



**Independent Acoustic
Consultancy Practice**

External Façade & Garden Sound Insulation monitoring

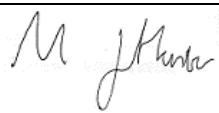
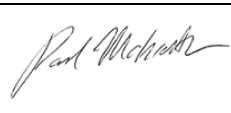
**Weavers Meadow
Trowbridge**

6058/EFA1

External Façade & Garden Sound Insulation monitoring

Project:	Weavers Meadow
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1. INTRODUCTION

Hunter Acoustics has been commissioned to carry out a road traffic noise intrusion commissioning measurement at Weavers Meadow, Hilperton, Trowbridge, BA14 in accordance with the requirements of the planning conditions.

Noise monitoring was undertaken in 2no first floor bedrooms and 2no garden areas in critical plots overlooking Elizabeth Way.

On site tests were carried out with windows closed and trickle vents open. External noise monitors were left in central locations of garden areas.

2. CRITERIA

2.1 Planning Conditions

The following planning condition has been implemented as part of the scheme;

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Prior to the commencement of development a noise mitigation scheme shall be submitted to and approved in writing by the Local Planning Authority. The scheme shall achieve the habitable room standard as detailed in BS8233:2014 'Guidance on sound insulation and noise reduction for buildings' with no relaxation for exceptional circumstances unless agreed in writing with the local planning authority and must include details of post construction validation. The approved noise and vibration attenuation measures shall thereafter be retained and maintained in working order for the duration of the use in accordance with the approved details.

REASON: In the interest of Residential Amenity.

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Prior to the commencement of development a scheme of measures to ensure noise levels in all private amenity spaces within that phase or sub phase do not exceed the BS8233:2014 upper guideline value of 55dB shall be submitted to and approved in writing by the Local Planning Authority. The scheme shall include details of post construction validation. Thereafter the development shall be carried out in accordance with the approved details and a separate validation report shall be submitted to and approved in writing by the Local Planning Authority prior to occupation.

REASON: In the interest of Residential Amenity."

2.2 Proposed Internal Noise Criteria

The following internal noise conditions (in habitable rooms) were targeted in the Noise Impact Assessment report:

- 35dB $L_{Aeq,16hr}$ daytime
- 30dB $L_{Aeq,8hr}$ night-time
- 45dB $L_{Amax,F}$ in bedrooms during the night (no more than 10-15 times per night)
- 55dB $L_{Aeq,16hr}$ in gardens

These are as per the desirable internal ambient noise values quoted in British Standard 8233:2014 'Guidance on sound insulation and noise reduction for buildings'

3. PROCEDURE

Due to ongoing site activity the commissioning noise survey was carried out over a weekend to avoid construction noise affecting the monitoring. This methodology was agreed with Steve Williams of WRS prior to commencing the monitoring.

3.1 Continuous Noise Monitoring

Continuous monitoring was carried out between 1345hrs on Friday 20th June 2025 to 1200hrs on Monday 23rd June 2025.

Table 3.1 – Continuous Monitoring Location Details (Internal)

Position	Ventilation Details
Plot 14 Bedroom	Acoustic trickle vents in the façade/ windows OPEN Windows shut Continuous dMEV running
Plot 128 Bedroom	Acoustic trickle vents in the façade/ windows OPEN Windows shut Continuous dMEV running

External monitoring took place in the gardens of Plots 1 & 128.

External microphone positions were approximately 1.5m above local ground height. Internal Microphones 1 & 2 were at approximately 1.2m in 1st floor bedrooms and set back $\geq 1.5m$ from the external wall.

Data including L_{Amax} , L_{Aeq} and background L_{A90} was logged at 1 minute intervals over the monitoring period, along with continuous audio and 100ms data to allow source identification and further detailed analysis of results if required. This also allows any construction noise or other spurious noise events to be isolated and excluded from the assessment.

3.1.1 Meteorological Conditions

Approximate weather conditions are shown in time history graphs in Figure B.1, Figure B.2, Figure B.3 & Figure B.4 of Appendix B.

