Persimmon Homes

Proposed Residential Development, Wombwell, Barnsley

Noise Assessment
August 2013

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1.0 Introduction

1.1 Purpose of this Report

This report presents the findings of a noise assessment for a proposed residential development on land off Barnsley Road, Wombwell.

A description of the existing noise environment in and around the site is provided. Noise surveys have been undertaken and the results used to verify predictions of the short-term and long-term effects of noise. The noise levels from the proposed development have been predicted at local representative receptors using CADNA noise modelling software which incorporates ISO 9613 and CRTN methodologies and calculations.

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.

1.2 Legislative Context (England)

PPG24 was replaced by NPPF on 27 March 2012. With regard to noise and planning NPPF contains the following 4 short statements (section 123):

A. Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;

B. Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;

C. Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and

D. Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

2.0 Assessment Criteria

2.1 Residential Noise Assessment Criteria

The criteria in BS 8233:1999 '*Sound insulation and noise reduction for buildings – code of practice*' has been chosen as a suitable method for determining an adequate level of noise control to ensure that noise levels within proposed properties, as a result of the proposed development, meet the following noise guideline values specified in the standard:

		Good		Reasonable	
Living rooms	L_{Aeq} =	30	-	40 dB	
Bedrooms	L_{Aeq} =	30	-	35 dB,	L_{Amax}, night-time = 45 dB
Gardens	L_{Aeq} =	50	-	55 dB	

BS 8233:1999 suggests that a typical façade, regardless of construction, will offer a maximum of 15 dB sound insulation when windows are open.

For the purposes of this assessment, the target noise level criteria with regard to habitable spaces is 35 $dBL_{Aeq,16hours}$ for living rooms and 30 $dBL_{Aeq,8hours}$ or 45 dBL_{Amax} for bedrooms. For external areas the target noise level criteria is 55 $dBL_{Aeq,\ 16hours}$. Comment is made where necessary where the target criteria is not strictly adhered to.

These levels are also comparable to the World Health Organisation Recommendations in their 'Guidelines for Community Noise' (1999) publication which recommends internal noise levels of 30 $dBL_{Aeq,8hours}$ / 45 dBL_{AMax} for bedrooms and 35 $dBL_{Aeq,16hours}$ for living rooms.

With regard to external amenity areas, the WHO Guidelines presents thresholds of annoyance and states that '*to protect the majority of people being seriously affected by noise during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55dB$L_{Aeq,16\ hours}$*.' It should be noted, however, that an individual's response or perception to noise is subjective. The WHO Guidelines refer to noise levels which relate to thresholds of detectable effects in the population. Therefore, whilst the guideline values set targets which are typically used as part of environmental noise assessments, including for proposed residential developments, the values do not represent all people's response to noise in all cases.

2.2 Tranquility

An assessment of the existing tranquillity level of the site has been based on the mapping data published by Campaign to Protect Rural England (CPRE). This uses a colour coded system and a 500m assessment grid for the whole of England, and a tranquillity rating of between 1 and 10 is assigned (10 being most tranquil and 1 being least).

3.0 Assessment Methodology

3.1 Noise Modelling Methodology

Three dimensional noise modelling has been undertaken based on the monitoring data to predict L_{Aeq} noise levels at a large number of locations both horizontally and vertically. CADNA noise modelling software has been used with the noise modelling undertaken based on the Department of Transport Calculation of Road Traffic Noise (CRTN) and ISO 9613 noise propagation methodology and allows for detailed prediction of noise levels to be undertaken for large numbers of receptor points and different noise emission scenarios.

The modelling software calculates noise levels based on the emission parameters and spatial settings that are entered. Input data, assumptions and model settings as given in the table below have been used.

Table 3.1 Modelling Parameters Sources and Assumptions

Parameter	Source	Details
Horizontal distances – around site	Ordnance Survey	Ordnance Survey
Traffic data, main surrounding roads	WYGE	Traffic data based on WYGE observations / measured noise level data.
Traffic data – local roads	WYGE	WYGE observations and experience.
Building heights – around site	WYGE Observations	8m height or 4m height for one storey buildings
Barrier heights	WYGE Observations	No barriers included in validation. 2.1m and 1.8m high barriers included where required for proposed modelling exercise.
Receptor positions	WYGE	Height of 1.5 m for ground floor, 4 m for first floor. 1.5 m height for model grid and monitoring locations for validation.
Proposed Site Plan	Persimmon Homes	Proposed Planning and Landscape Layout

It is acknowledged that a number of these assumptions will affect the overall noise levels presented in this report. However, it should be noted that certain assumptions made, as identified above, are worst case.

3.2 Model Input Data

3.2.1 Traffic Noise Data

All roads expected to make a significant contribution have been included within this assessment. Noise emissions from existing traffic flows have been derived from verification of the measured noise levels along with observations made during the site survey.

3.2.2 Model Verification

The model was verified by modelling the monitoring locations for the 'existing' scenario. A daytime and night time L_{Aeq} scenario has been verified for LT1, LT2, ST6 and ST8. The comparison between the monitoring and modelling results are shown in the tables below.

Table 3.3 Road Traffic Noise Validation $L_{Aeq;\ daytime\ 07:00 – 23:00}$

Location	Monitored L_{Aeq}	Modelled L_{Aeq}	Difference between Monitored and Modelled Results
LT1	55.3	54.4	-0.9
LT2	69.9	69.9	0.0
ST6	66.2	66.4	0.2

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

Table 3.4 Road Traffic Noise Validation $L_{Aeq;\ night\text{-}time\ 23:00– 07:00}$

Location	Monitored L_{Aeq}	Modelled L_{Aeq}	Difference between Monitored and Modelled Results
LT1	49.9	49.3	-0.6
LT2	64.8	64.8	0.0
ST8	57.6	57.6	0.0

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

The verification points show a divergence between monitored and modelled results of no more than 3 dB. All models are assumed to be suitably verified.

3.2.3 Industrial / Commercial Noise

Within the southern part of the site, noise from an extract vent along the western facade of the Potters of Barnsley meat wholesalers was audible. Whilst not audible at the site, breakout from the Billingtons Steel manufacturing area which is located in northern part of the premises facing Bradberry Balk Lane, noise comprising a general drone / grinding and occasional clangs and bangs has also been taken into account.

With regard to noise associated with the Potters extract and breakout from Billingtons, noise modelling has been undertaken in relation to these sources and the model was verified by modelling the specific noise level data obtained at the site boundary opposite each item of plant. Whilst steps were taken to minimise extraneous noise sources as far as practicable, the measurements were influenced by road traffic noise. Therefore, the measured L_{A90} has been used for to represent the Potters Extract given the continuous drone of the plant over the course of the measurements. The comparison between the monitoring and modelling results are shown in the table below. The monitoring locations (S1, S2 and S3) and the locations of the items of plant and noise sources are presented in SK02 of Appendix B.

Table 3.2 Plant Noise specific Measurement and Model Validation L_{Aeq}

Location	Monitored Noise Level	Modelled Noise level	Difference between Monitored and Modelled Results
S1 – On-site, approximately 10m from Potters Extract	63.3	63.3	0.0
S2 – On Barnsley Road, approximately 25m from Potters Extract	53.2	54.7	1.5
S3 – Approx. 15m from Billingtons roller shutter doors	60.3	60.6	0.3

* 15 minute L_{Aeq} - Inclusive of road traffic noise as both industrial and road traffic were principal sources

The verification model shows no divergence between monitored and modelled results and is therefore assumed to be suitably verified.

In addition to the above, whilst not audible during the attended noise measurements, noise attributable to potential delivery noise associated with Potters has been undertaken based on historical data obtained by WYG. The assessment has been undertaken using the following reasonable worst-case calculations which have been based on measurements of medium size HGV's delivering consumables. All measurements were undertaken in free-field conditions. In addition to noise from the unloading process, the levels used in the assessment include noise from the vehicle pulling up to the unloading bays, manoeuvring into position and then pulling away once unloading/loading is complete, together with other sources such reversing bleepers.

- *Daytime / Night-time $L_{Aeq,1hr}$ Noise Level = 64.8 dB at 3 m distance [L_w = 82.3 dB]*

- *L_{Amax} Noise levels from deliveries L_{Amax} used is as 85.4dB at 3 m distance [Lw = 102.9 dB]*

Using a one hour period is considered to present a worst case assessment as the relative noise criteria relates to assessment periods of 16 hours during the day and 8 hours during the night.

