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Project:

**MFG East Grinstead, 147-149 London
Road**

Title:

Servicing Noise Impact Assessment





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CONTENTS:

1	INTRODUCTION	1
2	SITE	2
3	GUIDANCE	4
4	MEASUREMENTS	6
5	EQUIPMENT	7
6	RESULTS	9
7	DELIVERY/SERVICING NOISE ASSESSMENT	11
8	BS4142 ASSESSMENT	16
9	CONCLUSIONS	22

APPENDIX A:	Glossary of Technical Terms
APPENDIX B:	Site Plan
APPENDIX C:	Planning Policy & Guidance
APPENDIX D:	Survey Results (Tabular)
APPENDIX E:	Survey Results (Graphical)



1 INTRODUCTION

- 1.01 Environmental Equipment Corporation Limited has been commissioned by MBH Design Studio Ltd to undertake an assessment of noise associated with the deliveries to the food to go operator within the recently redeveloped MFG East Grinstead service station as part of a Section 73 application to change the current permitted servicing hours. The proposal for extended delivery hours is essential due to the station's continuous 24/7 operation, catering to motorists at all hours. Extending delivery hours will help ensure that fresh stock is consistently available, especially during peak demand periods in the early morning. This adjustment will also allow deliveries to occur later in the evening or night, which is intended to reduce potential disruption to on-site operations during busy periods, which is generally in the morning between 0500 – 0900hrs. Waste collection for the site, currently managed by a third-party service provider, occurs only twice a week within the permitted hours. Given the current frequency and logistics of these collections, it is unlikely that the number of waste collections will increase with the proposed changes to delivery hours. Instead, the focus remains on optimising delivery schedules to support uninterrupted service and a consistently stocked facility, aligning with the site's operational needs and customer demand. Similarly to avoid affecting busy periods on the forecourt it may also be beneficial to allow for fuel deliveries to occur within any permitted servicing hours..
- 1.02 This noise assessment has been conducted in accordance with local and national policies, British and International design standards and is based on noise survey data taken on site both prior and post the redevelopment of the site.
- 1.03 This assessment includes:
- the prediction of noise impacts at the worst affected noise sensitive receptors based on a typical delivery for both the food to go operator within the service station and also the main deliveries to the services station, waste collection and fuel deliveries; and
 - a review of the expected noise impact based on the preferred servicing hours of 0700-2300hrs seven days a week.
- 1.04 This report is prepared solely for MBH Design Studio Ltd. Environmental Equipment Corporation Limited accepts no responsibility for its use by any third party. Note that the contents contained herein are produced for the purposes of review by relevant Planning Authority departments.
- 1.05 Whilst every effort has been made to ensure that this report is easy to understand, it is necessarily technical in nature. To assist the reader, an explanation of the terminology used in this report is contained in Appendix A.

2 SITE

2.01 The MFG service station is in a mixed commercial and residential area of East Grinstead. The site was redeveloped in the second quarter of 2024.

2.02 The following Google Maps image has been annotated to identify the site and the nearest noise sensitive residential properties. The Google Maps imagery for the area has not been updated yet to show the new site layout but the image in Figure 1 shows the land prior to the recent development, part of the site occupied by a multi storey office block and associated parking and the service station occupancy limited to the front (west most) portions of the site. The measurement location used for the pre development noise survey in 2021 has been marked on Figure 1 and captured noise levels representative of the site in the context shown in Figure 1.

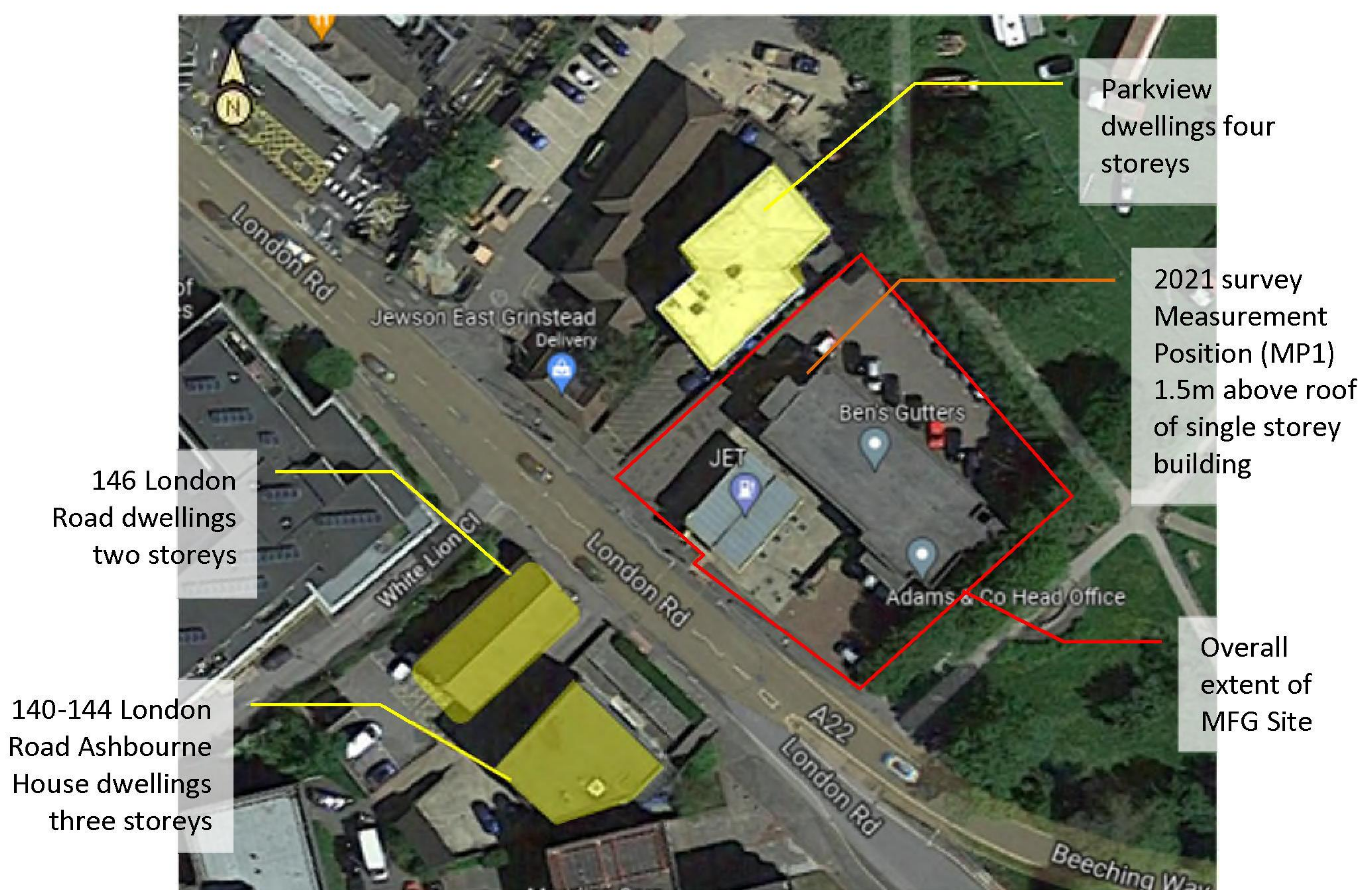


Figure 1: Site layout and nearest dwellings

2.03 The closest noise sensitive receptors to the site are the following:

- Parkview to the north of the site which was formerly offices but was converted via prior approval in 2014 into dwellings including for the development of additional storey and now provides four storeys of residential dwellings; and
- Three storeys of dwellings at Ashbourne House, 140-144 London Road to the west; and
- The two-storeys of dwellings that form 146 London Road also to the west of the proposed site.

2.04 This impact assessment covers noise of deliveries for both the food to go operator and the main delivery for the sales building associated with the Service Station, along with waste collection and noise associated with fuel deliveries. Figure 2 below overlays the new service station layout onto the current Google Maps image to put the current layout in context. The activity area for the delivery and waste service vehicles will be to utilise the customer parking bays at the front of the store with the product wheeled into the store in cages via the sales building main door. The fuel deliveries will see the fuel forecourt closed off and the vehicle parked in proximity to the underground fuel tanks.



Figure 2: Proposed new site layout and existing surroundings.

