



DA ACOUSTIC REPORT

Fresh Hope Care, 154 – 162 Stafford Street, Penrith

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This firm is a member of the Association of Australian Acoustical Consultants.

The work reported herein has been carried out in accordance with the terms of membership. We stress that the advice given herein is for acoustic purposes only, and that the relevant authorities should be consulted with regard to compliance with regulations governing areas other than acoustics.

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1.0 INTRODUCTION

PKA Acoustic Consulting (PKA) has been commissioned by Linear Project Management (Client) to prepare DA acoustic report for submission Penrith Council (Council) for the proposed Fresh Hope Care residential aged care development at 154 – 162 Stafford Street, Penrith.

The purpose of this DA acoustic report is to establish the following:

- Existing ambient (background) noise levels at the site and surrounding residential receivers.
- Mechanical plant noise breakout goals for future detailed design.
- Sound insulation requirements of the Building Code of Australia (BCA).
- Construction Noise & Vibration noise limits.

2.0 SITE DESCRIPTION

The proposed aged care residential premises are located at 154 – 162 Stafford Street. The development is bound by Stafford Street to the north and Doonmore Street to the west with residential receivers located across both the streets. There are other existing residential premises adjoining the proposed site on the remaining sides.

The site location is shown in Figure 2-1.

Figure 2-1 Site Location



3.0 PROJECT NOISE CRITERIA

3.1 Penrith Council Acoustic Requirements (Ref PL18/0101)

An acoustic assessment is required to be submitted as a part of the development application to demonstrate that the proposed development will not have any impact on nearby sensitive receivers. This report is to be prepared by a suitably qualified acoustic consultant, and is to consider:

- The ‘NSW Noise Policy for Industry’ in terms of assessing the noise impacts associated with the development, including noise from the indoor and outdoor communal spaces on internal residents as well as surrounding properties (including their outdoor spaces), the car parking spaces, as well as any mechanical plant associated with air conditioning for individual units and mechanical ventilation for the basement;
- The AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors in terms of ensuring that internal noise levels can be achieved; and
- The Interim Construction Noise Guideline in assessing the impacts associated with the construction phase of the development.
- Should mitigation measures be necessary, recommendations should be included to this effect. Recommendations and mitigation measures must be shown on all architectural plans.

3.2 NSW EPA Noise Policy for Industry (NPfI)

Noise generated from mechanical noise is generally assessed against the requirements of the NSW EPA Noise Policy for Industry 2017 (NPfI), which supersedes the previously used Industrial Noise Policy (2000). The policy sets out two separate criteria to ensure environmental noise objectives are met. The first criterion considers intrusive noise to residential properties and the second is set to ensure the amenity of the land use is protected. The lower value of both criteria is considered to be the Project noise trigger level, which is the limit of the $L_{Aeq, 15min}$ noise level that must not be exceeded for the corresponding period of the day.

Amenity Criterion

To limit continuing increases in noise levels, the maximum ambient noise level within an area from commercial noise sources should not normally exceed the levels as specified in Table 2.2 of the policy for the specified time of the day. The NPfI recommends the following Amenity Noise Levels for various receiver premises.

Table 3-1 Noise Criteria - Amenity for Receiver Buildings

All values in dB(A)

| Type of receiver | Time of day | Recommended Amenity Noise Level L_{Aeq} (period) |
|------------------------|-------------|---|
| Residential (Suburban) | Day | 55 |
| | Evening | 45 |
| | Night | 40 |

To ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise as follows:

Project amenity noise level for development = recommended amenity noise level **minus 5 dB(A)**.

To standardise the time periods for the intrusiveness and amenity noise levels, this policy assumes that the Amenity $L_{Aeq,15min}$ will be taken to be equal to the $L_{Aeq, period} + 3$ decibels (dB).

Intrusiveness Criterion

The intrusiveness of a stationary noise source may be considered acceptable if the average of the maximum A-weighted levels of noise, $L_{Aeq 15 minute}$ from the source do not exceed by more than 5dB the Rating Background Level (RBL) measured in the absence of the source. This applies during all times of the day and night. There also exists an adjustment factor to be applied as per the character of the noise source. This includes factors such as tonal, fluctuating, low frequency, impulsive, intermittent etc. qualities of noise. The RBL is determined in accordance with Section 2.3 of the NSW EPA NPfl. The intrusiveness criterion is $L_{Aeq 15 minute} < RBL+5$.

3.3 EPA NSW Interim Construction Noise Guidelines (ICNG)

Based on the above council conditions, the NSW EPA *Interim Construction Noise Guideline* (ICNG) is being used in performing this assessment.

The document aims at managing noise from construction works regulated by the EPA. Details of noise limits are presented in the following Table 3-2.

Table 3-2 Noise Levels Residential Receivers (Extract from EPA ICNG)

| Time of day | Management level $L_{Aeq (15 min)}$ | Application |
|---|--|--|
| Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm | Noise affected RBL + 10 dB | The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq (15 min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details. <i>(Table Continued on next page)</i> |

| Time of day | Management level L_{Aeq} (15 min) | Application |
|---------------------------------------|--|---|
| No work on Sundays or public holidays | Highly noise affected 75 dB | <p>The highly noise affected level represents the point above which there may be strong community reaction to noise.</p> <p>Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.</p> |
| Outside recommended standard hours | Noise affected RBL + 5 dB | <p>A strong justification would typically be required for works outside the recommended standard hours.</p> <p>The proponent should apply all feasible and reasonable work practices to meet the noise affected level.</p> <p>Where all feasible and reasonable practices have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.</p> |

3.4 General Construction Vibration Criteria

During demolition and excavation there is the potential for vibration impact on the neighbouring buildings' amenity and on structures. The EPA ICNG states that human comfort (amenity) vibration is to be measured and assessed in accordance with *Assessing Vibration – a technical guideline* (DECC 2006).

In general, structural damage due to vibration can be of concern when hammering, blasting, vibration rolling, crushing, piling and other vibration inducing construction works are carried out.

The EPA ICNG does not have specific structural vibration damage criteria however the RTA *Environmental Noise Management Manual* (2001) recommends the use of the following Standards:

- British Standard BS 7385: Part 2: *Evaluation and Measurement for Vibrations in Buildings – Part 2 Guide to Damage Levels from Ground-Borne Vibration*
- AS 2187.2 *Explosives-Storage, transport and use, Part 2: Use of Explosives*
- German Standard DIN 4150, Part 3: *Structural Vibration in Buildings: Effects on Structures*

3.5 BCA Sound Insulation Requirements – Class 3 Buildings

The BCA, in Volume 1 Section F5 “Sound Transmission and Insulation” states that walls and floors separating places of occupancy “*must provide insulation against the transmission of airborne and impact generated sound sufficient to prevent illness or loss of amenity to the occupants*”.

The following summarises the BCA sound insulation requirements, brevity necessitates detail in the BCA taking precedence over the tables below.

Table 3-3 Walls – Deemed-to-Satisfy Provisions

| Wall Description | BCA Reference | Airborne | Impact |
|--|-----------------------------|------------------------|----------------------------|
| Separating sole-occupancy units (SOUs) habitable areas | F5.5(a)(i) | $R_w + C_{tr} \geq 50$ | |
| Separating SOUs wet to habitable areas | F5.5(a)(i) F5.5(a)(iii) | $R_w + C_{tr} \geq 50$ | Discontinuous Construction |
| Separating SOUs with corridor, stairway, lobby or different classification | F5.5(a)(ii) | $R_w \geq 50$ | |
| Separating SOUs with plantroom or lift shaft | F5.5(a)(ii) F5.5(a)(iii) | $R_w \geq 50$ | Discontinuous Construction |
| Separating SOU habitable area with services from another SOU | F5.6(a)(i) | $R_w + C_{tr} \geq 40$ | |
| Separating SOU wet area with services from another SOU | F5.6(a)(ii) | $R_w + C_{tr} \geq 25$ | |
| Doors separating SOU with corridor, stairway, lobby | F5.5(b) | $R_w \geq 30$ | |

| Appendix A Wall Type | Appendix B Reference | Appendix C Discontinuous Construction Requirement |
|----------------------|----------------------|--|
| Masonry | F5.3(c)(i) | Wall having a minimum 20mm cavity between the 2 separate leaves, with resilient wall ties if necessary |
| Other than masonry | F5.3(c)(ii) | Wall having a minimum 20mm cavity with no mechanical linkage except at the periphery |

Table 3-4 Floors – Deemed-to-Satisfy Provisions

| Floor Description | BCA Reference | Airborne | Impact |
|---|---------------|------------------------|-------------------|
| Separating sole-occupancy units (SOUs) | F5.4(a)(i) | $R_w + C_{tr} \geq 50$ | $L_{n,w} \leq 62$ |
| Separating SOUs with plantroom, lift shaft, corridor, stairway, lobby or different classification | F5.4(a)(ii) | $R_w + C_{tr} \geq 50$ | $L_{n,w} \leq 62$ |
| Separating SOU habitable area with services from another SOU | F5.6(a)(i) | $R_w + C_{tr} \geq 40$ | |
| Separating SOU wet area with services from another SOU | F5.6(a)(ii) | $R_w + C_{tr} \geq 25$ | |

Table 3-5 Walls – Verification Methods

| Wall Description | BCA Reference | Airborne |
|---|---------------|-----------------------------|
| Separating sole-occupancy units (SOUs) | FV5.2(a) | $D_{nT,w} + C_{tr} \geq 45$ |
| Separating SOUs with plantroom, lift shaft, corridor, stairway, lobby or different classification | FV5.2(b) | $D_{nT,w} \geq 45$ |
| Doors separating SOUs with corridor, stairway, lobby | FV5.2(c) | $D_{nT,w} \geq 25$ |

Table 3-6 Floors – Verification Methods

| Floor Description | BCA Reference | Airborne | Impact |
|--|----------------------|-----------------------------|--------------------|
| Separating sole-occupancy units (SOUs) | FV5.1(a) FV5.1(b) | $D_{nT,w} + C_{tr} \geq 45$ | $L_{nT,w} \leq 62$ |

Discussion of BCA Sound Insulation Criteria

PKA considers the various sound insulation criteria in the BCA to be of a reasonably high standard. In some instances, we deem the BCA to be inadequate or overly stringent. The following discusses PKA’s position on some key aspects of the BCA.

Discussion of BCA Floor Impact

PKA considers the BCA floor impact sound insulation criteria of $L_{n,w} \leq 62$ and verification criteria of $L_{nT,w} \leq 62$ to be of a poor standard which typically results in noise complaints from adjoining occupants.

The Association of Australian Acoustical Consultants (AAAC) in their document *“Guideline of Apartment and Townhouse Acoustic Rating 2010”* rates the BCA impact sound insulation criteria to be a 2 Star Rating. For the development, PKA recommends aiming to achieve a AAAC 3 Star Rating for impact sound insulation of floors separating SOUs which provides at least an additional 7dB of improvement over the BCA criteria.