To summarise, the external weather conditions during the monitoring period were generally dry with an occasional breeze. A period of light rain occurred between 0625 – 0705hrs Saturday 21st June 2025

3.2 Reverberation Time Measurements

For bedrooms where internal traffic noise was measured, reverberation times were also confirmed at six microphone positions. This allows a correction, as the rooms were unfurnished.

Reverberation time measurements to be carried out in line with ISO 16283-3:2016.

Parameters for measurement positions to be followed are;

- >0.5m between mic and wall
- 0.7m between mic positions
- 1.0m between mic and speaker

The measured 1/3-octave band sound pressure levels ($L_{Aeq,T}$ and $L_{Amax,F}$) were then corrected in line with BS 8233:2014 guidance as follows:

$$L_{nT} = L - 10 \log \left(\frac{T}{T_0} \right) \text{ where;}$$

L is the measured sound pressure level in the room

T is the measured reverberation time (T_{20}) in the room

T_0 is the reference reverberation time (for habitable rooms, $T_0 = 0.5$ s)

1/3-octave L_{nT} levels are converted to a single 'standardised level' figure $L_{Aeq,nT}$ and $L_{Amax,F,nT}$

For simplicity these are then analysed to give a representative, corrected, $L_{Aeq,16hr}$, $L_{Aeq,8hr}$ and night-time $L_{Amax,F}$ values.

3.3 Measurement Equipment

The following measurement equipment was used during the surveys:

Table 3.2 Equipment List

Make	Description	Model	Serial Number	Last Calibrated	Certificate No.
Norsonic AS	Type 1 - Integrating - averaging Sound Level Meter	118	31808	13 August 2024	U48535
	Preamplifier	1206	30892	13 August 2024	Included
	Microphone	1225	62659	13 August 2024	48534
Norsonic AS	Calibrator (113.97dB @ 999.14Hz)	1251	24202	13 August 2024	U48533
NTi	Type 1 - Sound Level Meter	XL2-TA	A2A-08723-E0	11 June 2025	UK-25-074
	Preamplifier	MA220	1820	11 June 2025	UK-25-074
	Filters	XL2-TA	A2A-08723-E0	11 June 2025	UK-25-074
	Microphone Capsule	MC230	9381	11 June 2025	UK-25-074
NTi	Type 1 - Sound Level Meter	XL2-TA	A2A-10021-E0	15 August 2023	UK-23-094
	Preamplifier	MA220	5435	15 August 2023	UK-23-094
	Microphone Capsule	MC230	8547	15 August 2023	UK-23-094
NTi	Type 1 - Sound Level Meter	XL2-TA	A2A-14577-E0	21 June 2024	UK-24-065
	Preamplifier	MA220	7485	21 June 2024	UK-24-065
	Microphone Capsule	MC230	A15594	21 June 2024	UK-24-065
NTi	Type 1 - Sound Level Meter	XL2-TA	A2A-19813-E0	27 October 2023	UK-23-128
	Preamplifier	MA220	10302	27 October 2023	UK-23-128
	Microphone Capsule	MC230A	A21824	27 October 2023	UK-23-128
Larson Davis	Calibrator (94.00dB / 114.03dB @ 1kHz)	CAL200	19047	14 August 2024	48532

Measurement systems were calibrated before and after the surveys and no variation occurred.

Note: Copies of traceable calibration certificates for all equipment are available upon request.