3 GUIDANCE

- 3.01 The site received conditional planning permission from Mid Sussex District Council on 24th December 2021, reference DM/21/2400. The following planning condition set the delivery and commercial waste collection hours for the site:

7. No deliveries or collections of commercial goods or waste outside the following hours:

Monday to Friday: 07:00 to 19:00 hours
Saturday: 08:00 to 19:00 hours
Sundays and Bank/Public Holidays: None permitted

Reason: To protect the amenity of local residents and to comply with policies DP26 and DP29 in the District Plan 2014-2031.

- 3.02 The ensure fresh product is available during the busiest, early morning periods, later deliveries are required, until 2300hrs, beyond the current permitted 1900hrs curtailment. Current waste collections, undertaken by a third party, occur only twice a week during the permitted times and are not expected to change based on any variation to the condition. A marginal extension to the current permissions is sought for Sundays and Bank Holidays.
- 3.03 The noise impact from the deliveries during the proposed extended delivery window has been undertaken, adopting relevant current British Standards.
- 3.04 The assessment methodology of 'BS4142:2014: 'Methods for rating and assessing industrial and commercial sound'' is the principle standard against which to assess potential impact in this context and that standard in turn requires that the assessment outcomes be judged and considered taking into account context and relevant guidance metrics.
- 3.05 Additional guidance has been taken from current British Standards and World Health Organisation Guidance. These documents provide useful reference for assessing acceptability against established absolute noise limits.
- 3.06 The following provides a summary of the guidance provided within BS4142 used to assess compliance with the planning condition.

BS4142:2014 'Methods for rating and assessing industrial and commercial sound'

- 3.07 The scope of BS4142 includes that assessment of the following sources:
- Sound from industrial and manufacturing processes;
 - Sound from fixed installations which comprise mechanical and electrical plant and equipment;
 - Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
 - Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating
- 3.08 BS4142 gives guidance on assessing the likelihood of adverse impacts by calculating a 'rating level' of the new noise source and comparing its magnitude at noise sensitive locations to the existing

or underlying background noise level. The background noise level is subtracted from the 'rating level' to assess the likelihood of complaints:

- The greater the difference the greater the likelihood of complaints.
- A difference of around +10dB or more is an indication of a significant adverse impact, depending on the context.
- A difference of +5dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background noise level, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low sound impact, depending on the context.

3.09 This assessment is carried out over a one hour period for the daytime and a fifteen minute period for the night-time. For the purposes of the standard it states that daytime and night-time are typically 07:00 to 23:00 hours and 23:00 to 07:00 hours respectively.

3.10 The 'rating level' of the noise source is obtained taking the following factors into consideration:

- The new plant noise (the specific noise) is measured or predicted in terms of L_{Aeq} .
- An additional correction shall be included if the noise contains a distinguishable, discrete continuous note, if the noise contains distinct impulses or if the noise is irregular enough to attract attention. The value for any tonal noise can be an addition of up to 6dB and for impulsive noise of up to 9dB.

3.11 The background sound level should be established in terms of the L_{A90} noise index. The standard states that the background sound level should be measured over a period of sufficient length to obtain a representative value. The standard states that *'a representative level ought to account for the range of background sound levels and ought not to automatically to be assumed to be either the minimum or modal value.'*

3.12 BS 4142 goes onto state that:

'The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.'

3.13 BS4142 requires uncertainties in the assessment to be considered and, where the uncertainty is likely to affect the outcome of the assessment, steps should be taken to reduce the uncertainty.

BS8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'

3.14 BS8233:2014, 'Guidance on sound insulation and noise reduction for buildings', section 7 gives guidance on acoustic criteria and noise levels appropriate for various internal spaces that have different functions. Section 7.7 relates specifically to buildings having a residential purpose and

offers guidance on appropriate internal ambient noise levels for dwellings (when unoccupied) with specific consideration:

- i. for bedrooms, the acoustic effect on sleep; and
- ii. for other rooms, the acoustic effect on resting, listening and communicating.

3.15 The guidance applies to external noise as it affects the internal acoustic environment from sources without a specific character.

3.16 Table 4 of section 7.7.2 recommends the following internal noise limits based on the presence of steady, external noise sources:

Table 4 Indoor ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

3.17 The guidance criteria are based upon research and existing guidelines provided by the World Health Organisation.

3.18 It is generally considered that the sound insulation provided by a partially open window will be 15dB, dependent on window type, extent of opening and source frequency content.

3.19 It can be seen that in the worst case, with a partially open window reduction of 15dB, indoor ambient noise targets for bedrooms will be met where the external ambient noise level is below 45dB(A). This is based upon steady noise of an anonymous nature and is consistent with the World Health Organisations LOAEL.

4 MEASUREMENTS

4.01 EEC Ltd have undertaken two surveys at the MFG East Grinstead site. The first was over a weekend period in 2021 prior to the development, at the location identified in Figure 1 as MP1 and the second was on a weeknight in 2024 after the redevelopment of the site at the location identified in Figure 2 as MP2.

4.02 The environmental noise measurements undertaken in 2021 at MP1 were carried out over a weekend period, between 1900hrs hours on Thursday 24th June 2021 and concluded 0800 hours Monday 28th June 2021 to establish the existing noise levels at the site. This was prior to the new development being constructed. The survey methodology and results are set out below.

4.03 Noise measurements have been carried out at the following position, as shown in Figure 1 and described as:

- Measurement Position 1: located at a height of approximately 1.5 metres above the roof of a single storey part of the office building on the proposed site located behind

the building structure that housed a stair core for the offices. The measurement was not located within 3.5 metres of any reflecting surfaces, other than the mounting surface.

- 4.04 This position was considered to be representative of the nearest windows of Parkview, set back from London Road.
- 4.05 Properties located on the opposite side of London Road are likely subject to higher noise levels, as a result of their proximity to London Road in comparison to the measurement location that is screened from the direct noise of road traffic.
- 4.06 It is important to note that the survey was carried out during the third Government enforced lockdown regulations due to the COVID-19 epidemic but as restrictions had started to ease. The Government guidance at the time restricting public movement but non-essential retail was open and outdoor hospitality was permitted, however air traffic from Gatwick airport, which is nearby and likely to have some influence noise levels was significantly reduced from what would typically occur. As detailed below a second survey was undertaken to establish what the current noise climate is on site after the redevelopment to enable this to sense check the survey results obtained in 2021 and provide guidance on the suitability of the results of this survey as being representative of the typical noise climate.
- 4.07 Post development environmental noise measurements were carried out over a weekday period, between 1745 hours on Wednesday 23rd October 2024 and concluded 0830hours the following day, to establish the existing noise levels at the site. The survey methodology and results are set out below.
- 4.08 Noise measurements have been carried out at the following position, as shown in Figure 2 and described as:
- Measurement Position 2: located at a height of approximately 1.8 metres above ground level. The location was screened from activity noise on the forecourt by the walls of the jet wash bays.
- 4.09 This position was considered to be representative of the nearest windows of Parkview, set back from London Road.
- 4.10 Properties located on the opposite side of London Road are likely subject to higher noise levels, as a result of their proximity to London Road in comparison to the measurement location that is screened from the direct noise of road traffic.

5 EQUIPMENT

- 5.01 The equipment used for the survey at measurement position MP1 was as follows:-
- 01dB Fusion Integrating Sound Level Meter conforming to Class 1 BS EN 61672, Type 1 BS EN 60804 & BS EN 60651: 1994;
 - GRAS 40CD Condenser Microphone, PRE22 S Pre-amp and Connecting Leads;
 - Tripod.

5.02 The equipment holds current UKAS or equivalent accreditation and serial numbers as follows:

Sound Level Meter 01dB Fusion	Serial No.	12241
	Calibration Date	5 th December 2019
	Cal Certificate No.	U33533
½" Condenser Mic. GRAS 40CD	Serial No.	330667
	Calibration Date	5 th December 2019
	Cal Certificate No.	33532
Calibrator CAL 31	Serial No.	89090
	Calibration Date	12th January 2021
	Cal. Certificate No.	U36745

N.B. Copies of calibration certificates are available upon request.

5.03 The equipment was calibrated both before and after the survey with no difference noted in the levels.

5.04 The equipment used for the survey at position MP2 was as follows:-

- 01dB Fusion Integrating Sound Level Meter conforming to Class 1 BS EN 61672, Type 1 BS EN 60804 & BS EN 60651: 1994;
- GRAS 40CD Condenser Microphone, PRE22 S Pre-amp and Connecting Leads;
- Tripod.