Other BCA Acoustic Issues

The builder must also ensure that the project complies with following BCA acoustic requirements:

Chasing of Masonry Elements

The BCA specifically precludes chasing of services into concrete or masonry elements. (Clause 2. (e)(i)).

Fixing of Water Supply Pipework

Note Clause 2. (iii) (A) and (B).

A water supply pipe must:

- (A) Only be installed in the cavity of discontinuous construction; and
- (B) In the case of a pipe that serves only one sole occupancy unit, not be fixed to the wall leaf on the side adjoining any other sole-occupancy unit and have a clearance not less than 10mm to the other wall leaf.
(i.e. the cavity must not be bridged by any pipework)

Electrical Outlets

The BCA requires that any electrical outlets must be offset from each other:

- (A) in masonry walling, not less than 100mm; and
- (B) in timber or steel framed walling, not less than 300mm

Ducts

Ducts serving or passing through more than one SOU per F5.6(a) must be separated from another SOU by masonry or plasterboard construction having a minimum $R_w + C_{tr}$ of 40 for habitable rooms and $R_w + C_{tr}$ of 25 for non-habitable rooms.

3.6 AS/NZS 2107:2016 – Residential Buildings

Australian Standard AS/NZS 2107:2016 provides recommendations and design criteria regarding reverberation times and ambient sound levels for various building interiors including residential premises. These recommended indoor design levels are shown in the table below:

Table 3-7 Recommended Indoor Design Sound Levels

| Type of occupancy/activity | Design sound level ($L_{Aeq,t}$) range dB(A) |
|--|--|
| Houses & Apartments in suburban areas or near minor roads | |
| Apartment Common Areas (e.g. foyer, lift lobby) | 40 to 45 |
| Living Areas | 30 to 40 |
| Sleeping Areas | 30 to 35 |
| Work Areas | 35 to 40 |

4.0 NOISE SURVEY

Unattended noise monitoring was conducted on site between 14th and 21st February 2019 to record the ambient and traffic noise levels. The noise monitor was programmed to store the L_n percentile noise levels for each 15-minute sampling period. Measurements were made of L_{min}, L_{max}, L₉₀, and L_{eq} and were later retrieved for analysis.

The positions of the noise monitors are shown in Figure 2-1. The results and summary of the noise monitoring are listed in graphical form in Appendix B of this report.

4.1 Instrumentation

Noise measurements were conducted using the following equipment:

- Sound Analyser NTI XL2 Type Approved, Serial number A2A-15268-E0.
- Sound Analyser NTI XL2 Type Approved, Serial number A2A-15268-E0.
- Sound calibrator B&K 4230, Serial number 11419.

The instruments were calibrated before and after the noise measurements and there were no adverse deviations between the two.

The analysers are type 1 and comply with AS IEC 61672.2-2004. The instruments carry traceable calibration certificates.

4.2 Project Noise Goals

Mechanical Noise Breakout Goals

The tables below present the results of the ambient noise monitor measurements and the noise goals for noise breakout to surrounding premises.

As a guide, the noise criteria defined in the NPfl are listed below. The assessment periods are defined by the NPfl are as follows:

- Daytime: 7 am to 6 pm, Evening: 6 pm to 10 pm, Night: 10 pm to 7 am.

Table 4-1 NPfl Project Noise Trigger Levels for premises shielded from traffic noise

All values in dB(A)

| Receiver Type | Period | Measured RBL L _{A90} | Acceptable Noise Levels L _{Aeq(period)} | Noise Criteria | | Project Noise Trigger Levels L _{Aeq15min} |
|----------------------------|-------------|----------------------------------|--|-----------------------|-----------------------|--|
| | | | | NPfl Amenity | NPfl Intrusiveness | |
| | | | | L _{Aeq15min} | L _{Aeq15min} | |
| Residential (Sub-Urban) | Day | 34 | 55 | 53 | 39 | 39 |
| | Evening | 35 | 45 | 43 | 40 | 40 |
| | Night | 31 | 40 | 38 | 36 | 36 |
| Commercial | When in use | As above | 65 | 63 | N/A | 63 |

Table 4-2 NPfl Project Noise Trigger Levels for premises exposed to traffic noise

All values in dB(A)

| Receiver Type | Period | Measured RBL L _{A90} | Acceptable Noise Levels L _{Aeq(Period)} | Noise Criteria | | Project Noise Trigger Levels L _{Aeq15min} |
|-------------------------|-------------|----------------------------------|---|---------------------------------------|---|---|
| | | | | NPfl Amenity L _{Aeq15min} | Npfl Intrusiveness L _{Aeq15min} | |
| Residential (Sub-Urban) | Day | 42 | 55 | 53 | 47 | 47 |
| | Evening | 45 | 45 | 43 | 50 | 43 |
| | Night | 42 | 40 | 38 | 47 | 38 |
| Commercial | When in use | As above | 65 | 63 | N/A | 63 |

Construction Noise Goals

Based on the noise monitoring conducted, Table 4-3 below presents the results of ambient, background noise levels and the noise affected level (criterion). The following is considering that the project management intends to do the construction during normal daytime working hours 7am to 6 pm.

Table 4-3 Construction site-specific noise goals

| Location | Period | Background RBL dB(A) | Noise affected level (Criteria), dB(A) |
|-------------------------|------------------|-------------------------|--|
| At residential boundary | Day (7am to 6pm) | 42 | 52 |

The “Highly Noise Affected” criterion has a set level of 75 dB(A).

Traffic and Mechanical Noise Goals within the development

To ensure that the noise levels in habitable spaces within the proposed development are satisfactory, all façade and glazing must be selected to ensure that the indoor design levels do not exceed the recommended levels of the AS2107:2015 standard listed in Table 3-7.

5.0 ASSESSMENT

Car Park Activity

At the time of preparation of this report, a traffic or car park management plan was not available. However, the movements are expected to be minimal for an aged care premises, especially during the evening and night-time hours. However, as a fence is proposed in the plans, PKA have provided recommendations to upgrade it to an acoustic barrier (Section 6.0). This is primarily recommended for mechanical noise mitigation but will serve in reducing the noise impact from the proposed car park activity to the surrounding receivers.

Use of communal rooms and areas

As the communal rooms/areas are located centrally within the proposed premises, calculations indicate that the noise impact to other residential receivers will be mitigated by the shielding offered by the proposed buildings surrounding the communal space and the distance loss to the residential boundaries. This compliance will be achieved assuming that the premises are not used between 10pm and 7am and that no live or reinforced amplified music will be used in the communal premises.

Mechanical Noise to other residential receivers

At the time of preparation of this report, a selection of equipment is not available. However, coordination has been undertaken to relocate plant items away from boundaries or contained within enclosures or acoustic screens as far as practical.

Based on the final selections, it is anticipated acoustic screens may be required to all condenser plant located on ground or rooftop.

Mechanical Noise within the development (AS2107:2015)

Measurements were conducted to estimate the noise impact from the nearby traffic noise on site. However, the noise was nominal, and it was determined that no acoustic treatment would be required to mitigate traffic noise intrusion to meet the indoor design sound levels listed in the AS2107:2016.

Based on the final location and selection of plant, there is a potential for upgraded glazing to spaces located nearby plant condenser. This must be determined following the availability of a mechanical schedule at the later stages of the development.

6.0 RECOMMENDATIONS

The following recommendations are required to ensure that acoustic compliance is achieved with the recommended acoustic criteria. The recommendations have been based on data provided to PKA for the preparation of this report and assumptions made in the calculations.

1. BCA requirements

All walls and floors must be designed to comply with the design requirements listed in Section 3.5 of this report.

2. Architectural Treatment

Acoustic fences of min. 1.8m on the side separating the car park entrance to the adjoining residential premises on the eastern boundary.

The acoustic barrier must be of solid construction (with no air gaps) such as:

- Timber fence with double lapped boards of standard 15mm thickness, allowing a continuous thickness of 30mm
- Aerated Concrete panels such as Hebel
- Masonry
- Precast concrete panels
- Any combination of the above

3. Other Car Park Activity

We recommend the following management policies be in place:

- The car park drive in area and parking should be limited to 10km/hr for compliance to be maintained.
- Signage be displayed clearly to ensure people in the carpark are sensitive to their noise impact.

4. Outdoor Plant and equipment

In addition to the recommended fence, PKA recommends the location of any future outdoor mechanical and plant equipment be positioned away from boundaries adjoining proposed residential receivers. Additionally, the equipment must be selected so that the rated sound power/pressure levels will comply at the boundary of the adjoining residences with the criteria listed in Table 4-1 and Table 4-2, typically applied for mechanical plant noise emissions. This must be checked by a qualified acoustic consultant prior to installation. This applies to mechanical noise intrusion into the habitable spaces within the premises to comply with the AS2107-2015 recommended indoor design levels.

5. Communal Areas

- No live performances or amplified music can be used within the community centre.
- It has been assumed in this assessment that the communal areas will not be used after 10pm. If this is not the case, an assessment will have to be conducted for the night-time hours.

APPENDIX A DRAWINGS USED TO PREPARE REPORT

This report was prepared using drawings provided by Fulton Trotter Architects, Project No. 7082PE01.

| No. | Rev. | Title | Date |
|---------|------|-----------------------------|--------------|
| ACD1001 | DA01 | Existing Site Plan | 1 March 2019 |
| ACD1002 | DA01 | Existing/ Demolition | |
| ACD1003 | DA01 | Proposed Site Plan | |
| ACD2001 | DA01 | Basement Floor Plan | |
| ACD2002 | DA01 | Ground Floor Plan | |
| ACD2003 | DA01 | First Floor Plan | |
| ACD2101 | DA01 | Roof Plan | |
| ACD3001 | DA01 | Elevations | |
| ACD3101 | DA01 | Sections | |
| ACD5001 | DA01 | Typical Unit Plans Layout 1 | |
| ACD6001 | DA01 | Site Analysis | |
| ACD6002 | DA01 | Shadow Diagrams | |
| ACD6003 | DA01 | External Finishes | |

