

## Technical Note: Wimblebury Road

Project	Wimblebury Road		
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### 1 Introduction

- 1.1 BWB Consulting Limited (BWB) was commissioned by Taylor Wimpey to undertake a noise impact assessment to support a Vision Document for a proposed residential development at a site adjacent to Wimblebury Road, Cannock in Staffordshire.
- 1.2 The site lies to the east of Wimblebury Road, with further land available to the south-east for future development, to the north of the A5190 Cannock Road. Noise from road traffic and school activity will need to be considered.
- 1.3 The site comprises two parcels of land east of Wimblebury Road, Cannock. Cannock Chase District Council (CCDC) has now confirmed they are progressing with their Local Plan to Regulation 19 stage and are updating the local development scheme. The north western parcel is proposed as an allocation under site reference SH2, and the south eastern parcel has been safeguarded for future development. This technical note has been prepared to consider both parcels of land.
- 1.4 A baseline noise survey and assessment have been undertaken, and this technical note provides a summary of the work undertaken to date.
- 1.5 It is considered that, with appropriate consideration to site design and mitigation measures, noise could be adequately mitigated. A full noise assessment would be required to support a planning application.

#### Site Setting

#### Red Line Boundary

- 1.6 To the north and east of the parcel of allocated land is currently agricultural land, with residential dwellings beyond. To the west of the site is Wimblebury Road, with a school, residential dwellings and Old Brickworks Nature Reserve beyond. To the south of this parcel are allotments, with the A5190 Cannock Road beyond.

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### Land for Future Development

- 1.7 To the north and east of the parcel of safeguarded land is an area of woodland, with agricultural land and residential dwellings beyond. To the west of the safeguarded land parcel lies a park and allotments. The A5190 Cannock Road borders this parcel to the south, with agricultural land beyond.
- 1.8 The site location is shown below in Figure 1.1.

Figure 1.1: Proposed Development Site



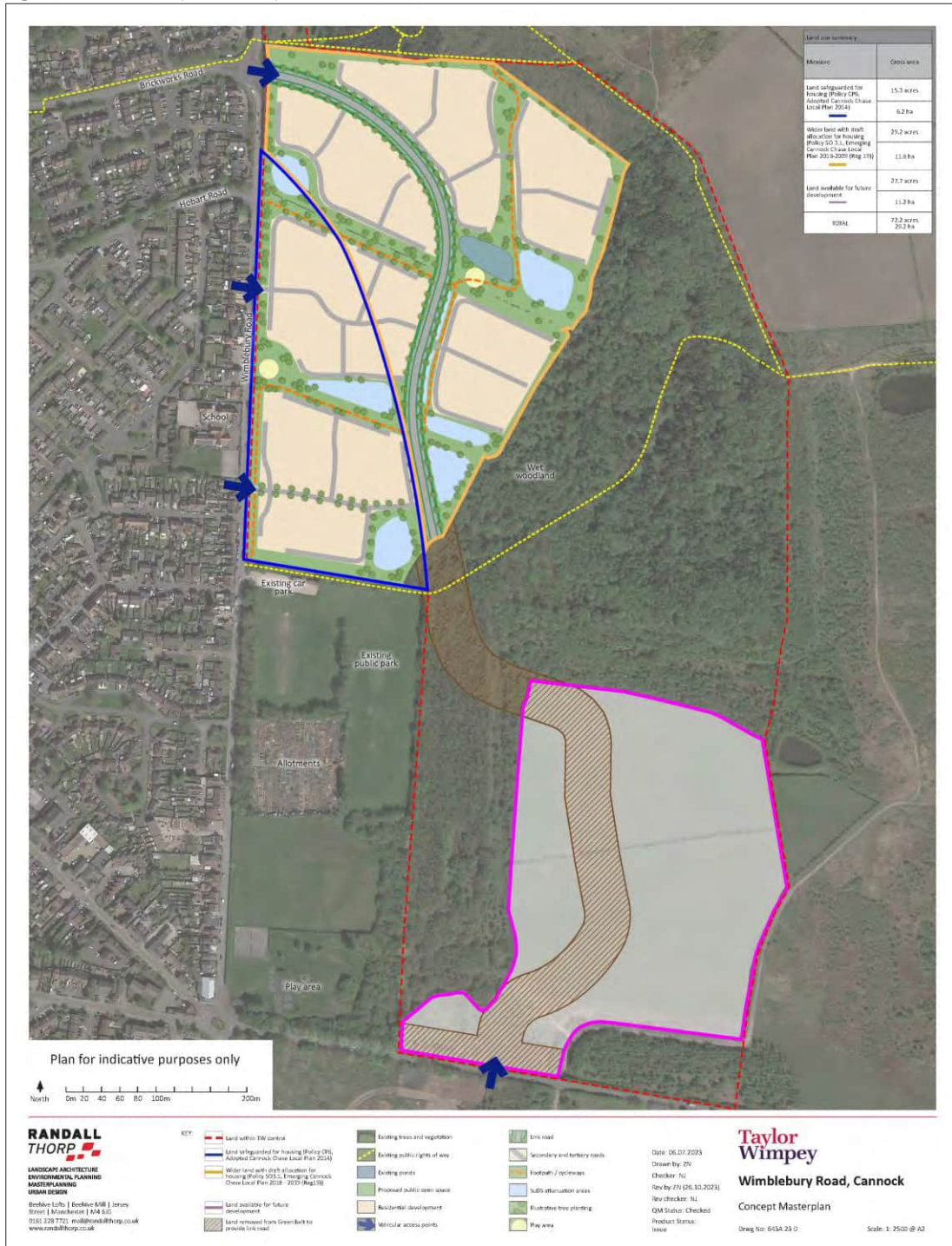
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### Proposed Development