4. RESULTS

4.1 Internal Sound Levels

Results for internal and external noise levels are shown below;

Table 4.1 – Measured Internal Noise Levels

Date	Period	Position	Position
		Plot 128	Plot 14
Friday 20 th June 2025*	Daytime $L_{Aeq,10hr}$ (dB)	27	35
Friday 20 th June – Saturday 21 st June 2025	Night-time $L_{Aeq,8hr}$ (dB) $L_{Amax,F} > 45dB$	22 2 times	28 11 times
Saturday 21 st June 2025	Daytime $L_{Aeq,16hr}$ (dB)	26	35
Saturday 21 st June – Sunday 22 nd June 2025	Night-time $L_{Aeq,8hr}$ (dB) $L_{Amax,F} > 45dB$	20 0 times	26 3 times
Sunday 22 nd June 2025	Daytime $L_{Aeq,16hr}$ (dB)	27	34
Sunday 22 nd June – Monday 23 rd June 2025	Night-time $L_{Aeq,8hr}$ (dB) $L_{Amax,F} > 45dB$	25 4 times	28 10 times

*NOTE These daytime measurements excluded periods of construction activity.

Overall results indicate that the guideline values quoted in BS 8233:2014 have been satisfied.

4.2 External (Garden) Sound Levels

Table 4.2 – Measured External Noise Levels (Gardens)

Date	Period	Position	Position
		Plot 128*	Plot 01
Friday 20 th June 2025	Daytime $L_{Aeq,7hr}$ (dB)	56	53
Saturday 21 st June 2025	Daytime $L_{Aeq,16hr}$ (dB)	56	53
Sunday 22 nd June 2025	Daytime $L_{Aeq,16hr}$ (dB)	53	31

*Note: Plot 128 Garden was not complete at the time of monitoring. Garden walls were not completely built and gates were not installed. A 1dB excess over BS8233:2014 upper guideline value of 55dB L_{Aeq} under these conditions should be considered a marginal, and is indicated to be achieved with fully constructed garden walls.

5. CONCLUSION

Internal and external noise monitoring has been undertaken at Weavers Meadow, Hilperton, Trowbridge, Wiltshire, BA14.

Measurements were undertaken in 2no bedrooms and 2no gardens of critical plots adjacent to the road. Internal monitoring was carried out with windows closed and trickle vents open.

Internal survey results show that the 35dB $L_{Aeq,16hr}$ and 30dB $L_{Aeq,8hr}$ guideline values quoted in BS8233:2014 are met, with regular night-time $L_{Amax,F}$ values from vehicle pass-bys not indicated to exceed 45dB more than 15 times per night.

External survey results show that the 55dB $L_{Aeq,16hr}$ guideline values quoted in BS8233:2014 are met for Plot 1 Garden.

Measured levels in Plot 128 garden marginally exceed the upper guideline value of BS8233:2014. Plot 128 garden was not complete with only some walls constructed and no gates included to entrances. Taking this into account a marginal excess of 1dB should be considered negligible and levels are likely to meet BS8233:2014 criteria once garden walling is completed.

APPENDIX A - ACOUSTIC TERMINOLOGY

Human response to noise depends on a number of factors including loudness, frequency content and variations in level with time. Various frequency weightings and statistical indices have been developed in order to objectively quantify 'annoyance'.

The following units have been used in this report:

dB(A)	The sound pressure level A-weighted to correspond with the frequency response of the human ear and therefore a persons' subjective response to frequency content.
L_{eq}	The equivalent continuous sound level is a notional steady state level which over a quoted time period would have the same acoustic energy content as the actual fluctuating noise measured over that period.
D_{nT}	Standardised level difference corresponding to a reference value of the reverberation time in a receiver room.
$D_{nT,w}$	Single number 'weighted standardised level difference'.
C_{tr}	Correction factor used in level difference calculation to take into account low frequency sounds.
R_w	Weighted Sound Reduction Index. R_w is a single number (dB) referring to the ability of a wall or other building structure to provide sound insulation. The higher the number, the better the sound insulation. R_w refers to sound insulation achieved in an acoustic testing laboratory.
T_{60}	Reverberation time - the time taken for a steady state sound to drop by 60 dB. A reference reverberation time of $T_0 = 0.5$ second is used during sound insulation calculations representing average room reverberation time.

