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Symmetry Park, Bicester Phase 3

Noise Impact Assessment

For Tritax Symmetry Bicester 3 Ltd

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1. Introduction

Hydrock acoustics are appointed by Tritax Symmetry Bicester 3 Ltd to provide an assessment of noise generated by the proposed development at Symmetry Park, Bicester.

This report provides an assessment of noise during the operational phase of the development. In addition to operational noise, there may be an unavoidable short-term noise impact during the construction phase. Given its temporary nature, this is not expected to be significant provided a best practicable means approach is taken to managing construction noise, as advised within BS5228-1:2009+A1:2019 and directed by the Construction Engineering Management Plan (CEMP). Assessment of construction related noise has therefore been scoped out of this assessment.

The site is within the administrative boundary of Cherwell District Council (CDC) and is centred on the National Grid Reference (NGR); x460647, y220636, as shown in Figure 1.

The site is located to the south-east of Bicester, approximately 3.5km to the south east of the town centre. The A41 provides direct access to the A34/M40 Junction 9 via the south of Bicester, which continues to link to the M25, and also the M42 south of Birmingham.

The site currently comprises two larger and one smaller agricultural field with a disused barn area to the north-east. The site is located between the existing Symmetry Park development (Bentley Designs and Medline Services immediately west and DPD to the north-west), and an existing industrial estate to the northeast comprising a caravan dealer, metal recycling and car breakers yard.



Figure 1: Site Location

2. Assessment Methodology

2.1 Applicable Policy and Guidance

The assessment methodology is based on the following legislation, policy and guidance:

- » National Planning Policy Framework, 2023 (NPPF);
- » Noise Policy Statement for England, 2010 (NPSE);
- » Planning Practice Guidance Noise (<https://www.gov.uk/guidance/noise--2>) – 2019 (PPG-Noise);
- » World Health Organisation (WHO) 1999: Guidelines for Community Noise; (WHO Guidelines)
- » British Standard 8233:2014 - Guidance on sound insulation and noise reduction for buildings (BS8233);
- » British Standard 4142:2014 + A1 2019 (BS 4142) - Methods for rating and assessing commercial and industrial sound;

The following guidance documents are used to prepare predictions presented herein:

- » ISO 9613-2 Attenuation of sound during propagation outdoors — Part 2: general method of calculation;
- » ISO 12354-3:2017 Estimation of acoustic performance of buildings from the performance of elements — Part 3: Airborne sound insulation against outdoor sound;
- » Department of Transport Technical Memorandum: Calculation of Road Traffic Noise, 1975 (CRTN);
- » Design Manual for Roads and Bridges, Volume 11, Section 3, Part 7, 2011 (DMRB);

Other guidance documents may be referenced throughout the document.

2.2 Planning Context

Symmetry Park, Bicester was granted outline planning permission in 2016 (16/00861/HYBRID) for B8 uses. A summary of the relevant planning history is set out in the accompanying Planning Statement.

The Site is identified in the Cherwell Local Plan Review 2042 (Regulation 19) Proposed Submission Plan, which was published on 4th November 2024, and is due to go out for public consultation in December 2024. The site is identified as an employment site allocation as an extension to the successful Symmetry Park Phase 1 and 2. The allocation is for employment uses (E(g)(i) (ii)/(iii)/B2/B8 (Policy Reference BIC 5).

2.3 British Standard 4142:2014+A1:2019

The standard method for assessing the noise impact from industrial and commercial activity is British Standard BS4142 "Method for rating and assessing industrial and commercial sound". A BS4142 assessment is made by determining the difference between the intrusive noise under consideration (known as 'the specific sound level') and the background sound level at the receptor. The background sound level is the existing level in the absence of the specific sound and is measured in terms of the L_{A90} parameter, which is the sound level excluding the loudest 10% of the measurement period.

