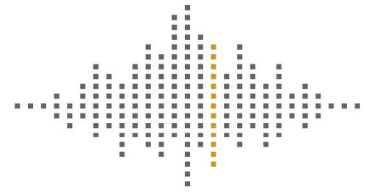


SHARPS REDMORE

ACOUSTIC CONSULTANTS ▪ Established 1990



Report

J Simpson Waste Management

**163-165 Brent Road,
Southall**

Sound Level Assessment

Prepared by

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Date 1st October 2020

Project No 2019838

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1.0 Introduction

- 1.1 Sharps Redmore have been appointed by J Simpson Waste Management Limited to undertake a sound level assessment associated with their proposed operation at 163-165 Brent Road, International Trading Estate, Southall. The company provide a skip-waste facility and are relocating from their current site in Willesden. Planning permission was sought for a temporary period of 7 years and approval¹ has been granted for the proposed development at the site which is located within a Locally Significant Industrial Estate. It is understood that the use of the industrial estate can occur over a 24/7 basis with the site having a history of being used for industrial and storage purposes, including waste related storage activities.
- 1.2 Operations are proposed to involve the manual and mechanical sorting of waste mix of items wood, plastic packaging, concrete, metal, soils, brick and rubble. All processing will be undertaken within a newly constructed building. There will be a 4m concrete push wall around the inside of the building.
- 1.3 The proposed operating hours are:
- 0700 to 1800 Monday to Friday
- 0700 - 1300 Saturday
- With no Operations on Sunday or Public Holidays
- 1.4 This sound level assessment is to accompany an Environmental Permit application following a request by the Environmental Agency (EA) for a 'Noise Impact Assessment' to accompany the application on the basis that the EA consider that:
- 1.5 *'the risk to receptors is unclear or potentially significant due to the following factors:*
- *120m from receptors (residential housing)*
 - *Site operation - external delivery, some storage outside and processing predominantly hard core materials'.*
- 1.6 This sound level assessment considers the impact at the nearest residential properties and has been undertaken in accordance with the guidance provided within BS 4142:2014+A1:2019². A Noise Management Plan has been provided by Integrated Skills separately.

¹ Planning Application Reference: 202213FUL, Ealing Council, 04/08/2020

² BS 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound

2.0 Assessment Methodology and Criteria

- 2.1 The assessment has been undertaken in accordance with the guidance provided within BS 4142. In brief, the BS4142 assessment method is to obtain an initial potential impact finding by comparing the difference in level between the site-attributable sound (called the rating level) and the background sound. The latter is the underlying value in the absence of the site sound. The initial impact finding is then to be considered in context and that can modify the outcome.
- 2.2 In terms of the 'difference' comparison, a difference of around +10dB or more is considered likely to be an indication of a significant adverse impact, depending on the context. A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context. When the difference is zero or negative in magnitude, the indication is of a low impact, again depending on the context. Context is key and pertinent factors to consider include the absolute level of the source; the character of the neighbourhood sounds (with and without the site contribution); the sensitivity of the receptor and the presence or otherwise of sound mitigation measures. (Clause 11 of BS4142). It is therefore entirely possible that whilst the numerical outcome of a BS 4142 assessment is indicative of adverse or significant adverse impact, when the proposal is considered in *context* the significance of the impact is reduced to an acceptable level.
- 2.3 A specific sound level survey has been undertaken at J Simpson's existing site in Willesden to establish source levels for proposed operations with modelling undertaken to predict rating levels at identified sensitive receptors. Further details relating to the specific sound survey and modelling is presented in Section 5.

3.0 Development Description

- 3.1 A comprehensive description of the site, the setting and the proposed development is provided in the Noise Management Plan which is to be submitted separately by Integrated Skills.
- 3.2 In the specific context of sound emissions, the development can be described as comprising an enclosed facility for the reception of construction and demolition waste from residential and business refurbishment and construction projects, its sorting and grading and the loading-out of recovered materials and residual waste. The proposed building construction is to be a steel framed structure with PVC based material / cladding. Planning has been granted for a temporary period of 7 years and this type of structure suits the proposed development. The building will be 10m high to the eaves and 12m to the pitch. A 4m high concrete push wall will be constructed around the inside of the building with access to the building provided by a 5m x 8m roller shutter door on the western façade.
- 3.3 The skips will enter the site and will be weighed, then proceed to the building and reverse into the reception area. The waste will be sorted by hand and machine to remove large items of metal, wood, and concrete, as well as plasterboard which are then placed in separate containers. The remaining waste will be loaded into processing equipment which consists of the following: shredder, trommel to break up the waste, picking station (hand sorting of waste), over band magnet to remove metals with hardcore material then being conveyed into a storage bay. The operation will use excavators and a loading shovel to load the processing plant and vehicles.
- 3.4 An image showing the site and surrounding area is presented in Section 4.

