

YOYLAND WEST - ADDENDUM

AIR QUALITY ASSESSMENT

VC-103210-AQ-RP-0003
R00

SEPTEMBER 2020



VANGUARDIA

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1. INTRODUCTION

- 1.1. Vanguardia has been commissioned by Newlands Developments to undertake an addendum air quality assessment to address comments made by Barnsley Metropolitan Borough Council (BMBC) during the planning process (planning ref: 2020/0647) in respect to an air quality assessment undertaken (ref: Hoyland West – Air Quality Assessment dated June 2020 - VC-103210-AQ-RP-0001), for a:

Hybrid planning application for a development of employment uses (B1, B2 and B8), new link road, associated works, including provision of internal access roads, drainage and landscaping

- a) *Outline with all matter reserved apart from means of access for up to 71,515 sq.m of employment uses (B1, B2, B8);*
- b) *Full application for 31,571 sq.m of B8, new link road including new roundabout to link with Hoyland south Masterplan Area (Local Plan references HS68, HS65, HS61, HS58, HS6, SL5)*

- 1.2. This addendum air quality assessment should be read in conjunction with the original air quality assessment (ref: Hoyland West – Air Quality Assessment dated June 2020 - VC-103210-AQ-RP-0001).
- 1.3. The primary comment to which this report addresses is the consideration of Plot 1, which could come forward in 2022, and which was previously assessed to come forward in 2029, in line with the associated Transport Assessment.
- 1.4. The second comment to which this report addresses is in relation to the request for a sensitivity test, which considers the impacts of plots 4, 5 & 6 of the Hoylands West Masterplan, and the Hoylands South Masterplan coming on line at the same time as the Proposed Development to which the original air quality assessment considered.
- 1.5. This report follows the same modelling methodologies set out in the previous air quality assessment, which was agreed with BMBC Environmental Health Officer, and covers further queries raised during the planning process. The correspondence with BMBC is set out in Appendix A.
- 1.6. The report is set out as follows:

- Section 2 sets a summary of the previous methodology used to assess the impacts;
- Section 3 describes the baseline conditions in 2022;
- Section 4 considers the operational phase traffic impacts of Plot 1 in 2022;
- Section 5 considers a sensitivity test of the Hoylands South Masterplan and Plots 4, 5 & 6 (associated with the Hoylands West Masterplan) coming forward in 2029; and
- Section 5 summaries and concludes the assessments.

2. ASSESSMENT METHODOLOGY

OPERATIONAL TRAFFIC IMPACTS ON HUMAN RECEPTORS

- 2.1. Three key guidance documents have been used to determine the potential for impact upon air quality. These are the Design Manual for Roads and Bridges (DMRB)¹, Environmental Protection UK (EPUK) Development Control: Planning for Air Quality, (2010 update)² and the EPUK & IAQM, (2017) Land-Use Planning and Development Control: Planning for Air Quality.³
- 2.2. The more stringent EPUK & IAQM, (2017) guidance, provides indicative criteria for the requirement of an Air Quality Impact Assessment, which is summarised below, and further set out in greater detail in Appendix B.

LOCAL HIGHWAY NETWORK

Step 1

- If any of the following apply to the development:
 - Contains 10 or more residential units or a site area of more than 0.5ha; or
 - Contains more than 1,000 m² of floor space for all other uses or a site area greater than 1ha.
- Coupled with any of the following:
 - The development has more than 10 parking spaces; or
 - The development will have a centralised energy facility or other centralised combustion process.

Step 2

- A change of LGV, (light goods vehicle) flow of:
 - More than 100 AADT within or adjacent to an AQMA; or
 - More than 500 AADT elsewhere.
- A change of HGV, (heavy goods vehicle) flow of:
 - More than 25 AADT within or adjacent to an AQMA; or

1 Highways Agency (2007). Design Manual for Roads and Bridges (DMRB), Volume 11: Environmental Assessment, Section 3: Environmental Assessment Techniques, Part 1, HA 207/07

2 Environmental Protection UK (2010). Development Control: Planning for Air Quality, (2010 Update) This guidance has been produced to help ensure that air quality is properly accounted for in local development control processes.

3 Environmental Protection UK & Institute of Air Quality Management (EPUK & IAQM) (2017) Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London

- More than 100 AADT elsewhere.

- 2.3. Should these criteria not be met, then the guidance document considers air quality impacts associated with a scheme to be negligible and no further assessment is required.
- 2.4. As the proposals are for an area greater than 1ha and associated parking, this exceeds the criteria in Step 1.
- 2.5. A review of the traffic data provided by the project transport consultant has been undertaken and the data screened against the Step 2 criteria. This is further discussed in Section 4, (Operational Phase Impact Assessment).

OPERATIONAL TRAFFIC IMPACTS ON ECOLOGICAL RECEPTORS

- 2.6. The DMRB guidance (HA207/07) ⁴ sets out when a full impact assessment on sensitive ecological receptors are to be undertaken, due to the changes in the following highway conditions, (if within 200m of the centre of the affected highway):
- Horizontal road alignment will change by 5m or more;
 - Daily traffic flows will change by more than 1,000 Annual Average Daily Traffic (AADT);
 - Heavy Duty Vehicle (HDV) flows will change by more than 200 AADT;
 - Daily average speed will change by more than 10kph; or
 - Peak hour speed will change by more than 20kph.
- 2.7. To note, the DMRB assessment criterion is based upon considering impacts in isolation and in combination with other plans and projects. Furthermore, increases in vehicular volumes are also reiterated in the IAQM (2020) A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites guidance⁵.
- 2.8. A review of the traffic data provided by the project transport consultant has been screened against the DMRB criteria. This is further discussed Section 4 (Operational Phase Impact Assessment).

⁴ Highways Agency (2007). Design Manual for Roads and Bridges (DMRB), Volume 11: Environmental Assessment, Section 3: Environmental Assessment Techniques, Part 1, HA 207/07

⁵ Institute of Air Quality Management (IAQM) (2020) A guide to the assessment of air quality impacts on designated nature conservation sites, IAQM, London

SENSITIVE HUMAN RECEPTORS

2.9. The concentrations of NO₂, PM₁₀ and PM_{2.5} have been considered as part of this assessment.

2.10. The same modelling receptor locations as for the previous air quality assessment have been used, (to note, these receptor locations have previously been agreed with BMBC). For completeness these are described in Table 1 and illustrated in Figure 1. To note, two further receptors has been considered (no(s).17 & 18) for the cumulative assessment, to consider the future air quality concentrations at Plot 6 of the Hoylands West Masterplan, which is identified as residential. These additional receptor locations were agreed with BMBC.