4.0 Noise Survey

4.1 Noise Survey Methodology

A monitoring survey was undertaken to characterise baseline ambient noise levels currently experienced on the site and to establish the relative local background and traffic noise levels.

Equipment used during the survey included:

Norsonic 118	Environmental Noise Analyser	s/n	28972
Norsonic 131	Environmental Noise Analyser (WYG4)	s/n	1312722
Norsonic 140	Environmental Noise Analyser	s/n	1402987
Norsonic 140	Building Acoustics Analyser	s/n	1402989
Rion NL-52	Environmental Noise Analyser (WYG14)	s/n	610212
Norsonic 1251	Sound Calibrator	s/n	31291

The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice and no drift was observed. The accuracy of the calibrators can be traced to National Physical Laboratory Standards, calibration certificates for which are available on request.

A baseline monitoring survey was undertaken at 12 locations (as specified in the following table and shown in SK01 of Appendix B) from Friday 12th April 2013 to Wednesday 17th April 2013. Attended short term measurements were undertaken at nine locations during the day, evening, peak and night-time periods with three additional locations being measured unattended over a 114 hour period. The raw data collected from the long term monitoring is available upon request.

Measurements were taken in general accordance with BS 7445-1:2003 *The Description and Measurement of Environmental Noise: Guide to quantities and procedures*. Weather conditions during the survey period were observed as being dry. Anemometer readings confirmed that wind speeds were less than 5 ms^{-1} at all times during the survey with a predominant westerly wind direction.

Table 4.1 Noise Monitoring Locations

Ref	Description	Grid Reference	
		X	Y
LT1	Southern boundary of the site adjacent to commercial premises on Barnsley Road	439496.9	403502.0
LT2	Northern Boundary of Site Adjacent to A633	439497.7	403655.7
ST1	Centre of the site	439459.1	403537.8
ST2	Adjacent to the rear boundary of Potters	439488.1	403655.5
ST3	Adjacent to the A633 in central part of the site	439721.1	403476.5
ST4	On earth mound along north eastern boundary of the site	439757.0	403356.2
ST5	South Eastern Boundary of the site	439354.9	403536.4
ST6	Corner of John Street and Barnsley Road	439318.3	403797.1
ST7	In field to the north of the A633.	439446.5	403467.9
ST8	Adjacent to Barnsley Road	439496.9	403502.0

4.2 Noise Survey Results

Existing ambient noise levels around the site are dominated by road traffic noise, particularly from Mitchells Way (A633) to the north of the site.

Ambient and background noise levels are usually described using the L_{Aeq} index (a form of energy average) and the L_{A90} index (i.e. the level exceeded for 90% of the measurement period) respectively. Road traffic noise is generally described using the L_{A10} index (i.e. the level exceeded for 10% of the measurement period).

The results of the statistical measurements and frequency measurements conducted during the survey are summarised in the following table. All values are sound pressure levels in dB (re: 2 x 10^{-5} Pa).

Table 4.2 Results of Baseline Noise Monitoring Survey

Period	Duration (T)	Monitoring Date and Times	Location	$L_{Aeq,T}$ (dB)	L_{Amax} (dB)	L_{Amin} (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
Day 07:00 - 23:00	75 hours	12/04/2013 - 17/04/2013 11:40 - 06:35	LT1	55.3	75.0	31.4	57.1	48.0
Night 23:00 – 07:00	38 hours	12/04/2013 - 17/04/2013 23:00 - 07:00		49.9	69.4	24.8	49.4	36.1
Day 07:00 - 23:00	75 hours	12/04/2013 - 17/04/2013 12:56 - 06:39	LT2	69.9	91.8	36.5	73.3	51.4
Night 23:00 – 07:00	38 hours	12/04/2013 - 17/04/2013 23:00 - 07:00		64.8	84.9	35.2	60.3	42.0
Day 07:00 - 19:00	15 Mins	12/04/2013 11:29	ST1	58.2	66.9	42.9	61.2	50.6
	15 Mins	12/04/2013 11:46	ST2	60.1	74.8	50.3	62.3	54.5

Period	Duration (T)	Monitoring Date and Times	Location	$L_{Aeq,T}$ (dB)	L_{Amax} (dB)	L_{Amin} (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
	15 Mins	12/04/2013 12:06	ST3	65.8	75.7	47.1	69.5	54.7
	15 Mins	12/04/2013 12:38	ST4	59.5	69.6	45.1	62.4	51.8
	15 Mins	15/04/2013 14:00	ST5	48.8	64	42.3	50.7	46.1
	15 Mins	15/04/2013 14:24	ST6	66.2	89.1	48.4	69.6	53.2
	15 Mins	15/04/2013 15:02	ST7	68	82.1	47.8	71.8	53.8
Evening 19:00 - 23:00	15 Mins	16/04/2013 22:44	ST7	58.4	75.8	38.6	63.1	41.1
	15 Mins	16/04/2013 22:24	ST8	65.7	94.4	34	64.6	38.7
Night 23:00 - 07:00	15 Mins	16/04/2013 23:56	ST7	59	75.4	37	62.8	40
	15 Mins	16/04/2013 23:24	ST8	57.6	78.3	32.8	52.9	34.4

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

4.3 Tranquility

By reference to the CRPE maps as noted in Section 2 the development site and surrounding area is assessed as falling into Zones 3 - 4 and is therefore not considered to be of high sensitivity.

5.0 Assessment of Key Effects

The assessment presented below is undertaken based on the validated noise modelling scenarios identified in Section 3 with predicted noise levels established at selected locations representative of proposed receptors across the site. The models include noise generation from both road traffic noise and noise associated with the identified commercial premises. Visual representations of the noise contour plots are provided in SK02 – SK04 in Appendix B.

5.1 Noise Intrusion Assessment

The criteria specified in Section 2 forms the basis of the assessment. The proposed building envelopes must provide adequate insulation against the measured noise levels and most standard external wall and roof constructions will do so if correctly designed. Generally, the glazing is generally the weak spot of the building envelope, in acoustic terms, and the following assessment establishes the glazing specification required to achieve the internal noise level criteria. Comment is also given to acoustic considerations with respect to appropriate means of ventilation which must be assessed separately in order to comply with the Building Regulations as well as noise in proposed external amenity areas.

Based on the noise modelling exercise, internal noise levels have been assessed both with windows open and windows closed. A reduction from a partially open window of 15 dB, and, with windows closed an assumption of a standard double glazed unit (4mm glass / 16mm air gap / 4mm glass) with a sound reduction of 26 dB R_{tr}[1] has been used. The predicted noise levels and associated required mitigation for selected receptors throughout the site are presented in Appendix C. A summary of the highest predicted noise levels are presented in Tables 5.1 and 5.2. For bedrooms, the $L_{Aeq,8hours}$ has been assessed as the associated design recommendations will be sufficient to address the vast majority of L_{Amax} levels that would occur at the site.

Table 5.1: Daytime Noise Intrusion Levels (Highest specification)

Plot	Noise Criteria	Modelled Noise Level	Sound reduction required (R_{tr} (dB))
216 Front	35 dB $L_{Aeq,16\ hour}$	63 dB $L_{Aeq,16\ hour}$	28

[1] Weighted sound reduction for road traffic noise. For noise sources where higher frequencies are dominant, the performance of the unit increases

Table 5.2: Daytime Noise Intrusion Levels (Highest Specification)

Plots	Noise Criteria	Modelled Noise Level	Sound Reduction Required (R_{tr} (dB))
199 Rear	30 dB $L_{Aeq,16\ hour}$	62 dB $L_{Aeq,8\ hour}$	32

A further assessment has been undertaken with regard to potential unloading / unloading activities within the Potter service yard to present a worst case and precautionary scenario with regard to maximum noise levels. The findings are presented in Appendix C and a summary of the highest predicted noise levels are presented in Tables 5.3.

Table 5.3: Maximum noise levels from Potters Service Yard (Highest specification)

Plots	Noise Criteria	Modelled Noise Level	Sound Reduction Required (R_{tr} (dB))
46 Front	45 dB $L_{Aeq,16\ hour}$	64 dB $L_{Aeq,8\ hour}$	19

Glazing

The results presented in above and in Appendix C show that the adopted noise level criteria can be achieved at virtually all proposed dwellings with standard double glazing. There will be a requirement for enhanced glazing for living rooms and bedrooms located along the northern and southern boundaries of the site with a sound reduction performance of up to 32 dB R_{tr}. The locations where enhanced glazing is required are presented in SK05a and SK05b with example glazing specification presented in Appendix C.

