



AIRTIGHT & NOISECHECK LIMITED

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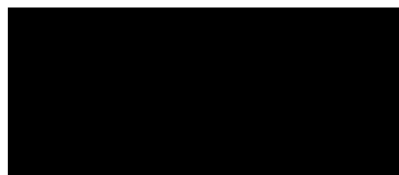
NOISE IMPACT ASSESSMENT FOR

CRESCENT LAND LIMITED

SITE ADDRESS

LAND TO REAR OF FORMER KINGS BEACH HOTEL
THE PARADE
BOGNOR REGIS
PO21 4TW

Acoustic Engineer:



Date: 14-15th December 2017

Michael Vine

AIRTIGHT & NOISECHECK BUILDING ACOUSTIC TESTING

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Raw Data can be sent upon request

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Customer Name:

Date: 14-15th December 2017

Crescent Land Limited

Site Address:

The land to the rear of The Former Kings Beach Hotel
The Parade
Bognor Regis
PO21 4TW

Acoustic Engineer:

Mr. Michael Vine

Equipment used:

Norsonic Environmental Analyser 121 – Serial No 29809 Calibration due July 2019

Analyser complies with the following standards:

IEC 60651 type 1
IEC 60804 type 1
IEC 61260 class 1
IEC 225
ANSI S1.4-1985 type 1
ANSI 1.43 -1997 type 1
ANSI S1.11-1986 order 3 type 1D
DIN 45 657
Norsonic Production Standard set for the Nor121

Measurement Microphones (Gras 40AF) – Serial No 51465 & Nor 1225 – serial No 72933, - Calibration due July 2019

Acoustic Calibrator - (Type 1251) – Serial No 31652, Calibration due July 2018

Measurement Procedure:

The external ambient noise levels were recorded for a 24hour period in two locations between Thursday 14th & Friday 15th December 2017 to measure the existing noise levels at the proposed boundary of the 3 x purpose built dwellings. These levels were measured in locations to assess the dominant noise sources in operation at the proposed site.

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Executive Summary:

Airtight & Noisecheck Ltd were instructed by Crescent Land Limited to undertake a Noise Impact Assessment (NIA) at The former kings Beach Hotel, The Parade. A planning application is to be made to erect 3 x purpose built residential dwellings in the vacant land to the rear of the building, these dwellings will be located to the Northwest, Northeast & West of the building which is now a convenience store.

The noise levels were measured for a 24hour period close to the proposed boundaries of the new dwellings. The noise emissions were measured at the point closest to the delivery location of the convenience store (and road) and also the plant location for the store. These locations offer a fair reflection of the noise levels that will be apparent at the residential facades of the dwellings. Two dwellings will face the local road network, with the 3rd being located to the rear of the building.

The calculations indicate that if the mitigation measures are implemented then there is no reason to suggest that the future residents of the proposed houses will be adversely affected by the noise emissions created by the noise associated with the road traffic, delivery bay and plant of the convenience store. Standard measures will be implemented to the building fabric, with possibly acoustic trickle vents fitted to any noise sensitive rooms facing the road network. All rear facades and facades for rear dwelling should be able to be ventilated by opening of windows.

The noise sources in operation were vehicles using the local road network & entering & leaving the car park, delivery activity for the convenience store & the plant activity for the store. The plant has been acoustically treated using acoustic louvres so the noise produced has already been mitigated.

Acoustic Design Statement:

It is clear that the site is situated near to a convenience store & car park and will be exposed to noise levels associated with such a venue. However, the site is located in a residential area, with residential dwellings located on all other aspects of the site. The noise sources in operation are:

1. Noise associated with the convenience store & car park
2. Delivery activities associated with the convenience store
3. Plant noise for the convenience store

With the above noise emissions in mind, the noise assessment was undertaken over a 24hour period with deliveries taking place and the store open. The operating hours of the Convenience store are 0700-2300hrs 7 days a week. The measurement period encompassed these hours.