Table 1 Receptor Locations

Receptor	Description	Grid References		
		x	y	Z (Height)
1	DT24 (Monitoring Site)	435274	400384	2.8
2	DT25 (Monitoring Site)	434832	400405	2.9
3	DT26 (Monitoring Site)	434820	400421	2.8
4	DT27 (Monitoring Site)	434823	400398	2.9
5	School	435438	400246	1.5
6	Residential	435536	400127	1.5
7	Residential	435379	400125	1.5
8	School	434614	400236	1.5
9	Residential	434629	400706	1.5
10	Residential	434610	401001	1.5
11	Residential	436128	399484	1.5
12	Residential	435810	399902	1.5
13	Residential	435385	399957	1.5
14	Residential	435551	400170	1.5
15	Care Home	435525	400169	1.5
16	Residential	435572	400145	1.5
Sensitivity Indicative Receptors				
17	Future Residential – Plot 6	435435	399906	1.5
18	Future Residential – Plot 6	435656	400033	1.5

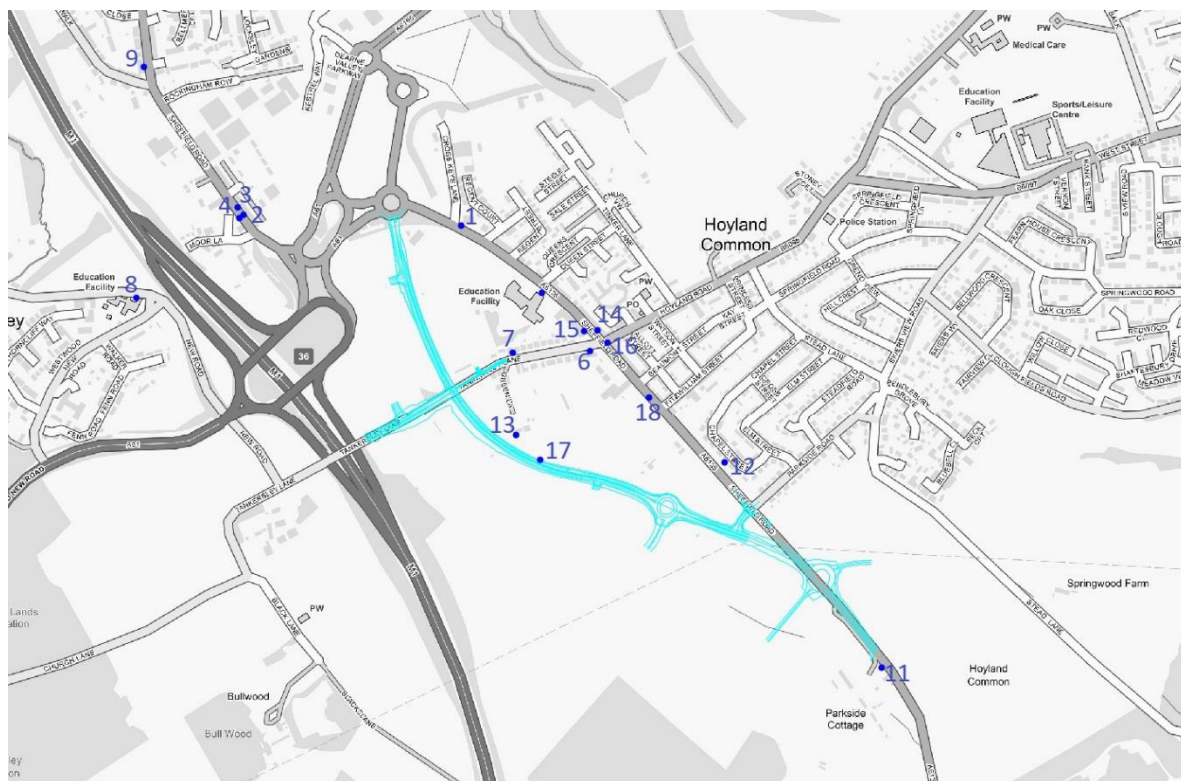


Figure 1 Modelling Locations

SENSITIVE ECOLOGICAL RECEPTORS

2.11. Along with human receptors, there is also the potential for ecological receptors to be impacted by air quality changes. The IAQM (2020) A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites⁶, recommends the following ecological sites could have wildlife which could be impacted by air quality:

- Sites of Special Scientific Interest (SSSIs);
- Special Areas of Conservation (SACs);
- Special Protection Areas (SPAs);
- Ramsar Sites;
- Areas of Special Scientific Interest (ASSIs);
- National Nature Reserves (NNRs);
- Local Nature Reserves (LNRs);
- Local Wildlife Sites (LWSs); and,

⁶ Institute of Air Quality Management (EPUK & IAQM) (2020) A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites, IAQM, London

— Areas of Ancient Woodland (AW).

2.12. A review of the Multi-Agency Geographic Information for the Countryside website⁷, (Magic) indicates two Local Nature Reserves, (*Potter Holes Plantation* and *Worsbrough Country Park*) are located near to the proposed development, as illustrated in Figure 2, which is within 200m of a highway which would be impacted by the proposed development. On this basis, a screening exercise has been undertaken of the potential traffic impacts.

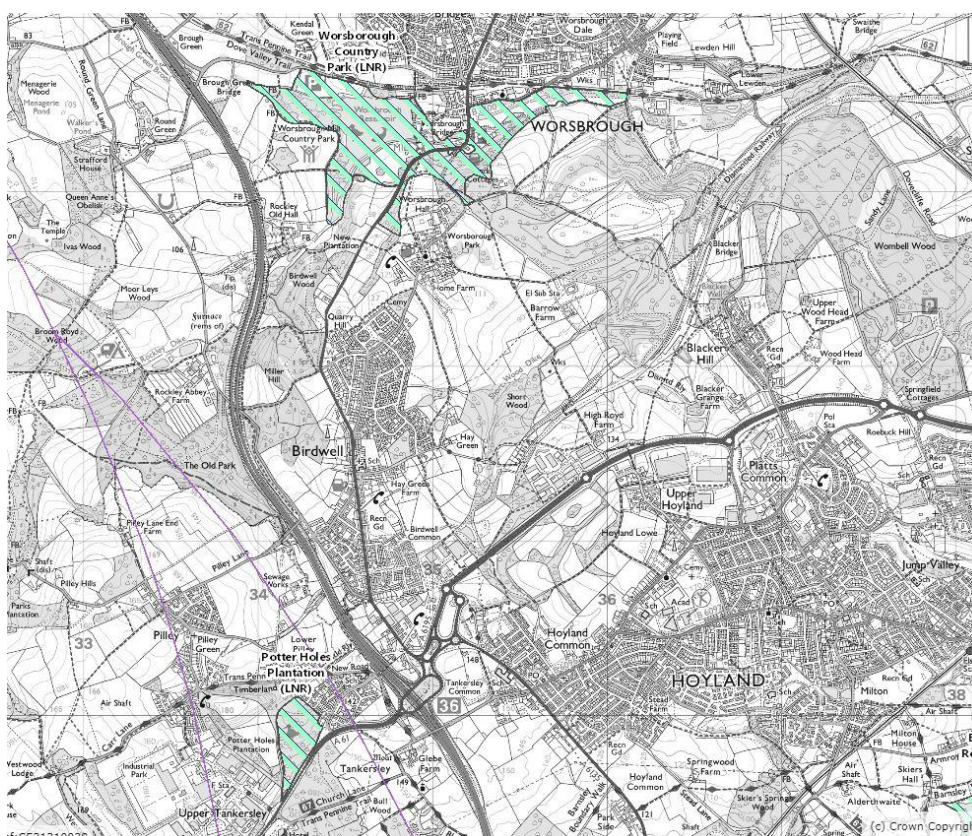


Figure 2 Local Ecological Sites

ASSESSMENT SCENARIOS

2.13. The traffic data, (and the assumptions built into this traffic data) utilised within this assessment has been provided by Fore Consulting and this data is set out in Appendix C. Vanguardia have been advised that both TEMPPO and committed developments have been included, (where relevant) within the traffic data.

7 Defra: MAGIC. <https://magic.defra.gov.uk/magicmap.aspx>

2.14. Fore Consulting have advised that the AADT traffic data has been derived to ensure a full daily profile of operational movements are considered, and not the associated 'peak hour' movements factored up. Therefore, this assessment represents a robust consideration of the potential vehicular traffic impacts.