11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

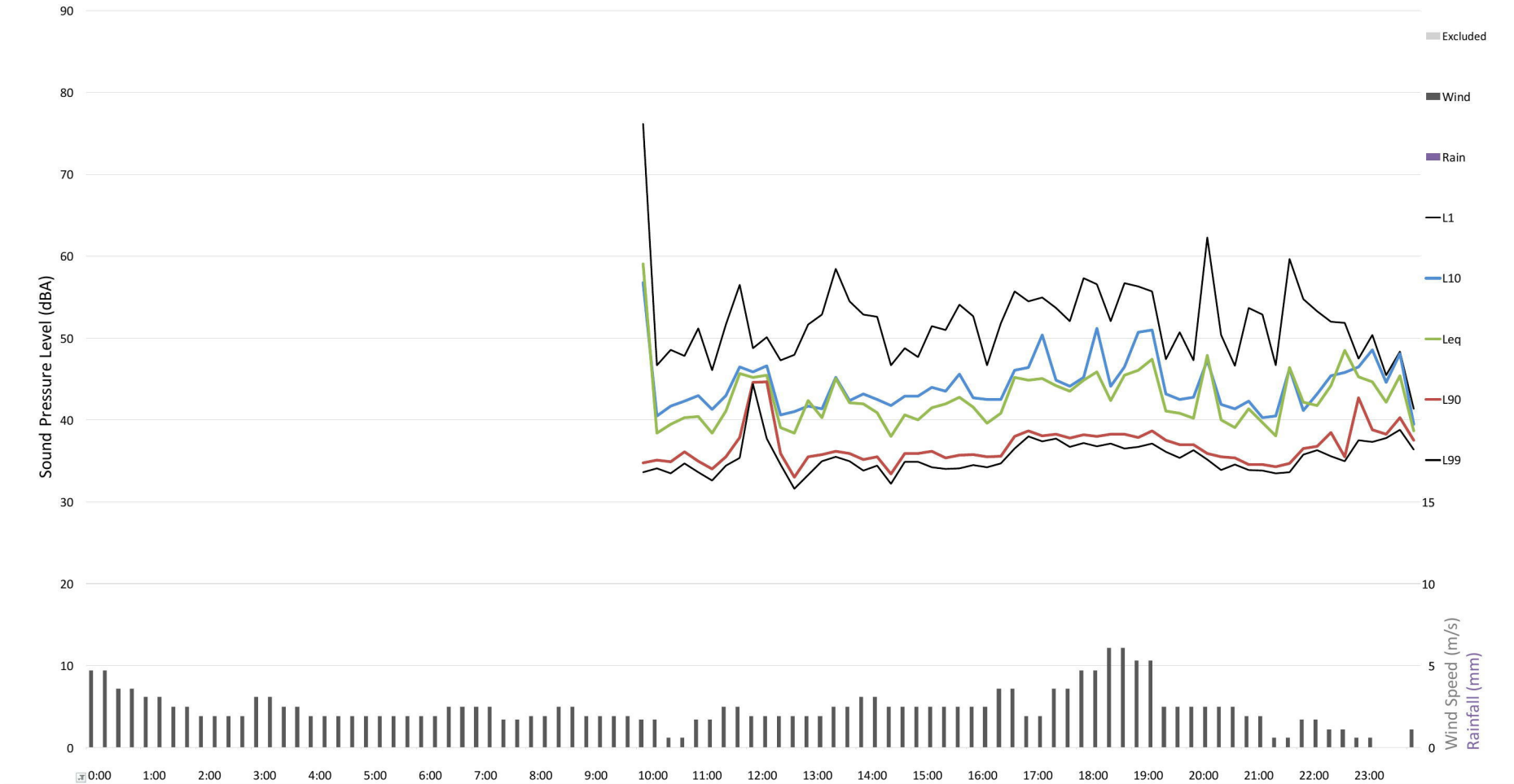
Logger Location: By the boundary of residential receiver at 68 Doonmore Street

BOM weather data: Penrith IDN60901



14-02-19 Thursday
Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | | | 44.1 | 44.1 | 43.2 | 43.2 |
| L _{A90} dB | | | 34.6 | 34.6 | 30.7 | 30.7 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

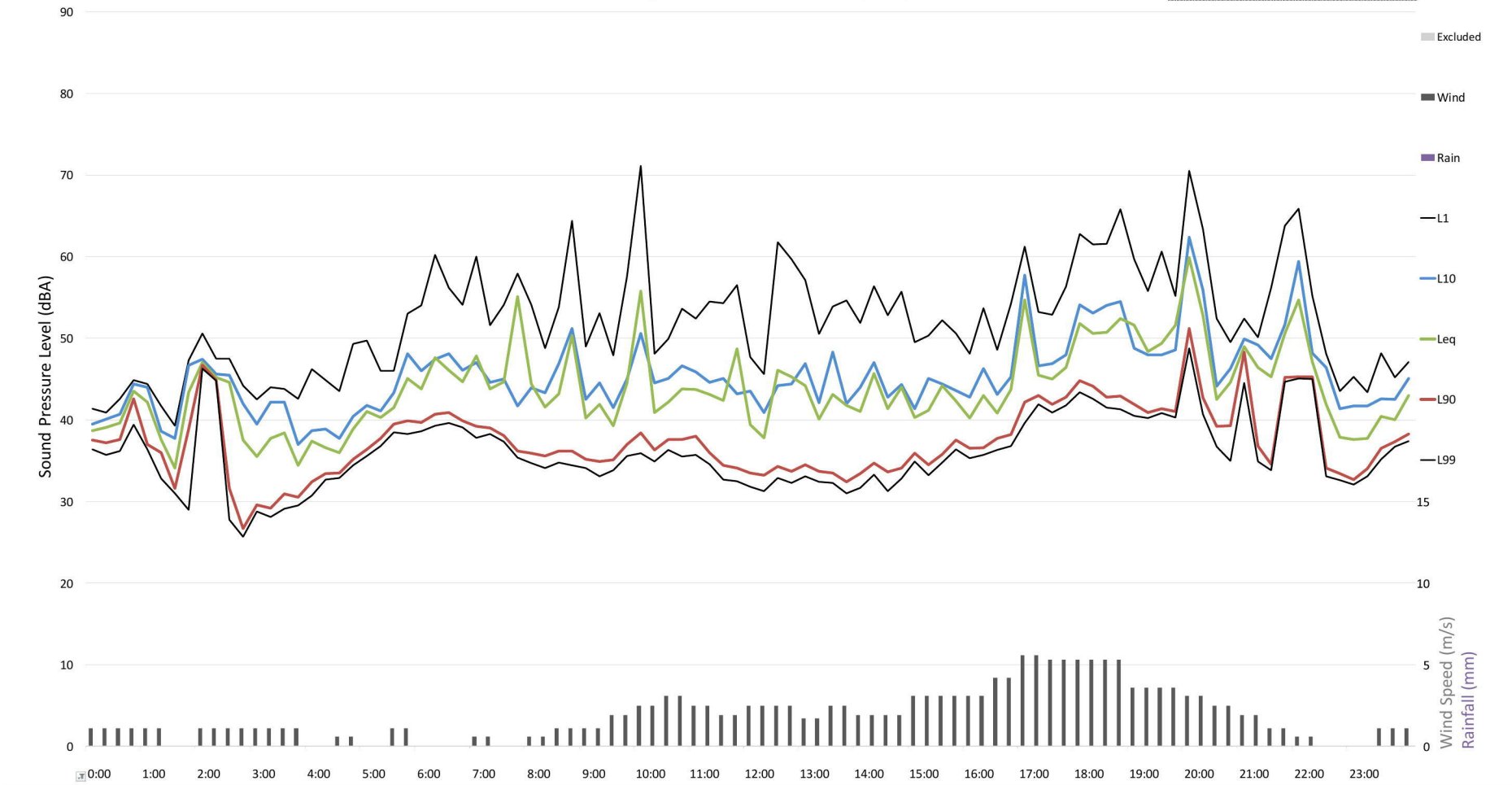
Logger Location: By the boundary of residential receiver at 68 Doonmore Street

BOM weather data: Penrith IDN60901



15-02-19 Friday
Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 46.6 | 46.6 | 51.9 | 51.9 | 44.9 | 44.9 |
| L _{A90} dB | 33.5 | 33.5 | 38.0 | 38.0 | 34.0 | 34.0 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

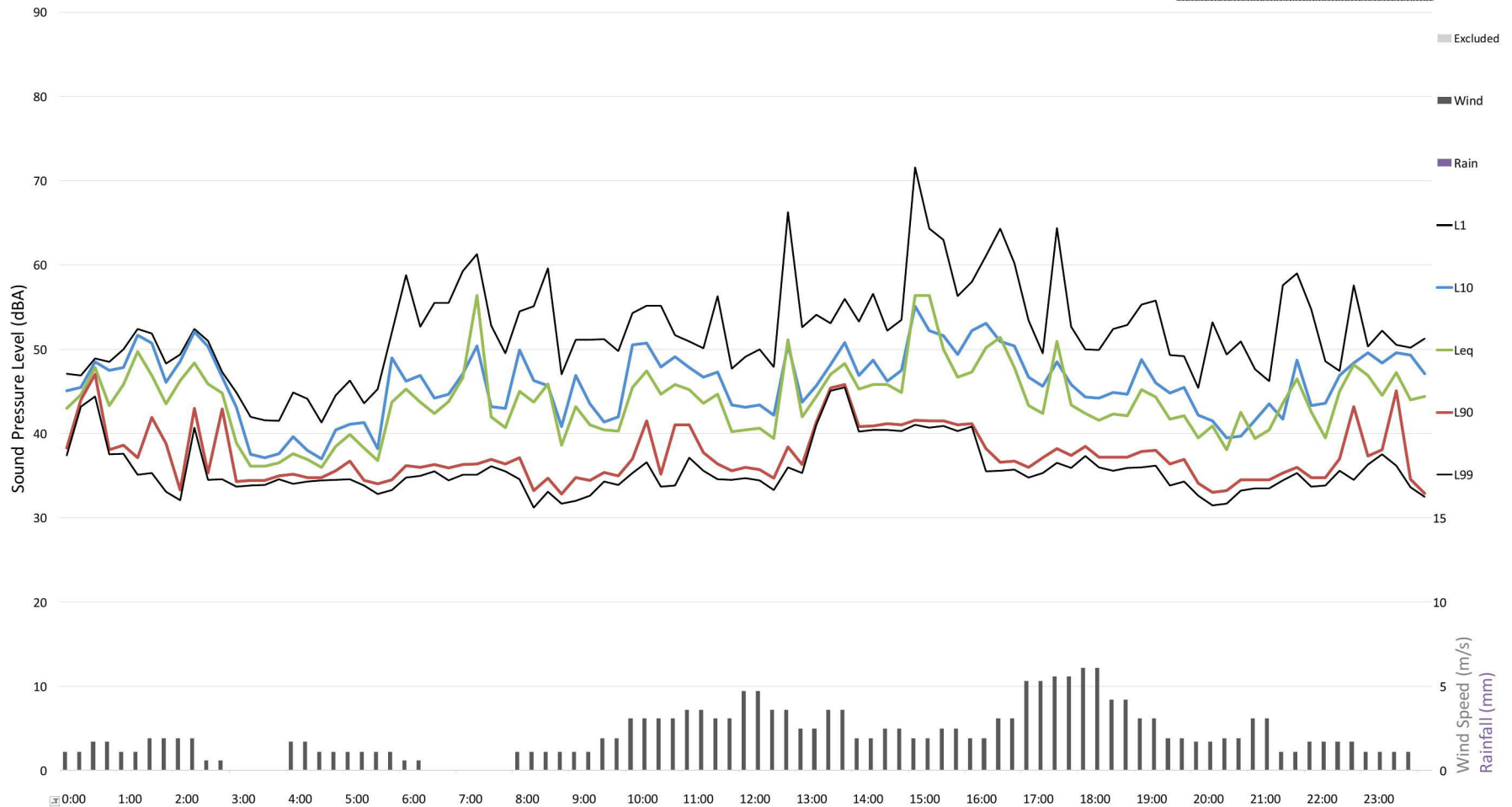
Logger Location: By the boundary of residential receiver at 68 Doonmore Street

