

# Adventure Parc Snowdonia Dolgarrog Conwy

## Environmental Noise Survey and Noise Impact Assessment Report

31885/NIA/Rev1

15 November 2024

For:  
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## Document Control

Rev	Date	Comment	Prepared by	Reviewed by	Approved by
1	15/11/2024	Minor amendment to project description wording		-	-
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# **Environmental Noise Survey and Noise Impact Assessment Report 31885/NIA/Rev1**

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## 1.0 Introduction

Hann Tucker Associates Limited (Hann Tucker) has been commissioned by GWG Consultants Ltd to undertake a noise assessment for a site in Conwy, Wales.

The site, which is located on Conway Road, is being considered for refurbishment of a surfing pool that was previously operational between 2015 and 2023. The proposals includes refurbishment of the existing surfing pool to replace the existing wave generation system with a new 'Cove' wave generation system. The proposals also include installation of 21No Lodges & glamping pods, and a new snow tunnel activity building. The project description is as follows:

*“Redevelopment of the existing surfing lagoon with updated wave generation technology to create a new surfing experience, engineering works to infill part of the surfing lagoon together with associated landscaping and siting of 21 lodges. Refurbishment and extension to the existing Adrenaline Indoors building to house a new leisure attraction along with all associated site infrastructure and external works.”*

Baseline noise conditions have been established by means of a detailed noise survey, presented herein. The findings have subsequently been used to assess the suitability of the site for commercial use. Measures required to mitigate noise impacts for the proposed development (when operational) have been discussed in context with relevant national & local planning policies, design standards and good practice guides.

## 2.0 Objectives

To undertake a baseline noise survey to establish the existing background noise levels at selected accessible positions representative of nearby receptors.

To assess the impact of noise associated with the new 'Cove' wave generation system by comparing the predicted noise levels taken from measurements (by others) of the existing wave generation system against the guidance within relevant British Standards and Local Authority requirements. Where appropriate, mitigation measures will be considered to reduce noise to within acceptable levels at existing sensitive receptors.

## 3.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.



## 4.0 Site Description

The site is located in Dolgarrog, Conwy. To the west of the site is Conway Road and to the south and east of the site are grasslands. To the north of the site is the Hilton Garden Inn Hotel and further west of Conway Road are residential properties.

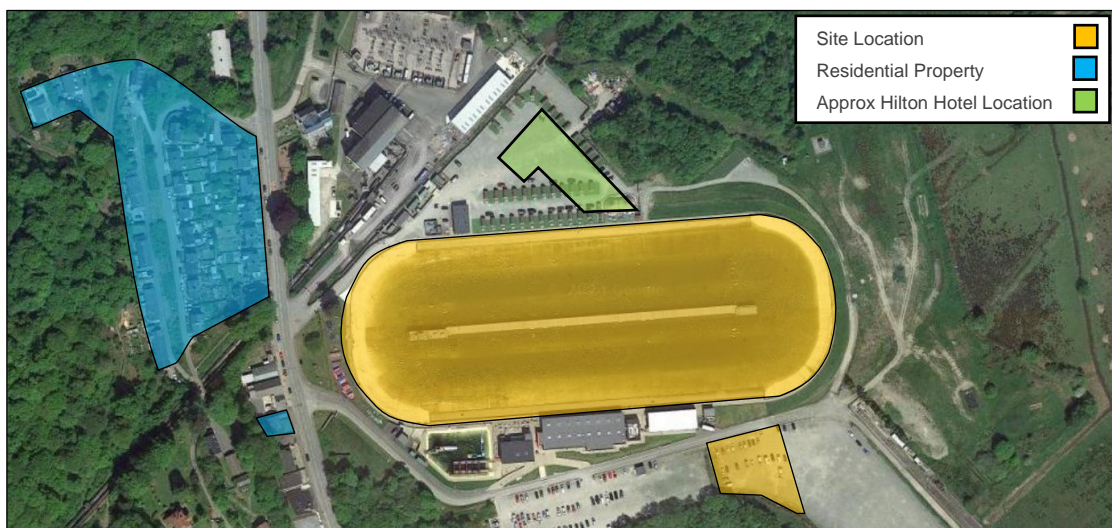
It is understood that the existing surfing pool has been operational since 2015 and only closed its operation in September 2023.

It is also understood that the Hilton Hotel, which is a part of the Adventure Parc development, was built in 2021 as part of the wider site development.

Considering Hilton Hotel is a part of the Adventure Parc development, and that there would be no change in the nature of the noise climate external to the hotel with the proposed refurbishment to the surfing pool, it is prudent to not consider the Hilton to be a sensitive receptor in terms of noise break-out from the surfing pool.

