

Memo Report



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6-7 Lovers Walk
Brighton, East Sussex
BN1 6AH
T +44 1273 546 800

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1	Note	Kathryn Barker Associate – Air Quality MSc, BSc (Hons), MIAQM, MIEEnvSc	Steven Lees Associate – Air Quality PhD, BSc (Hons), MIAQM, MIEEnvSc	Kathryn Barker Associate – Air Quality MSc, BSc (Hons), MIAQM, MIEEnvSc	20/09/2024

Air Quality Statement – Thurrock

1.1 This note sets out additional information with regard to the air quality assessment for the Thurrock Flexible Generation Plant. It should be read in-conjunction with the RPS Air Quality Assessment, dated 21st August 2024, which has been submitted as part of the permit application. This memo note sets out the results of the stack height determination and considers the air quality impacts at four additional designated ecological sites. This additional information does not alter the conclusion of the air quality assessment and the resulting air quality effect of the proposed development is still considered to be ‘not significant’ overall.

Stack Height Determination

1.2 A stack height determination has been undertaken to establish the height at which there is minimal additional environmental benefit associated with the cost of further elevating the stack. The Environment Agency removed their detailed guidance, Horizontal Guidance Note EPR H1 (Environment Agency, 2010), for undertaking risk assessments on 1 February 2016; however, the approach used here by RPS is consistent with that EA guidance which required the identification of:

“an option that gives acceptable environmental performance but balances costs and benefits of implementing it.”

- 1.3 The emissions data applied in the stack height determination are the same as those applied in the Air Quality Assessment. Simulations have been run using ADMS 6 to determine the stack height required to provide adequate dispersion/dilution and to overcome local building wake effects.
- 1.4 The stack height determination considers ground level concentrations over the averaging periods relevant to the air quality assessment, together with the full range of all likely meteorological conditions through the use of five years of hourly sequential meteorological data from Gravesend. The model was run for a range of stack heights from 17 m to 23 m.
- 1.5 The dispersion modelling for the purposes of stack height determination assumed a domain of 10 km by 10 km centred on the proposed development and with a grid spacing of 50 m. Results have been reported for the average concentrations across the modelled grid, relative to the appropriate averaging periods.
- 1.6 The stack height modelling results have been analysed by plotting the process contributions against height to determine if there is a height at which no material benefit is gained from further increases in stack heights.
- 1.7 Figure 1 and Figure 2 compares the annual-mean NO₂ process contributions and the 99.79th percentile of hourly-mean NO₂ process contributions per stack with the stack heights modelled.

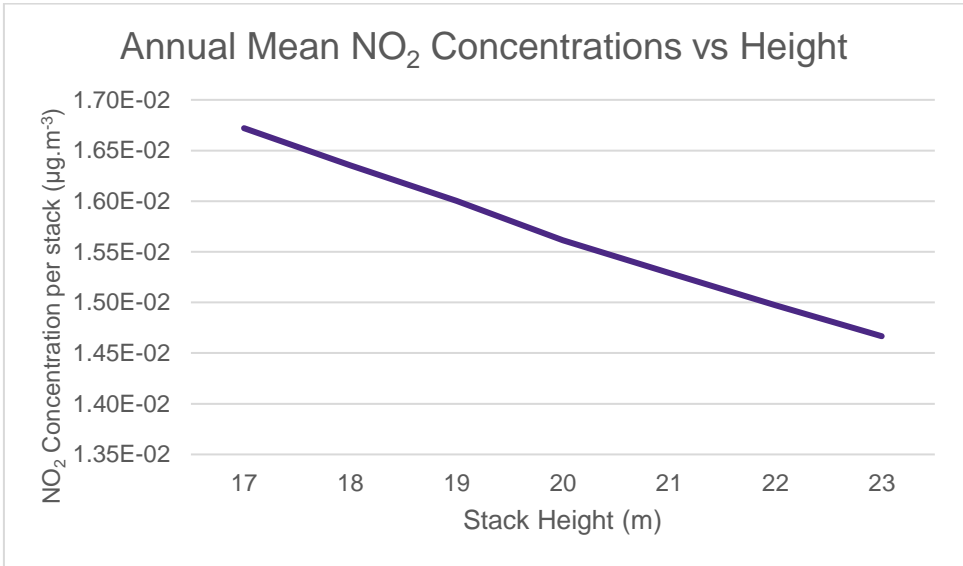


Figure 1: Annual-mean NO₂ Process Contributions Per Stack ($\mu\text{g.m}^{-3}$) vs Stack Height (m)

