

28/04/2023

Some of the Residents of Warlabby Lane (excluding Ainderby Cottage)
Ainderby Steeple
Northallerton
DL7

Issued by email only

Dear Sirs

Site: Wedding Venue, Sedgewell Barn, off Green Hills Lane, Northallerton
Doc ref: 03729-580100
Re: Background noise survey and review of applicant's updated noise assessment report

Introduction

Following my previous instruction to consider the originally submitted noise assessment reports relating to the potential noise impact of the above events venue, I have been instructed to undertake a background noise survey and review of the applicant's updated noise assessment report dated March 2023. Please see my findings set out below.

Firstly, to set out my qualifications, I am a member of the Institute of Acoustics, I hold an Engineering degree in Acoustics, I am a Chartered Engineer in Acoustics, I am the co-author of The Little Red Book of Acoustics, and I have taught the Institute of Acoustics (IOA) Environmental Noise Monitoring course for over a decade. I have worked for 3no different Association of Noise Consultants (ANC) member firms over my 20-year career. I am an acoustician by university degree, Chartered status, professional memberships, and peer review. A copy of my CV can be provided upon request.

This letter does not set out to provide a correct assessment of the proposal's noise impact, but seeks to explain some of the issues found with the noise assessment reports produced by NJD Environmental Associates Ltd submitted to the Council in support of the planning application for this proposed events venue. This letter sets out my primary findings relating to the most recently submitted document, rather than commenting on every issue observed.

NJD Environmental Associates Ltd are not members of the ANC, and as I understand it, they have no staff with university degrees in Acoustics. Staff are understood to hold university degrees in Geography, and to have taken the short IOA diploma course.

Upon review of the NJD Environmental Associates Ltd reports, including the report version most recently submitted in support of the application, I have found that there are still significant errors in the measurements, the calculations, the assumptions, the assertions, and the conclusions in the noise report, as well as various omissions and a general lack of transparency. An over-reliance on acoustic computer modelling software is apparent, which brings levels of risk and uncertainty that are not declared in the report. As discussed by Ed Clarke MIOA in the March/April 2023 edition of the IOA bulletin, "*New acoustical consultancy practices are*

being set up by increasingly junior and inexperienced practitioners... It seems too easy to be seduced by reliance on 'the model' outsourcing the legwork of really understanding and analysing the underlying physics, and just plugging in some input parameters and making various adjustments until you get the answer you're looking for." The reliance on modelling is a risk for the local residents here, as discussed below.

I neither believe that the NJD Environmental Associates Ltd reports reflect the reality of the application site, nor that they rely on real data sufficient to support their assertions – rather, the reports rely on modelling.

The premises licence application sets out the following:

- Live music between 0800-2359 hours daily, both inside and outside; with the note, *"Amplified live bands, amplified solo artists, unamplified bands, unamplified solo artists, unamplified brass or orchestral bands. No amplified live music will take place outdoors."*
- Recorded music between 0800-2359 hours daily, inside only; with the note, *"DJ's and pre-recorded playlists."*
- Alcohol will be sold between 0800-2359 hours daily.
- Hours open to the public are between 0800-0100 hours daily.

Noise assessment report ref. NJD21-0208-004R dated March 2023

This report is written by an 'NJD' – presumably Nick J Dennon, but alternatively Nichola J Dixon. Both personnel with NJD initials are directors of the firm NJD Environmental Associates Ltd, and it is possible that there is another NJD-initialled staff member working at or for the firm.

The author of the report is therefore not clearly stated. The qualifications of the author are not clearly stated. The professional memberships of the author are not clearly stated.

I believe 'NJD' is Nick J Dennon and that he holds no university degree in acoustics, but that he has undertaken a short Institute of Acoustics diploma course. I believe he is a Member of the Institute of Acoustics (MIOA).

It is reasonable for decision-makers to be provided with basic information allowing them to assign weight to the findings presented to them.

The March 2023 NJD Environmental Associates Ltd report follows my original letter setting out some of the errors and issues contained in previous NJD Environmental Associates Ltd report versions. Some of these errors have been corrected, some remain, and some additional errors have been introduced. It is unsafe for the Council to rely on the findings of the report without, as a minimum, a validation test prior to trading (or during a trial event) to show that the reality of the operation of the site will not impact on the occupants of local dwellings. As discussed by Ed Clarke MIOA in the March/April 2023 edition of the IOA bulletin, a considerable risk is introduced when there is an over-reliance on computer modelling and a lack of correctly measured data for a site.

This application assessment has not measured patron noise at source or at dwellings, nor indeed at any other site.

This application assessment has not measured vehicle noise at source or at dwellings, nor indeed at any other site.

This application assessment has not measured internal trading noise levels at source or at dwellings; it uses mocked up trading noise level data from another wedding venue site in Durham. The neighbours of that other site are still suffering from the trading noise impact of that wedding venue. I have personally spoken to some of those residents.

The risk here currently lies with the residents. If the Council grant permission and there is impact upon the residents as a result of this permitted trading, the Council may take no action. It is almost certain that the Council will take no action unless the noise is 'loud', and the residents would then be left with some disturbance – but not enough disturbance for the Council to consider a public nuisance to be occurring. This is the current situation for the residential neighbours of the Durham wedding venue.

The Sedgewell Barn venue site is not established and falls under the 'agent of change' principle. The change of use should not be permitted unless it is certain that impact on the residential use will be controlled – and this is currently not certain.

Sound sources

The March 2023 report lists music noise (music noise egress from the buildings), patron noise (guests using the courtyard), and road traffic noise (traffic moving on the proposed access road), as well as seeming to list reverberation time within the venue, as noise sources.

This is certainly a list of some of the potential noise sources, but clearly not all of them. Noise from dogs (not allowed to be left in glamping pods unattended) and staff-made noise such as vehicle movements, emptying of bins, etc. are 2no missing categories, as are external music noise, patron noise in any other location on the site, and all other types of traffic noise associated with the site's operation.

Music noise

In addition to music noise egress from the buildings, music noise will also occur externally. The premises licence application clearly declares that, "*Amplified live bands, amplified solo artists, unamplified bands, unamplified solo artists, unamplified brass or orchestral bands. No amplified live music will take place outdoors,*" are proposed between the hours of 0800-2359 hours every day of the week. Amplified live music will not take place outdoors, but clearly the intention is that unamplified bands, unamplified solo artists, unamplified brass and/or orchestral bands will perform outdoors and will be permitted between 0800-2359 hours. External music is simply not assessed at all in the report. The music noise egress assessment has various issues, as discussed later.

The report states that there is no measurement of trading sound levels at the site. There is also no measurement of trading noise egress from the site. Given that the venue has held at least 12no events onsite, it is hard to understand why no data has been obtained to demonstrate the normal trading sound levels within the buildings and the level of noise reaching the dwellings in the local area.

Paragraph 7.1.1 of the report states, *“During a meeting with HDC on the 1st February 2023, discussions were held with the EHO in order to confirm the use of surrogate archive data for the purpose of the assessment.”*

Paragraph 7.1.2 of the report states, *“The data is derived from a wedding/function venue at Bowburn Hall in County Durham.”* The data is not taken from trading underway at that venue either, but rather the DJ playing music specifically for the purpose of measurement only, on a Monday at lunchtime. This dataset does not contain any patrons talking/shouting/singing/laughing, etc., nor instances of music levels being increased to be able to still be heard above patron noise.

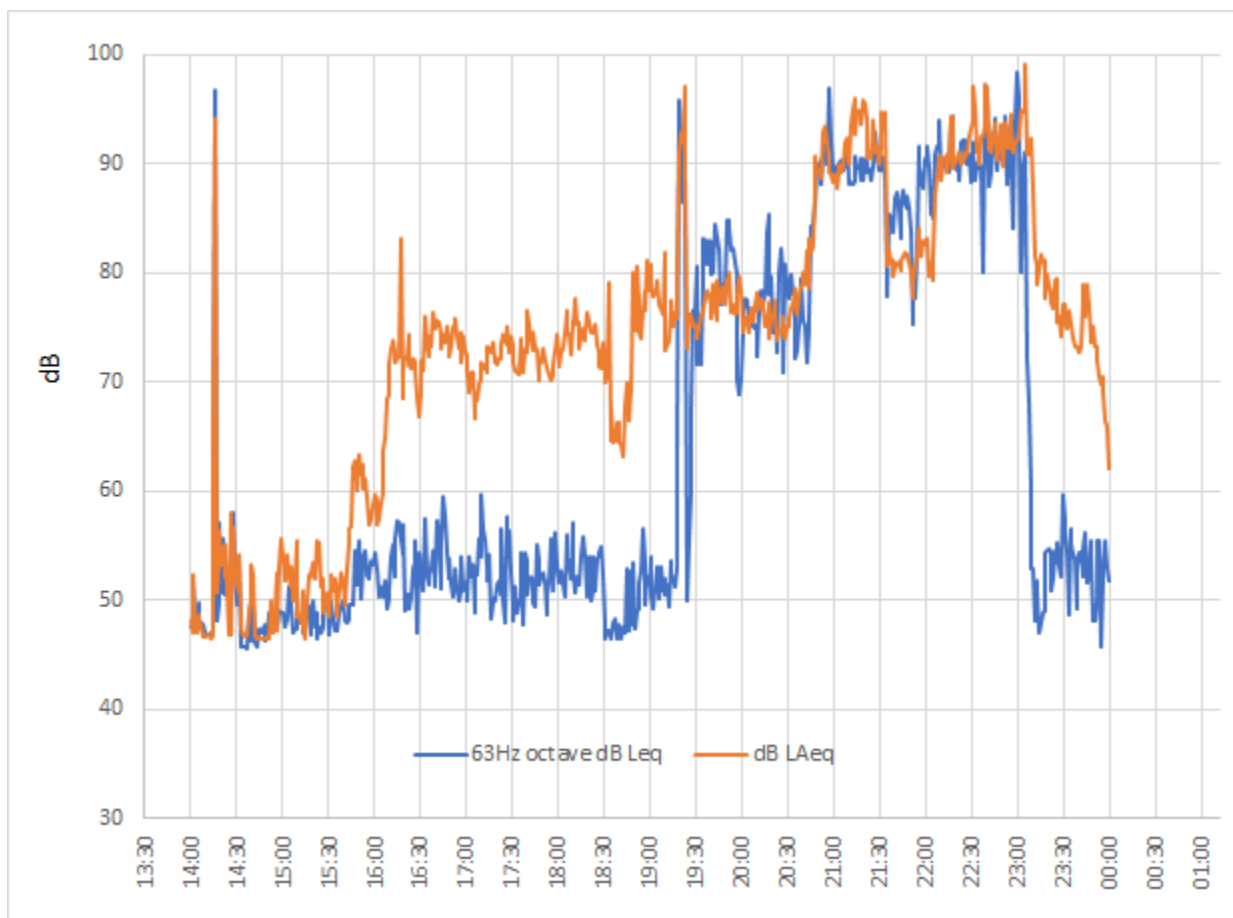
Noise measurements during an event should be undertaken in and around the site in order to establish the realities of this site.

An earlier report dated March 2022 stated, *“As the venue does not currently accommodate functions or events with amplified music, an assessment has therefore taken place using archive data from October 2017 (...)”*. Many events have been held onsite by March 2023, including Saturday 16/07/2022, Saturday 23/07/2022, Saturday 13/08/2022, and Saturday 20/08/2022 as detailed in the applicant’s traffic report, as well as at least another 5no dates detailed in the residential complaints made to the Council about noise from events at the venue. It is understood that the events occurred on at least 12no days in total. It is understood that NJD Environmental Associates Ltd did not attend the site during any of these events. It is also understood that NJD Environmental Associates Ltd have not measured source sound levels at the venue, experienced noise egress from an event, or even left equipment to log data measurements within the venue. The questions are, why did they not measure during an actual event, and why have the Council not required that this be done? Additional to this point is the upset and noise concerns of the residents living adjacent to the Bowburn Hall venue in Durham. I have personally spoken to residents who are disturbed by music and patron noise at that site.

Trading levels are assumed to be 85dB L_{Aeq} with 83dB in the 63Hz octave band, etc., with these values stated as being taken from another site. I would not consider these to be suitably representative sound levels for foreground amplified music typical of wedding functions, etc., and would expect values at least 10dB greater to be possible. This is supported by the DEFRA data (which is actually referenced in a previous NJD Environmental Associates Ltd report), as well as data I have collected at many venues. Indeed, the DEFRA data includes some that I personally collected.

The following chart presents 1-minute logging data from an actual wedding in a barn, as measured above the dining area/dancefloor. This is by no means the highest wedding noise level data I have on record. Note the broadband level is high at various times, including at around 1415 hours as the couple arrives, around 1920 hours with speeches and cake-cutting, and between 2100-2300 hours with music playing.

The values are around 93dB L_{Aeq} and 92dB L_{eq} in the 63Hz octave band for the last hour of trading; this is 8dB and 9dB higher than assumed in the NJD Environmental Associates Ltd report, and it comes from actual wedding event noise level data rather than non-event data. Short peaks in level are even higher than this.

Chart 1: Noise level data measured during a wedding event held at a barn venue

The assumed trading levels used here come from an assessment made by NJD Environmental Associates Ltd at Bowburn Hall Hotel in October 2017. The report for that site is available online, and it clearly demonstrates that the sound levels were not measured during trading, but rather were gathered at about 1300 hours on Monday 16/10/2017 – not during an event. It is clear from the 2017 report's data and description that the measurements were not taken during trading; rather, this was a mocked up scenario that had no patrons and no patron noise, where NJD Environmental Associates Ltd relied on the DJ to confirm that the music noise demonstrated was typical for an event. Patrons in a room during trading make noise and music is also played more loudly to be clearly audible above patron-generated noise, and it is clear to me that these measurements do not represent Bowburn Hall Hotel typical trading – let alone this venue's typical internal trading sound levels. I have measured sound levels in many venues with no music, where patron speech was louder than the spectrum used here at some frequencies.

The frequency content of sound can be measured in broadband terms (i.e. overall how loud was it if all frequency data is summed), or it can be measured in octave band centre frequencies (i.e. how much bass is there, how much is there the next octave up, etc.), or it can be measured in finer 1/3 octave analysis (not quite how loud is every note, but every few notes combined). This finer analysis is required in one of the guidance documents initially mentioned by NJD Environmental Associates Ltd, now no longer considered.

The proposed venue is most likely more like a pub in terms of patrons, food, drink, and entertainment than it is like a concert event. This report version contains no assessment in accordance with the IOA 'Code of Practice on the Control of Noise from Pubs and Clubs' 2003 document.

