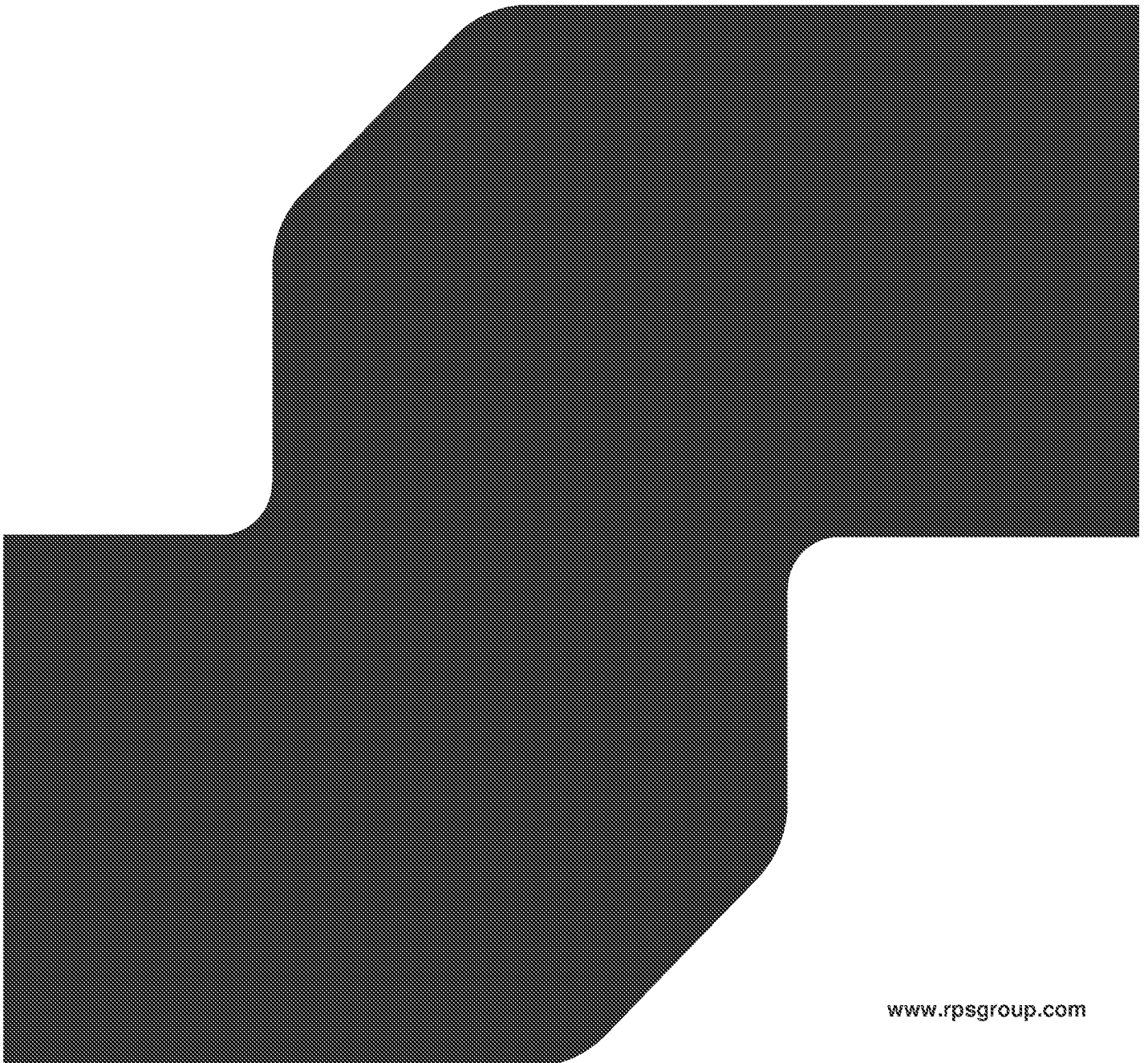


Baseline Noise Survey Report

Proposed Development at Bognor Regis Golf Club

For Hallam Land Management



PROPOSED DEVELOPMENT AT BOGNOR REGIS GOLF CLUB

Quality Management

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Contents

1	Introduction	1
2	Description of site and proposals	2
	Site Description	2
3	Baseline Survey.....	4
	Establishing Baseline Conditions	4
	Noise Measurement Results	8
4	Summary and Conclusions	10

