TECHNICAL NOTE: AIR QUALITY

Project name	Bicester Unit B - Ocado
Discipline	Air Quality
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Unit B, Symmetry Park – Air Quality

1. OVERVIEW

Hydrock has been instructed by Tritax Symmetry to prepare an air quality technical note to support the proposed application at Unit B Symmetry Park, Bicester.

2. PLANNING HISTORY

The planning history of the site includes a hybrid planning permission granted in November 2016 (Planning ref: 16/00861/HYBRID) comprising:

- Full planning permission for 18,394 m^2 of logistics floor space, within class B8, with ancillary class B1 (A) offices, together with access from A41 Aylesbury Road, associated site infrastructure including lorry parking, landscaping, amenity open space and sustainable drainage and private sewage treatment plant, allocated as Zone 1; and
- Outline planning permission for up to 44,314 m^2 of logistics floor space, within class B8, with ancillary class B1 (A) offices, together with associated site infrastructure including lorry parking, landscaping, amenity open space, sustainable drainage and private sewage treatment plant, allocated as Zone 2.

Full planning permission (Planning ref: 18/00091/F) was later sought for Unit B for 14,200m^2 of warehousing (B8) and ancillary class B1(a) offices of 929m^2 and 26m^2 gatehouse totalling 15,155m^2.

Full planning permission (Planning ref: 19/00388/F) was also granted in September 2019 for Unit C to include 29,350m^2 of logistics floor space, including ancillary class B1 (a) offices (1,688 sqm), erection of security gatehouse (26m^2), security fence, sprinkler tank and pump house, accessed from the existing Symmetry Park estate road, associated site infrastructure including external service yard, lorry parking, landscaping, amenity open space including 10m green corridor with 3m foot path and cycle link to wider Bicester 12 and storm water drainage infrastructure and private sewage treatment plant.

In addition to the above, a full planning application proposing the development of land to the northeast of the previously approved and partially built out Symmetry Park was approved in 2020. The proposals were for 4,635 m^2 of logistics floor space, within Class B8 of the Town and Country Planning Use class order 1987, including ancillary Class B1 (a) office, (592m^2), a customer collection facility (112m^2), staff mess pod (142m^2), and associated infrastructure including external service yard, lorry, van and staff car parking, re-fuelling facility, fencing, landscaping, storm water drainage and private sewage treatment plant, with an access road off Morrell

Way, to accommodate a parcel distribution depot, to be operated by the DPD Group Ltd'. The unit is currently under construction.

3. PROPOSED DEVELOPMENT

The development proposal are to facilitate an Ocado operation, and consist of changes to the yard area approved for Unit B under Planning Ref: 18/00091/F as follows:

1. Alterations and enlargement of existing service yard to provide additional spaces for car and van parking, new access point to van parking and dispatch area, new access to staff parking area;
2. Built development, comprising building and plant, associated with the proposed occupation of Ocado comprising: Vehicle Maintenance Unit (VMU); Technical Services Block (TSB); Vehicle Inspection Hub (VIH); Comms Container (CCR); Sprinkler Tanks and Pump House; Vehicle wash (with underground waste water tank) and Van Fuel Station (with canopy over); smoking and vaping shelter; compaction area (with canopy over) and cycle store;
3. Site fencing enclosure with electricity supply substation; standby generator; enclosed storage units and Pallet Stack;
4. Realignment of existing cycle and footpath between A41 and Site boundary with Wretchwick Green, including landscaping; and
5. Minor realignment of existing storm water drains and installation of storm water attenuation tanks.

4. LEGISTLATIVE / POLICY CONTEXT

UK Legislation

The targets and limit values set within the European Union Directive on ambient air quality and cleaner air for Europe (2008/50/EC)[1] were transposed into UK law through the Air Quality Standards Regulations 2010. These set out how the government has interpreted the EU directives. One of the main additions the regulatory framework for $PM_{2.5}$.