APPENDIX B – DIAGRAMS, GRAPHS AND TABLES

Figure B.1 – Approximate Weather History for Friday, 20 June 2025

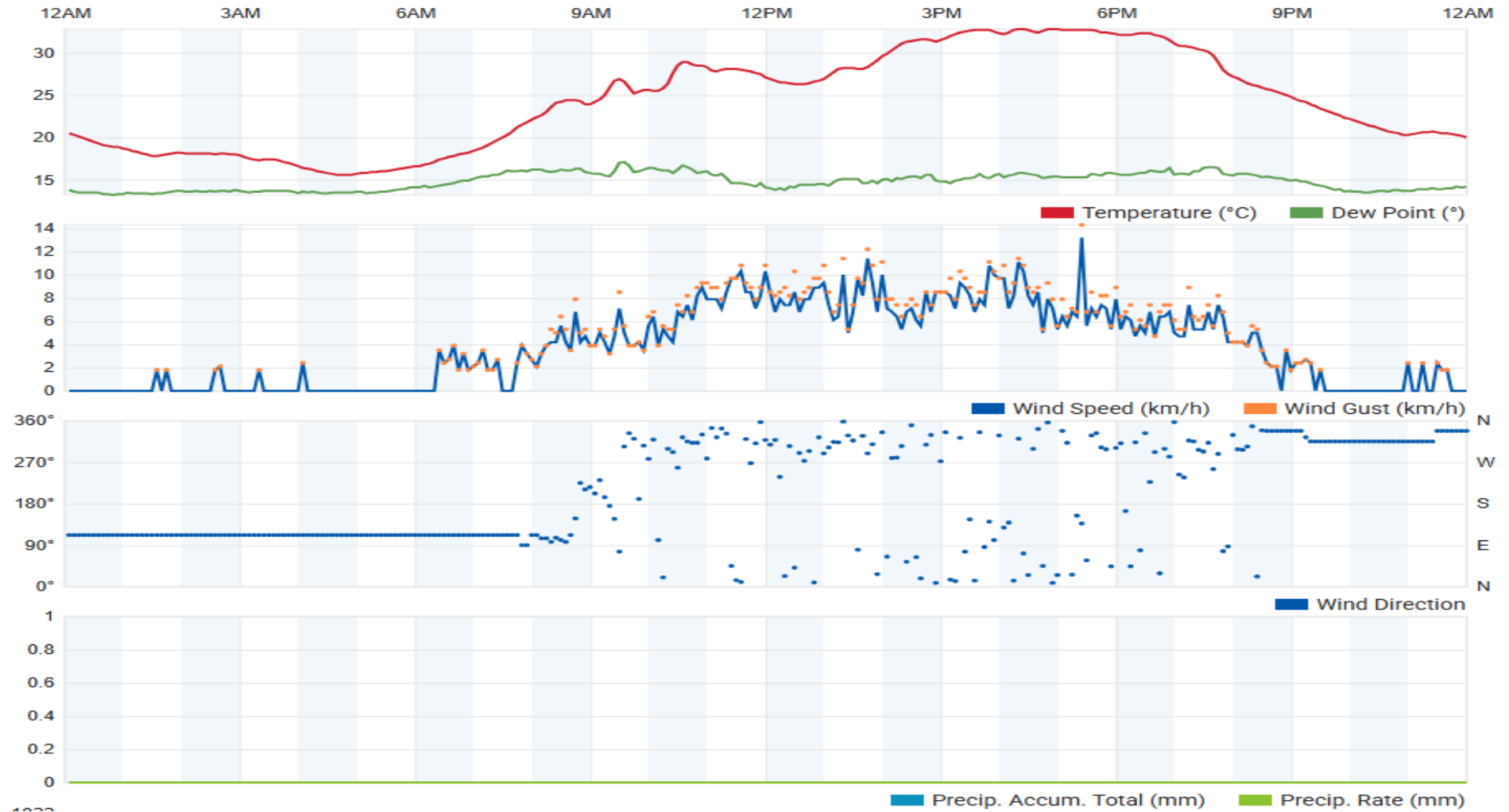