Tables, Figures and Appendices

Tables

Table 3.1: Baseline Sound Survey Instrumentation

Table 3.2: Weather Conditions

Table 3.3: Measurement Times and Durations

Table 3.4: Summary of baseline noise survey

Figures

Figure 1: Noise Monitoring Locations at Site A

Figure 2: Noise Monitoring Locations at Site B

Appendices

Appendix A: Baseline Survey Time Histories

1 Introduction

- 1.1 The Acoustics Team of RPS Environment (RPS) has been appointed by Hallam Land Management to carry out baseline noise monitoring to accompany a planning application for a proposed residential development at Bognor Regis Golf Club consisting of circa 500 dwellings, and the relocation of the Golf Club to a site approximately 3.5 km to the east. The site is located within the administrative area of Arun District Council (ADC).
- 1.2 This report outlines the methodology and results of the baseline noise survey.
- 1.3 RPS is a member of the Association of Noise Consultants (ANC), the representative body for acoustics consultancies, having demonstrated the necessary professional and technical competence. The assessment has been undertaken with integrity, objectivity and honesty in accordance with the Code of Conduct of the Institute of Acoustics (IOA) and ethically, professionally and lawfully in accordance with the Code of Ethics of the ANC.
- 1.4 The technical content of this assessment has been provided by RPS personnel, the majority of whom are corporate (MIOA) or non-corporate, associate members (AMIOA) of the IOA (the UK's professional body for those working in acoustics, noise and vibration). This report has been peer reviewed within the RPS team to ensure that it is technically robust and meets the requirements of our Quality Management System (QMS).

2 Description of site and proposals

2.1 This section of the report briefly describes the existing site conditions and the proposed development. A more detailed description of the site and development proposals can be found in the Environmental Statement (ES) for the project.

Site Description

2.2 This report details two sites:

- a) The current Bognor Regis Golf Club, which is proposed to be the site of a residential development. This will be referred to as 'Site A' throughout this report; and
- b) The new location for the Bognor Regis Golf Club, which is currently open fields. This will be referred to as 'Site B' throughout this report.

2.3 Each of the two sites fall within the administrative area of ADC.

Site A

2.4 Site A (the site of the proposed development) is located at Bognor Regis Golf Club, Bognor Regis, West Sussex. The site is bordered by residential dwellings to the southeast; fields to the southwest; Lec Airfield, a railway line, and an industrial estate to the west; and the A259 to the north and northeast.

2.5 The sources of noise affecting the site varies depending on location but in the majority of locations the main source of noise is traffic, primarily from the A259. This is of a 'broadband' nature with some individual vehicle sounds. Other sources of noise audible across the site include railway noise (including the use of the train's horn during the daytime), wind noise in the trees, and noise from golfing activities (although this is quiet and only audible in close proximity to golfers).

2.6 Noise from the Lec Airfield was also occasionally audible when aircraft took off and landed, but this only occurred very occasionally (i.e., approximately twice a day) and based on inspection of the baseline noise data, did not occur at night.

2.7 Figure 1 shows the site boundary and the areas of site proposed for development.

Site B

2.8 Site B (the new location for the Golf Club) is located to the southwest of Baird's Business Park, Grevatt's Lane, Bognor Regis, BN17 5RE, West Sussex. The area currently consists of fields, bordering the A259 to the north, a further set of fields to the east, fields and Lane End Farm Caravan Site to the west, and a housing estate on Ancton Way to the south.

- 2.9 The sources of noise affecting the site mainly included a distant broadband traffic 'hum' to the north and west (from the A259 and surrounding roads) and wind noise in the trees.
- 2.10 Figure 2 shows the site boundary and locations of noise monitoring equipment.

3 Baseline Survey

- 3.1 This section of the report describes the noise survey undertaken to identify baseline noise conditions across the site.

Establishing Baseline Conditions

Survey Locations

- 3.2 At Site A, four long-term (LT) sound level meters (SLMs) were deployed for a period of six days, with a further 15-minute short-term (ST) measurement taken on collection of the long-term surveys. At Site B, two long-term surveys were deployed over the same timeframe as Site A. For each survey listed below, the microphone was set up 1.5 m above ground level (AGL) with an environmental protection kit including windshield. The survey locations can be seen in Figure 1 and Figure 2 for Site A and B respectively.
- 3.3 Survey location LT1 was located on the western side of Site A approximately 5 m in from the redline boundary, next to a tree. Directly to the west is Lec Airfield, used for light aircraft and gliders with the runway approximately 100 m away, as well as the railway line, which is approximately 270 m away at its closest point.
- 3.4 Survey location LT2 was located on the southern side of Site A, approximately 35 m northwest of 28 Golf Links Road, approximately 10 m inside the redline boundary. This location is representative of noise sensitive receptors (NSRs) on Golf Links Road and Wroxham Way, which are located to the south and southeast of the SLM location.
- 3.5 Survey location LT3 was located on the eastern side of Site A at the edge of the golf course, approximately 10 m west of the boundary fence with 16 Bridger Close. This location is representative of NSRs on Bridger Close.
- 3.6 Survey location LT4 was located at the northern tip of Site A in an area of trees by the redline boundary. The A259 is located approximately 90 m to the north with the trainline approximately 150 m at its closest point, to the west.
- 3.7 Survey location ST2 was located at the northeast Site A near the redline boundary approximately 420 m southeast of LT4 and 420 m northwest of LT3. This was located approximately 50 m in from the redline boundary due to a patch of trees and bushes.
- 3.8 At Site B, survey location LT5 was located approximately halfway along the southern boundary of the new site next to a treeline and a lightly used public footpath. This location is representative of NSRs on Ancton Way.