The IOA 'Code of Practice on the Control of Noise from Pubs and Clubs' 2003 document requires the music and associated sources to be inaudible inside noise-sensitive dwellings. The draft version of the 2003 document required the entertainment noise L_{Aeq} to be below the representative background noise level L_{A90} , and for the L_{10} of entertainment noise to be less than the L_{90} representative background noise in each 1/3 octave band, 40-160Hz inclusive. These criteria could be applied both inside and outside a dwelling. The IOA guidance is therefore concerned with: A) how loud the new noise will be, B) how quiet it is at the dwellings prior to wedding venue operation, and C) the frequency content of A) and B).

The Noise Council 'Code of Practice on the Control of Noise from Concerts' (Pop Code) is referenced in the report, and some information is presented about it. Unlimited events are proposed at this venue, which exceeds the 30no events referenced in the Pop Code, and the premises licence application clearly states that live music is proposed until 2359 hours every day, with unamplified live music occurring externally as well as internally. Recorded music is additionally proposed until 2359 hours daily, and since this goes beyond the 2300 hours mark, the guidance would require inaudibility.

It would be reasonable for the residents adjacent to this proposed venue to seek for music noise to be inaudible at the dwellings, given that the residential use is established, the wedding venue use is not established, and the NPPF 'agent of change' principle is clearly in play here.

The IOA 'Code of Practice on the Control of Noise from Pubs and Clubs' draft guidance specifically requires low frequency trading content to be considered and compared to the background sound levels at those frequencies. The purpose of this is to minimise noise impact and complaints relating to bass. If there is not much low frequency noise in the area from other sources, then when music with bass content is played, it is more likely to be audible and more likely to impact on residents. There is no such assessment in the NJD Environmental Associates Ltd report. Naturally, the data I present above does have corresponding L_{A10} 1/3 octave band measurements, but the Sedgewell Barn assessment should not rely on data that I have collected.

The background sound levels in terms of frequency content have not been considered, and no assessment of impact in these low frequencies has been made.

There seem to be multiple factors contributing to the lack of consideration of low frequency music/bass noise. The applicant's background survey is undertaken during an event, when it should be undertaken in the absence of an event. The low frequency background noise level data is either not collected or not displayed. The measurement of the sound insulation performance of the building envelope does not include low frequency noise, with the author apparently mistakenly believing that measurement is not possible. There also remain errors in the method and calculation presented for building envelope testing. It is possible to test low frequency performance in ISO9613-3 terms, but noise egress from the building can obviously be measured at distance during an event or similar, in order to establish the acoustic performance of the building. The NJD Environmental Associates Ltd assessment does not have wedding trading source music noise levels available for assessment; its author does not know how the previous weddings have traded, how loud they have been, how much bass there has been, and how this has radiated from the building.

The report does not attempt to determine low frequency performance of the building (other than in modelling estimates), despite this being one of the two most important aspects of the assessment in terms of music noise impacting on residents – the other being external music noise, which is also not considered at all.

It is generally correct to say that internal music noise can be controlled through use of limiting devices. There must be no loud acoustic instruments and no other loudspeaker equipment in order for the in-house limiting to work satisfactorily. Additionally, I believe that the operator does not know how the proposed trading level limits compare to the previous weddings held at the venue – i.e. the reduction in noise level required is not understood by the operator.

Taking 24dB L_{A90} as an appropriate background noise level value at the dwellings, the predicted 18dB L_{Aeq} music noise level at dwellings could be considered acceptable in broadband terms (i.e. satisfying the broadband criteria in the draft version of the IOA 'Code of Practice on the Control of Noise from Pubs and Clubs' 2003 document), if that were to occur.

The report states that acoustic mitigation measures will be introduced. The measures are relatively modest. The effect of the measures is again based solely on theoretical modelling rather than in-situ measurement or laboratory data. The building post mitigation works is stated to provide a minimum of 15dB attenuation in the 63Hz octave band. The current performance of the building is unknown and unstated.

It is understood that the model predicting the 15dB minimum building attenuation gives 31dB at 63Hz at ESR1, increased to 37dB by a stated 6dB margin of safety. This is an octave band L_{eq} value. The 63Hz 1/3 octave background noise level value (L_{90}) at the dwellings is around 30dB (as presented in Appendix 1 below containing my background noise survey results). The bass is therefore likely to be audible and discernible, albeit relatively quiet. Of course, if the venue trades more like a typical wedding event, noise levels will be 10dB or so higher, and bass will be clearly audible and not relatively quiet. It seems that a great deal will be dependent on whether the venue will actually trade in the manner described and whether the music sound limiting system is able to control bass such that it does not exceed the stated values. Again, it is important to note that the values stated by NJD Environmental Associates Ltd as being trading level limits are not derived from actual trading measured at either this or any other venue.

It is certainly possible for the building to be designed such that music noise egress is controlled, but this has not been demonstrated so far.

There is also no attempt to consider the noise impact of music being played outside, for which permission is expressly sought by the premises licence application. This is a very large omission that will permit a potentially loud activity over a long time period each day, which has simply not been considered. Indeed, the premises licence application states it is for external live music performance until 2359 hours daily.

Patron noise

Patron noise will realistically not be restricted to solely 1no courtyard, but clearly will also occur within the buildings, in other external areas such as carparks, etc., and en route to and from glamping pods.

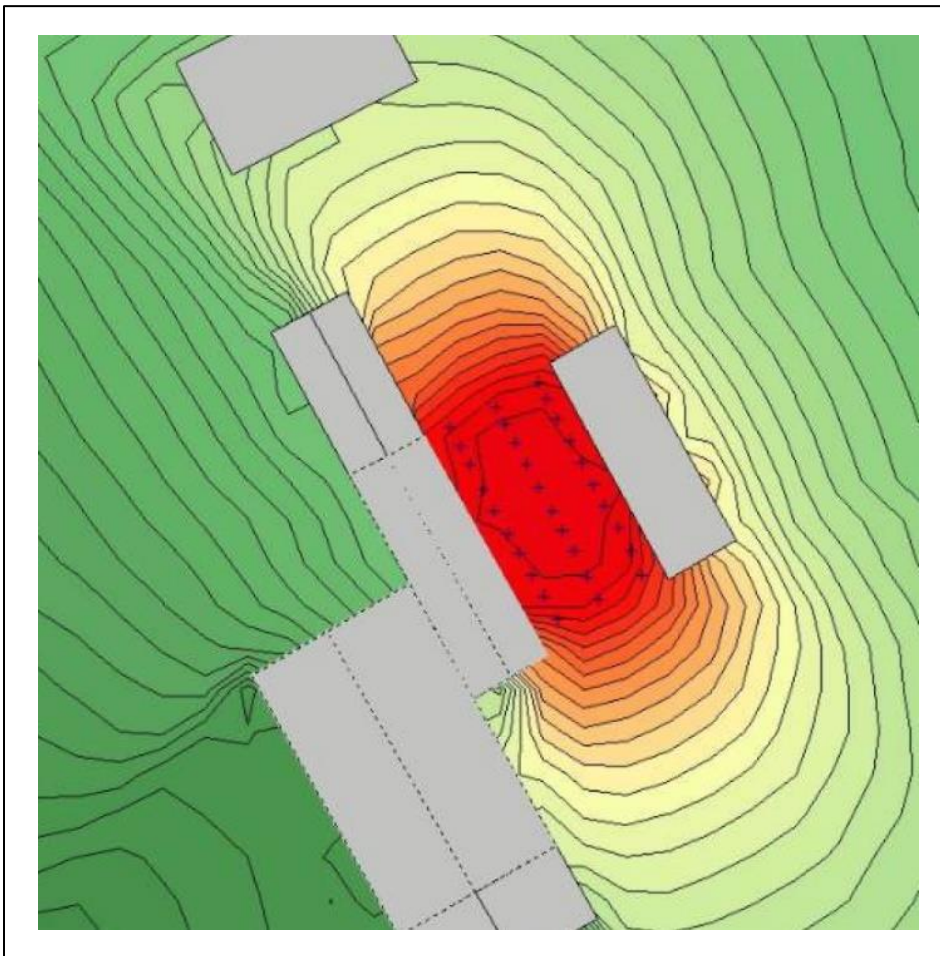
This is not considered in the NJD Environmental Associates Ltd report. The author assumes groups of 3.5no people, 1no of whom is speaking in a raised voice, and takes this to be 66dB L_{Aeq} at 1m (which is equated to a sound power level of 77dB), with the other 2.5no people not speaking. The assumption seems to be that 29% of the assumed 105no guests in the courtyard are speaking with a raised voice (i.e. 30no speaking). It is not clear why the 105no guests value is taken; 112no guests is the stated average in the report, 140no guests is stated in the report as being the highest recorded across the 5no events considered, 150no guests is the number of guests stated in the applicant's event management plan, and when last I looked, 200no guests is the number listed on the venue website as being possible to accommodate. The

value of 105no guests appears arbitrary and is an error, so it follows that the value of 30no speakers is arbitrary and is an error. A value of 150no was possibly mistyped into a spreadsheet as 105no, which was then processed to be 30no people speaking rather than 43no people speaking. If the application is for 150no guests to be permitted, it is important that the website does not suggest that a maximum of 200no guests is possible, and that bookings for 200no guests are not taken, etc.

The speech sound power level given in the NJD Environmental Associates Ltd report has no stated spectral shape, and having since modelled the scenario stated in the report myself, I believe that the spectral shape used in the NJD Environmental Associates Ltd model bears no relationship to actual speech. I also believe that the NJD Environmental Associates Ltd model assumes no reflections from surfaces, and so significantly underestimates patron noise as experienced at the dwellings.

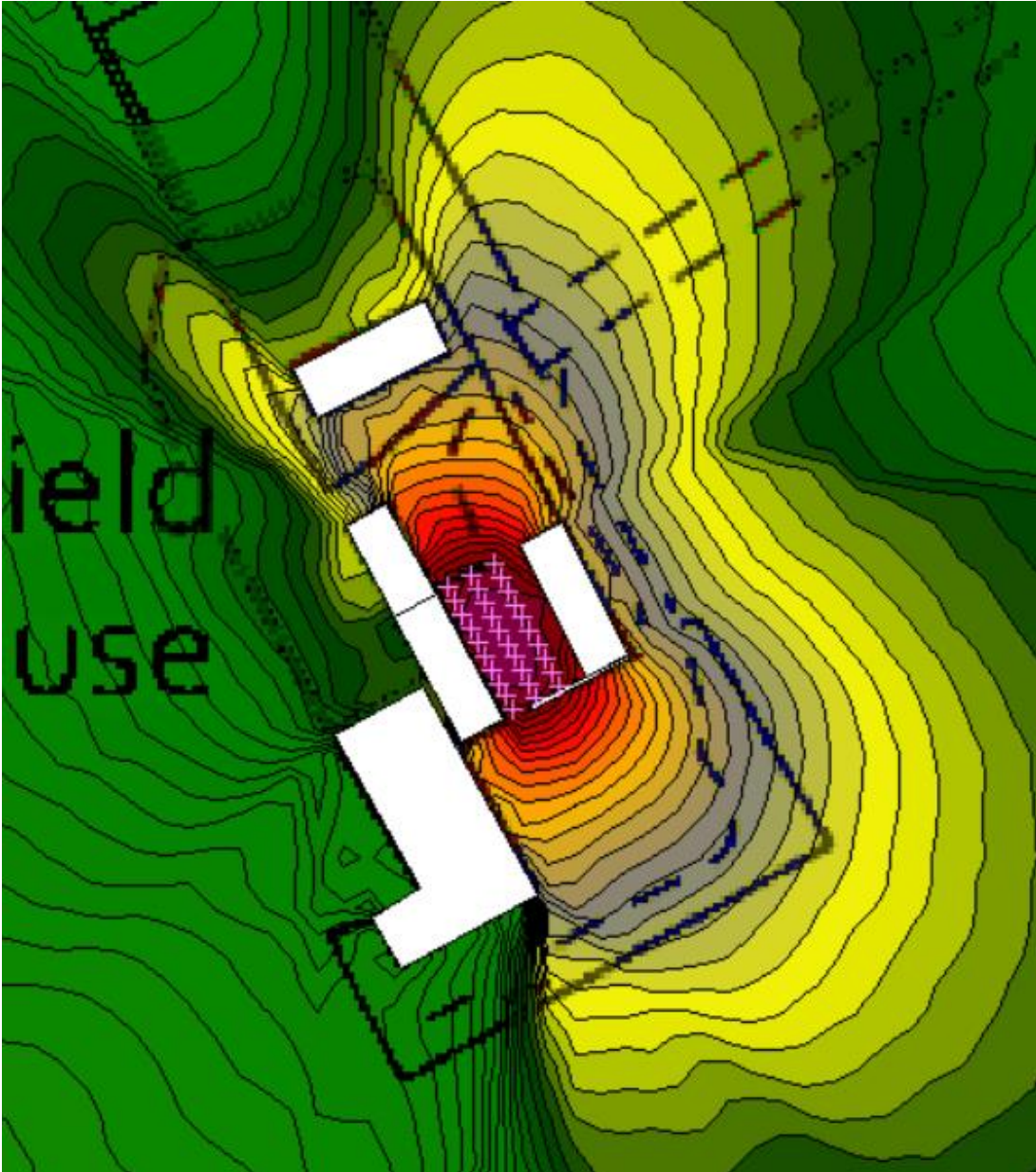
A model plot from NJD Environmental Associates Ltd's report is reproduced below. I believe that this is not a correct modelling of the patron noise, and that it is not accurate.