5.05 The equipment holds current UKAS or equivalent accreditation and serial numbers as follows:

Sound Level Meter 01dB Fusion	Serial No.	12241
	Calibration Date	21 st May 2024
	Cal Certificate No.	U47874
½" Condenser Mic. GRAS 40CD	Serial No.	330667
	Calibration Date	21 st May 2024
	Cal Certificate No.	47873
Calibrator CAL 31	Serial No.	89090
	Calibration Date	3 rd May 2024
	Cal. Certificate No.	U47718

N.B. Copies of calibration certificates are available upon request.

5.06 The equipment was calibrated both before and after the survey with no difference noted in the levels.

6 RESULTS

- 6.01 The weather during the survey for both surveys was suitable for noise measurement, it being dry with little wind for the duration of the survey.
- 6.02 Noise sources at the site include local and distant road traffic along with activity on the garage forecourts. There were no other significant sources of noise during the survey.
- 6.03 A list of the levels measured is included in Appendix D and represented graphically in Appendix E.
- 6.04 The requested delivery collection hours would see the following changes to:
- extended from 1900hrs to 2300hrs Monday to Friday; and
 - an additional hour of 0700-0800hrs in the morning and an extension from 1900hrs to 2200hrs on the Saturday; and
 - a full delivery window of 0700-2300hrs on Sundays and Bank Holidays
- 6.05 In Table 6.1 below we have summarised the hourly noise levels during the proposed extended hours summarised above across each day of our survey data at the two measurement positions.

Position	Day	Period	$L_{Aeq,T} - \text{dB}$	$L_{A90,T} - \text{dB}$
Measurement Position 1 (2021)	Thursday 24 th June 2021	1900-2000	58.5	52.2
		2000-2100	58.4	49.3
		2100-2200	57.6	46.2
	Friday 25 th June 2021	1900-2000	59.5	51.2
		2000-2100	58.4	50
		2100-2200	57.2	47.9
	Saturday 26 th June 2021	0700-0800	58.7	52.1
		1900-2000	58.7	52.1
		2000-2100	58.5	49.9
		2100-2200	57.0	48
	Sunday 27 th June 2021	0700-0800	54.4	42
		0800-0900	56	45.2
		0900-1000	58.3	48.4
		1000-1100	59	52.9
		1100-1200	59.2	53.5
		1200-1300	59.5	54.3
		1300-1400	59	53.6
		1400-1500	59.4	54.5
		1500-1600	59	53.2
		1600-1700	59	52.1
		1700-1800	59.5	52
		1800-1900	59.9	52.3
		1900-2000	58.9	51.1
		2000-2100	57.8	49.5
		2100-2200	55.4	48.1
Measurement Position 2 2024	Wednesday 24 th June 2024	1900-2000	57.7	50
		2000-2100	56.9	47.1
		2100-2200	56.4	45.9

Table 6.1: Free-Field Measured Ambient and Background Noise Levels over proposed delivery hours

6.06 Reviewing the data across the two surveys there does not appear to be a significant difference in the noise levels recorded despite the surveys being over 3 years apart and under different site conditions.

6.07 The ambient noise level during the proposed extended activity evening hours (1900-2200hrs) is consistently 57-58dB(A) L_{eq} (including Sunday), the hourly background noise level being between 45-52dB(A) L_{90} weekdays and dropping to a low of 42 dB(A) L_{90} on Sunday.

7 DELIVERY/SERVICING NOISE ASSESSMENT

7.01 The servicing operation for the food to go consists of deliveries in metal cages being taken from the back of the small delivery vehicle via a tail lift and wheeled directly into the front of the sales building via the shortest route. The vehicle will park in the customer bays at the front of the store, as annotated on the site plan in Figure 2. Currently deliveries to the food to go operator occur four times a week.

7.02 With regards to the waste collections these currently only occur twice a week. It is currently not expected that the frequency of waste collections will increase and these would only occur during the existing permitted hours but some flexibility on the days of collection being seven days a week could be beneficial.

7.03 Calculations have been undertaken using the following library data for a typical delivery operation at a similar store and includes for metal cages wheeled across a tarmac surface.

- Wheeling of stock from delivery vehicle to store – metal sided cage nominally 800 x 800 x 1700 H travelling over tarmac. Accounting for the site-specific distance and period of travel the resultant source sound power level of a typical delivery is:

86dB(A) Sound power level $L_{eq,20minute}$

7.04 Similarly we have used library data for the main service station deliveries as summarised below:

- Arrival of the vehicle, unloading of metal cages of stock via a tail lift, wheeled into the store and return of empty cages via the tail lift and departure of vehicle:

89dB(A) Sound power level $L_{eq,30minute}$

7.05 We have used library data for the waste collection as summarised below:

- Arrival of the vehicle, moving of the bins from the store to the rear of the vehicle, emptying of the bins into the rear of vehicle via hydraulic arms, returning the bins to the store and the departure of the vehicle. Allowing for up to three bins the resultant source sound power level would be:

96dB(A) Sound power level $L_{eq,10minute}$

7.06 We have also used library data for the typical noise delivery associated with a fuel as summarised below:

- Arrival of the vehicle and with the engine off the gravity feed of the fuel into the underground tanks and then the departure of the vehicle:

74dB(A) Sound power level $L_{eq,20minute}$

7.07 The proposed servicing will occur during off-peak periods within the trading hours of the store typically towards the end of the day. The servicing vehicle will pull up within the car park and the stock taken in via the front of the store. The servicing location is as annotated on the site plan in Figure 2 in Section 2. The following images Figure 3 -5 from the CadnaA acoustic model show the calculated resultant noise level from the both the typical food to go delivery and a service station main delivery operation. Figure 6-8 show Images from the CadnaA model that show the calculated

resultant noise level from a typical fuel delivery to the forecourt refuelling point and then a separate waste collection occurring at the front of the store.