Therefore, based on the above, the residences on Conway Road have been considered to be the nearest noise sensitive receptors in terms of any noise break-out from the proposed refurbishment.

The site is shown in the Site Plan below.



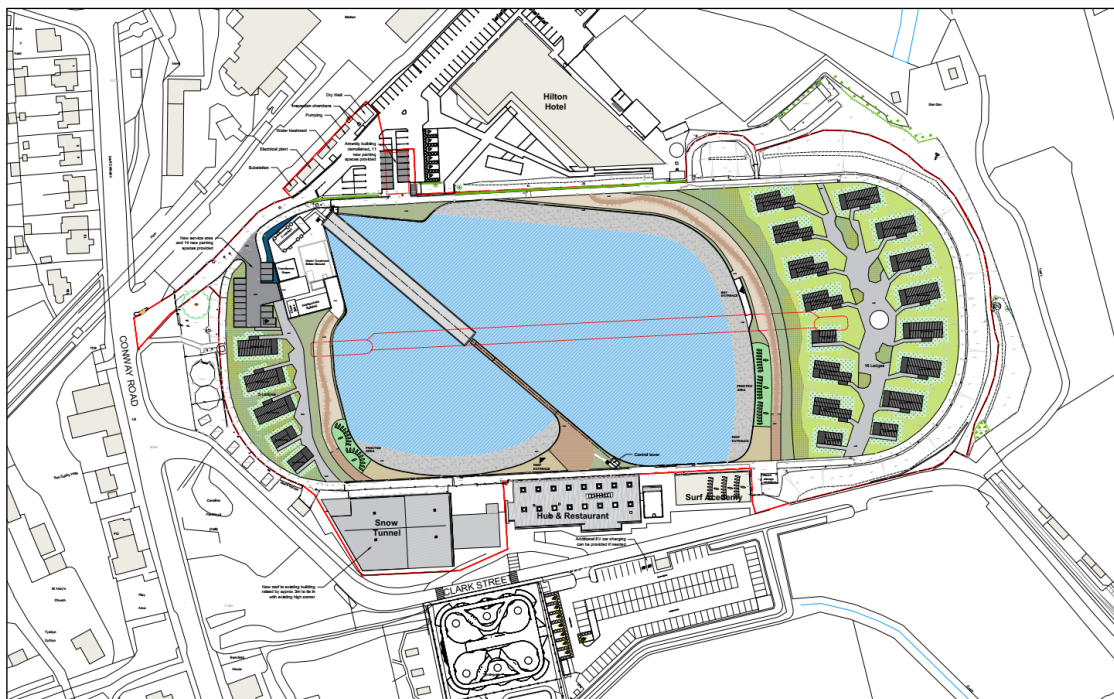
Site Plan (Map data ©2024)

## 5.0 Proposed Development

The proposed refurbishment of the existing surfing pool includes the replacement of the existing wave generation system with a new 'Cove' wave generation system, and the installation of 19No Lodges & glamping pods, as well as a new snow tunnel activity building on the south-east corner of the site.

It is understood that the proposed operation hours of the refurbished surfing pool will be between 08:00 hours to 21:00 hours, i.e. during the daytime period only. These operational hours are in line with the operational hours of the existing pool.

The proposed site is shown in the plan below.



Proposed Site Plan (c/o HB Architects)

## 6.0 Planning Policies, Standards & Guidance

### 6.1 Policies & Guides

In order to provide a suitable assessment a number of national planning policies have been considered, including:

- Planning Policy Wales (PPW), February 2024
- Technical Advice Note - Wales 11 (TAN11), Noise, October 1997



Technical Advice Note 11 (TAN11) says the following with respect to noise from recreational and sporting activities.

*“For these activities the local planning authority will have to take account of how frequently the noise will be generated and how disturbing it will be, and balance the enjoyment of the participants against nuisance to other people. Partially open buildings such as stadia may not be in frequent use. Depending on local circumstances and public opinion, local planning authorities may consider it reasonable to permit higher noise emission levels than they would from industrial development, subject to a limit on the hours of use, and the control of noise emissions (including public address systems) during unsocial hours. A number of sports activities are the subject of Codes of Practice. Some noise generating activities enjoy permitted development rights granted by Part 4 of Schedule 2 to the Town and County Planning (General Permitted Development) Order 1995, and so may not require specific planning permission provided that they occur on a temporary basis. However, this permission may be withdrawn by making a direction under Article 4 of the Order”.*

## 6.2 Specific Local Authority Criteria

An email was sent to the local council to agree a methodology for the assessment, and we have received the following response:

*“The Conwy LPD and the associated SPGs do not contain any technical document regarding noise impact assessment methodology. I think the assessment will need to take into account the advice in TAN11: Noise and other current standards applied in the industry i.e. BS and/or other professional institution guidance.”*

## 6.3 IEMA Guidelines on Noise Impact Assessments

It is important to consider the context of the surfing pool being previously consented and operated, and noise levels from this source at the nearest noise sensitive receptors when assessing the potential impact from the proposed refurbishment.