4.0 Description of Neighbourhood

- 4.1 The immediate surrounds of the site are predominantly of industrial use with residential premises located approximately 125m to the south east of the site beyond the junction of Scotts Road and Brent Road. Busy rail lines are located beyond the industrial estate to the north whilst The Parkway, which provides access to the M4 is approximately 400m to the west of the site. Heathrow Airport is approximately 3km to the south-west.
- 4.2 A plan showing the site location, surroundings and closest residential receptors is presented below with a site layout plan presented in Appendix B.

Figure 1: Site Location Plan



- 4.3 Sharps Redmore undertook a baseline sound survey on Friday 11th September 2020 between 06:45 to 08:00 and 11:25 to 15:20. The sound climate was observed to be dominated by intermittent vehicle movement including HGV's on Brent Road and Scotts Road. In addition, a distant steady underlying contribution from traffic in the wider area and from industry was also observed to be present. Industrial type sound included HGV engines and fridge motors from the far service yard of the ARYZTA Food Solutions warehouse which is located a short distance to the south of the site on the opposite side of Rubastic Road.
- 4.4 Further to the above, no sound associated with aircraft activity was observed during the baseline survey. Due to the current COVID-19 pandemic, it is likely that the current and measured baseline sound levels will be slightly lower than during periods when Heathrow airport is operating at normal capacity. This is considered further in Section 6 as part of the assessment context.
- 4.5 Sound level measurements were taken using a type 1/class 1 sound level meter (field-calibrated before and after survey) which was mounted at a height of 1.5m above local ground level. Measurements were obtained at 1No. location on Scotts Road adjacent and in line with the front façade of 150 Brent Road which is the closest residential receptor to the site. The monitoring location is presented in Figure 2 below.

Figure 2: Monitoring Location Plan



The weather conditions (dry, light westerly breeze, 10 – 18°C air temperature with 10% cloud cover) were suitable for the sampling of sound levels. The sound levels measured during the baseline survey are presented in Appendix C and are summarised at Table 4.1.

TABLE 4.1: Summary of Measured Baseline Sound Levels

Time / Date	Underlying/background sound level dB $L_{A90,T}$	Ambient / average sound level dB $L_{Aeq,T}$
0645 – 0800 (11 th September 2020)	48	62
11:25 – 15:20 (11 th September 2020)	48	62

5.0 Site-Attributable Sound Levels

- 5.1 A specific sound level survey was undertaken at the existing J Simpson site in Willesden on the morning of 11th September in order to establish source sound levels associated with existing plant and processes.
- 5.2 At the time of the site visit, waste processing operations were being undertaken by a trommel (fed by a 360^o grab), a second grab performing the pre-sorting of waste, a wheeled loading shovel and a shredder. Sound level measurements were obtained of these items operating at full capacity with the measured sound data presented in Appendix D.
- 5.3 J Simpson plan to have a new trommel and picking line, with electric power to the trommel, not diesel as per the existing unit. However, Sharps Redmore would not expect there to be a significant reduction in sound because the tumbling of material in the trommel that is often the main sound generating source. Sound associated with the shredder (Tana model) is typical of this type of equipment based on Sharps Redmore's experience with sound emanating predominantly from the engine, cooling fan and hydraulics power-pack. The trommel and the shredder are the most prominent sources of operational sound.
- 5.4 The measured sound levels for the relevant items of plant and the derived apparent sound power levels for the plant are presented in Appendix D.
- 5.5 With regard to vehicle movements, it is anticipated that the site will generate 64 skip lorry movements per day and 10 roll on, roll off skip lorry (HGV) movements. Over a 10 hour period (taking into account a 1 hour lunch break) this is averaged at 7 skip lorry movements and 1 HGV movement per hour.
- 5.6 During the baseline sound survey, sample traffic counts were taken. The minimum count along Brent Road, was 15 vans and 5 HGV movements over a 15 minute period along with additional light vehicle movements (such as cars). This would equate to around 60 vans and 20 HGV movements over a 1 hour period. Therefore, vehicle movements within and around the site associated with the proposed development, which could occur anyway should another operator be present, are considered to be negligible and not required to be assessed further.

