
APPENDIX 5B DETAILED CUMULATIVE ASSESSMENTS

Planning Application 23/0090/EIS Suez Recycling and Recovery UK Ltd. Carbon capture facility for existing Energy from Waste site (Decision Pending) – Potential Cumulative Air Quality Effects

Summary

The risk of cumulative air quality impacts between NZT and the proposed Suez Energy from Waste (EfW) Facility at Haverton Hill has been considered qualitatively based on available information from respective planning submissions. The qualitative review has considered amines, amine degradation products and nitrogen dioxide. The qualitative review has concluded that significant cumulative air quality effects are not expected. This is due to the low level of predicted pollutant contributions at the individual facilities, the physical separation between the sites and the prevailing winds in the area.

Overview

Suez Recycling and Recovery UK Ltd have applied for planning permission for a Carbon Capture and Storage (CCS) System at their operational EfW Facility at Haverton Hill, Stockton-on-Tees. There are 5 combustion lines within the facility operating across two separate process buildings. It is proposed that the CCS system would be implemented across lines 1-3 initially with the remainder to be fitted with CCS by 2030.

Post-combustion carbon capture processes commonly utilise proprietary amine solutions to remove carbon dioxide from the gas stream, which can result in 'amine slip' with consequent emissions to air. Some amines can potentially degrade into nitrosamines and nitramines (collectively referred to as N-amines) both within the capture process and in the environment following release.

The application for planning permission was accompanied by an air quality impact assessment (Suez AQA), prepared by Fichtner Consulting Engineers⁴. The air quality assessment considered the impact of emissions of amines and amine degradation products associated with the initial installation of a CCS system on lines 1-3 only. There was no consideration of cumulative effects from other proposed CCS systems in the vicinity, including the NZT development. AECOM has been asked to consider the potential for cumulative significant effects to occur due to emissions of amines and degradation products from the Suez facility and proposed NZT development, using published air quality impact assessments.

⁴ Tees Valley CCS, Initial Air Quality Assessment, dated 10th May 2022, Ref S3538-0030-0002SMN. Prepared by Fichtner Consulting Engineers for SUEZ Recycling and Recovery UK Limited.

Emissions to Air Discussion

- The Suez facility and the NZT facility are relatively remote from each other in terms of distance, with the Suez facility being situated approximately 9 km to the WSW of the NZT site.
- Despite the Suez facility being located further inland than the NZT site, both sites are likely to be subjected to comparable meteorological conditions, particularly in terms of the prevailing wind direction at any given time. This means that the emission plume from the Suez and NZT stacks would be expected to be carried in a similar direction in any given hour, making it unlikely that any location would be simultaneously impacted by emissions from both facilities at the same time.
- Due to the distance between the two facilities, the most affected location in terms of long-term air quality impact will be separated by a similar distance. The potential for significant long-term cumulative impacts to occur from the Suez and NZT facilities is therefore limited.
- The respective Air Quality Assessments (AQAs) for the two facilities have both considered the impact of emissions to air of amines and amine degradation products. Both assessments concluded that there would not be a risk of exceeding the Air Quality Assessment Levels (AQALs) for these pollutants, and that the effect of such emissions on local air quality would not be significant.
- For amines, the Suez AQA predicted a small magnitude impact on local air quality of less than 2% of the long-term and short-term AQALs. For the NZT facility, the predicted impact was 1% or less of the AQALs. The two facilities would therefore be incapable of producing an in-combination impact which risked exceeding the AQAL, even if the maximum impact locations were similar.
- In terms of total N-amine, the Suez AQA predicted a maximum impact of 12.6% of the relevant long-term AQAL, for NZT the predicted maximum was 20.5% of the AQAL. The two facilities would therefore be incapable of producing an in-combination impact which risked exceeding the total N-amine AQAL, even if the maximum impact locations were similar.
- For Nitrogen Dioxide (NO₂), the Suez AQA predicted an impact on long-term and short-term concentrations of 6.0% and 9.7% of the respective AQALs. For the NZT facility the predicted impacts are 2% of the long-term AQAL and 3% of the short-term AQAL. Even taking into account background concentrations, there is no risk of a cumulative impact which would risk exceeding the AQALs.

Conclusion and Further Work

On the basis of the above likely significant cumulative air quality impacts are not anticipated with the operation of the two facilities. No further quantitative air quality assessment is considered to be required.

Planning Application R/2023/0291/ESM Green Lithium Refining Limited, Application (All Matters Reserved) For The Development Of A 3 Line Low-Carbon Lithium Refinery – Potential Cumulative Traffic Impacts

No information is provided regarding the construction phase or the number of construction vehicles.

Once operational, the facility would generate around 6 HGVs per hour (two way), and no employee trips in the AM and PM peak periods 0800 to 099 and 1700 to 1800 respectively.

The main conflict between NZT construction traffic and the Green Lithium facility operating traffic would be as follows:

- 0600 and 0700;
- 0700 and 0800, and
- 1800 to 1900.

From the traffic counts undertaken in support of NZT, the level of base traffic is at least around 2,000 vehicles lower in these times compared to the peak hours of 0800 to 0900 and 1700 to 1800.

It is not therefore considered that the construction and operation of the Green Lithium facility would materially change the conclusions with the Proposed Development ES.