2.15. The committed developments built into the traffic data include:

- 2018/1039: Land off Lidgett Lane/ Pilley Green, Pilley – residential development of up to 72 dwellings.
- 2017/1341: Land off New Road, Pilley – residential development of up to 56 dwellings.
- 2018/1361: Land off New Road, Tankersley – residential development up to 29 dwellings.
- 2016/1531: Land north of Hawshaw Lane – outline application for residential development up to 100 dwellings.
- 2019/1573: Rockingham Phase 2 and 3, Hoyland – hybrid application for B1C, B2 and B8 employment floorspace with a development quantum of up to 1.1m sqft (102,193sqm).

2.16. Based upon the current programme of works it is anticipated that Plot 1 will come forward during the third quarter of 2022. On this basis, the following scenarios have considered as part of this assessment:

- Scenario 1 – 2022 Baseline;
- Scenario 2 – 2022 Baseline + Operational Traffic (associated with Plot 1).

2.17. It should be noted that the link road and building infrastructure has been assumed to be completed in 2021. Therefore, this has not been considered within this assessment.

2.18. For the 2029 cumulative assessment, the following traffic data has been included:

- Baseline traffic;
- Committed developments set out in paragraph 2.15;
- Operational traffic of Plots 1, 2 & 3 (which the original air quality assessment considered);

- Operational traffic of Plots 4, 5 & 6 of Hoylands West Masterplan; and
- Operational traffic associated with the Hoylands South Masterplan

2.19. The traffic data is set out in Appendix C.

BACKGROUND CONCENTRATIONS

2.20. The Defra website⁸ includes estimated background air pollution data for NO_x, NO₂, PM₁₀ and PM_{2.5} for each 1km by 1km OS grid square. In August 2020 a new set of background mapping was released (*'2018-based background maps for NO_x, NO₂, PM₁₀ and PM_{2.5}'*).

2.21. However, due to the most recent Emission Factor Toolkit (v10/10.1) not being available for use within the ADMS model (as discussed within *Emission Factors* section) the *'2017-based background maps for NO_x, NO₂, PM₁₀ and PM_{2.5}'* has been utilised for this assessment. This would also align with the DEFRA NO_x to NO₂ Calculator (v7.1) which has had to be used for this assessment for the same reasoning. Furthermore, the 2017-based background maps were also the used for the original air quality assessment, which enables a good comparison of the previous modelled results against this assessment.

2.22. The 2017 based background maps are modelled from the base year of 2017 and based on ambient monitoring, meteorological data from 2017 and then projected for future years (up to 2030).

2.23. To note, a sensitivity assessment has been undertaken for the background nitrogen dioxide (NO₂) concentrations. The road-traffic components in the background maps have been uplifted in order to derive future year background nitrogen dioxide (NO₂) concentrations, for use within the sensitivity test. The reasoning for this sensitivity test is further discussed in the following section (Emission Factors).

EMISSION FACTORS

2.24. There are numerous sources of NO₂, PM₁₀ and PM_{2.5} which include for example, industry and domestic origins. However, the main source is usually road transport. For the purpose of the

⁸ Defra: UK-AIR. <http://www.uk-air.defra.gov.uk>

air quality assessments associated with this proposed development, and due to the absence of other sources in the area, only road traffic emissions have been modelled.

2.25. In August 2020 Defra released an updated Emission Factor Toolkit⁹ (v10.0/10.1). However, at the time of writing the software developer have advised the software update to update the emission factors in ADMS-Roads is not available.

2.26. Therefore, the same Emission Factor Toolkit (v9.0), which was used for the previous air quality assessment has been utilised. This also allows direct comparison between the modelling results.

2.27. Defra provides road traffic emission factors that predict how fleet-averaged vehicle emissions will change year-on-year as newer, cleaner vehicles populate the national vehicle fleet. These emission factors are routinely used in air quality modelling. Historically, modelling carried out using these emission factors has predicted large reductions in nitrogen oxides (NO_x) emissions and concentrations.

2.28. It has been widely known for some time that NO_x/NO₂ levels are not reducing as quickly as anticipated which was identified by Defra¹⁰ in 2011 and reiterated in an IAQM Interim Position Statement¹¹ released in July 2018, recognising that emissions from diesel vehicles have not declined as expected by Defra. It states:

"it has been known since around 2011 that [NO_x] emissions from diesel vehicles have not declined as expected despite the introduction of increasingly more stringent European Union (EU) emission limits"

2.29. Therefore, historically the Defra Emissions Factors Toolkits (built into ADMS-Roads) are considered to be underperforming.

2.30. The reason for the disparity relates to the on-road performance of modern diesel vehicles. New vehicles registered in the UK have had to meet progressively tighter European type approval emissions categories, referred to as "Euro" standards. While the NO_x emissions from newer vehicles should be lower than those from equivalent older vehicles, the on-road

9 Defra (2016). Emissions Factor Toolkit. <http://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>

10 Carslaw, D., Beevers, S., Westmoreland, E. and Williams, M. (2011) Trends in NO_x and NO₂ emissions and ambient measurements in the UK

11 IAQM. (2018). Interim Position Statement (v1.1): Dealing with Uncertainty in Vehicle NO_x Emissions within Air Quality Assessments.

performance of some modern diesel vehicles has often been no better than that of earlier models.

- 2.31. In order to address this Air Quality Consultants (AQC) have developed the Calculator Using Realistic Emissions for Diesels (CURED). These calculations provide a sensitivity test presented in CURED V3A focussed entirely on the NO_x EFT's assumptions regarding emissions from diesel vehicles registered in 2020 or later. At the time of the production of CURED V3A there was little evidence that diesel Euro 6d would under realistic conditions, vehicles in the real world would achieve the low emission rates that have been incorporated into EFT v9.0.
- 2.32. However, the latest real-world monitoring data¹² suggests that diesel vehicles are capable of achieving the emissions limits required under the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) and Real Driving Emissions (RDE) tests not only for Euro 6c and Euro 6d-TEMP vehicles, but also for Euro 6d.
- 2.33. A recent report in respect to the use of the CURED (*Performance of Defra's Emission Factor Toolkit 2013 – 2019*)¹³ concluded:
- "On the basis of the analysis set out in this report, there seems to be little value in continuing to use, or updating, the CURED model. It is considered that the EFT may be relied upon to predict the most likely, or potentially conservative, situation in the future, provided that the assessment is verified against measurements made in the year 2016 or later."*
- 2.34. Notwithstanding the above it was decided that the CURED method would still be used to represent a robust worst-case sensitivity assessment and this approach was agreed during the initial scoping exercise with BMBC.
- 2.35. To note, this would aid in addressing the consideration of the fleet composition.
- 2.36. The road source NO_x emission rates, (based upon the traffic data provided by the project transport consultant) using version V3A, along with the uplifted background nitrogen dioxide (NO₂) concentrations have been utilised as a sensitivity test for the assessment year scenarios, and ran through the ADM-Roads (v5.0.0.1) model.
- 2.37. Vehicles emit NO_x with different proportions of NO₂. In the atmosphere, chemical reactions take place between NO, NO₂ and Ozone. In this assessment, the screening of NO_x emissions

¹² <https://www.acea.be/publications/article/access-to-euro-6-rde-monitoring-data>;

¹³ AQC. (2020). Performance of Defra's Emission Factor Toolkit 2013 – 2019

has taken place and the resulting NO₂ concentration has been calculated post modelling using the DEFRA NO_x to NO₂ Calculator (v7.1)¹⁴.

- 2.38. It is noted that Version 8.1 of the tool has been released. However, it is advised that this version should only be used with the 2018 reference year background map concentrations and the EFT v10/10.1. As highlighted earlier in this section, it has not been possible to use EFT v10/10.1, and therefore v7.1 of the NO_x to NO₂ Calculator has been utilised.