Roof Construction

For a warm roof, i.e. where rooms are proposed in the roof space, the proposed design specification comprises concrete roof tiles with rigid insulation to cavity and a single layer of plaster board. This should provide a sound insulation performance of approximately 35 dB R_{tr}. With regard a cold roof, i.e. where no habitable rooms are proposed in the roof space, there will be a much greater level of acoustic performance.

As the performance of the proposed roof construction throughout the development will provide a greater level of acoustic performance than the required glazing specification, no further design measures are required.

Ventilation

Within the central part of the site, the vast majority of habitable living spaces and bedrooms, natural ventilation (i.e. with openable windows) will be acceptable. For some properties located within closer

proximity of to the northern and southern boundaries of the site, the criteria is predicted to be exceeded when windows are open in both habitable living spaces and bedrooms orientated towards the site boundaries. Acoustic trickle vents / cowls or acoustic air bricks will be suitable in terms of providing sufficient acoustic attenuation. The sound insulation performance of the units installed should be comparable to the glazing specification. The locations where alternative ventilation is required are presented in SK05c and SK05d.

5.2 External Amenity Areas

Predicted noise levels at the identified receptor locations are presented in the table below. The installation of close boarded fences or walls along garden boundaries which are identified within the planning layout presented in Appendix B have been taken into account within the noise modelling exercise. The location of fences has been included in line with the Planning Layout. It should be noted that for plots located along Mitchells Way (Plots 216-210, 200, 199 -192) a 2.1m high close boarded fence has been included.

Predicted noise levels in selected garden areas are presented in Table 5.4 below.

Table 5.4 External Noise Levels $L_{Aeq,16hr}$

Location	External L_{Aeq}	Target Criteria L_{Aeq}
216 G	58.1	55
214 G	55.4	55
212 G	58.4	55
200 G	56.4	55
204 G	54.6	55
199 G	58.5	55
192 G	58.8	55
195 G	55.7	55
1 G	52.0	55
34 G	47.6	55
14 G	46.3	55
28 G	52.0	55
70 G	47.9	55
57 G	54.6	55
169 G	53.1	55
138 G	53.5	55
125 G	52.9	55

** G denotes garden of dwelling*

Noise levels in external areas within the majority of the development site will fall within the target criteria of 55 $dBL_{Aeq,16hours}$. In a small number of gardens along the northern boundary of the site, noise levels are

predicted to slightly exceed 55 dBL_{Aeq}. As stated in Section 2, the WHO Guidelines refer to noise levels which relate to onset of detectable effects in the population. There is no upper noise limit specified with regard to what would be acceptable for all people in all occasions. On this basis and, in the context of the overall development, that noise levels in only a very small number of gardens will only marginally exceed 55 dB, it is considered reasonable to assume that some people will not be unacceptably affected by noise levels in external areas which are greater than the target noise level criteria. Additionally, prospective buyers will be aware of the noise level that they will be exposed to in external areas when undertaking a viewing of the property prior to purchase and can make an informed decision as to whether it is acceptable or not. Therefore, it is considered that acceptable levels of amenity are afforded throughout the proposed development site.

6.0 Conclusions

A noise assessment has been undertaken for a proposed residential development off Barnsley Road in Wombwell. The following conclusions can be made.

NPPF 123 A & B

In considering the NPPF test in section 123, points A & B. The proposed development is not expected to have an 'adverse impact' on health or quality of life. With regard to NPPF (123) point B, it is considered that all 'adverse impacts on health and quality of life' (relating to noise) are mitigated by the use of the following mitigation where required.

Noise Intrusion Assessment

A glazing and ventilation strategy has been provided in order to demonstrate that the relevant internal ambient noise level criteria, in accordance with standard guidance documents, can be achieved throughout the site. Standard mitigation measures comprising enhanced glazing and alternative means of ventilation will be required for some habitable living rooms and bedrooms located along the northern and southern boundary of the site. Within the remainder of the site, standard double glazing and openable windows will be acceptable.

External Amenity Assessment

With regard to external areas, noise levels will fall below the target noise level criteria of 55 $dBL_{Aeq,16\ hours}$ in the vast majority of gardens. In a small number of gardens in the northern part of the site, noise levels are predicted to exceed 55 $dBL_{Aeq,16\ hours}$ by a marginal amount. Based on the assessment undertaken, it is considered that, an acceptable level of amenity is afforded in private external amenity spaces throughout the proposed development site.

NPPF 123 C & D

The development site and surrounding area is situated in an area of tranquillity which ranges from CPRE Zone 3 - 4 (Zone 1 being the least tranquil and Zone 10 being the most tranquil), as such NPPF 123 point D is not considered to apply to this site. Additionally, no existing businesses are anticipated to be adversely affected by the proposals based on the assessment undertaken.

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

DMRB – Design Manual for Roads and Bridges

HGV – Heavy Goods Vehicle

WYGE – WYG Environment

PPG 24 – Planning Policy Guidance 24

NPPF – National Planning Policy Framework

Appendix B – Sketches

SK01 Noise Monitoring Location Plan

SK02 Daytime Noise Contour Plot $L_{Aeq,16hr}$

SK03 Night-time Noise Contour Plot $L_{Aeq,8hr}$

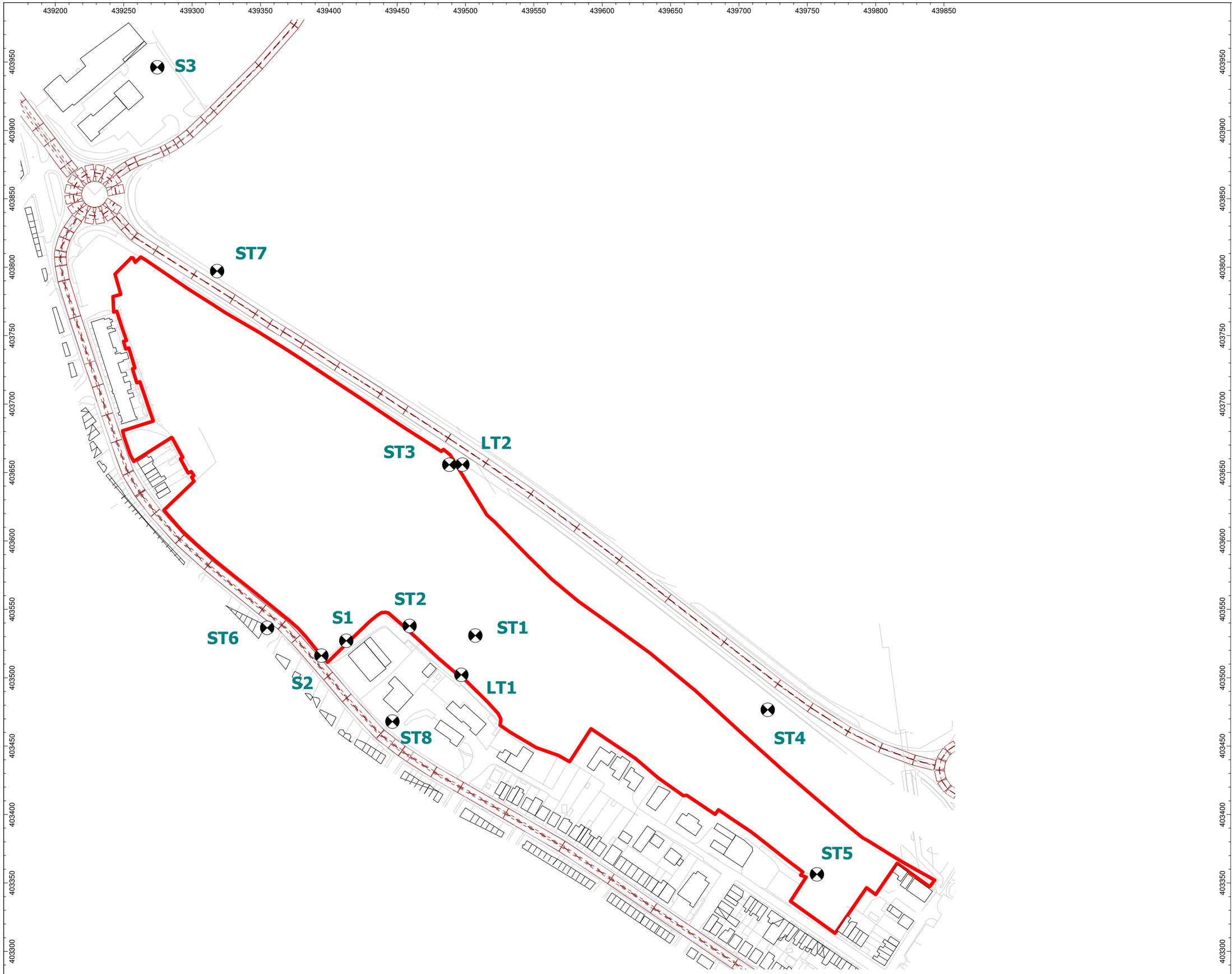
SK04 Night-Time Noise Contour Plot L_{Amax} from Potential Deliveries