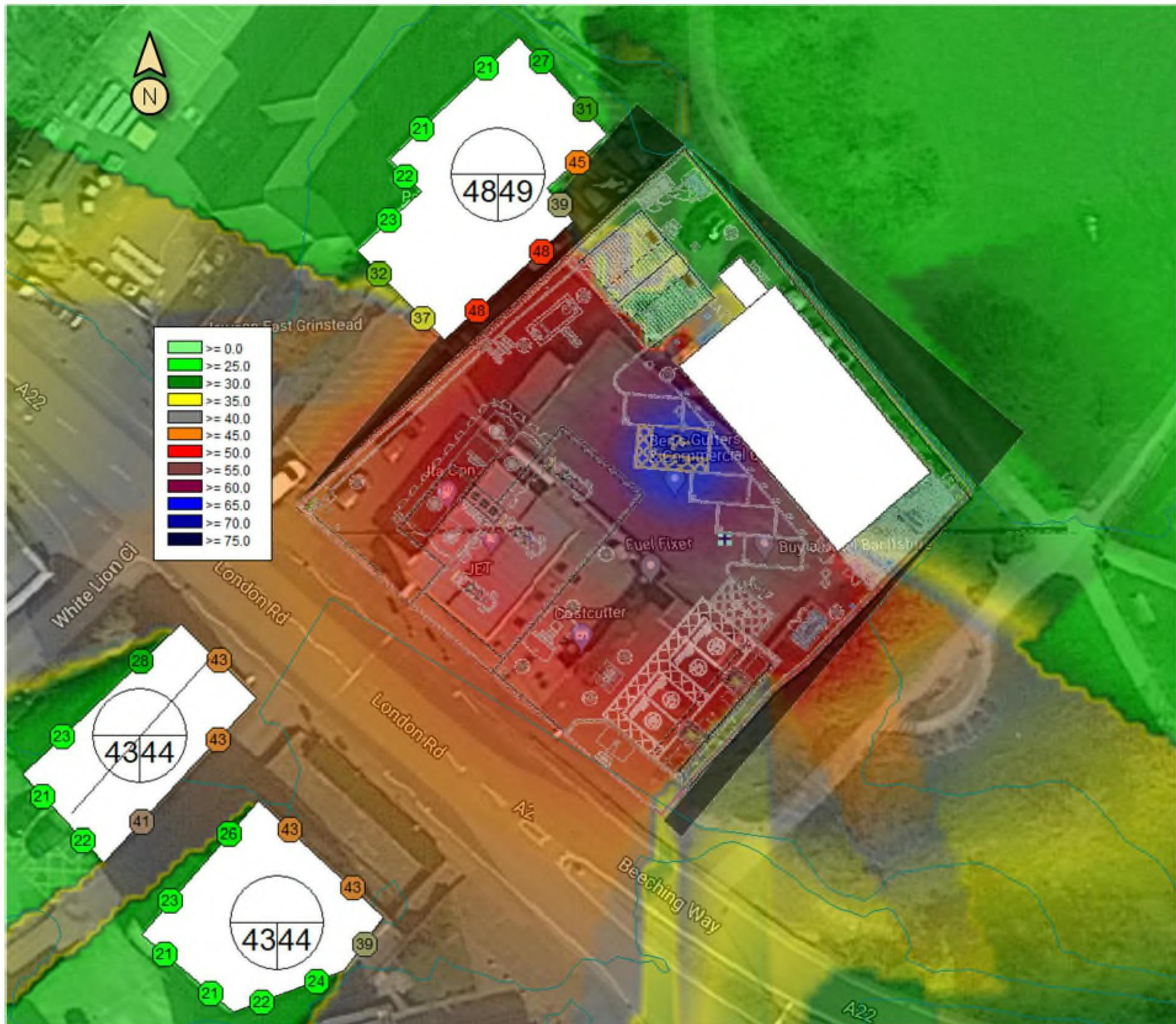
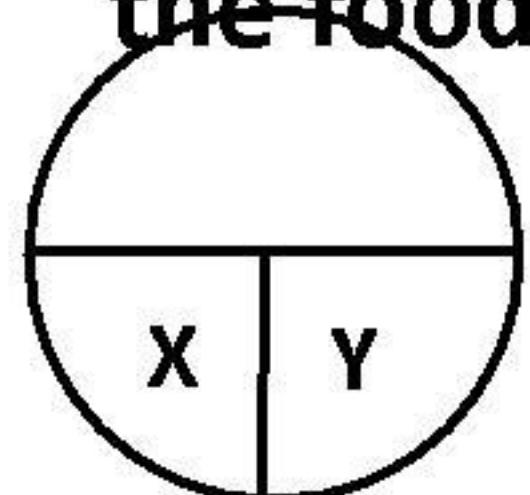


Figure 3: Calculated worst case resultant noise levels from unloading of servicing vehicles for both the food to go and main sales building – Specific image shows noise from Food to go vehicle



X – Food to Go Servicing Noise – Typical Delivery
Y – Service Vehicle Noise

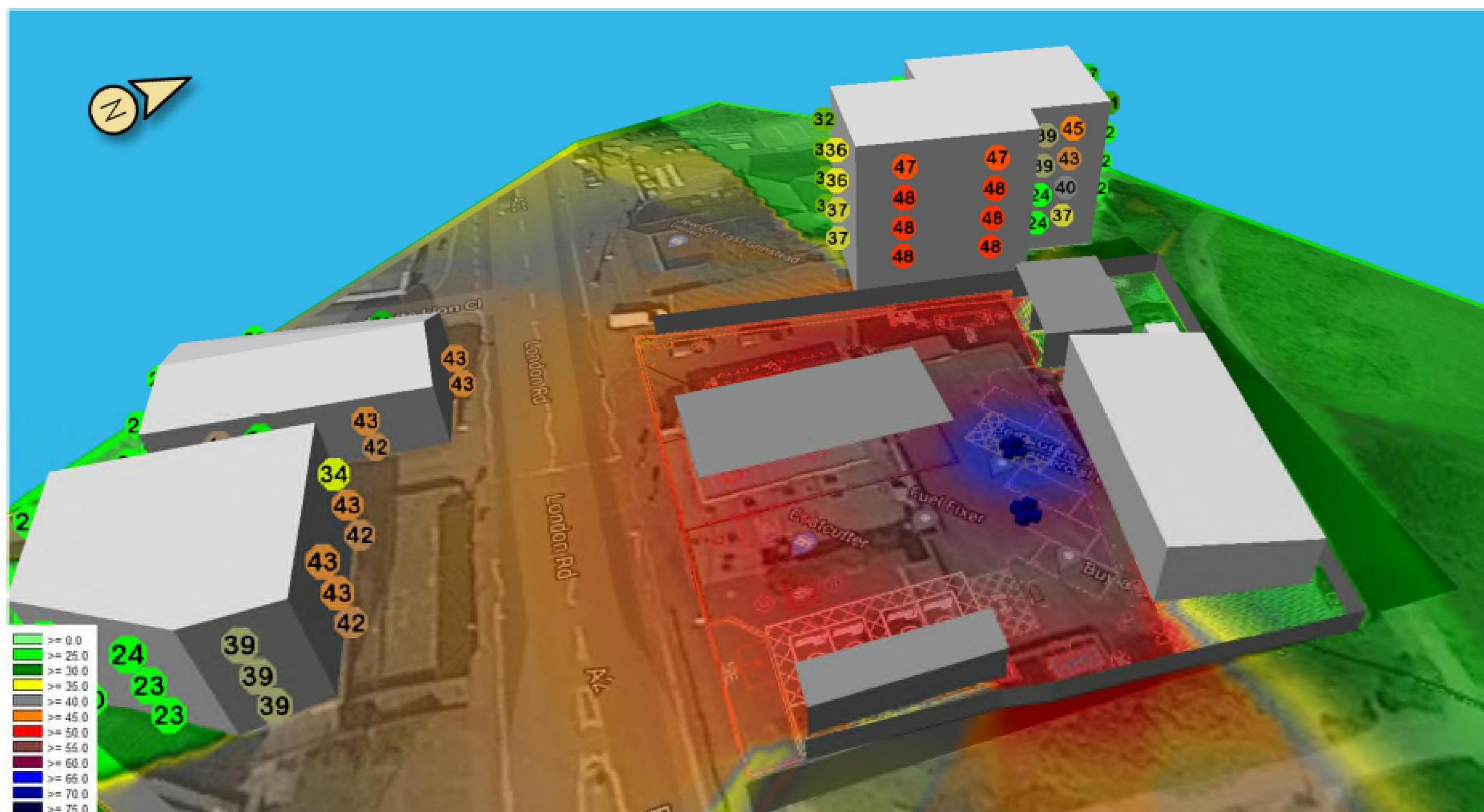


Figure 4: Isometric view of noise propagation from unloading of food to go delivery into the Sales Building