Noise Modelling

- 5.7 Acoustic computer modelling has been undertaken using SoundPLAN 8.2 to calculate the sound propagation from the site based on measured specific source sound levels which are representative of proposed operations. The model uses the calculation methodology described by ISO 9613-2⁴ with the model input parameters presented in Appendix D. The processing activities will occur within a building. Given the type of building fabric, noise will pass through the building rather than create a reverberant field. It is therefore reasonable to model the sound emission as point sources with the lower push wall included in the model, rather than as a building radiating from its entire envelope. The source sound power levels summarised in Table 5.1 have been used to calculate predicted sound levels at the closest residential receptors (146 – 150 Brent Road) shown in SK1 in Appendix E. R1 represents 150 Brent Road, R2: 148 Brent Road and R3: 146 Brent Road.

⁴ ISO 9613-2:1996, Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation

Table 5.1: Source Sound Power Levels Associated with Proposed Operations

Plant	Apparent Sound Power Level ($L_{WA',1hour}$)	Octave band centre frequency Hz – dBA							
		63	125	250	500	1k	2k	4k	8k
Trommel + 360' grab	115 dB	85	90	98	106	110	111	105	96
360' grab (pre-sort)	107 dB	81	92	93	101	102	102	96	87
Loading shovel	109 dB	79	90	96	95	96	108	90	81
Shredder	116 dB	84	102	105	109	111	109	105	97

- 5.8 Predicted specific sound levels at the closest residential receptors are tabulated in Appendix D. Excluding any sound reduction from the external building fabric, the highest predicted specific sound level is 52 $dBL_{Aeq,1hour}$ at 148 Brent Road.
- 5.9 Further to the above, no details are available with regard to the level of sound level reduction provided by the proposed building fabric. Therefore, Sharps Redmore have estimated the octave band Sound Reduction Index (R) based on previous experience of a similar type of building fabric. This is presented in Table 5.2.

Table 5.2: Estimated Sound Reduction Index of the Proposed Building Fabric

Octave band Sound Reduction Index Hz - dB							
63	125	250	500	1k	2k	4k	8k
0	0	2	5	10	15	20	25

- 5.10 However, screening from operations to residential receptors and thus reduction in sound will be provided by intervening buildings and the 4m concrete push wall which will be constructed around the inside of the building. The attenuation provided by these barriers has been incorporated within the model and therefore it would be unlikely that the reduction in sound level attributable to the building fabric would be equivalent to the octave band sound reduction values as stated in Table 5.2.
- 5.11 Therefore, as a more conservative estimate, by halving the level of sound reduction of the building fabric within each octave band, this would provide an overall reduction of 3 dB. The calculation is presented in Appendix D and the resultant predicted specific sound level at 148 Brent Road is 49 $dBL_{Aeq,1hour}$.

6.0 Sound Level Assessment

- 6.1 This section considers the levels of sound and the guidance within BS4142 for the rating and assessing of the proposed operations.
- 6.2 Table 6.1 provides the rating and assessment steps, following the guidance of BS4142. The highest specific sound level predicted at residential receptors is 49 dB $L_{Aeq,1hr}$ at 148 Brent Road. A contour plot is presented in Appendix E which presents the predicted rating level at the closest residential receptors.