VERIFICATION METHOD

- 2.39. Whilst ADMS-Roads is widely accepted for its use in assessments of this nature, it is still important that a model verification process is undertaken to confirm that the model's performance for the Site, is within an acceptable margin of error. Therefore, a comparison of modelled results with monitored results has been undertaken in line with LAQM.TG(16)¹⁵.
- 2.40. The same ADMS-Roads model and setup has been utilised as per the original air quality assessment. Details of the verification process are set out Appendix F of the original air quality assessment.

MODELLING UNCERTAINTY

- 2.41. There are many uncertainties when considering both measured and predicted pollution concentrations. The model is dependent upon the traffic data provided for the project, and should this be subject to change, so may the resulting pollution concentrations.
- 2.42. As highlighted in the *Emission Factors* section, a CURED sensitivity test has been built into the assessment, to provide a robust assessment, and reduce model uncertainty.

IMPACT CRITERIA

- 2.43. Currently there is no formal guidance on the absolute magnitude and significance criteria for the assessment of air quality impacts. However, the IAQM & EPUK (2017) document have published recommendations for describing the impact at individual receptor locations as set out in Table 2 and utilised to determine the description of any impact.

¹⁴ <http://laqm.defra.gov.uk/tools-monitoring-data/no-calculator.html>.

¹⁵ Department for Environment, Food and Rural Affairs (2018) Local Air Quality Management Technical Guidance LAQM, TG (16).DEFRA. London

Table 2 Air Quality Impact Descriptors for Individual Receptors

Long term average Concentration at receptor in assessment year.	% Change in concentration relative to Air Quality Action Level (AQAL*)			
	1	2-5	6-10	>10
75% of less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

*AQAL are considered to be the objective levels

2.44. The IAQM & EPUK (2017) document provides guidance on the severity of an impact as a descriptor. Although the impacts might be considered 'Slight', 'Moderate' or 'Substantial' at one or more receptor location, the overall effects of a proposed development may not always be judged as being significant.

2.45. The judgement of the overall significance should be made by a competent professional who is suitably qualified. A summary of the professional experience of the staff contributing to this assessment is provided in Appendix D.

3. BASELINE CONDITIONS

BACKGROUND CONCENTRATIONS

- 3.1. Projected pollutant concentrations for the future assessment year of 2022 and 2029 covering the closest OS grid squares to the chosen receptor locations are provided in Table 3 below, which have been utilised as part of this assessment. To note, the sensitivity test background concentrations have been derived using the CURED methodology.

Table 3 Summary of Background NO₂, PM₁₀ and PM_{2.5} Concentrations (µg/m³)

Source	Pollutant	2022	2029
Defra	NO ₂	10.2 – 14.3	8.3 – 10.9
CURED	NO ₂	11.1 – 15.9	9.8 – 13.8
Defra	PM ₁₀	10.5 – 12.1	10.3 – 12.4
Defra	PM _{2.5}	6.5 – 8.2	6.3 – 7.9

- 3.2. Annual mean concentrations are within the relevant objective limits for NO₂ and PM₁₀. There are no ambient air quality limit PM_{2.5}.

2022 BASELINE MODELLING RESULTS

- 3.3. The baseline concentrations of NO₂, PM₁₀ and PM_{2.5} at the specified receptor location are set out in Table 4.

Table 4 Scenario 1 - 2022 Baseline Annual Mean Concentrations (µg/m³)

Receptor	NO ₂	NO ₂ *	PM ₁₀	PM _{2.5}
1	22.54	24.30	12.87	8.02
2	31.88	34.15	15.74	9.66
3	31.82	34.08	15.76	9.66
4	30.52	32.76	15.30	9.41
5	19.35	20.91	12.12	7.59
6	18.68	20.21	11.87	7.45
7	17.07	18.49	11.52	7.26
8	24.92	27.04	13.72	8.53

9	29.04	31.32	15.12	9.29
10	27.15	29.13	14.47	8.98
11	15.02	16.20	11.87	7.17
12	16.79	19.86	13.24	8.92
13	15.63	18.73	12.69	8.63
14	29.05	31.17	14.05	8.70
15	22.13	23.86	12.59	7.86
16	32.80	34.91	14.87	9.17

*Sensitivity Test

2022 BASELINE DISPERSION MODELLING ASSESSMENT

- 3.4. The predicted annual mean concentrations of nitrogen dioxide (NO₂), PM₁₀ and PM_{2.5} are all below their respective annual mean objectives in 2022 at all receptors. The annual mean nitrogen dioxide (NO₂) concentrations are also all below 60 µg/m³, which is regarded to be an indicator that the hourly mean objective will also not be breached.
- 3.5. The annual mean PM₁₀ concentrations are below 32 µg/m³, which is an indication of potential exceedances of the 24-hour mean PM₁₀ objective and it is, therefore, unlikely that the 24-hour mean PM₁₀ objective will be exceeded.

4. OPERATIONAL PHASE IMPACT ASSESSMENT

SCREENING OF 2022 OPERATIONAL TRAFFIC IMPACTS ON ECOLOGICAL RECEPTORS

- 4.1. The predicted impacts of the operational traffic for the development, (in isolation and in conjunction with other committed developments) has been screened against the DMRB criteria. Neither scenarios represent an increase in the AADT of greater than 1,000 or more AADT or more, or an HGV AADT increase of by 200 or more on the highway links adjacent to Potter Holes Plantation nature reserve and Worsbrough Country Park nature reserve. Therefore, an impact assessment has been scoped out, and any impact would be negligible (adverse), but not significant.

SCREENING OF OPERATIONAL TRAFFIC IMPACTS ON HUMAN RECEPTORS

- 4.2. The predicted impacts of the operational traffic for the Proposed Development has been screened against the EPUK & IAQM (2017) thresholds, set out in Appendix B, and the estimates exceed the EPUK & IAQM (2017) thresholds. Therefore, a full impact assessment has been undertaken.

2022 MODELLED ROAD TRAFFIC IMPACTS

- 4.3. The predicted '2022 baseline' NO₂, PM₁₀ and PM_{2.5} concentrations at the previously specified receptor locations, have been compared to the predicted operational vehicular impacts, on air quality concentrations are set out in Table(s) 5 to 7. The table also sets out the impact descriptor at each receptor location in line with the assessment matrix in Table 2.

Table 5 2022 Impacts on NO₂ Concentrations (µg/m³)

Receptor	Annual Mean (µg/m³)			Impact Descriptor
	2022 Baseline	2022 Baseline + Operational Traffic	% Change of Objective	
NO₂				
1	22.54	20.98	-4	Negligible
2	31.88	31.99	0	Negligible
3	31.82	31.91	0	Negligible

4	30.52	30.65	0	Negligible
5	19.35	18.35	-3	Negligible
6	18.68	17.81	-2	Negligible
7	17.07	17.93	2	Negligible
8	24.92	25.08	0	Negligible
9	29.04	29.24	0	Negligible
10	27.15	27.42	1	Negligible
11	15.02	15.21	0	Negligible
12	16.79	14.49	-6	Slight
13	15.63	19.69	10	Slight
14	29.05	25.23	-10	Slight
15	22.13	20.28	-5	Negligible
16	32.80	25.70	-18	Moderate

NO₂ CURED

1	24.30	22.62	-4	Negligible
2	34.15	34.60	1	Negligible
3	34.08	34.52	1	Negligible
4	32.76	33.18	1	Negligible
5	20.91	19.87	-3	Negligible
6	20.21	19.38	-2	Negligible
7	18.49	19.54	3	Negligible
8	27.04	27.20	0	Negligible
9	31.32	31.61	1	Negligible
10	29.13	29.52	1	Negligible
11	16.20	16.38	0	Negligible
12	19.86	17.59	-6	Slight
13	18.73	22.98	11	Moderate
14	31.17	27.08	-10	Moderate
15	23.86	21.90	-5	Negligible
16	34.91	27.72	-18	Moderate