The Air Quality Strategy 2007 Volume 1[2] outlines the National Air Quality Standard (AQS) concentrations and National Air Quality Objectives (NAQOs) that should be achieved. A summary of the AQS concentrations and NAQOs of relevance to this technical note is provided below, in Table 1:

Table 1 - UK Air Quality Standards

Pollutant	units	Averaging Period	Air Quality Standard (AQS)	National Air Quality Objectives (NAQO)
Nitrogen dioxide (NO_2)	µg/m^3	1 Hour Mean	200 µg/m^3	Not to be exceeded more than 18 times in a year.
		Annual Mean	40 µg/m^3	
Particulate matter (PM_{10})	µg/m^3	24 Hour Mean	50 µg/m^3	Not to be exceeded more than 35 times in a year.
		Annual Mean	40 µg/m^3	
Particulate matter ($PM_{2.5}$)	µg/m^3	Annual Mean	25 µg/m^3	25 µg/m^3

1 EC, "Directive 2008/50/EC of the European Parliament and of the Council," May 21, 2008, 44.

2 Defra, "The Air Quality Strategy for England, Scotland, Wales and Northern Ireland - Volume 1" (Department for Food, Environment and Rural Affairs (Defra), July 2007), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf.

Local Air Quality Management

Obligations under the Environment Act 1995[3] require local authorities to declare an Air Quality Management Area at locations where an objective concentration has been predicted to be exceeded. In setting an AQMA, the local authority must then formulate an Air Quality Action Plan (AQAP) to seek to reduce pollution concentrations to values below NAQOs.

The closest AQMA to the application site is "AQMA No.4 Bicester" which was declared by Cherwell District Council (CDC) in 2015 for exceedances of the annual mean NAQO for NO_2. A map of the Bicester AQMA is provided below in Figure 1:

Figure 1 – AQMA boundary in relation to the Site

3 Environment Agency, "Environment Act 1995" (The Environment Agency, 2002), http://www.legislation.gov.uk/ukpga/1995/25/contents.

CDC's AQAP (2017)[4] provides the details of priority measures taken by the council to improve air quality in the AQMAs. These measures include:

- Priority 1 – Strengthening local policy to improve air quality and its role in protecting health;
- Priority 2 – Reducing NO_x emissions from cars in all AQMAs;
- Priority 3 – Ensuring new developments encourage and facilitate low emission and alternative transport;
- Priority 4 – Ensuring transport infrastructure delivery takes account of air quality improvement potential within AQMAs;
- Priority 5 – Raising awareness of poor air quality and encouraging improvement actions by vehicle users and fleet managers.

National Planning Policy Framework

The National Planning Policy Framework (nPPF)[5] sets out the Government's planning policy for England. It requires planning decisions for any new development to prevent new and existing development from contributing to, or being put at risk from, unacceptable levels of air pollution (paragraph 170). It also states that planning decisions should sustain and contribute towards compliance with relevant limit values or national objectives for air pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones (paragraph 181), and the cumulative impacts from other sites (paragraph 180).

Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. Furthermore, planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.

Planning Practice Guidance

Reference ID 32 (Air Quality) of the National Planning Practice Guidance (nPPG)[6] which was updated in November 2019, provides guiding principles on how planning can take account of the impact of new development on air quality. The PPG summarises the importance of air quality in planning and the key legislation relating to it.

Local planning policy

There are no designated policies on air quality in the adopted Cherwell Local Plan 2011 – 2031[7] However, air quality is mentioned in the context of Policy BSC 8: Securing Health and Well-Being, and Policy ESD 10: Protection and Enhancement of Biodiversity and the Natural Environment.

4 Cherwell District Council, "Cherwell District Council Air Quality Action Plan -2017," March 1, 2017.

5 Ministry of Housing, Communities and Local Government, "National Planning Policy Framework," February 2019, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/740441/National_Planning_Policy_Framework_web_accessible_version.pdf.

6 Ministry of Housing, Communities & Local Government, "Reference ID (32) Air Quality" (Ministry of Housing, Communities & Local Government, 2019), https://www.gov.uk/guidance/air-quality--3.

7 Cherwell District Council, "The Cherwell Local Plan 2011 – 2031," July 1, 2017.

5. PREVIOUS ASSESSMENT WORK

The impact of the accepted scheme (unit A/B/C) on air quality was assessed through an Environmental Statement (ES) chapter as part of the original Outline Planning Permission application (ref. 16/00861/HYBRID), which was granted on the 8th November 2016.