- 3.9 Survey location LT6 was located at the western boundary of Site B, approximately 350 m north of the southern boundary, next to a treeline. This location is representative of NSRs at Lane End Farm Caravan Site.

Instrumentation

- 3.10 Details of the instrumentation used during the survey are provided in Table 3.1. Calibration certificates of the equipment are available upon request. Calibration of the equipment was carried out before and after measurements with no significant drift ($< \pm 0.5$ dB) observed.

Table 3.1: Baseline Sound Survey Instrumentation

Measurement Location	Make/Model	Internal Reference / Serial Number	Calibration Ref / Calibration Start / Calibration End	Last Calibration Date
LT1	Rion NL52	#147 / 386736	94.0 / 94.0 / 94.0 dB	19/10/2021
LT2	Rion NL52	#148 / 386735	94.0 / 94.0 / 93.9 dB	19/11/2020
LT3	Rion NL52	#168 / 998569	94.0 / 94.0 / 94.0 dB	16/03/2020
LT4	Rion NL52	#167 / 998567	94.0 / 94.0 / 93.6 dB	16/03/2020
ST2	Rion NL52	#167 / 998567	94.0 / 94.0 / 94.0 dB	16/03/2020
LT5	Rion NL52	#166 / 998566	94.0 / 94.0 / 93.9 dB	16/03/2020
LT6	Rion NL52	#165 / 998563	94.0 / 94.0 / 93.9 dB	16/03/2020
Calibrator	Rion NC74	#33 / 34472822	N/A	30/09/2021

Weather Conditions

- 3.11 The weather conditions at the time of each survey were noted down using a handheld anemometer and are summarised in Table 3.2.
- 3.12 In addition, an unattended wind logger and rain gauge was deployed at survey location LT2 for the duration of the survey. The data from this station can be seen overlaid on the graphs in Appendix A.

Table 3.2: Weather Conditions

Location	Time	Wind Speed, m/s	Wind Direction	Temperature, °C	Relative Humidity %	Cloud Cover, Oktas ¹
LT1	Deployment	1.3	SW	14	68	7
	Collection	1.4	SW	17	78	1
LT2	Deployment	1.4	SW	14	65	8
	Collection	0.5	SW	16	81	2
LT3	Deployment	3.2	SW	13	65	3
	Collection	0.5	SW	15	82	6
LT4	Deployment	1.2	SW	14	65	2
	Collection	2.4	SW	15	80	7
ST2	N/A	2.5	SW	15	80	7
LT5	Deployment	1.2	SW	15	59	6
	Collection	0.8	SW	15	82	8
LT6	Deployment	1.0	SW	15	63	7
	Collection	0.8	SW	79	15	8

Notes:

¹ 0 = clear skies / 8 = complete cloud cover.

Survey Duration

3.13 Table 3.3 provides details of the measurement start time, finish time and duration at each measurement location. Although it was planned to leave the survey kits out for a full week, it was necessary to collect them a day earlier than intended due to the forecast of adverse weather (heavy rain).

Table 3.3: Measurement Times and Durations

Location	Start Time	End Time	Duration
LT1	22/10/2021 14:45	28/10/2021 14:30	5d 23h 45m
LT2	22/10/2021 14:15	28/10/2021 13:45	5d 23h 30m
LT3	22/10/2021 12:30	28/10/2021 12:45	6d 0h 15m
LT4	22/10/2021 13:00	28/10/2021 12:00	5d 23h 0m
ST2	28/10/2021 12:27	28/10/2021 12:42	0d 0h 15m

¹ Cloud cover is measured in 'Oktas', where zero Oktas is clear sky, and eight Oktas is complete cloud cover.

