

REF: L1806.2 V1

Princess House
Princess Way
SWANSEA
SA1 3LW

Ms Louise Warren
Kier Construction Ltd
Conway House
St Mellons Business Park
CARDIFF
CF3 0EY

T: 01792 484424
www.redtwin.co.uk

20th March 2026

**RE: HERONSBRIDGE SEN SCHOOL
OUTLINE NOISE ASSESSMENT**

Dear Ms Warren,

Following our recent correspondence, we are writing to you with respect to the above project, to provide a summary of a recent noise survey that was carried out at the above site and an outline assessment of noise impact from mechanical equipment.

We understand the project involves the construction of a new SEN school over 3 No storeys providing facilities for 300 students, in addition to 2 No residential units, and will replace an existing school and residential provision at a different site in the borough.

The subject of this assessment is the proposed equipment to serve the new school building, the specification of which is currently unknown. Noise limits have therefore been proposed to inform the design of the building services systems and to assist with the forthcoming planning application.

For assessment of noise impact, we have followed the methodology set out in British Standard 4142:2014 *Method for Rating and Assessing Industrial and Commercial Sound*. This is considered to be the most relevant piece of guidance for the situation, and our assessment is described in the following sections.

We have also based our assessment on the provisions set out in the BREEAM Technical Manual 2023, the relevant details of this are included in the following sections.

1.0 BS4142 CRITERIA...

BS4142 presents a method for determining the likelihood of complaints arising from noise levels associated with fixed sources. The procedure set out in the standard involves the comparison of two noise levels at a noise sensitive location, these are:

Bristol Office (HQ)
2nd Floor, Aztec Centre
Aztec West, Almondsbury
BRISTOL
BS32 4TD
T: 01454 203777

Swansea Office
Princess House
Princess Way
SWANSEA
SA1 3LW
T: 01792 484424

Plymouth Office
4th Floor, Salt Quay House
Sutton Harbour
PLYMOUTH
PL4 0HP
T: 01752 279179

Rating Noise Level: The level of noise produced by the plant equipment when it has been corrected for tonal and temporal components.

Background Noise Level: The background noise measured as an L_{A90} (the noise exceeded for 90% of the time) when the plant equipment is not operating.

If the plant noise has any distinguishing characteristics such as tonal (e.g. whine, hiss, hum etc) or impulsive components (e.g. bangs, clicks, thumps etc), or if the noise is irregular enough to attract attention, then a penalty is applied depending on the severity of the characteristic.

Acoustically Distinguishing Characteristic	Size of Penalty	Assessment Methodologies
Tonality	0 dB to +6 dB	Subjective Method 1/3 Octave Method Reference Method
Impulsivity	Up to +9 dB	Subjective Method Reference Method
Other sound characteristics	3 dB	Subjective Method
Intermittency	3 dB	Subjective Method

TABLE 1: SUMMARY OF BS4142 ACOUSTIC CHARACTERISTIC PENALTIES

To assess the likelihood of complaints, the difference between the *Rating Level* and the *Background Sound Level* is calculated. A simple comparison of these levels provides the outcome of the assessment as shown in Table 2.

Level Difference (Rating – Background) dB(A)	Assessment Conclusion
Around +10 or more	Likely to be an indication of a significant adverse impact, depending on the context
Around +5	Likely to be an indication of an adverse impact, depending on the context
Zero or less	Indication of the specific sound source having a low impact, depending on the context

TABLE 2: SUMMARY OF BS4142:2014 ASSESSMENT METHOD

The assessment conclusions are all subject to taking into consideration the context of the ambient sound at the site, the character of the specific sound and the sensitivity of the receptors.

Where the assessment takes place prior to the specific source of sound being installed, it is permitted to predict the sound level at the noise sensitive location.

2.0 OTHER DESIGN CRITERIA...

Planning Policy Wales (PPW)

The document entitled Planning Policy Wales (PPW) sets out the Welsh Assembly's planning policies for Wales and how these are expected to be applied.

PPW is supplemented by a series of Technical Advice Notes (TANs).

