

## **Project**

Hatfield Avenue, Hatfield

## **Prepared for**

Maxbase Ltd

## **By**

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### Revision History

Revision	Date	Comments
	10/02/2017	First Report



## Summary

Maxbase Ltd appointed SRL Technical Services Limited to assess the impact of existing noise on the proposed residential care home development on Hatfield Avenue, Hatfield.

The dominant source of noise on this site is road traffic. We have used BS8233:2014 to assess these noise sources and conclude that the site is suitable for residential development with standard thermal double glazed windows and non-acoustic trickle vents.

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For and on behalf of

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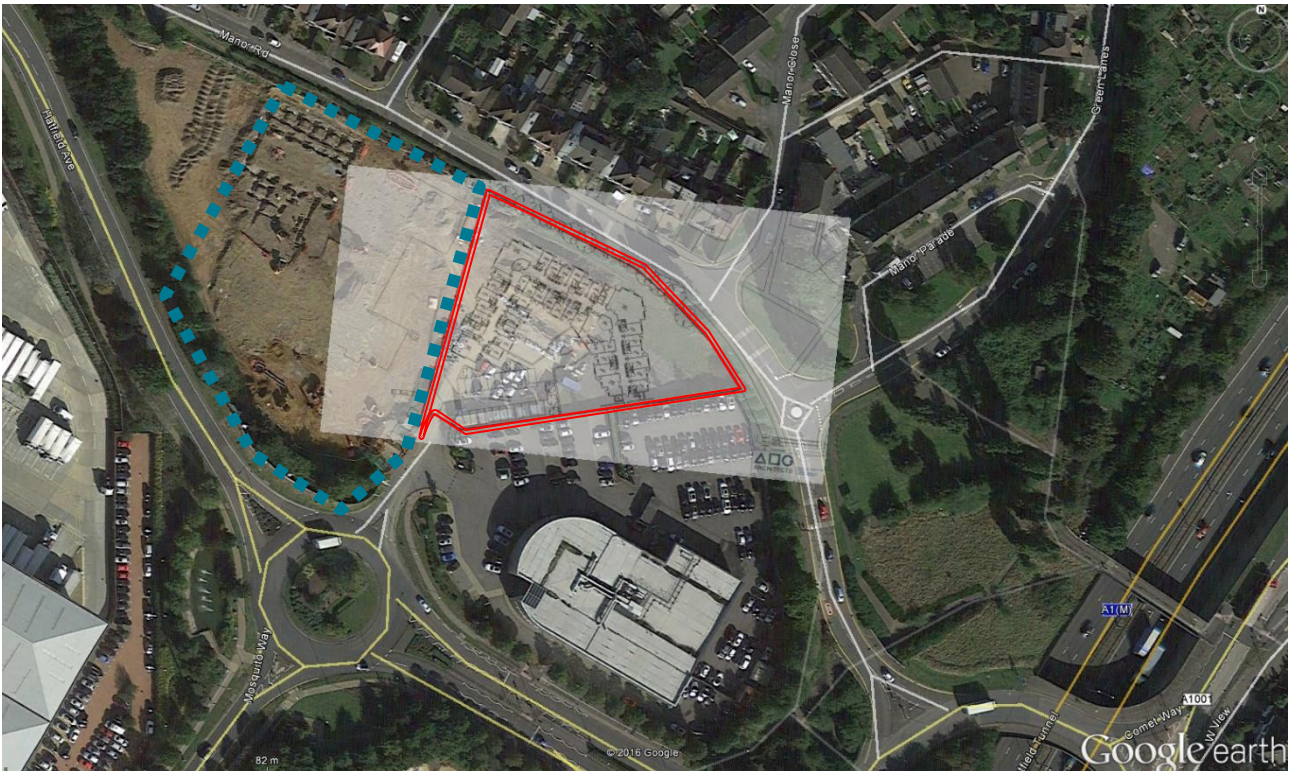
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## 1.0 Introduction

Maxbase Ltd propose to apply for planning permission for a residential care home development on a site on Hatfield Avenue, Hatfield, see Figure I.1 marked in red.

**Figure I.1 - Site Plan of development area**



The site is bounded by Manor Road (to the north), the Porsche Centre Hatfield showroom to the south and One Hatfield Hospital (under construction) to the west of the site (Figure I.1) highlighted in blue.