Location	Start Time	End Time	Duration
LT5	22/10/2021 16:15	28/10/2021 10:30	5d 17h 45m
LT6	22/10/2021 16:30	28/10/2021 10:45	5d 17h 45m

Subjective Description of the Noise Climate

- 3.14 At location LT1 at the time of deployment, the main noise sources included: wind noise in the trees with rustling leaves; broadband traffic sounds primarily from the north; light aircraft movements directly to the west, including one plane taking off from Lec Airfield; occasional trains using their horns; and some golf noises including people talking. At the time of collection, the main noise sources included: wind noise in the trees; light aircraft overhead; some golf noises; and some broadband traffic, mainly from the southwest.
- 3.15 At location LT2 at the time of deployment, the main noise sources included: wind noise in the trees; the occasional train to the west, including the use of the train horn; broadband distant traffic; some golf noises and people talking; and some distant planes overhead (low rumble). At the time of collection, the main noise sources included: wind noise in the trees; some golf noises; distant broadband traffic to the south; some plant noise from the plant building located a few metres away; and a helicopter overhead.
- 3.16 At location LT3 at the time of deployment, the main noise sources included: strong wind noise with leaves in the trees; distinct broadband traffic hum from the north with some distinct engine sounds mainly from the north; and some talking from golf activities nearby. At the time of collection, the main noise sources included: broadband traffic noise; wind in the trees; power tools in use at a house nearby; a grass mower in the distance on the golf course; and light aircraft in the distance.
- 3.17 At location LT4 at the time of deployment, the main noise sources included: wind noise including rustling leaves; broadband traffic noise from the flyover to the north, with some individual engine and tyre noise; an occasional train to the northwest; and occasional talking from the golf course. At the time of collection, the main noise sources included: distinct traffic sounds with broadband and individual characteristics; and wind noise from the leaves in the trees.
- 3.18 At location ST2, the main noise sources included: broadband traffic noise; grass cutting on the golf course; an occasional train passing in the distance; a light aircraft in the distance; and people talking loudly nearby on the golf course.
- 3.19 At location LT5, the main noise sources included broadband traffic noise and wind in the trees. At the time of deployment there was also a light aircraft overhead, and at the time of collection seagulls were present and an angle grinder could be heard in the distance.

3.20 At location LT6, the main noise sources included broadband traffic noise and wind noise in the trees and bushes. At the time of deployment, a light aircraft was also overhead.

Noise Measurement Results

3.21 The results of the noise surveys are summarised in Table 3.4. Full time history data for each location can be seen in Appendix A.

3.22 Five 15-minute periods were excluded from the calculations due to rainfall. The locations of these data points are included as 'rain events' on the graphs in Appendix A. No data has been excluded due to wind, as wind speeds remained low (maximum 2 m/s) throughout the survey duration. This data was gathered by the unattended wind logger and rain gauge deployed with survey LT2.

Table 3.4: Summary of baseline noise survey

Location	Period, T	Ambient Noise Level, $L_{Aeq,T}$ (dB) ¹	Background Noise Level, $L_{A90,T}$ (dB) ²
LT1	Day, 16hr	50	41
	Night, 8hr	44	36
LT2	Day, 16hr	51	40
	Night, 8hr	44	35
LT3	Day, 16hr	49	40
	Night, 8hr	43	34
LT4	Day, 16hr	59	53
	Night, 8hr	53	36
ST2	Day, 15min	50	47
LT5	Day, 16hr	49	39
	Night, 8hr	44	35
LT6	Day, 16hr	45	38
	Night, 8hr	41	33

Notes:

¹ With the exception of ST2, the values displayed are the typical daytime and night-time $L_{Aeq,T}$ noise levels. This has been derived by linear averaging the individual daytime 16 hour and night-time 8-hour values for each measurement position, rounded to the nearest whole number.

² Values are the 25th percentile of each 15-minute period, rounded to the nearest whole number. These values have also been reviewed against the time history data to check they provide a reasonable worst-case representation of 'background' noise levels.

3.23 The values in Table 3.4 have been visually checked against the graphs of the time histories (available in Appendix A) and the individual day-by-day values to ensure the values are representative.

- 3.24 The ambient noise levels at Site A locations LT1, LT2 and LT3 are all very similar, having daytime $L_{Aeq,16hr}$ values of around 50 dB and night-time $L_{Aeq,8hr}$ values of around 44 dB. The background $L_{A90,T}$ levels are also similar at around 40 dB during the day and 36 dB during the night.
- 3.25 Location ST2 also experienced a similar daytime ambient level to that at LT1, LT2 and LT3, although the background level was slightly higher. Due to the measurement period only being 15-minutes at this location, a small variation is expected.
- 3.26 Location LT4 experienced significantly higher levels than the rest of the site for both the ambient and background levels. These were around 9 dB higher than the other locations, due to its proximity to the A259 road.
- 3.27 Locations LT5 and LT6 at Site B had similar daytime ambient levels at 49 and 44 dB $L_{Aeq,16hr}$, with LT5 being slightly higher. This may be due to its proximity to the residential area at Ancton Way compared to LT6's location being more rural. The background sound levels were similar at both survey locations for the time period in question, most likely due to the main influence being the distant A259 road, which both survey locations are similarly exposed to.