PPW does not contain quantitative acoustic criteria but summarises national planning policy advice and articulates the Assembly's vision of sustainable development. It provides a framework within

which councils can provide their own local plans, which reflect the needs and priorities of their communities.

In respect of noise and vibration, PPW states that planning policies and decisions should aim to:

- *“ensure, as far as is practicable, that noise-sensitive developments, such as hospitals, schools and housing, that need to be located close to existing transportation infrastructure to facilitate access, are designed in such a way as to limit noise levels within and around those developments;*
- *ensure, as far as possible, that potentially noisy developments are located in areas where noise will not be such an important consideration or where its impact can be minimised;*
- *adopt policies to prevent potentially noisy developments in areas which have remained relatively undisturbed by noise;*
- *have regard to any relevant Noise Action Plan, including the need to protect urban ‘quiet areas’ against an increase in noise.*

With regards to ‘adverse effects’ and ‘significant adverse effects’, PPW refers to the Technical Advice Note 11 (TAN 11).

Technical Advice Note 11 (TAN 11)

TAN 11 seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The advice note applies to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise.

The statement sets out the long-term vision of the Welsh Assembly’s noise policies and outlines some of the main considerations which local planning authorities should take into account when determining planning applications for development which will either generate noise or be exposed to existing noise sources.

This long-term vision is divided into three key sections:

- *Noise generating development*
- *Noise sensitive development*
- *Measures to mitigate the impact of noise*

The long-term policy vision and aims are designed to enable decisions to be made regarding what is an acceptable noise burden to place on society.

Noise and Soundscape Plan for Wales 2023–2028

The Welsh Government’s Noise and Soundscape Plan for Wales 2023–2028 requires planning and public authorities to manage the acoustic environment as a “soundscape,” meaning how sound is experienced by people rather than only measuring noise levels. The policy encourages development that avoids exposing people to harmful noise, protects quiet or tranquil areas, and designs places to support positive sound environments through layout, green infrastructure, and acoustic design. Planning authorities should consider the health, wellbeing, and amenity impacts of sound, ensure noise-generating and noise-sensitive land uses are compatible, and use mitigation where necessary so that developments contribute to appropriate soundscapes for communities.

Bridgend County Borough Council RLDP (2018 – 2033)

Strategic Policy SP2 – Design and Sustainable Place-Making

This policy requires all development to contribute to high-quality environments and protect amenity and states that development must avoid or minimise noise pollution and other environmental impacts. It also states that layout, siting and design should protect the amenity of existing and future residents.

Policy ENV7 – Environmental Protection

This policy states that development that would generate unacceptably high levels of noise should be located away from sensitive uses, particularly housing and that development should also not be placed near existing noise sources unless impacts are addressed or mitigated.

BREEAM Technical Guidance (2023)

We understand that the project is to be assessed against the latest version of BREEAM and therefore to achieve the POL05 credit for this project, the Rating Level of the new noise source must be at least 5 dB below the background sound level throughout the day and night.

Other Guidance

In addition, we have also considered BS8233:2014 and the World Health Organisation guidance for noise levels which offer good external amenity. A reasonable standard of external amenity is considered to be 55 dB(A) $L_{Aeq,16hr}$ and below, with good conditions below 50 dB(A) $L_{Aeq,16hr}$.

Furthermore, we would expect neighbouring dwellings to maintain reasonable internal noise levels with windows open for ventilation. The BS8233 guidance for reasonable internal noise during the day within a dwelling is 35 dB(A) $L_{Aeq,16hr}$. We would normally expect 10-15 dB(A) reduction through an open window and hence we would not expect the noise level from new plant equipment to exceed 45 dB(A) L_{Aeq} measured 1 m from the external building façade where there is an opening window.

The most onerous of the above design criteria is expected to apply.

3.0 EXISTING BACKGROUND SOUND LEVELS...

There are no restrictions on the minimum duration of measurement of the *Background Sound Level* in BS4142, albeit to say they should represent the “*Typical*” background level when the new equipment will be in operation.

We have assessed the equipment operating at 100% duty cycle during the daytime and night-time period as a worst-case scenario. It is likely, however, that some or all plant would not be operational during the night at full duty or otherwise.