BOM weather data: Penrith IDN60901



16-02-19 Saturday
Existing Ambient Noise Levels (dBA)

| | Daytime | | Evening | | Nighttime | | |
|---------------------|---------------|---------------|---------------|----------|-----------|----------|-----------|
| | 07:00 - 18:00 | 18:00 - 22:00 | 22:00 - 07:00 | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 48.3 | 48.3 | 42.6 | 42.6 | 44.1 | 44.1 | |
| L _{A90} dB | 34.7 | 34.7 | 33.7 | 33.7 | 28.1 | 28.1 | |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

Logger Location: By the boundary of residential receiver at 68 Doonmore Street

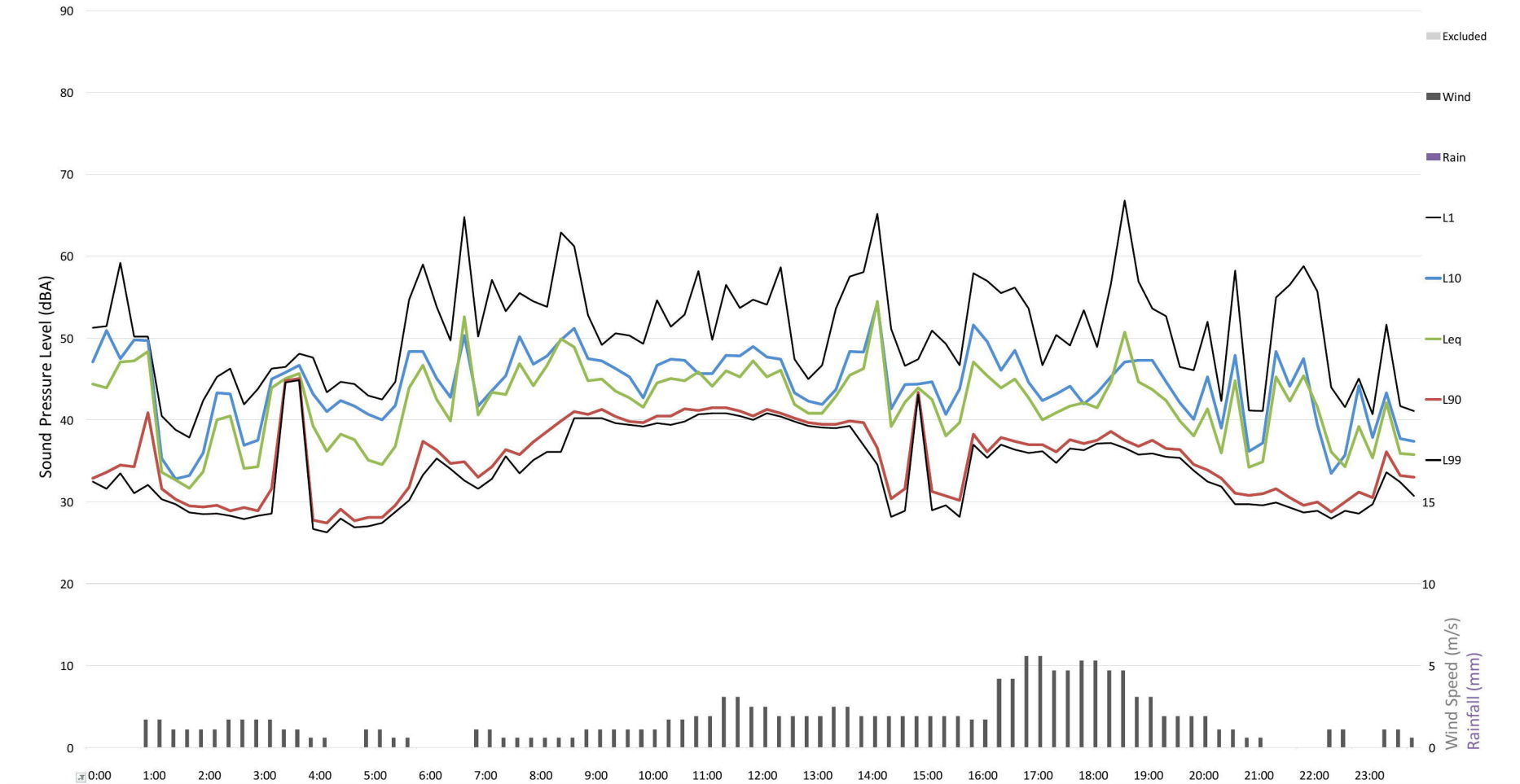
BOM weather data: Penrith IDN60901



17-02-19 Sunday

Existing Ambient Noise Levels (dBA)

| | Daytime 08:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 08:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 45.5 | 45.5 | 42.0 | 42.0 | 44.6 | 44.6 |
| L _{A90} dB | 31.6 | 31.6 | 30.9 | 30.9 | 28.5 | 28.5 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

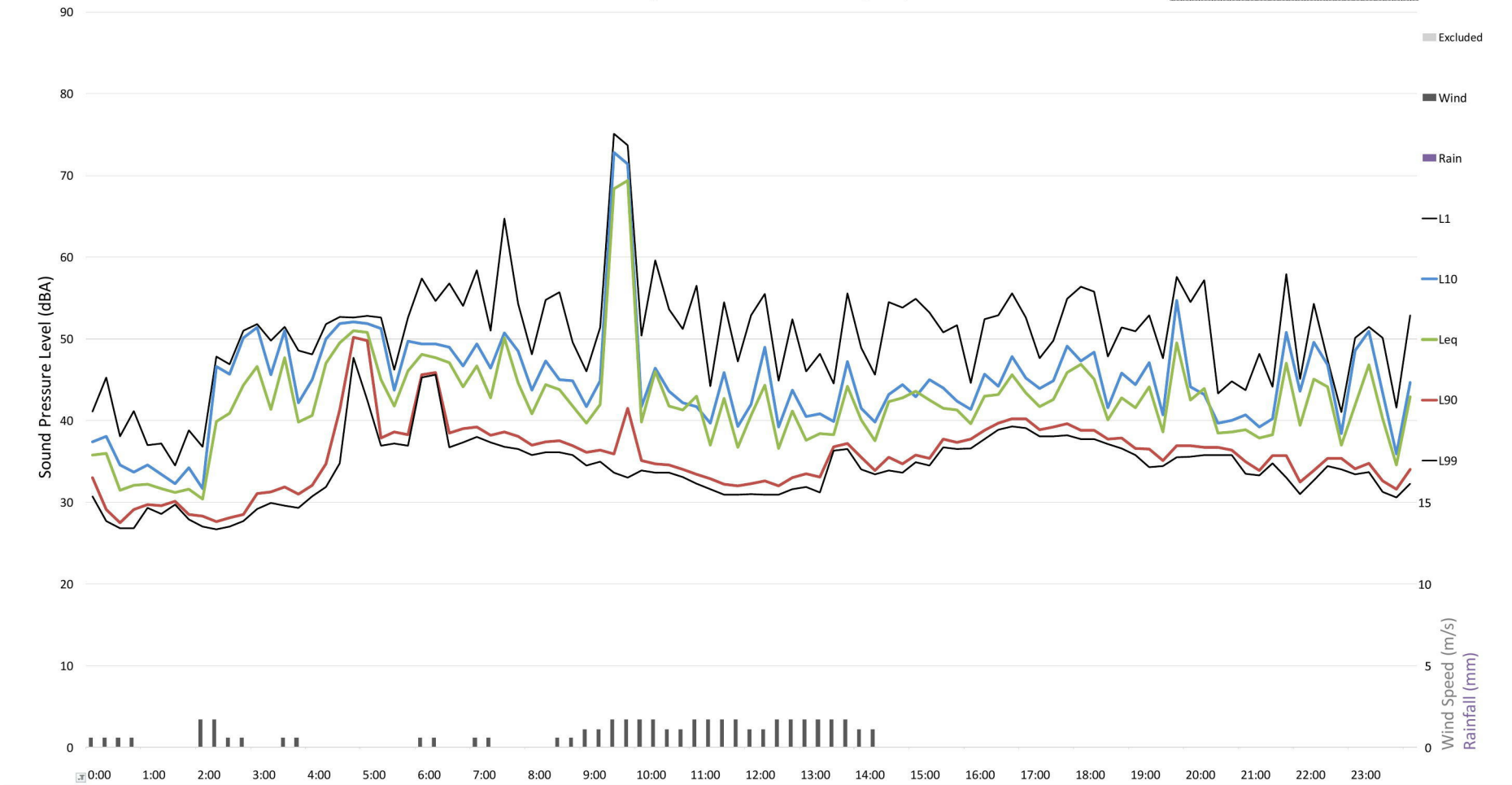
Logger Location: By the boundary of residential receiver at 68 Doonmore Street

BOM weather data: Penrith IDN60901



18-02-19 Monday
Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 55.7 | 55.7 | 43.7 | 43.7 | 42.5 | 42.5 |
| L _{A90} dB | 32.7 | 32.7 | 35.1 | 35.1 | 31.1 | 31.1 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