Table 6 2022 Impacts on PM₁₀ Concentrations (µg/m³)

Receptor	Annual Mean (µg/m ³)			Impact Descriptor
	2022 Baseline	2022 Baseline + Operational Traffic	% Change of Objective	
1	12.87	12.51	-1	Negligible
2	15.74	15.78	0	Negligible
3	15.76	15.79	0	Negligible
4	15.30	15.35	0	Negligible
5	12.12	11.91	-1	Negligible
6	11.87	11.72	0	Negligible
7	11.52	11.78	1	Negligible
8	13.72	13.76	0	Negligible
9	15.12	15.18	0	Negligible
10	14.47	14.56	0	Negligible
11	11.87	11.92	0	Negligible
12	13.24	12.68	-1	Negligible
13	12.69	13.79	3	Negligible
14	14.05	13.24	-2	Negligible
15	12.59	12.23	-1	Negligible
16	14.87	13.33	-4	Negligible

Table 7 2022 Impacts on PM_{2.5} Concentrations (µg/m³)

Receptor	Annual Mean (µg/m ³)			Impact Descriptor
	2022 Baseline	2022 Baseline + Operational Traffic	% Change of Objective	
1	8.02	7.94	-1	Negligible
2	9.66	9.81	0	Negligible
3	9.66	9.81	0	Negligible
4	9.41	9.57	0	Negligible
5	7.59	7.60	0	Negligible
6	7.45	7.49	0	Negligible
7	7.26	7.53	1	Negligible
8	8.53	8.68	0	Negligible
9	9.29	9.46	0	Negligible
10	8.98	9.15	0	Negligible

11	7.17	7.32	0	Negligible
12	8.92	8.73	-1	Negligible
13	8.63	9.38	2	Negligible
14	8.70	8.37	-2	Negligible
15	7.86	7.79	-1	Negligible
16	9.17	8.42	-4	Negligible

NITROGEN DIOXIDE RESULTS

- 4.4. The modelled nitrogen dioxide, (NO₂) concentrations in Table 5, show that with both the official emission factors and the 'sensitivity' emissions, nitrogen dioxide (NO₂) concentrations, at all receptor locations are below the annual mean objective (40 µg/m³).
- 4.5. Furthermore, all the annual mean nitrogen dioxide (NO₂) concentrations are below 60 µg/m³ and it is unlikely that the 1-hour mean nitrogen dioxide objective will be exceeded.
- 4.6. Using the matrix in Table 2, the nitrogen dioxide (NO₂) impacts are predicted to be 'moderate (beneficial) to moderate (adverse)' but not significant.

PM₁₀ & PM_{2.5} RESULTS

- 4.7. The modelled PM₁₀ concentrations do not predict an exceedance of the annual mean objective, (40 µg/m³). Using the matrix in Table 2, the impacts are anticipated to be 'negligible (beneficial to adverse)' but not significant.

For PM₁₀, the following equation can be used to derive the number of days that the daily mean limit (of 50µg.m³) is likely to be exceeded:

$$\text{No. 24 hour exceedances} = -18.5 + 0.00145 \times \text{annual mean}^3 + \left(\frac{206}{\text{annual mean}} \right)$$

The highest annual mean PM₁₀ concentration in the assessment tables is 15.79µg/m³. Based on the above formula, this predicts 0 exceedance days, which is below the 35-days annual limit. It is therefore anticipated that none of the receptors would be exposed to any material impact from the short-term concentrations of PM₁₀.

- 4.8. Along with the modelled PM_{10} concentrations, no exceedances are anticipated of the annual mean $PM_{2.5}$ objective. Using the matrix in Table 2, it can be derived that the impacts are anticipated to be “negligible (beneficial to adverse)” but not significant.

OTHER OPERATIONAL IMPACTS

- 4.9. Plot 1 of the proposals already has a potential end occupier based upon the B8 class land use. Therefore, the main air quality impacts associated with this land use primarily relate to vehicular traffic.

5. CULUMATIVE ASSESSMENT

2029 CULUMATIVE AIR QUALITY CONCENTRATIONS

- 5.1. The predicted cumulative air quality concentrations in 2029 (based upon the scenario set out in Section 3), at the previously specified receptor locations are set out in Table 8.

Table 8 2029 Cumulative Annual Mean Concentrations

Receptor	NO ₂	NO ₂ *	PM ₁₀	PM _{2.5}
1	14.69	18.95	12.35	7.60
2	21.49	28.71	15.72	9.49
3	21.44	28.64	15.73	9.49
4	20.68	27.60	15.25	9.24
5	13.17	16.84	11.73	7.26
6	13.04	16.72	11.60	7.19
7	13.17	17.01	11.68	7.23
8	17.34	22.99	13.54	8.31
9	19.76	26.28	15.06	9.12
10	18.39	24.25	14.49	8.84
11	11.94	15.03	12.08	7.18
12	12.01	15.36	13.16	8.38
13	15.13	19.62	14.43	9.09
14	17.26	22.53	13.14	8.05
15	14.36	18.53	12.09	7.46
16	17.94	23.56	13.38	8.18
17	19.89	25.87	17.03	10.51
18	12.22	15.52	11.39	7.07

*Sensitivity Test

2029 CULUMATIVE DISPERSION MODELLING ASSESSMENT

- 5.2. The predicted annual mean concentrations of nitrogen dioxide (NO₂), PM₁₀ and PM_{2.5} are all below their respective annual mean objectives at all receptors. The annual mean nitrogen dioxide (NO₂) concentrations are also all below 60 µg/m³, which is regarded to be an indicator that the hourly mean objective will also not be breached.

- 5.3. The annual mean PM₁₀ concentrations are below 32 µg/m³, which is an indication of potential exceedances of the 24-hour mean PM₁₀ objective and it is, therefore, unlikely that the 24-hour mean PM₁₀ objective will be exceeded.
- 5.4. Receptor no(s). 17 & 18, which are representative of potential future residential receptors on Plot 6 of the Hoyland West Masterplan, are predicted to be within acceptable air quality concentrations for residential receptors.

6. MITIGATION

OPERATIONAL PHASE

- 6.1. As set out in Section 4, the potential operational impacts are not considered to be of an order that would adversely impact air quality concentrations. Based upon the EPUK & IAQM (2017) guidance, the impact would be moderate (adverse) to moderate (beneficial), but not significant.
- 6.2. Detailed operational measures have been set out in the original Air Quality Assessment (ref: Hoyland West – Air Quality Assessment dated June 2020 - VC-103210-AQ-RP-0001) which would aid in reducing the impacts associated with the operational vehicular movements.

7. CONCLUSIONS

- 7.1. Vanguardia were appointed by Newlands Developments to undertake an addendum air quality assessment to address the comments raised by BMBC in respect to the air quality assessment (ref: Hoyland West – Air Quality Assessment dated June 2020 - VC-103210-AQ-RP-0001). The original assessment supported a hybrid planning application for employment development in Hoyland, on land identified as ES13 in Barnsley's Local Plan. Planning permission is sought for a new link road through the site and 103,083 sqm of employment land use, comprising a mix of B1, B2 and B8.
- 7.2. A quantitative assessment has been undertaken for the operational phase of Plot 1 of the proposed development (In conjunction with other committed developments) in 2022, when the plot is anticipated to be first operational. The operational vehicular impacts of Plot 1 in 2022 upon human receptors are anticipated to range from 'moderate (beneficial) to moderate (adverse)' but not significant. The operational vehicular impacts upon ecological receptors are anticipated to be negligible but not significant.
- 7.3. A cumulative assessment of Plots 1, 2, 3 (Proposed Development), 4, 5 & 6 of the Hoylands West Masterplan and Hoylands South Masterplan and committed developments in 2029 indicates compliance of the air quality objectives.
- 7.4. Mitigation measures have been set out in original air quality assessment which would aid in reducing both impacts and overall emissions.
- 7.5. The proposed development is therefore expected to comply with all relevant air quality policy.