The initial risk assessment indicated that the noise levels associated with the site are low, and that there are many residential dwellings in close proximity to the proposed scheme. The plant for the store has already been extensively mitigated and is almost inaudible at the nearest proposed receptor. It is anticipated that standard mitigation/specification measures can be implemented to the dwellings due to the low noise levels apparent.

Based on the measured levels & proposed mitigation measures to be implemented then there is no reason to suggest that the future occupants of the scheme cannot be adequately protected from the external noise emissions. The LAeq 16hour values are also within the guidelines for external amenity space as per BS8233: 2014.

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Assessment Criteria:

The NPPF came into effect in March 2012 and replaced other documents such as PPG24. The NPPF provides a number of objectives and aims that are directed towards avoiding significant adverse impacts and reducing others on quality of life and health. This document states that:

The planning system should contribute to and enhance the natural and local environment by: preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

The Noise Policy Statement for England (NPSE) states the following aims with respect to noise policy:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of the Government policy on 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.*

BS8233: 2014 'Guidance of Sound Insulation and Noise Reduction for Buildings' defines a range of ambient noise levels for design purposes, in order that appropriate conditions are achieved in certain internal environments. These internal requirements are listed in the table below.

BS8233: Table 5 – Indoor Ambient noise levels in spaces when they are unoccupied.

Activity	Location	0700-2300	2300-0700
Resting	Living Rooms	35dB LAeq,16hour	-
Dining	Dining Room/Area	40dB LAeq,16hour	-
Sleeping (daytime resting)	Bedroom	35dB LAeq,16hour	30dB LAeq,8hour

Night time noise events can have a significant impact on sleep disturbance. There is no specific guidance presented in BS8233 regarding a noise limit to maximum night time noise ($L_{Amax, F}$). As part of this assessment the number of night time noise events will be considered in a qualitative manner with an internal $L_{Amax, F}$ of 45dB used as an initial screening tool to identify night-time noise events that may be of significance to sleeping conditions in bedrooms.

The noise sources apparent at the site are activities associated with the local road network, activity associated with the Convenience store, delivery activity & plant noise. There are no acoustic feature corrections to be applied to the plant.

ProPG: Planning & Noise 2017 (Professional Practice Guidance on Planning & Noise) issued by ANC/IOA/CIEH is a document that came into effect in May 2017. This document is a guidance document and not a Code of Practice or British Standard.

This document states that there is a staged approach to such schemes, with the first phase being a risk assessment undertaken at the site, followed by a detailed assessment taking into account the recommended internal values by measuring the external noise levels.

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1 Objective:

1.1 To determine the noise levels associated over a 24hour period at the proposed facade of the development. The noise levels associated with the proposed dwellings were measured to ensure that the future residents of the proposed scheme will not be adversely affected by the noise emissions created in the immediate area. The site currently comprises of a vacant parcel of land to the rear of the convenience store. Part of the land are derelict garages. A planning application is to be made to erect 3 x residential dwellings in the parcel of land that runs around the rear of the store. The dwellings will be located to the Northwest, Northeast & West of the convenience store.

1.2 The objective of the testing is to ensure that the future residents of the proposed scheme will be protected from the external noise emissions produced at the site, the dominant noise source apparent on site is the road traffic & noise associated with the convenience store.

2 Calibration:

2.1 The measurement microphones were calibrated before and after testing in the measurement location and there were no drifts recorded during the assessments.

3 Site Layout & Microphone Position:

3.1 Pagham is a small village located to the West of Bognor Regis. The Parade is a predominantly residential road that runs in front of the large detached convenience store. The building is located on the corner of The Parade & Sea Lane. There are mixed use buildings located to the Northeast and predominantly residential dwellings on all other aspects. There are some other commercial units located further East.

3.2 The proposed dwellings are to be located to the rear of the convenience store, with one plot to the Northeast (front aspect facing The parade), one to the Northwest (located in between existing dwellings) and one to the West (front aspect facing Sea Lane). The microphone were located close to the assumed dominant noise sources to establish the worst case scenario for the site.

