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Author	A. Van de Sande		
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Response to Pollution Control Comments

1. AIR QUALITY

This technical note has been prepared in response to comments and queries from Eastleigh Borough Council (EBC) relating to the Air Quality ES chapter, prepared by Hydrock and submitted in support of the following planning application(s):

- OPA Phase 1, F/20/89500, and:
- Horton Heath Wider OPA, O/20/89498.

1.1 Comments related to Technical Content of the ES Chapter

1.2 OPA Phase 1, F/20/89500

- 1.2.1 *“With respect to impacts from construction dust; for nuisance dust these are characterised as high from the earthworks and the construction works, and medium from trackout, for Human Health impacts from these activities are counted as ‘low’ on the basis that there are fewer than 100 receptors within 20m of the site, however this does not appear to take account of the fact that as the development progresses very many new receptors will be created on the site. That said we acknowledge that with proper site planning to manage dust, and the diligent implementation of good practice on the site, dust arisings should be controlled to acceptable levels, however given the large size of the site effective planning and strict adherence to such controls will be necessary to avoid adverse impacts on the sensitive receptors.”*

Hydrock Response 1: The ES chapter recommended the mitigation measures for a High-Risk site, the highest mitigation in line with IAQM guidance. As long as those recommended measures are included within the CEMP and implemented during the construction phase, any potential dust impacts can be considered to be effectively reduced to Negligible in line with IAQM guidance.

- 1.2.2 *“With respect to the predicted significance of Nitrogen dioxide arisings from traffic generated by the completed development this is presented in tabular form in Table 7.19. This indicates negligible NO₂ impact in the 2023 opening year for the development. The assessment of future impact of the development on nitrogen dioxide at identified receptors has determined that impact would be negligible, using the IAQM guidelines. For example, it identifies that no exceedances of UK target values for NO₂ will occur.”*

1.2.3 “In doing so the assessment es not appear to consider that a relatively small adverse impact over large area or population should be evaluated in terms of whether that widespread impact makes those smaller impacts more significant.”

Hydrock Response 2: The ES chapter concludes that the impact at all modelled receptor locations will be Negligible impact. It is not considered that a negligible impact across the study area would produce a wider scale significant impact. The largest modelled increase in NO₂ concentrations was 0.2µg/m³ and all modelled receptor locations were well below the NAQO. As such, it is still considered that the overall impact of the development is Not Significant.

1.2.4 “Further, looking at the predicted future nitrogen dioxide levels within the Eastleigh AQMA, if we consider receptor R35 on Southampton Road, a location where we have extensive current and historic real word monitoring data, the do nothing and do something future predicted levels for NO₂ levels are around 17.7 ug/m³ at this location in 2023. However, results of data collected by EBC for Southampton Road and reproduced in the report at Table 7.15 (Eastleigh diffusion tube data) shows levels in recent years, 2016-2019, close to this location on Southampton Road to range from 47.3 to 36.8 ug/m³ for NO₂, we therefore find it hard to understand how levels are expected to fall by over 50% in the next 2 years, and given the size of the discrepancy are therefore sceptical about the reliability of modelling data outputs in the report.”

Hydrock Response 3: An additional verification exercise has been undertaken along Southampton Road in order to determine concentrations at R35 given the concerns outlined above. Three monitoring locations, SR2, ES1 and SR1 have been utilised in the additional verification exercise which has determined an adjustment factor of 3.1 should be applied to Southampton Road, as shown below.

Table 1: Additional NO₂ Verification Factor

ID	Monitored NO ₂	Monitored Road NO _x	Modelled Road NO _x	Ratio	Adj Factor	Modelled Road NO _x after Adj	Modelled NO ₂	% Diff
SR2	37.6	41.6	13.32	0.32	3.1	41.56	37.6	0
ES1	36.7	39.6	16.55	0.42	3.1	51.64	42	14
SR1	43.6	55.3	12.75	0.23	3.1	39.78	36.8	-16