APPENDIX A – EMAIL CORRESPONDANCE

Simon Grubb

Subject: RE: 2020/0647, Hybrid planning application, land west of Sheffield Road,
Operational Phase Air Quality Assessment

From: Shields , Chris (TECHNICAL OFFICER (POLL)) <ChrisShields@barnsley.gov.uk>
Sent: 28 August 2020 16:54
To: Simon Grubb <Simon.Grubb@vanguardia.co.uk>
Cc: Ward , Elaine (SENIOR PLANNING OFFICER) <ElaineWard@barnsley.gov.uk>; Thomas , Jason (SENIOR
TRANSPORT PLANNER) <jasonthomas@barnsley.gov.uk>; Gardham , James (ENVIRONMENTAL HEALTH OFFICER)
<JamesGardham@barnsley.gov.uk>
Subject: RE: 2020/0647, Hybrid planning application, land west of Sheffield Road, Operational Phase Air Quality
Assessment

Simon,

Your latest comments in green are acceptable.

Thanks and Regards,

Chris

Chris Shields
Technical Officer (Pollution Control), Regulatory Services
Business Unit 10
Public Health Directorate
Barnsley Council

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<https://www.gov.uk/guidance/wuhan-novel-coronavirus-information-for-the-public>
<https://publichealthmatters.blog.gov.uk/2020/01/23/wuhan-novel-coronavirus-what-you-need-to-know/>

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- [NHS guidance](#)
- [NHS Frequently Asked Questions](#)
- [Advice for people travelling](#)
- [Guidance for non-clinical settings](#) (education, employers and businesses, social, community care and residential settings)

From: Simon Grubb <Simon.Grubb@vanguardia.co.uk>
Sent: 28 August 2020 16:16
To: Shields , Chris (TECHNICAL OFFICER (POLL)) <ChrisShields@barnsley.gov.uk>
Cc: Ward , Elaine (SENIOR PLANNING OFFICER) <ElaineWard@barnsley.gov.uk>; Thomas , Jason (SENIOR
TRANSPORT PLANNER) <jasonthomas@barnsley.gov.uk>; Gardham , James (ENVIRONMENTAL HEALTH OFFICER)
<JamesGardham@barnsley.gov.uk>
Subject: RE: 2020/0647, Hybrid planning application, land west of Sheffield Road, Operational Phase Air Quality
Assessment

Chris,

Please see my further comments in [green](#).

I trust this is all acceptable.

Regards,
Simon

From: Shields , Chris (TECHNICAL OFFICER (POLL)) <ChrisShields@barnsley.gov.uk>
Sent: 28 August 2020 15:01
To: Simon Grubb <Simon.Grubb@vanguardia.co.uk>
Cc: Ward , Elaine (SENIOR PLANNING OFFICER) <ElaineWard@barnsley.gov.uk>; Thomas , Jason (SENIOR TRANSPORT PLANNER) <jasonthomas@barnsley.gov.uk>; Gardham , James (ENVIRONMENTAL HEALTH OFFICER) <JamesGardham@barnsley.gov.uk>
Subject: RE: 2020/0647, Hybrid planning application, land west of Sheffield Road, Operational Phase Air Quality Assessment

Simon,

Thank you for your e-mail below. Apologies for the delay in responding, my latest comments are added below in [blue](#).

Regards,

Chris

Chris Shields
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- [Advice for people travelling](#)
- [Guidance for non-clinical settings](#) (education, employers and businesses, social, community care and residential settings)

From: Simon Grubb <Simon.Grubb@vanguardia.co.uk>
Sent: 26 August 2020 09:48
To: Shields , Chris (TECHNICAL OFFICER (POLL)) <ChrisShields@barnsley.gov.uk>
Subject: RE: 2020/0647, Hybrid planning application, land west of Sheffield Road, Operational Phase Air Quality Assessment

Hi Chris,

Further to our chat on Monday I have had a discussion internally and have provided comments in red below on how your points below we will address / considered.

I wanted to get this over ASAP so you can provide any further comment before you went on annual leave.

Can make myself available if you wish to discuss in the first instance.

Kind regards,

SIMON GRUBB
ASSOCIATE

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VANGUARDIA

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From: Shields, Chris (TECHNICAL OFFICER (POLL)) <ChrisShields@barnsley.gov.uk>

Sent: 21 August 2020 09:33

To: Ward, Elaine (SENIOR PLANNING OFFICER) <ElaineWard@barnsley.gov.uk>

Cc: McCarthy, Lucie (SPATIAL PLANNING PROJECT MANAGER) <LucieMcCarthy@barnsley.gov.uk>; Thomas, Jason (SENIOR TRANSPORT PLANNER) <jasonthomas@barnsley.gov.uk>; Gardham, James (ENVIRONMENTAL HEALTH OFFICER) <JamesGardham@barnsley.gov.uk>

Subject: RE: 2020/0647, Hybrid planning application, land west of Sheffield Road, Operational Phase Air Quality Assessment

Elaine, Lucie,

Further to our previous correspondence regarding the operational phase air quality assessment and our internal meeting earlier this week, I now understand that a 2021 scenario with the Hermes site fully operational is now going to be assessed for air quality impact and I look forward to this information in due course. **As mentioned earlier in the week, this will be assessed in a 2022 scenario (when it is anticipated to come forward). Agreed**

Following our internal meeting however with planners and transport planners, additional issues have come to light which now need further consideration within the operational phase air quality assessment, these being:

1. Consideration of the air quality impact of plots 4, 5 and 6 as detailed within the Hoyland West Masterplan on sensitive receptors, in addition to the already considered plots (1, 2 and 3), within the traffic and air quality assessments.
Plots 4 / 5 & 6 will be included within a sensitivity assessment to quantify the overall concentrations at the previously identified modelling receptor locations. This is acceptable
2. Consideration of the air quality Impact of plots 1-5 (commercial/industrial) on plot 6 (residential). Suitable sensitive worst-case residential receptors shall be identified within Plot 6 for assessment, taking into account traffic generated by all plots on these residential receptors. If no receptor locations can be identified at this stage, I recommend that the assessment evaluates concentrations at the nearest Plot 6 site boundary lines in relation to the location of the proposed link road (and other roads which may have impact) as a worst case scenario.

Further to the previously identified modelling receptor locations would receptor no.13 (E:435385 N:399957) suffice as a representative receptor location for the plot no.6 boundary to the link road. I can also add a receptor on the Sheffield Road side (E:435656 N:400033)? This will be considered within a sensitivity assessment (along with the operation of Hoylands south) Could you supply a map showing the location of receptor 13 in relation to plot 6 to confirm that receptor 13 is suitable? I have further reviewed the proposed modelling location and think the attached location (E: 435435 N: 399906) would offer a better worst case scenario than Receptor 13 (based upon the field boundaries and plots on <https://www.barnsley.gov.uk/media/14380/hoyland-consultation.pdf>).