3.3 The measurement microphones were located:

- 1- The proposed Eastern façade facing the plant location of the store. It was at least 2m from ground level and in excess of 3.5m from any other reflective surface
- 2- The proposed Southern façade of the plot facing Sea Lane (and delivery bay location, see site plan). It was at least 2.5m from ground level and in excess of 3.5m from any other reflective surface.

4 Weather Conditions:

4.1 The weather was dry during the measurement procedures, the temperatures ranged between 2-12degrees. There was no wind or rain during the measurement procedure.

AIRTIGHT & NOISECHECK LIMITED ACOUSTICS TESTING**5 Results:**

5.1 The purpose of this measurement procedure was to calculate the noise levels apparent at the noise sensitive facades and ensure suitable mitigation measures are implemented so that the requirements of BS8233 & WHO can be met. The night time L_{Amax} values have also been derived so that they can be mitigated against also.

LAeq 16hour & 8hour Values:

Mic Location	L_{Aeq} 16hour Value	Reduction needed for BS8233 compliance	L_{Aeq} 8hour Value	Reduction for BS8233 compliance	L_{Amax} 1hour value – night time	Reduction for WHO compliance
ML 1	47dBA	12dB	38dBA	8dB	63dBA	18dBA
ML2	51dBA	16dB	42dBA	12dB	75dBA	30dBA

6 Results Conclusion:

ML1 locations apply to the rear facades of all dwellings (red lines on drawings) and ML 2 applies to the front facades of the 2 x dwellings facing the local road network & convenience store delivery bay (blue lines on drawings).

6.1 The level of reduction apparent for the site is listed in the table above. It is clear that the level of mitigation required at the facades is relatively low. The level of mitigation for WHO guidelines applies to the bedrooms with the average noise levels applying to the living rooms. The WHO guidelines only apply to bedrooms during the night time period.

6.2 The WHO guidelines for community noise - 2000 state that the internal L_{Amax} level (night time) should not exceed 45dB(A). If it exceeds this level on a regular basis then sleep disturbance may be caused. This is the internal level that should be achieved. The Pro PG document states that the internal level of 45dB should not be exceeded more than 10 times a night, however due to the noise emissions being associated with a delivery bay the highest L_{Amax} value has been used. It is assumed that the level measured was associated with a delivery considering the time of day and the increase over the other values.

6.3 The noise levels measured within this report offer a fair reflection of the noise levels apparent at the site. The measurement period encapsulated the noise sources apparent during the 24hours so it is a fair reflection of the typical noise emissions associated with the site.

6.4 If the above level of mitigation is met then the requirements of BS8233: 2014 & World Health Organisation – guidelines for community noise should be met.

6.5 Due to the low level of noise it is anticipated that the majority of the rooms can be ventilated by the opening of windows, however it may be prudent to fix acoustic trickle vents of any noise sensitive bedrooms located to the front aspects of the 2 x dwellings facing the road network.

6.6 The measured L_{Aeq} 16hour values are 47dB & 51dB therefore it meets the requirements of BS8233: 2014 for amenity spaces. In addition to this there will be a boundary fence erected around the boundary of the gardens to the residential dwellings so it is likely that this level will reduce further.

6.7 Whilst there was not a microphone placed at the proposed boundary of the dwelling located to the Northeast of the convenience store, it is anticipated that this façade will be exposed to similar levels as the façade facing the delivery bay and road network. The road traffic levels are very similar on both aspects of the site so this level of reduction would appear to be a fair representation for the assumed noise levels of these facades.

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6.8 It is anticipated that the majority of the rooms can be ventilated naturally but the installation of acoustic trickle vents to the front facades of the dwellings facing the road network & delivery bay may be wise. These are vents that offer high levels of sound reduction whilst still offering ventilation to residential dwellings. The products listed below should offer the necessary sound reduction for the site.