Drawing 4 of report ref. NJD21-0208-004R dated March 2023



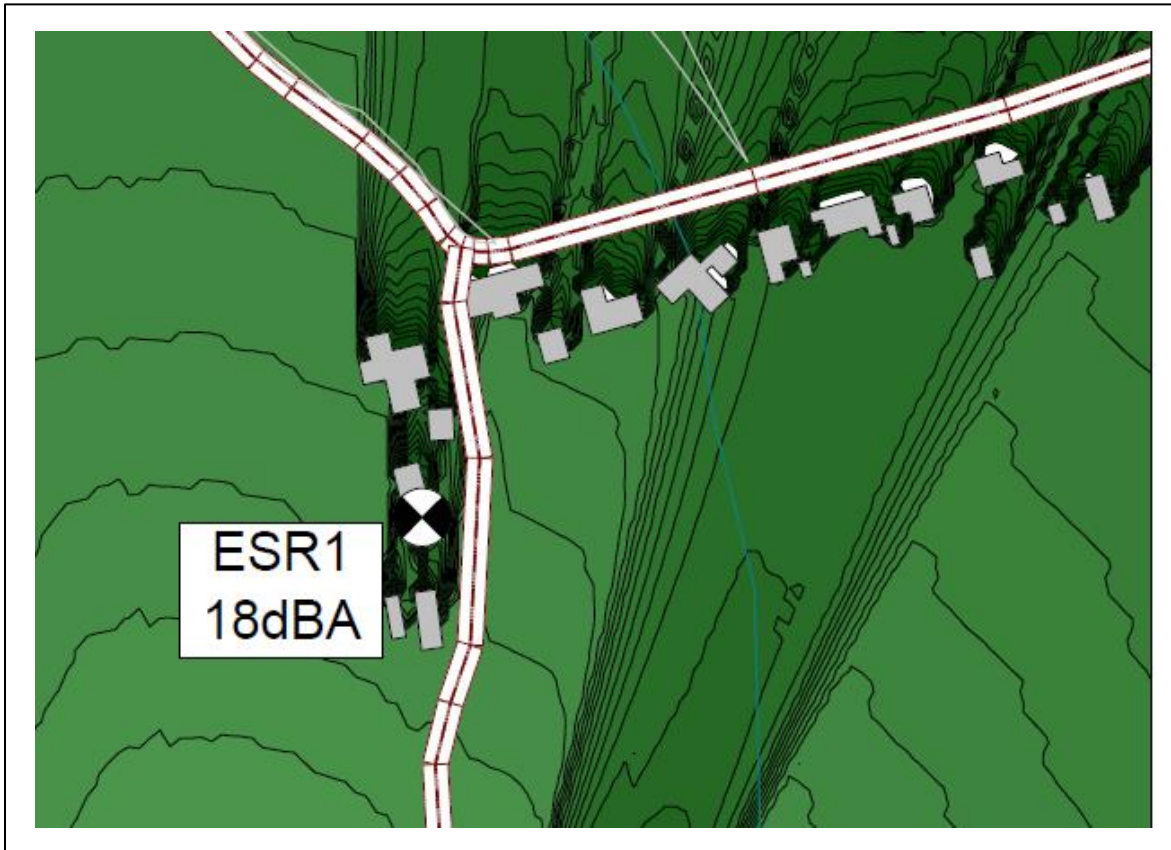
The computer model output should look more like my plot below – also plotted at 4m height, dB L_{Aeq} (i.e. like for like).

Figure 1



A further model plot from NJD Environmental Associates Ltd's report is reproduced below. I believe that the worst-case result of 18dB L_{Aeq} stated in the report is incorrect, and is low.

Figure 3 of report ref. NJD21-0208-004R dated March 2023



The worst-case result should be at least 26dB L_{Aeq} / 27dB L_{Aeq} , as shown in my plot below.

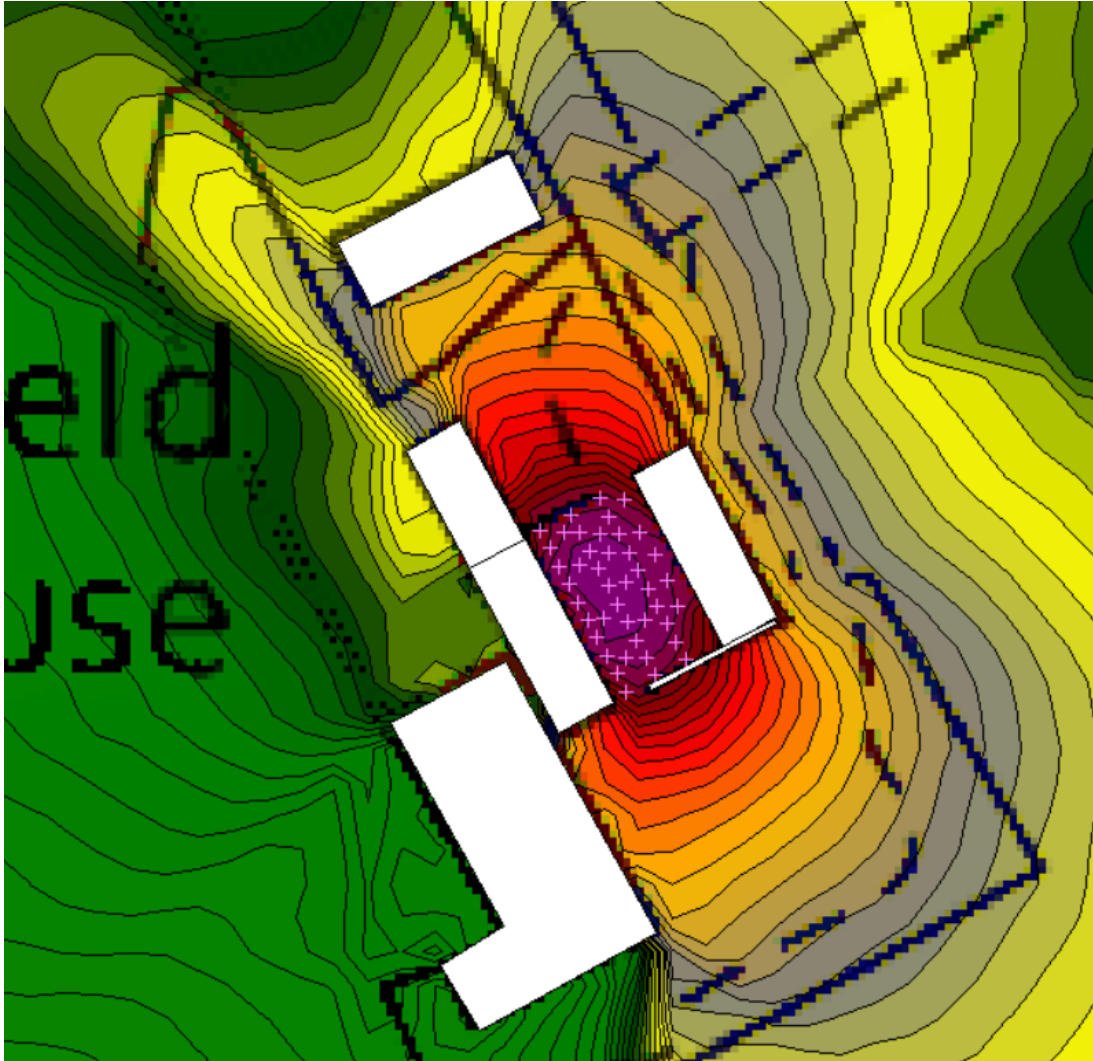
Figure 2



The modelling calculation driving the above plot assumes 30no speakers having a sound power level of 77dB(A) at a source height of 1.7m, but with a correct frequency content and allowing 2no reflections from buildings.

The logic of the NJD Environmental Associates Ltd report – i.e. 1no patron speaking per 3.5no patrons – should work out to 43no speakers, not 30no speakers. The maths are: $150/3.5=42.9$ people. My plot modelling 43no people speaking is shown below.

Figure 3



Under these conditions, noise levels of 28dB L_{Aeq} are now predicted at the dwellings, as shown in my plot below. This is 10dB(A) higher than the applicant's report states. A 10dB difference is perceived as the sound being twice as loud. The applicant's report underestimates patron noise by 10dB(A), i.e. it states patron noise to be half as loud in perceived level terms.

Figure 4

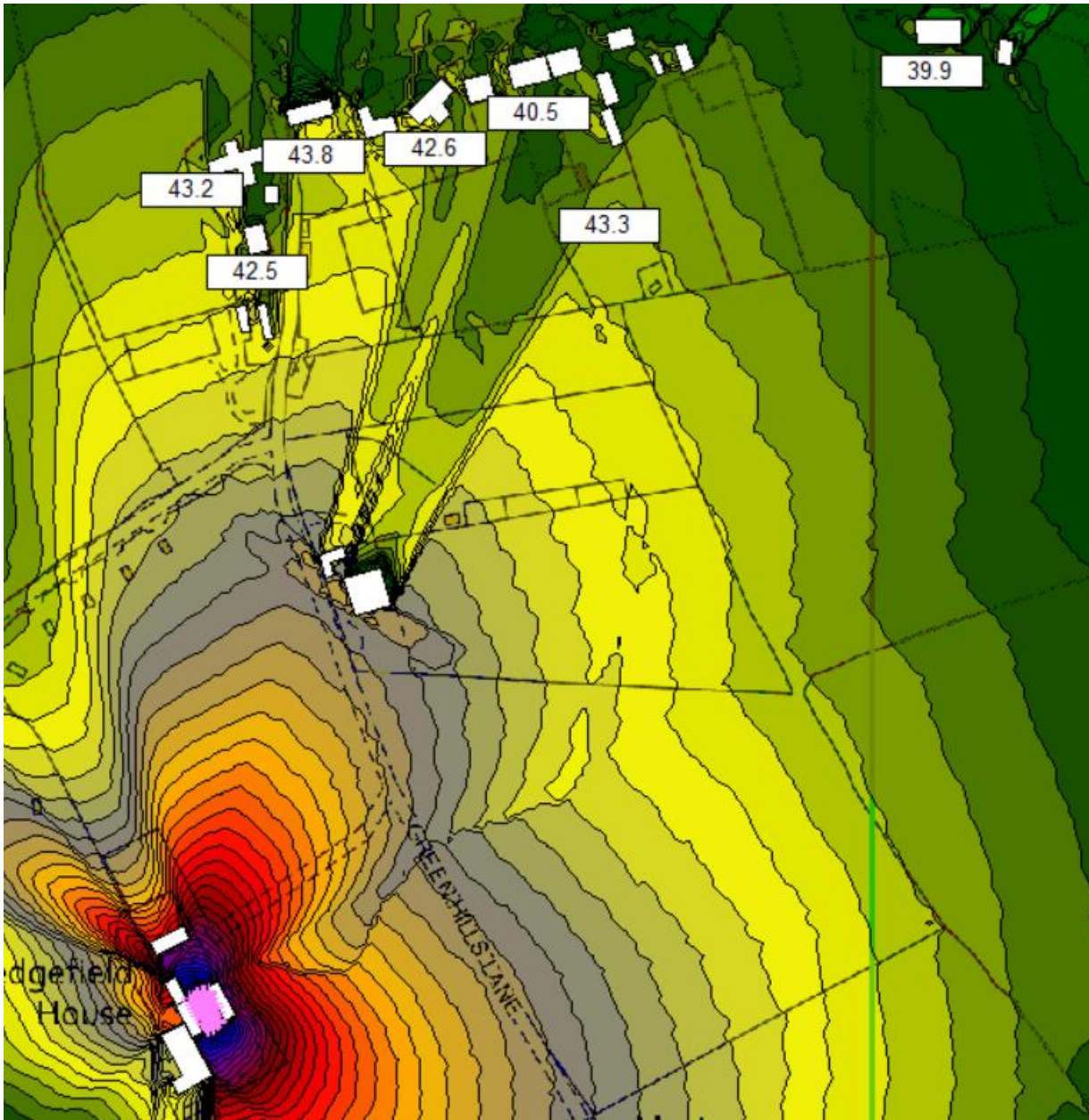


The above demonstrates that the Council should not accept the output of a model to be correct without consideration of what has been done in the calculation, how the model is constructed, and the author's qualifications. Software has the ability to obscure errors and omissions big and small, with the quality and accuracy of computer model outputs only being as good as the quality and accuracy of their inputs and the skill and competence of the user.

In addition, I understand that residents have heard shouting/cheering during particular events, perhaps cake-cutting, or photography, or the arrival of the bride and groom at the venue. None of these activities are considered in any way in the NJD Environmental Associates Ltd report. I also understand that speech noise made in the area of the glamping site is audible at some dwellings, and that this issue is already generating complaints.

In summary, patron noise is not correctly assessed by the applicant, and the noise levels emitted are underestimated. The resulting magnitude of impact upon local residents is therefore underestimated. It seems likely that the cheers, etc. that will occur during a wedding will be significantly louder than the above assumed values, as essentially an estimated 70% of 148no people will be using at least 'very loud' vocal effort. This works out to 104no people vocalising at once and is shown in my model plot below – plotted as before, with short vocal effort period levels being 43dB L_{Aeq} / 44dB L_{Aeq} at dwellings. This will be clearly audible and accords with what the local residents have reported experiencing.

Figure 5



Traffic noise

Traffic noise events are clearly not in reality limited to movements on the applicant's proposed new access road. For example, vehicle events will occur in the carpark, where car doors, boots, etc. will be closed, and reversing beepers or car horns may emit noise in the course of manoeuvring around the site. These elements are not considered in the report, and the acoustic modelling for the proposed road is concerning in numerous ways.

As stated in the NJD Environmental Associates Ltd report, Saturday 23/07/2022 is taken as the most appropriate event date to base the assessment on. This date had 137no guests and 52no "Total No. Vehicles" (understood to mean 'total number of vehicle movements'). The report states that the traffic survey was undertaken between 2000-0030 hours, but the comments below the traffic count table show that event-related traffic movements occurred beyond 0030 hours.

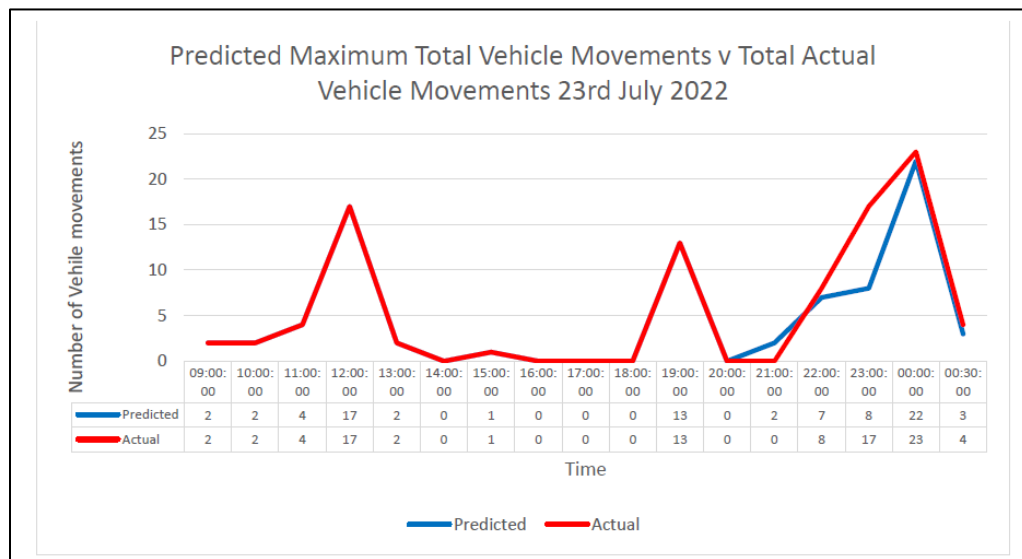
Table from Page 2 of applicant's traffic assessment report dated October 2022

4. Data					
	16 th July 2022	23 rd July 2022	13 th August 2022	20 th August 2022	Averages
No. Cars	8	16	4	13	10
No. Taxi Minibus	4	8	2	5	5
No. Taxi Car Type	12	20	8	22	16
No. Staff & Vans	6	8	7	8	7
Total No. Vehicles	30	52	21	48	38
No. of Guests	97	137	72	140	112

Table 1. Vehicle count from 20:00 until 00:30 along with the total number of event guests. These numbers are also shown as an average.