SK05a Enhanced Glazing Requirements – Living Rooms

SK05b Enhanced Glazing Requirements – Bedrooms

SK05c Alternative Ventilation Requirements – Living Rooms

SK05d Alternative Ventilation Requirements – Bedrooms



Client:
Persimmon Homes

Project:
Wombwell,
Barnsley

Project Number:
A081108

Drawing Title / Scenario:
Noise Monitoring
Location Plan

Drawing Number:
SK01

Key:
Monitoring locations
Site Boundary

Scale : Not to scale

WYGE Leicester 31.07.13

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Client:
Persimmon Homes

Project:
Wombwell,
Barnsley

Project Number:
A081108

Drawing Title / Scenario:
Daytime Noise Contour Plot LAeq, 16hours

Drawing Number:
SK02

Key:
Site Boundary

0- 50 dB
50 - 61 dB
> 61 dB

Scale : Not to scale

Noise Contour Plots presented for indicative purposes only

WYGE Leicester 31.07.13

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Client:
Persimmon Homes

Project:
Wombwell,
Barnsley

Project Number:
A081108

Drawing Title / Scenario:
Night-time Noise Contour Plot LAeq, 8hours

Drawing Number:
SK03

Key:
Site Boundary

0 - 45.0 dB
45 - 56.0 dB
> 56.0 dB

Scale : Not to scale

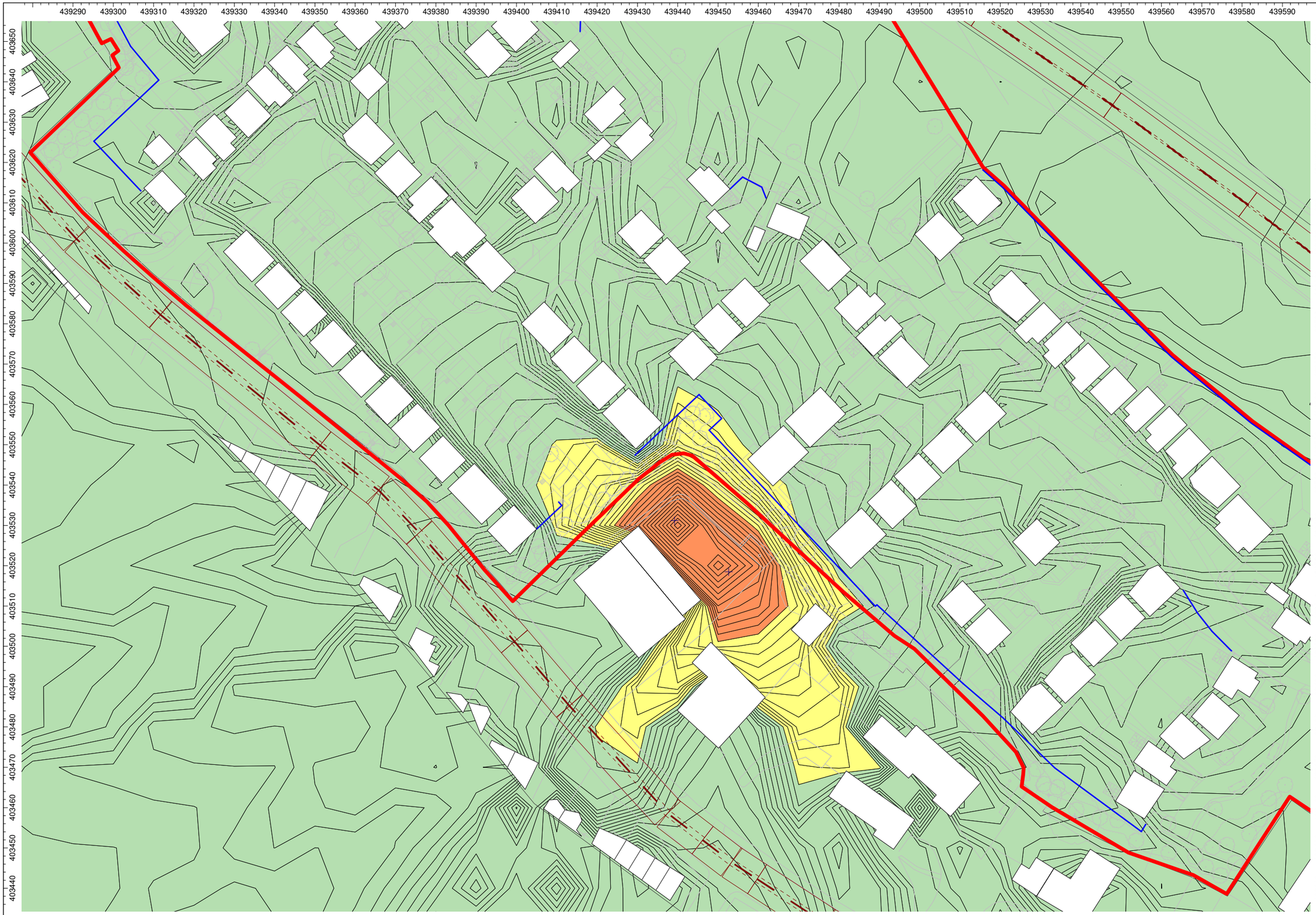
Noise Contour Plots presented for indicative purposes only

WYGE Leicester 31.07.13

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LE7 7GR
Tel 0116 234 8000

© WYG Environment



Client:
Persimmon Homes

Project:
Wombwell,
Barnsley

Project Number:
A081108

Drawing Title / Scenario:
Night-time Noise Contour Plot, LAmax from potential Potters deliveries

Drawing Number:
SK04

Key:
Site Boundary

0 - 60.0 dB
60 - 71.0 dB
> 71.0 dB

Scale : Not to scale

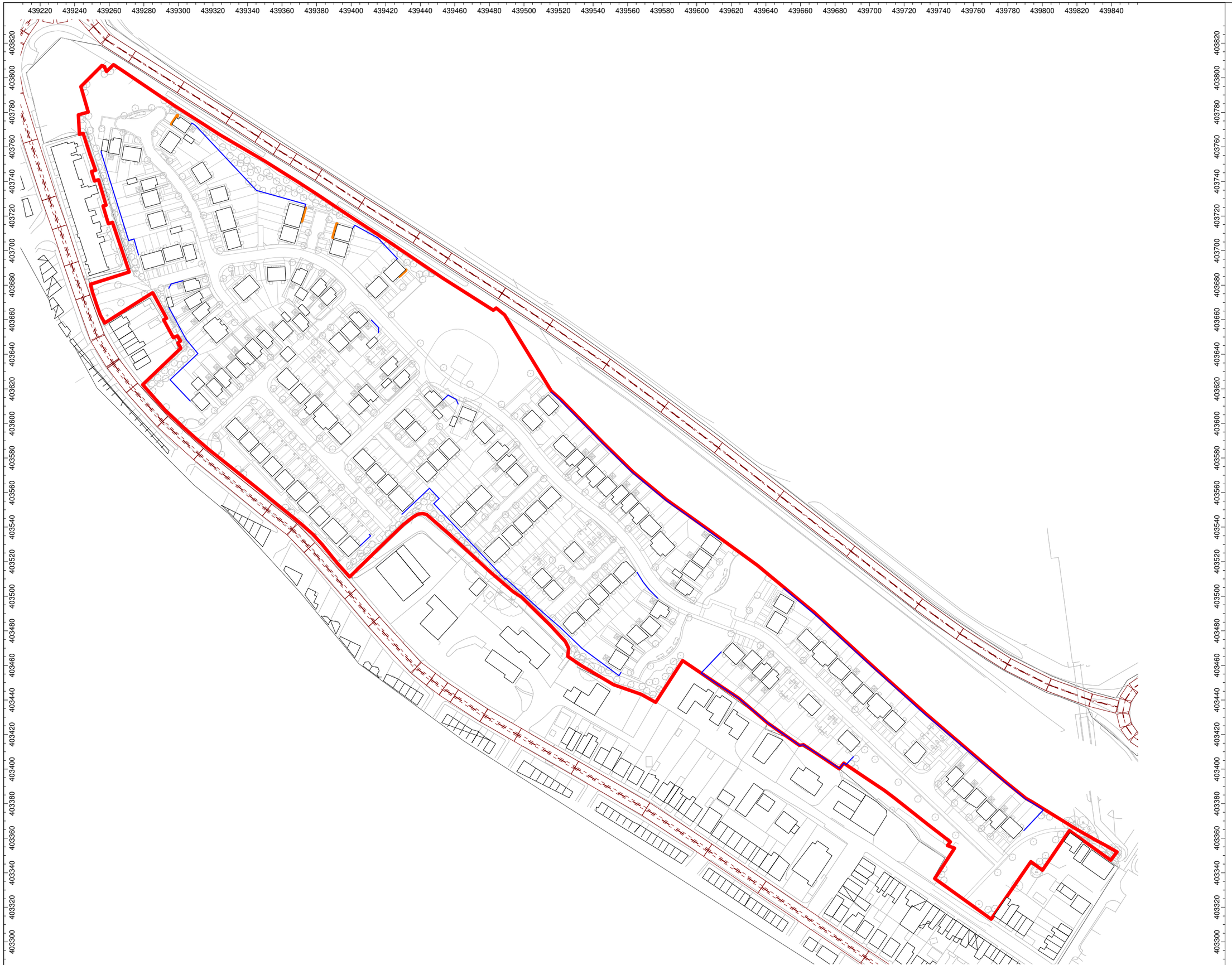
Noise Contour Plots presented for indicative purposes only