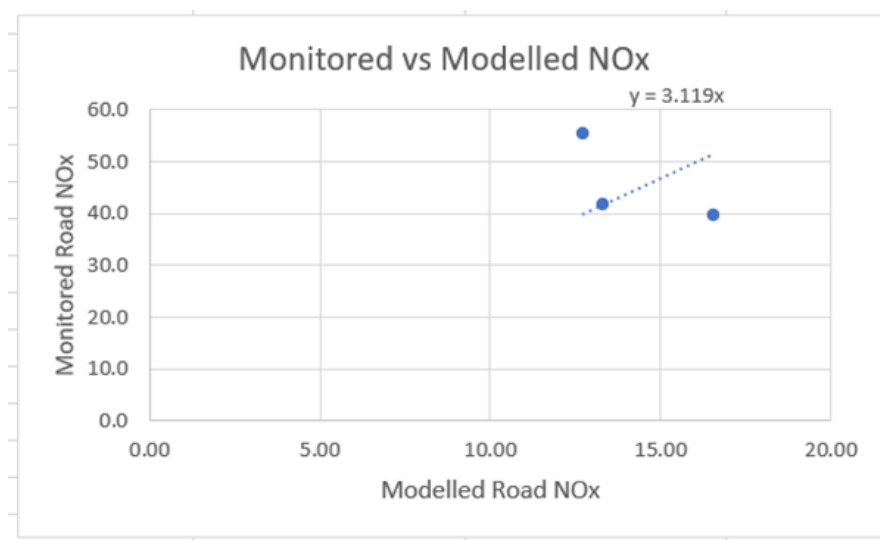


Figure 1: Additional Verification Factor

An adjustment factor of 3.1 has been applied to the modelled results at R35, instead of the original factor of 1.8 to produce the following results for the OPA Phase 1 scenario. This predicts a reduction of approximately 25% over a four-year period of 2019 to 2023 – this is in line with the monitored results which seems a reasonable prediction. More importantly the predicted increase in concentrations as a result of the development is 0.02ug/m³.

Table 2: Updated R35 prediction

	Annual Mean NO ₂				
Receptor	2019	2023 DM	2023 DS	Difference	IAQM Impact
R35	39.34	28.88	28.9	0.02	Negligible

- 1.2.5 “Similarly, Table 7.20 predicts future PM₁₀ concentrations, EBC has a real time PM₁₀ monitoring on Southampton Road and data reproduced in the report, table 7.14, show annual real-world concentrations varying from 20.9 to 22.5 ug/m³ for PM₁₀ (with no trend up or down) between 2016 – 2019, however the modelled value for 2023 at R35 for 2023 is given to be 15.3 ug/m³, a reduction of over 25% in 2 years, given increased traffic flow we cannot see how this is reasonable.”
- 1.2.6 “Consequently, we are concerned at the robustness of the impact assessment as a result. We are sceptical about the future predicted scenarios and the large falls indicated. On this basis we do not think that the report is robust and cannot place confidence in the conclusions regarding the scale of impacts.”

Hydrock Response 4: As with NO₂, a separate verification exercise has been undertaken for PM₁₀ using the ES1 Monitor, as shown below. The ratio of modelled to monitored PM₁₀ is 1.4, as shown below:

Table 3: Additional PM Verification Factor

ID	Monitored PM ₁₀	Modelled Road PM ₁₀	Background PM ₁₀	Total Modelled PM ₁₀	Ratio
ES1	22.5	1.4	15.1	16.5	1.4

If this ratio is applied to both the modelled PM₁₀ and PM_{2.5} concentrations across the study area, then the concentrations at the modelled receptor locations are still well below the NAQOs and the impacts are still predicted to be Negligible, as shown below.

Table 4: Updated PM Assessment Results

	Annual Mean PM ₁₀				Annual Mean PM _{2.5}			
Receptor	2023 DM	2023 DS	Difference	IAQM Impact	2023 DM	2023 DS	Difference	IAQM Impact
R01	25.2	25.2	0.04	Negligible	17.7	17.7	0.03	Negligible
R02	19.5	19.5	0.01	Negligible	14.3	14.3	0.01	Negligible
R03	21.3	21.3	0.01	Negligible	15.4	15.4	0.01	Negligible
R04	20.7	20.7	0.02	Negligible	14.9	14.9	0.01	Negligible
R05	19.8	19.8	0.01	Negligible	14.6	14.6	0.01	Negligible
R06	20.7	20.7	0.02	Negligible	14.9	14.9	0.01	Negligible
R07	19.2	19.2	0.03	Negligible	14.1	14.1	0.02	Negligible

