Harron Homes

Phases 2 & 3

Owl Lane, Dewsbury

Noise Assessment

October 2016

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1.0 Introduction

1.1 Purpose of this Report

This report details the noise mitigation strategy for Phases 2 & 3 a proposed residential development at land at Owl Lane, Dewsbury. Residential development at the site has been afforded planning permission (Application Ref: 2014/62/90780E).

A number of noise related planning conditions were included as part of the planning approval with planning condition 12 relevant with regard to Phases 2 and 3. The condition states:

> *"Before development commences a sound insulation, glazing and ventilation scheme for all residential properties shall be submitted to and approved in writing by the Local Planning Authority. The scheme shall be designed so that the following internal sound levels are not exceeded:-*
>
> - *35dB L_{Aeq} (16hr) in living rooms (0700-2300)*
> - *30dB L_{Aeq} (8hr) in bedrooms (2300-0700)*
> - *45dB L_{A1} (15min) in bedrooms (2300-0700)*
> - *55dB L_{Amax} in bedrooms (2300-0700)*
>
> *.....*
>
> *All the above indoor levels shall be achieved with windows open or closed in properties provided with acoustic ventilation over and above "background" ventilation that is sufficient to achieve summer cooling without the need to open windows."*

The noise levels across the site have been predicted at proposed receptors using CADNA noise modelling software, which incorporates ISO 9613 and CRN methodologies and calculations. Other than assessing against minor changes to the positioning of buildings within the site, no changes have been made to noise models which were used as part of the assessment undertaken during the previous planning submission.

A list of acoustic terminology and abbreviations used in this report is provided in Appendix A and a set of location plans and noise contour plots relevant to the assessment are presented in Appendix B.

2.0 Assessment Criteria

This report is based on achieving the following noise criteria which is comparable to that specified within the planning condition 12:

- 35dB L_{Aeq} (16hr) in living rooms (0700-2300)
- 30dB L_{Aeq} (8hr) in bedrooms (2300-0700)
- 45dB L_{A1} (15min) in bedrooms (2300-0700)
- 55dB L_{Amax} in bedrooms (2300-0700)

3.0 Assessment Methodology

3.1 Noise Modelling Methodology

The noise model for both the daytime and night-time periods have not been changed other than the proposed residential building layout and the receptor locations selected as part of this assessment for presentation purposes.

3.2 Sensitive Receptors

Selected proposed receptor locations are presented in SK01 in Appendix B.

4.0 Assessment of Key Effects

Internal noise levels at the proposed development, based on the existing ambient noise climate, have been assessed both with windows open, where a reduction from a partially open window of 12 dB has been used, and with windows closed where an assumption of standard double glazing (4mm / 16mm / 4mm) with a sound reduction of 26 dB R_{tr} has been used.

The noise models include all sources of noise previously assessed, including road traffic, the Waste Transfer Station, Infinis gas plant, nearby industrial / commercial premises including Rixonway Kitchens and UPS and the use of the Dewsbury Rams training pitch. A separate assessment has also been undertaken to verify the mitigation requirements with respect to the frequency content of noise emanating from the gas plant.

The findings at selected receptor locations are presented in Tables 4.1 – 4.3 below. Daytime and night-time L_{Aeq} noise contour plots are presented in Figures SK02 and SK03. The mitigation requirements are based on the following internal target noise level criteria: 35dB$L_{Aeq,16hours}$ during the daytime and 30 dB$L_{Aeq,8hours}$ during night-time periods throughout the site. As established within the previous ES noise chapter by mitigating against the night-time L_{Aeq}, the internal noise criteria of 55dBL_{Amax}.will also be achieved. In addition, consistent with the approach taken within the ES, a tolerance of +1 dB(A) has been taken into account with regard to the internal noise criteria when windows are open.