- 1.9 The proposed development will comprise up to 400 residential dwellings, with a further area safeguarded for future development to the south-east. The concept masterplan is shown below in Figure 1.2.

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Figure 1.2: Concept Masterplan



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### 2 Relevant Standards and Guidance

National Planning Policy Framework (NPPF)

- 2.1 Published in December 2023, this document sets out the Government's planning policies for England and supersedes the previous NPPF published in 2021. It makes the following reference to noise in the section entitled Conserving and enhancing the natural environment:

*"180. Planning policies and decisions should contribute to and enhance the natural and local environment by:*

*[...]*

*e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans."*

- 2.2 It also makes the following references to noise in the Section entitled Ground conditions and pollution:

*"191. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

*a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life<sup>69</sup>;*

*b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

<sup>69</sup> See *Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010).*"

BS8233:2014 Guidance On Sound Insulation And Noise Reduction For Buildings

- 2.3 This standard provides guidance for the control of noise in and around buildings. The guidance provided within the document is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building.

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- 2.4 The guidance provided includes appropriate internal and external noise level criteria which are applicable to dwellings for steady external noise sources. It is stated that it is desirable that the internal ambient noise level does not exceed the following criteria set out in Table 2.1 below:

Table 2.1: Summary of Internal Ambient Noise Levels to be achieved in Habitable Rooms when Assessed in Accordance with BS 8233

Activity	Location	Period	
		07:00 to 23:00 Hours, i.e. Daytime	23:00 to 07:00 Hours, i.e. Night-time
Resting	Living Room	35 dB LAeq, 16 Hour	-
Dining	Dining Room/area	40 dB LAeq, 16 Hour	-
Sleeping (daytime resting)	Bedroom	35 dB LAeq, 16 Hour	30 dB LAeq, 8 Hour

- 2.5 Whilst BS 8233:2014 recognises that a guideline value may be set in terms of SEL or LA<sub>Fmax</sub> for the assessment of regular individual noise events that can cause sleep disturbance during the night-time, a specific criterion is not stipulated. Accordingly, reference has been made in this assessment to the World Health Organisation (WHO) 1999: *Guidelines for Community Noise* below.
- 2.6 With respect to external amenity space such as gardens and patios it is stated that it is desirable that the noise level does not exceed 50 dB LA<sub>eq,T</sub>, with an upper guideline value of 55 dB LA<sub>eq,T</sub> which would be acceptable in noisier environments. It is then confirmed that higher external noise criteria may be appropriate under certain circumstances such as within city centres urban areas, and locations adjoining the strategic transportation network, where it may be necessary to compromise between elevated noise levels and other factors such as convenience of living, and efficient use of land resource.