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R08	18.8	18.8	0.02	Negligible	13.8	13.8	0.01	Negligible
R09	22.0	22.0	0.03	Negligible	16.1	16.1	0.02	Negligible
R10	19.7	19.8	0.04	Negligible	14.0	14.0	0.03	Negligible
R11	18.9	18.9	0.01	Negligible	13.8	13.9	0.01	Negligible
R12	18.9	19.0	0.01	Negligible	13.8	13.8	0.01	Negligible
R13	18.9	18.9	0.05	Negligible	13.8	13.8	0.03	Negligible
R14	19.7	19.7	0.05	Negligible	13.9	14	0.03	Negligible
R15	20.9	20.9	0.02	Negligible	15.3	15.3	0.01	Negligible
R16	19.9	19.9	0.01	Negligible	15	15	0.01	Negligible
R17	21.5	21.5	0.02	Negligible	15.7	15.7	0.01	Negligible
R18	21.7	21.7	0.05	Negligible	15.8	15.8	0.04	Negligible
R19	19.2	19.2	0.03	Negligible	14	14.1	0.02	Negligible
R20	19.3	19.3	0.03	Negligible	14	14	0.02	Negligible
R21	19.8	19.8	0.03	Negligible	14.2	14.2	0.02	Negligible
R22	19.9	19.9	0.01	Negligible	14.7	14.7	0.01	Negligible
R23	19.2	19.2	0.01	Negligible	14.2	14.2	0.01	Negligible
R24	21.2	21.2	0.02	Negligible	15.3	15.3	0.01	Negligible
R25	21.7	21.7	0.05	Negligible	15.8	15.8	0.04	Negligible
R26	20.2	20.2	0.02	Negligible	14.6	14.6	0.02	Negligible
R27	19.8	19.8	0.01	Negligible	14.7	14.8	0.01	Negligible
R28	21.1	21.1	0.02	Negligible	16.1	16.1	0.02	Negligible
R29	24.4	24.4	0.01	Negligible	17.3	17.3	0.01	Negligible
R30	21.6	21.7	0.03	Negligible	15.6	15.7	0.02	Negligible
R31	20.2	20.3	0.02	Negligible	15.1	15.1	0.01	Negligible
R32	21.3	21.3	0.04	Negligible	15.6	15.6	0.03	Negligible
R33	21.9	21.9	0.04	Negligible	15.9	15.9	0.03	Negligible
R34	23.3	23.3	0.03	Negligible	17.1	17.1	0.02	Negligible
R35	21.4	21.4	0.00	Negligible	16.1	16.1	0.00	Negligible
R36	21.7	21.8	0.01	Negligible	16.5	16.5	0.01	Negligible
R37	23.7	23.7	0.03	Negligible	16.9	16.9	0.01	Negligible
R38	21.8	21.8	0.01	Negligible	16.6	16.6	0.01	Negligible
R39	21.7	21.7	0.01	Negligible	16.3	16.3	0.01	Negligible
R40	24.4	24.4	0.02	Negligible	17.4	17.4	0.01	Negligible
R41	24.3	24.3	0.01	Negligible	17.5	17.5	0.01	Negligible
R42	21.7	21.7	0.01	Negligible	16.1	16.1	0.00	Negligible
R43	22.0	22.0	0.01	Negligible	16.3	16.3	0.00	Negligible
R44	20.5	20.5	0.01	Negligible	15.7	15.7	0.01	Negligible
R45	20.8	20.8	0.04	Negligible	15.5	15.5	0.03	Negligible
R46	20.7	20.7	0.05	Negligible	15.4	15.4	0.03	Negligible
R47	22.4	22.5	0.03	Negligible	16.1	16.1	0.03	Negligible