Although not specifically developed to recreational activities, the IEMA Guidelines for Environmental Noise Assessment provide framework to assess the potential noise impact of a proposed development at nearby receptors. The document states that each site should be assessed on a case-by-case basis and should consider the change in noise level (either  $L_{Aeq}$ ,  $L_{AFmax}$  or  $L_{A90}$ ) caused as a result of the proposed development.



This change in noise level should then be used to determine the magnitude of impact at the nearby noise sensitive receptor. The Guidelines contain effect descriptors for changes in ambient noise level. These effect levels are summarised below:

Impact	Description
Very Substantial Impact	Greater than 10 dB $L_{Aeq}$ change in sound level perceived at a receptor of great sensitivity to noise
Substantial Impact	Greater than 5 dB $L_{Aeq}$ change in sound level at a noise-sensitive receptor, or a 5 to 9.9 dB $L_{Aeq}$ change in sound level at a receptor of great sensitivity to noise
Moderate Impact	A 3.0 to 4.9 dB $L_{Aeq}$ change in sound level at a sensitive or highly sensitive noise receptor, or a greater than 5 dB $L_{Aeq}$ change in sound level at a receptor of some sensitivity
Slight Impact	A 3.0 to 4.9 dB $L_{Aeq}$ change in sound level at a receptor of some sensitivity
Not Significant	Less than 2.9 dB $L_{Aeq}$ change in sound level and/or all receptors are of negligible sensitivity to noise or marginal to the zone of influence of the proposals

## 7.0 Baseline Noise Survey

### 7.1 Procedure

Fully automated environmental noise monitoring was undertaken by Euan Ellis BA(Hons) from approximately 13:00 hours on Friday 11 October 2024 to 12:00 hours on Monday 14 October, to establish full daytime and night-time noise levels over a typical weekday and weekend period. Measurements were taken continuously of the A-weighted (dBA)  $L_{90}$  sound pressure levels over discrete 15-minute periods.

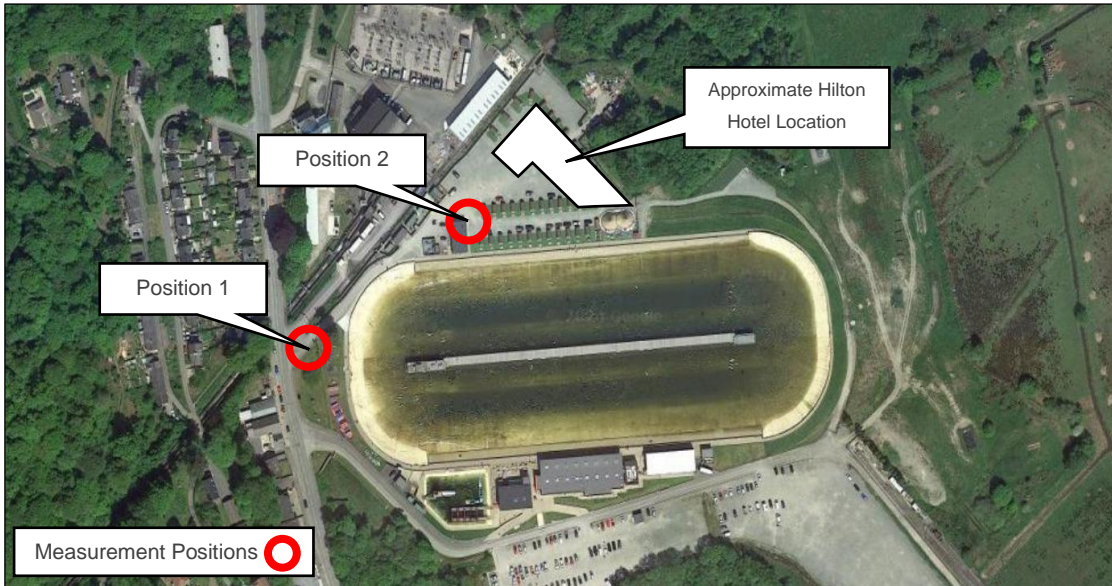
### 7.2 Measurement Positions

The noise level measurements were undertaken at 2 positions as described in the table below.