TABLE 6.1: BS 4142 Assessment

Derivation of Rating Level	
Specific level at closest residential premises on Brent Road (specific sound level).	49 dB $L_{Aeq,1hr}$
Character Correction: A +3dB correction has been applied to account for the potential occasional distinctiveness of the proposed operations against the residual sound environment at the receptor. No tonal characteristics were present other than the reverse warning signal on the existing loader (This is to be replaced by a broadband reverse warning signal). No impulsive characteristics would be perceptible at the receptor.	+3dB
Rating level (specific level plus character correction)	52 dB $L_{Ar,1hr}$
Background level	48 dB $L_{A90,T}$
Difference. Rating minus background level	4 dB
Initial impact finding, depending on the context	Not Adverse

Context and uncertainty

1. The Brent Road site is a Locally Significant Industrial Estate allocation with the expectation therefore that sounds attributable to vehicles, their movements, the handling of goods and fixed plant can be a character of the area. It is understood that industrial uses within the estate can operate over a 24/7 basis. Proposed operations are daytime only with no working on Sundays or public holidays.
2. Due to the current COVID-19 pandemic, it is likely that the current and measured baseline sound levels will be slightly lower than during periods when Heathrow airport is operating at normal capacity and different flight paths. This could potentially be in the order of 1 dB or greater which would result in the difference between the background and rating level being lower during more 'normal' circumstances.
3. Uncertainty in the source sound level has been reduced through a specific sound survey of the same or comparable plant that will be used at the Brent Road site. A conservative estimate of the sound performance of the building fabric has been incorporated within the calculations.

4. In addition, a +3dB character correction has been applied to account for the potential that operations could be distinguishable at the receptor on certain occasions. As well as the potentially lower measured background sound level (See Point 2), the specific sound levels are predicted to be around background sound levels and below measured ambient sound levels. As such, debatably, a character correction may not be warranted. The uncertainty of the measurement is not considered significant to the outcome of the assessment.

Final Impact

- 6.3 In view of the Context, Sharps Redmore consider the impact to be Low.

7.0 Conclusions

- 7.1 Sharps Redmore have undertaken an environmental sound assessment to consider the potential impact associated with a proposed waste processing facility at 163-165 Brent Road, International Trading Estate, Southall.
- 7.2 The proposed operating hours are:
- 0700 to 1800 Monday to Friday
- 0700 - 1300 Saturday
- With no Operations on Sunday or Public Holidays
- 7.3 A baseline sound survey has been undertaken and background sound levels representative of the closest residential receptors have been established. A specific source sound level survey at an existing J Simpson facility of the type of plant and activities proposed at the site has been undertaken. The specific source sound levels have been modelled and rating levels predicted at the closest residential receptors.
- 7.4 This assessment has objectively demonstrated in the context of BS 4142 that sound levels from proposed operations would not be expected to give rise to a significant adverse impact at nearby residential receptors and that a low impact is predicted.
- 7.5 A Noise Management Plan has been submitted separately as part of the Permit application.

APPENDIX A

ACOUSTIC TERMINOLOGY

Acoustic Terminology

D1 Noise, defined as unwanted sound, is measured in units of decibels, dB. The range of audible sounds is from 0 dB to 140 dB. Two equal sources of sound, if added together will result in an increase in level of 3 dB, i.e. $50 \text{ dB} + 50 \text{ dB} = 53 \text{ dB}$. Increases in continuous sound are perceived in the following manner:

1 dB increase - barely perceptible.

3 dB increase - just noticeable.

10 dB increase - perceived as twice as loud.

D2 Frequency (or pitch) of sound is measured in units of Hertz. 1 Hertz (Hz) = 1 cycle/second. The range of frequencies audible to the human ear is around 20Hz to 18000Hz (or 18kHz). The capability of a person to hear higher frequencies will reduce with age. The ear is more sensitive to medium frequency than high or low frequencies.

D3 To take account of the varying sensitivity of people to different frequencies a weighting scale has been universally adopted called "A-weighting". The measuring equipment has the ability automatically to weight (or filter) a sound to this A scale so that the sound level it measures best correlates to the subjective response of a person. The unit of measurement thus becomes dBA (decibel, A-weighted).

D4 The second important characteristic of sound is amplitude or level. Two units are used to express level, a) sound power level - L_w and b) sound pressure level - L_p . Sound power level is an inherent property of a source whilst sound pressure level is dependent on surroundings/distance/directivity, etc. The sound level that is measured on a meter is the sound pressure level, L_p .

D5 External sound levels are rarely steady but rise or fall in response to the activity in the area - cars, voices, planes, birdsong, etc. A person's subjective response to different noises has been found to vary dependent on the type and temporal distribution of a particular type of noise. A set of statistical indices have been developed for the subjective response to these different noise sources.