4 Summary and Conclusions

- 4.1 The Acoustics Team of RPS Environment (RPS) has been appointed by Hallam Land Management to carry out baseline noise monitoring to accompany a planning application for a proposed residential development at Bognor Regis Golf Club consisting of circa 500 dwellings, and the relocation of the Golf Club to a site approximately 3.5 km to the east. The site is located within the administrative area of Arun District Council (ADC).
- 4.2 This report outlines the methodology and results of the baseline noise survey. A more detailed description of the site and development proposals can be found in the Environmental Statement (ES) for the project.
- 4.3 Site A (the site of the proposed development) is located at Bognor Regis Golf Club, Bognor Regis, West Sussex. The site is bordered by residential dwellings to the southeast; fields to the southwest; Lec Airfield, a railway line, and an industrial estate to the west; and the A259 to the north and northeast.
- 4.4 Site B (the new location for the Golf Club) is located to the southwest of Baird's Business Park, Grevatt's Lane, Bognor Regis, BN17 5RE, West Sussex. The area currently consists of fields, bordering the A259 to the north, a further set of fields to the east, fields and Lane End Farm Caravan Site to the west, and a housing estate on Ancton Way to the south.
- 4.5 In order to establish baseline acoustic conditions across both sites, a number of concurrent surveys were deployed on Friday 22 October 2021 and collected on Thursday 28 October 2021. At Site A, four long-term (LT) sound level meters (SLMs) were deployed for a period of six days, with a further 15-minute short-term (ST) measurement taken on collection of the long-term surveys. At Site B, two long-term surveys were deployed over the same timeframe as Site A.
- 4.6 The data collected from the baseline surveys is summarised in Table 3.4, with full time histories available in Appendix A.