The main conclusion within the 2016 HYBRID ES air quality chapter is presented below:

> *"Concentrations of the pollutants of potential concerns (nitrogen dioxide (NO2) and fine particulates, PM10 and PM2.5) have been predicted for a number of worst-case locations representing existing properties adjacent to the road network that will be used by vehicles accessing the Site. Predicted concentrations are below the relevant national air quality objectives at all of the existing receptor locations without and with the proposed development in place. The operational effects of the proposed development are therefore judged to be negligible."*

Following approval, a Hydrock technical report (ref: SPC-HYD-XX-ZZ-RP-Y-2001_P03) assessed the impact due to the initial changes made to unit C. Hydrock's technical note concluded:

> *"It is considered that the elements of the development that now fall outside the parameters plan will not give rise to any change to the level of significance of air quality effects beyond those previously identified in the 2016 HYBRID ES."*

6. UPDATED BASELINE

Local Air Quality Monitoring Data

CDC monitoring Nitrogen dioxide (NO_2) concentrations across the district through a network of diffusion tubes.

Table 2 shows the annual mean monitored concentrations of NO_2 at monitoring locations in the vicinity of the site on routes associated with the operational assignment of vehicle movements owing to the proposals, or within the Bicester AQMA. The monitoring locations are shown in Figure 2.

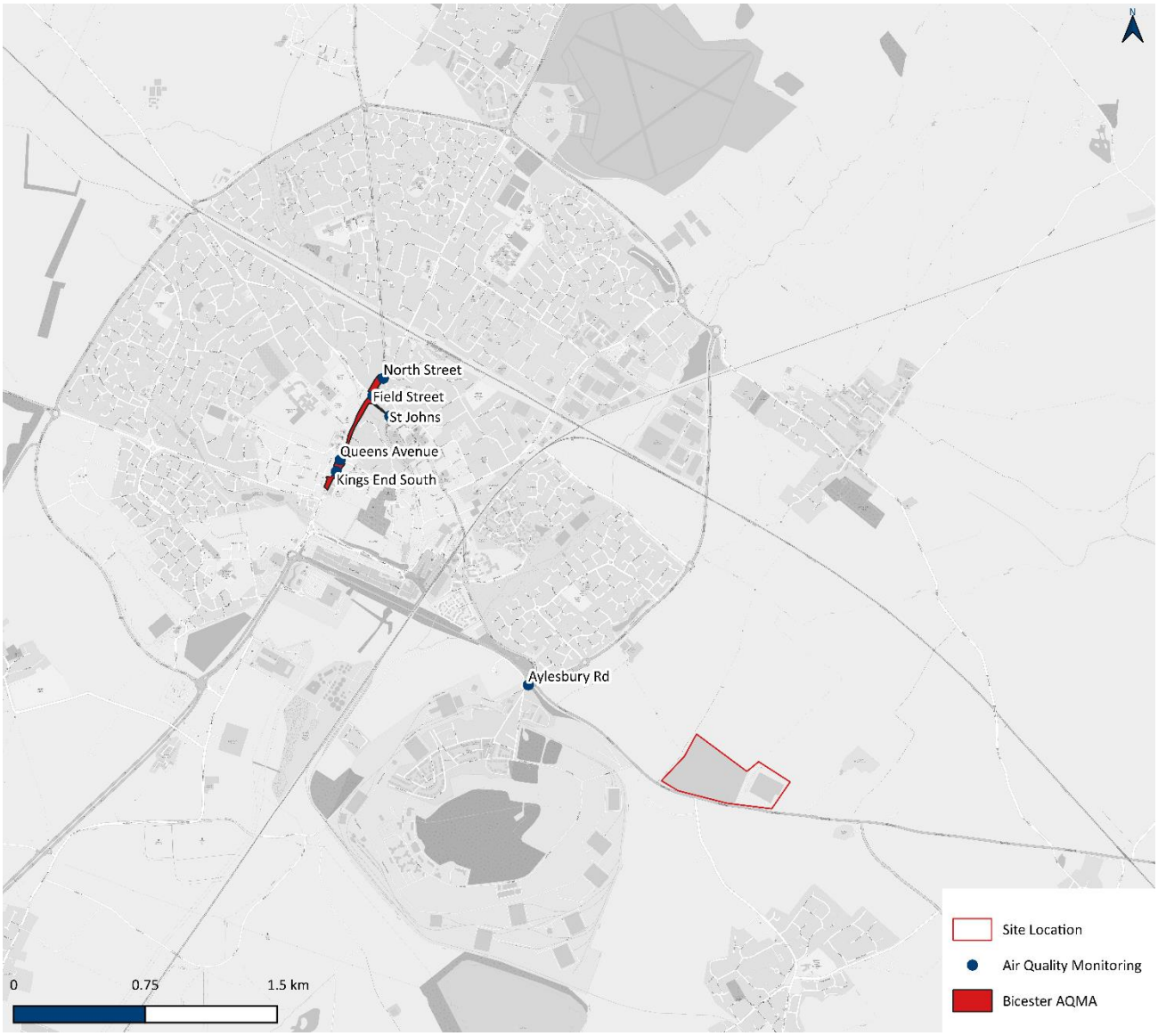

Figure 2 – Map of local air quality monitoring locations

Table 2 - Annual mean NO_2 concentrations (µg/m³)