A survey of the pre-development sound environment was undertaken in a location which is considered representative of the pre-development *Background Sound Levels* at the nearest neighbouring properties in free-field conditions. The location of the measurement equipment is indicated in Appendix A.

The *Ambient* and *Background Sound Level* at the nearest neighbouring dwellings are considered to be dominated by the noise from the local road network (repairs taking place with temporary traffic lights), passing airplanes, occasional passing trains, and construction noise / tree work taking place on neighbouring land. These sources of sound set the context for the assessment of noise impact.

A brief summary of the overall sound levels measured is provided in Table 3.

Location	Period	Parameter dB(A)	
		$L_{Aeq,T}$	$L_{A90,T}$
1	Day Time (07:00-23:00)	48	45
	Night-Time (23:00-07:00)	47	34

TABLE 3: SUMMARY OF MEASURED NOISE LEVELS (FREE FIELD)

The L_{A90} parameters are the most commonly occurring within the respective measurement periods.

The measurement of Background Sound Level was taken in a free acoustic field therefore we have included a correction of +3 dB to convert the free-field measurements to a façade level in accordance with BS4142 Clause 6.2.

4.0 ASSESSMENT OF NOISE IMPACT...

Whilst the equipment has not yet been selected, we have, at this stage, based our assessment on all external plant being located on the roof of the school.

The assessed location of the equipment is indicated on a marked-up plan included in the appendix to this letter.

We have used 2 No assessment locations as follows:

- | | |
|---------------|---|
| Receiver No 1 | Most exposed (off-site) residential property to the proposed school building. The address is understood to be known as 'Comerways' and is the Southern-most dwelling on Island Farm Road and is located approximately 100 m from the most Northern elevation of the proposed school building. |
| Receiver No 2 | Most exposed (on-site) residential property to the proposed school building. The address is understood to be the new social services residential accommodation block and is located approximately 60 m from the most Northern elevation of the proposed school building. |

The assessment locations are taken at 1 m from the façade of the buildings.

To give an idea of the distances involved we have used an on-line mapping tool and drawings to estimate the distance between the assessment location and the worst-case (closest) plant equipment location. For the purposes of this assessment, we have assumed all plant is to be located at the closest distance from the neighbour (i.e. the northern end of the roof of the new school building), which is a conservative approach as it is likely that some of it is to be located further South on the roof.

We have assessed on the basis that the plant has direct line of site to the neighbouring properties, i.e. we have not allowed for the benefit of any plant enclosure / parapet walls on the new building, nor the bund that is situated to the North-West of the proposed school building.

The calculated maximum sound power level of equipment to be installed in the plant areas are summarised in Table 4.

We have not included a correction for temporal or tonal components on the basis that the equipment is new and operating efficiently. Please note that should it transpire that the equipment has an undesirable acoustic characteristic, a penalty would be applied depending on the severity in accordance with BS4142.

Receiver Location	Source	Period	Background Sound Level dB(A) LA90,1hr	Maximum Rating Level dB(A) LAr,Tr	Distance to Nearest Source (m)	Max Specific Sound Level at 1m dB(A)	Approx. Max Total Sound Power Level dB(A)
1 (off-site)	Outdoor Plant	Daytime	48	43	100	83	97
		Night-time	37	32		72	86
2 (on-site)		Daytime	48	43	60	78	91
		Night-time	37	32		67	81

TABLE 4: SUMMARY OF PREDICTED RATING LEVEL AT RECEIVERS (FAÇADE LEVEL)

The total sound power level off all installed plant indicated is an approximate level based on a correction between sound power level and pressure level at 1 m of +14 dB. This is an empirical relationship which is based on the typical dimensions of air condensing equipment and follows the principles of ISO 3744.

For comparison purposes only at this stage, a typical 14 kW outdoor condensing unit has a sound pressure level at 1 m of 50-55 dB(A) when installed over a reflecting plane (i.e. on the floor/roof), and a sound power level of around 65 dB(A) L_{WA}. This suggests that equipment could readily be installed externally, although equipment of higher noise output may be acceptable provided a commensurate level of mitigation was included.

We would expect a detailed review of the equipment to be undertaken once selected.