Figure B.2 – Approximate Weather History for Saturday, 21 June 2025

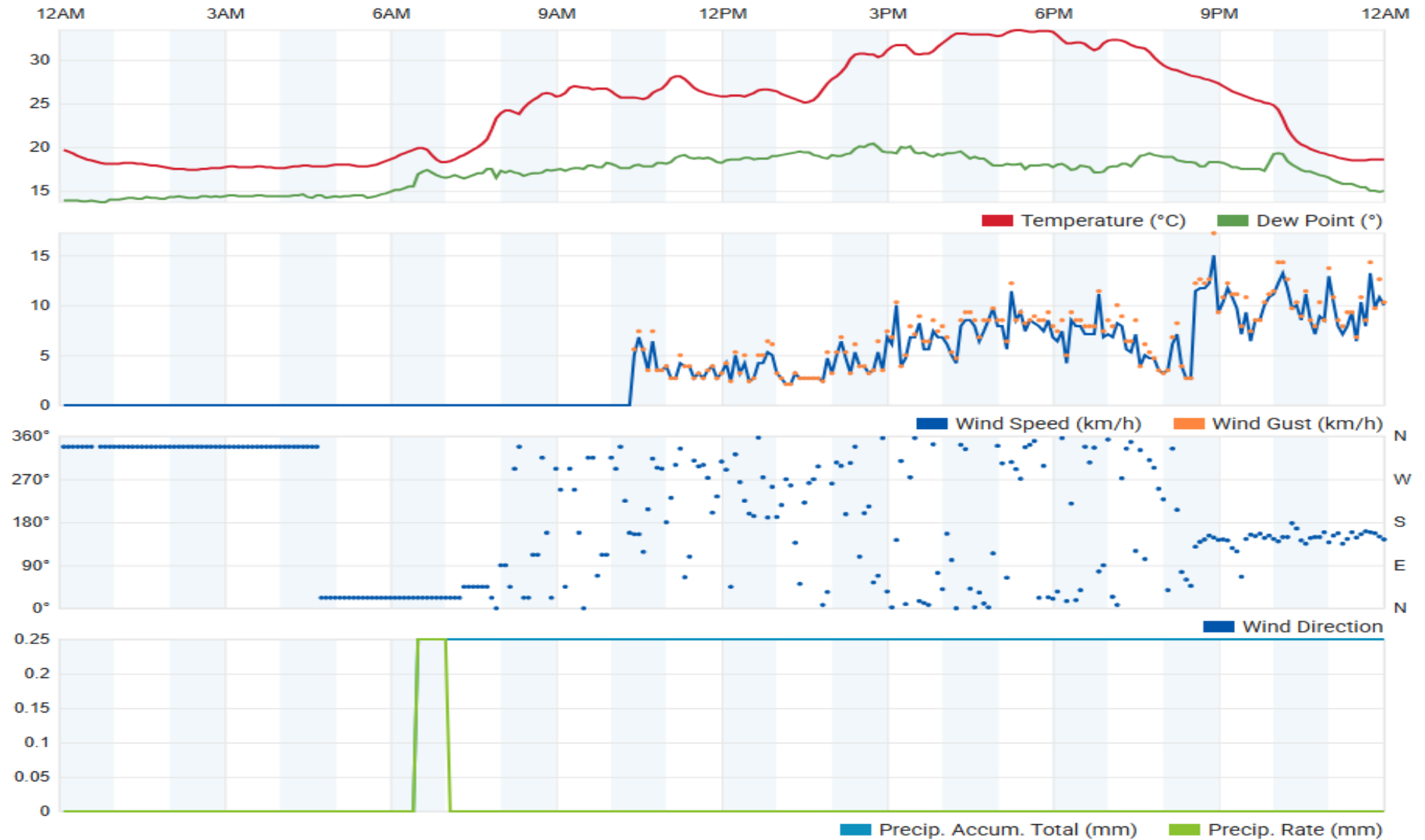


Figure B.3 – Approximate Weather