Table 4.1 Daytime Noise Intrusion Levels $L_{Aeq,16hours}$

Ref	External $L_{Aeq,16hr}$ Night-time	Internal $L_{Aeq,16hr}$ Night-time (Windows Open)	Internal $L_{Aeq,16hr}$ Daytime (Windows Closed)	Target Criteria L_{Aeq}	Within Criteria	Mitigation Required
R1	41.2	29.2	17.2	35	Yes	No
R2	43.5	31.5	19.5	35	Yes	No
R3	46.4	34.4	22.4	35	Yes	No
R4	46.8	34.8	22.8	35	Yes	No
R5	44.7	32.7	20.7	35	Yes	No
R6	44.8	32.8	20.8	35	Yes	No
R7	44.5	32.5	20.5	35	Yes	No
R8	45.7	33.7	21.7	35	Yes	No
R9	40.2	28.2	16.2	35	Yes	No
R10	44.1	32.1	20.1	35	Yes	No
R11	44.7	32.7	20.7	35	Yes	No
R12	43.5	31.5	19.5	35	Yes	No
R13	42.9	30.9	18.9	35	Yes	No
R14	41.1	29.1	17.1	35	Yes	No
R15	39.0	27.0	15.0	35	Yes	No

All values are sound pressure levels in dB re: 2x 10^{-5} Pa.

Table 4.2 Night-time Noise Intrusion Levels $L_{Aeq,8hours}$

Ref	External $L_{Aeq,8hr}$ Night-time	Internal $L_{Aeq,8hr}$ Night-time (Windows Open)	Internal $L_{Aeq,8hr}$ Daytime (Windows Closed)	Target Criteria $L_{Aeq,8hours}$	Within Criteria	Mitigation Required
R1	44.7	32.7	20.7	30	No	Yes
R2	46.0	34.0	22.0	30	No	Yes
R3	47.0	35.0	23.0	30	No	Yes
R4	47.4	35.4	23.4	30	No	Yes
R5	49.4	37.4	25.4	30	No	Yes
R6	50.4	38.4	26.4	30	No	Yes
R7	48.6	36.6	24.6	30	No	Yes
R8	46.3	34.3	22.3	30	No	Yes
R9	40.9	28.9	16.9	30	Yes	No
R10	45.0	33.0	21.0	30	No	Yes
R11	45.4	33.4	21.4	30	No	Yes
R12	42.9	30.9	18.9	30	Yes	No
R13	43.4	31.4	19.4	30	Yes	No
R14	42.2	30.2	18.2	30	Yes	No
R15	40.5	28.5	16.5	30	Yes	No

All values are sound pressure levels in dB re: $2x\ 10^{-5}$ Pa.

With regard to noise from the gas plant, in accordance with the Kirklees NDA, the target internal criteria are NR25 in living rooms and NR20 in bedrooms due to the tonal content of the noise source. Table 4.3 below presents the predicted external and internal noise levels across the frequency range at first floor level based on the BS 8233 rigorous noise break-in calculation method using the proposed building construction details, at the most exposed receptor facade to this plant (R12 / Plot 24).

Table 4.3 Plant Compound Noise Frequency Spectrum (R12 / Plot 24) with Windows Open

Octave Band Centre Frequency (Hz)	Noise Level (dB)						
	63	125	250	500	1000	2000	4000
Predicted Noise Level Externally	58.9	44.8	36.2	38.9	37.9	32.2	25.2
Resultant Internal noise Level (BS 8233 Calculation)	44.8	30.5	21.9	24.6	23.6	17.9	10.9
NR20	51.3	39.4	30.6	24.3	20	16.8	14.4

With windows open, assuming a 12 dB reduction across the frequency range, the internal noise level is NR24. The exceedance at 1kHz is likely to be masked by distant road traffic noise whilst the attenuation through the open window is likely to provide greater than 12 dB attenuation. With windows closed the internal criteria of NR20 is predicted to be achieved.

The predicted noise levels shown in the tables above confirm that standard double glazing will be acceptable throughout the site for both living rooms and bedrooms. Openable windows will be acceptable for living rooms.

However, consideration will need to be given with regard to the means of ventilation to some bedrooms along the extremities of the site. The locations where alternative means of ventilation will be required are presented in SK04. Trickle vents with a $D_{,n,e,w}$ of 34 dB are proposed to be installed which would maintain the performance of the standard double glazing specification referenced above.

