3) Current Assessment – 75% of Maximum Volume Flow	Process Contribution (mg/m^3) Current Assessment – Maximum Volume Flow	Variation (mg/m^3)	Predicted Environmental Concentration (mg/m^3)	Limit Value (mg/m^3)	PEC as a % of the Ambient Limit	Variation as a % of the Ambient Limit
NO_2 (1-Hr)	26	24.83	28.67	-3.83	50.83	200	25.4%	-1.92%
NO_2 (Ann)	13	0.99	1.01	-0.021	13.99	40	35.0%	-0.05%
NO_X (Ann)	25	1.32	1.34	-0.028	26.32	30	87.7%	-0.09%
SO_2 (1-Hr)	6.4	22.08	24.11	-2.03	28.48	350	8.1%	-0.58%
SO_2 (24-Hr)	5.7	2.00	2.31	-0.301	7.70	125	6.2%	-0.24%
PM_{10} (24-Hr)	20	0.20	0.20	-0.004	20.20	50	40.4%	-0.01%
PM_{10} (Ann)	20	0.0658	0.0672	-0.001	20.07	40	50.2%	0.00%
$PM_{2.5}$ (Ann)	14	0.0658	0.0672	-0.001	14.07	25	56.3%	-0.01%
CO (8-hr)	600	13.50	14.08	-0.583	615.5	10,000	6.1%	-0.01%
Benzene (Ann)	0.2	0.07	0.07	-0.001	0.27	5	5.3%	-0.03%
HCl (1-hr)	0.01	4.03	4.33	-0.308	4.04	100	4.0%	-0.31%
HF (1-hr)	0.005	0.27	0.29	-0.021	0.273	3	9.1%	-0.69%
Hg (Ann)	0.0015	0.00033	0.00034	0.000	0.0018	1	0.2%	-0.0007%
Cd (Ann)	0.001	0.00033	0.00034	-0.00001	0.0013	0.005	26.6%	-0.14%
As (Ann)	0.001	0.00036	0.00036	-0.00001	0.0014	0.006	22.6%	-0.13%