Site ID	Site Type	X(m)	Y(m)	Results (µg/m³)		
				2017	2018	2019
Aylesbury Rd	Roadside	459100	221190	28.8	29.5	26.7
Kings End South	Roadside	458006	222404	**41.7**	**41.9**	**41.5**
Queens Avenue	Kerbside	458028	222471	39.5	35	35.6
St Johns	Kerbside	458310	222720	37.8	38.6	31.7
Field Street	Kerbside	458214	222836	33.5	31.6	32.1
North Street	Kerbside	458274	222935	36.5	37.6	35.6
Notes: **Bold** values denote exceedance of the Annual Mean NAQO.						

The data in Table 2 show that annual mean NO_2 concentrations in the vicinity of the site have not exceeded the annual mean NAQO for NO_2 in recent years with the exception of Kings End South, which is located within the

Bicester AQMA. However, Queens Avenue, Field Street, North Street and St John's are also within the AQMA where no exceedances of the NAQO have been monitored in recent years.

The closest diffusion tube to the site is Aylesbury Road, monitoring emissions from the A41. Monitored concentrations of NO_2 are well below the risk of exceedance of the annual mean NAQO at this location.

7. IMPACTS

Construction Phase

It is understood that the main building is fully constructed. However, minor additional construction works form part of the application, namely:

- Vehicle Maintenance Unit (VMU);
- Technical Services Block (TSB);
- Vehicle Inspection Hub (VIH);
- Comms Container (CCR);
- Sprinkler Tanks and Pump House;
- Vehicle wash (with underground waste water tank) and Van Fuel Station (with canopy over);
- smoking and vaping shelter;
- compaction area (with canopy over) and
- cycle store

An assessment of the potential risk of dust impacts associated with the above has been undertaken in accordance with the IAQM's guidance on assessing impacts from construction[8]. This considers the risk of impacts during the construction phase in terms of nuisance dust, human health (PM_{10} exposure) and ecological impacts.

Potential Dust Emission Magnitude

No demolition works are associated with this application. As such, the impact of dust during demolition is not considered further in this assessment.

The yard extension falls within the earthworks phase and the site area is within the IAQM's threshold for 'Medium' potential magnitude for dust release during this phase.

The total volume of new structures and buildings associated with this application is estimated by the applicant to be below <25,000m^3, which is within the IAQM's threshold for 'Small' potential magnitude for dust release during this phase.

With regard to trackout, no unpaved surfaces would be utilised as site traffic would be routed along the existing road network. Accordingly, the potential dust emission magnitude during Trackout associated with this application is considered to be 'Small'.

Sensitivity of the Area

No high-sensitivity ecological receptors (such as designated sites) have been identified close to the site and ecological impacts are not considered further. 1 high-sensitivity human receptor has been identified within 20m

8 IAQM, "Guidance on the Assessment of Dust from Demolition and Construction" (Institute of Air Quality Management (IAQM)), February 2014), http://www.iaqm.co.uk/text/guidance/construction-dust-2014.pdf.

of the boundary of Symmetry Park, in the south-west corner. However, the distance between this receptor and the location of Unit B in the centre of the site is >250m. Accordingly, the sensitivity of the area, in terms of nuisance dust and human health impacts, is defined as 'Low' in accordance with IAQM guidance.

Risk of Impacts

The overall risk of impacts is defined by combining the sensitivity of the area with the potential dust emission magnitude of each stage of the construction phase as described above.

Table 3 provides a summary of the construction dust risk assessment. Overall, the development is considered to be Low Risk for adverse impacts during construction.

Table 3 - Risk of adverse impacts during construction phase

Construction Phase	Risk of Impacts
Earthworks	Low Risk
Construction	Negligible Risk
Trackout	Negligible Risk

Operational Phase

The net increase in vehicle movements associated with the new proposals have been compared with guidance threshold criteria derived from the EPUK / IAQM Land-use Planning & Development Control: Planning for Air Quality[9] guidance, as shown below:

Table 4 – Guidance thresholds for further assessment:

Criteria	The development will:	Indicative criteria for further assessment:
1	Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV - cars and small vans <3.5t gross vehicle weight)	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA -more than 500 AADT elsewhere.
2	Cause a significant change in Heavy Duty (HDV) flows on local roads with relevant receptors (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.