Notes from Page 3 of applicant's traffic assessment report dated October 2022

5. Notes from the Data Collection Process	
16 th July 2022	All taxis journeys between 22:50 and 00:31 2 x vans (band & bar staff) 2 x 4x4 vehicles and trailers
23 rd July 2022	Most taxi journeys 23:00 to 00:24 3 x vans
13 th August 2022	All taxi journeys 20:00 to 23:28 1 x van 1 4x4 vehicle and trailer
20 th August 2022	Most taxi journeys 21:30 to 00:18 4 taxis between 20:00 and 21:30 One late taxi at 00:40 3 x vans

Chart from Page 4 of applicant's traffic assessment report dated October 2022

It is unclear what is meant to be understood from the above chart. The values for 2000 hours, 2100 hours, 2200 hours, 2300 hours, and 0000 hours all presumably show the traffic count in that hour from the start time, but then 0030 hours is specifically designated when it would normally be taken to be contained within the 1-hour period between 0000-0100 hours. If the counts were made according to half-hour periods, then half of them are not presented. If the denoted hours are period end times, then the period ending 0100 hours is missing. Given these unexplained discrepancies, it is not evident to me that it is safe to assume 27 no movements in the last hour.

It appears that the NJD Environmental Associates Ltd computer model implements a normal CRTN type calculation, treating the proposed new access road as a normal highway. This is not accepted as being correct or reasonable. The access road will not be a public highway, nor will it be constructed as one. It is likely that additional noise sources will be created here as a result of the surface material of the road, the uneven nature of it, the intermittency of vehicles, the passing places being used, etc. This makes it clearly not a public highway, yet it appears that it is being modelled as one. Again, there is no source data for traffic flowing to and from a wedding at the venue, and the NJD Environmental Associates Ltd report relies solely on modelling without consideration of whether this access road has the characteristics of a normal highway – which clearly it does not. Stopping and starting, passing place use, vehicles clattering and banging, tyres on stones, etc. clearly are possible here, but are not allowed for in the applicant's calculation method.

CRTN modelling is stated to generate 31dB L_{Aeq} at the nearest dwelling. This is likely to underestimate the actual noise levels experienced at the dwellings. The existing noise levels at what is labelled as ESR5 in NJD Environmental Associates Ltd's report are unknown to its author, as they have not measured at that location. The existing noise levels are actually 31dB L_{Aeq} at night. The increase in noise level in the hour containing vehicle movement will therefore be 3dB, rather than the 1.5dB stated in the report. Following the logic of the report, even using the CRTN modelled values but with a correct ambient level, the impact would be moderate – not minor, as stated. The 35dB L_{Aeq} assumed by the report's author is taken from a different location, and I suspect it includes noise from the dawn chorus (which will not be occurring at 0000 hours) – although as stated at length, this is not known to me since the data is not correctly presented.

Background noise surveys

The NJD Environmental Associates Ltd report sets out some information relating to background noise surveys. The information is missing many key required pieces of information.

The previous NJD Environmental Associates Ltd report versions I have reviewed did not mention that part of the background survey contained wedding event trading noise. I believe the author had not made the connection between the dates and did not realise that the background survey was flawed. The March 2023 report version now contains an attempt to excuse that error, essentially saying that the event did not change the noise climate. The report's author is in no position to make this statement, as they do not know how the data would have looked if the event had not been occurring on that day.

The report does not state the time period for each measurement, and does not present the measurements made. This makes the report significantly incomplete.

ML1 is the first measurement location, and measurements are described as being undertaken between 1300 hours on 12/08/2022 and 2300 hours on 14/08/2022. ML2 is the second measurement location, with measurement times stated as being the same. It would seem unlikely that measurements were stopped and the equipment retrieved at 2300 hours on the Sunday night, and it would be more typical to collect equipment on the Monday. It is likely that data was in fact collected on Sunday night, but that it has been omitted from the report.

Table 3 and Table 4 of the report set out a summary of the data collected, but incorrectly. For example, Table 3 for ML1 on Friday 12/08/2022 is declared as having 44dB L_{Aeq} and 30dB L_{A90} between 0700-2300 hours in the daytime, when in reality the measurement was not started until 1300 hours. Table 4 for ML2 contains the same misrepresentation. Saturday 13/08/2022 contains trading noise from a small wedding event, and so is not a background noise survey day at all. This version of the report states at Paragraph 4.3.2 that the wedding event did occur on this date – and this version of the report follows my original review letter ref. 03729-590101 pointing this out. It is not appropriate to assume that the wedding did not affect noise levels; clearly it is possible that noise levels would have been lower in the absence of the event.

The report states that full details of measurements are provided in its Appendix 1, whereas in reality this is not the case. The individual measurements are not displayed in Appendix 1. The measurement start times and stop times are misstated in Appendix 1. There is no means for the reader to know that the data collected is correct, nor to see how the data varies over time.

Other issues

A previous NJD Environmental Associates Ltd report version used Insul software to estimate the sound insulation performance of each building element of the wedding venue proposal. These values were then used in their CadnaA software acoustic model, which estimates noise egress from the site. The calculated Insul values did not take into account real-world issues such as holes, seals, junctions, etc. within the construction, and will overestimate performance. In addition, there were obvious issues in the calculation; for example, the 50mm solid steel fire door described is clearly impossible and simply cannot exist onsite. The 43dB attenuation assumed in the 63Hz octave band was an order of magnitude away from reality; other values are also inaccurate, but that was the most significant and obvious error.

This version of the report uses measurements of sound insulation onsite initially, and then Insul-calculated values for the proposed works. There are no measurements of trading or trading noise egress, nor indeed of patron noise or noise from vehicles; there is an attempt to measure the sound insulation performance of the main building elements, albeit incorrectly.

It should be noted that the last version of the report I commented on stated the following at Paragraph 5.1.2:

5.1.2 The Apparent Sound Reduction Index ($D_{tr,2m,n}$) of each façade and roof has been determined in accordance with the requirements of BS EN ISO-3 (2016) 'Acoustics – Field measurements of sound insulation in buildings and of building elements: Façade sound insulation'.

The new version of Paragraph 5.1.2 in report ref. NJD21-0208-004R dated March 2023 states:

5.1.2 The Standardized Difference Level ($D_{ls,2m,nT}$) of each elevation has been determined in accordance with the requirements of BS EN ISO 16283-3 (2016) 'Acoustics – Field measurements of sound insulation in buildings and of building elements: Façade sound insulation'.

These changes followed these statements in my original review letter ref. 03729-590101:

- a) *The use of the phrase 'Apparent Sound Reduction Index' is incorrect.*
- b) *The use of the term ' $D_{tr,2m,n}$ ' is incorrect.*
- c) *'ISO-3' does not exist; ISO 16283-3 is intended.*

This implies that the author of the NJD Environmental Associates Ltd report has read my letter, and that my comments were found to be correct. However, other issues highlighted by my original review letter remain unaddressed, and NJD Environmental Associates Ltd's March 2023 updated report additionally introduces new errors.

The March 2023 report makes reference to NPPF, NPSE, PPGN, and introduces the concepts of NOEL, LOAEL, and SOAEL, but gives no further mention or consideration of these aspects. The concept of the agent of change is not mentioned, whereas this is a key element here, and is a consideration of NPPF and PPGN.

The applicant's event management plan document has additional issues. There is some irony in the proposed glamping rules specifically forbidding music, loud talking, singing, or shouting between 2100-0800 hours so that the guests can have a restful, peaceful stay, while there is no rule proposed for protecting the nearby residents from disturbance by similar events.

The applicant's proposed event noise monitoring procedure and associated logsheet are unclear on various points. It is unclear whether measurements of sound levels are to be made – if so, with what equipment,

calibration, and training? If subjective listening is proposed, it is unclear why the rows of the logsheet are titled "Reading 1", etc. I believe the intention is that if the person undertaking this monitoring can hear the lyrics of a song, then the music should be turned down; and that if the person undertaking this monitoring can hear the bass, then the bass should be turned down.

The proposed policy therefore seems to be that singing and bass should not be heard at the dwellings. This is not stated anywhere else in the bundle. The logsheet implies that 5no locations will be used to assess music noise emanating from the venue during events, and that the noise climate at all 5no locations will be experienced and graded within a 30-minute period. I believe it is unrealistic, if not impossible, to travel between these 5no locations on foot and spend any time listening for music at each, within a 30-minute period. Surely, spending at least a 3-minute period at each location is required, and counting the walking time between locations I believe it is impossible to complete the monitoring procedure as described. If a car or quad bike is intended to be used instead of travelling on foot, then that noise source is not considered or presented in the applicant's noise assessment. How often the noise will be monitored throughout an event is also unstated. The logsheet implies that monitoring 4-5no times per event is intended. Starting at 1900 hours and considering it is possible that monitoring at all 5no locations takes 1no hour in total to complete, will the monitoring sessions start at 1900 hours, 2015 hours, 2130 hours, 2245 hours, and 0000 hours? This procedure should be formalised. It will take a member of staff the full evening to reasonably monitor an event in the manner described.

Logsheet from Appendix 7 of applicant's event management plan document dated March 2023

Noise Monitoring Sheet V4									
Sedgewell Barn									
Date								Planner Responsible	
Event								Name of Clients	
Time	Location (map on other side)						Action Taken	Reading taken by	
	Church View Nursery DL7 9JX Back Gate (ESR1)	Alpaca View Entrance DL7 9PT (Close to ESR 4)	Mog Cabins DL7 9JX (extra point)	Top of Jervaulx Road Morton on Swale DL7 9RA (ESR 3)	Bottoms Field (Close as possible to ESR 2)				
Example	19: 00 - 19:30	Bass heard	Couldn't be heard	Just audible	No reading	Bass heard	Turn bass down	Stuart	
Reading 1									
Reading 2									
Reading 3									
Reading 4									
Go to the locations and listen. Can you hear the music?		No - record your findings.				Amplified Music	Times Start/Finnish	Times Start/Finnish	Times Start/Finnish
		Yes - Can you hear the words?				Reception Music			
		Yes - Can you hear the bass?		Yes - turn the volume down and record your findings.		Disco			
		Yes - turn the bass down and record your findings.				Band			

Conclusion

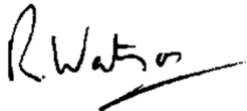
It is not evident to me that the noise impact this operation will bring is acceptable. Indeed, some elements of the applicant's noise assessment are demonstrably incorrect, and essential information is also missing. The resulting uncertainty in their predictions is significant, and the magnitude of adverse impact upon residents is underestimated.

The primary element missing is real-world data measured at the venue. The assessment relies on computer models that are not verified, and the March 2023 NJD Environmental Associates Ltd report version unfortunately falls into the category described by Ed Clarke MIOA in the March/April 2023 edition of the IOA bulletin.

In the pursuit of informed decision-making outcomes, the output of an acoustic model should not be assumed to be correct without consideration of what has been done in the calculation, how the model is constructed, and the qualifications of its author.

Please do not hesitate to email me if you require anything further.

Yours faithfully



Richard Watson BEng(Hons) CEng MIOA MAES MIEEE
Senior Consultant

APPENDIX 1 – MARCH/APRIL 2023 NOISE SURVEY

As it seems that no correct ambient and background noise level measurements had been made near the affected dwellings, Blue Tree Acoustics undertook a 1-week unattended noise survey at Location 1 and Location 2. Survey details, measured noise level data, and results are presented below.

Aerial view image and approximate measurement locations



Measurement location photographs

Location 1



Location 2



Data measurement and results

Contiguous 15-minute measurements were made at Location 1 and Location 2 between Thursday 30/03/2023 and Thursday 06/04/2023.

The instruments used during the survey were 2no Rion NL-52 Type 1/Class 1 integrating sound level meters. Each meter was within a valid period of laboratory calibration. Calibration checks were carried out both before and after the measurements, with no variance observed. A proprietary environmental windshield was fitted to each microphone. The measurements were made with each microphone mounted on a tripod at approximately 1.5m from local ground level.