The standard requires an assessment of the typical background sound level. However, the background sound level used for the assessment should be representative of the most sensitive time the specific sound will be in operation. For example, a noise source which is operational throughout the day should be assessed against the typical background sound level during the quietest part of the day, not during rush hours for receptors also affected by road noise. It is also relevant to consider other factors that

may affect the times when a receptor will be most sensitive. For example, a typical residential receptor may be more sensitive during evenings and weekends, when residents are more likely to be home and enjoying external amenity areas.

The specific sound is assessed in terms of the L_{Aeq} parameter, which is a measure of the total sound over the measurement or assessment period, but a character penalty can be applied for tonal, impulsive or intermittent characteristics. Intermittency is defined as having an identifiable on/off condition and a penalty of 3dB is applicable if "the intermittence is readily distinctive against the residual acoustic environment". The specific sound should be calculated or measured over a 1-hour period during the day and a 15-minute period during the night.

The specific sound level (L_{Aeq}), with the character correction (if necessary), is known as the rating level, L_{Ar} . The standard then gives the following criteria for assessment based on the difference between the background sound level (L_{A90}) and the rating level (L_{Ar}):

- "a) Typically, the greater this difference the greater the magnitude of the impact.*
- b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.*
- d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source has a low impact, depending on the context."*

The importance of considering the numerical assessment in context is stressed throughout BS4142. The human response to noise is subjective and therefore a numerical assessment cannot provide the full picture. Factors such as receptor sensitivity, affected time of day, the character of the sound compared to the existing noise climate, and the affected parties view of the noise source, can all affect how a specific sound is perceived.

BS4142:2014 also notes that, where background sound levels are low, other standards should be considered. This is particularly relevant during the night-time, when sleep disturbance criteria from BS8233:2014 and World Health Organisation Guidelines et. al. might be as, or more, important than the level relative to background.

3. Environmental Noise Survey

3.1 Methodology

Unattended long-term environmental noise monitoring was undertaken over the period Tuesday 24th September to Wednesday 25th September at two monitoring locations. The survey locations are presented in



Figure 2, labelled as "MP" for measurement position. Noise sensitive receptors (NSRs) locations are also indicated on



Figure 2.

Noise measurements were made using Class 1 integrating sound level meters. Microphones were positioned vertically on a tripod at least 1.2m above the ground and at least 3.5m from any other reflecting surfaces. The sound level meters were calibrated to a reference level of 94 dB at 1kHz both prior to and on completion of the noise survey. No significant drift in calibration was noted during the survey (≤ 0.5 dB). Full details of the equipment used is provided in Table 1.

Table 1: Environmental Noise Survey Equipment

Location	Manufacturer	Instrument	Type	Serial No. / Version	Calibration Renewal date
MP1	O1dB	Sound Level Meter	Fusion	14016	19/02/2026
	O1dB	Pre-Amplifier	pre22 n°	2105046	
	O1dB	Microphone	40CD	415846	
MP2	O1dB	Sound Level Meter	Fusion	14018	12/04/2025
	O1dB	Pre-Amplifier	pre22 n°	2105045	

	01dB	Microphone	40CD	504913	
All	B&K	Acoustic Calibrator	4231	3015450	21/08/2025

All measurement equipment has been laboratory calibrated within the appropriate calibration interval, biennially for sound level meters and annually for acoustic calibrators.

A summary of the measurement locations is provided in Table 2 overleaf.

Table 2: Monitoring Location Summary and Noises Heard During Setup and Collection of Long-term Unattended Monitors

Location	Description	Monitoring Period
MP1	<p>An unattended measurement of sound under free-field conditions was undertaken at the north-eastern boundary of the site at an approximate distance of 350 metres from the A41. The sound environment was dominated by consistent road traffic noise from the A41 to the south.</p> <p>The noise of faint vehicle unloading activity from the DPD depot, approximately 100 metres west of the measurement position was heard. Also audible was noise from L C Hugues Metal Recycling & Breakers Yard, approximately 120 meters east of the measurement location. This included reversing tones and materials handling noises.</p>	24 th / 25 th
MP2	<p>An unattended measurement of sound under free-field conditions was undertaken at the north-eastern boundary of the site at an approximate distance of 150 metres from the A41. The sound environment was dominated by consistent road traffic noise from the A41 to the south.</p> <p>Sporadic noise from vehicles traversing the access track to Bicester Carvan & Leisure and L C Hugues contributed towards the sound environment. Other noises from these businesses were also audible. These included vehicle movements in the yard, reversing tones, and occasional bangs and clangs from material handling activity.</p>	24 th /25 th

A summary of the weather conditions during the survey is presented in Table 3. The weather record was taken from historical data from the closest national weather station published at www.wunderground.com/.