Considering the requirements of BREEAM 2023, the proposal can be expected to achieve a Rating Level that is at least 5 dB below the Background Sound Level, and therefore the criteria is expected to be achieved and the credit awarded (i.e POL05 1 credit).

5.0 CONCLUSIONS IN CONTEXT...

The context of the site is that of a semi-urban area with school pupils and vehicles frequently moving around.

The proposed plant, due to its nature, would operate in a continuous manner and be similar in context to the road traffic noise affecting the area and other plant serving the neighbouring Science Park. The proposed location is not considered to be especially sensitive to the inclusion of new building services plant.

We are of the opinion that the new sources would not be noticeable as out of character with the ambient sound in this area.

6.0 EFFECTS OF UNCERTAINTY...

Where available we have included uncertainty in our calculations.

We have assessed the uncertainty associated with the measurement of the background sound level based on the measurement tolerance of a Class 1 sound level meter which conforms with IEC61672-1:2002. The largest calculated uncertainty based on the frequency spectrum of the measured background level is ±1 dB(A).

The survey of the *Background Sound Level* has been undertaken in full accordance with BS7445 and ANC Green Book Guidance using laboratory calibrated measurement equipment. These

precautions will minimise sources of uncertainty in the survey data. The current site conditions exhibit a low variability in the ambient and background sound levels, and our data is considered to be a good representation of the site.

There are other sources of uncertainty in our assessment, such as, tolerances to be applied to manufacturers data, the variation in *Background Sound Level* on a different day, and the calculation tolerances for the propagation model.

The ISO propagation model used is stated to give results that are “on average correct” although tolerances are given for individual octave bands. We therefore expect uncertainty to have only a small influence on the outcome.

The assessment is based on a worst-case scenario with all equipment operating at full duty and being located externally at the closest part of the new school building to the nearest receiver.

Should any plant equipment be located closer to the neighbouring dwellings than the school building, e.g. in an external plant enclosure to the north of the site, further review would be necessary, although the current plans do not include such a provision.

We do not expect the effects of uncertainty to have a significant effect on the outcome of our assessment.

7.0 ASSESSMENT CONCLUSION...

We have undertaken an assessment of the proposed new fixed building plant against the methodology set out in BS4142:2014 and to assess compliance with the relevant guidance and design targets.

Prior to the detailed design and equipment selection we have assessed the situation in reverse and set a maximum sound level for the proposed equipment which can be expected to achieve a satisfactory impact due to noise at the nearest neighbour.

I trust you find this assessment provides suitable information for consideration by the local planning authority. Please don't hesitate to contact me if I can be of further assistance.

Yours sincerely,
For Red Twin Limited



Dr Ashley Punter BEng (Hons) EngD MSc MRTPI MIOA
Consultant

APPENDIX A – PROPOSED SITE PLAN...