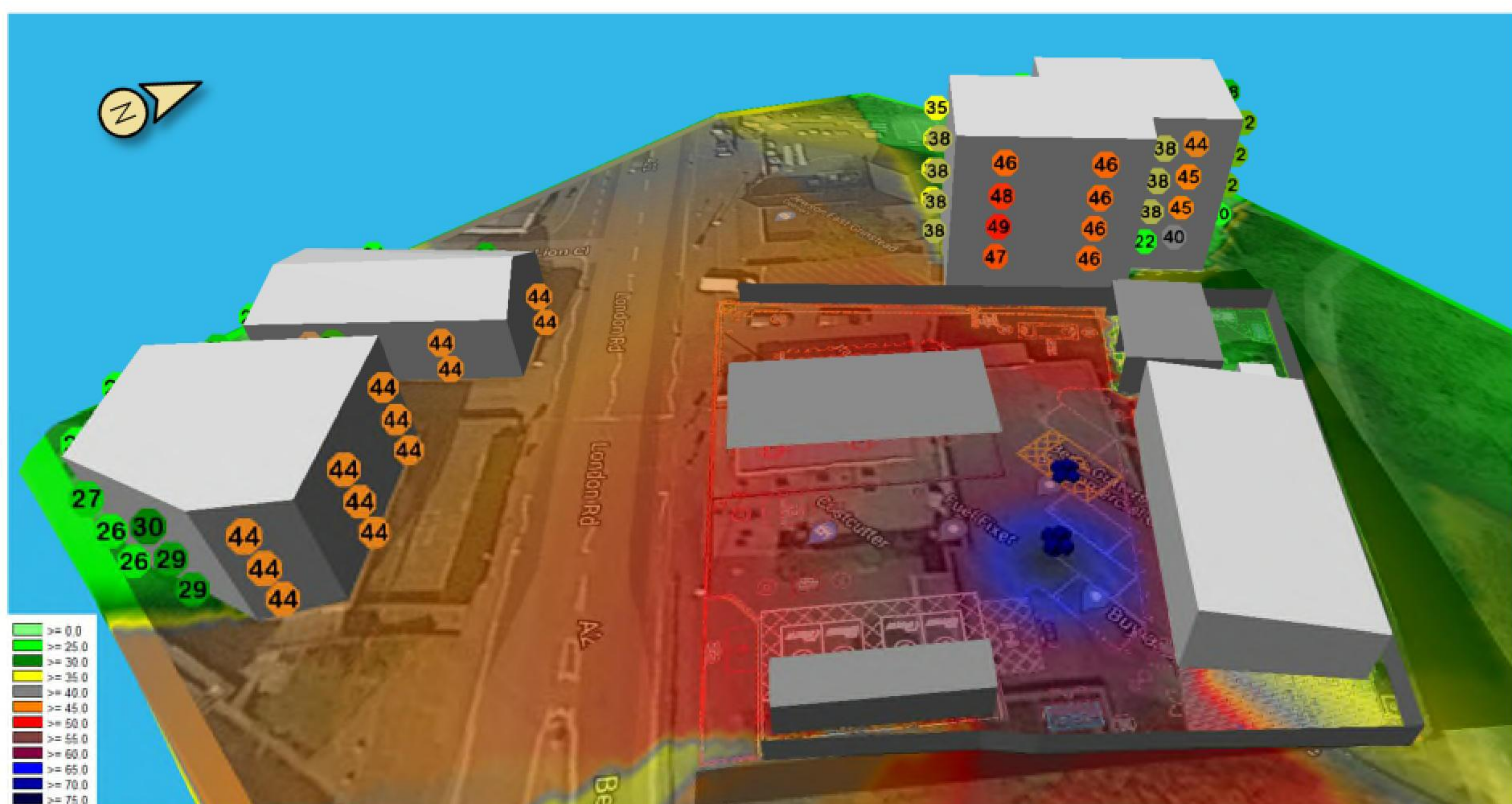
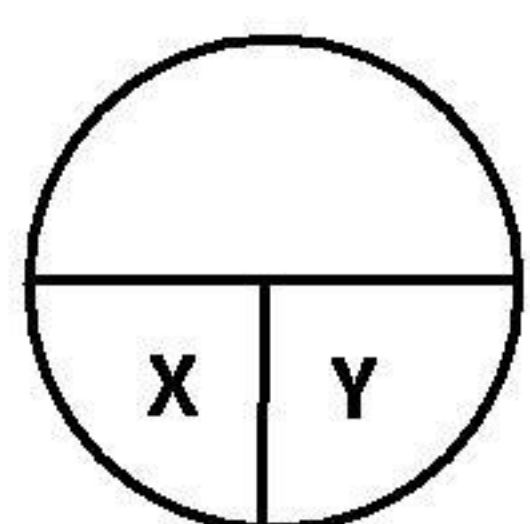


Figure 5: Isometric view of noise propagation from typical service station main delivery into the sale building



Figure 6: Calculated worst case resultant noise levels from unloading of fuel delivery and waste collection - image shows waste collection noise levels incident on facades