World Health Organisation (WHO) 1999: *Guidelines for Community Noise*

- 2.7 The World Health Organisation (WHO) guidance: 1999: *Guidelines for community noise* includes guidance for individual maximum noise events during the night-time. This document draws upon guidance from Vallet and Vernay, which states:

*“For good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB LA<sub>Fmax</sub> more than 10-15 times per night”.*

## 3 Baseline Noise Monitoring

- 3.1 A baseline survey has been undertaken to determine the prevailing noise conditions across the proposed development site, specifically in relation to noise from road traffic and noise associated with the nearby school to the west of the site.

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- 3.2 The measurement locations (ML) are shown in Figure 3.1. All noise levels were measured at a height of 1.5m above local ground level and in free-field conditions.

Figure 3.1: Baseline Noise Survey Measurement Location



### ML1

- 3.3 ML1 was adopted to determine the noise levels incident on the western site boundary due to road traffic on Wimblebury Road. Measurements at ML1 were undertaken over a 24-hour period commencing at 07:00 on Wednesday 14th July 2021. The microphone was positioned at a height of 1.5 m above local ground level and at 4 m from the nearside carriageway of Wimblebury Road. The noise climate at ML1 during periods of attendance was dominated by the passage of road traffic along Wimblebury Road,

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although noise from children playing in the school yard adjacent to the measurement position was noted to be audible during break-times at the school.

### ML2

- 3.4 ML2 was adopted to determine the noise levels incident on the southern site boundary due to road traffic on the A5190 to the south. Measurements at ML2 were undertaken over a 24-hour period commencing at 08:00 on Wednesday 14th July 2021. The microphone was positioned at a height of 1.5 m above local ground level and at 5 m from the nearside carriageway of the A5190. The noise climate at ML2 during periods of attendance was dominated by the passage of road traffic along the A5190.

### Measurement Equipment

- 3.5 The baseline noise survey was undertaken using the Class 1 noise measurement equipment detailed in Table 3.1. Equipment was calibrated using a portable calibrator immediately before and after the measurements with no significant drift in calibration observed. The sound level meters, pre-amplifiers and microphones were calibrated to traceable standards within the 24 months prior to the measurements. The portable calibrator was calibrated within the 12 months preceding the date of the survey.

Table 3.1: Noise Measurement Equipment

ML	Equipment	Make and Model	Serial Number
1 and 2	Sound Level Meter	01 dB Fusion	11327
	Microphone	Grass 40CE	259479
	Pre-amp	01 dB PRE 22	1605201
	Calibrator	Svantek SV33A	90275

### Weather Conditions

- 3.6 During the survey period weather conditions were generally conducive to environmental noise monitoring, it being dry with low wind speeds.

### Measurement Results

- 3.7 A summary of measured sound pressure levels is presented in Tables 3.2 to 3.5.



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Table 3.2: Summary of Measured Sound Pressure Levels at ML1

Start Date and Time	Period	dB LAeq,T	dB LA90,T	dB LAFmax
14/07/2021 07:00	Daytime (07:00 – 23:00)	58	42	-
14/07/2021 23:00	Night-time (23:00 – 07:00)	50	29	74

1 Mean of measured LA90,15min values during period.  
 2 90th percentile of measured LAFmax,15min values during the night-time.

Table 3.3: Summary of Measured Octave Band Sound Pressure Levels at ML1

Period	Octave Band Sound Pressure Levels (Leq dB)								dB(A)
	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz	
Daytime	66	61	57	53	54	50	45	40	58
Night-time	58	53	50	45	47	42	35	30	50

Table 3.4: Summary of Measured Sound Pressure Levels at ML2

Start Date and Time	Period	dB LAeq,T	dB LA90,T	dB LAFmax
14/07/2021 08:00	Daytime (07:00 – 23:00) <sup>1</sup>	69	57 <sup>2</sup>	-
14/07/2021 23:00	Night-time (23:00 – 07:00)	64	46 <sup>2</sup>	86 <sup>3</sup>

<sup>1</sup> Includes periods between 08:00 and 23:00 on the 14th July and 07:00 and 08:00 on the 15th July 2021.  
<sup>2</sup> Mean of measured LA90,15min values during period.  
<sup>3</sup> 90th percentile of measured LAFmax,15min values during the night-time.