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Client:
Persimmon Homes

Project:
Wombwell,
Barnsley

Project Number:
A081108

Drawing Title / Scenario:
Enhanced Glazing Requirements Living Rooms

Drawing Number:
SK05a

Key:

Site Boundary

Enhanced Glazing Required

Scale : Not to scale

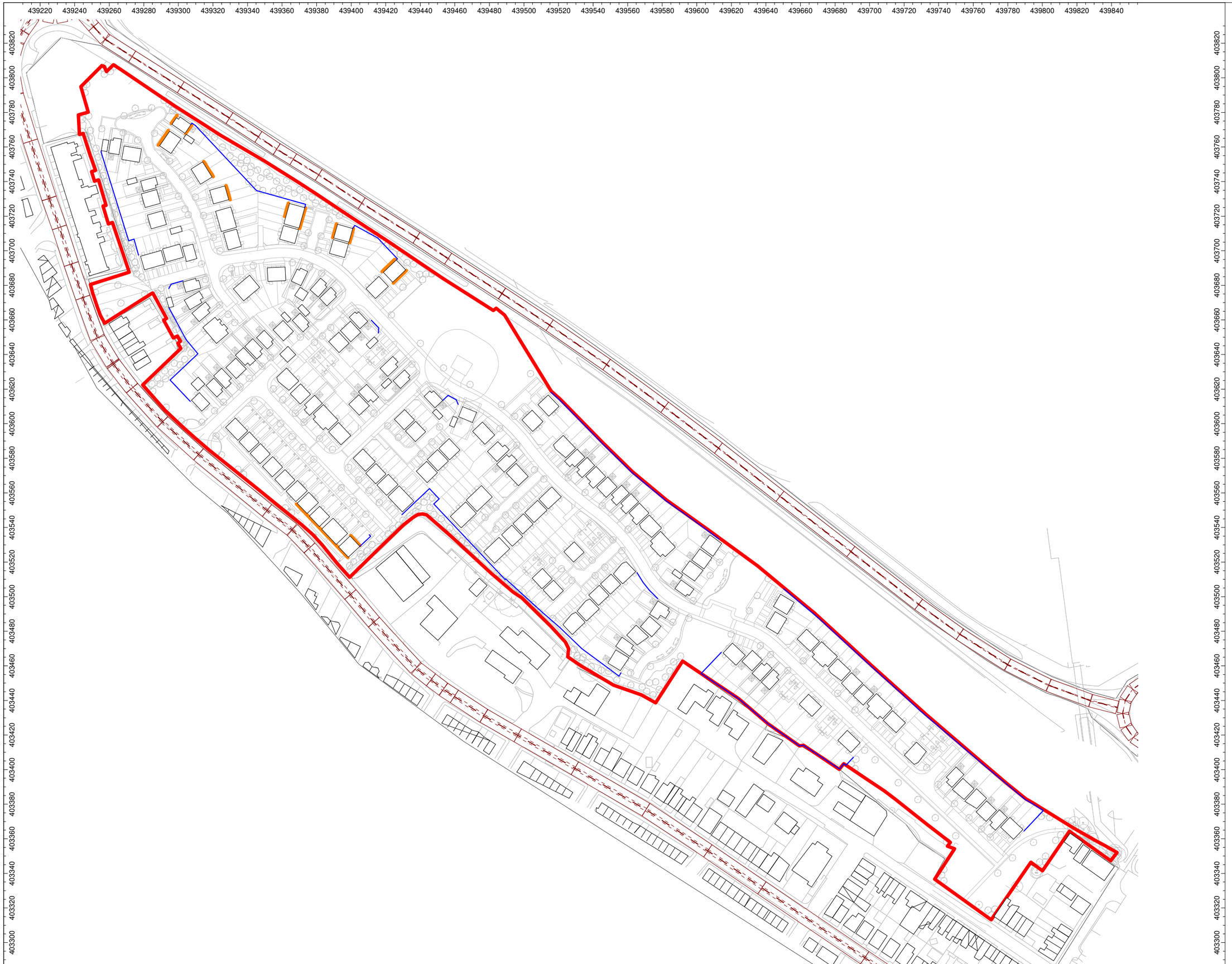
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Client:
Persimmon Homes

Project:
Wombwell,
Barnsley

Project Number:
A081108

Drawing Title / Scenario:
Enhanced Glazing Requirements Bedrooms

Drawing Number:
SK05b

Key:
Site Boundary

Enhanced Glazing Required

Scale : Not to scale

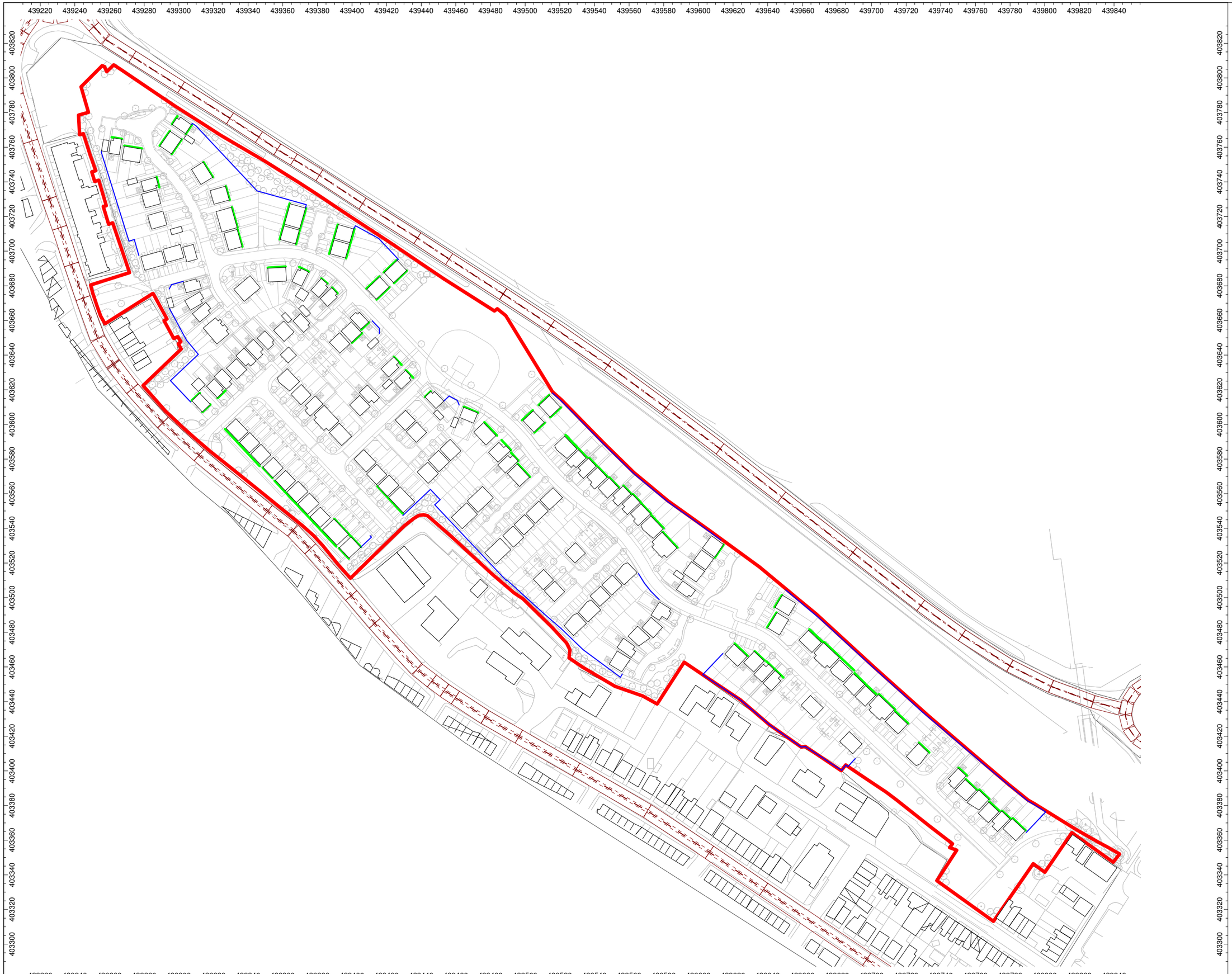
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Client:
Persimmon Homes