3. Information has now been received from the Hermes site applicant regarding the diurnal variation of HGV movements from their sister site at Rugby (see attached), which have been agreed to be used as a basis for quantifying HGV operational movements associated with the proposed Hoyland Hermes site within the traffic assessment (with addition of appropriate scaling factors to take account of the ~ 1/3 size increase with the proposed Hoyland Hermes site compared to their existing Rugby site). Due to the potentially significant number of HGV movements from the Hermes site therefore, the operational phase air quality assessment shall clearly demonstrate that these vehicle movements have been taken into account, along with consideration of the Hermes fleet characteristics (e.g. fleet age, Euro specification).

In respect to the fleet characteristics. The CURED approach has been undertaken to provide a reasonable worst case assessment, to ensure a robust assessment has been undertaken. Due to the historical issues with the under performance of the Defra Emission Factor Toolkits this is considered an appropriate route to take for air quality assessment. Further details of the CURED method will be set out in the addendum air quality assessment. On the basis of this approach I don't think the breaking down of the Hermes fleet would provide any benefit, and has the risk of change in time (which I would envisage for the better). This would therefore represent the most robust reasonable worst case assessment. If the CURED approach can demonstrate a worst case scenario when compared to the issues discussed in my paragraph 3 above, then this would be acceptable. However a methodology / explanation would have to be submitted which clearly demonstrates this. I note also that Defra have yesterday announced that the emissions factor toolkit has been updated to EFT 10.1, which updates f-NO₂ values based on the latest available 'Primary NO₂ Emission factors for road transport (2020 version)' from the National Air Emissions Inventory (NAEI). Will you be using this latest version of the toolkit and how will the impact of the use of CURED for sensitivity analysis?

The CURED method offers a 'reasonable' worst case assessment (based upon the current knowledge of real word test results of emissions). I can add some further justification within the addendum assessment.

It is noted within my drafted addendum that a new Emission Factor Toolkit has been released (v10.0/10.1). However, CERC (ADMS developer) have advised there is an issue with certain factors within v10.0 and therefore can't provide a model update to ADMS-Roads yet. Therefore, the same Emission Factor Toolkit (v9.0), which was used for the previous air quality assessment has been utilised. This also allows direct comparison between the modelling results. It is also noted that a new version of the NOx:NO₂ calculator (v8.1) has been released. However, it is advised that this version should only be used with the 2018 reference year background map concentrations and the EFT v10/10.1. As highlighted above, it has not been possible to use EFT v10, and therefore v7.1 of the NOx:NO₂ calculator has been utilised in conjunction with Emission Factor Toolkit v9.0 and 2017 reference year background map concentrations (as recommended by defra).

Discussions with our Transport Planners have highlighted that the methodology used to derive the AADT for the air quality assessment will therefore have to be representative of the full daily profile of operational movements. It is noted that any agreement of 'peak hour' trip generations and its associated uplift for AQ assessment purposes may lead to an underrepresentation of operational movements given the propensity for much higher operational vehicle proportions across a range of daily hours of operation. This issue therefore needs to be considered and set out within the operational phase air quality assessment.

I understand from speaking to the project transport consultant that the profile has been incorporated within the AADT and it is not the peak hour trips factored up. This is acceptable

Furthermore, it is possible that the supporting traffic assessment may also be subject to further revision – I understand that discussions are currently on going to confirm the quantum of employment for the Hermes site, which may have further impact on the traffic assessment outputs.

4. I understand that the council's Hoyland South Masterplan is currently intended to be adopted either later this year or next year, which will be residential development with ~ 1100 properties, with the additional traffic generated by this future development using the local road network, including the proposed link road. The operational phase air quality assessment has therefore to take account of this impact on the sensitive receptors. I therefore suggest further technical discussions to agree a methodology for a "sensitivity test" to account for this additional traffic generated with the air quality consultant. The rationale for this is that the additional traffic from Hoyland South would create additional emissions and subsequently increased air pollution concentrations, which would have additional impact on those receptors in particular close to the link road (including those residential properties theoretically close to the link road within plot 6). Therefore, whilst Hoyland South is not committed development there may be an issue with the link road alignment when emissions from this additional traffic are also taken into account.

It may be that there is not a sufficiently significant air quality impact from this additional traffic to warrant further consideration of the link road alignment (i.e. moving the alignment of the link road a little further away from sensitive receptors), but I think consideration and assessment of this issue shall be given nevertheless.

This was be included within a sensitivity test, along with Plots 4 / 5 & 6. Agreed

I am happy to have further discussions with the air quality consultant in order to progress these issues, whilst noting that there may still be outstanding issues with the traffic assessment.

Please forward this onto the relevant parties.

Chris

Chris Shields
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From: Shields , Chris (TECHNICAL OFFICER (POLL))

Sent: 11 August 2020 14:23

To: Ward , Elaine (SENIOR PLANNING OFFICER) <ElaineWard@barnsley.gov.uk>

Cc: McCarthy , Lucie (SPATIAL PLANNING PROJECT MANAGER) <LucieMcCarthy@barnsley.gov.uk>; Thomas , Jason (SENIOR TRANSPORT PLANNER) <jasonthomas@barnsley.gov.uk>; Gardham , James (ENVIRONMENTAL HEALTH

OFFICER) <JamesGardham@barnsley.gov.uk>

Subject: 2020/0647, Hybrid planning application, land west of Sheffield Road, Operational Phase Air Quality Assessment

Elaine,

I have undertaken an initial appraisal of the operational phase air quality assessment (AQA) for the above. I have also discussed the links between the traffic assessment for 2020/0647 and AQA with Jason. As you can gather this is quite a complex situation with several issues I am trying to work through.

Consequently, my initial comments are below:

The assessment undertakes an operational phase assessment for 2029 for the 3 plots of land (plots 1, 2 and 3 of the Barnsley West Masterplan) within this planning application. This includes the operational phase for the proposed Hermes development (Plot 1). However, I understand that the Hermes application, subject to approval, is intended to be operational several years prior to 2029. Construction phase traffic AQAs have been undertaken for 2020 (infrastructure) and 2021 (buildings), so I assume that the Hermes site could be operational as early as 2021, following construction of the link road?

It appears that an operational phase AQA has not been undertaken for opening year for the Hermes site (2021?). This maybe important as the emissions from the significant number of vehicles using the Hermes site in 2021 will very likely be greater than the emissions from a similar number of vehicles using the Hermes site in 2029, due to continuing reduction in emissions from vehicles with time. Also background air pollution concentrations will be higher in 2021 compared to later years.

I would therefore require this assessment to be undertaken, and am happy for the the applicant's air quality consultant to contact me regarding this issue.

I note the process for adoption of the Hoyland West Masterplan Framework and this planning application are running concurrently. I note also that the Masterplan Framework includes 2 further employment plots (plots 4 and 5) and 1 housing plot (plot 6). I do think there should be consideration on including the impact of these further plots on air quality, in conjunction with plots 1 to 3? I have copied Lucie into this e-mail for her thoughts and clarification on this also.

There may be other issues as I take a more detailed look at this.

Happy to discuss further.

Regards,

Chris

Chris Shields
Technical Officer (Pollution Control), Regulatory Services
Business Unit 10
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Mobile: 07795 305865
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Mail: PO Box 634, Barnsley, S70 9FH

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APPENDIX B - EPUK & IAQM PLANNING FOR AIR QUALITY GUIDANCE

The guidance issued by EPUK & IAQM (2017) is comprehensive in its explanation of the place of air quality in the planning regime. The key section of the guidance not previously discussed within Section 3 are set out below.