Figures

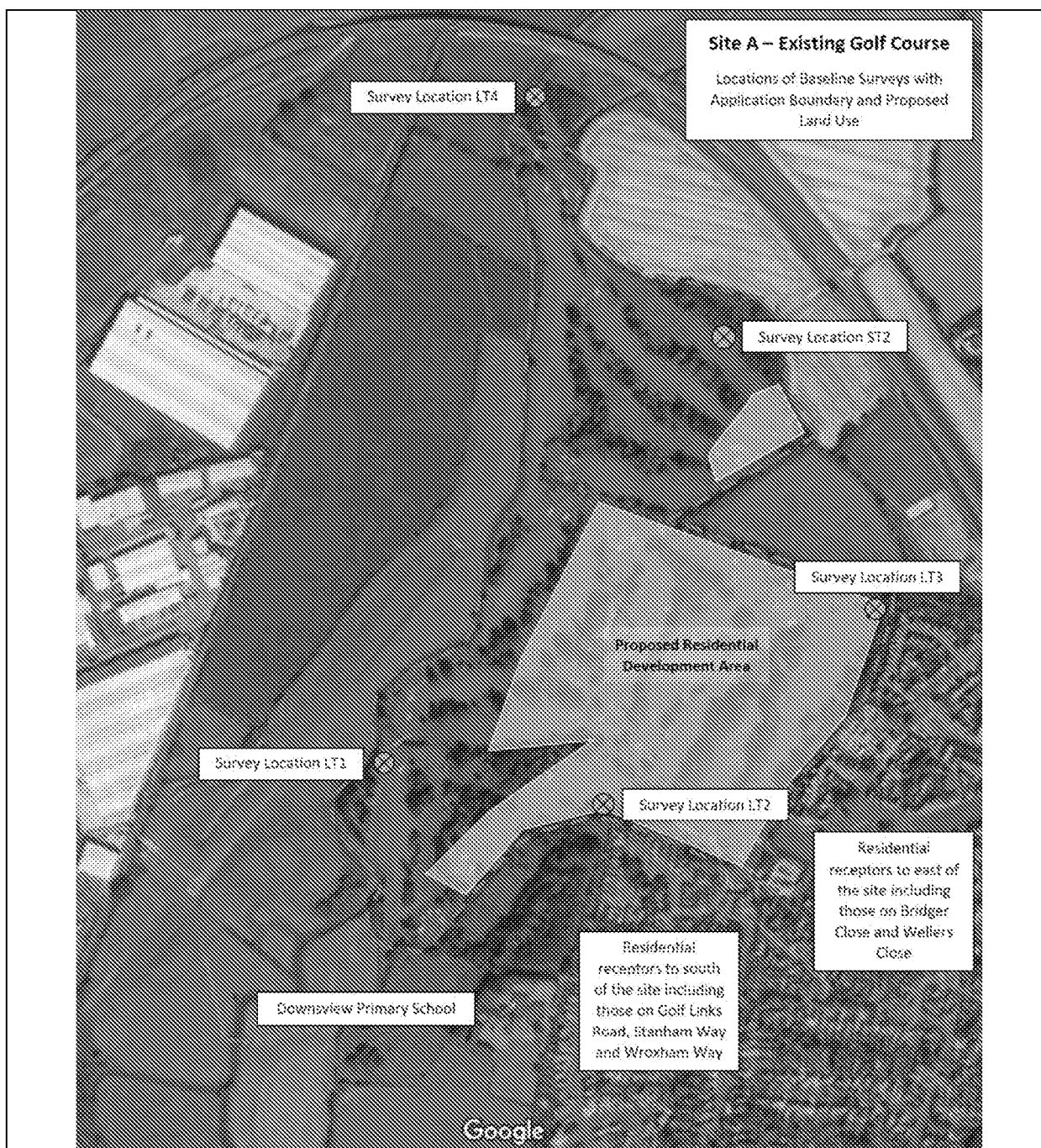


Figure 1: Noise Monitoring Locations at Site A

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Client:	Hallam Land Management	Rev:	2	Drawn By: NS
		Date:	08/12/2021	Checked By: MH
File location:	"O:\Jobs_2000 - 3000\02792\ProPG\JAJ02792 Site A Noise Monitoring Locations.png"			
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Notes		6-7 Lovers Walk Brighton East Sussex BN1 6AH T 01273 546800 F 01273 546801 E rpsbn@rpsgroup.com W rpsgroup.com rpsgroup.com/uk		
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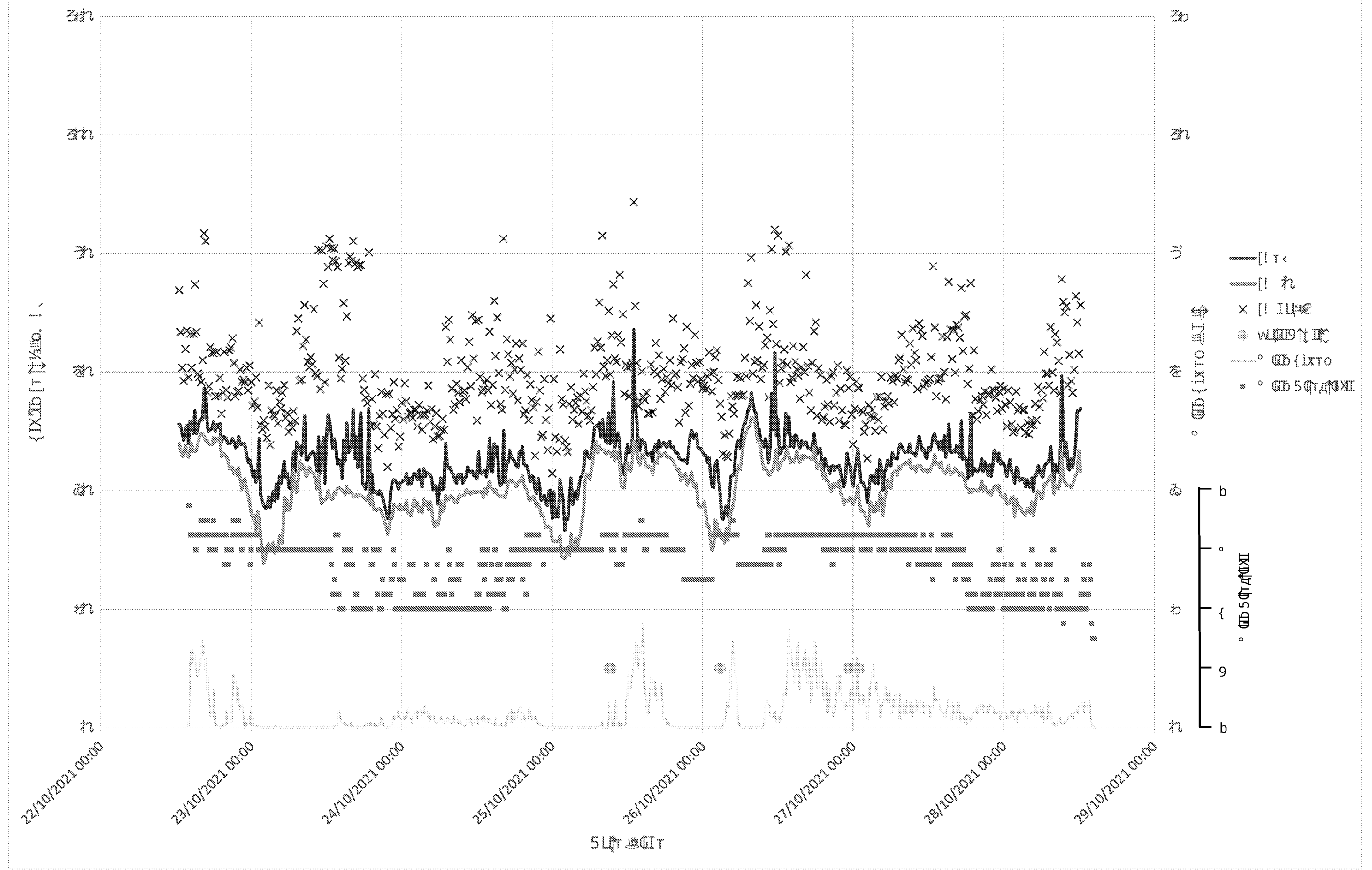
Figure 2: Noise Monitoring Locations at Site B