5.0 Conclusions

A noise assessment has been undertaken to support the discharge of Planning Condition 12 (Application Ref: 2014/62/90780E) for Phases 2 & 3 of the proposed residential development of land off Owl Lane,

Comparable to the findings of the previous assessment, standard double-glazing will be acceptable throughout the site whilst openable windows will be an acceptable for means of ventilation for all living rooms and the majority of bedrooms. Alternative means of ventilation will be required for some bedrooms along the western boundary of the site opposite UPS and Rixonway Kitchens as well as a small number of bedrooms in the south eastern part of the site.

Appendices

Appendix A – Acoustic Terminology and Abbreviations

Acoustic Terminology

dB — Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is high-pitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.

dB(A) — Instead, the dBA figure is used, as this is found to relate better to the loudness of the sound heard. The dBA figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dBA value provides a good representation of how loud a sound is.

L_{Aeq} — Since almost all sounds vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The $L_{Aeq,\ 07:00 - 23:00}$ for example, describes the equivalent continuous noise level over the 12 hour period between 7 am and 11 pm. During this time period the L_{pA} at any particular time is likely to have been either greater or lower that the $L_{Aeq,\ 07:00 - 23:00}$.

L_{Amin} — The L_{Amin} is the quietest instantaneous noise level. This is usually the quietest 125 milliseconds measured during any given period of time.

L_{Amax} — The L_{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.

L_n — Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dBA is exceeded for say 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the $L_{A10,\ 1\ hr}$ = x dB.

The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90}, the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.

R_w — The *weighted sound reduction index* determined using the above *measurement* procedure, but weighted in accordance with the procedures set down in BS EN ISO 717-1. Partitioning and building board manufacturers commonly use this index to describe the inherent sound insulation performance of their products.