Project:
Wombwell,
Barnsley

Project Number:
A081108

Drawing Title / Scenario:
Alternative Ventilation Requirements
Living Rooms

Drawing Number:
SK05c

Key:
Site Boundary

Alternative Ventilation Required

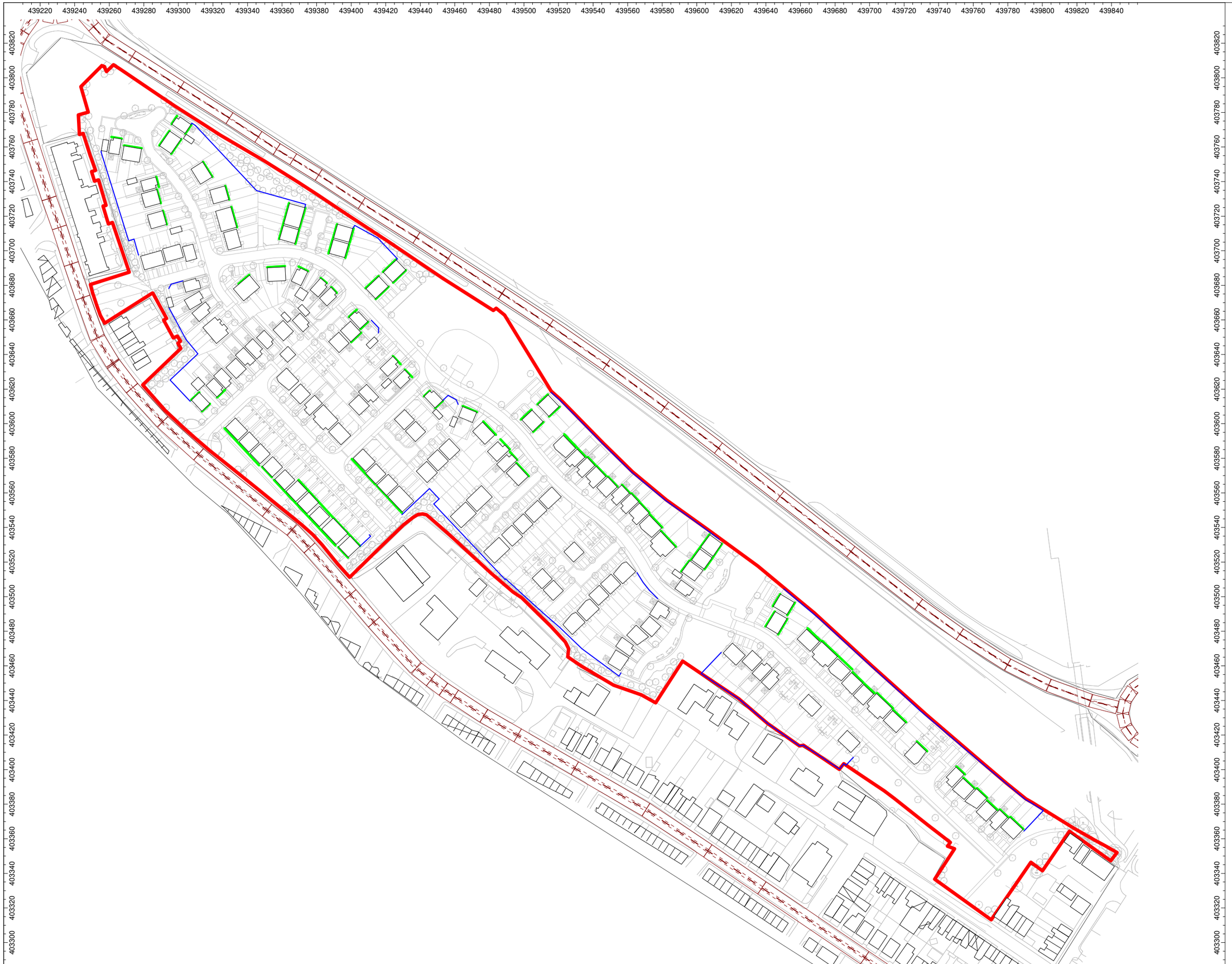
Scale : Not to scale

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Client:
Persimmon Homes

Project:
Wombwell,
Barnsley

Project Number:
A081108

Drawing Title / Scenario:
Alternative Ventilation Requirements - Bedrooms

Drawing Number:
SK05d

Key:
Site Boundary

Alternative Ventilation Required

Scale : Not to scale

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Appendix C – Predicted Noise Level Tables