X – Fuel Delivery Specific Noise Level
Y – Waste Collection Specific Noise Level

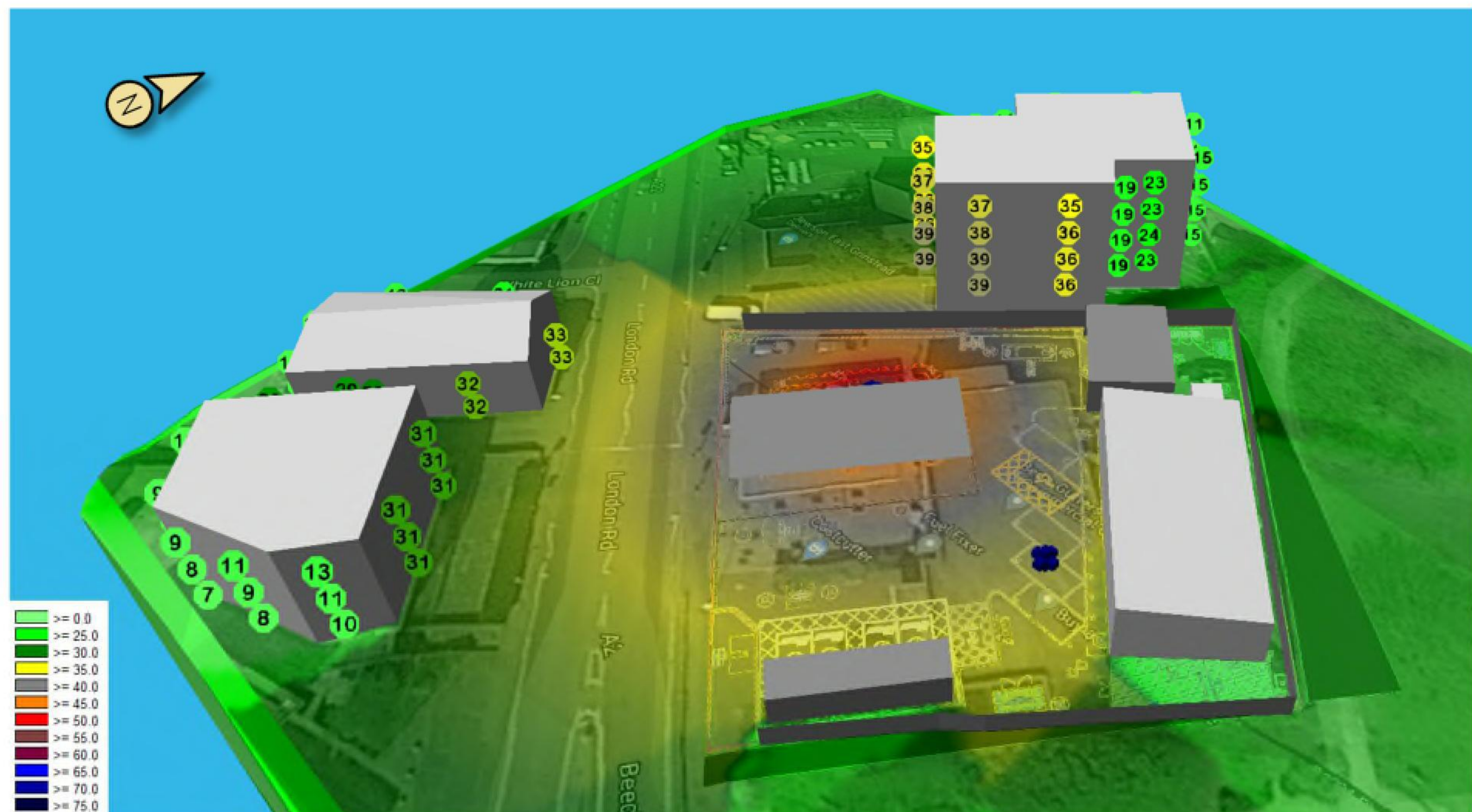


Figure 7: Isometric view of noise propagation from Fuel Delivery to Forecourt

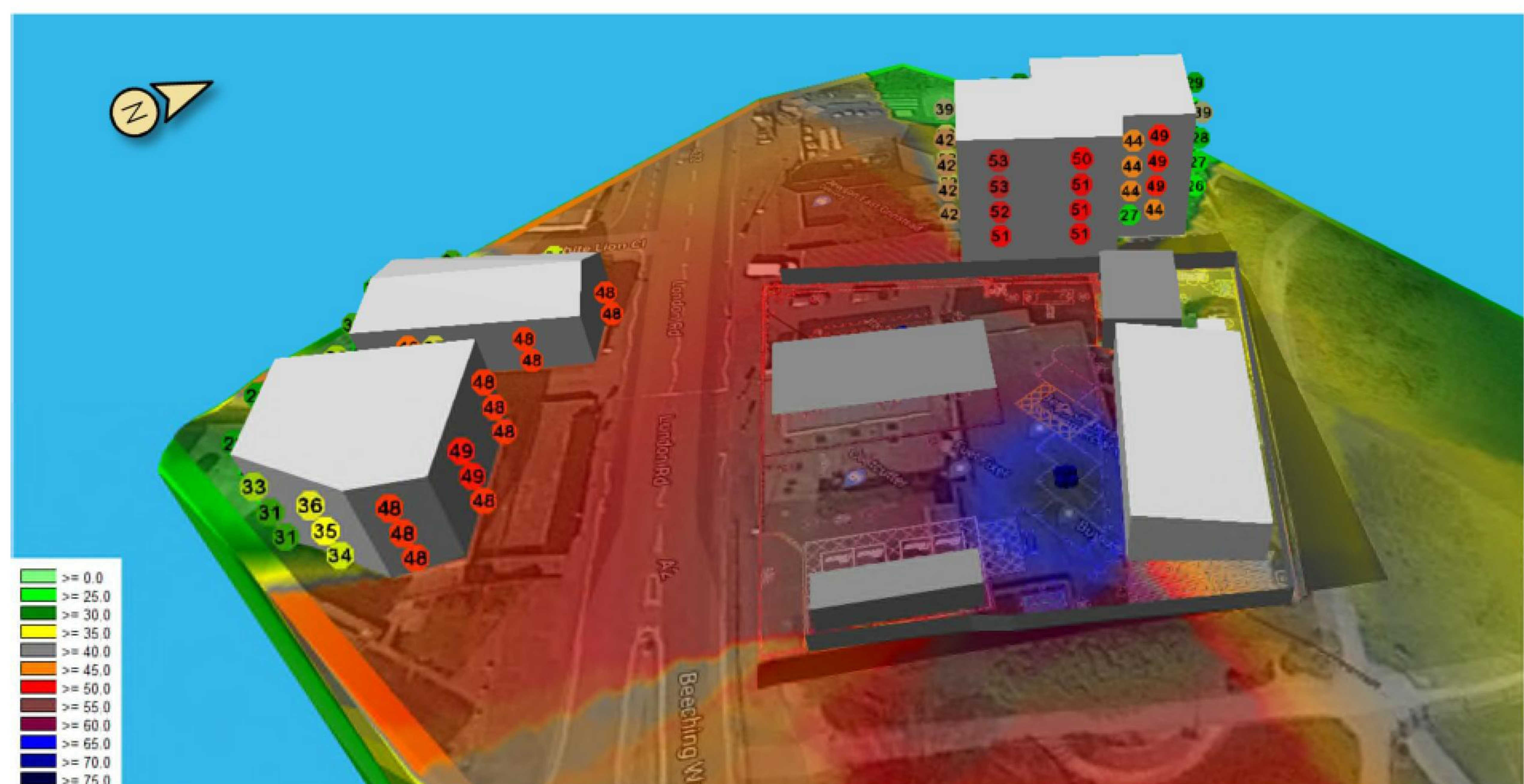


Figure 8: Isometric view of noise propagation from typical waste collection outside of Sales building

7.08 The results of the noise modelling show that the nearest and most affected dwellings from noise from both types of deliveries will be the Parkview dwellings. Table 7.1 presents a summary of the modelled noise levels:

Noise Source	Parkview
Food to go Delivery	48 dB(A)
Main service station delivery	49 dB(A)
Fuel Delivery	37 dB(A)
Waste Collection	53 dB(A)

Table 7.1: Worst case noise levels at most affected façade of nearest dwellings due to noise from the different servicing provisions to the service station

8 BS4142 ASSESSMENT

- 8.01 In line with the requirements current national planning policy an assessment in accordance with BS 4142:2014 has been carried out to assess the noise impact from the proposed delivery operations for both food to go operator and the main sales building for the service station occurring during the proposed periods.
- 8.02 As discussed in Section 6, the background noise levels across the proposed delivery window are generally between 45-52dB(A) L_{90} . From a review of the measured range and modal values, a representative background noise level of 47dB(A) is considered appropriate for this assessment. The typical ambient noise level across the proposed extension to the existing delivery hours is 57dB(A) L_{eq} .
- 8.03 The following tables present the BS4142 assessment procedure for a single typical delivery for either the food to go operator or the main sales building happening in any one hour period based upon the specific noise levels modelled in CadnaA (Section 7 above). The deliveries would be scheduled to ensure that they did not occur at the same time. The assessments also include commentary on context and reference to absolute noise standards found in BS8233:2014, 'Guidance on sound insulation and noise reduction for buildings' and WHO guidelines.
- 8.04 The assessment refers only to worst-case site-wide noise impacts at the most affected properties of Parkview
- 8.05 All other receptors are either further away or are subject to the same or less noise than those noted above.

Typical Food to Go Delivery Operation

Results		Relevant Clause	Commentary
Assessment made during the daytime, so reference time interval is 1 hour		7.2	
Calculated Specific Noise	48 dB $L_{Aeq,20\text{ minuter}}$	7.3.6	Noise modelled using CadnaA, based on library data for a similar delivery operation
Source level correction	- 5dB		Typical delivery operation will only take 20minutes out of any one hour(- 10 log (20/60) dB) ⁽¹⁾
Acoustic Character Correction	+ 3 dB	9.2	Intermittent noise from wheeling of cages
Rating Sound Level	(48-5+3) dB = 46 dB	9.2	Overall 1 hour level
Background Noise Level	47 dB $L_{A90,1\text{ hour}}$	8	Representative background during proposed additional hours sought for delivery window
Difference	(46-47) dB= - 1 dB	11	
Assessment indicates the impact of the noise would be low, depending on context		11	The site operates as a commercial business already and includes noise of this type and magnitude.
Uncertainty of assessment	Not Significant	10	The noise model uses certified published source data and representative background noise levels are based extended survey including a weekend period.

Table 8.1: BS4142 Assessment for closest dwellings based on typical delivery operation for food to go provision

Typical Main Service Station Delivery Operation

Results		Relevant Clause	Commentary
Assessment made during the daytime, so reference time interval is 1 hour		7.2	
Calculated Specific Noise	49 dB $L_{Aeq,10min}$	7.3.6	Noise modelled using CadnaA, using library data for typical stock deliveries via a tail lift
Source level correction	- 5dB		Min service station delivery takes no more than 20 minutes in any one hour based on three bins collection $(-10 \log(20/60) \text{ dB})^{(1)}$
Acoustic Character Correction	+ 3 dB	9.2	Intermittent noise from min delivery to service station
Rating Sound Level	$(49-5+3) \text{ dB} = 47 \text{ dB}$	9.2	Overall 1 hour level
Background Noise Level	47 dB $L_{A90,1 \text{ hour}}$	8	Representative background noise level across proposed delivery window
Difference	$(47-47) \text{ dB} = -0 \text{ dB}$	11	
Assessment indicates the noise impact will be low, depending on context		11	The site operates as a commercial business already and includes noise of this type and magnitude.
Uncertainty of assessment	Not Significant	10	The noise model uses certified published source data and representative background noise levels are based extended survey including a weekend period.

Table 8.2: BS4142 Assessment for closest dwellings based on typical deliveries via a tail lift

Typical Fuel Delivery Operation

Results		Relevant Clause	Commentary
Assessment made during the daytime, so reference time interval is 1 hour		7.2	
Calculated Specific Noise	37 dB $L_{Aeq,10min}$	7.3.6	Noise modelled using CadnaA, using library data for typical waste collection
Source level correction	- 5 dB		Fuel Delivery takes no more than 20 minutes in any one hour based on three bins collection ($10 \log (20/60)$ dB) ⁽¹⁾
Acoustic Character Correction	+ 3 dB	9.2	Intermittent noise from vehicle arrival and departure
Rating Sound Level	(37-5+3) dB = 35 dB	9.2	Overall 1 hour level
Background Noise Level	47 dB $L_{A90,1 \text{ hour}}$	8	Representative background noise level across proposed delivery window
Difference	(35-47) dB= - 12 dB	11	
Assessment indicates the noise impact will be negligible, depending on context		11	The site operates as a commercial business already and includes noise of this type and magnitude.
Uncertainty of assessment	Not Significant	10	The noise model uses certified published source data and representative background noise levels are based extended survey including a weekend period.