Position	Type	Description
1	Unattended	The meter was positioned on a lamp post approximately 4 metres above ground level in free field. Located approximately 40 metres east of the residential properties and 150 metres west of the Hilton Hotel.
2	Unattended	Located in a lamp post box approximately 4 metres from ground level in free field, approximately 40 metres west of the Hilton Hotel.

The positions are shown on the plan below.





Plan Showing Measurement Positions (Map data ©2024)

### 7.3 Weather Conditions

For the unattended survey between Friday 11 October 2024 and Monday 14 October 2024, local weather reports indicated no notable periods of prolonged or heavy rainfall, with temperatures ranging from 2 °C (night) to 14 °C (day) and wind speeds generally less than 5m/s. During our time on site, skies were clear with patchy cloud cover, wind conditions were calm and from a southerly direction and road surfaces were dry.

### 7.4 Instrumentation

The instrumentation used during the survey is presented in the table below:

Position	Description	Manufacturer	Type	Serial Number	Calibration
1	Type 1 Data Logging Sound Level Meter	Larson Davis	LXT	6490	12/09/2024
	Pre Amp	PCB	PRMLxT1L	070074	
	Type 1 ½" Condenser Microphone	PCB	377B02	347391	
2	Type 1 Data Logging Sound Level Meter	Larson Davis	LXT	5104	30/05/2024
	Pre Amp	PCB	PRMLxT1L	42842	
	Type 1 ½" Condenser Microphone	PCB	377B02	317684	
--	Type 1 Calibrator	Larson Davis	CAL200	3083	27/03/2024



Each sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were found to have occurred (no more than 0.3 dB).

Each sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. Each microphone was fitted with a windshield.

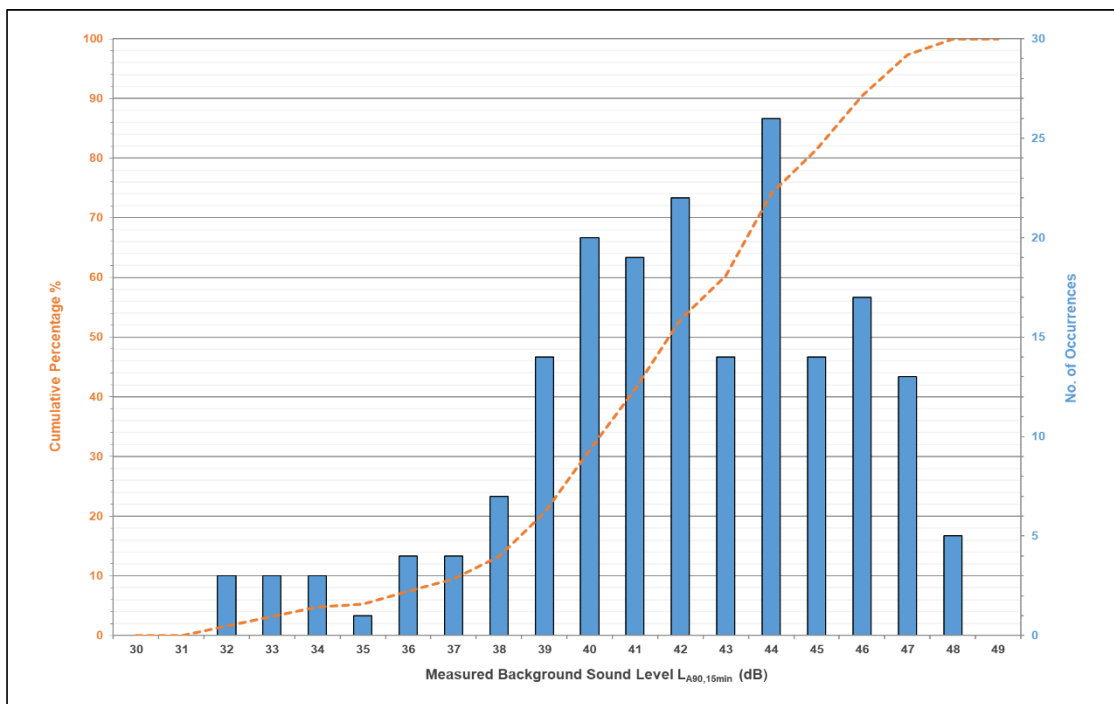
### 7.5 Results

The results have been plotted on Time History Graphs 31885/TH1 to 31885/TH2 enclosed presenting the 15-minute A-weighted (dBA)  $L_{90}$ ,  $L_{eq}$  and  $L_{max}$  levels at each measurement position throughout the duration of the survey.