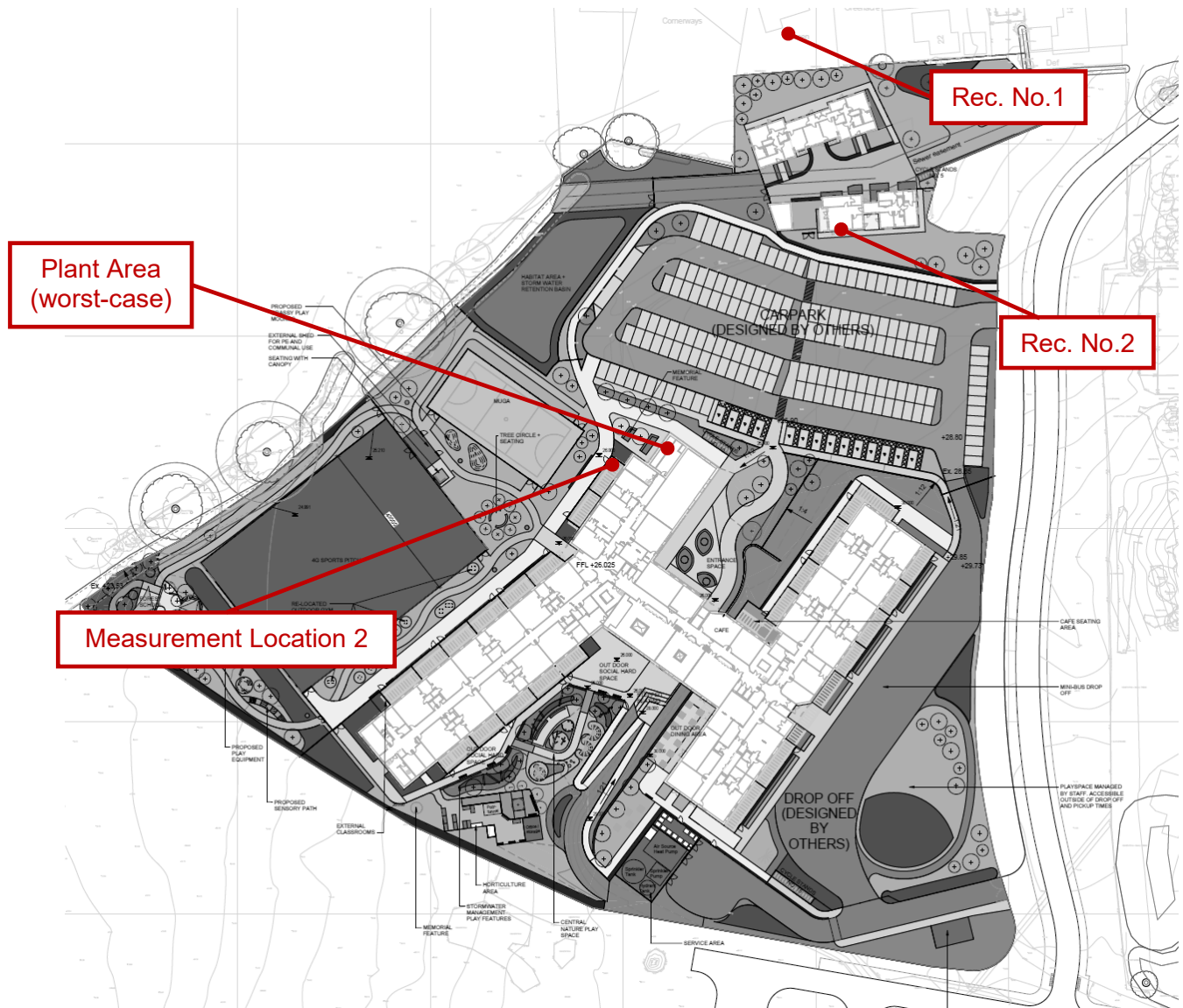


FIGURE 1: SITE PLAN SHOWING PROPOSED PLANT AREA AND NEIGHBOURING NOISE SENSITIVE RECEIVERS

APPENDIX A – SURVEY DETAILS...

Address: New Heronsbridge SEN School, Land adjacent to Bridgend Science Park, Bridgend.

Date: 2nd - 4th March 2026

Measurement Location

Location 1 The monitoring equipment was set up to the West of the site at a location considered representative of the Northern façade of the proposed new school building. The microphone was pole mounted at 2.5 m above local ground level and in free-field conditions as indicated in Figure 2.

Equipment

Location 1 (Green kit)

Brüel & Kjær 2250 hand-held analyser, serial No 2832395, with a Brüel & Kjær Type 4189 Microphone, serial No 3005055. The microphone was fitted with a UA-1650 windshield. The hand-held analyser and microphone were laboratory calibrated on 9th April 2024 (Certificate No. 47434) and the calibrator was laboratory calibrated on 6th October 2025 (Certificate No. U52280). The hand-held analyser sensitivity was checked before and after the measurements using the calibrator and a drift of +0.05 dB was observed, which is not significant and no adjustments to the measurements have been made to the data.

Personnel

The survey was set up and managed by Dr Ashley Punter of Red Twin Limited.

Weather

The weather was suitable for noise measurement with sunny / part cloud conditions. There was no precipitation at any time during or immediately prior to the survey. Wind speeds were generally low ($< 5 \text{ m s}^{-1}$) and were suitable for noise surveying.