Chart 2: Location 1 – Full primary dataset (including time periods with poor weather conditions)

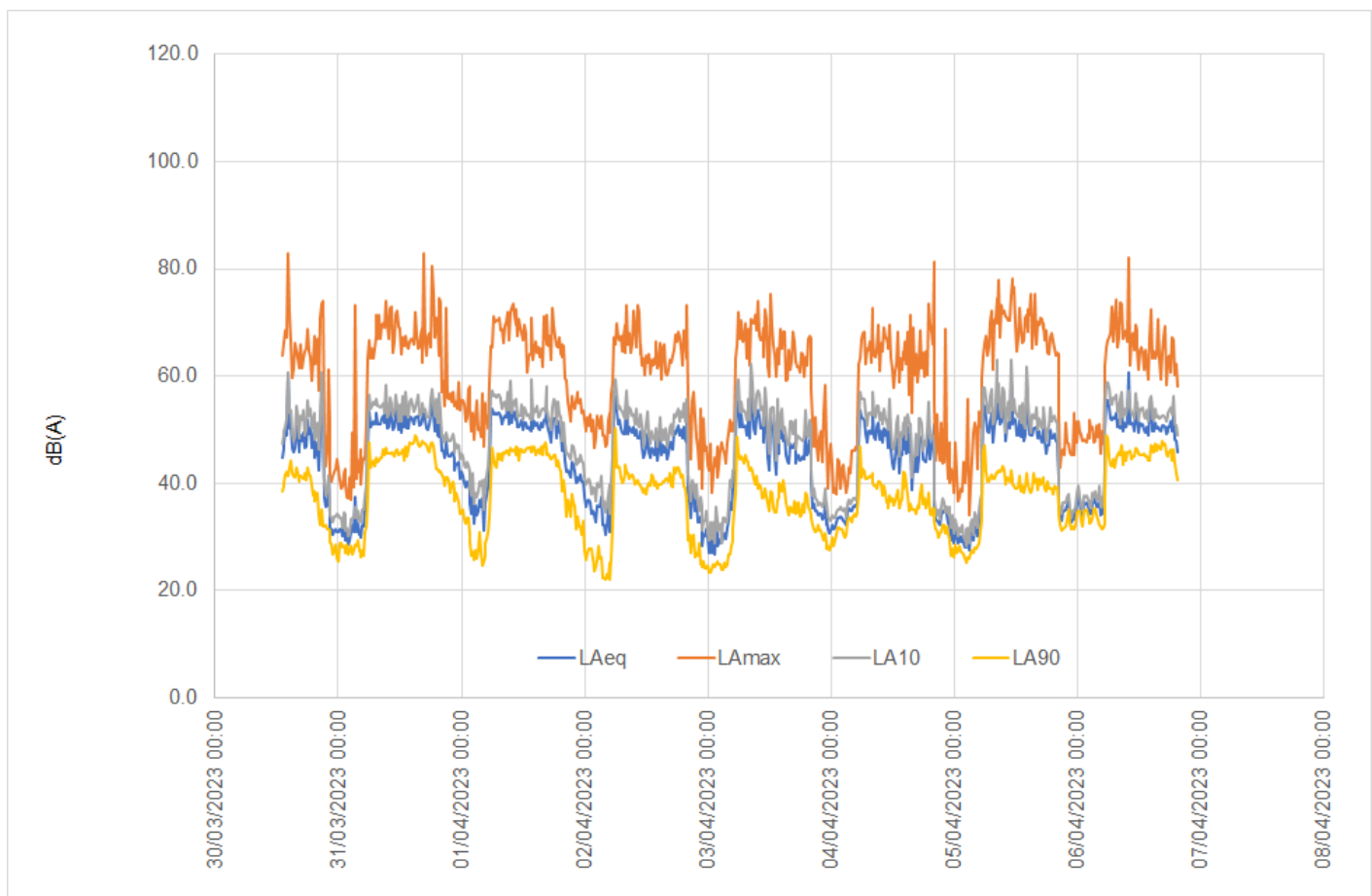


Chart 3: Location 2 – Full primary dataset (including time periods with poor weather conditions)

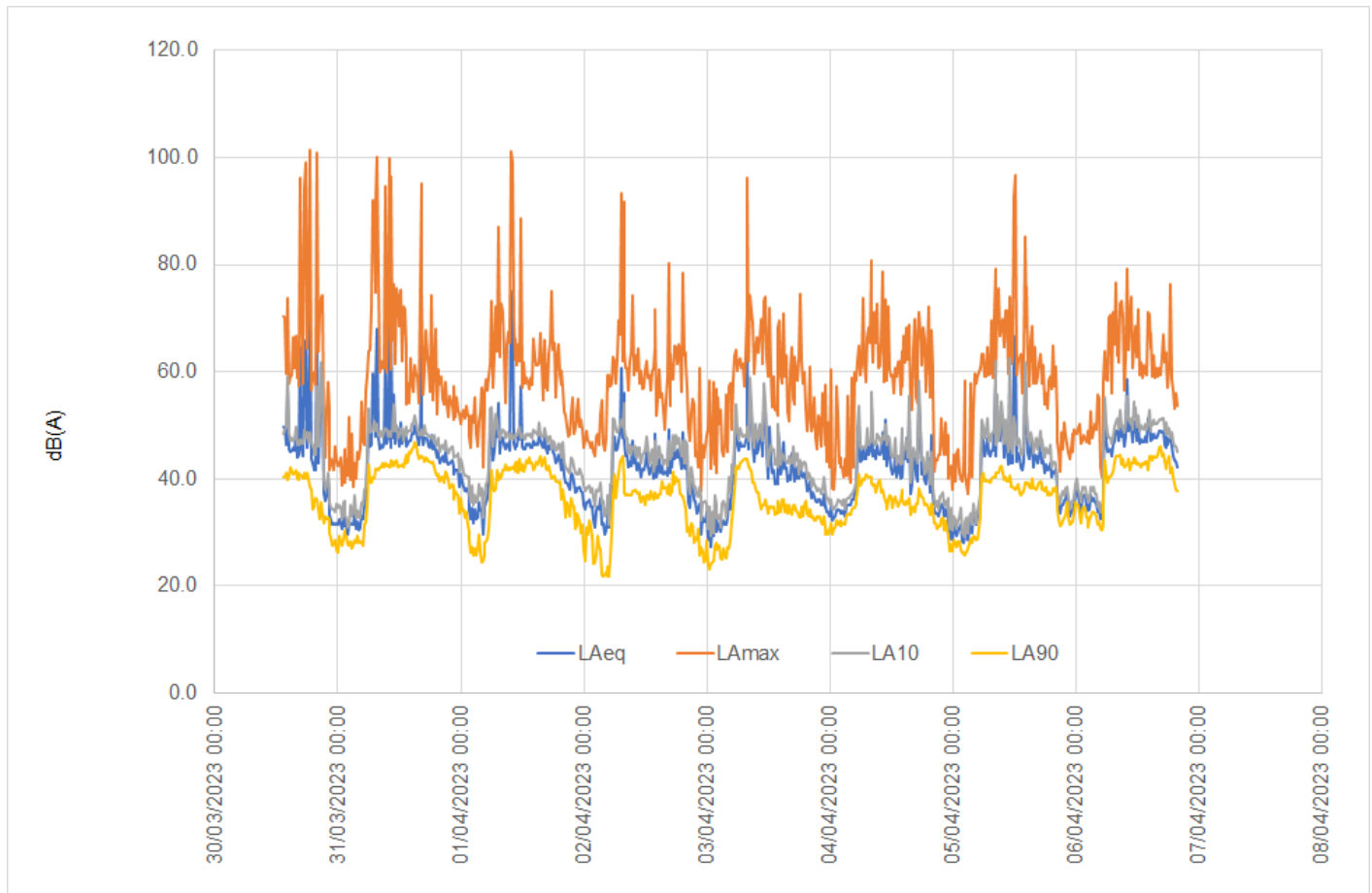


Chart 4: Location 1 and Location 2 – Dataset excluding time periods with poor weather conditions – Evenings between 2000-2300 hours (dB LAeq)

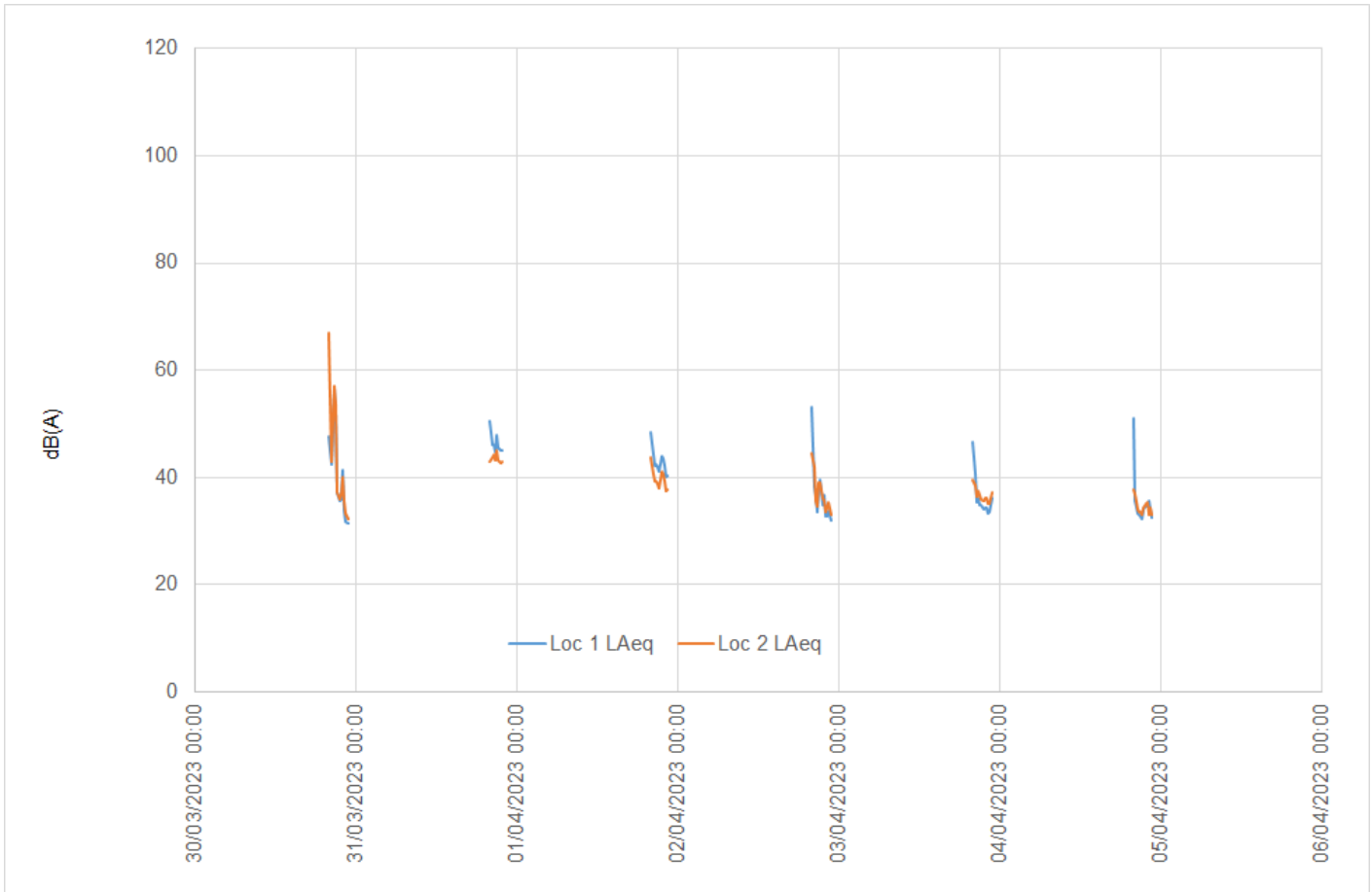


Chart 5: Location 1 and Location 2 – Dataset excluding time periods with poor weather conditions – Evenings between 2000-2300 hours (dB LA90)

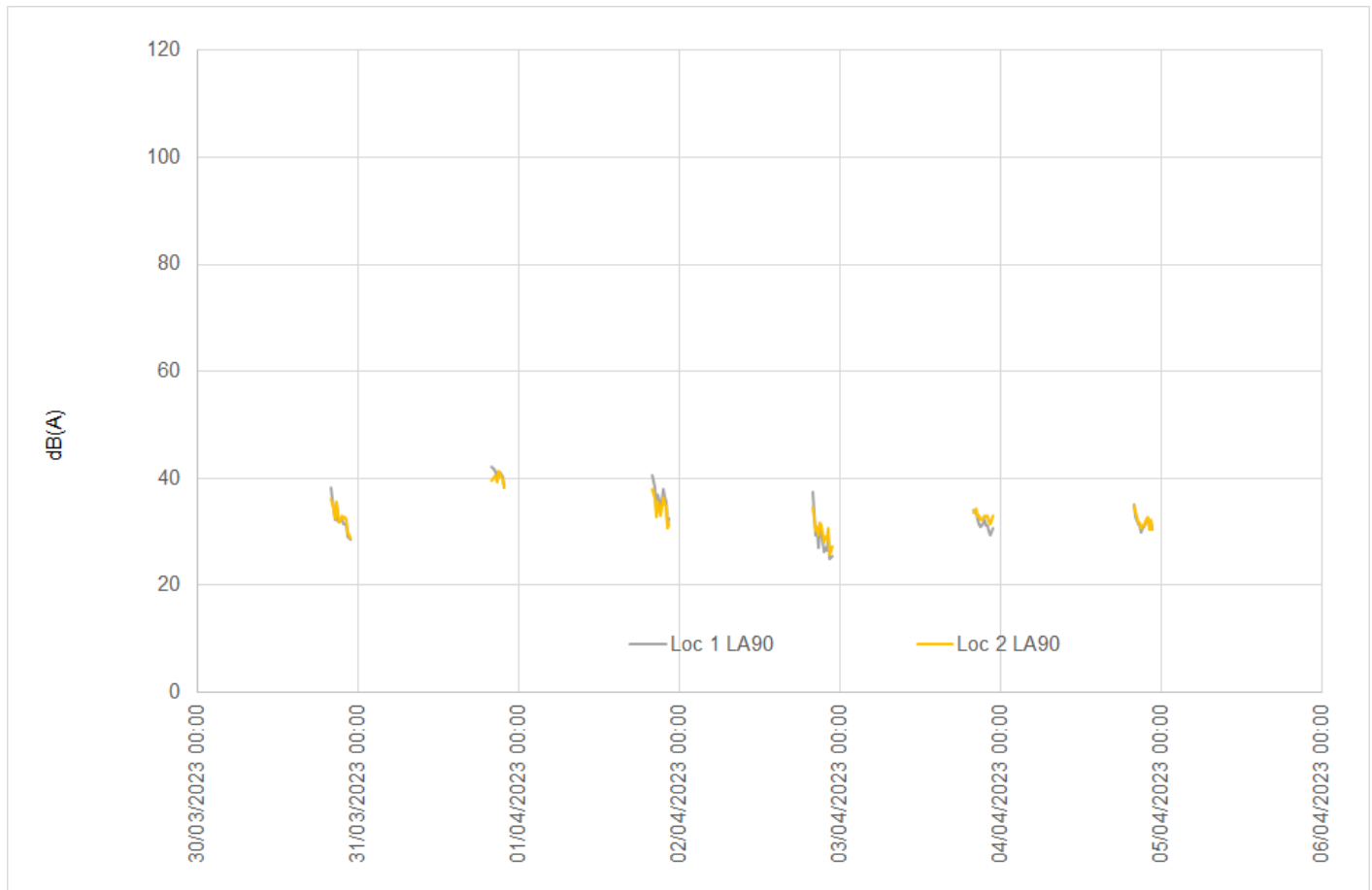


Chart 6: Location 1 and Location 2 – Dataset excluding time periods with poor weather conditions – Nights between 2300-0100 hours (dB LAeq)