To determine the typical background noise levels at the site in-line with the procedure set out in BS4142:2014+A1:2019 statistical analysis of the measured 15-minute noise levels is required to establish the typical background noise levels. As such, the measured background  $L_{A90}$  values have been plotted on the histograms presented overleaf with a view to establishing the typical background noise levels for the daytime periods based on the proposed operational hours of site.

#### 7.5.1 Measurement Position 1

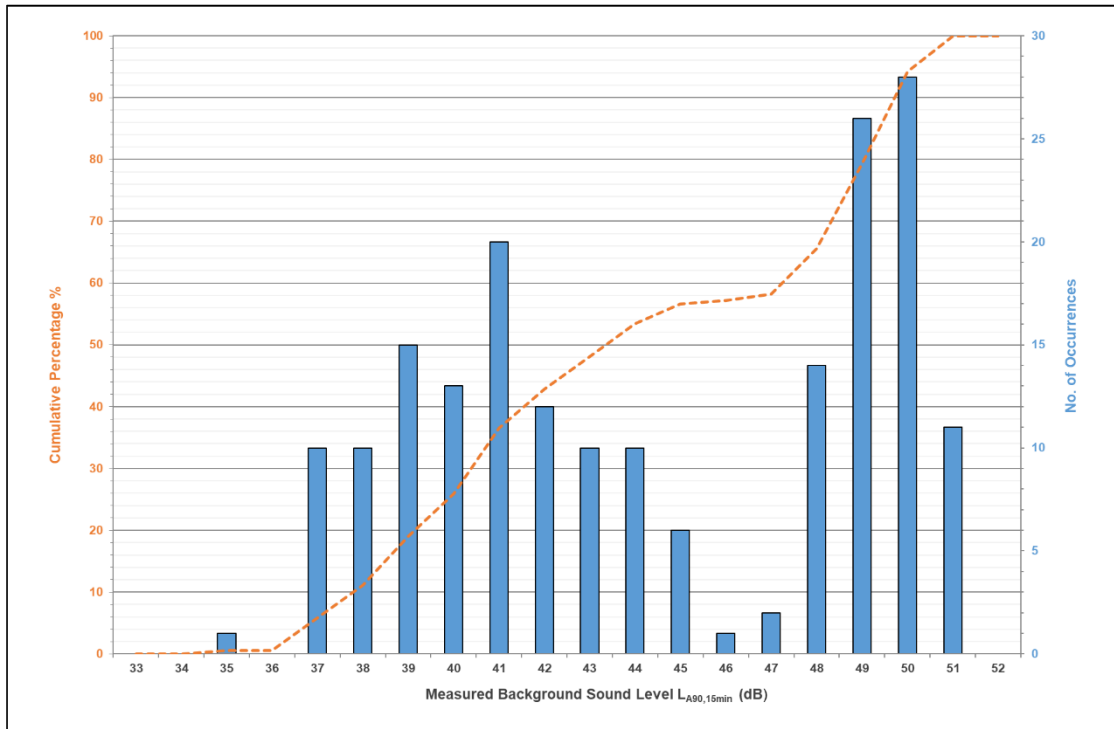
The statistical graphs for daytime and night-time periods are presented below.



Plot Showing Statistical Analysis of Measured Daytime Background Noise Levels – Position 1



### 7.5.2 Measurement Position 2



Plot Showing Statistical Analysis of Measured Daytime Background Noise Levels – Position 2

Based on the above, the typical daytime and night-time background sound levels at both measurement locations are presented below as free-field levels. Note that the typical background noise levels selected are based on approximately 20% of the events for the combined daytime and night-time periods.

Measurement Position	Typical Measured $L_{A90}$ Background Noise Level (dB re $2 \times 10^{-5}$ Pa)
	Daytime (07:00 – 23:00)
1	39
2	39

### 7.6 Discussion of Noise Climate

Due to the nature of the survey, i.e. unattended, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However, at the beginning and end of the survey period the noise climate was noted to be dominated by road traffic noise from Conway Road. It was noted that during attending site there was also noise from low flying fighter jets on training flights around the area.



