

12 October 2026

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RE: Response To ACP 30 September 2026

The enclosed technical note is a response to the letter from the ACP dated 30 September 2026.

This response has been prepared by Dr. Edward Porter. Dr. Edward Porter is Director with responsibility for Air Quality with AWN Consulting. He holds a BSc from the University of Sussex (Chemistry), has completed a PhD in Environmental Chemistry (Air Quality) in UCD where he graduated in 1997 and is a Chartered Chemist and a Full Member of the Royal Society of Chemistry (MRSC CChem), the Institute of Environmental Sciences (MIEEnvSc) and the Institute of Air Quality Management (MIAQM). He specialises in the fields of air quality, climate and air dispersion modelling.

Kind regards



Dr. Edward Porter
AWN Consulting

RESPONSE TO ACP DATED 30 SEPTEMBER 2026

This document has been prepared in response to the request from ACP as detailed below.

- 3. Following receipt and consideration of your response to item 5 of the further information request, you are requested to clarify the level of consideration given (if any) to coastal fumigation and complex local meteorological conditions in the dispersion modelling study, in line with the advice and requirements of EPA guidance 'Air Dispersion Modelling from Industrial Installations Guidance Note (AG4) (2019).***

Response 3

EPA guidance 'Air Dispersion Modelling from Industrial Installations Guidance Note (AG4)' (2019) has outlined the appropriate approach for undertaking modelling of coastal fumigation and complex local meteorological conditions in the dispersion modelling study.

In relation to the issue of coastal fumigation, in Section 5.2 of AG4, the question is asked whether coastal fumigation is a consideration:

"Is coastal fumigation a consideration?"

Both ADMS 5 and CALPUFF contain algorithms for calculating concentrations under fumigation conditions in the region of a coastline. The AERMOD dispersion model cannot model the effects of coastal fumigation although AERSCREEN does have this capability." (Page 19, AG4 (2019))

Thus, an appropriate model for coastal fumigation, as outlined above, is CALPUFF. CALPUFF has been specifically modelled in the EIAR as outlined in Section 8.6 of Appendix 8.1 of the EIS (as updated in August 2026).

In Appendix B of AG4 (EPA, 2019), the capabilities of CALPUFF when assessing complex local meteorological conditions are outlined as follows:

"CALPUFF is a multi-layer, multi-species non-steady-state Gaussian puff dispersion model that simulates the effects of time- and space-varying meteorological conditions on pollutant transport, transformation, and removal^(13,18). The modelling system is composed of the CALMET meteorological pre-processor, the CALPUFF dispersion model and the CALPOST post-processor for analysis of results (e.g. to determine long-term averages, prepare files for contour plots, etc.). The model can use 3-dimensional fields of meteorological data that are prepared by the CALMET meteorological pre-processor, and the model can account for spatial variability in meteorological conditions within the modelling domain. Pre-processors for land use and terrain are included with the model, the outputs of which are used as inputs to the CALMET pre-processor."

AG4 (EPA, 2019) further states, in Appendix B, in regards to complex winds and terrain that:

"In relation to the status of Lagrangian models (including CALPUFF) in the near field (less than 50km) the USEPA has stated that:

"7.2.1.2 Complex Winds

a. Inhomogeneous Local Winds. In many parts of the United States, the ground is neither flat nor is the ground cover (or land use) uniform. These geographical variations can generate local winds and circulations and modify the prevailing ambient winds and circulations. Typically, geographic effects are most apparent when the ambient winds are light or calm, as stronger synoptic or mesoscale winds can modify, or even eliminate the weak geographic circulations. In general, these geographically induced wind circulation effects are named after the source location of the winds, e.g., lake and sea breezes, and mountain and valley winds. In very rugged hilly or mountainous terrain, along coastlines, or near large land use variations, the characterization of the winds is a balance of various forces, such that the assumptions of steady-state straight-line transport both in time and

space are inappropriate. In such cases, a model should be chosen to fully treat the time and space variations of meteorology effects on transport and dispersion⁽¹³⁾”(Appendix B of AG4 (2019))

Thus, CALPUFF has the capability to model complex local meteorological conditions in areas of complex terrain as outlined in Section 8.6 of Appendix 8.1 of the EIS.

“The CALPUFF modelling system has been recommended by the USEPA on a case-by-case basis in complex flow situations within 50km⁽¹⁾ . CALPUFF has some important advantages over steady-state Gaussian models such as AERMOD in areas of complex meteorology. Firstly, AERMOD, being a steady state straight line plume model cannot respond to the terrain-induced spatial variability in wind fields. Secondly, as AERMOD is based on a single-station wind observation, the wind fields do not vary spatially within the modelling domain. Thirdly, AERMOD cannot treat calm conditions and does not calculate concentrations during these hours. Because of these limitations, CALPUFF would be expected to more accurately reflect the meteorological and dispersion characteristics of the modelling domain and thus lead to more accurate ambient air concentrations.”

CALPUFF has the capability to model shoreline fumigation as outlined in Section 8.6 of Appendix 8.1 of the EIS.

“As shoreline fumigation was also raised as a possible concern in the previous application and AERMOD does not have the capability to model this phenomenon, CALPUFF (version 6.42) was selected as the most appropriate model which could assess all possible meteorological conditions within the one air dispersion model with the modelling domain shown in Figure 8.34.”

As outlined in Section 8.6 of Appendix 8.1 of the EIS, detailed modelling of the facility was undertaken using the CALPUFF air dispersion model and the modelled results were compared to the ambient air quality standards. The modelling approach that has been undertaken is consistent with the requirements of AG4 (EPA, 2019). The conclusion of the assessment, as outlined in Section 8.6.3 of Appendix 8.1 of the EIS, was that all results are in compliance with the air quality standards including under coastal fumigation conditions.