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Re: 57 Station Road, Seven Hills – 19.2MW Two Storey Data Centre – DPE Response

This letter provides a response to DPE's comments regarding the Air Quality Impact Assessment for the proposed development located at 57 Station Road, Seven Hills, also described as Lot B in DP 404669. The proposed development is for a 19.2MW two storey data centre.

The response/approach is informed by the meeting held with DPE on 12/9/2022.

7-The Department notes the submitted air quality impact assessment does not appear to have adequately considered cumulative impacts associated with the Council-approved development to the front of the site. The modelling (particularly Scenario 3 - Emergency operations) should subsequently be updated to address this matter.

With the inclusion of the three additional generators from the already approved data centre the total NOx emissions are expected to increase in Scenario 3 by approximately 20%. As shown in the assessment the Scenario 3 of the assessment, the predicted ground level concentrations of NO_2 of the emergency scenario exceed the criteria for the 100th percentile. It is important to note that Scenario 3 assumes each all generators are operating 100% of the time, therefore a 100th percentile is highly conservative. Based on the system average interruption duration index (SAIDI) and the system average interruption frequency index (SAIFI), a supply loss of ~350 minutes represents 0.069% of the year. Based on this, despite predicted exceedances of the NO_2 impact assessment criteria being likely during operation of all standby generators concurrently, it is not likely that this worst-case scenario would occur in a typical year. A cumulative assessment of 12 generators running at 100% capacity (emergency scenario) would not alter the outcomes of this assessment. Therefore, we believe additional modelling is not considered warranted.

The certain circumstances in which the development would cause additional exceedances are unlikely. There is difficulty in the direct application of the additional exceedance criteria for emergency generators as they are not in operation unless during maintenance or in the event of a power outage representing a very small amount of time over the course of a year. Furthermore, the Approved Methods do not contain methodology for the assessment of infrequent operations with a risk-based consequence and frequency criteria for further assessment. Therefore, additional assessment is not considered warranted.

Note: The 20% increase in emissions has been estimated by calculating the emission rate for the existing generated using a normalised exhaust concentration 4,140 mg/m^3 for the Cummins2250 generator and an exhaust flow rate of 5.6 m^3/s and 1.37 m^3/s for the Cummins2250 and Cummins550 generators respectively then correcting for a dry exhaust flow using a typical factor of 0.35 and calculating the percentage based on the total mass emission rate of these 3 generators compared with the total mass emission rate of the proposed facility.

8-The Department notes the submitted air quality impact assessment has predicted a number of exceedances for both testing scenarios (Scenario 1 and 2). This document should be updated to provide further assessment and/or justification in relation to the predicted exceedances. Consideration should also be made towards the following:
i) undertaking site-specific air quality monitoring to establish more accurate background air quality levels

Accuracy of background measurements are unlikely to alter the outcomes of the assessment based on the predicted incremental impacts from the site. The dispersion modelling assessment requires an hourly background file over a full year period. A year's worth of monitoring is considered too onerous for the proposed development. A shorter period of site-specific monitoring can be undertaken to compare local air quality to the existing data used, however it is unlikely to alter the outcomes of the assessment as the background levels are likely to be similar and not change the total impact.

ii) revising the proposed generator testing hours to reduce the likelihood of any exceedances at nearby sensitive receptors, particularly during periods with elevated background levels

The testing regime is undertaken based on the manufacturer's requirements, reducing the testing regime poses breakdown risks.

Hourly background NO_2 concentration from 2017-2021 have been analysed and it has been established that high background concentrations are most common in the winter, with the highest occurring from evening through to early morning. Background concentrations are lower during the summer, and at their lowest between the hours of 13:00-16:00. Therefore, it is recommended that the annual 65-minute maintenance tests be undertaken during the summer between 13:00-16:00 and regular 35-minute maintenance be undertaken during the daytime between 13:00-16:00.

iii) implementation of pollution reduction controls for the generators

Additional pollution reduction controls for the generators are not considered warranted/reasonable due to the low likelihood the operations would cause exceedances. However, it is recommended that the design, installation, and operation of the back-up generators and/or generator enclosures does not preclude the ability for air pollution emission controls to be retrofitted.

Yours faithfully,
for Benbow Environmental

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