D6 The main noise indices in use in the UK are:

L_{A90} : The sound level (in dBA) exceeded for 90% of the time. This level gives an indication of the sound level during the quieter periods of time in any given sample. It is used to describe the "background sound level" of an area.

L_{Aeq} : The equivalent continuous sound level in dBA. This unit may be described as "the notional steady noise level that would provide, over a period, the same energy as the intermittent noise". In other words, the energy average level. This unit is now used to measure a wide variety of different types of noise of an industrial or commercial nature, as well as aircraft and trains.

L_{A10} : The sound level (in dBA) exceeded for 10% of the time. This level gives an indication of the sound level during the noisier periods of time in any given sample. It has been used over many years to measure and assess road traffic noise.

L_{AMAX} : The maximum level of sound measured in any given period. This unit is used to measure and assess transient noises, i.e. gun shots, individual vehicles, etc.

D7 The sound energy of a transient event may be described by a term SEL - Sound Exposure Level. This is the L_{Aeq} level normalised to one second. That is the constant level in dBA which lasting for one second has the same amount of acoustic energy as a given A weighted noise event lasting for a period of time. The use of this unit allows the prediction of the L_{Aeq} level over any period and for any number of events using the equation;

$$L_{AeqT} = SEL + 10 \log n - 10 \log T \text{ dB.}$$

Where

n = Number of events in time period T.

T = Total sample period in seconds.

D8 In the open, known as free field, sound attenuates at a rate of 6 dB per each doubling of distance. This is known as geometric spreading or sometimes referred to as the Inverse Square Law. As noise is measured on a Logarithmic scale, this attenuation in distance = $20 \log$ (ratio of distances), e.g. for a noise level of 60 dB at ten metres, the corresponding level at 160 metres is:

$$60 - 20 \log \frac{160}{10} = 60 - 24 = 36 \text{ dB.}$$

APPENDIX B

SITE LAYOUT PLAN



NOTES

All NGRs are approximate.

R1 Nearest Property is 150 Brent Road at NGR 511173 179257

Tromme is at NGR 511040 179310

Shredder is at NGR 511012 179328

Building corners and door as shown.

Building is 10m high to the eaves and 12m to the pitch. Door opening will be 8m high and 12m wide.

Site Entrance is at 510993 179282

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			DRAWING STATUS DRAWN BY: ARC DATE: SEPT2020		
			CHECKED: CHECKED:	SCALE: 1:1000@A	

APPENDIX C

SOUND SURVEY DATA

Baseline Survey Data: Adjacent to 150 Brent Road

Date / Start Time	dB L _{Aeq,T}	dB L _{Amax}	dB L _{A90,T}
(2020/09/11 06:45:30.00)	61.8	78.7	49.8
(2020/09/11 07:02:50.00)	62.3	82.2	49.1
(2020/09/11 07:18:34.00)	62.7	80.4	47.6
(2020/09/11 07:33:29.00)	63.0	81.6	47.8
(2020/09/11 07:47:51.00)	61.2	78.0	46.7
(2020/09/11 11:24:42.00)	65.6	89.1	50.4
(2020/09/11 11:45:00.00)	62.9	86.7	48.2
(2020/09/11 12:00:26.00)	63.8	90.0	47.6
(2020/09/11 12:16:25.00)	61.9	80.6	48.6
(2020/09/11 12:46:10.00)	64.5	94.7	48.2
(2020/09/11 13:02:17.00)	63.2	91.1	48.5
(2020/09/11 13:15:55.00)	63.7	86.0	50.4
(2020/09/11 13:31:12.00)	62.1	84.2	48.4
(2020/09/11 13:46:46.00)	60.1	78.4	49.3
(2020/09/11 14:02:45.00)	59.4	76.3	49.7
(2020/09/11 14:17:33.00)	61.1	82.5	48.2
(2020/09/11 14:32:52.00)	61.0	84.7	49.0
(2020/09/11 14:48:06.00)	61.7	89.2	49.3
(2020/09/11 15:03:14.00)	60.3	78.4	48.9

Measurement duration (T) is typically 15 minutes

Further to the above, specific source sound level measurements are presented in Appendix D.