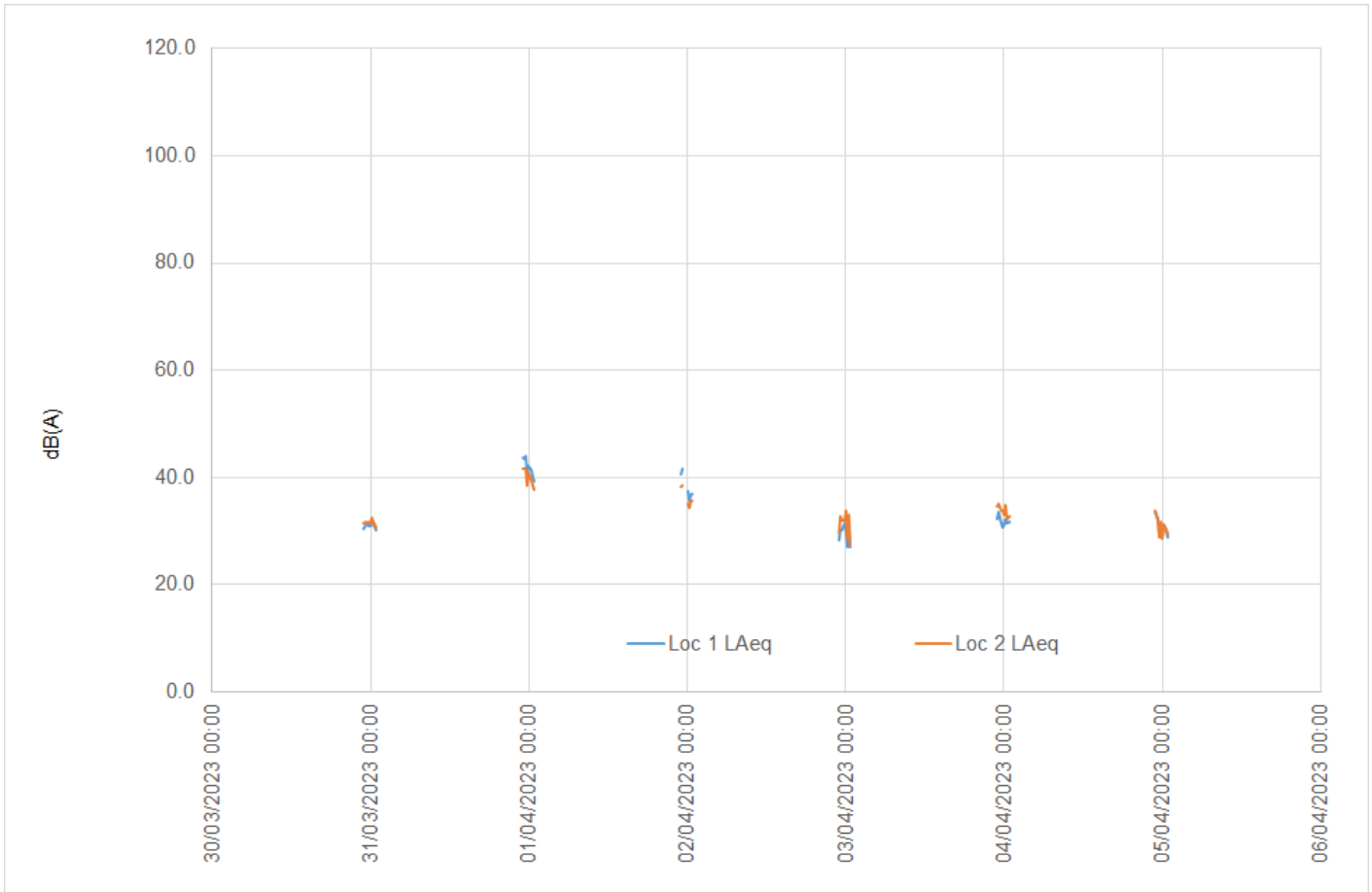


Chart 7: Location 1 and Location 2 – Dataset excluding time periods with poor weather conditions – Nights between 2300-0100 hours (dB LA90)

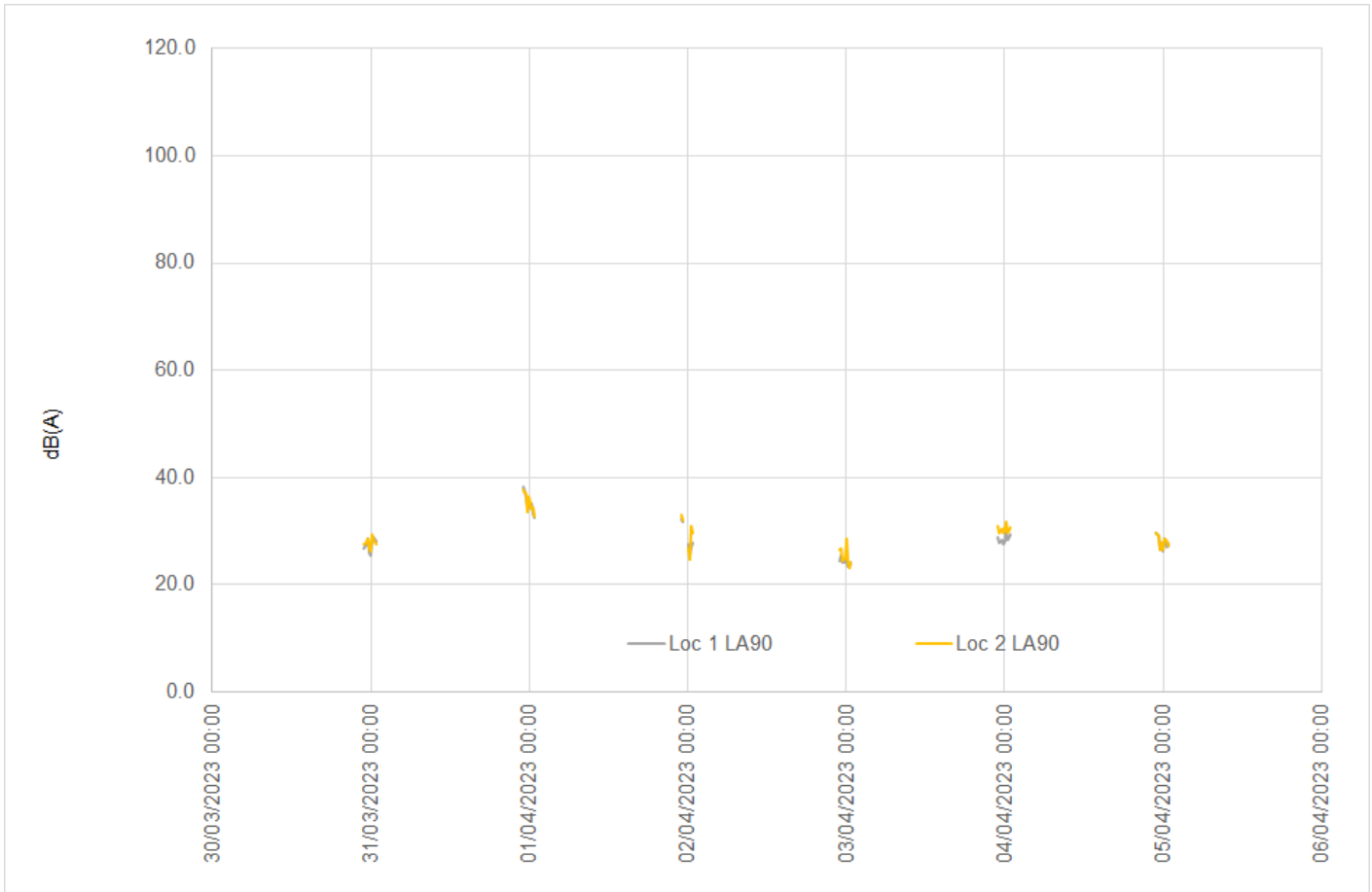


Table 1: Processed dataset for evenings (between 2000-2300 hours)

Evening	Average Location 1 dB LAeq	Average Location 2 dB LAeq	Representative Location 1 dB LA90	Representative Location 2 dB LA90
Thursday 30/03/2023	48	57	32	33
Friday 31/03/2023	46	43	41	40
Saturday 01/04/2023	44	40	36	35
Sunday 02/04/2023	43	38	25	29
Monday 03/04/2023	39	37	31	33
Tuesday 04/04/2023	41	35	31	32
Wednesday 05/04/2023	N/A, weather affected all data	N/A, weather affected all data	N/A, weather affected all data	N/A, weather affected all data

Table 2: Processed dataset for nights (between 2300-0100 hours)

Night	Average Location 1 dB LAeq	Average Location 2 dB LAeq	Representative Location 1 dB LA90	Representative Location 2 dB LA90
Thursday 30/03/2023	31	32	29	28
Friday 31/03/2023	42	40	34	34
Saturday 01/04/2023	39	37	28	25
Sunday 02/04/2023	30	32	24	24
Monday 03/04/2023	32	34	28	30
Tuesday 04/04/2023	31	31	27	26
Wednesday 05/04/2023	N/A, weather affected all data	N/A, weather affected all data	N/A, weather affected all data	N/A, weather affected all data

As can be seen above, noise levels fluctuate, but it is reasonable – given the unlimited number of potential events, which could occur on any day and any night – to take the values in the green-shaded cells above as the baseline for the noise impact assessment. Certainly, it will be at these times that residents are most disturbed by the proposed events. It is also possible that some days and nights will have lower baseline noise levels.

Table 3: Broadband data summary

Period	Location 1 dB L_{Aeq}	Location 2 dB L_{Aeq}	Representative Location 1 dB L_{A90}	Representative Location 2 dB L_{A90}
Evening	39	35	25	29
Night	30	31	24	24

It could be argued that even these values do not sufficiently reflect the worst-case situation. For example, during the Monday evening at Location 1 (taken to be 39dB L_{Aeq}), noise levels dropped as low as 33dB L_{Aeq} for periods. Similarly, Tuesday evening at Location 2 (taken to be 35dB L_{Aeq}) contains periods as low as 33dB L_{Aeq}.

The following charts show low frequency background noise level data for each measurement location.

Chart 8: Location 1 – Spectral dB L₉₀ at octave bands 40-160Hz – Sunday 02/04/2023