Further to the south is Hatfield Avenue with Arla Foods beyond, and the AI(M) to the east.

## 2.0 Noise Climate

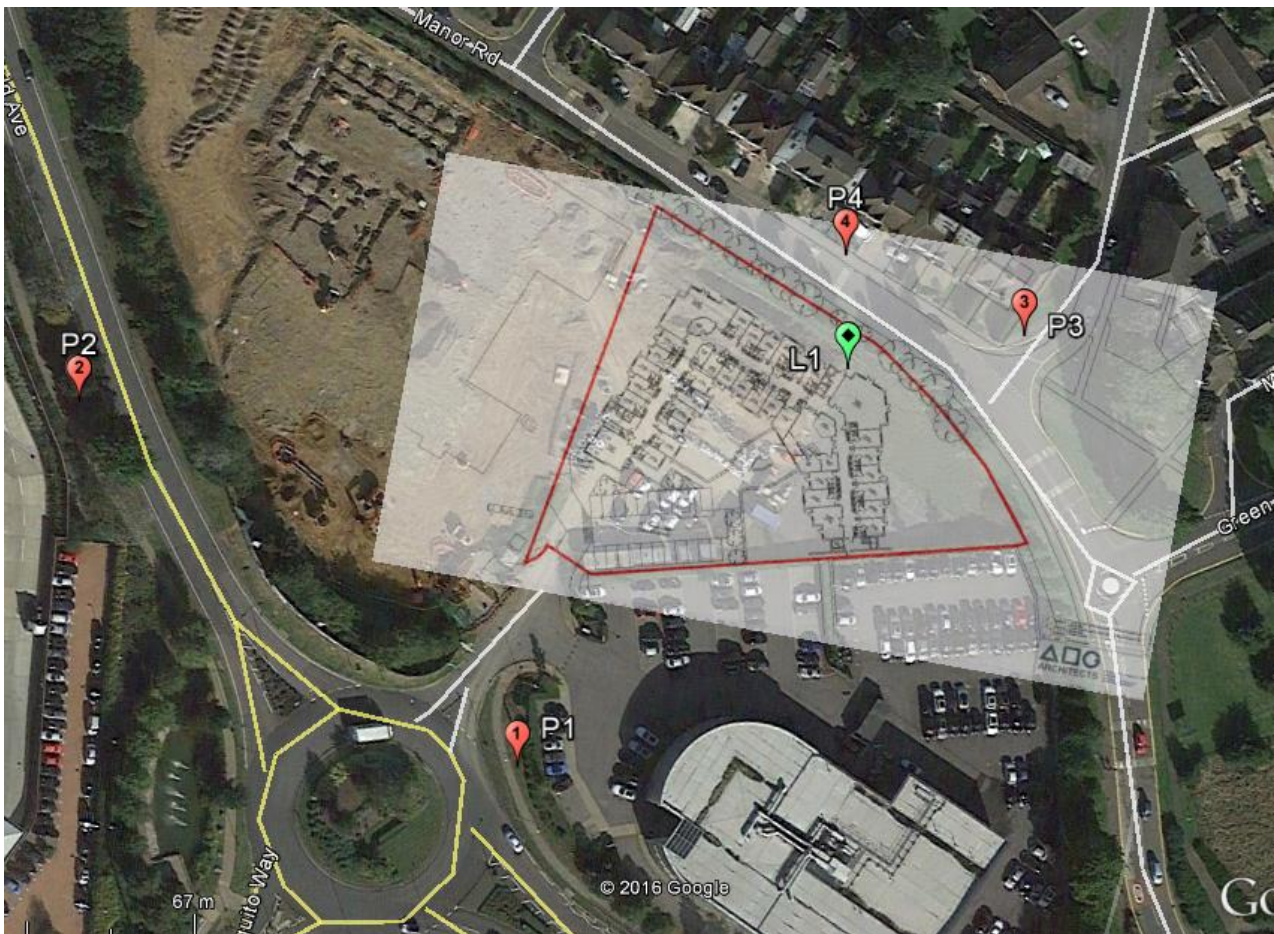
SRL have evaluated the noise environment at the proposed dwellings by:

- determining the external ambient noise levels through measurements
- establishing the dominant noise sources across the site and
- calculating the indoor levels based on the information supplied on the proposed dwellings.