APPENDIX D

NOISE MODEL: INPUT DETAILS AND PREDICTED SOUND LEVELS

TABLE D.1: SoundPlan Model Sources and Parameters

Parameter	Source	Details
Base Plan	The GeoInformation Group 2018	Licence No. LANDMLON100003121118
Ground Levels	BlueSky MapShop	1m Lidar (DTM)
Building Heights	SR Observations and Google Earth	6.5 meters for off-site buildings
Barriers	SoundPlan	4m concrete push wall
Receptor Positions	SoundPlan	1.5m height and 1m from façade
Absorbent Ground	SoundPlan	G=0: Hard Ground
Reflections	SoundPlan	2 nd order reflections
Site Layout	Integrated Skills	Site setting: JWS-BR-SET-10

Table D.2: Measured Source Sound Levels (JW Simpsons Willesden)

Plant	Octave band centre frequency Hz – dBA								SUM
	63	125	250	500	1k	2k	4k	8k	
Trommel+360 grab at 40m	45	50	58	66	70	71	65	56	75
Single 360 grab at 22.5m*	46	57	58	66	67	67	61	52	72
Loading shovel at 30m	42	53	59	58	58.4	70	52	43	71
Shredder at 20m	50	68	71	75	77	75	71	63	82

*Activity occurring between 20 and 25m from measurement position

Sound power levels included in the model are calculated for each item of plant using the following equation: $L_{WA'} = SPL + 20 \cdot \log(r) + 8$, where:

$L_{WA'}$ = Apparent Sound Power Level

SPL = Measured Sound Pressure Level

r = measurement distance from source (m)

Table D.3: Calculated Apparent Sound Power Levels ($L_{WA'}$) Proposed Plant

Plant	Octave band centre frequency Hz – dBA								SUM
	63	125	250	500	1k	2k	4k	8k	
Trommel+360 grab	85	90	98	106	110	111	105	96	115
Single 360 grab	81	92	93	101	102	102	96	87	107
Loading shovel	79	90	96	95	96	108	90	81	109
Shredder	84	102	105	109	111	109	105	97	116

**Table D.4: Predicted Specific Sound Levels at Closest Residential Receptors
(No allowance for attenuation through the building fabric)**

Receptor	Octave band centre frequency Hz – dBA								SUM (dB L _{Aeq,1hr})
	63	125	250	500	1k	2k	4k	8k	
R1 (150 Brent Road)	27	37	42	44	45	44	31	7	50
R2 (148 Brent Road)	29	40	43	47	47	44	31	8	52
R3 (146 Brent Road)	29	40	43	47	47	43	31	7	52

Table D.5: Corrected Predicted Specific Sound Level at R2 to allow for attenuation by building fabric

Receptor	Octave band centre frequency Hz – dBA								SUM (dB L _{Aeq,1hr})
	63	125	250	500	1k	2k	4k	8k	
Estimated R _w	0	0	2	5	10	15	20	25	
R _w (reduced by ½)	0	0	1	3	5	8	10	13	
R2 Specific Sound Level: No Correction	29	40	43	47	47	44	31	8	52
R2 Specific Sound Level: With Correction	29	40	42	45	42	37	21	0	49

Grid References from model

Plant	Grid References		Modelled Height (m)
	X	Y	
Trommel+360 grab	511040	179311	4.5
Single 360 grab	511033	179293	2
Loading shovel	511026	179325	2
Shredder	511013	179329	2.5

Receptor Location	Grid References		Modelled Height (m)
	X	Y	
R1: 150 Brent Road	511166	179253	1.5
R2: 148 Brent Road	511167	179248	1.5
R3: 146 Brent Road	511168	179244	1.5

SoundPlan model (including QSI) file submitted separately to this report which includes offsite building positions

APPENDIX E

NOISE MODEL CONTOUR PLOT











Drawing title:
SK1: Noise Contour Plot (1.5m)

Date:
01/10/2020


Project:
JW Simpson Waste

Project number:
2019838

Predicted rating level
 $L_{A,r,T,r}$ (dB)

	<= 40
	40 < <= 45
	45 < <= 50
	50 < <= 55
	55 < <= 60
	60 < <= 65
	65 < <= 70
	70 < <= 75
	75 < <= 80
	80 <

Legend

-  Noise source
-  Residential building
-  Building
-  4m Push Wall
-  Indicative site boundary
-  Receiver



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