R48	22.8	22.9	0.04	Negligible	16.1	16.1	0.03	Negligible
R49	22.9	22.9	0.03	Negligible	16.4	16.4	0.02	Negligible
R50	24.0	24	0.01	Negligible	17.4	17.4	0.01	Negligible
R51	24.7	24.7	0.03	Negligible	17.4	17.5	0.02	Negligible
R52	23.4	23.4	0.02	Negligible	16.7	16.7	0.01	Negligible
R53	24.8	24.8	0.02	Negligible	17.7	17.7	0.02	Negligible
R54	21.6	21.6	0.04	Negligible	15.7	15.7	0.03	Negligible
R55	24.7	24.8	0.03	Negligible	17.8	17.9	0.03	Negligible
R56	24.7	24.8	0.03	Negligible	17.8	17.9	0.03	Negligible
R57	24.6	24.6	0.03	Negligible	17.8	17.8	0.02	Negligible
R58	24.0	24.1	0.01	Negligible	17.4	17.4	0.01	Negligible
R59	21.9	22	0.08	Negligible	15.7	15.8	0.06	Negligible
R60	20.7	20.7	0.01	Negligible	15.1	15.1	0.01	Negligible
R61	19.9	20	0.05	Negligible	14.3	14.3	0.04	Negligible
R62	20.8	20.9	0.01	Negligible	15.4	15.4	0.01	Negligible
R63	19.9	20	0.05	Negligible	14.1	14.1	0.04	Negligible
R64	19.7	19.7	0.01	Negligible	14.8	14.8	0.01	Negligible
R65	20.6	20.7	0.04	Negligible	15.3	15.3	0.04	Negligible
R66	23.6	23.6	0.01	Negligible	16.8	16.8	0.01	Negligible
R67	23.9	23.9	0.01	Negligible	17.0	17	0	Negligible

R35 which is the most representative modelled receptor locations of the ES1 monitoring location predicts a concentration of 21.4 ug/m³ in 2023 which is still in line with the monitoring concentrations between 2016 and 2019.

1.3 Horton Heath Wider OPA, O/20/89498

1.3.1 *“Assessment of construction impacts – this follows the same approach as outlined above. Please see our previous comments on the OPA Phase 1.”*

Hydrock Response 5: See above Hydrock Response 1

1.3.2 *“Assessment of nitrogen dioxide and particulate matter impacts in the future year 2030 arising from the development. Again, we similar underprediction of future levels of nitrogen dioxide when compared to current levels, as with our comments above we are concerned at the robustness of the assessment and the reliability of its conclusions into significance of impact, therefore we are unable to support its conclusions of negligible impact.”*

Hydrock Response 6: As outlined with the OPA Phase 1 above, an adjustment factor of 3.1 has been applied to the modelled results at R35, instead of the original factor of 1.8 to produce the following results for the Wider OPA scenario. This predicts a reduction of approximately 50% over a 11-year period of 2019 to 2030 – this is in line with the monitored results which seems a reasonable prediction. More importantly the predicted increase in concentrations as a result of the development is 0.06ug/m³.

Table 5: Updated R35 prediction

	Annual Mean NO ₂				
Receptor	2019	2030 DM	2030 DS	Difference	IAQM Impact
R35	39.34	19.43	19.49	0.06	Negligible

As with the OPA Phase 1 assessment above, the verification of PM₁₀ produces an adjustment factor of 1.4. If this ratio is applied to both the modelled PM₁₀ and PM_{2.5} concentrations across the study area, then the concentrations at the modelled receptor locations are still well below the NAQOs and the impacts are still predicted to be Negligible, as shown below.