Project Number:	JAJ02792-REPT-02-R2	Project Title	Proposed Development at Bognor Regis Golf Club		
Client:	Hallam Land Management	Rev:	2	Drawn By:	NS
		Date:	08/12/2021	Checked By:	MH
File location:	"O:\Jobs_2000 - 3000\02792\ProPG\JAJ02792 Site B Noise Monitoring Locations.png"				
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Appendices

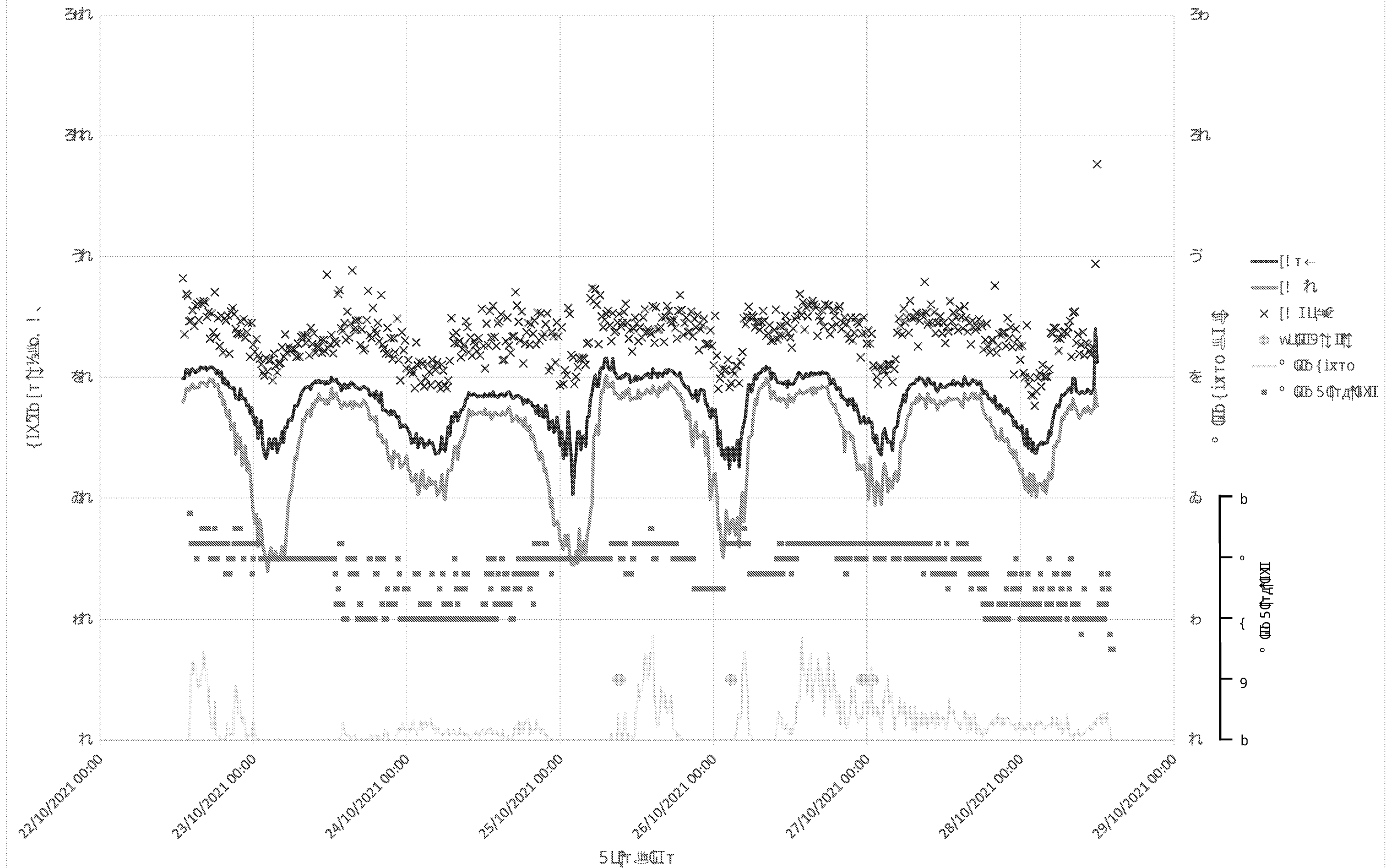
Appendix A: Baseline Survey Time Histories