History for Sunday, 22 June 2025

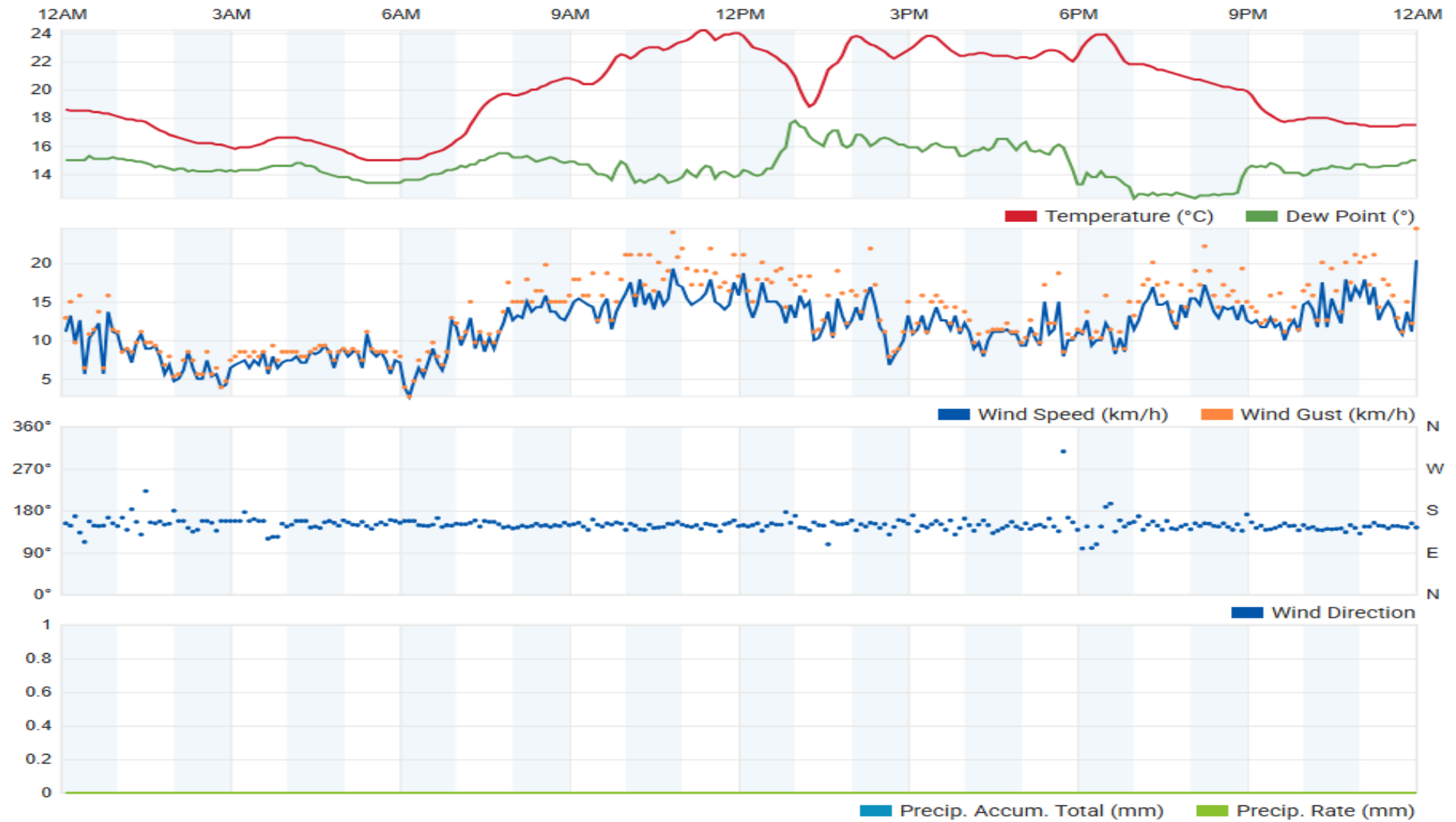
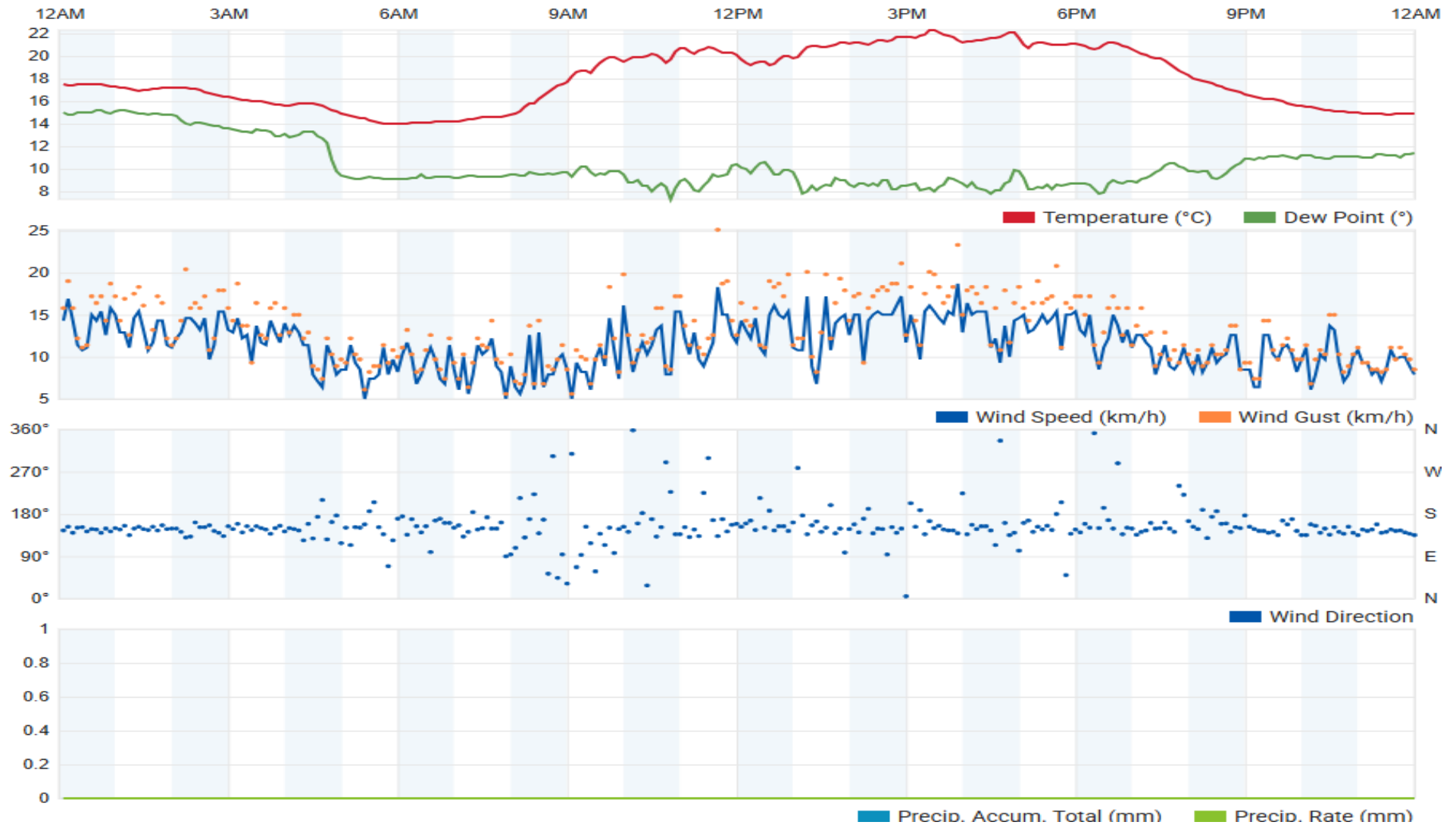


Figure B.4 – Approximate Weather History for Monday, 23 June 2025



Note: Taken from www.wunderground.com - weather station ITROWB16 located in Trowbridge [Elev 42 m, 51.34 °N, 2.19 °W]