Table 3: Weather Conditions During Survey

Day	Average temperature day/night (°C)	Average wind speed (ms ⁻¹) and Direction	Notes
24th to 25th September	17 / 10	3ms ⁻¹ , generally from the north west.	Overcast with spells of sunshine.

Weather conditions during the survey were conducive to noise measurement. i.e. winds were light and there was no precipitation. Background noise levels in the north westerly winds that persisted during the survey may have been slightly lower than during periods of prevailing south westerly winds, due to the relative location of the A41.



Figure 2: Monitoring and receptor locations

3.2 Results - Background Sound Levels

Representative background sound levels measured at the long-term locations are presented for daytime (0700 to 1900 hours), evening (1900 to 2300 hours), and night-time (2300 to 0700 hours) in Table 4. Results at each monitoring location, over the duration of the survey are provided graphically in Figure 3 & Figure 4.

The representative background sound level (L_{A90}) has been determined from a statistical analysis of the 15-minute measurements over the period, in line with the approach recommended in BS4142:2014. The modal averages of the 15-minute background sound levels are presented in Table 4. In this case the modal average provides a reasonable indication of the typical background sound level during the quietest periods.

Table 4: Long-term Unattended Ambient and Background Sound Levels

Monitoring Location	Time Period (hours)	Representative Background Sound Level
		L _{A90, 15 minutes}
MP1	0700 – 2300	49
	1900 – 2300	37
	2300 – 0700	35
MP2	0700 – 2300	43
	1900 – 2300	39
	2300 – 0700	34