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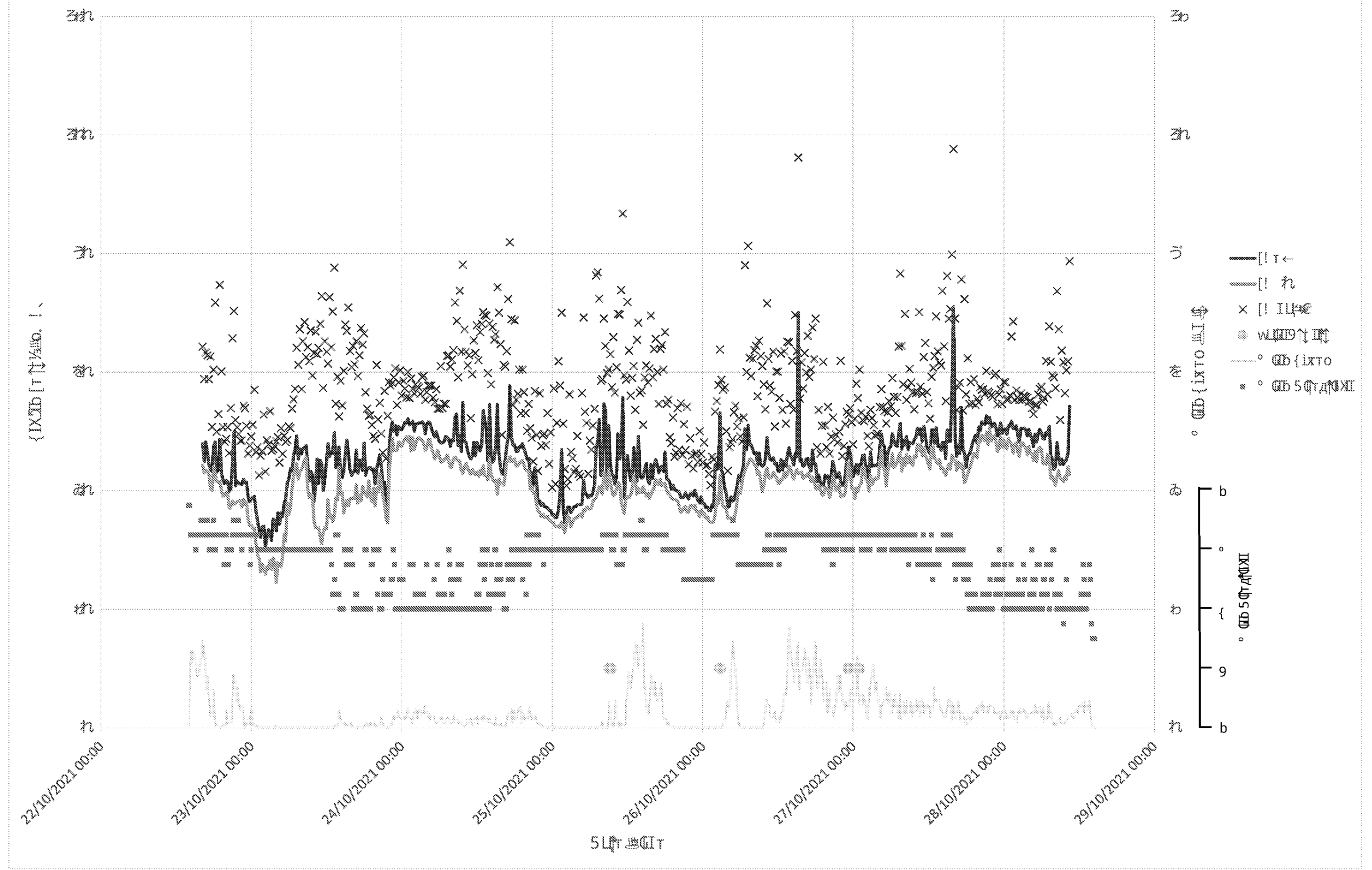


5月1日

【お天気予報】



【日照時間】



5月1日

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