Predicted Noise Levels and Recommended Mitigation - Living Rooms

Receptor	Predicted Noise Level (dB $L_{Aeq,T}$)	Noise Criteria (dB L_{Aeq})	Level of Attenuation Required (dB)	Example Enhanced Glazing Specification	Alternative Ventilation Required
217 Front	*59*	*35*	*24*	*NA*	*Yes*
218 Front	*59*	*35*	*24*	*NA*	*Yes*
219 Front	*59*	*35*	*24*	*NA*	*Yes*
219 Rear	*42*	*35*	*7*	*NA*	*NA*
214 Front	*59*	*35*	*24*	*NA*	*Yes*
215 Front	*60*	*35*	*25*	*NA*	*Yes*
216 Front	*63*	*35*	*28*	*6mm / 16mm / 6mm*	*Yes*
216 Rear	*59*	*35*	*24*	*NA*	*Yes*
214 Rear	*54*	*35*	*19*	*NA*	*Yes*
224 Front	*50*	*35*	*15*	*NA*	*NA*
213 Rear	*60*	*35*	*25*	*NA*	*Yes*
212 Rear	*59*	*35*	*24*	*NA*	*Yes*
211 Rear	*58*	*35*	*23*	*NA*	*Yes*
210 Rear	*58*	*35*	*23*	*NA*	*Yes*
209 Rear	*57*	*35*	*22*	*NA*	*Yes*
208 Rear	*56*	*35*	*21*	*NA*	*Yes*
207 Rear	*56*	*35*	*21*	*NA*	*Yes*
206 Rear	*55*	*35*	*20*	*NA*	*Yes*
205 Rear	*55*	*35*	*20*	*NA*	*Yes*
230 Front	*50*	*35*	*15*	*NA*	*NA*
200 Rear	*56*	*35*	*21*	*NA*	*Yes*
200 Front	*63*	*35*	*28*	*6mm / 16mm / 6mm*	*Yes*
201 Rear	*57*	*35*	*22*	*NA*	*Yes*
201 Front	*62*	*35*	*27*	*6mm / 16mm / 6mm*	*Yes*
202 Rear	*57*	*35*	*22*	*NA*	*Yes*
202 Front	*60*	*35*	*25*	*NA*	*Yes*
204 Rear	*55*	*35*	*20*	*NA*	*Yes*
199 Front	*63*	*35*	*28*	*6mm / 16mm / 6mm*	*Yes*
199 Rear	*59*	*35*	*24*	*NA*	*Yes*
198 Front	*61*	*35*	*26*	*NA*	*Yes*
198 Rear	*59*	*35*	*24*	*NA*	*Yes*
191 Front	*51*	*35*	*16*	*NA*	*NA*
190 Front	*52*	*35*	*17*	*NA*	*NA*
189 Front	*53*	*35*	*18*	*NA*	*Yes*
188 Front	*55*	*35*	*20*	*NA*	*Yes*
187 Front	*55*	*35*	*20*	*NA*	*Yes*
185 Front	*56*	*35*	*21*	*NA*	*Yes*
184 Front	*56*	*35*	*21*	*NA*	*Yes*
195 Rear	*56*	*35*	*21*	*NA*	*Yes*
193 Rear	*58*	*35*	*23*	*NA*	*Yes*
192 Rear	*59*	*35*	*24*	*NA*	*Yes*
192 Front	*62*	*35*	*27*	*6mm / 16mm / 6mm*	*Yes*
193 Front	*61*	*35*	*26*	*NA*	*Yes*
176 Front	*52*	*35*	*17*	*NA*	*NA*
176 Rear	*55*	*35*	*20*	*NA*	*Yes*
177 Front	*50*	*35*	*15*	*NA*	*NA*
177 Rear	*53*	*35*	*18*	*NA*	*Yes*
178 Rear	*51*	*35*	*16*	*NA*	*Yes*
173 Front	*56*	*35*	*21*	*NA*	*Yes*
1 Rear	*51*	*35*	*16*	*NA*	*NA*
1 Front	*56*	*35*	*21*	*NA*	*Yes*
2 Front	*51*	*35*	*16*	*NA*	*NA*
34 Rear	*48*	*35*	*13*	*NA*	*NA*
57 Front	*54*	*35*	*19*	*NA*	*Yes*
57 Rear	*52*	*35*	*17*	*NA*	*NA*
58 Front	*57*	*35*	*22*	*NA*	*Yes*
58 Rear	*41*	*35*	*6*	*NA*	*NA*
169 Front	*58*	*35*	*23*	*NA*	*Yes*
169 Rear	*52*	*35*	*17*	*NA*	*NA*
14 Front	*58*	*35*	*23*	*NA*	*Yes*
14 Rear	*46*	*35*	*11*	*NA*	*NA*
23 Rear	*48*	*35*	*13*	*NA*	*NA*
24 Rear	*51*	*35*	*16*	*NA*	*NA*
28 Front	*62*	*35*	*27*	*6mm / 16mm / 6mm*	*Yes*
28 Rear	*53*	*35*	*18*	*NA*	*Yes*
38 Front	*47*	*35*	*12*	*NA*	*NA*
41 Front	*50*	*35*	*15*	*NA*	*NA*
42 Front	*50*	*35*	*15*	*NA*	*NA*
43 Front	*51*	*35*	*16*	*NA*	*NA*
44 Front	*51*	*35*	*16*	*NA*	*NA*
45 Front	*52*	*35*	*17*	*NA*	*NA*
46 Front	*52*	*35*	*17*	*NA*	*NA*
70 Rear	*47*	*35*	*12*	*NA*	*NA*
70 Front	*47*	*35*	*12*	*NA*	*NA*
63 Front	*53*	*35*	*18*	*NA*	*Yes*
161 Rear	*54*	*35*	*19*	*NA*	*Yes*
151 Front	*52*	*35*	*17*	*NA*	*NA*
149 Rear	*43*	*35*	*8*	*NA*	*NA*
149 Front	*50*	*35*	*15*	*NA*	*NA*
148 Front	*54*	*35*	*19*	*NA*	*Yes*
145 Rear	*50*	*35*	*15*	*NA*	*NA*
108 Front	*51*	*35*	*16*	*NA*	*NA*
111 Front	*51*	*35*	*16*	*NA*	*Yes*
138 Rear	*54*	*35*	*19*	*NA*	*Yes*
135 Rear	*54*	*35*	*19*	*NA*	*Yes*
125 Rear	*53*	*35*	*18*	*NA*	*Yes*
24 Front	*61*	*35*	*26*	*NA*	*Yes*
25 Front	*62*	*35*	*27*	*6mm / 16mm / 6mm*	*Yes*
17 Front	*57*	*35*	*22*	*NA*	*Yes*
18 Front	*57*	*35*	*22*	*NA*	*Yes*

Glazing

NA - Standard double glazing will be acceptable (4mm / 16mm / 4mm)

Ventilation

Alternative Ventilation recommended where required noise level reduction is greater than 15 dB
NA - Openable windows will be acceptable
Where nominal exceedance of 'Good' criteria is specified (i.e 2dB) - alternative ventialtion has not been recommended.

Predicted Noise Levels and Recommended Mitigation - Bedrooms

Receptor	Predicted Noise Level (dB $L_{Aeq,T}$)	Noise Criteria (dB L_{Aeq})	Level of Attenuation Required (dB)	Example Enhanced Glazing Specification	Alternative Ventilation Required
217 Front	*56*	*30*	*26*	*NA*	*Yes*
218 Front	*55*	*30*	*25*	*NA*	*Yes*
219 Front	*55*	*30*	*25*	*NA*	*Yes*
219 Rear	*40*	*30*	*10*	*NA*	*NA*
214 Front	*56*	*30*	*26*	*NA*	*Yes*
215 Front	*57*	*30*	*27*	*6mm / 16mm / 6mm*	*Yes*
216 Front	*60*	*30*	*30*	*6mm / 16mm / 8mm*	*Yes*
216 Rear	*60*	*30*	*30*	*6mm / 16mm / 8mm*	*Yes*
214 Rear	*54*	*30*	*24*	*NA*	*Yes*
224 Front	*47*	*30*	*17*	*NA*	*NA*
213 Rear	*59*	*30*	*29*	*6mm / 16mm / 6mm*	*Yes*
212 Rear	*58*	*30*	*28*	*6mm / 16mm / 6mm*	*Yes*
211 Rear	*57*	*30*	*27*	*6mm / 16mm / 6mm*	*Yes*
210 Rear	*57*	*30*	*27*	*6mm / 16mm / 6mm*	*Yes*
209 Rear	*55*	*30*	*25*	*NA*	*Yes*
208 Rear	*54*	*30*	*24*	*NA*	*Yes*
207 Rear	*54*	*30*	*24*	*NA*	*Yes*
206 Rear	*52*	*30*	*22*	*NA*	*Yes*
205 Rear	*52*	*30*	*22*	*NA*	*Yes*
230 Front	*46*	*30*	*16*	*NA*	*NA*
200 Rear	*57*	*30*	*27*	*6mm / 16mm / 6mm*	*Yes*
200 Front	*59*	*30*	*29*	*6mm / 16mm / 6mm*	*Yes*
201 Rear	*56*	*30*	*26*	*NA*	*Yes*
201 Front	*58*	*30*	*28*	*6mm / 16mm / 6mm*	*Yes*
202 Rear	*55*	*30*	*25*	*NA*	*Yes*
202 Front	*57*	*30*	*27*	*6mm / 16mm / 6mm*	*Yes*
204 Rear	*53*	*30*	*23*	*NA*	*Yes*
199 Front	*59*	*30*	*29*	*6mm / 16mm / 6mm*	*Yes*
199 Rear	*62*	*30*	*32*	*6mm / 16mm / 10mm*	*Yes*
198 Front	*58*	*30*	*28*	*6mm / 16mm / 6mm*	*Yes*
198 Rear	*60*	*30*	*30*	*6mm / 16mm / 8mm*	*Yes*
191 Front	*48*	*30*	*18*	*NA*	*Yes*
190 Front	*48*	*30*	*18*	*NA*	*Yes*
189 Front	*49*	*30*	*19*	*NA*	*Yes*
188 Front	*52*	*30*	*22*	*NA*	*Yes*
187 Front	*51*	*30*	*21*	*NA*	*Yes*
185 Front	*53*	*30*	*23*	*NA*	*Yes*
184 Front	*53*	*30*	*23*	*NA*	*Yes*
195 Rear	*53*	*30*	*23*	*NA*	*Yes*
193 Rear	*58*	*30*	*28*	*6mm / 16mm / 6mm*	*Yes*
192 Rear	*60*	*30*	*30*	*6mm / 16mm / 8mm*	*Yes*
192 Front	*59*	*30*	*29*	*6mm / 16mm / 6mm*	*Yes*
193 Front	*57*	*30*	*27*	*6mm / 16mm / 6mm*	*Yes*
176 Front	*48*	*30*	*18*	*NA*	*Yes*
176 Rear	*52*	*30*	*22*	*NA*	*Yes*
177 Front	*46*	*30*	*16*	*NA*	*Yes*
177 Rear	*49*	*30*	*19*	*NA*	*Yes*
178 Rear	*48*	*30*	*18*	*NA*	*Yes*
173 Front	*53*	*30*	*23*	*NA*	*Yes*
1 Rear	*50*	*30*	*20*	*NA*	*Yes*
1 Front	*52*	*30*	*22*	*NA*	*Yes*
2 Front	*47*	*30*	*17*	*NA*	*NA*
34 Rear	*45*	*30*	*15*	*NA*	*NA*
57 Front	*50*	*30*	*20*	*NA*	*Yes*
57 Rear	*48*	*30*	*18*	*NA*	*NA*
58 Front	*53*	*30*	*23*	*NA*	*Yes*
58 Rear	*40*	*30*	*10*	*NA*	*Yes*
169 Front	*55*	*30*	*25*	*NA*	*Yes*
169 Rear	*52*	*30*	*22*	*NA*	*Yes*
14 Front	*55*	*30*	*25*	*NA*	*Yes*
14 Rear	*44*	*30*	*14*	*NA*	*NA*
23 Rear	*47*	*30*	*17*	*NA*	*NA*
24 Rear	*51*	*30*	*21*	*NA*	*Yes*
28 Front	*58*	*30*	*28*	*6mm / 16mm / 6mm*	*Yes*
28 Rear	*57*	*30*	*27*	*6mm / 16mm / 6mm*	*Yes*
38 Front	*46*	*30*	*16*	*NA*	*NA*
41 Front	*49*	*30*	*19*	*NA*	*Yes*
42 Front	*49*	*30*	*19*	*NA*	*Yes*
43 Front	*50*	*30*	*20*	*NA*	*Yes*
44 Front	*51*	*30*	*21*	*NA*	*Yes*
45 Front	*51*	*30*	*21*	*NA*	*Yes*