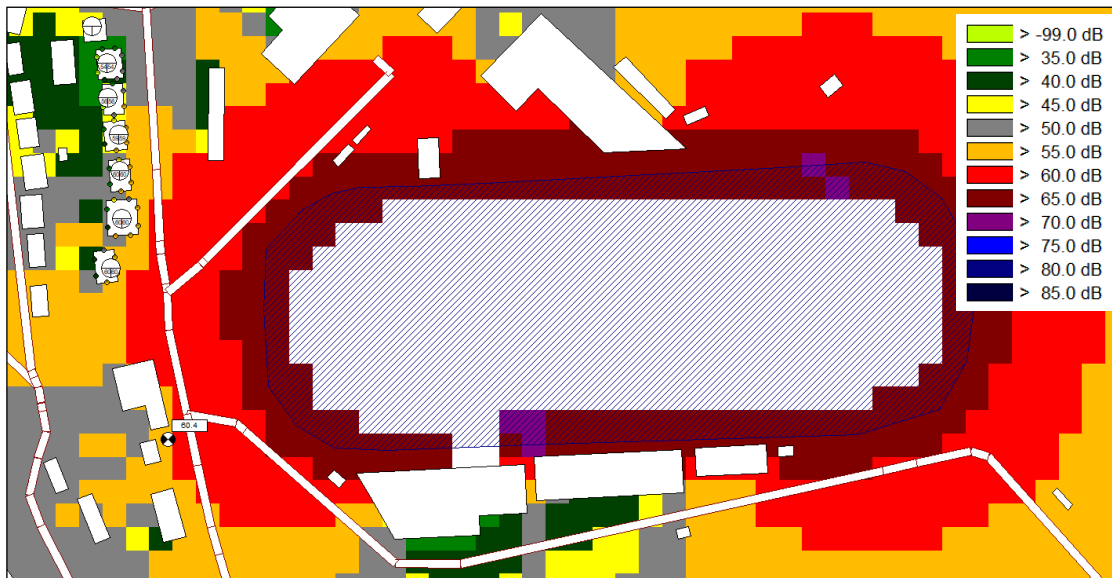
## 8.0 Noise Assessment of the Surfing Pool

### 8.1 Existing Surfing Pool

As mentioned above, there is an existing surfing pool on site which uses a traditional wave generation system to generate artificial waves at a frequency of approximately 16 waves per hour.

Hann Tucker has been provided with noise levels from the existing surfing pool, measured by others in 2015. A noise level of 60 dB  $L_{Aeq,1min}$  was measured at a location about 30m (to the west) from the edge of the lagoon due to a single wave heading west towards Conway Road.

Using the above data, a 3D noise model in CadnaA® has been created and a noise level of 60 dB  $L_{Aeq,1min}$  is predicted external to the residences on Conway Road due to the existing surfing pool as seen in the figure below. This allows us to calibrate the predicted noise from the site in its previous operation.