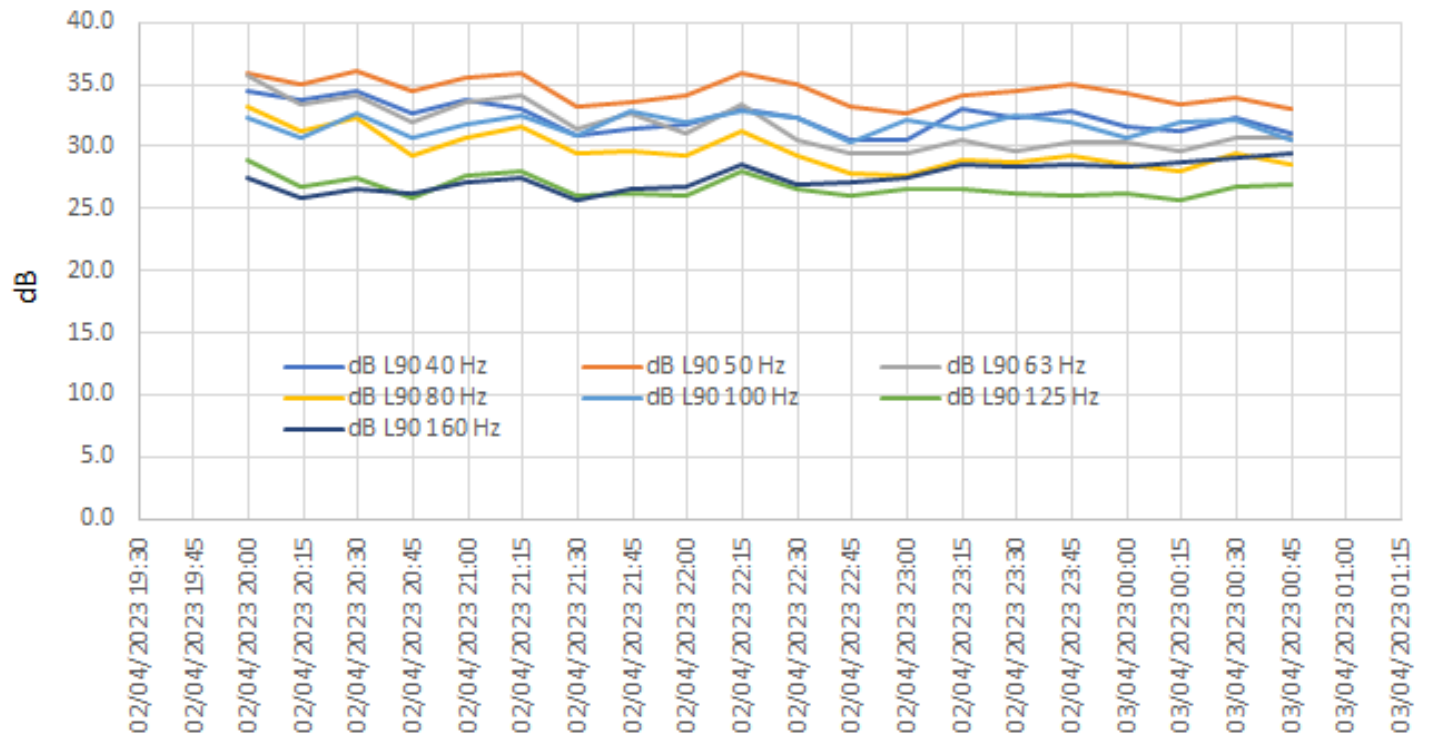
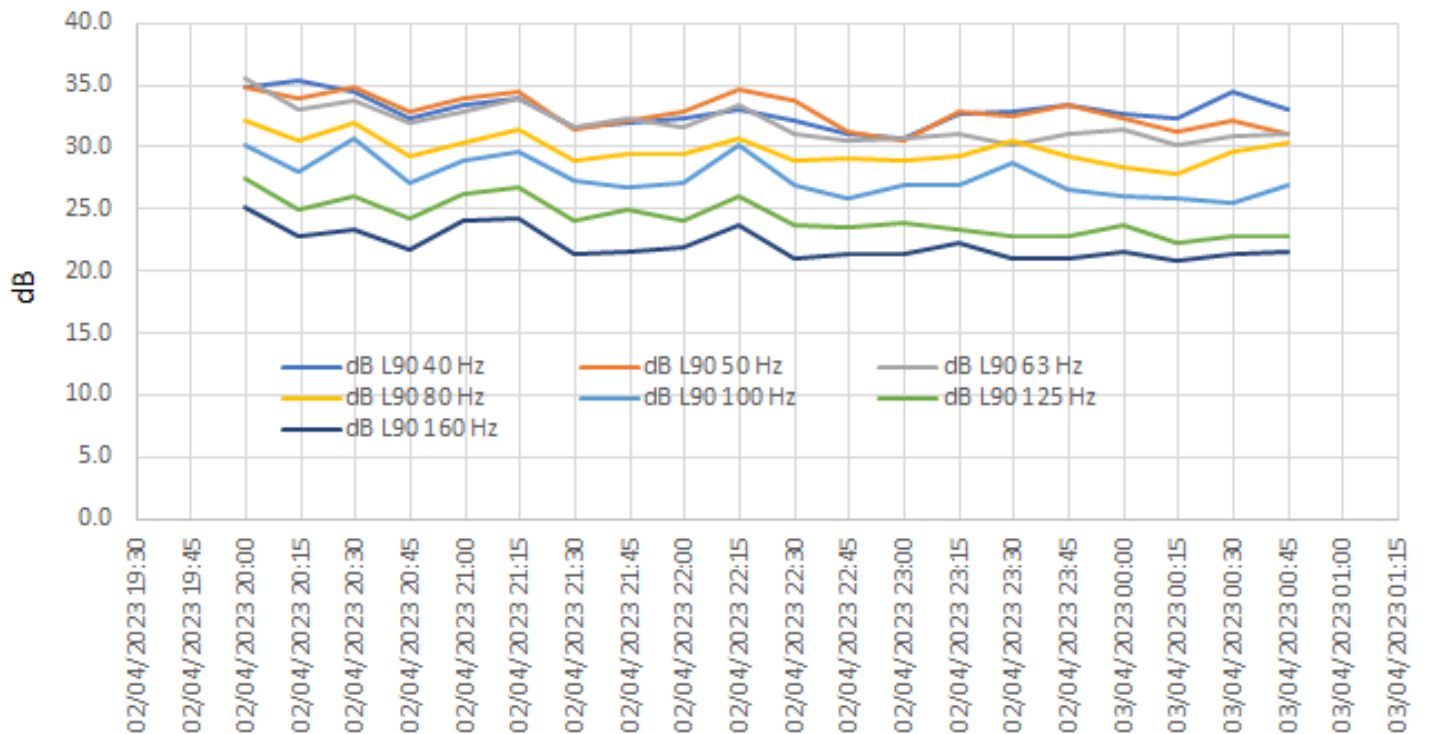
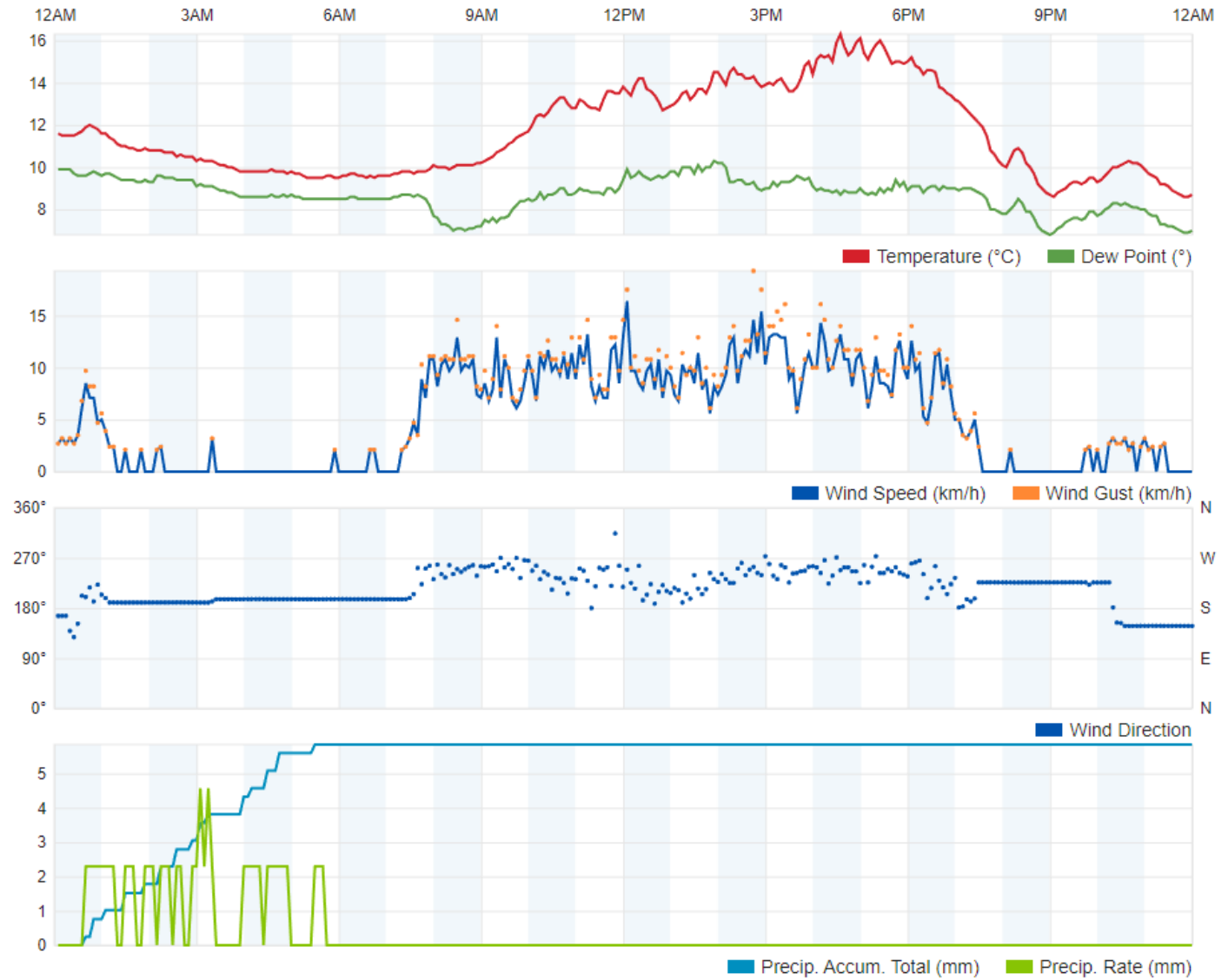


Chart 9: Location 2 – Spectral dB L₉₀ at octave bands 40-160Hz – Sunday 02/04/2023