Receptor	Predicted Noise Level (dB $L_{Aeq,T}$)	Noise Criteria (dB L_{Aeq})	Level of Attenuation Required (dB)	Example Enhanced Glazing Specification	Alternative Ventilation Required
46 Front	*51*	*30*	*21*	*NA*	*Yes*
70 Rear	*46*	*30*	*16*	*NA*	*NA*
70 Front	*46*	*30*	*16*	*NA*	*NA*
63 Front	*49*	*30*	*19*	*NA*	*Yes*
161 Rear	*53*	*30*	*23*	*NA*	*Yes*
151 Front	*48*	*30*	*18*	*NA*	*Yes*
149 Rear	*40*	*30*	*10*	*NA*	*NA*
149 Front	*46*	*30*	*16*	*NA*	*NA*
148 Front	*51*	*30*	*21*	*NA*	*Yes*
145 Rear	*46*	*30*	*16*	*NA*	*NA*
108 Front	*48*	*30*	*18*	*NA*	*Yes*
111 Front	*47*	*30*	*17*	*NA*	*NA*
138 Rear	*50*	*30*	*20*	*NA*	*Yes*
135 Rear	*50*	*30*	*20*	*NA*	*Yes*
125 Rear	*50*	*30*	*20*	*NA*	*Yes*
24 Front	*57*	*30*	*27*	*6mm / 16mm / 6mm*	*Yes*
25 Front	*57*	*30*	*27*	*6mm / 16mm / 6mm*	*Yes*
17 Front	*56*	*30*	*26*	*NA*	*Yes*
18 Front	*56*	*30*	*26*	*NA*	*Yes*

Glazing

NA - Standard double glazing will be acceptable (4mm / 16mm / 4mm)

Ventilation

Alternative Ventilation recommended where required noise level reduction is greater than 15 dB
NA - Openable windows will be acceptable
Where nominal exceedance of 'Good' criteria is specified (i.e 2dB) - alternative ventialtion has not been recommended.

Predicted Noise Levels from Pottters Service Yard (L_{Amax}) and Recommended Mitigation - Bedrooms

Receptor	Predicted Noise Level (dB L_{AMax})	Noise Criteria (dB L_{AMax})	Level of Attenuation Required (dB)	Example Enhanced Glazing Specification	Alternative Ventilation Required
14 Front	*41*	*45*	*0*	*NA*	*NA*
17 Front	*41*	*45*	*0*	*NA*	*NA*
18 Front	*42*	*45*	*0*	*NA*	*NA*
25 Front	*45*	*45*	*0*	*NA*	*NA*
63 Front	*45*	*45*	*0*	*NA*	*NA*
24 Front	*45*	*45*	*0*	*NA*	*NA*
28 Front	*47*	*45*	*2*	*NA*	*NA*
58 Rear	*51*	*45*	*6*	*NA*	*NA*
14 Rear	*51*	*45*	*6*	*NA*	*NA*
38 Front	*55*	*45*	*10*	*NA*	*NA*
23 Rear	*56*	*45*	*11*	*NA*	*NA*
24 Rear	*57*	*45*	*12*	*NA*	*NA*
41 Front	*57*	*45*	*12*	*NA*	*NA*
28 Rear	*59*	*45*	*14*	*NA*	*NA*
42 Front	*59*	*45*	*14*	*NA*	*NA*
43 Front	*59*	*45*	*14*	*NA*	*NA*
70 Rear	*59*	*45*	*14*	*NA*	*NA*
70 Front	*59*	*45*	*14*	*NA*	*NA*
44 Front	*61*	*45*	*16*	*NA*	*Yes*
45 Front	*62*	*45*	*17*	*NA*	*Yes*
46 Front	*64*	*45*	*19*	*NA*	*Yes*

Glazing

NA - Standard double glazing will be acceptable (4mm / 16mm / 4mm)

Ventilation

Alternative Ventilation recommended where required noise level reduction is greater than 15 dB
NA - Openable windows will be acceptable

Appendix D – Planning Layout



KEY:

- DENOTES 1800 HIGH CLOSE BOARDED FENCE
- DENOTES 900 HIGH 2 POST AND RAIL TIMBER FENCE
- DENOTES 1800 HIGH SCREEN WALL / FENCE
- DENOTES 900 HIGH RAILINGS
- DENOTES 450 HIGH TIMBER KNEE RAIL
- BRICK RETAINING WALL MAX 1.5M HIGH
- TITLE BOUNDARY
- PROPOSED TREE PLANTING
- TURF PLANTING AREA

FOR FULL LANDSCAPE DETAILS SEE LANDSCAPE ARCHITECTS PLANS

PARKING SPACES TO BE 5m X 2.5m
ALL DRIVEWAYS ARE A MIN OF 5.6m LONG
SINGLE DRIVES ARE 3m WIDE
DOUBLE DRIVEWAYS ARE 6m WIDE
6m x 3m GARAGES ARE INDICATED ON PLAN

- DENOTES DUAL ELEVATION PLOT
- * DENOTES AFFORDABLE HOUSING (15%)

SCHEDULE OF ACCOMMODATION

Housetype		Total
Mou	Moulton 2 Storey 2 Bed Semi Detached/Terraced House	33 No.
Bra	Brampton 2 Storey 2 Bed Semi/Terrace	34 No.
Bra (dual)	Brampton (dual) 2 Storey 2 Bed Semi/Terrace	2 No.
Ruf	Rufford 2 Storey 3 Bed Detached House	22 No.
Ruf(s)	Rufford Semi 2 Storey 3 Bed Semi Detached	4 No.
Han	Hanbury 2 Storey 3 Bed Semi Detached/Terraced House	54 No.
Han (dual)	Hanbury (dual) 2 Storey 3 Bed Semi Detached/Terraced House	6 No.
Sou	Souter 2 ½ Storey 3 Bed Semi Detached/Terraced House	42 No.
Cla	Clanden 2 Storey 3 Bed Detached House	2 No.
Hat	Hatfield 2 Storey 3 Bed Detached House	15 No.
Ros	Roseberry 2 Storey 4 Bed Detached House	11 No.
Kea	Keating 2 Storey 4 Bed Detached House	6 No.
Win	Winster 2 Storey 4 Bed Detached House	4 No.
Cle	Clevedon 2 Storey 3 Bed Detached House	1 No.
		Total 236

PERSIMMON
Together, we make a home

Proposed Residential Development
Off Barnsley Road, Wombwell

Proposed Planning & Landscape Layout

Scale	1:500@A0	Drawing Number	WOM-2013:01
Drawn By	NSR		
Checked By	CAH		July 13