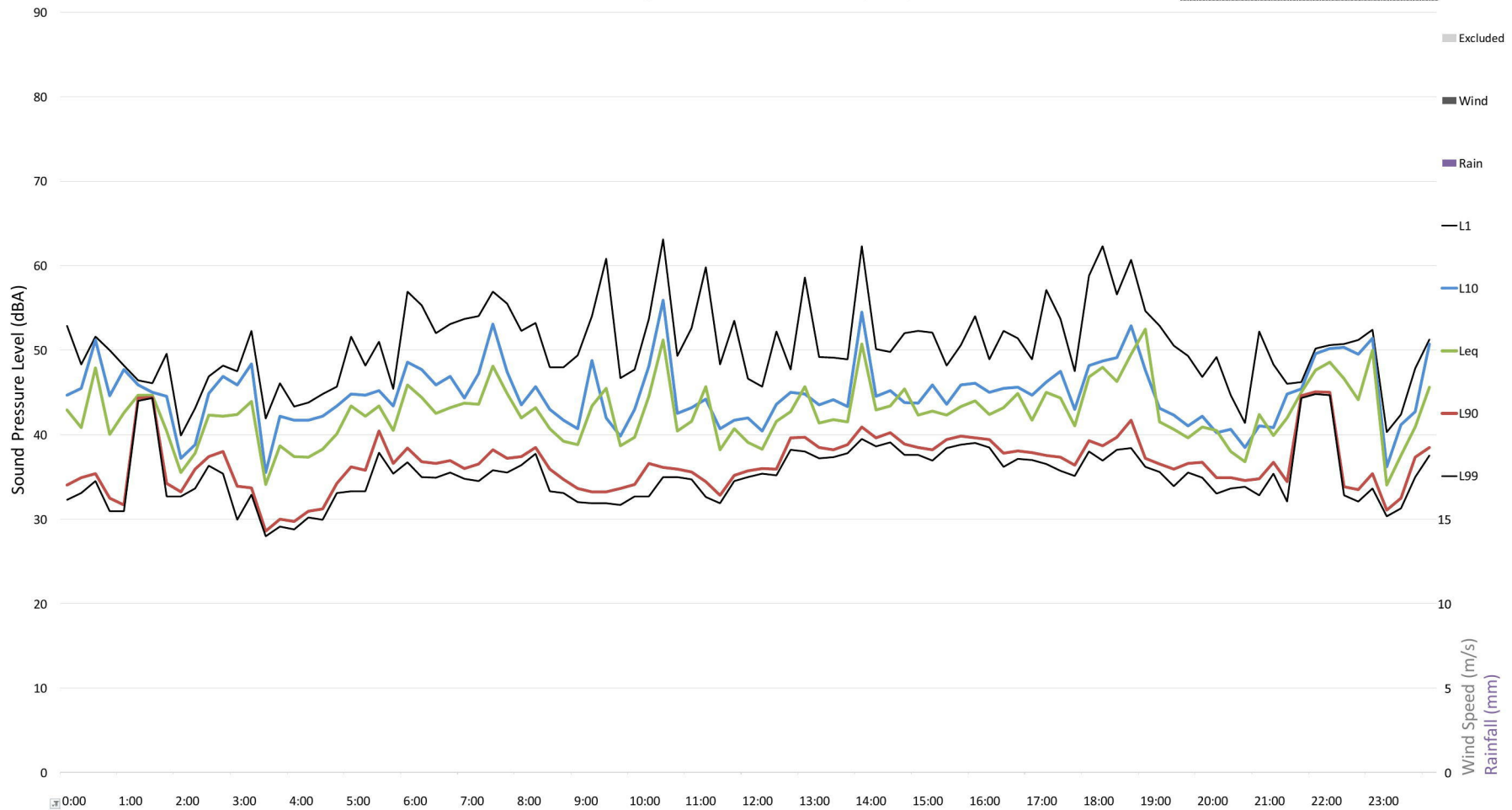
Logger Location: By the boundary of residential receiver at 68 Doonmore Street

BOM weather data: Penrith IDN60901



19-02-19 Tuesday
Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 44.0 | 44.0 | 45.5 | 45.5 | 45.8 | 45.8 |
| L _{A90} dB | 33.8 | 33.8 | 34.7 | 34.7 | 32.7 | 32.7 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

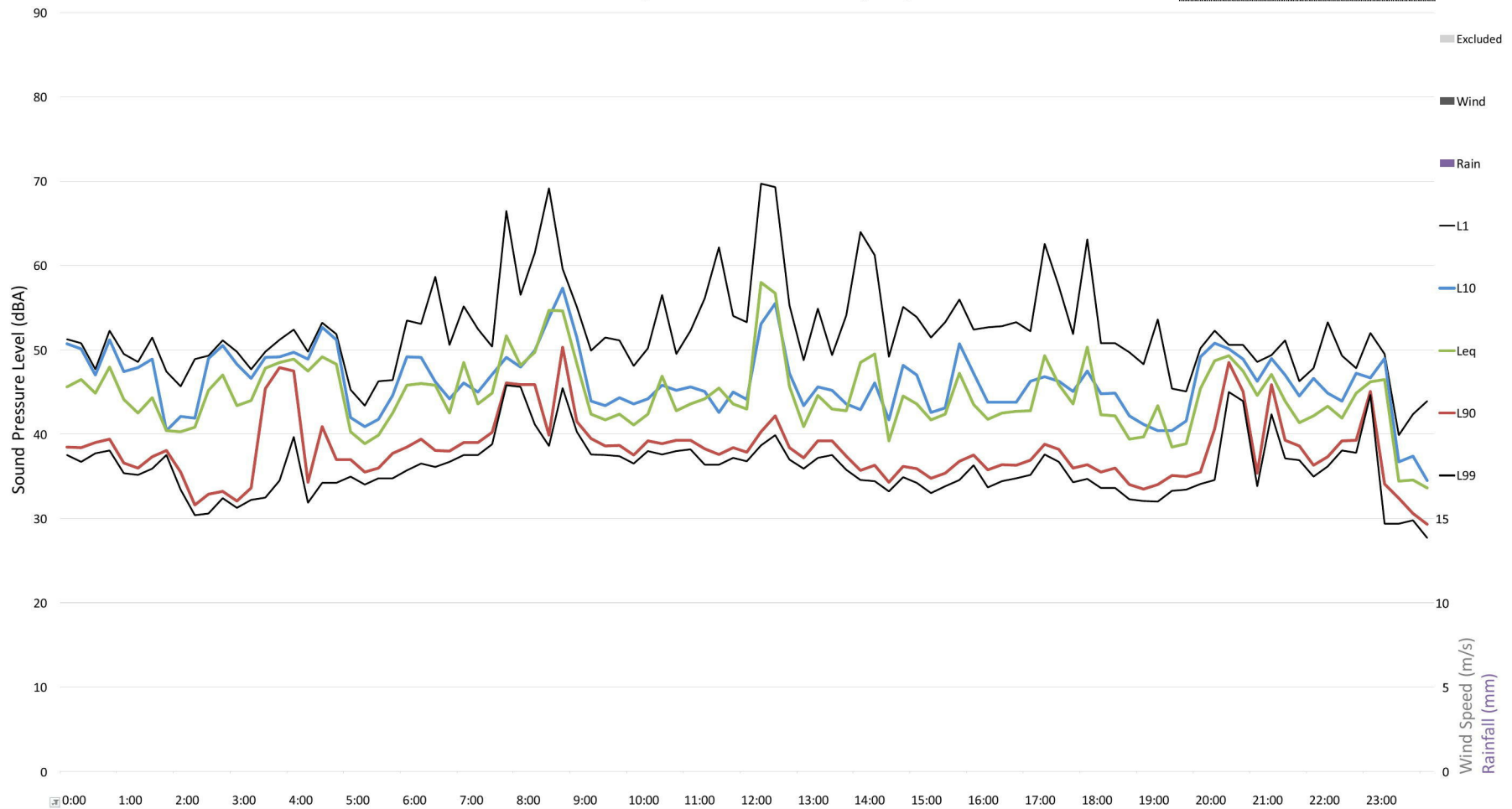
Logger Location: By the boundary of residential receiver at 68 Doonmore Street

BOM weather data: Penrith IDN60901



20-02-19 Wednesday
Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 48.5 | 48.5 | 45.5 | 45.5 | 42.5 | 42.5 |
| L _{A90} dB | 35.8 | 35.8 | 34.0 | 34.0 | 28.8 | 28.8 |



11470 Fresh Hope Care

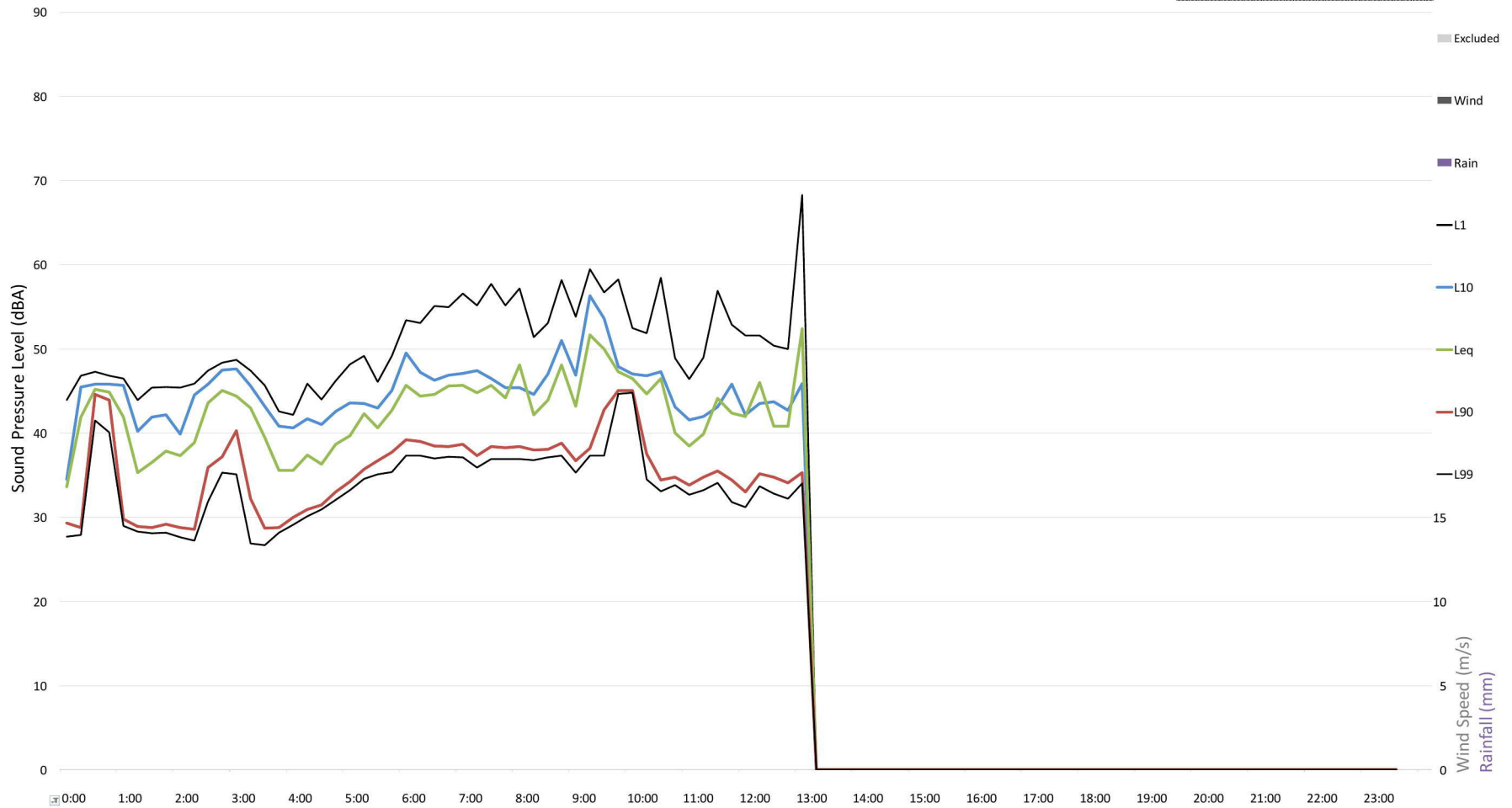
Project Address: 154 - 162 Stafford Street, Penrith

Logger Location: By the boundary of residential receiver at 68 Doonmore Street

BOM weather data: Penrith IDN60901

21-02-19 Thursday
Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 46.3 | 46.3 | | | | |
| L _{A90} dB | 34.2 | 34.2 | | | | |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