Table 8.3: BS4142 Assessment for closest dwellings based on typical Fuel Delivery

Typical Waste Collection Operation

Results		Relevant Clause	Commentary
Assessment made during the daytime, so reference time interval is 1 hour		7.2	
Calculated Specific Noise	53 dB $L_{Aeq,10min}$	7.3.6	Noise modelled using CadnaA, using library data for typical waste collection
Source level correction	- 8dB		Waste collection takes no more than 10 minutes in any one hour based on three bins collection ($10 \log (10/60)$ dB) ⁽¹⁾
Acoustic Character Correction	+ 3 dB	9.2	Intermittent noise from bin collection
Rating Sound Level	(53-8+3) dB = 48 dB	9.2	Overall 1 hour level
Background Noise Level	47 dB $L_{A90,1 \text{ hour}}$	8	Representative background noise level across proposed delivery window
Difference	(48-47) dB= + 1 dB	11	
Assessment indicates the noise impact will be low, depending on context		11	The site operates as a commercial business already and includes noise of this type and magnitude.
Uncertainty of assessment	Not Significant	10	The noise model uses certified published source data and representative background noise levels are based extended survey including a weekend period.

Table 8.4: BS4142 Assessment for closest dwellings based on typical Waste Collection

8.06 Table 8.5 presents a summary of the each assessed scenario at the closest most affected receptor during each period and the relevant BS 4142 conclusion.

Scenario	Rating Level – Background noise dB	BS 4142 Assessment Conclusion
Typical delivery - food to go operator	-1	Noise impact is considered to be low.
Typical main delivery to service station	0	Noise impact is considered to be low.
Typical Fuel Delivery to service station	-12	Noise impact is considered to be negligible.
Typical wate collection from service station	+1	Noise impact is considered to be low.

Table 8.5: Summary of BS4142 conclusions for each potential worst case scenario

- 8.07 As indicated in the above BS4142 assessments, the impacts of the proposed operations within the extended delivery windows would still be considered to be low, depending on context.
- 8.08 Review the wider context of the existing noise climate, the current ambient noise level is consistently above 57 dB L_{Aeq} during the daytime which is higher than the calculated noise level from the typical food to go and main deliveries to the service station. This can be expected to provide some useful masking, further mitigating the assessed level of noise impact.
- 8.09 Additional reviews of the operational noise levels are presented below in the context of established and accepted absolute design targets and metrics for noise in dwellings as described in BS8233:2014, 'Guidance on sound insulation and noise reduction for buildings'.
- 8.10 The following review considers levels of noise that will result within the properties accounting for the noise reductions that will occur as sound passes across the building facades.
- 8.11 The sound insulation of the façade is very much governed by the type of glazing and whether the windows are open or not. Both cases are considered here assuming minimum levels of 20dB sound insulation likely from basic closed thermal double glazed windows. A typical loss of 15dB could be expected for noise passing through a partially open window.
- 8.12 Table 8.6 presents the noise levels that could be expected within the dwellings against the relevant BS 8233 design criteria. A minimal loss of 15dB could be expected for noise passing through a partially open window.

Period	Condition	Calculated $L_{Aeq,T}$ external	Minimum sound reduction loss	Resultant internal ambient noise level	BS8233 Design Criterion
Daytime	Windows Closed	53 dB	20 dB	<33 dB(A) $L_{eq,15minutes}$	35dB(A) $L_{eq,16 hour}$
	Windows Open	53 dB	15dB	38 dB(A) $L_{eq,15 minutes}$	35dB(A) $L_{eq,16 hour}$

Table 8.6: Calculated Internal Ambient Noise levels within closest dwellings of Parkview

- 8.13 BS 8233 assesses the noise levels over the full 16 hour daytime period (0700-2300hrs). The proposed delivery events should be no more than 20 minutes in the worst case with the worst case values for the waste collection presented in Table 8.6 which is the noisiest activity. The assessment shows the guideline values would be satisfied if the dwellings have their windows closed and a very minor breach during these short periods the activity will occur if they have their windows open. The noise survey showed that the existing ambient noise levels were consistently above 57dB(A) during the daytime period and there is an expectation that residents will currently be adopting mitigation strategies to control this existing higher noise source (if and where required). The introduction of this new noise source during the proposed delivery window will have negligible impact on the existing ambient noise and thus is not expected to lead to any behavioural changes or additional mitigation needs by the occupants of these dwellings.

9 CONCLUSIONS

- 9.01 MBH Design Studio Ltd has appointed Environmental Equipment Corporation Limited to undertake a noise assessment for typical deliveries for both the food to go operator and the main sales building for the MFG service station in East Grinstead as part of a section 73 application to vary the conditioned delivery hours to the site.
- 9.02 The site has the following conditioned hours:
- Monday to Friday 0700 to 1900hrs
 - Saturday 0800 to 1900hrs
 - Sundays and Bank/Public holidays None permitted
- 9.03 The application is to seek to extend the existing permitted hours to be 0700-2300hrs seven days a week. The proposal for extended delivery hours is essential due to the station's continuous 24/7 operation, catering to motorists at all hours. Extending delivery hours will help ensure that fresh stock is consistently available, especially during peak demand periods in the early morning. This adjustment will also allow deliveries to occur later in the evening or night, which is intended to reduce potential disruption to on-site operations during busy periods, which is generally in the morning between 0500 – 0900hrs
- 9.04 The assessment has been carried out in accordance with national planning guidance and the current British Standards and is based on environmental noise surveys conducted at the site over both a mid-week and weekend period.
- 9.05 A noise assessment using library data has been undertaken to evaluate the potential noise impact of a typical delivery and also a standard main delivery occurring during the proposed additional hours.
- 9.06 The predictions have shown that following the procedures of a BS 4142 assessment the noise impact from the activities during the proposed extended hours would be expected to be low. The existing ambient noise levels on site during the proposed hours are typically 6dB or more above the calculated noise levels from the activities and therefore in the context of the existing noise exposure of the local residents will be expected to have a negligible overall impact.
- 9.07 On the basis of this noise impact assessment it is considered that the results of this assessment would support a limited extension to the current permitted delivery times of 0700-2300hrs seven days a week.

APPENDIX A

GLOSSARY OF TECHNICAL TERMS

ACOUSTIC TERMINOLOGY

Absorption Classes	The sound absorption of a material is rated from Class A to Class E, where Class A materials provide the highest level of sound absorption.
Ambient Noise Levels	Noise levels measured in the absence of noise requiring control, frequently measured to determine the situation prior to the additional of a new noise source.
dB	Decibel. The logarithmic unit of sound level.
dB(A)	A-weighted decibel. The A-weighting approximates the response of the human ear.
$D_{nT,w}$	Weighted standardized level difference. A single number quantity of the sound level difference between two rooms. $D_{nT,w}$ is typically used to measure the on-site sound insulation performance of a building element such as a wall, floor or ceiling. Measured in accordance with BS EN ISO 16283-1 and weighted in accordance with BS EN ISO 717-1.
$D_{n,e,w}$	The weighted element-normalized level difference. A single number rating of the sound reduction provided by a sound passing through an individual element. $D_{n,e,w}$ is typically used to define the sound insulation provided by ventilators. Measured in accordance with BS EN ISO 10140-2:2010 and rated in accordance with BS EN ISO 717-1.
Flanking	Transmission of sound energy through paths adjacent to the building element being considered. For example, sound may be transmitted around a wall by travelling up into the ceiling space and then down into the adjacent room.
Frequency	Sound can occur over a range of frequencies extending from the very low, such as the rumble of thunder, up to the very high such as the crash of cymbals. Sound is generally described over the frequency range from 63Hz to 4kHz, roughly equal to the range of frequencies on a piano.
Impact Sound	Sound produced by an object impacting directly on a building structure, such as footfall noise or chairs scrapping on a floor.
$L_{Aeq,t}$	The equivalent continuous sound level measured in dBA. This is commonly referred to as the average noise level. 't' is the interval time for the measurement. Typically 't' of 16hrs and 8hrs is used for day and night time ambient noise respectively or 't' is defined by the period of interest in BS4142 assessments.
$L_{A90,t}$	The noise level exceeded for 90% of the measurement period, measured in dBA. This is commonly referred to as the background noise level.
$L'_{nT,w}$	Weighted, standardized impact sound pressure level. A single number rating of the impact sound insulation of a floor/ceiling when impacted on by a standard "tapper" machine. The lower the $L'_{nT,w}$, the better the acoustic performance. Measured in accordance with BBS EN ISO 140-7 and rated in accordance with BS EN ISO 717-2.
NR	Noise Rating. A single number rating which is based on the sound level in the octave bands 31.5Hz – 8kHz inclusive, generally used to assess noise from mechanical services in buildings.
Octave Band	Frequencies are often grouped together into octaves for analysis. Octave bands are labelled by their centre frequency which are: 63Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz and 4kHz.
Reverberation Time (T_{mf})	Reverberation time is used for assessing the acoustic qualities of a space. It is defined as the time it takes for an impulse to decay by 60dB. T_{mf} is the arithmetic average of the reverberation time in the mid frequency bands (500Hz, 1kHz and 2kHz).
R_w	Weighted sound reduction index. A single number rating of the sound insulation performance of a specific building element. R_w is measured in a laboratory. R_w is commonly used by manufacturers to describe the sound insulation performance of building elements such as plasterboard and concrete. Measured in accordance with BS EN ISO 10140-2:2010 and rated in accordance with BS EN ISO 717-1.
Sound Absorption	When sound hits a surface, some of the sound energy is absorbed by the surface material. Sound absorption refers to the ability of a material to absorb sound, rated from 0, complete reflection, to 1, complete absorption.
Sound Insulation	When sound hits a surface, some of the sound energy travels through the material. 'Sound insulation' refers to the ability of a material to prevent the travel of sound.
Structure-borne transmission	Transmission of sound energy as vibrations via the structure of a building.