AIR QUALITY AS A MATERIAL CONSIDERATION

The guidance states:

"Any air quality issue that relates to land use and its development is capable of being a material planning consideration. The weight, however, given to air quality in making a planning application decision, in addition to the policies in the local plan, will depend on such factors as:

- The severity of the impacts on air quality;
- The air quality in the area surrounding the proposed development;
- The likely use of the development, i.e. the length of time people are likely to be exposed at that location; and
- The positive benefits provided through other material considerations."

SCREENING

The guidance sets out two stages of screening criteria that can be used to identify whether a detailed air quality assessment is required, in terms of the impact of the development on the local area. The first stage is that you should proceed to the second stage if any of the follow apply:

- 10 or more residential units or a site area of more than 0.5 ha residential use; or
- More than 1,000 m² of floor space for all other uses or a site area greater than 1 ha

Coupled With:

- The development has more than 10 parking spaces; or
- The development will have a centralised energy facility or other centralised combustion process

If the above do not apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area. If they do apply then you proceed to stage 2, the criteria for which are set out below.

- The development will lead to a change in light vehicle flows of more than 100 AADT within or adjacent to an Air Quality Management Area (AQMA) or more than 500 AADT elsewhere;
- The development will lead to a change in heavy vehicle flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- Where the change is 5m or more and the road is within an AQMA;
- Introduction of a new junction that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts;
- The development will introduce or change a bus station where bus flows will change by more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- The development will have an underground car park with more than 100 movements per day (total in and out) with an extraction system that exhausts within 20 m of a relevant receptor; or
- Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.

Should none of the above apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area.

APPENDIX C – TRAFFIC DATA

Hoyland

Traffic Flows for Air Quality Assessment

Development Traffic Flows - 24hr AADT

Location	Link	2019 Base			2022 Do Min			2022 Dev Flows (Hermes)			2022 With Dev (Hermes)		
		24hr AADT	24hr AADT HGV	HGV %	24hr AADT	24hr AADT HGV	HGV %	24hr AADT	24hr AADT HGV	HGV %	24hr AADT	24hr AADT HGV	HGV %
		2-Way Flow	2-Way Flow	2-Way Flow	2-Way Flow	2-Way Flow	2-Way Flow	2-Way Flow	2-Way Flow	2-Way Flow	2-Way Flow	2-Way Flow	2-Way Flow
A	M1 North off-slip	13,070	720	6%	13,815	793	6%	446	316	71%	14,261	1,108	8%
	M1 North on-slip	14,498	866	6%	15,381	943	6%	406	275	68%	15,787	1,218	8%
B	M1 South off-slip	11,635	607	5%	12,273	663	5%	293	196	67%	12,566	860	7%
	M1 South on-slip	12,362	784	6%	13,098	839	6%	268	171	64%	13,366	1,011	8%
C	New Road	3,470	70	2%	3,575	72	2%	19	0	0%	3,594	72	2%
D	Tankersley Lane	3,811	25	1%	3,927	26	1%	199	0	0%	4,125	26	1%
E	Sheffield Road	14,441	594	4%	15,721	612	4%	0	0	#DIV/0!	11,109	380	3%
F	Sheffield Road	14,441	594	4%	15,721	612	4%	0	0	#DIV/0!	11,109	380	3%
G	Sheffield Road	11,768	373	3%	12,524	384	3%	276	0	0%	2,358	41	2%
H	Sheffield Road	11,768	373	3%	12,126	384	3%	357	0	0%	2,040	41	2%
I	Sheffield Road	11,768	373	3%	12,126	384	3%	364	0	0%	12,490	384	3%
J	Tankersley Lane (west of new link road)	6,484	57	1%	6,681	59	1%	217	0	0%	6,899	59	1%
K	A61 (North of The Walk, Birdwell)	21,204	935	4%	21,848	964	4%	260	103	40%	22,108	1,067	5%
L	Link Road (southern Access)	0	0	#DIV/0!	0	0	#DIV/0!	721	0	0%	11,163	343	3%
M	Link Road (south Tankersley Lane)	0	0	#DIV/0!	0	0	#DIV/0!	2,741	1,676	61%	13,183	2,019	15%
N	Link Road (north Tankersley Lane)	0	0	#DIV/0!	0	0	#DIV/0!	2,524	1,676	66%	15,593	2,081	13%
O	Link Road (northern Access)	0	0	#DIV/0!	0	0	#DIV/0!	2,524	1,676	66%	15,593	2,081	13%
17	M1 southbound (south of J36)	53,294	4,121	8%	55,268	4,277	8%	268	171	64%	55,536	4,448	8%
18	M1 northbound (south of J36)	52,355	4,115	8%	54,225	4,277	8%	293	196	67%	54,518	4,474	8%
19	M1 northbound (north of J36)	55,218	4,374	8%	57,333	4,557	8%	406	275	68%	57,739	4,832	8%
20	M1 southbound (north of J36)	54,002	4,057	8%	55,985	4,231	8%	446	316	71%	56,431	4,546	8%
21	M1 northbound (Through / under J36)	40,720	3,508	9%	41,952	3,614	9%	0	0	#DIV/0!	41,952	3,614	9%
22	M1 southbound (Through / under J36)	40,932	3,337	8%	42,170	3,438	8%	0	0	#DIV/0!	42,170	3,438	8%

Hoyland

Traffic Flows for Additional Air Quality Assessment

Development Traffic Flows - 24hr AADT

h Dev Sensitivity Test (Includes Plots 4,5,6 and Hoylar

Location	Link	24hr AADT	24hr AADT HGV	HGV %
		2-Way Flow	2-Way Flow	2-Way Flow
A	M1 North off-slip	15,609	1,243	8%
	M1 North on-slip	17,186	1,351	8%
B	M1 South off-slip	13,670	953	7%
	M1 South on-slip	14,489	1,108	8%
C	New Road	3,867	76	2%
D	Tankersley Lane	5,061	28	1%
E	Sheffield Road	11,862	402	3%
F	Sheffield Road	11,862	402	3%
G	Sheffield Road	3,306	44	1%
H	Sheffield Road	3,275	44	1%
I	Sheffield Road	17,821	677	4%
J	Tankersley Lane (west of new link road)	8,060	62	1%
K	A61 (North of The Walk, Birdwell)	23,962	1,153	5%
L	Link Road (southern Access)	15,437	633	4%
M	Link Road (south Tankersley Lane)	17,553	2,361	13%
N	Link Road (north Tankersley Lane)	19,567	2,427	12%
O	Link Road (northern Access)	19,984	2,597	13%
17	M1 southbound (south of J36)	59,125	4,747	8%
18	M1 northbound (south of J36)	58,075	4,778	8%
19	M1 northbound (north of J36)	61,591	5,177	8%
20	M1 southbound (north of J36)	60,245	4,882	8%
21	M1 northbound (Through / under J36)	44,405	3,825	9%
22	M1 southbound (Through / under J36)	44,636	3,639	8%

APPENDIX D – STATEMENT OF EXPERTISE

The primary authors have the following experience within the field of air quality.

Simon Grubb MA, BSc (Hons), MEnvSci, MIAQM

Simon is a full member of the Institute of Environmental Sciences and the Institute of Air Quality Management. Simon has 13 years extensive experience of working within the private sector delivering a wide range of environmental assessments including air quality and noise impact assessments. Simon also has knowledge and experience in Town and County Planning and Transport Planning.

David Sutton MSc, BSc (Hons), CEnv, MEnvSci, MIAQM

David is a chartered environmentalist, and a full member of the Institute of Environmental Sciences and the Institute of Air Quality Management. David has over 12 years' experience working in public sector Environmental Health / Environmental Protection and over 7 years experience delivering environmental assessments and managing multidisciplinary teams within the private sector.



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