Logger Location: Facing Doonmore Street at approximately 5m away from the road



| Background Noise Levels L_{A90} dB | | | | | | |
|--------------------------------------|-----------|--------------------------|-----------|----------------------------|-----------|--|
| Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | | |
| Measured | Corrected | Measured | Corrected | Measured | Corrected | |

| | | | | | | | |
|--------------------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Thursday | 14-02-19 | | | 43.2 | 43.2 | 35.6 | 35.6 |
| Friday | 15-02-19 | 42.4 | 42.4 | 46.2 | 46.2 | 38.1 | 38.1 |
| Saturday | 16-02-19 | 40.7 | 40.7 | 45.2 | 45.2 | 37.5 | 37.5 |
| Sunday | 17-02-19 | 39.0 | 39.0 | 45.0 | 45.0 | 43.5 | 43.5 |
| Monday | 18-02-19 | 43.9 | 43.9 | 44.8 | 44.8 | 42.6 | 42.6 |
| Tuesday | 19-02-19 | 44.0 | 44.0 | 42.9 | 42.9 | 42.2 | 42.2 |
| Wednesday | 20-02-19 | 42.6 | 42.6 | 39.3 | 39.3 | 41.8 | 41.8 |
| Thursday | 21-02-19 | 41.8 | 41.8 | | | | |
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| Rating Background Level (RBL) | | 42 | 42 | 45 | 45 | 42 | 42 |

| Existing Noise Levels L_{Aeq} dB | | | | | | |
|------------------------------------|-----------|--------------------------|-----------|----------------------------|-----------|--|
| Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | | |
| Measured | Corrected | Measured | Corrected | Measured | Corrected | |

| | | | | | | | |
|---|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Thursday | 14-02-19 | | | 59.4 | 59.4 | 55.0 | 55.0 |
| Friday | 15-02-19 | 60.3 | 60.3 | 58.3 | 58.3 | 53.8 | 53.8 |
| Saturday | 16-02-19 | 59.1 | 59.1 | 57.6 | 57.6 | 53.5 | 53.5 |
| Sunday | 17-02-19 | 57.9 | 57.9 | 56.6 | 56.6 | 53.8 | 53.8 |
| Monday | 18-02-19 | 58.7 | 58.7 | 57.2 | 57.2 | 54.2 | 54.2 |
| Tuesday | 19-02-19 | 60.0 | 60.0 | 58.5 | 58.5 | 53.1 | 53.1 |
| Wednesday | 20-02-19 | 59.4 | 59.4 | 57.4 | 57.4 | 52.7 | 52.7 |
| Thursday | 21-02-19 | 59.1 | 59.1 | | | | |
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| Average Noise Level (L_{Aeq}) | | 59 | 59 | 58 | 58 | 54 | 54 |

11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

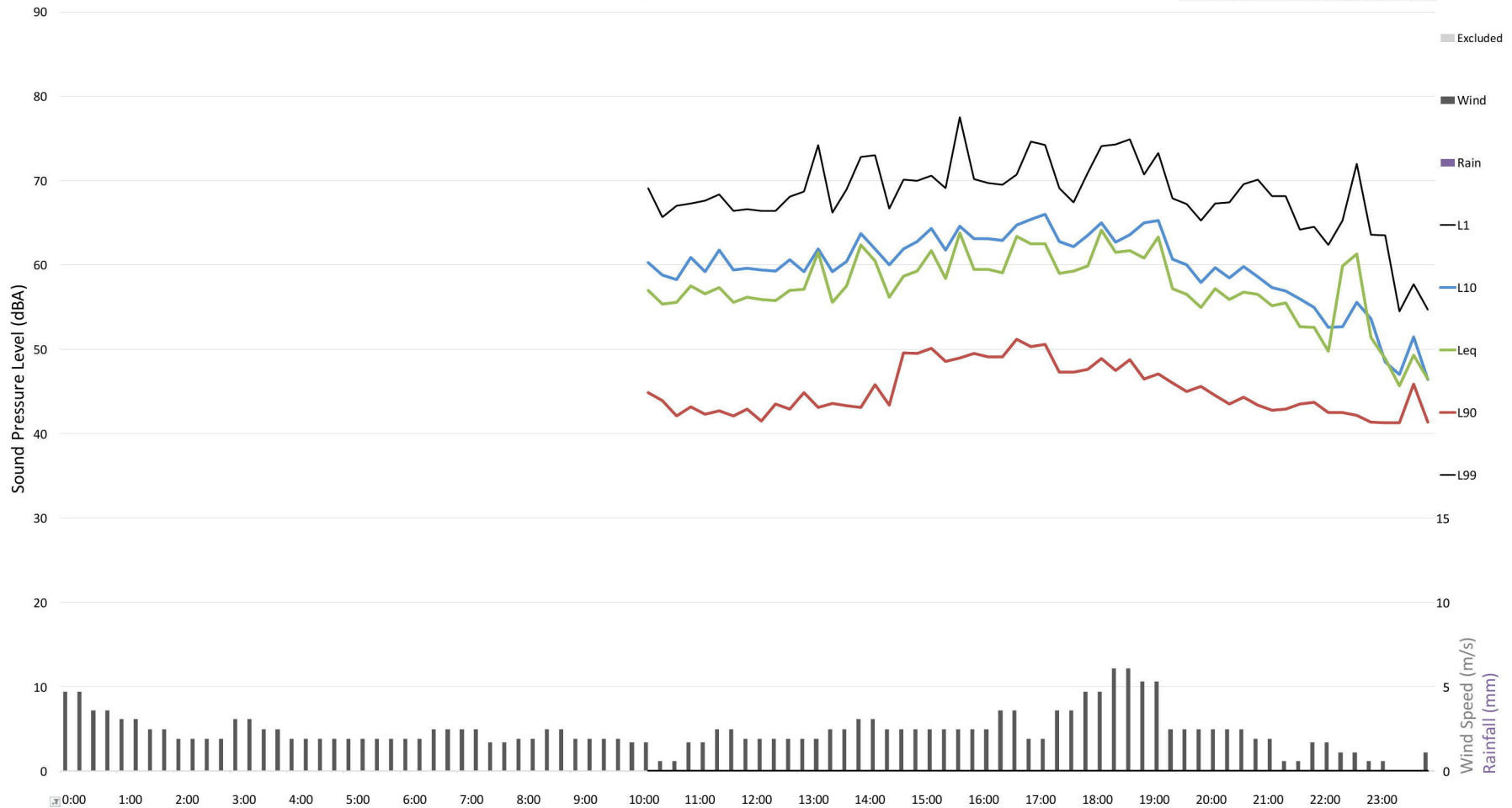
Logger Location: Facing Doonmore Street at approximately 5m away from the road

BOM weather data: Penrith IDN60901



14-02-19 Thursday
Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | | | 59.4 | 59.4 | 55.0 | 55.0 |
| L _{A90} dB | | | 43.2 | 43.2 | 35.6 | 35.6 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

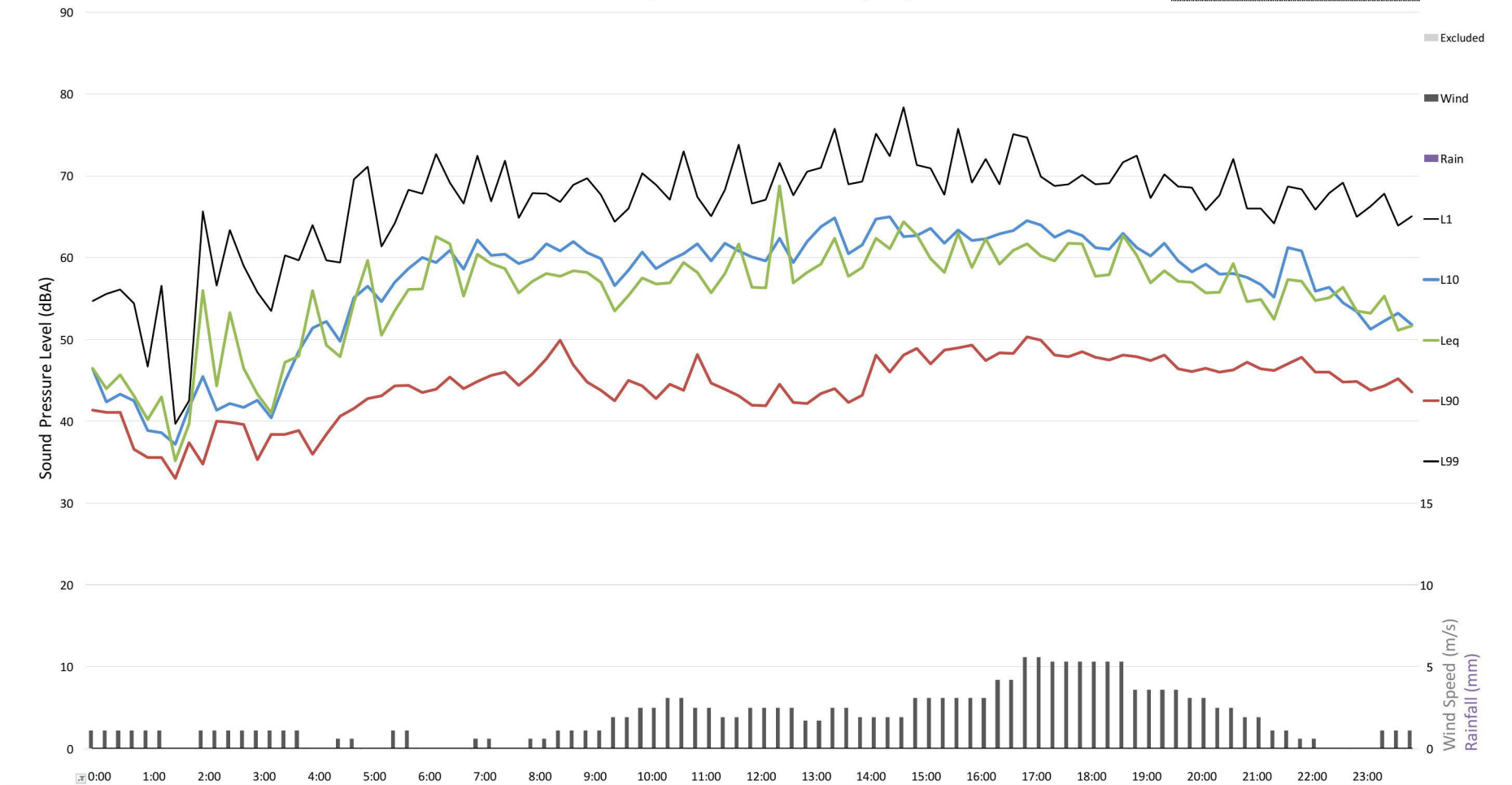
Logger Location: Facing Doonmore Street at approximately 5m away from the road

BOM weather data: Penrith IDN60901



15-02-19 Friday
Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 60.3 | 60.3 | 58.3 | 58.3 | 53.8 | 53.8 |
| L _{A90} dB | 42.4 | 42.4 | 46.2 | 46.2 | 38.1 | 38.1 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