Predicted Noise Level from Existing Surfing Pool External to Nearest Residences

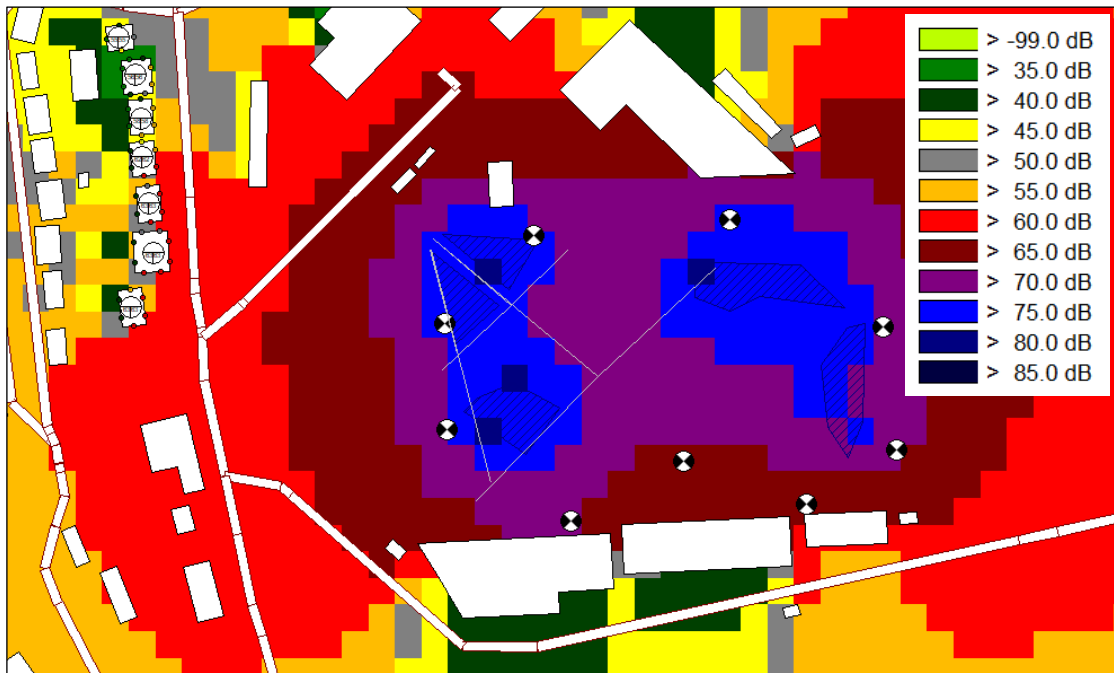
### 8.2 Proposed Surfing Pool

The proposed surfing pool will include a “Cove” wave generation system to generate artificial waves at a frequency of approximately 280 waves per hour.



Hann Tucker has been provided with noise levels from a similar surfing site in Bristol which uses the “Cove” wave generation system. Based on this noise levels ranging between 79 dB  $L_{Aeq,1min}$  to 70 dB  $L_{Aeq,1min}$  has been measured in “Beast Mode” around the perimeter of the lagoon in Bristol.

Using the above data, the 3D noise model in CadnaA® has been updated to reflect the proposed operation, and a noise level of 63 dB  $L_{Aeq,1min}$  is predicted external to the residences on Conway Road due to the proposed refurbishment to the surfing pool as seen in the figure below.



Predicted Noise Level from Proposed Surfing Pool External to Nearest Residences

### 8.3 Discussion and Conclusion

Based on above, the proposed refurbishment of the surfing pool could be expected to result in a 3 dB increase in noise levels external to residences on Conway Road. This conforms to a “Slight Impact” at the residences in terms of IEMA guidelines, i.e. there is a change in sound level at a receptor of some sensitivity, though it is at the very bottom of this impact range (a 2.9dB increase or less can be regarded as “Not Significant”).

However, considering the context that the surfing pool at the site had been operational from 2015 to 2023, it is unlikely that a slight increase in noise will result in a change in the type or ‘nature’ of noise emissions from the development site. It is suggested that no change in nature of noise be considered as a mitigating factor to the “Slight Impacts” that could occur at the receptors on Conway Road.



In addition, the surfing pool is operational only between 08:00 hours to 21:00 hours during peak season (10:00 hours to 18:00 hours during off-peak season) and considering the below context from TAN11 the “Slight Impact” from the proposed surfing pool could be off-set against the nature and context of the proposed use of the site.

*“For these activities the local planning authority will have to take account of how frequently the noise will be generated and how disturbing it will be and balance the enjoyment of the participants against nuisance to other people. Partially open buildings such as stadia may not be in frequent use. Depending on local circumstances and public opinion, local planning authorities may consider it reasonable to permit higher noise emission levels than they would from industrial development, subject to a limit on the hours of use, and the control of noise emissions (including public address systems) during unsocial hours”.*

## 9.0 Conclusion

Hann Tucker Associates Limited has been commissioned by GWG Consultants Ltd to undertake Noise Impact Assessment to support a planning application for the above site in Conwy, Wales.

The assessment considers the impact of noise associated with the new “Cove” wave generation system associated with the surfing pool at the nearest noise sensitive receptors.

A baseline survey was undertaken in October 2024 and subsequent assessment work has been undertaken in accordance with current standards and guidance.

A model has been created using CadnaA to calculate and compare the noise levels from the existing and proposed wave generation systems in operation at the nearest noise sensitive window.

Based on IEMA guidelines, the proposed surfing pool could result in a “Slight Impact” on the nearest receivers, though it is suggested that the pre-existing nature of the site be considered when judging the potential noise impact.

As surfing pool is a recreational activity which is infrequent and does not operate at unsociable hours, and considering the context of the site that there is an existing surfing pool at the site operational since 2015, this is reason that the proposals could be deemed acceptable.

## Appendix A

### Acoustic Terminology

The acoustic terms used in this report are defined as follows:

dB	Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).
dBA	<p>The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The <sub>A</sub> subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted</p> <p>It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.</p>
L <sub>90,T</sub>	L <sub>90</sub> is the noise level exceeded for 90% of the period <i>T</i> (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.
L <sub>eq,T</sub>	L <sub>eq,T</sub> is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, <i>T</i> .
L <sub>max</sub>	L <sub>max</sub> is the maximum sound pressure level recorded over the period stated. L <sub>max</sub> is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L <sub>eq</sub> noise level.
L <sub>p</sub>	Sound Pressure Level (SPL) is the sound pressure relative to a standard reference pressure of 2 x 10 <sup>-5</sup> Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).
L <sub>w</sub>	Sound Power Level (SWL) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10 <sup>-12</sup> W).