Figure 2.1 shows measurement locations taken close to the roads, in order to exclude construction noise from the One Hatfield Hospital to the west of the site.

Road traffic noise is the dominant source of noise across the site - from Hatfield Avenue to the south and Manor Road and A1(M) to the north and east. Aircraft high overhead were perceptible at times, as were the occasional car movements associated with the Porsche Centre Hatfield showroom.

**Figure 2.1 - SRL noise survey measurement locations**



One Hatfield Hospital planning application decision notice (ref. 6/2016/0755/COND) states: "It has been confirmed that plant and equipment will be designed to be 10dB below background noise level at the nearest residential properties - a level of 35dB has been set in line with noise readings taken on site. The final noise levels produced by the development will be tested on completion to confirm that the 35dB level is not being exceeded (as defined in condition 18.)"

On this basis, the impact from One Hatfield plant noise on the proposed residential care home will be negligible.

Full survey details in Appendix A and the measured noise levels are in Appendix B.

Table 2.1 shows the average noise levels during day and night ( $L_{Aeq,16hr}$  and  $L_{Aeq,8hr}$ ) at each measurement position, as well as the typical night time  $L_{AFmax}$ .

**Table 2.1: Summary of Noise Measurements – dB(A)**

Measurement Position	Day $L_{Aeq,16hr}$	Night $L_{Aeq,8hr}$	Night Typical $L_{AFmax}$
P1	68	63	78
P2	71	67	81
P3	61	53	66
P4	60	53	74
LI Logger	57	52	59

## 3.0 Noise Criteria

BS 8233:2014 gives guidance for the acoustic design of buildings, including residential developments. Section 7.7.2 of the standard gives guideline indoor ambient noise levels for anonymous noise such as traffic noise which is dependent on the activity within the dwelling. Day (07:00-23:00) and night (23:00 - 07:00) guideline noise levels are:

- Daytime - 35 dB ( $L_{Aeq,16hr}$ ) for resting (living or bedroom)
- Daytime - 40 dB ( $L_{Aeq,16hr}$ ) for dining (dining area)
- Night-time - 30 dB ( $L_{Aeq,8hr}$ ) for sleeping (bedroom)

BS 8233 also says that “regular individual noise events can cause sleep disturbance”. Due to the location of the site we do not expect there to be any significant noise events of this nature.



## 4.0 Acoustic Assessment

### 4.1 Glazing and Ventilation Requirements

Using the noise measurements in Table 2.1, we have predicted the noise levels at the facades of the proposed care home by correcting for distance and shielding. Table 4.1 below shows a summary of the noise levels at the proposed facades the site together with the BS8233 guidelines for acceptable internal noise levels.

**Table 4.1 - Noise levels across the site and needed façade performance (level difference)**

Period	External Noise Level, $L_{Aeq}$		Internal criteria $L_{Aeq}$	Level Difference Needed	
	North facade	South facade		North	South
Day (07:00 - 23:00)	59 dBA	59 dBA	35 dBA	24 dBA	24 dBA
Night (23:00 - 07:00)	51 dBA	55 dBA	30 dBA	21 dBA	25 dBA

The highest level difference required is 25 dBA and our predictions show that this is achievable with standard thermal double glazed windows and non-acoustic trickle vents.

### 4.2 Mechanical Services Requirements

Any fixed plant and equipment associated with the proposed care home building will need to be adequately controlled. It is likely that any planning condition will be similar to that for the adjacent Hospital One site.

Table 4.2 below shows the typical background noise levels measured at the nearest noise sensitive receptors during the daytime and night-time.

**Table 4.2 - Typical Measured Background Noise Levels**

Measurement Position	Typical Background Noise Level $L_{A90}$ , dB	
	Day (07:00 - 23:00)	Night (23:00 - 07:00)
At the Care Home	54	49

Measurement Position	Typical Background Noise Level $L_{A90}$ , dB	
	Day (07:00 - 23:00)	Night (23:00 - 07:00)
At houses on Manor Rd	52	42

## Appendix A - Survey Details

### Survey Details

#### A1. Location of Survey

Hatfield Avenue, Hatfield AL10 9UA

#### A2. Date & Time of Survey

13:50 on Monday 23 January to 10:30 on Tuesday 24 January 2017

#### A3. Personnel Present During Survey

Alex Hancock (SRL)