Conditions were acceptable for noise measurement work and in full accordance with BS7445.

Survey Comments

The background and ambient sound at site are considered to be dominated by the noise from the local road network (repairs taking place with temporary traffic lights), passing airplanes, occasional passing trains, and construction noise / tree work taking place on neighbouring land.

Location	Start Time	Duration	Parameter dB(A)			
			L _A F _{max}	L _A eq	L _A 1	L _A 90
1 Day 1	13:00:00	01:00:00	87.2	54.0	60.2	42.9
	14:00:00	01:00:00	71.6	50.5	63.5	44.0
	15:00:00	01:00:00	69.5	50.2	59.7	45.9
	16:00:00	01:00:00	69.2	50.4	56.7	47.0
	17:00:00	01:00:00	67.2	48.7	55.8	45.7
	18:00:00	01:00:00	69.2	48.2	53.9	45.7
	19:00:00	01:00:00	63.7	49.4	60.2	44.2
	20:00:00	01:00:00	66.1	47.0	59.5	41.4
	21:00:00	01:00:00	56.0	45.6	50.6	42.3
	22:00:00	01:00:00	61.6	44.9	51.1	40.3
1 Day 2	07:00:00	01:00:00	70.8	49.7	57.0	47.5
	08:00:00	01:00:00	64.7	48.1	53.5	46.1
	09:00:00	01:00:00	70.2	52.5	58.6	47.5
	10:00:00	01:00:00	73.0	52.5	61.9	45.2
	11:00:00	01:00:00	72.5	52.2	59.1	47.7

	12:00:00	01:00:00	77.8	53.5	58.4	47.4
	13:00:00	01:00:00	68.1	48.3	56.6	45.6
	14:00:00	01:00:00	78.6	51.2	55.5	46.6
	15:00:00	01:00:00	69.2	50.2	56.4	45.3
	16:00:00	01:00:00	64.6	49.0	54.6	45.6
	17:00:00	01:00:00	68.8	49.1	57.9	46.2
	18:00:00	01:00:00	57.4	46.9	50.6	45.3
	19:00:00	01:00:00	61.8	45.6	48.4	44.0
	20:00:00	01:00:00	53.3	44.3	46.9	42.8
	21:00:00	01:00:00	56.9	44.1	47.6	41.8
	22:00:00	01:00:00	55.6	42.9	47.0	40.4
1 Day 3	07:00:00	01:00:00	67.11	49.8	54.35	48.06
	08:00:00	01:00:00	76.5	50.82	58.55	47.48
	09:00:00	01:00:00	86.79	51.53	56.33	45.53
	09:54:00	00:54:00	115.4	72.47	56.9	44.07

TABLE 5: MEASURED NOISE DATA – (FREE-FIELD)

Data in read has been excluded from our survey due to it being extraneous noise sources



FIGURE 2: PHOTOGRAPH OF SURVEY MEASUREMENT LOCATION NO 1 (LOOKING NORTH)

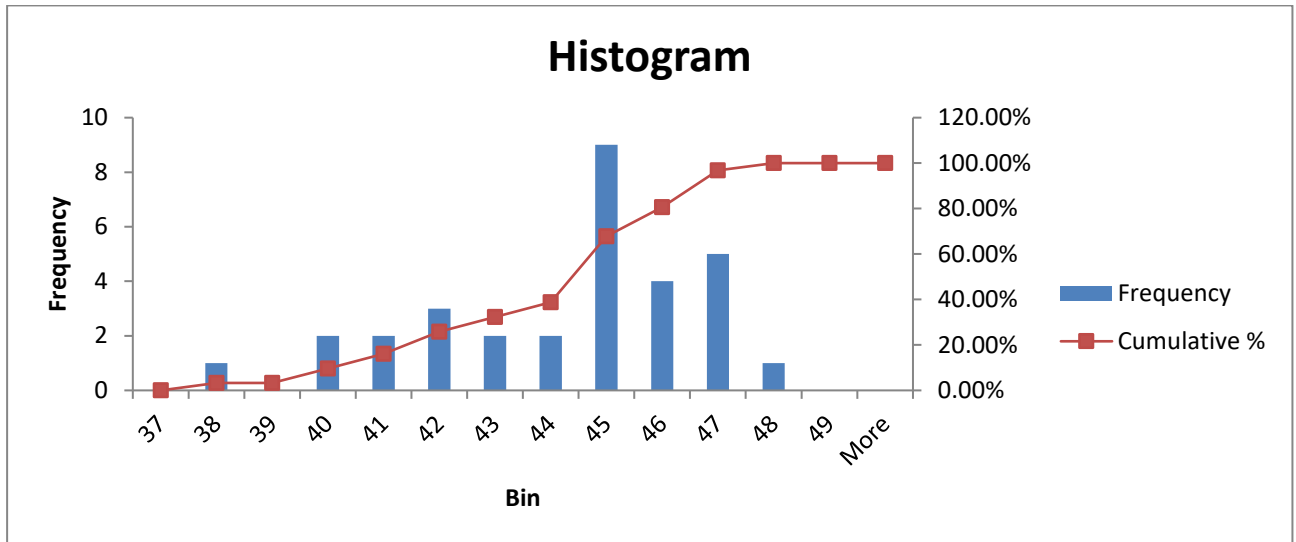


FIGURE 3: HISTOGRAM OF LA90 1HR DAYTIME

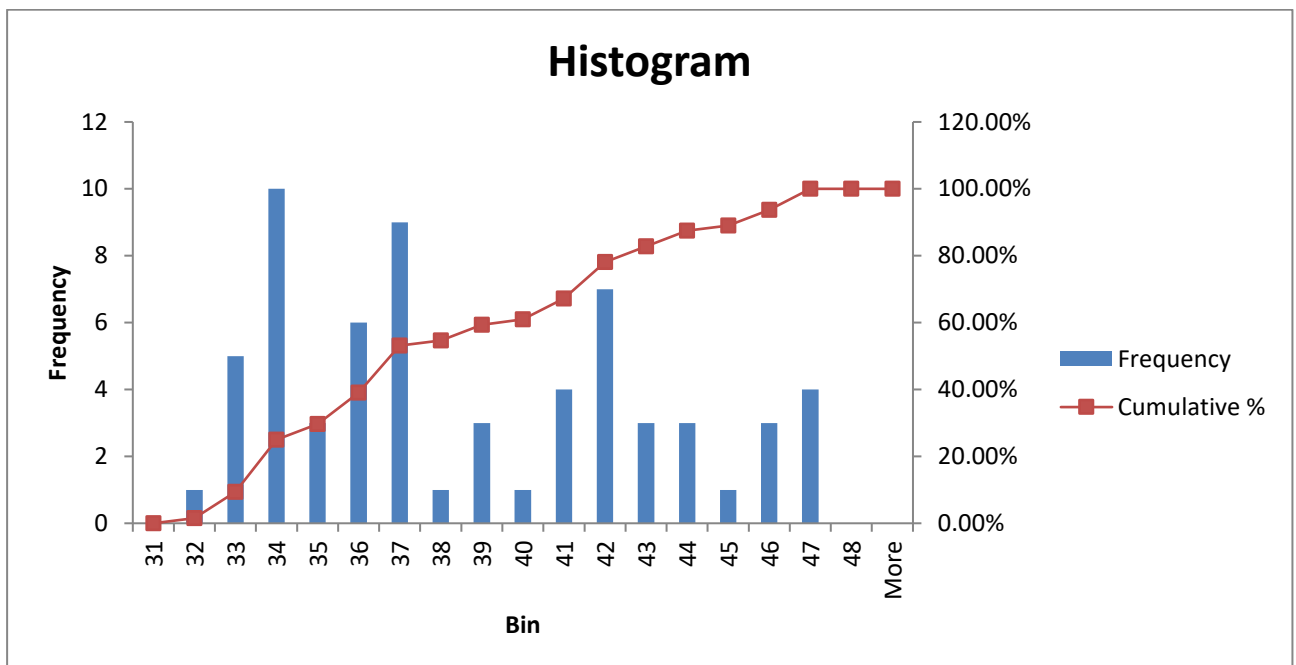


FIGURE 4: HISTOGRAM OF LA90 15MINS NIGHT-TIME

APPENDIX B – SITE LOCATION PLAN...

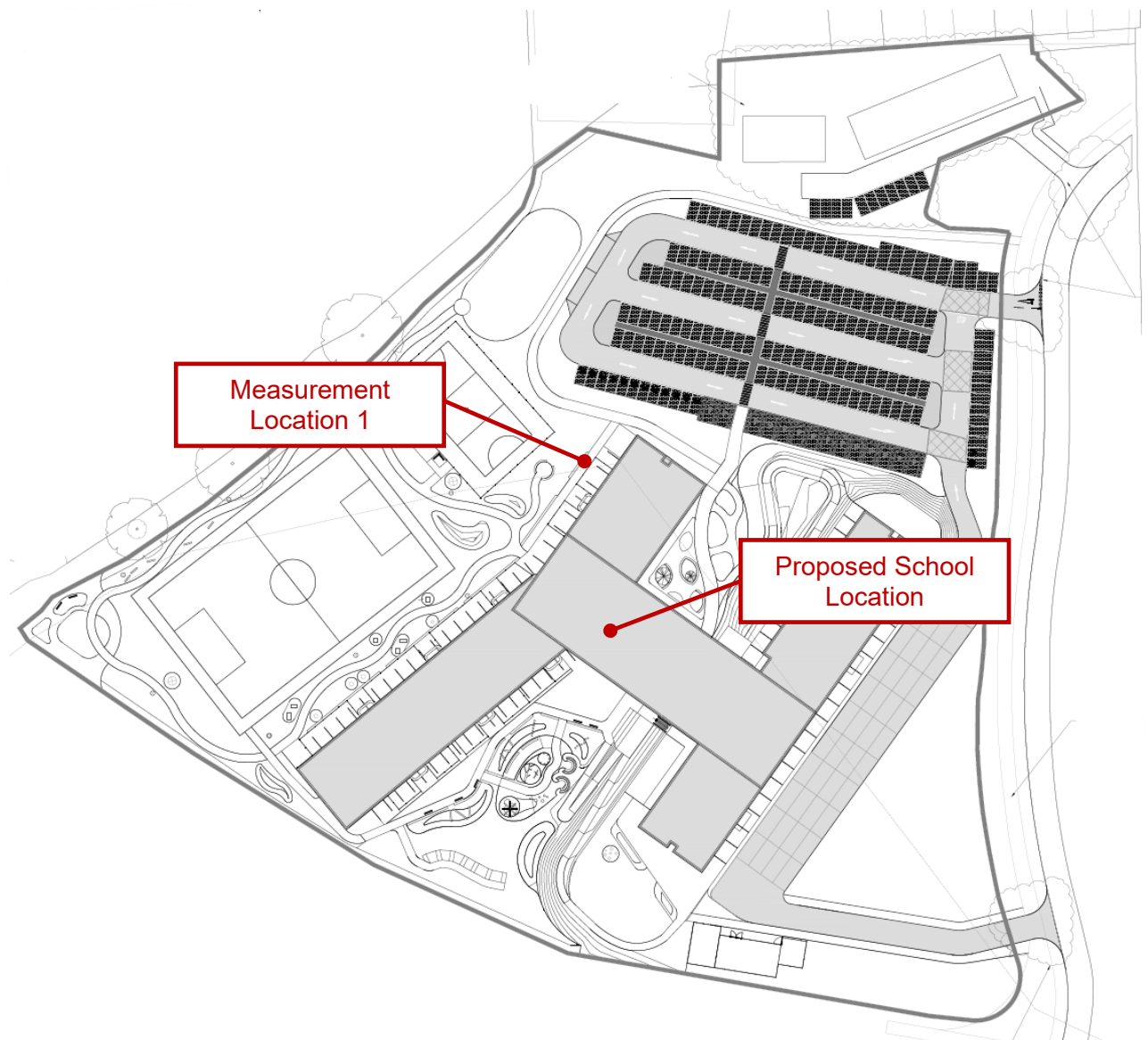


FIGURE 5: SITE LOCATION SHOWING KEY LOCATIONS