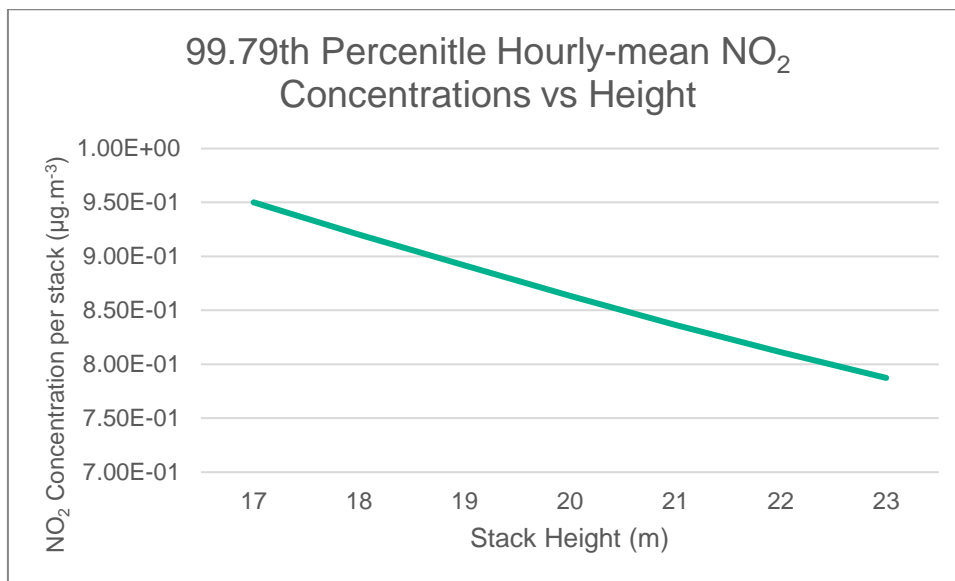


Figure 2: 99.79th Percentile of Hourly-mean NO₂ Process Contributions Per Stack (µg.m⁻³) vs Stack Height (m)

- 1.8 Figures 1 and 2 do not indicate that there would be any appreciable improvement in an increase in the stack height above the 20 m modelled within the Air Quality Assessment.
- 1.9 The results of the Air Quality Assessment illustrate that with a stack height of 20 m the impacts are not significant.
- 1.10 Based on the results of the detailed stack height modelling and using professional judgement, a suitable stack height for the assessment is considered to be 20 m and the detailed modelling undertaken in the Air Quality Assessment report applies a 20 m high stack.

Air Quality Impacts at Ecological Receptors

- 1.11 The Nature and Heritage Screening Report for the application site outlines the following designated habitat sites that were not specifically assessed in the air quality assessment:
- Peters Pit Special Area of Conservation;
 - Benfleet and Southend Marshes Special Protection Area (SPA) and Ramsar;
 - West Tilbury Church Local Wildlife Site (LWS); and
 - Hob Hill and Sandy Lane Pit, Chadwell St Mary (LWS).
- 1.12 Paragraphs 5.1.40 to 5.1.42 of the Habitats Regulations Assessment Report submitted with the DCO application states:

“Air quality data with respect to the Peter’s Pit SAC, Medway Estuary & Marshes SPA/Ramsar and Benfleet and Southend Marshes SPA/Ramsar have not specifically been modelled. Given that the critical levels for NO_x, SO₂ and NH₃ are universal (i.e. the same for all vegetation) and no effect is predicted at sites closer to the proposed development, no effect from these gases is predicted at these more distant sites.

Peter’s Pit comprises a matrix of woodland, scrub and grassland with large ponds supporting breeding great crested newts. APIS does not provide details of critical loads/critical load function for the fresh water habitats present. However, no effect is predicted on the much closer woodland habitats at the North Downs Woodland SAC and, as such, no effect on this site is predicted due to changes in nutrient nitrogen/acid deposition.

The habitats present within the Benfleet and Southend Marshes SPA/Ramsar and Medway Estuary & Marshes SPA/Ramsar are similar to those within the much closer Thames Estuary & Marshes SPA/Ramsar. Given that no effect is predicted at the Thames Estuary & Marshes SPA/Ramsar due to changes in nutrient nitrogen deposition or acid deposition, no effect is predicted at the Benfleet and Southend Marshes SPA/Ramsar”.

- 1.13 The West Tilbury Church LWS is adjacent to the West Tilbury Hall LWS and the Hob Hill and Sandy Lane Pit, Chadwell St Mary LWS is close to, but further from the site than, the Broom Hill LWS. Therefore, predicted concentrations at these sites will be the same or lower than those predicted at the West Tilbury Hall LWS and Broom Hill LWS.
- 1.14 Appendix A of the Air Quality Assessment shows that the air quality impacts at the Broom Hill LWS and the West Tilbury Hall LWS can be screened out as insignificant based on the process contribution not exceeding 100% of the relevant critical levels and loads. As the predicted concentrations are expected to be the same or lower, the impacts at the West Tilbury Church LWS and the Hob Hill and Sandy Lane Pit, Chadwell St Mary LWS are also considered to not be significant.