APPENDIX B

SITE PLAN

APPENDIX C

PLANNING POLICY AND GUIDANCE

PLANNING POLICY AND GUIDANCE

National Planning Policy Framework and the Noise Policy Statement for England

The Department for Communities and Local Government published the National Planning Policy Framework (NPPF) on 27th March 2012 (as amended on 20th December 2023) and upon its publication, the majority of planning policy statements and guidance notes were withdrawn, including Planning Policy Guidance 24 Planning and Noise, which previously presented the government's overarching planning policy on noise.

Paragraph 180 in Section 15 of the NPPF, entitled Conserving and enhancing the natural environment, states that:

"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..."

Paragraph 191 in Section 15 also states that:

"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;

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..."

The Department for Environment Food and Rural Affairs published the Noise Policy Statement for England (NPSE) in March 2010. The explanatory note of NPSE defines the following terms used in the NPPF:

"NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

2.21 Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur."

The NPSE does not define any of the above effect levels numerically.

The NPSE presents the Noise Policy Aims as:

“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy and sustainable development:

avoid significant adverse impacts on health and quality of life;

mitigate and minimise adverse impacts on health and quality of life; and

where possible, contribute to the improvement of health and quality of life.”

It can be seen that the first two bullet points are similar to Section 11 of the NPPF, with a third aim that seeks to improve health and quality of life. The NPSE later expands on the Noise Policy Aims, stating:

2.23 *The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also taking into account the guiding principles of sustainable development (paragraph 1.8).*

2.24 *The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.*

2.25 *This aim (the third aim), seeks where possible, positively to improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development (paragraph 1.8), recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.”*

It is clear that noise described in the NPSE as SOAEL that would lead to significant adverse effects should be avoided, although there is no definition as to what constitutes a significant adverse effect. Similarly, noise should be mitigated where it is high enough to lead to adverse effects, termed the LOAEL, but not so high that it leads to significant adverse effects.

British Standard 4142

To assess the acceptability of the resultant noise levels we have consulted the relevant standards. BS 4142:2014 ‘Methods for rating and assessing industrial and commercial sound’ has been used to assess the likelihood any adverse impacts based on the resultant noise level from the new plant item, including any corrections for the character of the noise against the existing background noise level.

BS4142 gives guidance on assessing the likelihood of adverse impacts by calculating a ‘rating level’ of the new noise source and comparing its magnitude at noise sensitive locations to the existing or underlying background noise level. The background noise level is subtracted from the ‘rating level’ to assess the likelihood of complaints:

- The greater the difference the greater the likelihood of complaints.
- A difference of around +10dB or more is an indication of a significant adverse impact, depending on the context.
- A difference of +5dB is likely to be an indication of an adverse impact, depending on the context.

- The lower the rating level is relative to the measured background noise level, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low sound impact, depending on the context.

This assessment is carried out over a one hour period for the daytime and a fifteen minute period for the night-time. For the purposes of the standard it states that daytime and night-time are typically 07:00 to 23:00 hours and 23:00 to 07:00 hours respectively.

The 'rating level' of the noise source is obtained taking the following factors into consideration:

- The new plant noise (the specific noise) is measured or predicted in terms of L_{Aeq} .
- An additional correction shall be included if the noise contains a distinguishable, discrete continuous note, if the noise contains distinct impulses or if the noise is irregular enough to attract attention. The value for any tonal noise can be an addition of up to 6dB and for impulsive noise of up to 9dB.

BS 4142 goes onto state that:

'The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.'

BS4142 has been referenced in setting noise limits for any fixed plant proposed as part of the proposed development.

APPENDIX D

SURVEY RESULTS
(TABULAR)

EC 18447 - MFG East Grinstead - 2021 Data

MBH Design Studio

Tabulated Noise data

Sheet 1 of 1

Time	L _{Aeq}	L _{AMax}	L _{A90}
19:00	59	72	52
20:00	58	81	49
21:00	58	85	46
22:00	55	74	42
23:00	52	70	36
00:00	51	74	34
01:00	48	68	33
02:00	47	67	32
03:00	48	69	32
04:00	49	66	35
05:00	54	72	39
06:00	57	80	44
07:00	60	88	51
08:00	60	77	55
09:00	59	74	54
10:00	60	82	54
11:00	60	74	54
12:00	60	77	54
13:00	62	88	54
14:00	61	86	55
15:00	59	69	54
16:00	60	88	54
17:00	60	82	54
18:00	61	92	54
19:00	60	86	51
20:00	58	79	50
21:00	57	75	48
22:00	57	86	44
23:00	55	75	41
00:00	53	79	38
01:00	51	68	35
02:00	48	69	34
03:00	48	68	31
04:00	49	69	34
05:00	52	68	39
06:00	54	78	40
07:00	57	75	43
08:00	58	74	50
09:00	59	72	52
10:00	60	86	53
11:00	59	76	52
12:00	61	93	53
13:00	59	78	53
14:00	59	79	53
15:00	59	80	52
16:00	59	76	52
17:00	59	80	53
18:00	59	78	53

Time	L _{Aeq}	L _{AMax}	L _{A90}
19:00	59	83	52
20:00	59	80	50
21:00	57	73	48
22:00	56	70	46
23:00	54	69	44
00:00	54	74	42
01:00	49	68	38
02:00	47	66	35
03:00	46	65	34
04:00	46	73	37
05:00	51	71	38
06:00	53	70	39
07:00	54	68	42
08:00	56	75	45
09:00	58	86	48
10:00	59	76	53
11:00	59	83	54
12:00	60	82	54
13:00	59	83	54
14:00	59	77	55
15:00	59	74	53
16:00	59	74	52
17:00	60	81	52
18:00	60	78	52
19:00	60	77	51
20:00	59	73	50
21:00	58	70	48
22:00	55	73	43
23:00	52	73	36
00:00	49	66	35
01:00	47	71	33
02:00	45	65	33
03:00	46	65	34
04:00	49	72	36
05:00	54	69	41
06:00	57	73	45
07:00	59	73	51
08:00	60	78	53

EC 18447 - MFG East Grinstead 2024 Data

MBH Design Studio

Tabulated Noise data

Sheet 1 of 1

Time	L _{Aeq}	L _{AMax}	L _{A90}
18:00	59	79	53
19:00	58	67	50
20:00	57	81	47
21:00	56	76	46
22:00	56	73	43
23:00	52	72	40
00:00	51	73	39
01:00	50	72	39
02:00	48	71	38
03:00	49	69	38
04:00	51	68	37
05:00	53	68	39
06:00	56	71	45
07:00	59	73	51

APPENDIX E

SURVEY RESULTS
(GRAPHICAL)

Noise Level Time History at MFG East Grinstead - 2021 Data



— LAeq — LAFmax — LAF90