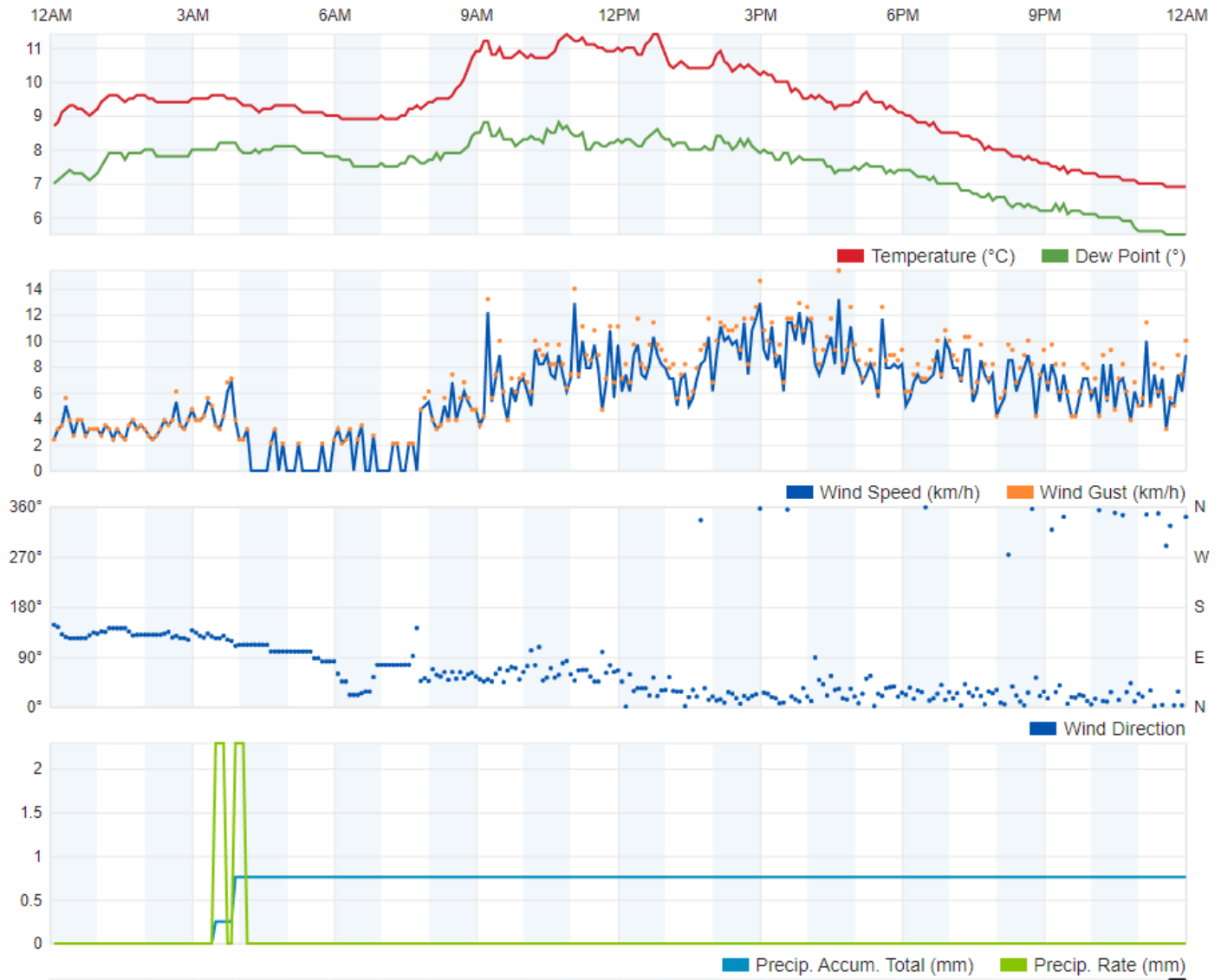


Archival weather data for noise survey period

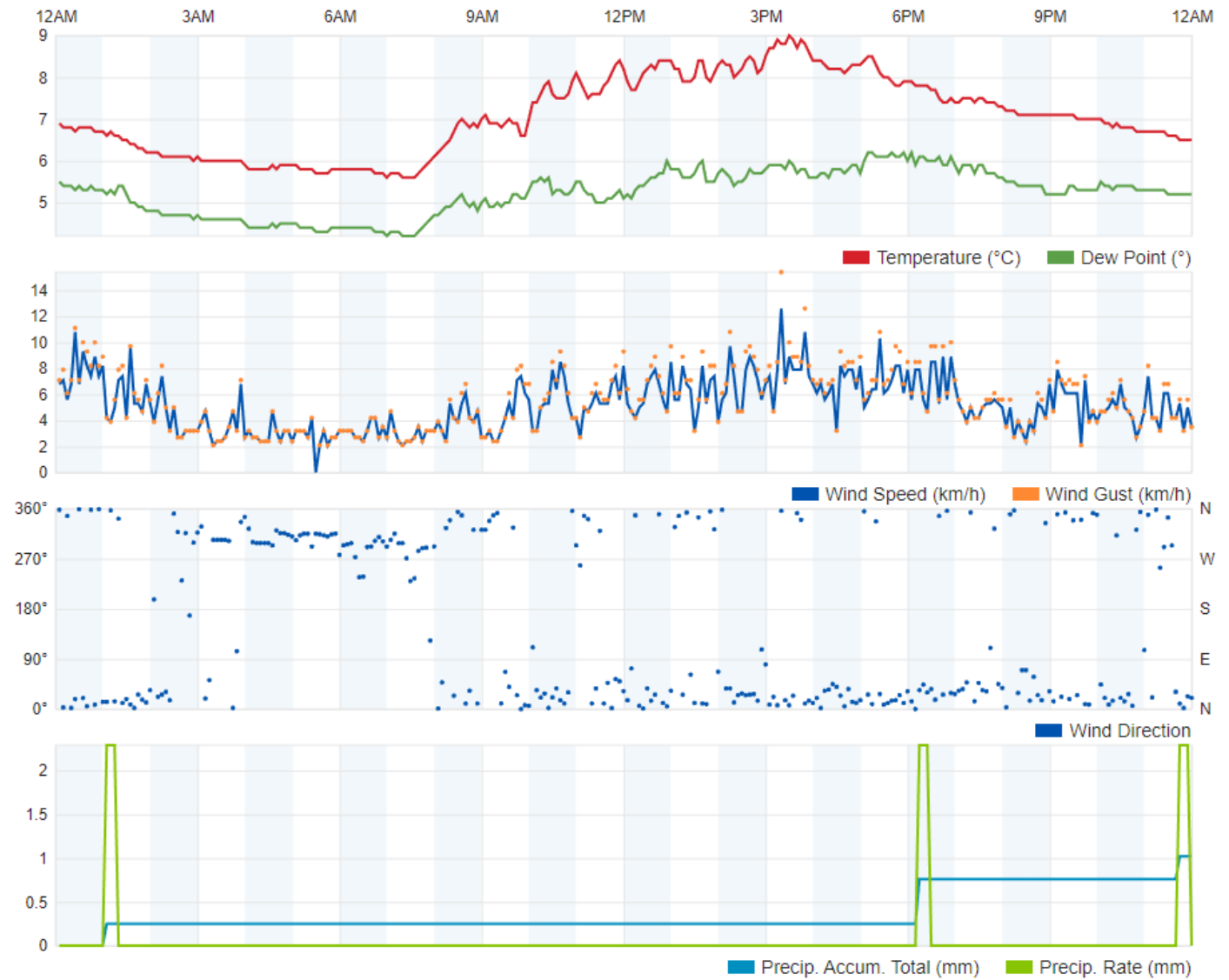
Thursday 30/03/2023



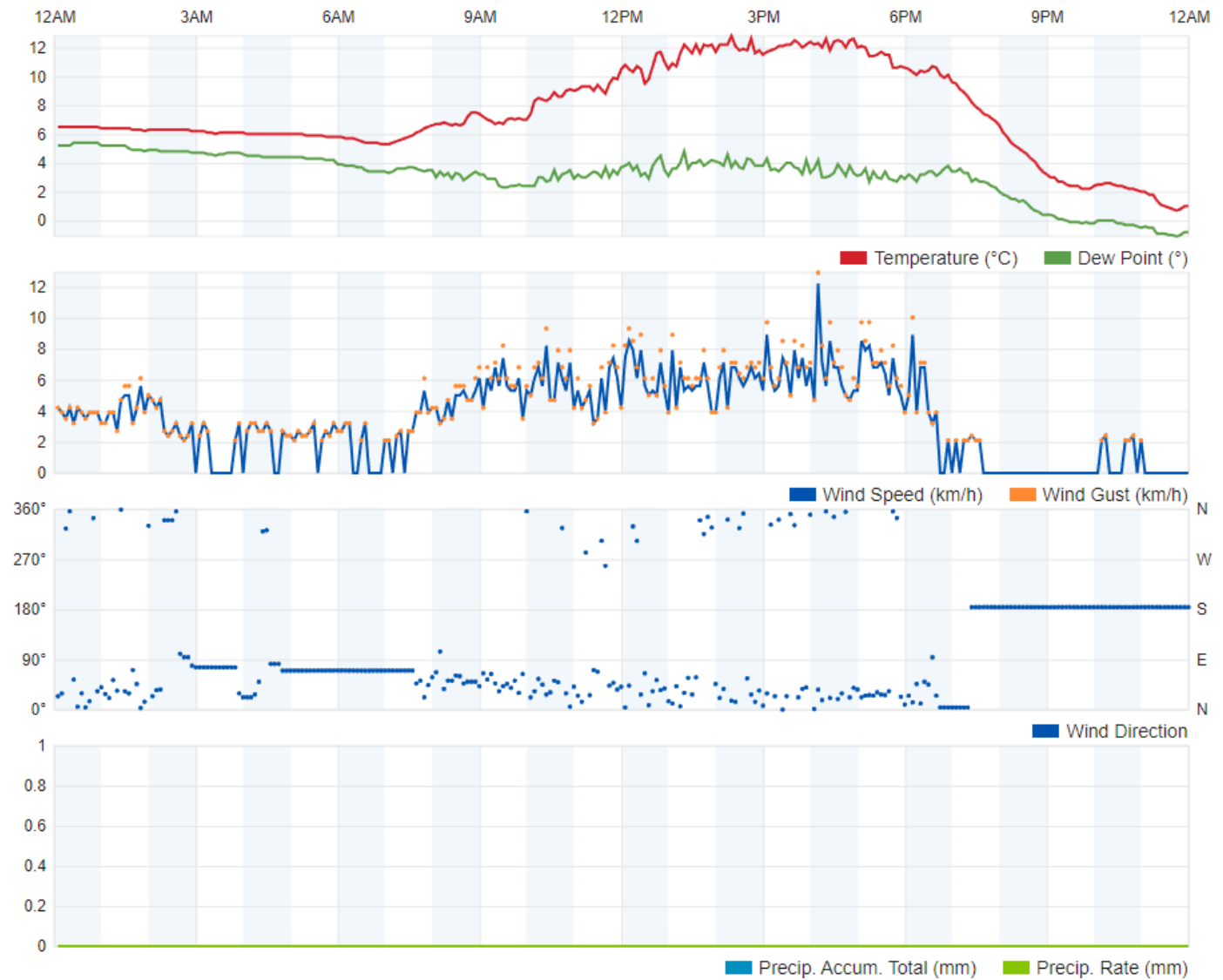
Friday 31/03/2023



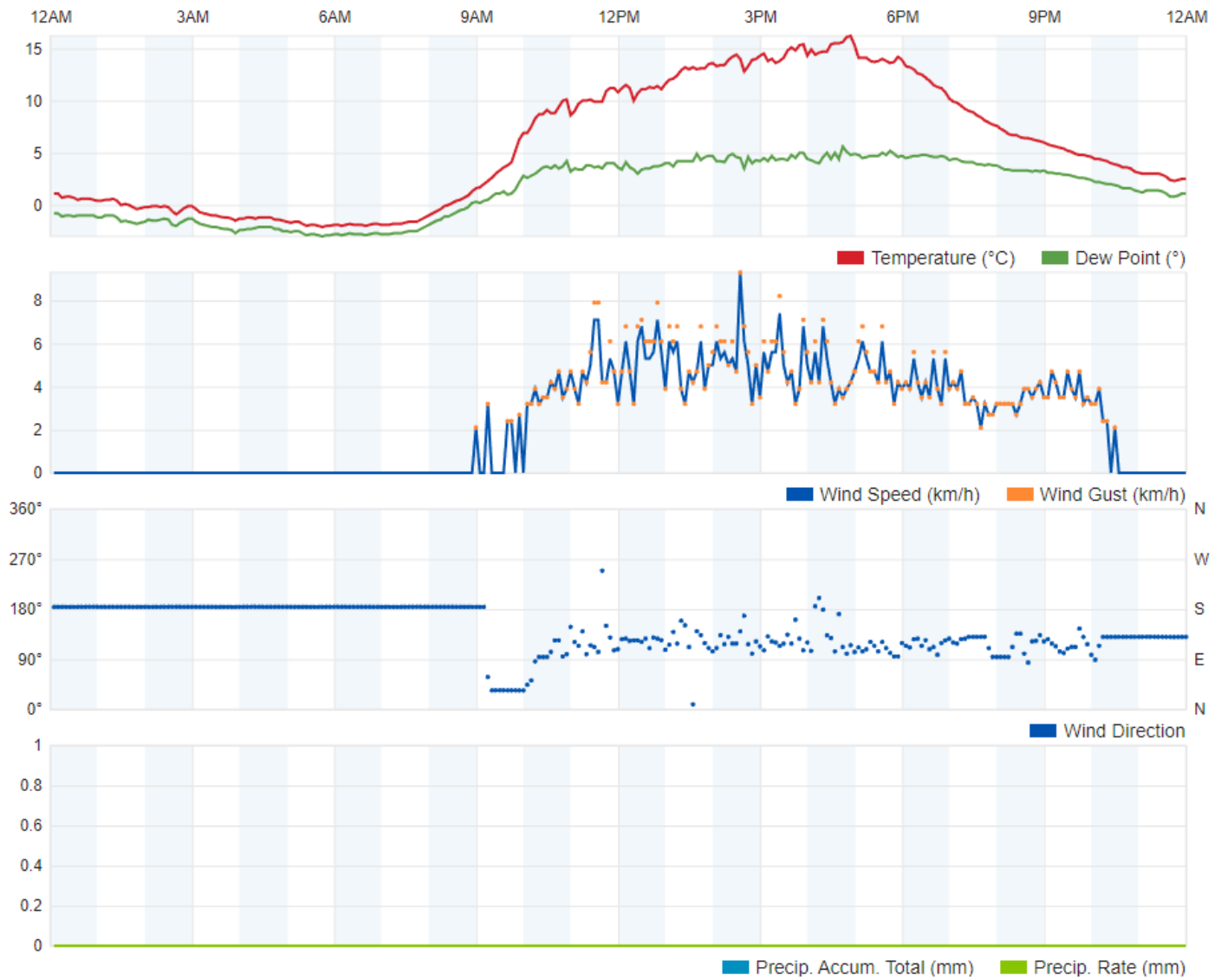
Saturday 01/04/2023



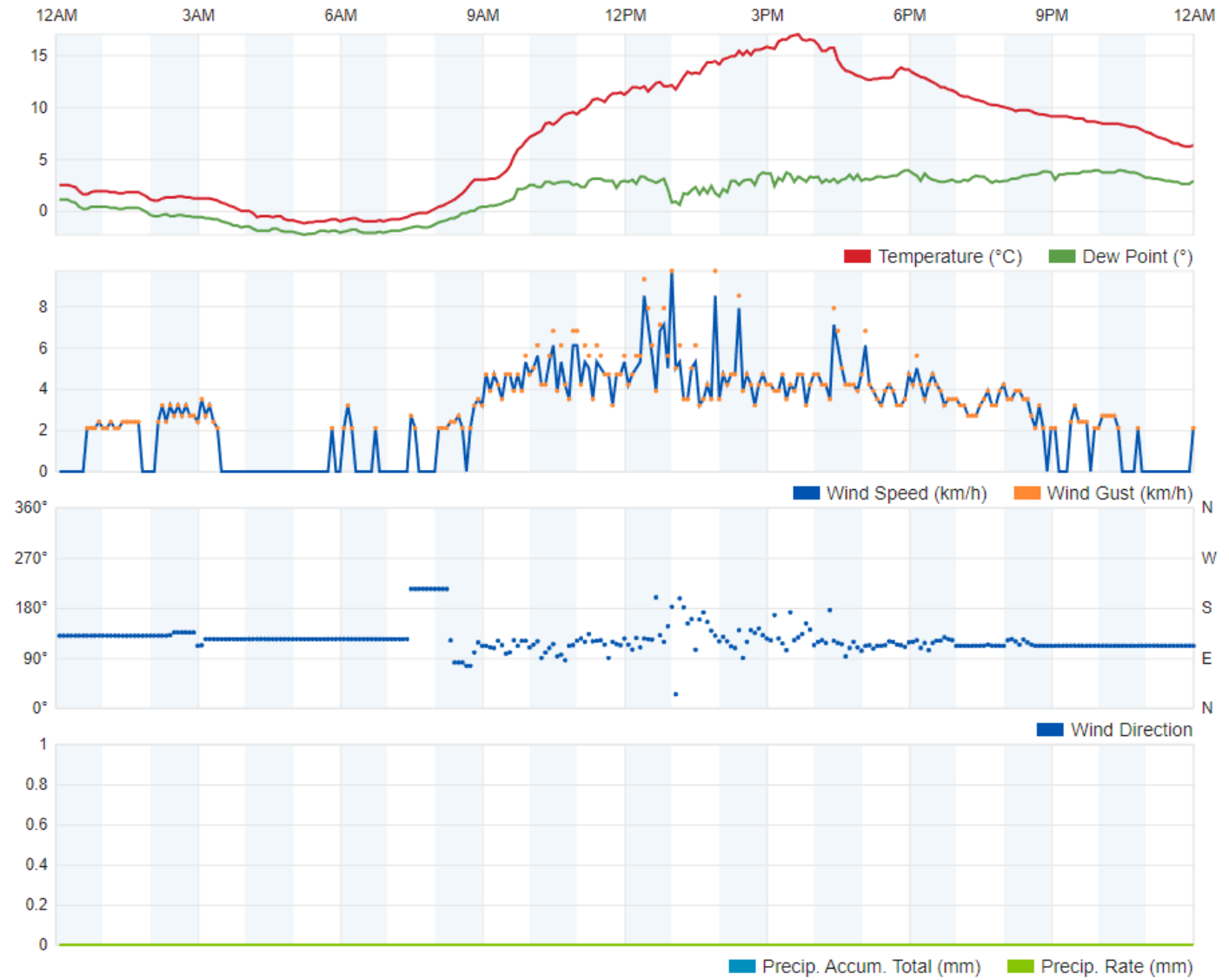
Sunday 02/04/2023



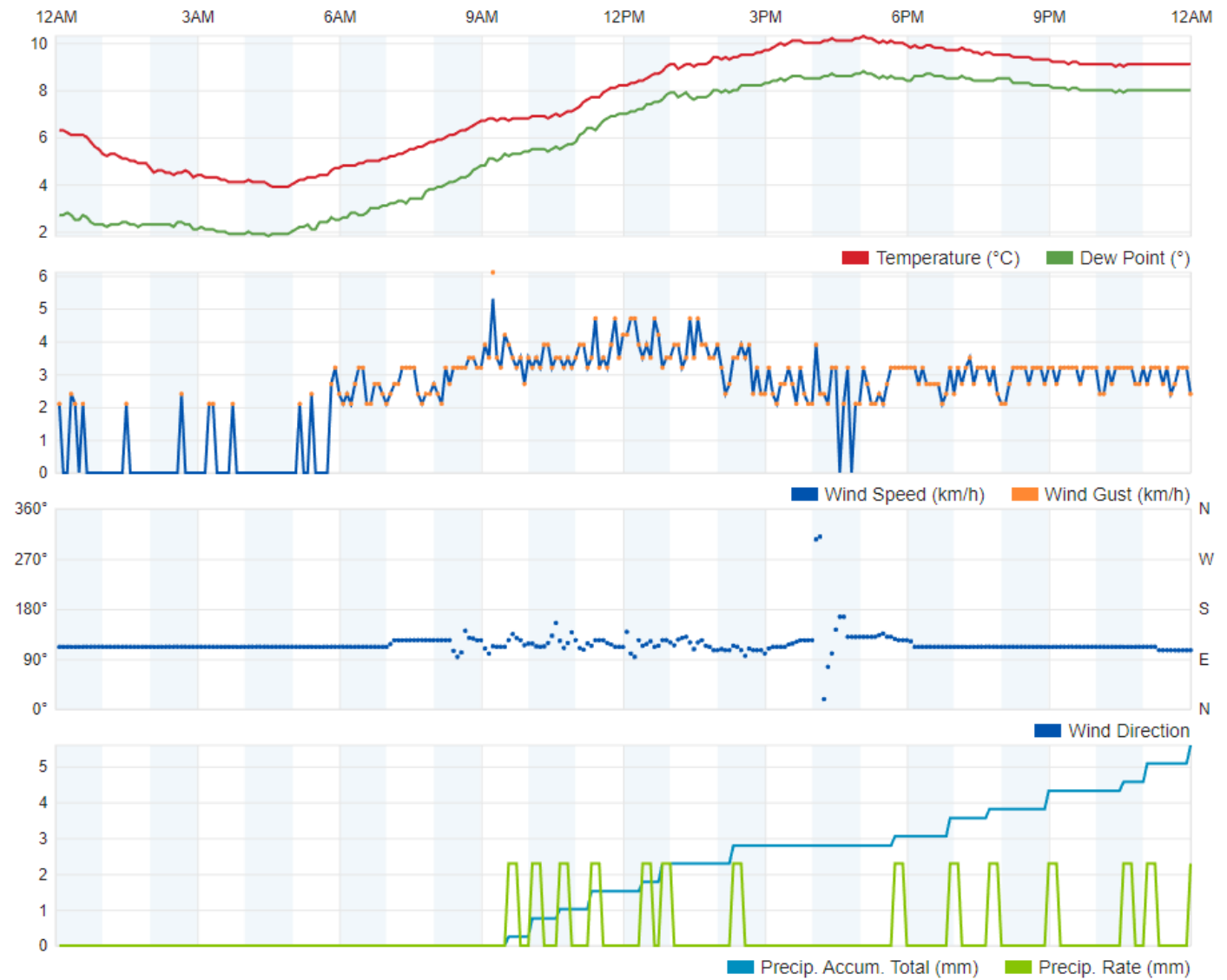
Monday 03/04/2023



Tuesday 04/04/2023



Wednesday 05/04/2023



Thursday 06/04/2023