Table 3.5: Summary of Measured Octave Band Sound Pressure Levels at ML2

Period	Octave Band Sound Pressure Levels (Leq dB)								dB(A)
	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz	
Daytime	69	65	63	63	67	60	52	45	69
Night-time	63	60	58	59	62	56	48	40	64

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### 4 Assessment

#### Noise Modelling

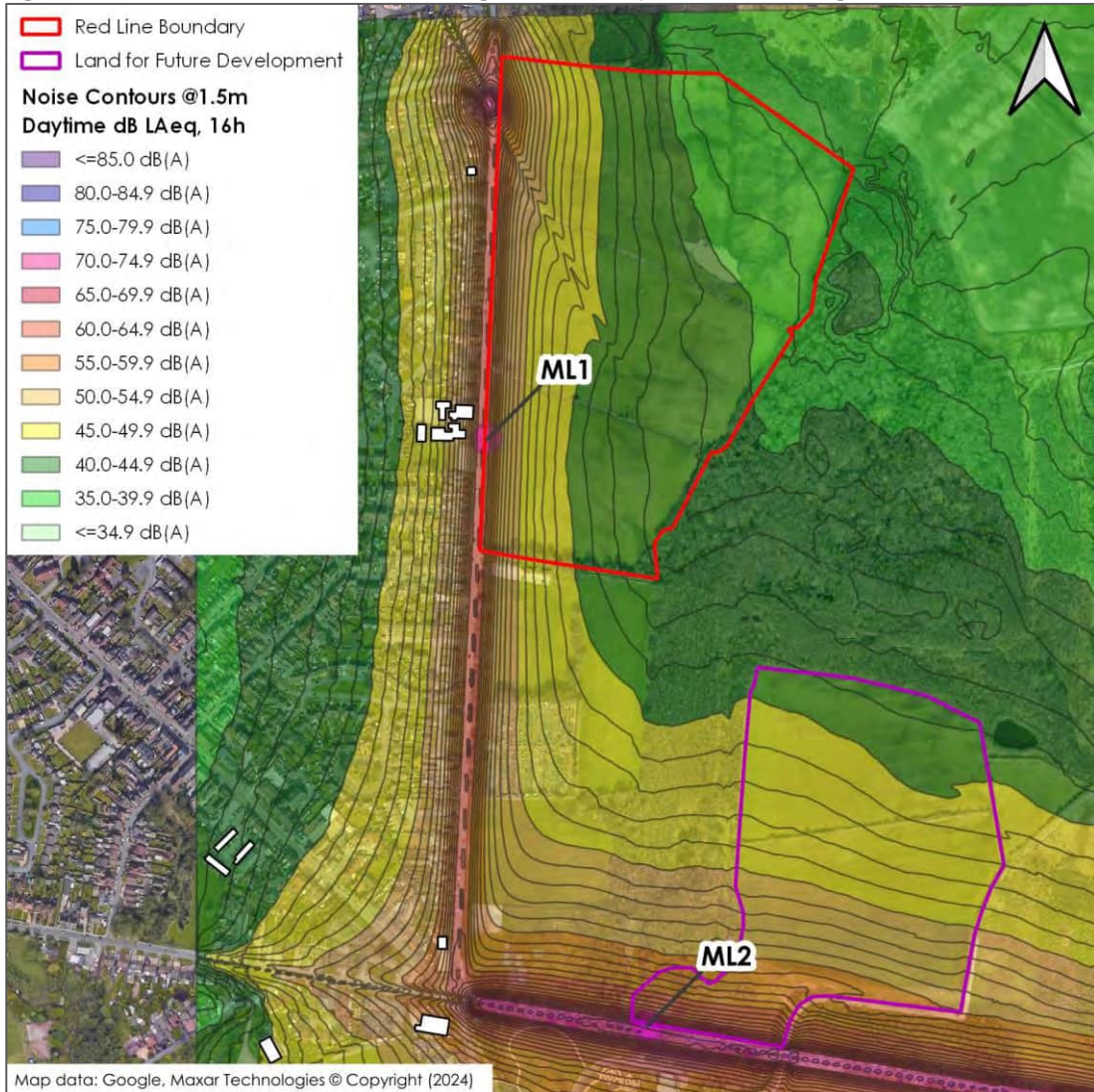
- 4.1 Although there was noise from the school that was audible during attended periods of the baseline noise survey at ML1, it was noted that road traffic was dominant and that there was no increase in the  $L_{Aeq,T}$  level during break times. Therefore, noise from the school has not been considered further in this assessment.
- 4.2 A detailed acoustic model has been generated in order to calculate the noise propagation across the site from road traffic, based on the results of the baseline noise survey. This model was generated applying the following methodology:
- The noise model was generated using the PC based CadnaA® noise modelling package;
  - The noise model was set up to apply the noise prediction methodology set out in the 1988 Department of Transport and the Welsh Office document Calculation of Road Traffic Noise for road traffic noise sources;
  - Mapping of the site and the surrounding area was calibrated into the noise model based on known Ordnance Survey grid reference points;
  - Indicative ground topography was approximated using the LIDAR Composite 2m DTM information freely available from the data.gov website;
  - The model was set to include second order reflected noise from solid structures;
  - The measurement locations have been included in the model and the resultant road traffic noise has been adjusted until the model is equal to the measured noise levels for the daytime and night-time periods; and
  - Ground absorption was set to  $G=1$  (100% acoustically absorptive ground) during calibration of road traffic sources. This is reflective of the ground cover at the time of the noise survey. Ground absorption was set to  $G = 0.5$  to predict the noise levels across the site, which is considered reflective of the ground cover with the proposed development in place. Therefore, it is considered that the predicted noise levels are representative of noise levels from road traffic across the Proposed Development Site.