Product	Sound Reduction - Open	Sound Reduction - Closed
Simon Acoustic Vent EHA	36dB	38dB

7 Façade Detail – The proposed façade is believed to be something similar to: - Aggregate block cavity wall, minimum 100mm blocks (minimum density 1350kg/m³), minimum 75mm cavity between leaves, finished with 13mm plaster. This system should achieve a sound reduction of between 50-52dB DnT,w + Ctr 'Code of Practice BS8233: 2014, Page 60 – Table E.1B – Airborne sound insulation of walls and partitions'. Also a cavity wall system comprising of 7N concrete blocks (two separate frames), have a sound reduction of approximately 53dB (predicted weighted sound reduction index values of Celcon Blockwork – from H&H Celcon).

8 Roof Detail – The proposed roof detail is believed to be similar to: Tiles on felt, pitched roof with 100mm mineral wool on plasterboard ceiling. This system should achieve a sound reduction of 43dB Rw 'BS8233: 2014, page 41 - Table 8 - The sound insulation of roofs'.

9 Windows - The proposed windows to be used is unknown but standard double-glazed systems offer a sound reduction of between 30-35dB so this should be adequate for the site (30dB). The specifications below offer these levels of reduction but the exact proposed specification is unknown and it is recommended that the window manufacturer provide the necessary documentation upon installation to ensure the correct materials have been used.

Possible Units	Thickness	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	Overall reduction
SG Solaglass 4-12-5	21mm	23	22	29	39	37	33	32dB
SG 4/12/10	26mm	28	23	32	38	42	44	35dB

There are many other suitable products and the client will have to show compliance for the windows before installation, the manufacturer will have the acoustic data for the windows.

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10 Results Summary:

10.1 The results of the various calculations indicate that the noise emissions associated with the site will not have an adverse impact on the proposed residential dwellings. The levels of sound reduction required for the proposed dwellings is clearly listed and can easily be achieved.

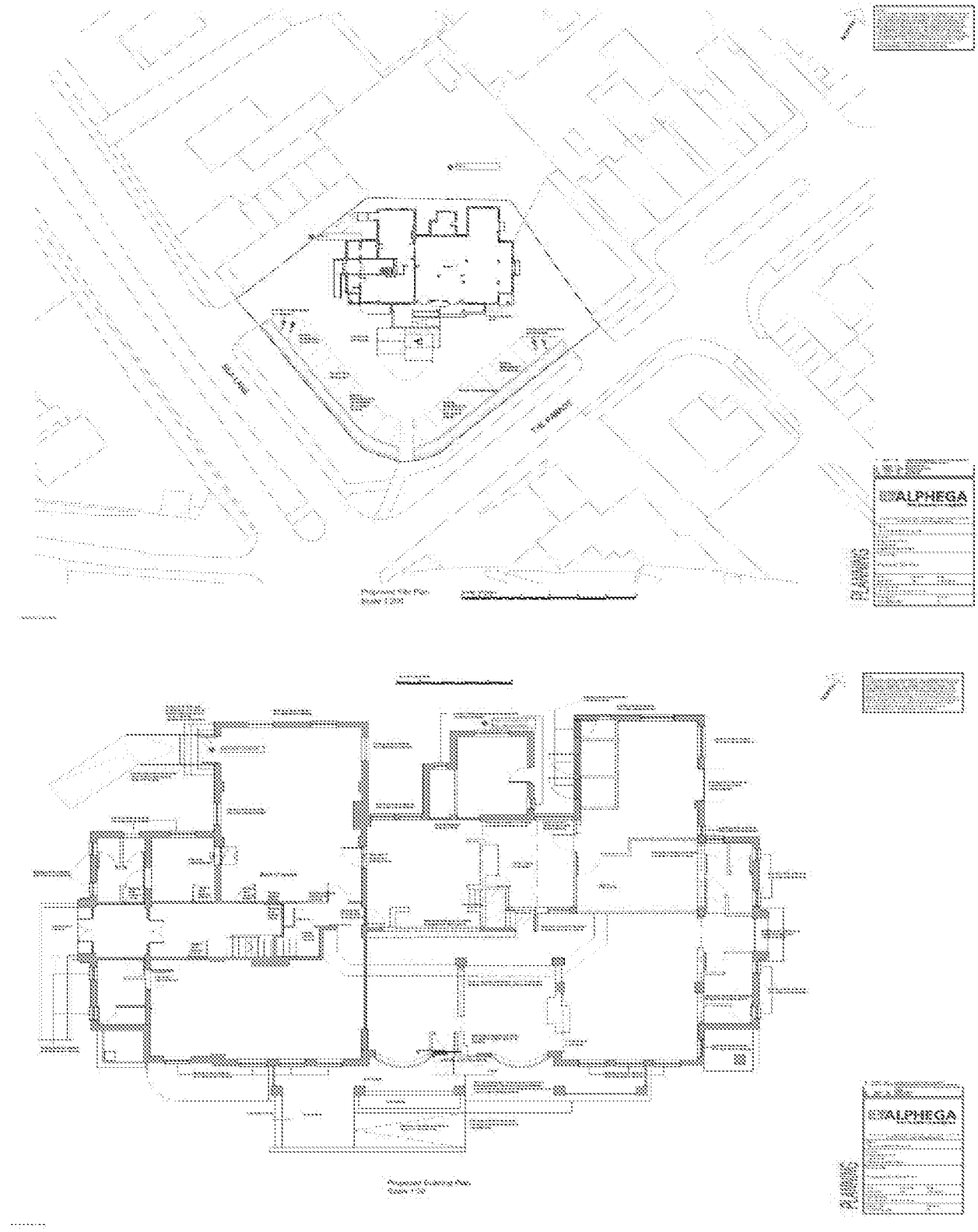
10.2 The mitigation measures listed within this report offer suitable sound reduction for the necessary building elements and if they are implemented throughout the site then the future residents should be able to enjoy a reasonable standard of living. Upon implementation of the mitigation measures, the internal & external criteria of BS8233: 2014 should be met within the noise sensitive bedrooms at the proposed development.