Abbreviations

CADNA – Computer Aided Noise Abatement

CRTN – Calculation of Road Traffic Noise

DMRB – Design Manual for Roads and Bridges

AAWT – Annual Average Weekday Traffic

HGV – Heavy Goods Vehicle

WYGE – WYG Environment

NPPF – National Planning Policy Framework

NPPG – National Planning Policy Guidance

NOAEL – No Observed Adverse Effect Level

LOAEL – Lowest Observed Adverse Effect Level

SOAEL – Significant Observed Adverse Effect Level

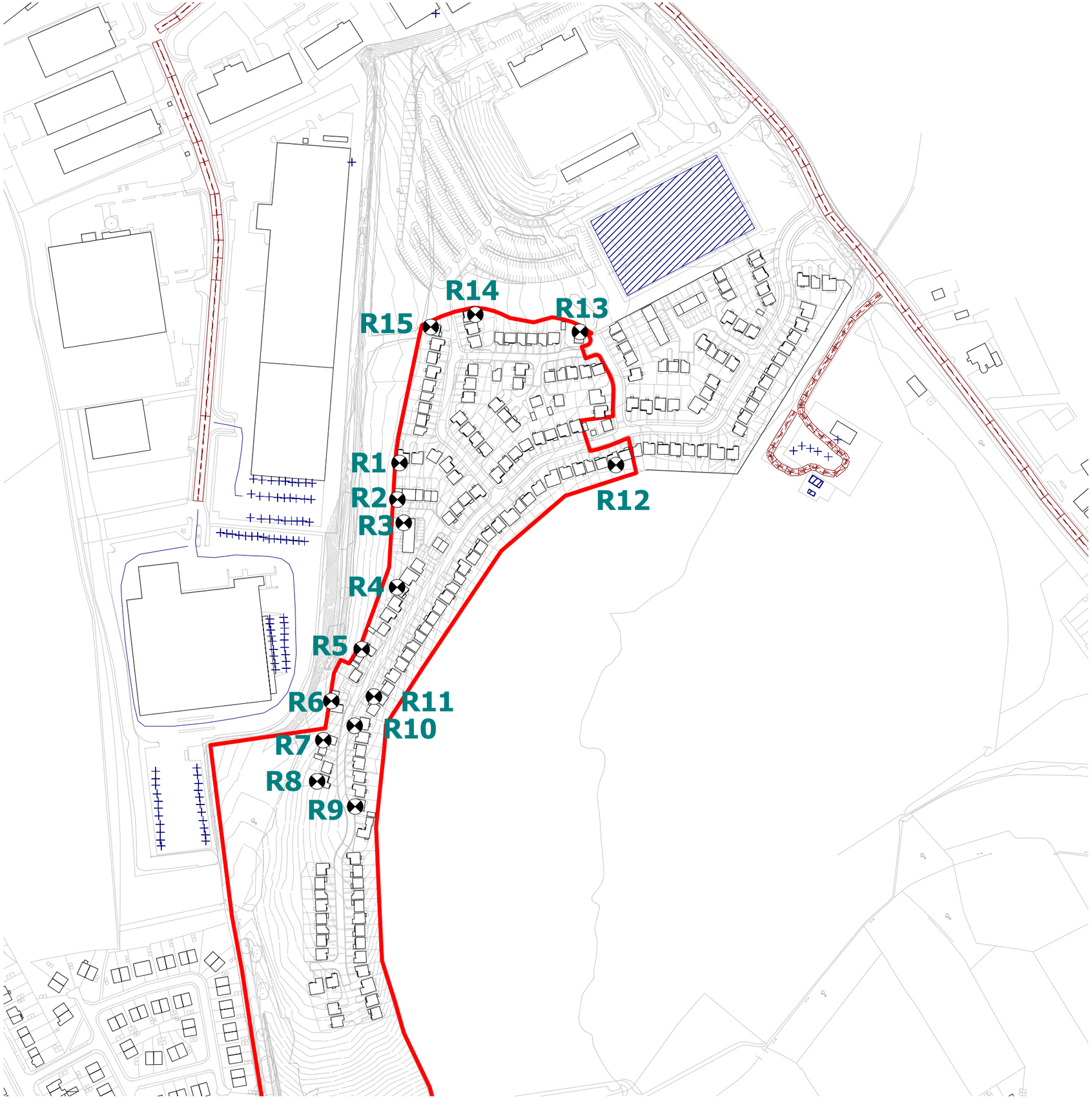
Appendix B – Sketches

SK01 Proposed Receptor Location Plan

SK02 Noise Contour Plot Proposed $L_{Aeq,16hr}$ 1.5m

SK03 Noise Contour Plot Proposed $L_{eq,8hr}$ 4m

SK04 Required Mitigation – Bedrooms



Client:
Harron Homes

Project:
Owl Lane Phases 2 & 3
Noise Assessment

Project Number:
A096908

Site Address:
Owl Lane,
Dewsbury

Drawing Title / Scenario:
Receptor
Location Plan

Drawing Number:
SK01

Key:

Site Boundary:

Receptor Location:

Scale : Not to scale

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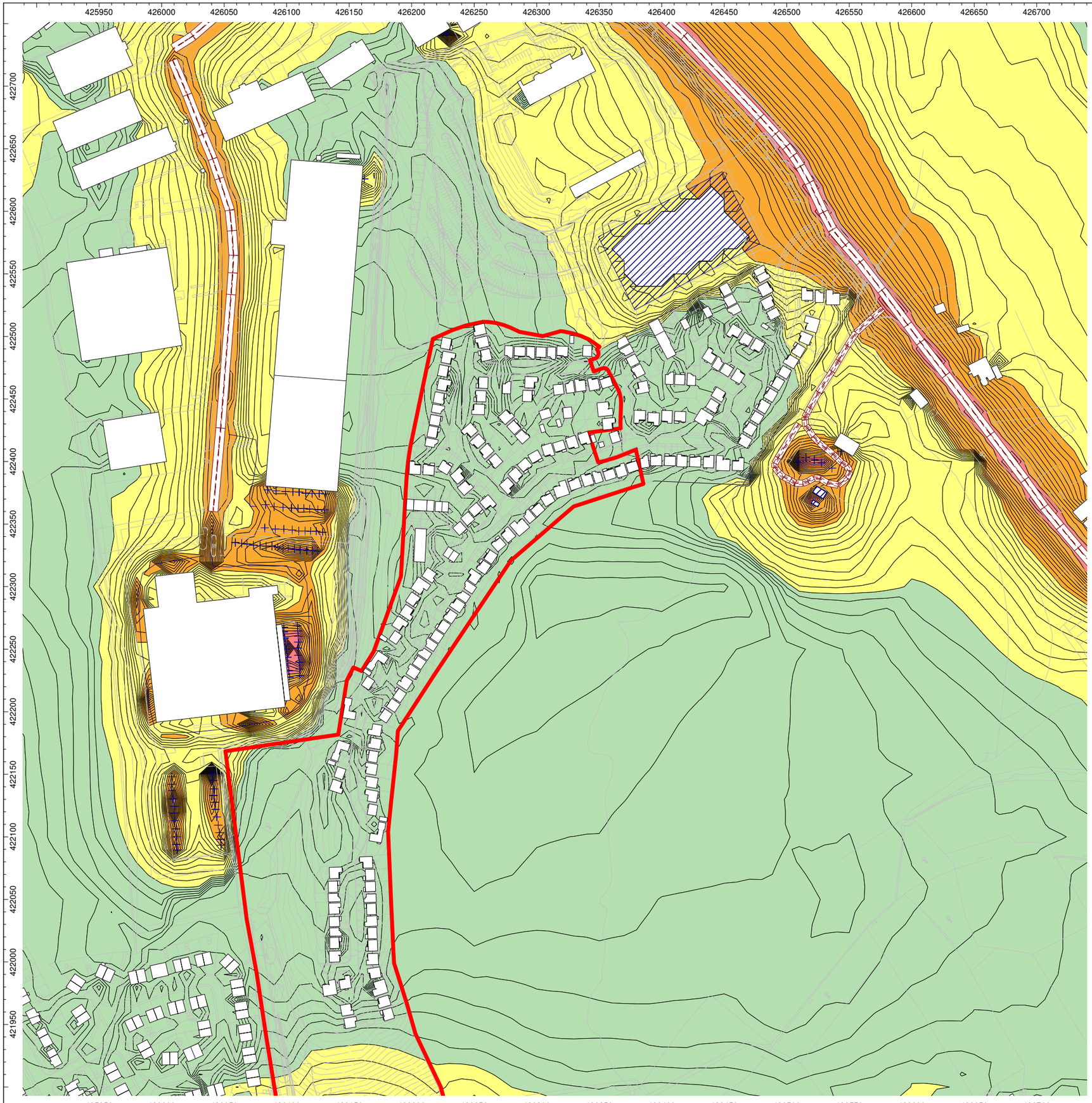

Client:
Harron Homes

Project:
Owl Lane Phases 2 & 3
Noise Assessment

Project Number:
A096908

Site Address:
Owl Lane,
Dewsbury

Drawing Title:
Proposed LAeq,1hour
Daytime Noise
Contour Plot

Drawing Number:
SK02

Key:

Site boundary:

0.0 - 50.0 dB
50.0 - 60.0 dB
60.0 - 70.0 dB
>70.0 dB

Contour Plot Presented for
Indicative Purposes Only

Scale : Not to scale

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Leicestershire
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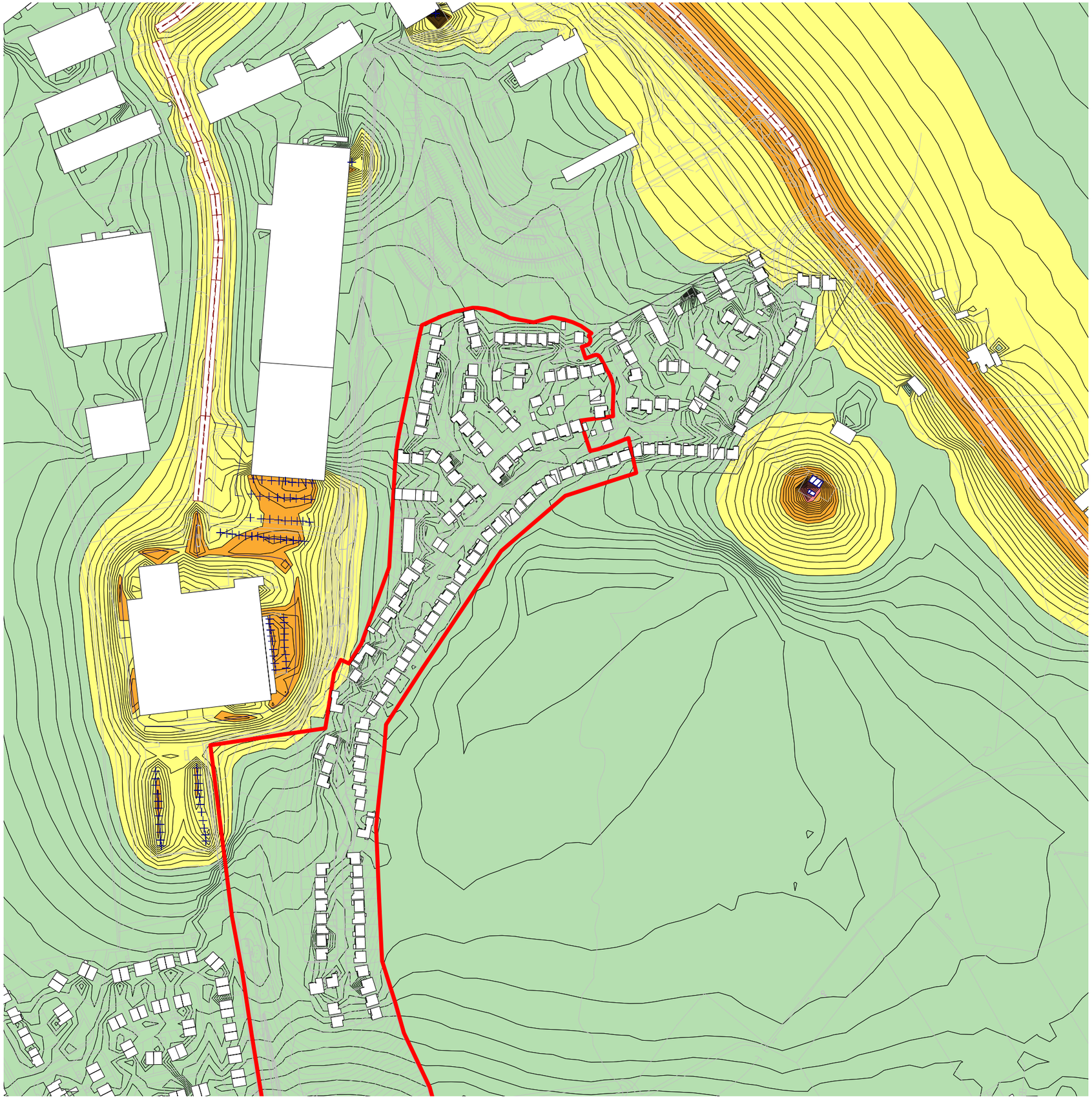

Client:
Harron Homes

Project:
Owl Lane Phases 2 & 3
Noise Assessment

Project Number:
A096908

Site Address:
Owl Lane,
Dewsbury

Drawing Title:
Proposed LAeq,1hour
Night-time Noise
Contour Plot

Drawing Number:
SK03

Key:

Site boundary:

0.0 - 50.0 dB
50.0 - 60.0 dB
60.0 - 70.0 dB
>70.0 dB

Contour Plot Presented for
Indicative Purposes Only

Scale : Not to scale

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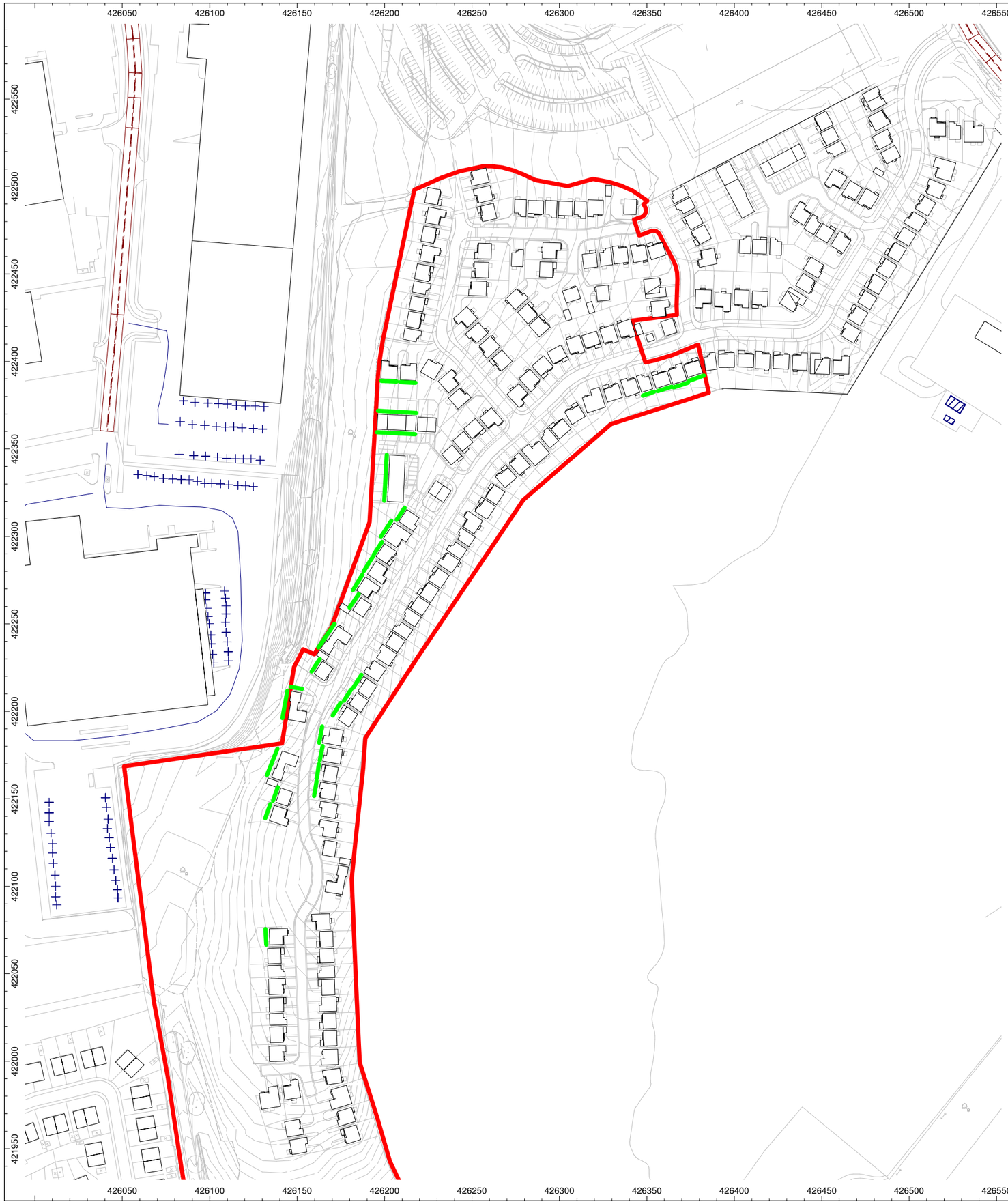

Client:
Harron Homes

Project:
Owl Lane Phases 2 & 3
Noise Assessment

Project Number:
A096908

Site Address:
Owl Lane,
Dewsbury

Drawing Title / Scenario:
Required Mitigation
- Bedrooms

Drawing Number:
SK04

Key:

Site Boundary:

Alternative Ventilation Required:

Specification:
Trickle Vents with
34 dB Dn,e,w

Scale : Not to scale

WYGE Leicester 13.10.16

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