#### A4. Weather Conditions during Survey

Start: Overcast, Still, 5 degrees C

End: Overcast, Still, 4 degrees C

#### A5. Instrumentation

Bruel & Kjaer

Type 2250 Sound Level Meter (SRL 2250A (HE1), SRL No: 750) (serial no. 2548190)

Type 4231 Calibrator (SRL No:753) (serial No:2545771)

Type 2250 Sound Level Meter (SRL 2250 (HE3), SRL No: 519) (serial no. 2559287)

Type 4231 Calibrator (SRL No:520) (serial No:2564290)

Norsonic

Norsonic - Noise Logger (HLI, Green)

Description	SRL No.	Serial	Make	Model
Sound Level Meter	777	1404560	Norsonic	Nor 140
Calibrator (94.0dB)	187	1169468	Brüel & Kjaer	Type 4230
Pre-amp	-	13927	Norsonic	Type 1209
Microphone	-	157421	Norsonic	Type 1225
De-humidifier	-	255	Norsonic	Type 1284

## A6. Calibration Procedure

Brüel & Kjaer - Type 2250

Before and after the survey the measurement, apparatus was check calibrated to an accuracy of  $\pm 0.3$  dB using the type 4231 Sound Level Calibrator. The Calibrators produce a sound pressure level of 94.0 dB re  $2 \times 10^{-5}$  Pa at a frequency of 1 kHz.

Norsonic - Type 140

Before and after the survey the measurement, apparatus was check calibrated to an accuracy of  $\pm 0.3$  dB using the type 4230 Sound Level Calibrator. The Calibrator produces a sound pressure level of 94.0 dB re  $2 \times 10^{-5}$  Pa at a frequency of 1 kHz.

## A7. Survey Procedure

I measured the existing noise levels on site during several hours of the day and night at 4 locations. One unattended logger was installed to show the noise profile over a 24-hour period.

Measurements tabulated in Appendix B.

## Appendix B - Noise Measurements

### B1. Logger (L1): Unattended Noise Measurements: North Boundary of Site

Date	Day / Night	Time	L <sub>Aeq,T</sub> dB	L <sub>AFmax,T</sub> dB
23/01/2017 to 24/01/2017	Daytime	07:00 - 23:00	57*	N/A
	Night-time	23:00 - 07:00	52	59

\* Measurement affected by construction noise.

Full logger data is available on request.

## B2. Attended Noise Measurements - dB(A)

Position	Date	Time	Duration (mins)	L <sub>Aeq</sub> , dB	L <sub>AFmax</sub> , dB	L <sub>A90</sub> , dB
1	23/01/2017	14:24	10	67	79	59
		15:20	10	67	79	61
		16:29	10	69	87	62
		23:08	5	62	76	50
		23:41	5	66	78	50
	24/01/2017	06:05	5	67	78	58
		06:40	5	66	79	57
2	23/01/2017	14:36	10	70	87	59
		15:50	10	73	85	57
		16:41	10	70	82	58
		23:15	5	68	81	51
		23:49	5	65	80	48
	24/01/2017	06:12	5	71	81	56
		06:47	5	71	84	55

Position	Date	Time	Duration (mins)	L <sub>Aeq</sub> , dB	L <sub>AFmax</sub> , dB	L <sub>A90</sub> , dB
3	23/01/2017	14:52	10	61	74	57
		16:04	10	61	74	58
		16:57	10	60	71	56
		23:24	5	53	63	48
		23:58	5	50	59	46
	24/01/2017	06:22	5	58	69	55
		06:56	5	57	68	55
4	23/01/2017	15:03	10	62	77	56
		16:15	10	60	76	53
		17:09	10	59	77	52
		23:30	5	54	74	46
	24/01/2017	00:04	5	45	58	42
		06:28	5	57	75	51
		07:02	5	59	77	52

## Appendix C - Noise Measurement Parameter Definitions

### Noise Measurement Parameter Definitions

$L_{Aeq}$  - The "A" weighted equivalent continuous sound pressure level. A representation of a continuous sound level having the same amount of sound energy as the measured varying noise, over the measurement period. Considered as the "average" noise level.

$L_{Amax}$  - The maximum "A" weighted sound level during a given time.

$L_{A90}$  - The "A" weighted sound pressure level that is exceeded for 90% of the measurement period. It is used as the "Background Noise Level".



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