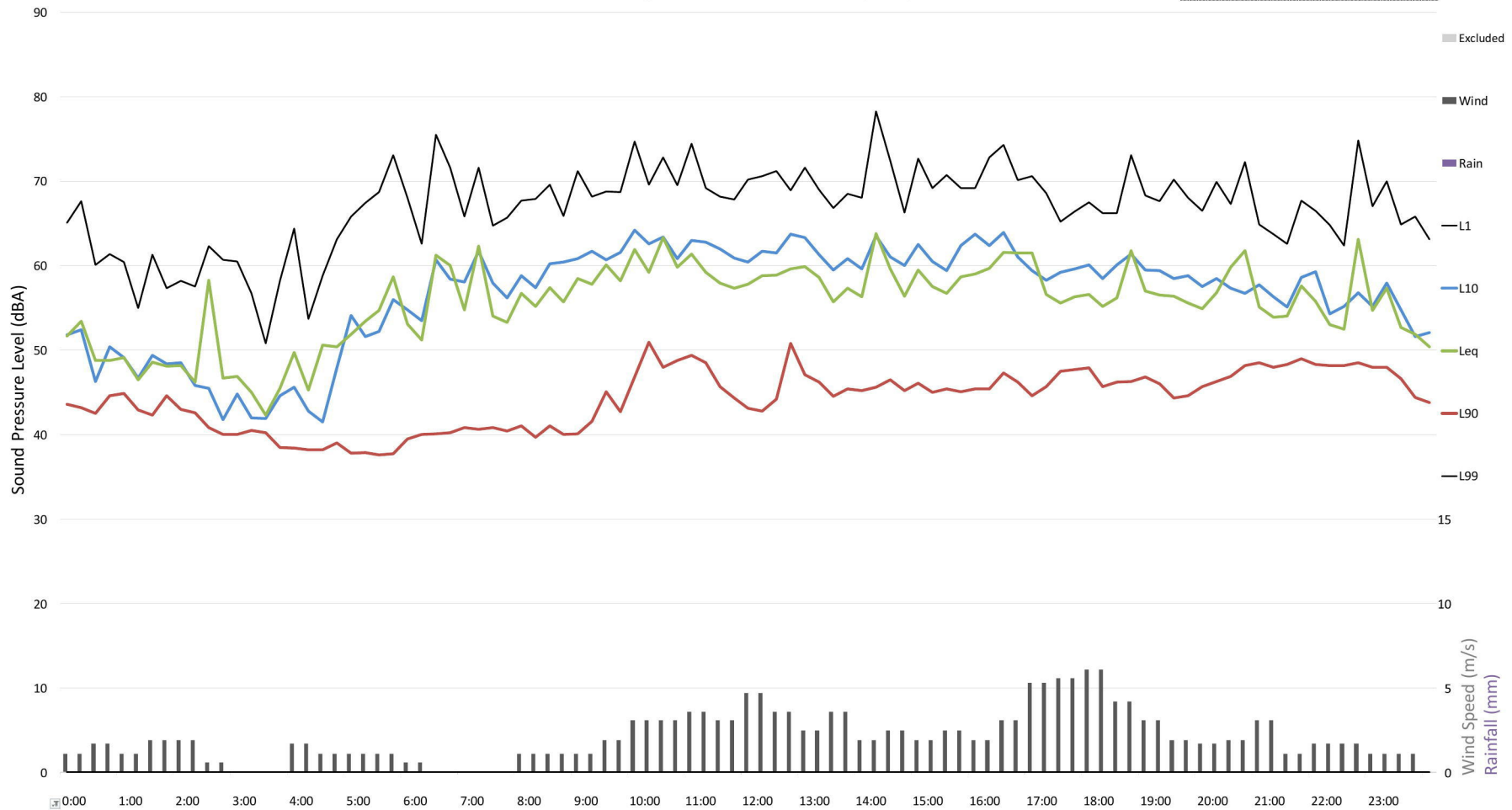
Logger Location: Facing Doonmore Street at approximately 5m away from the road

BOM weather data: Penrith IDN60901



16-02-19 Saturday
Existing Ambient Noise Levels (dBA)

| | Daytime | | Evening | | Nighttime | |
|---------------------|---------------|-----------|---------------|-----------|---------------|-----------|
| | 07:00 - 18:00 | | 18:00 - 22:00 | | 22:00 - 07:00 | |
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 59.1 | 59.1 | 57.6 | 57.6 | 53.5 | 53.5 |
| L _{A90} dB | 40.7 | 40.7 | 45.2 | 45.2 | 37.5 | 37.5 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

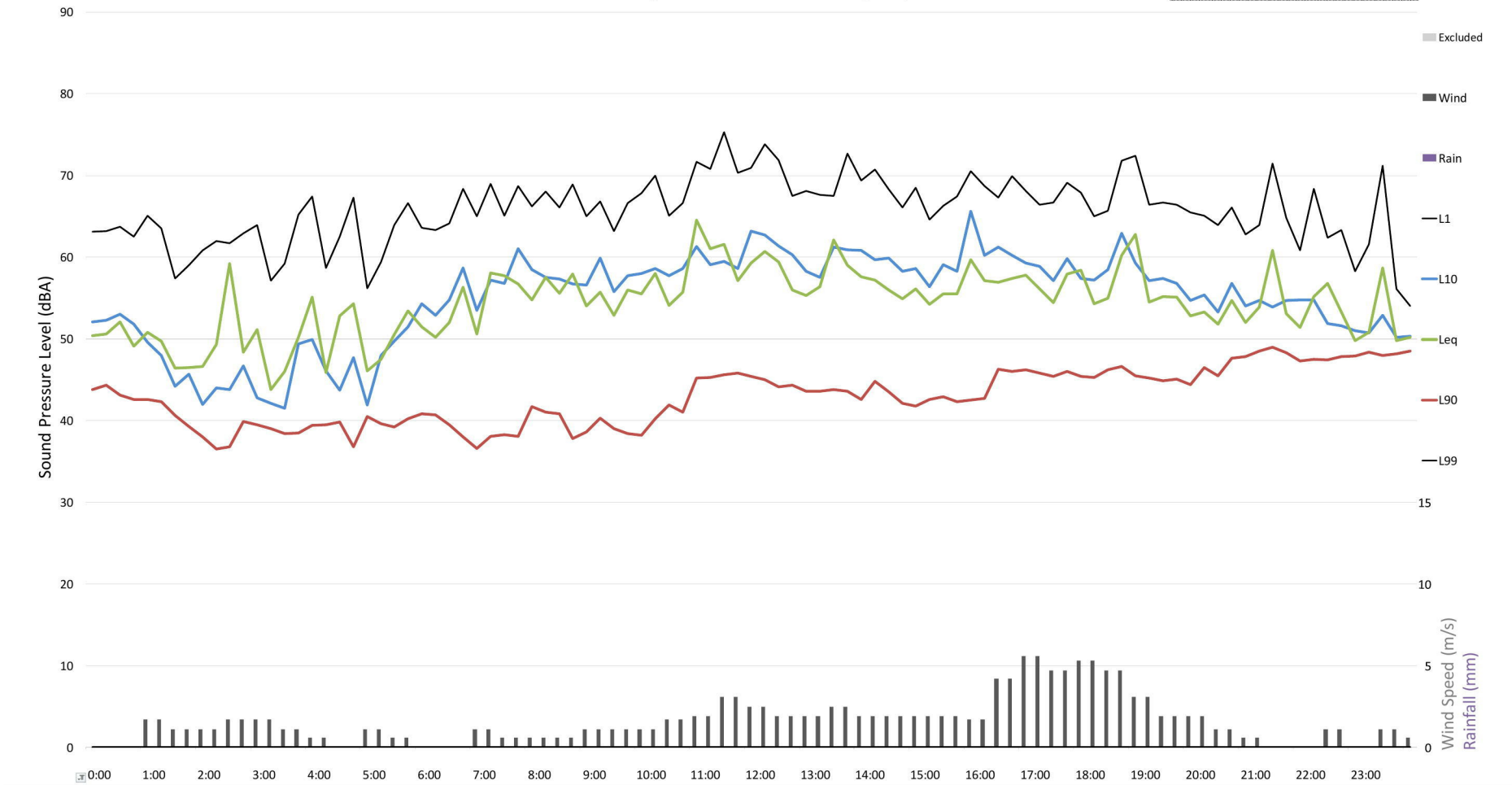
Logger Location: Facing Doonmore Street at approximately 5m away from the road

BOM weather data: Penrith IDN60901



17-02-19 Sunday
Existing Ambient Noise Levels (dBA)

| | Daytime | | Evening | | Nighttime | |
|---------------------|---------------|-----------|---------------|-----------|---------------|-----------|
| | 08:00 - 18:00 | | 18:00 - 22:00 | | 22:00 - 08:00 | |
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 57.9 | 57.9 | 56.6 | 56.6 | 53.8 | 53.8 |
| L _{A90} dB | 39.0 | 39.0 | 45.0 | 45.0 | 43.5 | 43.5 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

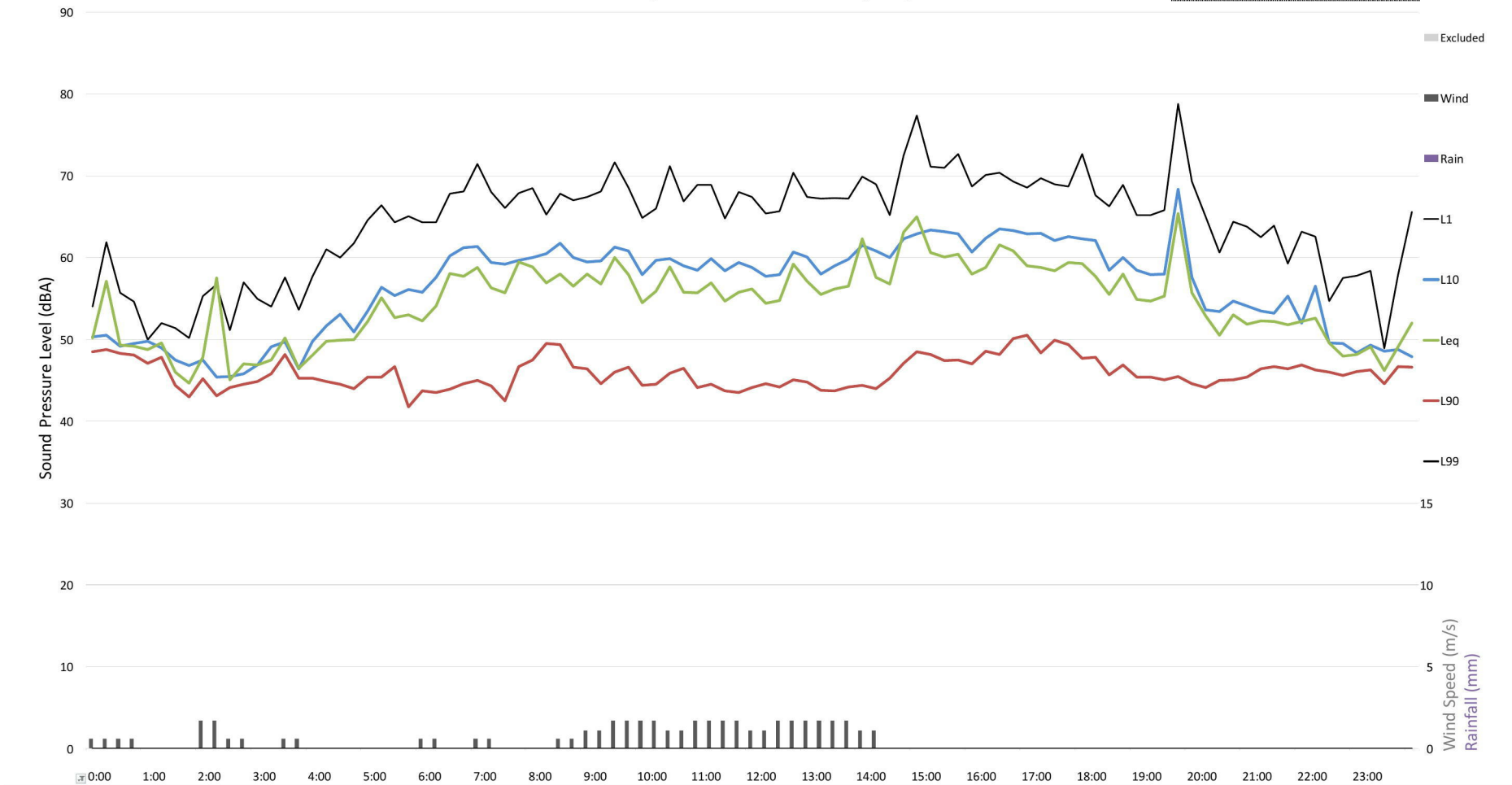
Logger Location: Facing Doonmore Street at approximately 5m away from the road