Table 5: Updated PM Assessment Results

	Annual Mean PM ₁₀				Annual Mean PM _{2.5}			
Receptor	2023 DM	2023 DS	Difference	IAQM Impact	2023 DM	2023 DS	Difference	IAQM Impact
R01	24.9	25.1	0.2	Negligible	16.6	16.7	0.1	Negligible
R02	19	19.2	0.2	Negligible	13.2	13.3	0.1	Negligible
R03	21.1	21.4	0.3	Negligible	14.4	14.6	0.2	Negligible
R04	20.4	20.5	0.2	Negligible	13.8	13.9	0.1	Negligible
R05	19.5	19.6	0.1	Negligible	13.5	13.6	0.1	Negligible
R06	20.4	20.5	0.2	Negligible	13.8	13.9	0.1	Negligible
R07	18.9	19.1	0.2	Negligible	13	13.2	0.1	Negligible
R08	18.4	18.6	0.1	Negligible	12.7	12.8	0.1	Negligible
R09	21.7	21.9	0.2	Negligible	15	15.1	0.1	Negligible
R10	19.3	19.8	0.5	Negligible	12.9	13.2	0.3	Negligible
R11	18.5	18.7	0.2	Negligible	12.7	12.9	0.1	Negligible
R12	18.5	18.9	0.3	Negligible	12.7	12.9	0.2	Negligible
R13	18.5	18.8	0.3	Negligible	12.6	12.8	0.2	Negligible
R14	19.3	19.6	0.3	Negligible	12.8	13	0.2	Negligible
R15	20.6	20.7	0.1	Negligible	14.1	14.2	0.1	Negligible
R16	19.5	19.6	0.1	Negligible	13.9	13.9	0.1	Negligible
R17	21.2	21.4	0.2	Negligible	14.6	14.7	0.1	Negligible
R18	21.1	21.6	0.5	Negligible	14.5	14.9	0.3	Negligible
R19	18.9	19.1	0.2	Negligible	13	13.1	0.1	Negligible
R20	19	19.2	0.2	Negligible	12.9	13.1	0.1	Negligible
R21	19.5	19.7	0.2	Negligible	13.1	13.2	0.1	Negligible
R22	19.4	19.6	0.2	Negligible	13.5	13.7	0.1	Negligible
R23	18.7	18.9	0.1	Negligible	13.1	13.1	0.1	Negligible
R24	20.6	20.9	0.2	Negligible	14.1	14.2	0.2	Negligible
R25	21.1	21.5	0.5	Negligible	14.5	14.9	0.3	Negligible
R26	19.8	19.9	0.2	Negligible	13.4	13.5	0.1	Negligible
R27	19.3	19.5	0.2	Negligible	13.5	13.7	0.1	Negligible

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R28	20.8	21	0.1	Negligible	15	15.1	0.1	Negligible
R29	24.1	24.1	0.1	Negligible	16.1	16.2	0	Negligible
R30	21.3	21.5	0.2	Negligible	14.6	14.7	0.1	Negligible
R31	19.9	20	0.1	Negligible	14	14.1	0.1	Negligible
R32	21	21.2	0.3	Negligible	14.5	14.6	0.2	Negligible
R33	21.6	21.9	0.3	Negligible	14.8	15	0.2	Negligible
R34	23	23.2	0.2	Negligible	16	16.1	0.1	Negligible
R35	21	21.1	0	Negligible	15	15	0	Negligible
R36	21.4	21.5	0.1	Negligible	15.4	15.5	0.1	Negligible
R37	23.4	23.5	0.1	Negligible	15.8	15.9	0.1	Negligible
R38	21.5	21.6	0.1	Negligible	15.5	15.6	0.1	Negligible
R39	21.3	21.4	0	Negligible	15.2	15.3	0	Negligible
R40	24.1	24.2	0.1	Negligible	16.2	16.3	0.1	Negligible
R41	23.9	24	0	Negligible	16.4	16.4	0.1	Negligible
R42	21.3	21.4	0	Negligible	14.9	14.9	0	Negligible
R43	21.7	21.7	0	Negligible	15.2	15.2	0	Negligible
R44	20.2	20.2	0.1	Negligible	14.6	14.7	0.1	Negligible
R45	20.4	20.7	0.3	Negligible	14.4	14.6	0.2	Negligible
R46	20.3	20.6	0.3	Negligible	14.3	14.5	0.2	Negligible
R47	22	22.2	0.2	Negligible	14.9	15.1	0.2	Negligible
R48	22.5	22.7	0.2	Negligible	14.9	15	0.1	Negligible
R49	22.5	22.7	0.2	Negligible	15.2	15.4	0.1	Negligible
R50	23.6	23.7	0.1	Negligible	16.2	16.3	0.1	Negligible
R51	24.3	24.5	0.2	Negligible	16.3	16.4	0.1	Negligible
R52	22.9	23.1	0.1	Negligible	15.5	15.6	0.1	Negligible
R53	24.4	24.5	0.1	Negligible	16.5	16.6	0.1	Negligible
R54	21	21.4	0.4	Negligible	14.4	14.7	0.3	Negligible
R55	24.4	24.6	0.2	Negligible	16.6	16.8	0.1	Negligible
R56	24.4	24.6	0.2	Negligible	16.6	16.8	0.1	Negligible
R57	24.3	24.4	0.2	Negligible	16.6	16.7	0.1	Negligible
R58	23.7	23.8	0.1	Negligible	16.2	16.3	0.1	Negligible
R59	21.2	21.9	0.7	Negligible	14.4	14.8	0.4	Negligible
R60	20.3	20.5	0.1	Negligible	14	14.1	0.1	Negligible
R61	19.6	19.9	0.3	Negligible	13.2	13.4	0.2	Negligible
R62	20.5	20.6	0.1	Negligible	14.3	14.3	0.1	Negligible
R63	19.6	19.9	0.3	Negligible	13	13.2	0.2	Negligible
R64	19.3	19.4	0.1	Negligible	13.6	13.7	0	Negligible
R65	20.1	20.5	0.4	Negligible	14	14.3	0.3	Negligible
R66	23.1	23.2	0.1	Negligible	15.6	15.7	0.1	Negligible
R67	23.5	23.5	0	Negligible	15.8	15.8	0	Negligible