## **Appendix B**

### **Time History Graphs**



# Adventure Parc, Snowdonia

## Position 1

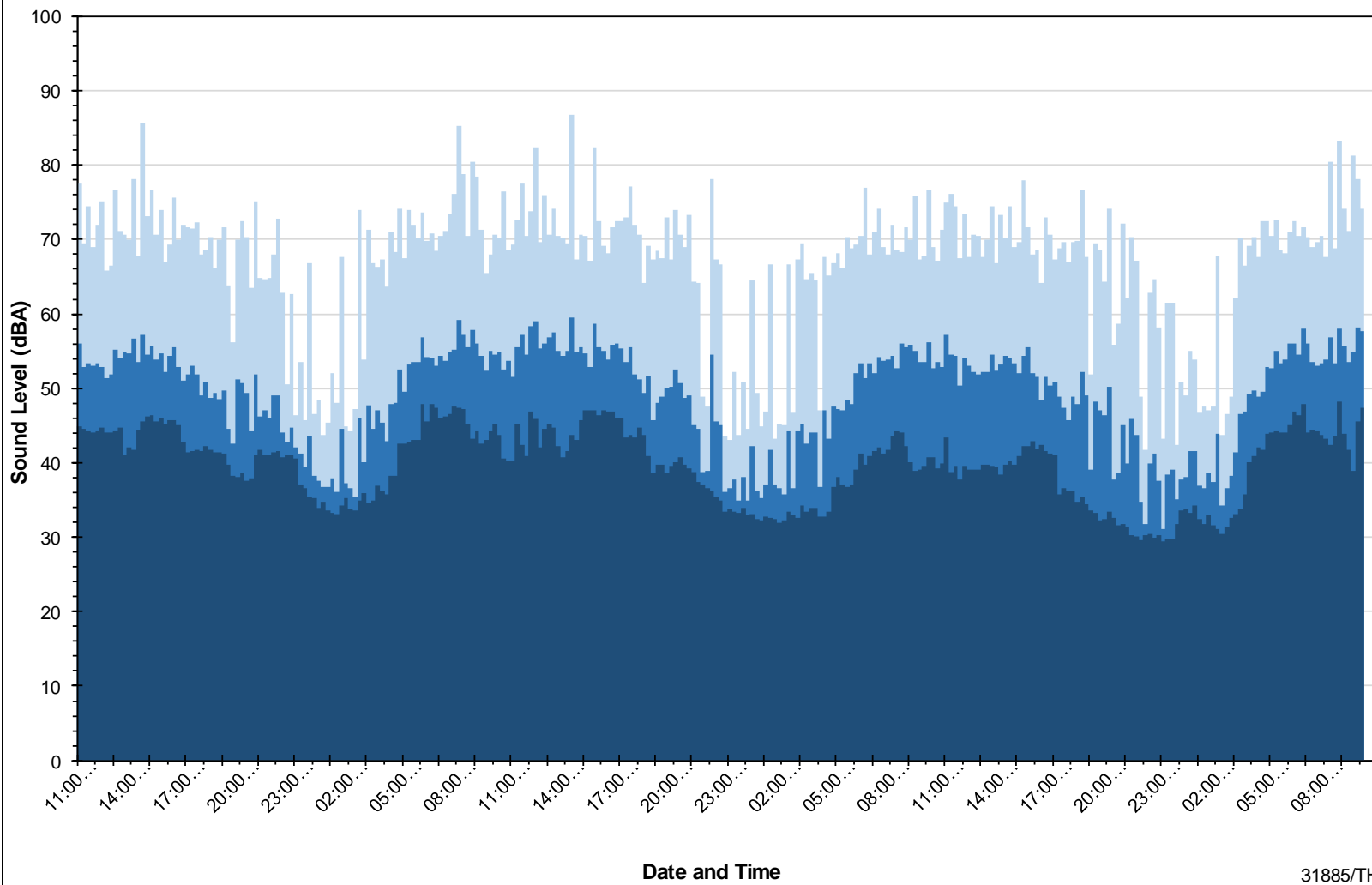
$L_{eq}$ ,  $L_{max}$  and  $L_{90}$  Noise Levels

Friday 11 October 2024 to Monday 14 October 2024

■  $L_{Amax}$

■  $L_{Aeq}$

■  $L_{A90}$



# Adventure Parc, Snowdonia

## Position 2

$L_{eq}$ ,  $L_{max}$  and  $L_{90}$  Noise Levels

Friday 11 October 2024 to Monday 14 October 2024

LAmax

LAeq

LA90