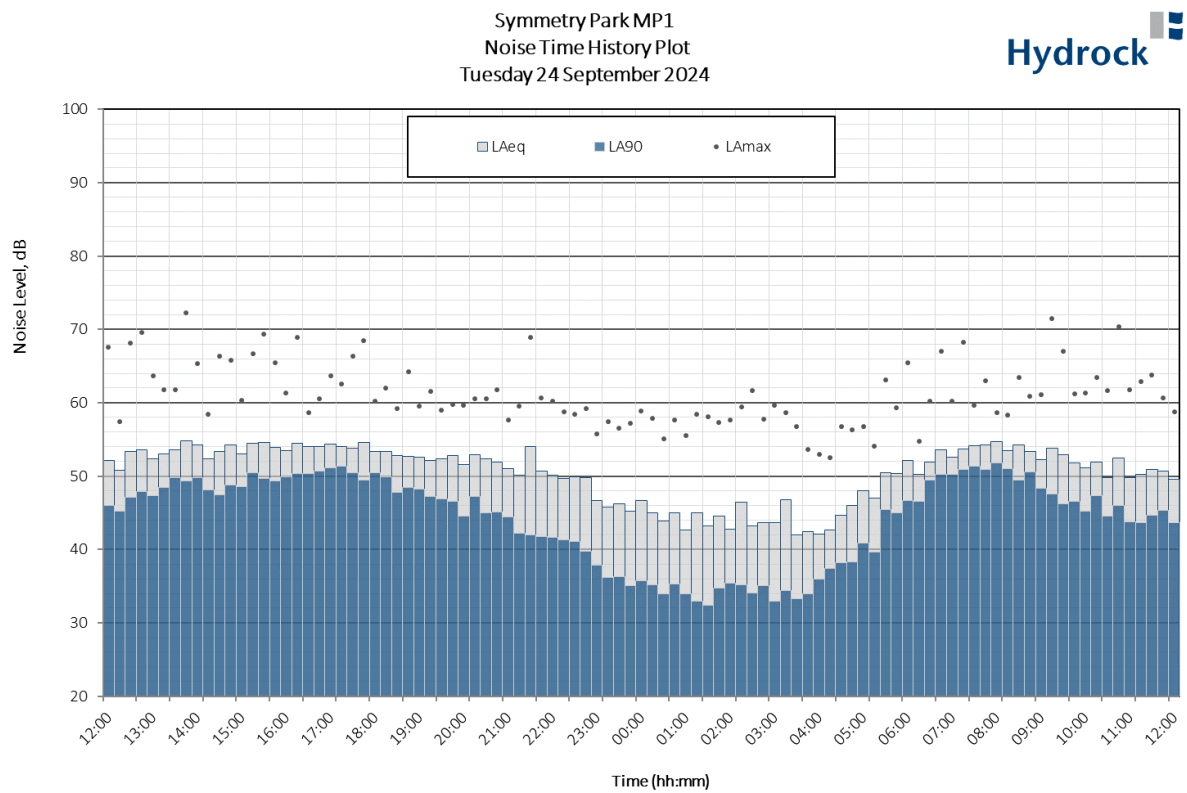


Figure 3: Noise Time History MP1

Symmetry Park MP2
 Noise Time History Plot
 Tuesday 24 September 2024

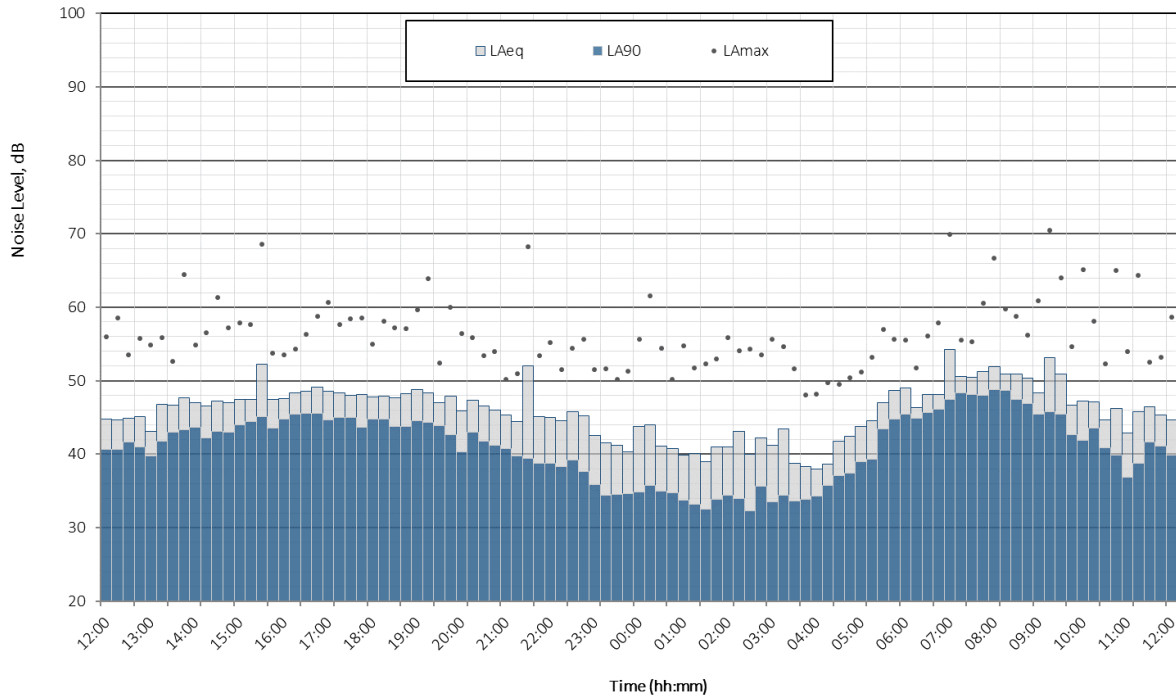


Figure 4: Noise Time History MP2

4. Proposed Development

The Proposed Development consists of two units and associated infrastructure on the land adjacent to Symmetry Park, Bicester Phases 1 and 2. The total floor area proposed consists of 25,856 m² of logistics floor space (Use Class B8), with ancillary office space (Use Class E (g)(i)), together with associated site infrastructure including: lorry parking; landscaping; and, sustainable drainage, and access.