The new proposals represent an increase in the number of vehicle movements when compared to the approved scheme for Unit B, due to changes in trip generation associated with Ocado. Anticipated trip changes between the accepted and proposed schemes were provided by Hydrock's transportation team and are presented in Table 5.

9 IAQM, "Land-Use Planning & Development Control: Planning for Air Quality" (Institute for Air Quality Management (IAQM), January 2017), http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf.

Table 5 - Daily traffic numbers in Annual Average Daily Trips (AADT), for the accepted scheme and proposed development.

Road Name	Approved Unit B Trip Generation		Proposed Ocado Net Trip Generation		Difference (Net Increase compared to Extant Permission)	
	LDV	HDV	LDV	HDV	LDV	HDV
A41 (Westbound)	254	136	1141	108	887	-27
A41 (Eastbound)	21	0	94	0	73	0
A41 (following roundabout)	93	136	417	108	325	-27
A4421	142	0	638	0	497	0
Oxford Road	49	0	220	0	171	0
In Bicester AQMA	15	0	68	0	53	0

The increase in vehicle movements associated with the proposals, as shown in Table 5, do not exceed the relevant EPUK /IAQM guidance thresholds for further assessment on the following roads:

- A41 Eastbound;
- A41 (following roundabout);
- A4421;
- Oxford Road, and
- Within the Bicester AQMA.

As such, no further assessment is required as it is reasonable to conclude the increase in vehicle movements associated with the proposals will have a negligible impact on local ambient air quality.

It is noted that the EPUK / IAQM guidance threshold for non-AQMA roads is exceeded on the A41 (Westbound). On this road there is one receptor, Wretchwick Farm, designated as R1 within the Hybrid ES chapter.

The Hybrid ES, which assessed the impact from the accepted scheme, predicted a negligible impact on NO_2 concentrations based on an increase in LDV and HDV flows of 528 AADT and 282 AADT (810 AADT total) respectively. The proposed scheme represents comparable traffic flows to those previously assessed, with a marginal increase in movements predicted.

A commonly accepted threshold, which is referenced by the latest Highway's England Design Manual for Roads and Bridges (2019) guidance[10], the IAQM[11] and Natural England[12], is that an increase in vehicle movements of 1000 AADT is roughly equivalent to a 1% increase in emissions relative to the assessment level. In the context of the annual mean NAQO for NO_2, this equates to an increase of 0.4µg/m^3 per 1000 AADT as an approximate guide. While this threshold is most commonly used to assess strategic road schemes or impacts on ecological receptors, it is considered appropriate to use in this context.

Using the latest 2019 monitored concentrations of NO_2 on Aylesbury Road as a proxy receptor, an increase of 13.3 µg/m^3 would be required to trigger an exceedance of the annual mean NAQO. Similarly, with reference to

10 Highways England, "LA 105: Air Quality," 2019, https://www.standardsforhighways.co.uk/prod/attachments/10191621-07df-44a3-892e-c1d5c7a28d90.

11 IAQM, "A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites" (Institute for Air Quality Management (IAQM), June 2019), https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2019.pdf.

12 http://publications.naturalengland.org.uk/file/5431868963160064

EPUK / IAQM impact descriptors, an increase of 10 µg/m^3 or more would be required for there to be a significant impact.

Based on the magnitude of change as assessed at R1 in the Hybrid ES (where an increase of 0.5 µg/m^3 was predicted through dispersion modelling) and the similarity in traffic flows in the new proposals, the potential impact on ambient air quality at receptors on the A41 Westbound is not reasonably be expected to be significant.

8. CONCLUSION

In the context of the updated evidence provided in this technical note, the conclusions from the original ES chapter are deemed suitable for the new proposals, whereby:

> *"The assessment concluded that the impact on annual NO_2, PM_{10} and PM_{25} concentration levels are all negligible. The development does not lead to any exceedance of air quality objective strategies."*

With regard to the construction phase, the works associated with this application are considered to be Low Risk for adverse impacts and best-practice mitigation measures will reduce the risk of impacts to negligible.

The proposed development is expected to comply with all relevant air quality policy. As such, air quality should not pose any significant obstacles to the planning process.