#### Results

- 4.3 Figures 4.1 and 4.2 show the existing noise levels across the site from road traffic on Wimblebury Road to the west, and the A5190 to the south during the daytime and night-time respectively.

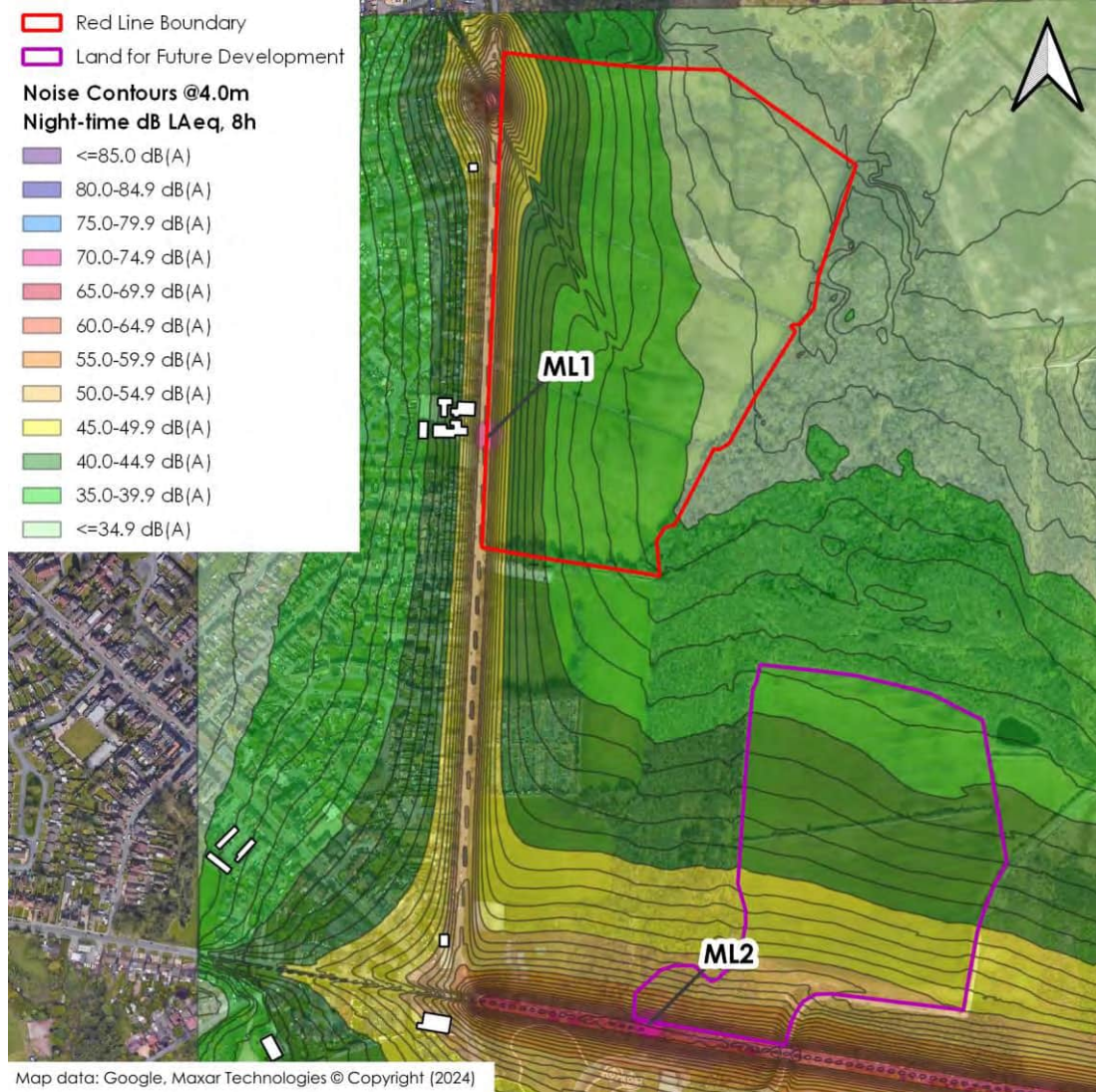
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Figure 4.1: Noise Contour Plot without Mitigation, dB LAeq,16h, 1.5m above ground