The key features of the Proposed Development are:

- » Provision of employment land;
- » Opportunity to attract new investment and job creation into Cherwell;
- » Contribution towards the economic growth sought by Cherwell;
- » Training and apprenticeship opportunities;
- » Generation of Business Rates;
- » Wide spectrum of job opportunities;
- » Accessibility by a variety of modes of transport: pedestrian, cycle, public transport; and
- » The provision of a high-quality landscaped environment: ecology and amenity value.

The proposed site layout is presented in Figure 5, below.



Figure 5: Proposed site layout

There are currently no confirmed operators for the units. Therefore, the noise assessment is based on the activities of typical users of such units, such as courier companies. The following noise generating activities are assumed:

- HGV and loading/unloading activity to occur during the night (23:00 to 07:00 hours) and daytime (07:00 to 23:00 hours) periods;

- HGVs to reverse into loading bays. Loading and unloading from the rear of the vehicle such that the forklifts and trolleys will generally never leave the building, nevertheless occasional forklift external movements may be necessary;
- Fixed plant will be limited to typical HVAC plant and the energy centre located to the west of Unit E;
- Future users will follow best practice with regards to managing noise from deliveries.

5. Assessment of Operation Noise Levels

5.1 Prediction of Specific Sound Level from Delivery and Collections

The primary noise source on the proposed site will be heavy goods vehicles (HGV) deliveries and collections. The most affected receptor will be NSR 1 (The Bungalow), which is approximately 95m from the site boundary and 180m from the nearest loading bay, to the east of the metal recycling/breakers yard.

Noise sources associated with deliveries and collections are as follows:

- » fork lift activity
- » lorry movements
- » lorry engines idling in the service yard

Fork lift activity has been measured previously by Hydrock Consultants. The measured fork lift noise levels are presented in Table 5, below. Most of the measurements included audible reversing warnings. The measurements were made at various distances but have all been normalised to 10m. The time-weighted decibel average noise level is also presented.

Table 5: Measured Noise Levels from Fork Lift Activity

Location	Duration (seconds)	Description	L _{Aeq} dB @ 10m
Structural Steel Factory (Hydrock library data)	12	Fork lift manoeuvring	66
Drinks Warehouse (Hydrock library data)	20	Forklift Moving pallets	65
	18	Forklift Moving pallets	53
	91	Forklift Moving pallets	64
	17	Forklift Moving pallets + 7.5 tonne lorry manoeuvring	60
	34	Forklift Moving pallets	60
	377	Forklift stacking pallets	57
	213	Forklift Loading pallets onto flatbed truck	54
	782	Average Noise Level	59

Hydrock library noise data of lorries manoeuvring in service yards are presented in Table 6. All measurements included audible reversing warnings. Again, these measurements have been normalised to a distance of 10m.

Table 6: Measured Noise Levels from Lorries Manoeuvring

Location	Description	L _{Aeq1} dB @ 10m
Drinks Warehouse	17 tonne rigid lorry manoeuvring slowly (including airbrakes)	67
	17 tonne lorry idling	62
	17 tonne lorry manoeuvring slowly	67
Sainsbury's	Articulated HGV Arriving	67

BS4142:2015 requires noise from the commercial activity (the specific sound level) to be assessed over 15 minutes during the night and 1 hour during the day. The shorter night-time assessment period generally results in higher specific noise levels for similar sources. Therefore, the greatest noise impacts from the proposed development are likely to be during the early hours (night-time) when HGVs are arriving at the depot and being unloaded.

The night-time specific noise level from a night-time delivery to the closest bay has been predicted at the NSR 1. The calculation is set out in Table 6, below. The following noise sources are considered:

- » an articulated lorry pulling in to the delivery depot and manoeuvring into a loading bay;
- » lorry idling for a short time;
- » fork lift unloading from rear of the vehicle for the remaining time but with a period of 2 minutes outside the building.

The following assumptions are made:

- » Lorries travel at 2.2 m/s on site;
- » A lorry will take a maximum of approximately 82 seconds to drive from the site entrance to the loading bay (based on 180m driving distance to the bay and 2.2m/s on site speed);
- » A lorry will take a maximum of approximately 90 seconds to manoeuvre into a loading bay;
- » Lorries will typically allow the engine to idle for no more than 60 seconds after pulling into a bay;
- » Fork lifts will not generally operate externally but short duration external activity is possible;
- » Most forklifts will operate within the building only and enter lorries via the rear door;
- » Fork lift horns will not be used at night.

Table 7: Estimated Specific Noise Levels at the NSR 1

Noise Source	Source Noise Level (L _{Aeq} , dB)	Ref. Distance (m)	On-time (seconds)	Quantity	Distance to Receptor (m)	Receptor Noise Level (L _{Aeq} , dB)
Forklift (external)	10	59	120	1	181	34
Lorry driving on site	10	67	81	1	271	38
Lorry Manoeuvring into bay	10	67	90	1	181	42
Lorry idling	10	62	60	1	181	37
Specific noise level at receptor (L _{Aeq, 15 minute} , dB)						34

The prediction of distance attenuation is based on geometric divergence only with no ground or screening corrections.

5.2 BS4142:2014 Assessment – Delivery and Collections

A BS 4142:2014 assessment of noise from the proposed units is presented in Table 7, below.

Table 8: BS4142:2014 Assessment – Deliveries and Collections at Night- NSR 1

Results		Commentary
Measured Background Sound Level (L_{A90} , dB)	34 dB	Night-time level used
Specific Sound Level - (L_{Aeq} , dB)	34 dB	(Calculation from Table 6)
BS4142 Rating Level (L_{Ar})	34 dB	No character correction is deemed to apply to delivery noise at receptors. Noise from the depot will primarily be from lorries manoeuvring on site. Noise from vehicles manoeuvring is not dissimilar to the existing dominant noise sources at receptors (A41 road traffic and activity at L C Hughes) and therefore should not be considered distinctive against the residual acoustic environment provided that white noise reversing warning systems are used.
Excess of Rating Level over Background Sound level (dB)	$(34 - 34) = 0$ dB	The assessment indicates that noise from deliveries and collections would be a low impact.

The predicted worst case specific noise over a 15 minutes period during the night is equal to the existing background sound level; “this is an indication of the specific sound source having a low impact, depending on the context”. The context in this case is as follows:

- » there are existing logistics uses in the area which would generate a similar character of noise, although these are further from the receptors affected by the proposed development;
- » the closest receptors are already affected by noise from L C Hughes Metal Recycling & Car Breakers and Bicester Caravan & Leisure, which is closer;
- » the predicted noise levels are relatively low and would not exceed the recommended levels for good conditions in habitable rooms, even when receptor windows are open;
- » the character of noise from the proposed development is not dissimilar to road traffic noise from the A41 and activity noise from L C Hughes Metal Recycling & Car Breakers which dominates the existing noise climate;

Therefore, in consideration of the context as set out above, the numerical assessment represents a “low impact” in terms of BS 4142:2014.

BS4142:2014 requires an assessment uncertainty. The primary source of uncertainty is related to the assumed uses of the proposed speculative development. I.e. as the occupiers are not known, there could be necessary noise sources that are not considered in this assessment. However, noise emissions

from all plant and equipment, including from the planned energy centre, can be appropriately controlled by condition, as discussed in the following section.

6. Mechanical Plant and Equipment

There is currently no information available on the mechanical plant and equipment which might be required by future occupiers. An energy centre, which may be used for a Combined Heat and Power (CHP) system, has been included in the masterplan. However, this is a space allowance only and no details are available to allow noise assessment at this stage.

The outline planning application for the wider masterplan (16/00861/HYBRID) included the following condition relating to noise emission from fixed plant and equipment:

'16. Cumulative noise output from any mechanical ventilation or fixed plant associated with the development shall be noise attenuated or mitigated so that it achieves the following levels at 1m from the nearest receptors (listed below):

a) Daytime (0.700-23.00)

i) Wretchwick Farm Cottages and Wretchwick Farm: 43dB L_{Aeq}

ii) Little Wretchwick Farm: 34dB L_{Aeq}

b) Night time (23.00-07.00)

i) Wretchwick Farm Cottages and Wretchwick farm: 31dB L_{Aeq}

ii) Little Wretchwick Farm: 28dB L_{Aeq}

In addition to the noise sensitive receptors noted in the above planning condition, Jim Guest, Cherwell EHO later identified two closer sensitive properties to the east of the Symmetry Park site. These are shown in



Figure 2 as NSR 1 & 2. Proposed plant noise limits for these receptors are presented in Table 9, based on the recent background sound measurements reported herein.

Table 9: Proposed Plant Noise Limits

Receptor	Period	Representative Background Sound Level, L_{A90} , dB	Proposed Plant Noise Limits, L_{Ar} , dB
NSR 1 (The Bungalow)	Daytime (0.700-23.00)	39	39
	Night-time (23.00-07.00)	34	34
NSR 2 (Windmill Cottage)	Daytime (0.700-23.00)	39	39
	Night-time (23.00-07.00)	34	34

The limits in Table 9 are rating level (L_{Ar}) and therefore include any character corrections for tonal or other relevant characteristics.

As the equipment to be provided within the Energy Centre is not known at this stage, the following planning condition is suggested:

"No mechanical equipment shall be installed within the energy centre hereby approved unless and until a supplementary noise impact assessment has been submitted to and approved in writing by the Local Planning Authority. This shall be based upon the finalised and confirmed plant details and demonstrate, by calculation, compliance with the noise limits proposed in Table 9 of Hydrock Noise Impact Assessment 22281-HYD-XX-ZZ-RP-Y-3001.

The energy generating equipment shall not be provided other than in accordance with the approved details.

REASON:

In the interests of residential amenity and to ensure the details are acceptable to the Local Planning Authority."

7. Traffic Noise Assessment

BS4142:2014 is not appropriate for the assessment of road traffic noise on public highways. National Highways guidance on the assessment of road noise is provided in the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3. The DMRB assessment method is based on the increase in the 18-hour basic road noise levels as defined in the Calculation of Road Traffic Noise (CRTN), DoF, 1988. CRTN describes a method for predicting the basic road noise level based on 18-hour Annual Average Weekday Traffic flow rates (AAWT), HGV percentage, traffic speed and other factors.

The proposed development is expected to generate 18 HGV and 309 car and van trips in an average week day. The vast majority of these have been assigned to the A41 west of the site in the transport analysis carried out by Hydrock. This is compared to the baseline flows on the A41 in Table 10, below.

Table 10: Change in Road Traffic Noise on A41

Road	Baseline		Development		Predicted Change in Road Noise Level (dB)
	Cars/Vans	HGV	Cars/Vans	HGV	
A41 (west of site)	15832	1899	309	18	<0.1 dB

With reference to the magnitude of impact classification from DMRB, the impact on noise levels on the A41 is negligible.

8. Summary

An assessment has been made of noise from the proposed logistics warehouses on land at Symmetry Park, Bicester. A survey was carried out over the period 24th – 25th September 2024 to characterise the existing acoustic climate at receptors.

The noise impact of traffic increases on local roads is negligible. Noise from operation of the proposed development is predicted to have a low impact on local sensitive receptors and will not substantially alter the existing acoustic climate.

Details of mechanical plant associated with the development are not available at this stage. Therefore, mechanical plant noise limits have been proposed based on the background sound survey results, and can be appropriately controlled via condition. A suitable condition has been suggested within this report that will ensure compliance with noise limits derived using the same methodology as for previous phases.