1.4 Comments related to Mitigation requirements

1.4.1 *“Reference to suitable mitigation that may be employed is included in the chapter.”*

1.5 OPA Phase 1, F/20/89500

1.5.1 *“Construction, reference is made to the need for mitigation for dust in line with advice given by the Grater London Authority, GLA, and the IAQM, whilst the measures proposed are considered good practice, there needs to be a site-specific assessment which relates to the actual construction techniques, development phasing, and relate to site compounds etc for this to be considered in detail. We would welcome the submission of such a site-specific scheme, ad agree it should follow the good practice approaches previously outlined.”*

1.5.2 *“No mitigation of emissions from development generated road traffic is deemed necessary.”*

1.5.3 **Hydrock Response 7:** Whilst the recommended High Risk IAQM mitigation measures are proposed and deemed suitable to reduce impacts to negligible, a more a site-specific regime can be included in the CEMP to address actual construction techniques, development phasing and site compounds etc.

1.6 Horton Heath Wider OPA, O/20/89498

1.6.1 *“With respect to construction impacts we would expect to see detailed site and construction process specific schemes brought forward for each phase, where subsequent phases are brought forward at the same time, or overlap chronologically, we would expect the combined impacts to be duly considered.”*

“No mitigation of emissions from development generated road traffic is deemed necessary.”

Hydrock Response 8: Given the application for the Wider OPA is outline, more site-specific schemes can be produced as each phase is brought forward and measures incorporated as part of a CEMP.

1.6.2 *“The assessment does not consider the potential for air pollution impacts, dust, odour, fume, etc impacts arising from any B2 industrial uses either as part of any industrial development on or nearby. Similarly, no assessment of impact from odours arising from food uses that may reasonably be expected as part of the commercial developments including local centres, included in the development have been considered.”*

Hydrock Response 9: The application for the Wider OPA is for outline only, as such it would be difficult to accurately assess the impacts arising from B2 industrial and/or odour from food uses etc as the level of detail required is not available at this stage. More detailed impact assessments from such sources can be undertaken as each phase is brought forward at a more detailed planning stage. Suitable mitigation can be recommended at such stages to reduce any potential impacts.

1.6.3 *“Also, the use of gas fired central heating is likely to give rise to emissions of nitrogen dioxide in particular, given the large scale of the development we would have expected this to have been considered, and if appropriate recommendations for low NOx boilers, or alternate space and water heating for the dwellings.”*

Hydrock Response 10: More detailed impact assessments can be undertaken as each phase is brought forward at a more detailed planning stage which will include recommendations for low emissions heating and energy such as low NOx boilers/Air source heat pumps for example.

- 1.6.4 *“With respect to the commercial, leisure and education uses information is not provided, nor assessment made of any potential emissions from fixed plant associated with space or water heating associated with those uses.”*

Hydrock Response 11: The application for the Wider OPA is for outline only, as such it would be difficult to accurately assess the impacts arising from fixed plant associated with space or water heating as the level of detail required is not available at this stage. More detailed impact assessments from such sources can be undertaken as each phase is brought forward at a more detailed planning stage. Suitable mitigation can be recommended at such stages to reduce any potential impacts.