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Figure 4.2: Noise Contour Plot without Mitigation, dB LAeq,8h, 4m above ground



### Daytime External Noise Levels

- 4.4 The daytime noise contour plot shown in Figure 4.1 indicates that noise levels in outdoor living areas across the site will be between 50dB of 55dB LAeq,T, which is in line with the criteria set out in BS8233 and WHO guidance, with the upper guideline value of 55dB not being exceeded within the developable areas. Therefore, mitigation measures have not been considered further.

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### Internal Noise

#### *Noise From Wimblebury Road*

- 4.5 The results of the noise modelling indicate that the nearest proposed developable area to Wimblebury Road would be exposed to free-field levels of 54dB  $L_{Aeq,16hr}$  and 46dB  $L_{Aeq,8hr}$  for daytime and night-time, respectively. The night-time  $L_{AFmax}$  level of 74dB has been corrected for distance to the nearest developable area, assuming a simple point source correction from the nearside kerb edge, which results in a level of 60dB  $L_{AFmax}$ .
- 4.6 Assuming a 15dB loss through a partially opened window, this would result in internal levels of 39dB  $L_{Aeq,16h}$  and 31dB  $L_{Aeq,8h}$  for daytime and night-time, respectively. A partially opened window would also result in an internal level of 45dB  $L_{AFmax}$  during the night-time. Therefore, the criteria of 35dB for the daytime and 30dB for the night-time are likely to be exceeded, assuming partially opened windows. As such, mitigation measures would likely be required for habitable rooms.

#### *Noise From the A5190*

- 4.7 The results of the noise modelling indicate that the nearest proposed developable area to the A5190 would be exposed to free-field levels of 55dB  $L_{Aeq,16hr}$  and 50dB  $L_{Aeq,8hr}$  for daytime and night-time, respectively. The night-time  $L_{AFmax}$  level of 86dB has been corrected for distance to the nearest façade, assuming a simple point source correction from the nearside kerb edge, which results in a level of 59dB  $L_{AFmax}$ .
- 4.8 Assuming a 15dB loss through a partially opened window, this would result in internal levels of 40dB  $L_{Aeq,16h}$  and 35dB  $L_{Aeq,8h}$  for daytime and night-time, respectively. A partially opened window would also result in an internal level of 44dB  $L_{AFmax}$  during the night-time. Therefore, the criteria of 35dB for the daytime and 30dB for the night-time are likely to be exceeded, assuming partially opened windows. As such, mitigation measures would likely be required for habitable rooms.

## 5 Likely Mitigation and Recommendations

### External Noise Levels

- 5.1 The results of the preliminary modelling indicate that, with the current set-back distance to the A5190 and Wimblebury Road, mitigation is not required to reduce external noise levels.
- 5.2 Should the developable area move closer to the A5190 and/or Wimblebury Road, then it is likely that recommended external noise levels would be exceeded without mitigation in place. In the first instance, garden areas could be located on the screened side of dwellings. Alternatively, boundary mitigation may be required to ensure that recommended external noise levels are achieved.

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### Internal Noise Levels

- 5.3 It is widely considered that first amelioration measure available to an occupant will be to close windows. Therefore, in order to assess the noise mitigation required to ensure an adequate level of protection against noise, it is appropriate to explore in the first instance the protection that could be afforded by the sound insulation performance of the external building fabric, and in particular the glazing elements.
- 5.4 Noise break-in calculations have been completed in accordance with the rigorous method from BS 8233:2014, based on the measured frequency spectra detailed in Table 3.3. The following assumptions have been made:
- Room dimensions (W3m x L4.4m x H3m) and window sizes (30% window, 70% wall);
  - Glazed area of 2.5m<sup>2</sup>
  - A reverberation time of circa 0.5 seconds;
  - External walls will provide a  $R_w + C_{tr}$  sound reduction performance of 48dB; and
  - 1 no. of vents per room.

### *Dwellings closest to Wimblebury Road*

- 5.5 To achieve the daytime internal noise criterion of 35dB  $L_{Aeq,16h}$  adopted for this assessment, based on the façade closest to Wimblebury Road experiencing a 54dB free-field at the proposed façade, a reduction of 19dB(A) would be required for habitable rooms. To achieve the internal criteria of 30dB  $L_{Aeq,8h}$  adopted for this assessment, a reduction of up to 16dB(A) would be required for habitable rooms.
- 5.6 For the proposed dwellings located closest to the Wimblebury Road, all criteria should be achieved with standard double glazing such as configuration of 4mm pane/6-16mm pane/4mm pane, which would need to provide a minimum  $R_w + C_{tr}$  of 25dB. Trickle Ventilators with direct air path which achieve a minimum performance of  $D_{n,e,w} + C_{tr}$  of 32dB would be required.
- 5.7 It is considered that for dwellings further into the site that are screened by the development itself, the mitigation requirements may be reduced.

### *Dwellings closest to A5190*

- 5.8 To achieve the daytime internal noise criterion of 35dB  $L_{Aeq,16h}$  adopted for this assessment, based on the façade closest to the A5190 experiencing 54dB free-field at the proposed façade, a reduction of 19dB(A) would be required for habitable rooms. To achieve the internal criteria of 30dB  $L_{Aeq,8h}$  adopted for this assessment, a reduction of up to 20dB(A) would be required for habitable rooms.
- 5.9 For the proposed dwellings located closest to the A5190, all criteria should be achieved with standard double glazing such as configuration of 4mm pane/6-16mm pane/4mm

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pane, which would need to provide a minimum  $R_w + C_{tr}$  of 25dB. Trickle Ventilators with direct air path which achieve a minimum performance of  $D_{n,e,w} + C_{tr}$  of 32dB would be required.

- 5.10 It is considered that for dwellings further into the site that are screened by the development itself, internal noise levels could be achieved with open windows.

## 6 Summary

- 6.1 Due to the proximity of the site to Wimblebury Road and the A5190, careful consideration will need to be given to the following;

- Site layout;
- Orientation of buildings, in particular placing gardens on the screened side of dwellings;
- Localised barriers around garden areas; and
- Glazing and ventilation requirements for dwellings located closest to the A5190 and Wimblebury Road.

- 6.2 It is considered that, with appropriate consideration to site design and mitigation measures, noise could be adequately mitigated. A full noise assessment would be required to support a planning application.