10.3 Planning ProPG states that a good acoustic design process is a vital part of new developments. It is clear that the existing acoustic climate should not have an adverse impact on the dwelling, and some mitigation measures have already been applied to the plant, including acoustic louvres (see site plan). The plant was inaudible at the nearest noise sensitive receptor. The delivery activity should also not have an adverse impact on the residential dwellings and the convenience store is only open between 0700-2300hrs so this should not cause sleep disturbance as it will not be open during the night time period.

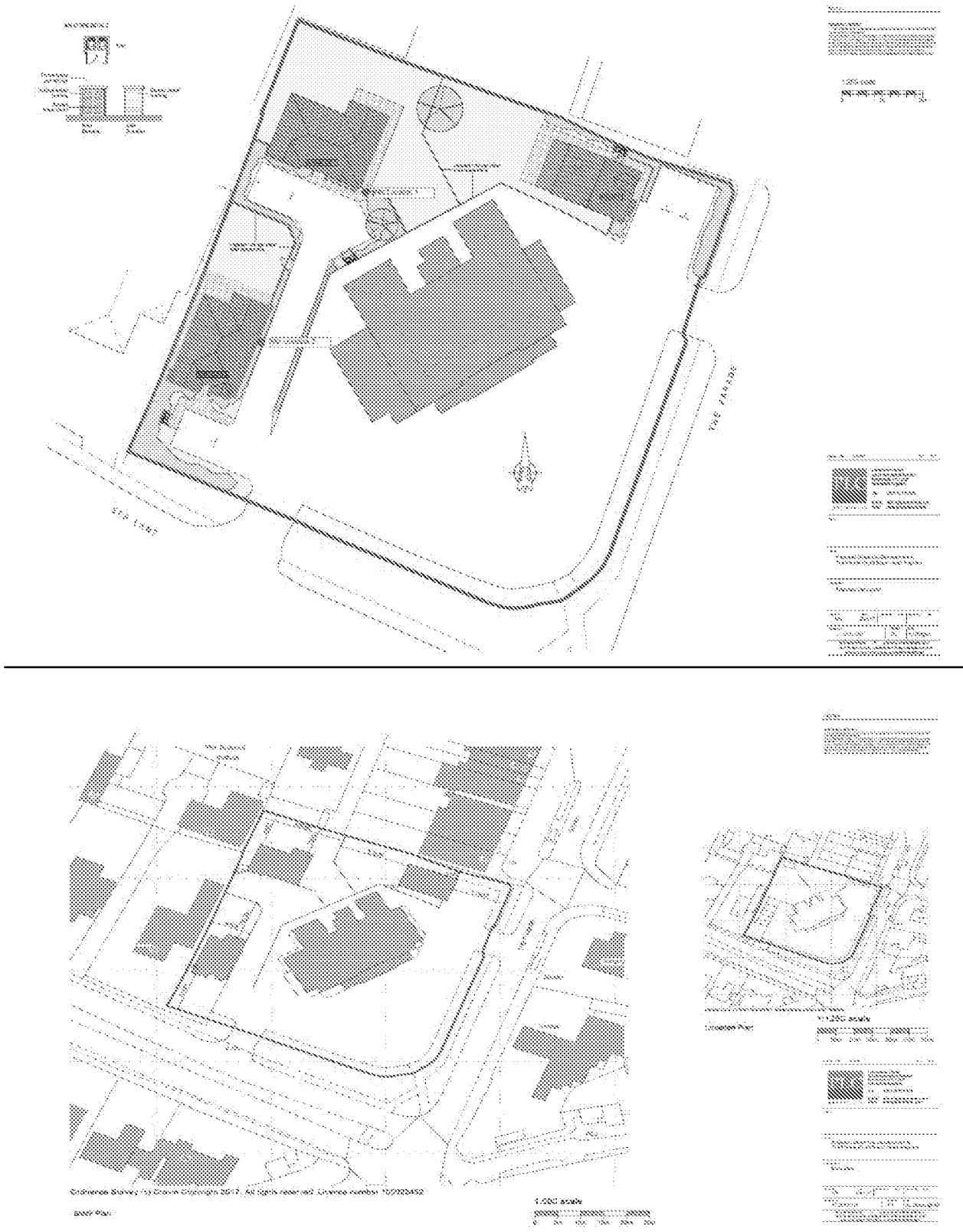
10.4 The above named document also states that the internal L_{Amax} value of 45dB should not be exceeded more than 10 times per night. In this instance the highest L_{Amax} value has been used due to the various instantaneous noise events that are associated with a convenience store. If this criteria is met then sleep disturbance should not be caused and based on the proposed mitigation measures and existing noise levels this criteria should be met comfortably.

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14 Site Plans:



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APPENDIX

Continuous equivalent noise level, LAeq — The steady noise level (usually in dBA) which, over the period of time under consideration, contains the same amount of sound energy as the time varying noise.

LAm_{ax} - The maximum value that the A-weighted sound pressure level reaches during a measurement period.

dB (A) — The A-weighted sound pressure level.

Decibel (dB) — A unit used for many acoustic qualities to indicate the level of sound with respect to a reference level.

A-weighting — A frequency weighting that relates to the response of the human ear.

Background noise level — Prevailing noise level in a specified environment measured in the absence of the noise being studied.

Habitable Room — A room used for sleeping or recreation/relaxation

D_{ne,w} Weighted element normalised level difference — A single-number quantity which characterises the airborne sound insulation of a small building elements.

EPU — Environmental Protection Unit

R_w Weighted sound reduction index — A single-number quantity which characterises the airborne sound insulation of a material or building element measured in the laboratory.

LA₁₀ — The A-weighted noise level exceeded for 10% of the measurement duration.

LA₉₀ - The A-weighted noise level exceeded for 90% of the measurement duration.

British Standards & associated documents:

Code of Practice: BS8233: 2014 - Sound Insulation and noise reduction for buildings.

World Health Organization (WHO) - Guidelines for Community Noise.

ProPG: Planning & Noise – Professional Practice Guidance on Planning & Noise – New Residential Development – May 2017

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13 Google Earth:

