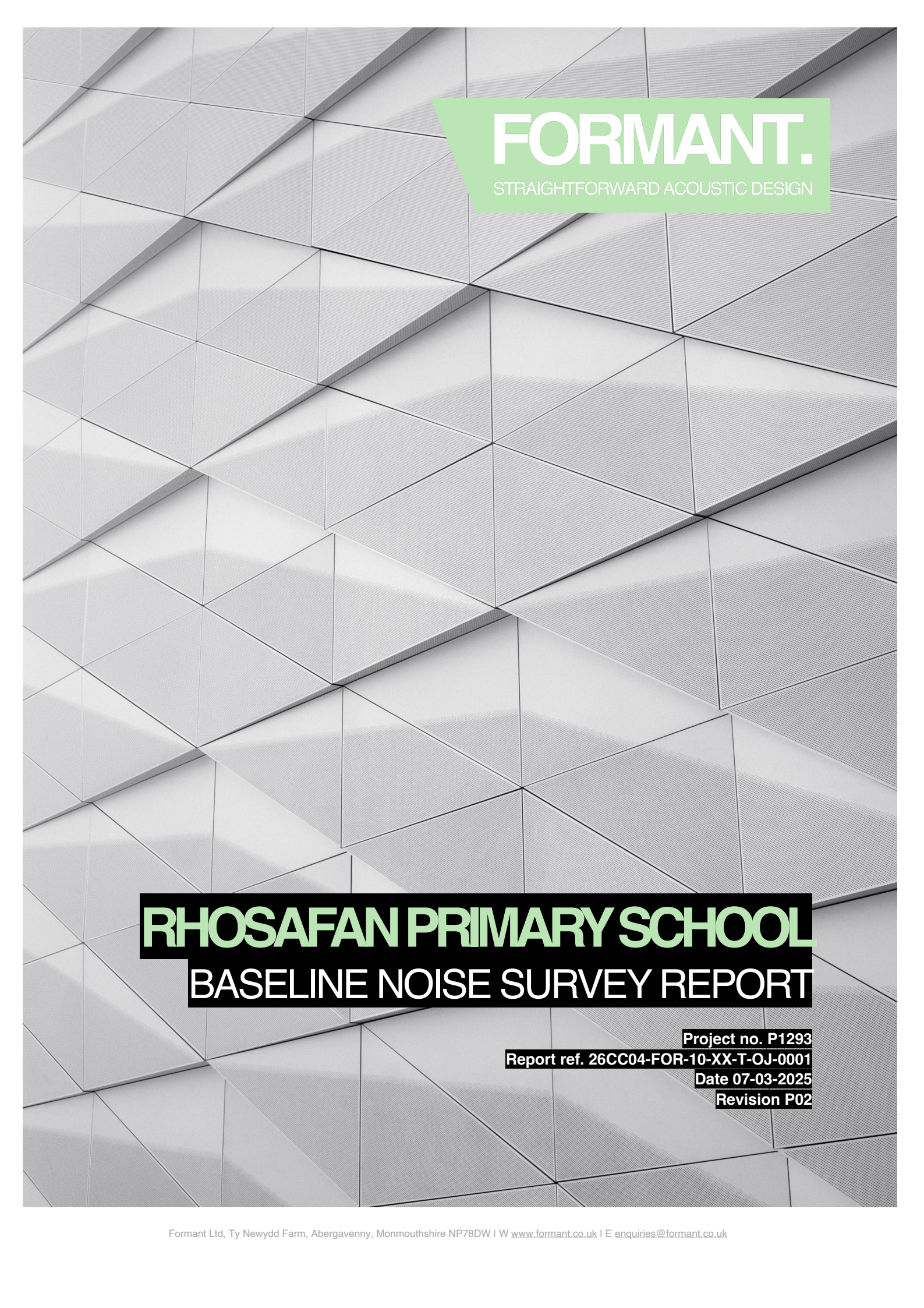




FORMANT.

STRAIGHTFORWARD ACOUSTIC DESIGN

RHOSAFAN PRIMARY SCHOOL

BASELINE NOISE SURVEY REPORT

Project no. P1293

Report ref. 26CC04-FOR-10-XX-T-OJ-0001

Date 07-03-2025

Revision P02



EXEC SUMMARY

Formant has been appointed by Morgan Sindall to assess the soundscape at the site of Rhosafan Primary School, Port Talbot, in connection with the proposed redevelopment to provide a new school building and associated car parking/playing fields. This report summarises the results of a baseline noise survey undertaken at the site in March 2024 and an assessment of potential noise impacts arising from the proposed development.

The site is located in a predominantly residential area, away from any major transportation, commercial or industrial noise sources. As such, environmental noise impacts on the proposed school are expected to be minimal, but it will be important to consider the potential noise impact of new mechanical services plant on nearby noise sensitive receptors (NSRs).

NOISE AFFECTING THE PROPOSED SCHOOL

The site is located on Marine Drive which is a local residential access road with fairly low traffic flows. The proposed new school buildings will be located on the playing fields to the rear (southwest) of the existing school buildings and the soundscape in this location was dominated by (wind or wave) noise from the southwest, with no traffic noise audible. We understand that the site is often exposed to relatively high wind speeds due to its location approx. 150 m from Aberavon Beach and the noise of the sea and/or wind is expected to be a fairly typical audible noise source.

Daytime ambient noise level measurements results were around 47 dBL_{Aeq,T} at the location of the proposed new school buildings. This is below the BB93 limits for natural ventilation, therefore all ventilation strategy options would be suitable acoustically.

In summary the site is exposed to fairly low noise levels and no significant impacts on the school are expected as a result of environmental noise at the site.

PLANT NOISE EMISSIONS

Background sound levels were 43 dBL_{A90} (daytime) and 38 dBL_{A90} (night time) and these figures have been used to set building services plant noise limits.

A detailed plant noise assessment has been made using external plant selections provided by the M&E engineer and a 3D computer model of the site, using the methodology in BS 4142/BREEAM. For BREEAM Pol 5 compliance, the rating sound level limits at nearby residential receptors are 5 dB below the background sound levels, i.e. 38/33 dBL_{A,r} (day/night). The predicted rating sound levels with all plant running simultaneously at full duty are no higher than 31 dB at the nearby NSRs, which is compliant with the limits, therefore **no significant impacts are predicted as a result of plant noise emissions.**

1 INTRODUCTION

Formant has been appointed by Morgan Sindall to assess the noise climate at the site of Rhosafan Primary School, Port Talbot, in connection with a proposed development to provide new school accommodation and associated car parking/playing fields. The proposed development is at the early stages of design and the exact location of the proposed buildings is not yet finalised.

This report provides:

- 1) A summary of applicable legislation, policy and guidance,
- 2) A description of the proposed development and its potential impacts,
- 3) The results of a baseline noise survey undertaken at the site and
- 4) A summary of the assessment of potential noise impacts

2 PROPOSED DEVELOPMENT

2.1 PROPOSED SITE

The application site is currently occupied by the existing Rhosafan Primary School and the adjacent NPTCBC Skills & Training Centre site. The site is accessed off Marine Drive to the northeast and is surrounded by residential properties on all sides. The site is generally fairly flat and the surrounding residential properties are typically two storeys tall. The existing site is populated by a series of 1-2 storey school/college buildings in the centre of the site, with car parking to the north and playing fields/yard to the south. There are no significant sources of transportation, commercial or industrial noise in proximity to the site. Figure 1 below shows the existing site location:

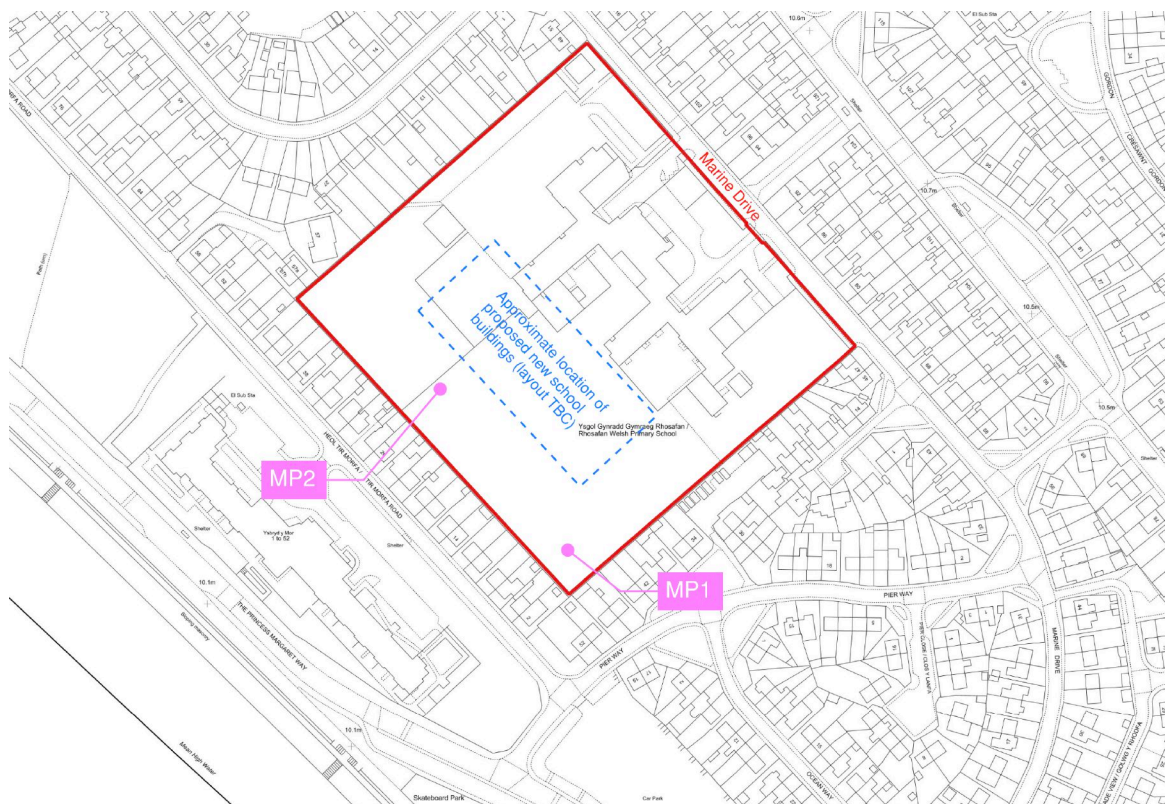


Figure 1: Existing site plan showing approximate noise measurement positions MP1 and MP2.

The proposed new school buildings will be located on the playing fields to the southwest of the existing buildings, as shown in Figure 1. Following construction of the new school building, the existing school will be demolished and replaced by new car parks and playgrounds/sports pitches. The use of the site will not change significantly in terms of noise and will not introduce any new noise sources into the existing soundscape, i.e. it is currently a school with car parks and external play areas, and it will remain so after the redevelopment.



2.3 SITE SOUNDSCAPE

The soundscape during the survey was dominated by (wind or sea) noise from the southwest, with no traffic noise audible. We understand that the site is often exposed to relatively high wind speeds due to its location approx. 150 m from Aberavon Beach and the noise of the sea and/or wind is expected to be a fairly typical audible noise source.

2.4 PRE-APPLICATION EHO FEEDBACK

During the planning pre-application process, the Environmental Health Office (EHO) at Neath Port Talbot Council raised the following noise-related comments regarding the draft noise assessment:

“The assessment has considered noise impacts on the school itself and from plant but does not assess the impact of noise from the school, more specifically playing fields and sports areas. As you know this is a common source of complaints and needs to be assessed as part of an application so that we can recommend conditions with any necessary controls.

If I recall correctly you said that sports fields will not be utilised outside of school hours which reduces the likelihood of complaints somewhat but we would be likely to put a condition on with this restriction if evening activities are not assessed.

The report is suggesting that a noise level 5dB below background can be achieved from plant, we assume this takes into account the cumulative impact of all plant and if proposed any air source heat pumps. If this is correct we would be likely to recommend a condition with this restriction.”

The potential noise impact of the MUGAs and rugby pitch has been considered as described in Section 2.2 above and no detailed noise impact assessment is deemed necessary.

We confirm that the plant noise assessment does include consideration of all plant noise sources and more detailed of this are now provided in Section 5.2 below.



3 LEGISLATION, POLICY AND GUIDANCE

3.1 LEGISLATION

Approved Document E of the Building Regulations states that new school buildings should comply with the requirements set out in Building Bulletin 93 (BB93). The development will be designed to comply fully with BB93 and it forms the basis of the criteria used in this assessment.

3.2 POLICY

NATIONAL POLICY

Planning Policy Wales (PPW) sets out the policy framework for all planning applications in Wales, including broad objectives for creating appropriate soundscapes and managing noise pollution, which have been considered in this assessment.

Technical Advice Note (Wales) 11 (TAN11) sets out the Welsh Government's current policy on noise-related planning issues including the impact of environmental noise on noise-sensitive developments and the impact of proposed developments on nearby NSRs.

LOCAL POLICY

Paragraph 5.3.46 of the NPT Local Development Plan states that *"In relation to noise, potentially noisy proposals should not be located close to sensitive uses (such as hospitals, schools and housing) and new noise-sensitive developments should not be located near to existing noisy uses (including industry and existing or proposed transport infrastructure) unless it can be shown that adverse effects can be dealt with through mitigation measures incorporated into the design."*

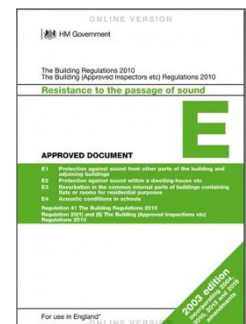
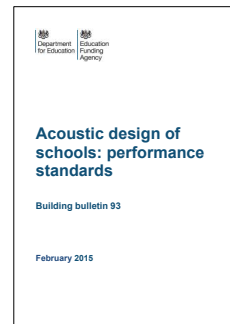
3.3 GUIDANCE

BS 4142:2014

BS4142 provides a method for rating industrial and commercial sound and a method for assessing resulting impacts upon people. The method is applicable to fixed plant installations and has been used as the basis for the assessment of plant noise emissions.

BREEAM 2018: NON-DOMESTIC BUILDINGS

BREEAM provides criteria and assessment methods applicable to schools, under the Hea5 and Po15 credits. These criteria have been adopted for this assessment.





4 BASELINE NOISE SURVEY

4.1 MEASUREMENT METHODOLOGY

Environmental noise measurements were undertaken at positions MP1 (attended measurement) and MP2 (unattended noise logger) as shown in Figure 1. The measurements were made by Paul Driscoll MIOA between 12:00 on Friday 01 March 2024 and 04:00 hrs on Sunday 03 March 2024. It was only possible to undertake measurements at two positions around the site due to the high wind speeds that were present in other less-sheltered locations, however there were time periods during the unattended logging when wind speeds were lower, therefore the measurements are still considered suitable for assessing the site soundscape.

Noise measurements were undertaken approximately 1.5 metres above local ground level, at a distance of at least 3 metres from the façade of any buildings and they are considered representative of free field measurements. Measurements were made in line with BS 7445:2003 *Description of Environmental Noise*.

4.2 EQUIPMENT

The following measurement equipment was used to conduct the survey:

- Nti XL2 Class 1 Sound level meter, SNo. A2A-18665-E0,
- Nti Larson Davies CAL200 Calibrator, SNo. 18652

All measurement equipment owned or hired and operated by Formant has annual or bi-annual calibration checks carried out by external companies traceable to UKAS or national standards. Copies of all calibration records are kept and can be provided upon request. The sound level meter was field calibrated before and after the measurements were undertaken and no significant drift was observed.

4.3 WEATHER CONDITIONS

Weather conditions during the attended measurements were cold and sunny with partial cloud cover, no precipitation, and a fresh breeze. At MP1, the wind speeds were too high for the measurement to be completed therefore the measurement was aborted and a more sheltered location (MP2) was selected to leave the unattended logger. The weather and wind speeds during the unattended noise survey at MP2 are shown below (based on data from a nearby public weather station):

Date/time	Temp (°C)	Humidity (%)	Precip (mm)	Snow (mm)	Wind gust (mph)	Wind speed (mph)	Cloud cover (%)	Conditions
2024-03-01T12:00:00	5.8	75.32	1.5	0	31.1	19.4	83.7	Rain, Partially cloudy
2024-03-01T13:00:00	5.8	77.68	0	0	29.1	19.7	74.4	Partially cloudy
2024-03-01T14:00:00	5.5	80.36	1	0	29.3	16.5	68.5	Rain, Partially cloudy
2024-03-01T15:00:00	6.6	76.7	0.9	0	28	11.6	42.1	Rain, Partially cloudy
2024-03-01T16:00:00	4.8	86.89	1.1	0	23.3	16.7	92.8	Rain, Overcast
2024-03-01T17:00:00	4.8	86.89	0.8	0	19.9	10.5	80.9	Rain, Partially cloudy
2024-03-01T18:00:00	3.5	92.42	0.2	0	13	6.8	72.8	Rain, Partially cloudy
2024-03-01T19:00:00	3.1	92.4	0	0	13.2	4.5	88	Partially cloudy
2024-03-01T20:00:00	3.1	92.4	1	0	9.8	6.8	58.4	Rain, Partially cloudy
2024-03-01T21:00:00	2.8	93.13	0.8	0	6.9	6.4	25	Rain, Partially cloudy
2024-03-01T22:00:00	1.9	95.81	0.1	0	7.2	7.4	29.7	Snow, Rain, Partially cloudy



Date/time	Temp (°C)	Humidity (%)	Precip (mm)	Snow (mm)	Wind gust (mph)	Wind speed (mph)	Cloud cover (%)	Conditions
2024-03-01T23:00:00	2.5	93.12	0.2	0	9.2	5.6	88	Rain, Partially cloudy
2024-03-02T00:00:00	2.9	93.14	0.3	0	8.7	6.9	64.1	Rain, Partially cloudy
2024-03-02T01:00:00	2.4	93.87	0	0	8.3	7	94.2	Overcast
2024-03-02T02:00:00	2.4	97.18	0.2	0	9.4	4.7	95.2	Rain, Overcast
2024-03-02T03:00:00	2	93.85	0	0	12.5	6.2	69.9	Partially cloudy
2024-03-02T04:00:00	1.5	93.82	0	0	13.9	5.8	64.1	Partially cloudy
2024-03-02T05:00:00	1.1	93.8	0	0	14.8	6	59.4	Partially cloudy
2024-03-02T06:00:00	1.4	97.16	0	0	17.7	6.5	69.9	Partially cloudy
2024-03-02T07:00:00	1	93.8	0	0	17.7	6.6	64.1	Partially cloudy
2024-03-02T08:00:00	1.1	93.04	0	0	17.2	4.7	61	Partially cloudy
2024-03-02T09:00:00	3.3	93.91	0	0	16.1	9.1	64.1	Partially cloudy
2024-03-02T10:00:00	4.2	88.23	0	0	15.7	8.6	90.3	Overcast
2024-03-02T11:00:00	5.1	79.95	0	0	15.2	10	94.2	Overcast
2024-03-02T12:00:00	5.4	79.99	0	0	15	13.2	94.2	Overcast
2024-03-02T13:00:00	6.4	75.26	0	0	17	15.5	100	Overcast
2024-03-02T14:00:00	6	75.19	0	0	17.4	11.6	94.2	Overcast
2024-03-02T15:00:00	6.2	76.93	0.3	0	21.3	16.8	74.4	Rain, Partially cloudy
2024-03-02T16:00:00	5.9	78.48	0.2	0	20.8	14.9	92.8	Rain, Overcast
2024-03-02T17:00:00	6.3	78.39	0.1	0	19.5	15.2	88	Rain, Partially cloudy
2024-03-02T18:00:00	4.8	86.19	0	0	23	11.9	43.5	Partially cloudy
2024-03-02T19:00:00	3.9	86.8	0	0	18.8	8.7	58.3	Partially cloudy
2024-03-02T20:00:00	3.8	90.56	0	0	18.8	11.7	57.2	Partially cloudy
2024-03-02T21:00:00	3.6	90.56	0	0	15.7	7.6	88	Partially cloudy
2024-03-02T22:00:00	3.6	90.56	0	0	12.3	8.9	79.7	Partially cloudy
2024-03-02T23:00:00	4.1	85.05	0	0	11.2	7.3	67.2	Partially cloudy
2024-03-03T00:00:00	4.1	87.52	0	0	8.1	7.6	53.5	Partially cloudy
2024-03-03T01:00:00	3.2	90.53	0	0	8.1	6.3	91.5	Overcast
2024-03-03T02:00:00	2.4	90.47	0	0	8.1	5.5	50	Partially cloudy
2024-03-03T03:00:00	1.1	96.37	0.1	0	7.8	3	88	Snow, Rain, Partially cloudy
2024-03-03T04:00:00	1.1	96.37	0	0	7.2	4.6	58.6	Partially cloudy

Table 1: Weather data for Port Talbot during survey (sourced from www.visualcrossing.com)

The weather conditions were fairly consistent for the majority of the survey with negligible precipitation. Wind speeds were suitably low from the late afternoon of 01 March onwards, therefore the data is considered suitable for use in the noise assessment.

4.4 NOISE PARAMETERS

A full range of noise data was captured during the survey including the following statistical measurements:

- L_{Amax}** The sound pressure level of the single noisiest event during the measurement period.
- L_{Aeq}** Time averaged sound pressure level. This is generally considered to be an acceptable representative descriptor of environmental noise.
- L_{A90}** Sound pressure level exceeded for 90% of the measurement period, this is generally accepted to be indicative of the continuous background noise level.

4.5 MEASUREMENT RESULTS

Position and description	Parameter	Result	Photo	
MP1 Southwest site boundary, close to residential properties. Soundscape dominated by noise from the southwest which appeared to be wind and wave/sea noise. No other noise sources audible. Ambient sound levels observed to be around 50 dBL _{Aeq} , but wind speeds were too high for usable results.	Date/time	12:00 hrs		
	Duration	15 mins		
	L _{Aeq}	n/a		
	L _{Amax}	n/a		
	L _{A90}	n/a		
MP2 Southern corner of the site. Soundscape as per MP1 but wind speeds began to increase during the measurement, which may have raised the measured noise levels slightly above 'normal' conditions.	Date/ time	12:30 hrs 01 Mar 2024 to 04:00 hrs 03 Mar 2024		
	Time period	Day (0700- 2300 hrs)		Night (2300- 0700 hrs)
	L _{Aeq,15min}	47 dB		43 dB
	L _{Amax(F)}	73 dB		61 dB
	L _{A90,15min}	43 dB		38 dB
	* L _{Aeq} results are the logarithmic average of the 15-minute results during the day/night time periods during the survey. * L _{A90} results are the modal average of the 15-minute results during the day/night time periods during the survey.			

Table 2: Noise survey results summary

The distribution of background sound level results is shown in Figure 2 and a time history graph of the full results at MP2 are shown in Figure 3 (overleaf).

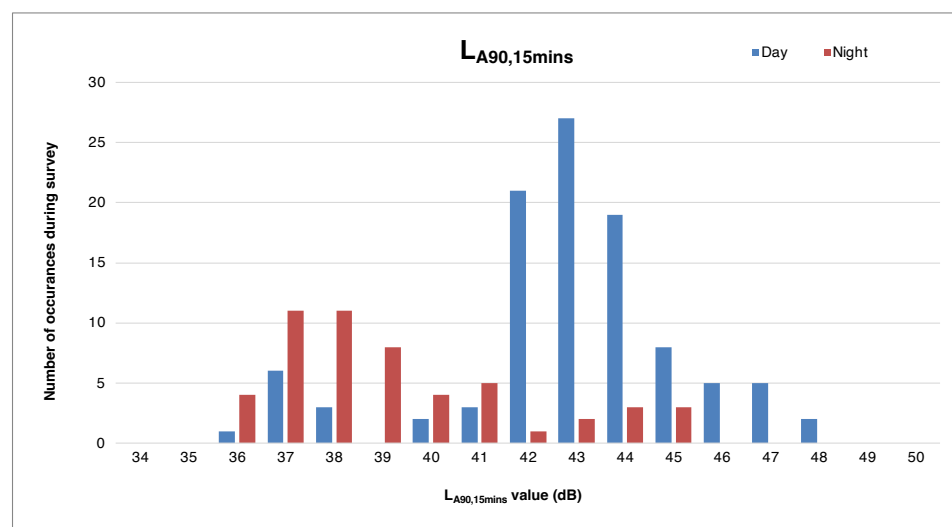


Figure 3: Distribution of background sound level results

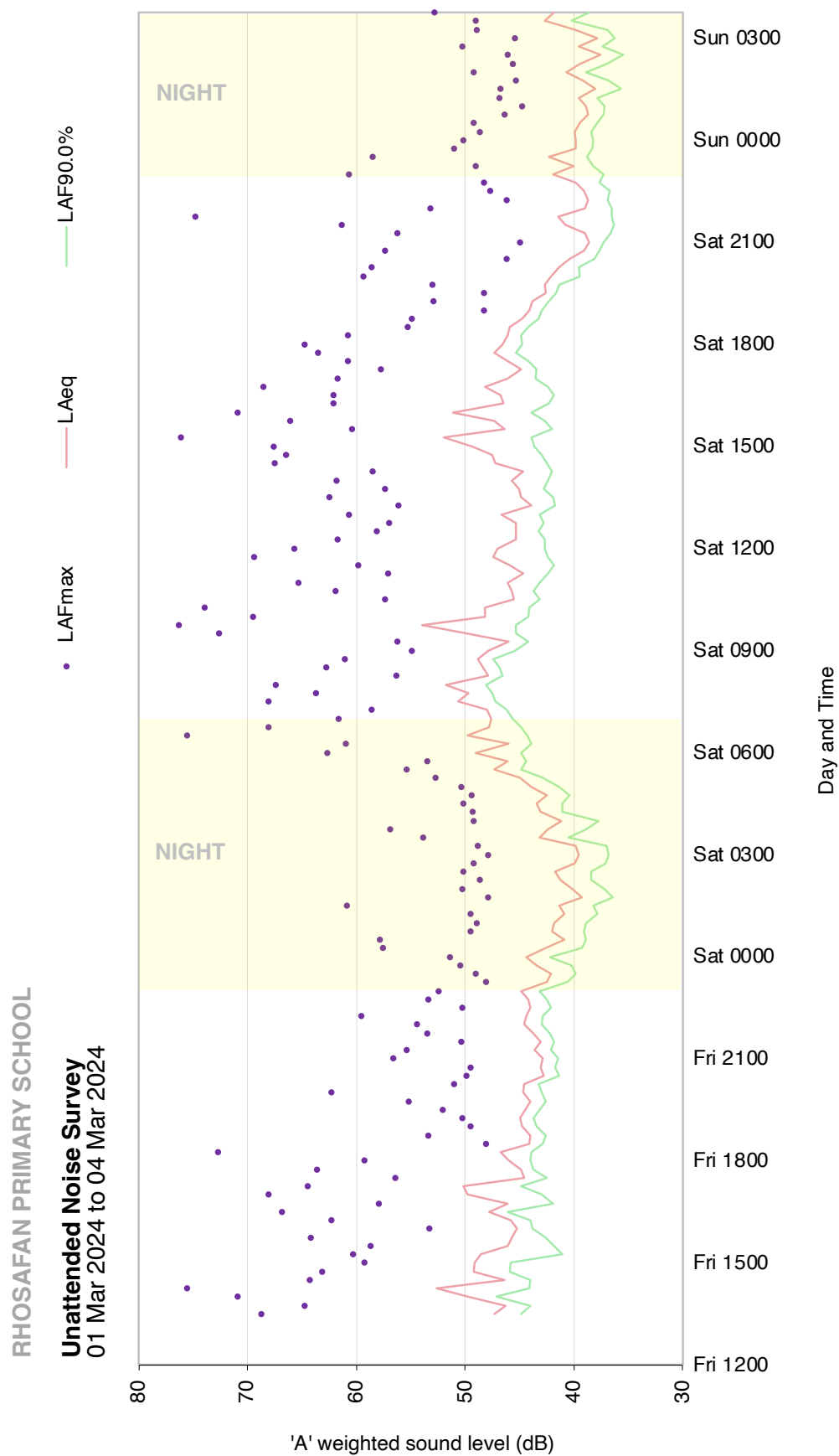


Figure 4: Time history graph of the measurement results at MP2.



5 NOISE IMPACT ASSESSMENT

5.1 ENVIRONMENTAL NOISE BREAK-IN

ASSESSMENT CRITERIA

BB93 provides internal ambient noise level (IANL) criteria for each different type of space within a school. In general, most teaching spaces in a new-build school have an IANL criterion of 35 dB, with a +5 dB relaxation permitted for naturally ventilated spaces. BB93 states that the IANL criteria can normally be achieved with:

- Single-sided ventilation where external noise levels exceed the IANL criteria by up to 16 dB, and
- Cross-ventilation where external noise levels exceed the IANL by up to 20 dB.

In short this means that most teaching spaces can typically be naturally ventilated where external noise levels do not exceed $L_{Aeq,30min}$ 51 dB for single-sided ventilation or 55 dB for cross-ventilation.

VENTILATION STRATEGY AND BUILDING ENVELOPE

The results of the survey indicate that the noise levels at the location of the proposed facades are below the limit for natural ventilation by either single-sided or cross-ventilation, should this be the preferred option. Alternatively, mechanical ventilation can be adopted, provided that the ventilation system is designed to achieve the BB93 IANL criteria. In summary, **any ventilation strategy is likely to be suitable for the proposed development.**

The sound insulation performance of most standard building envelope constructions will be capable of meeting the require minimum sound insulation performance, therefore **no acoustic upgrades to the building envelope should be required.**

SUMMARY OF ENVIRONMENTAL NOISE ASSESSMENT

Noise levels at the site fall below the levels at which noise mitigation would be required. As such, **no significant adverse impacts are predicted as a result of the proposed development.**

5.2 PLANT NOISE EMISSIONS

ASSESSMENT CRITERIA

In line with BREEAM Pol 5 and BS 4142, we propose rating sound limits 5 dB lower than the background noise level at nearby NSRs. The measured background sound levels were 43/38 $dB_{LA90,15min}$ (day/night), therefore the proposed rating sound limits are **L_{Ar} 38 dB (daytime) and L_{Ar} 33 dB (night).**

Rating sound levels equal to the background sound level would still be considered a 'low impact' in line with BS 4142 and should be considered acceptable, if the BREEAM limits are not achievable.

PROPOSED PLANT

During the detailed design phase we have used a 3D computer noise model of the site to assess the rating sound levels of the external plant selections which are located on the roof of the proposed building. The results of the model are shown below:

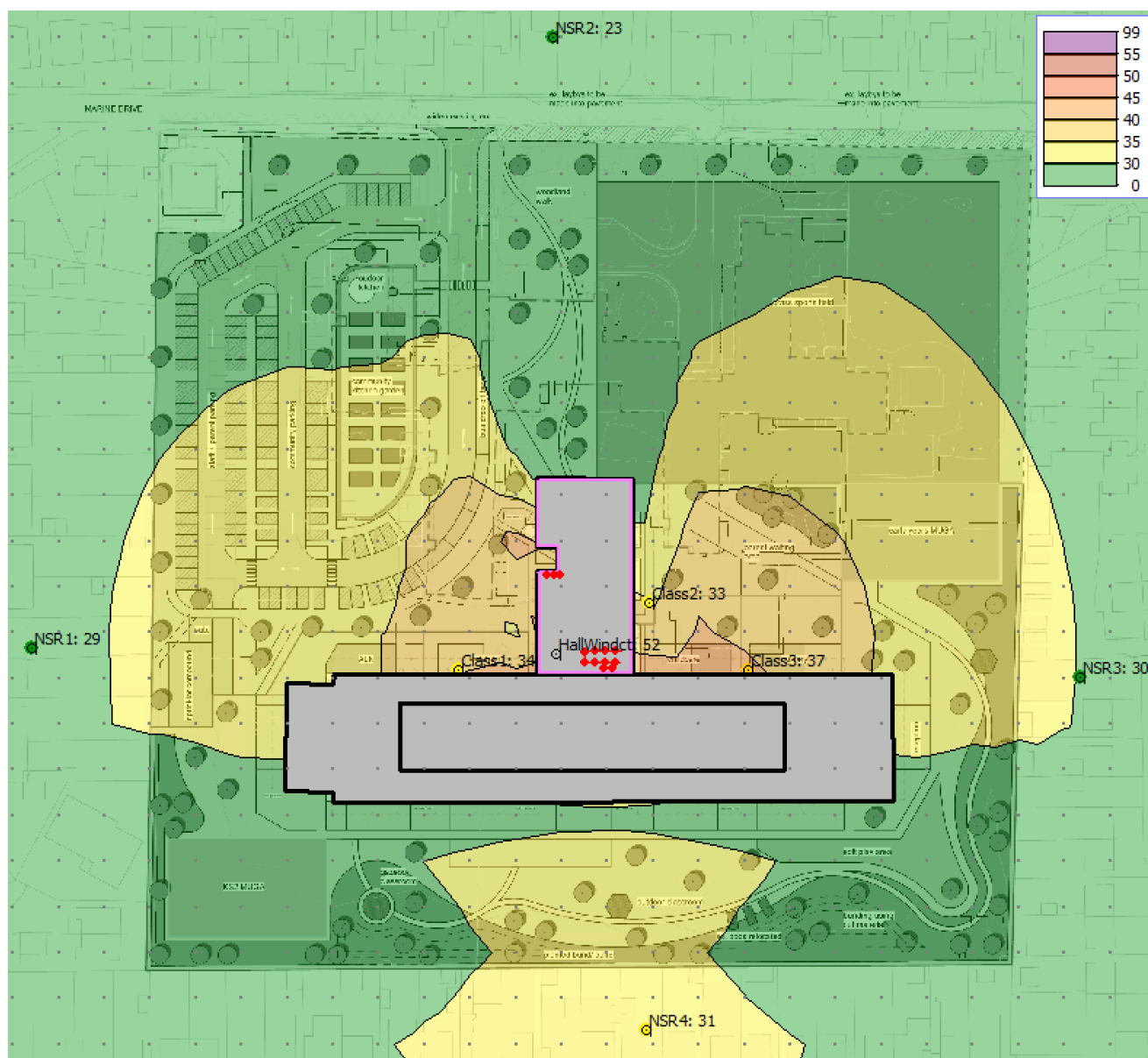


Figure 5: Roof plan noise emissions model noise contour plot at 4 m above ground level.

The model is based on the following plant specifications and assumed heights:

Name	Equipment specification	Assumed height above roof level (including mounting)
ASHPs	6 no. CAHV-R450YA-HPB (64 dBL _{pA} @1m) 1.7m high	2.0 m
Server DXs	2 no. PUZ-ZM71VHA2 (67 dBL _{WA}) 0.95m high	1.2 m
Kitchen DX	1 no. PUZ-PUZ-ZM100YKA2 (69 dBL _{WA}) 1.35m high	1.6 m

Table 3: Roof plant used in the noise emissions model.



The model results at each NSR location are as follows:

NSR	Predicted plant noise level (dBA)	Comparison with background sound level (dBA)		Compliant?
		Daytime (L _{A90} 43 dB)	Night time (L _{A90} 38 dB)	
1	29	-14	-9	Yes
2	23	-20	-15	Yes
3	30	-13	-8	Yes
4	31	-12	-7	Yes

Table 4: Results of roof plant noise modelling at NSR locations

The results of the modelling show that the plant noise emissions are compliant with the noise limits at all NSRs by a comfortable margin.

The nearest classroom windows to the roof plant are well screened from the plant so predicted noise levels are well below the 45 dBA limits, at 33-37 dBA.

PLANT SCREENS

No acoustic plant screens have been included in the model, but the parapet of the building has been included as a 1.3m high solid structure running continuously around the perimeter of the roof, as shown on the architectural section drawings.

MVHR AND AHU NOISE EMISSIONS

All internal MVHRs, fans and AHUs will be provided with attenuators on their environmental-side ductwork in order to meet the noise limits at nearby NSRs and adjacent classroom windows. The specific attenuators will be selected during detailed design to achieve the required limits.

PLANT NOISE FEATURE CORRECTIONS

Should any plant noise exhibit audible acoustic features (tonality, intermittency, etc.) at the location of the NSRs, additional penalties should be applied in line with BS 4142. Based on similar plant used on other schemes, we have assumed no feature corrections are required and with the predicted plant noise levels being well below the background level at the NSRs, any such noise characteristic at the source location would likely be inaudible at the NSR location in any case.

SUMMARY OF PLANT NOISE ASSESSMENT

A detailed assessment of plant noise emissions has been made based on the selections for all key external plant items and all information/specifications available at this stage of the design. The results of the assessment show that the noise limits can be met with provision of standard attenuation and screening measures and there is a comfortable margin in the calculation results. Therefore **no significant noise impacts are predicted as a result of building services plant noise emissions.**