BOM weather data: Penrith IDN60901



18-02-19 Monday
Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 58.7 | 58.7 | 57.2 | 57.2 | 54.2 | 54.2 |
| L _{A90} dB | 43.9 | 43.9 | 44.8 | 44.8 | 42.6 | 42.6 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

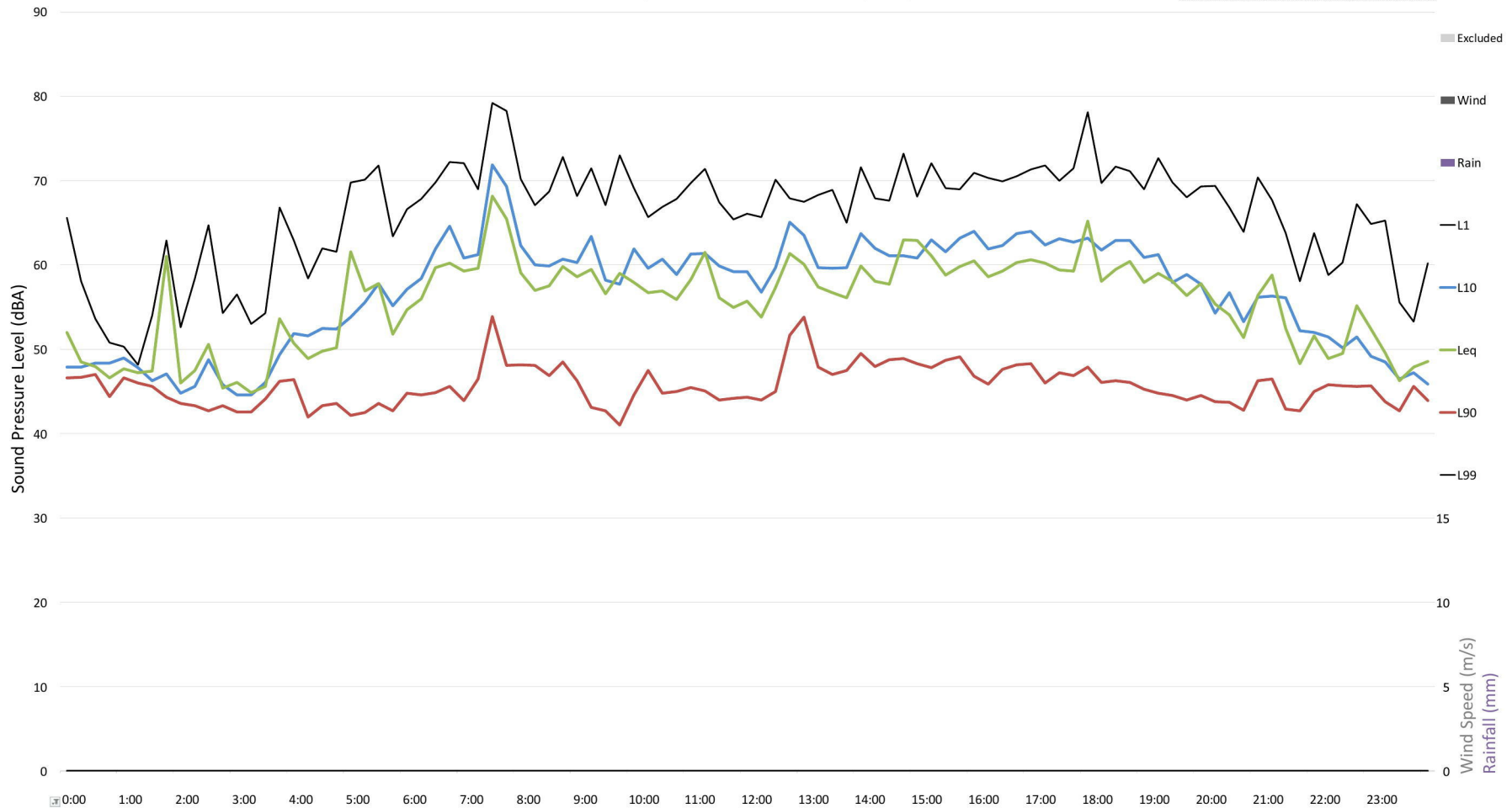
Logger Location: Facing Doonmore Street at approximately 5m away from the road

BOM weather data: Penrith IDN60901



19-02-19 Tuesday
Existing Ambient Noise Levels (dBA)

| | Daytime | | Evening | | Nighttime | |
|---------------------|---------------|-----------|---------------|-----------|---------------|-----------|
| | 07:00 - 18:00 | | 18:00 - 22:00 | | 22:00 - 07:00 | |
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 60.0 | 60.0 | 58.5 | 58.5 | 53.1 | 53.1 |
| L _{A90} dB | 44.0 | 44.0 | 42.9 | 42.9 | 42.2 | 42.2 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

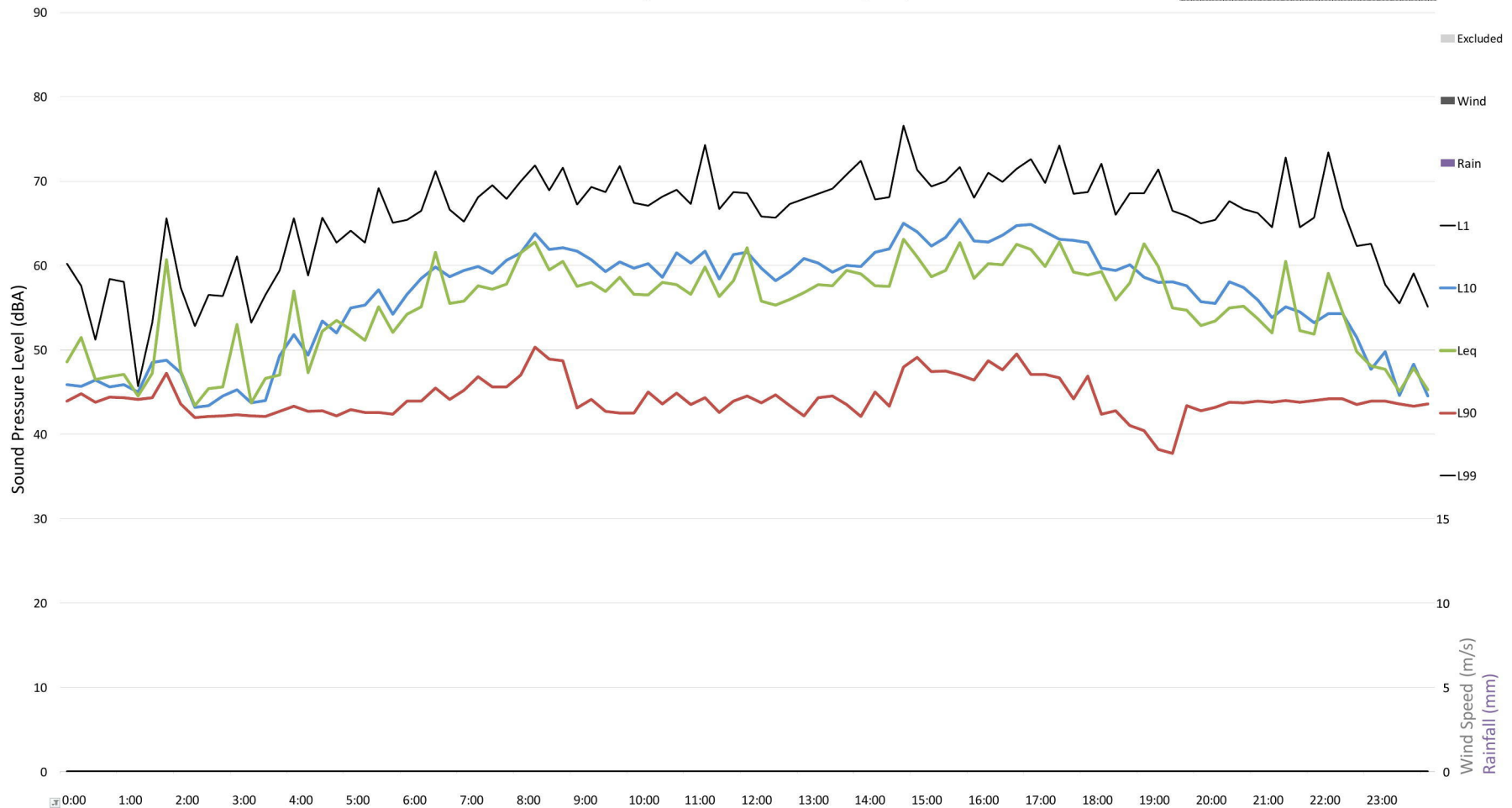
Logger Location: Facing Doonmore Street at approximately 5m away from the road

BOM weather data: Penrith IDN60901



20-02-19 Wednesday
Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 59.4 | 59.4 | 57.4 | 57.4 | 52.7 | 52.7 |
| L _{A90} dB | 42.6 | 42.6 | 39.3 | 39.3 | 41.8 | 41.8 |



11470 Fresh Hope Care

Project Address: 154 - 162 Stafford Street, Penrith

Logger Location: Facing Doonmore Street at approximately 5m away from the road

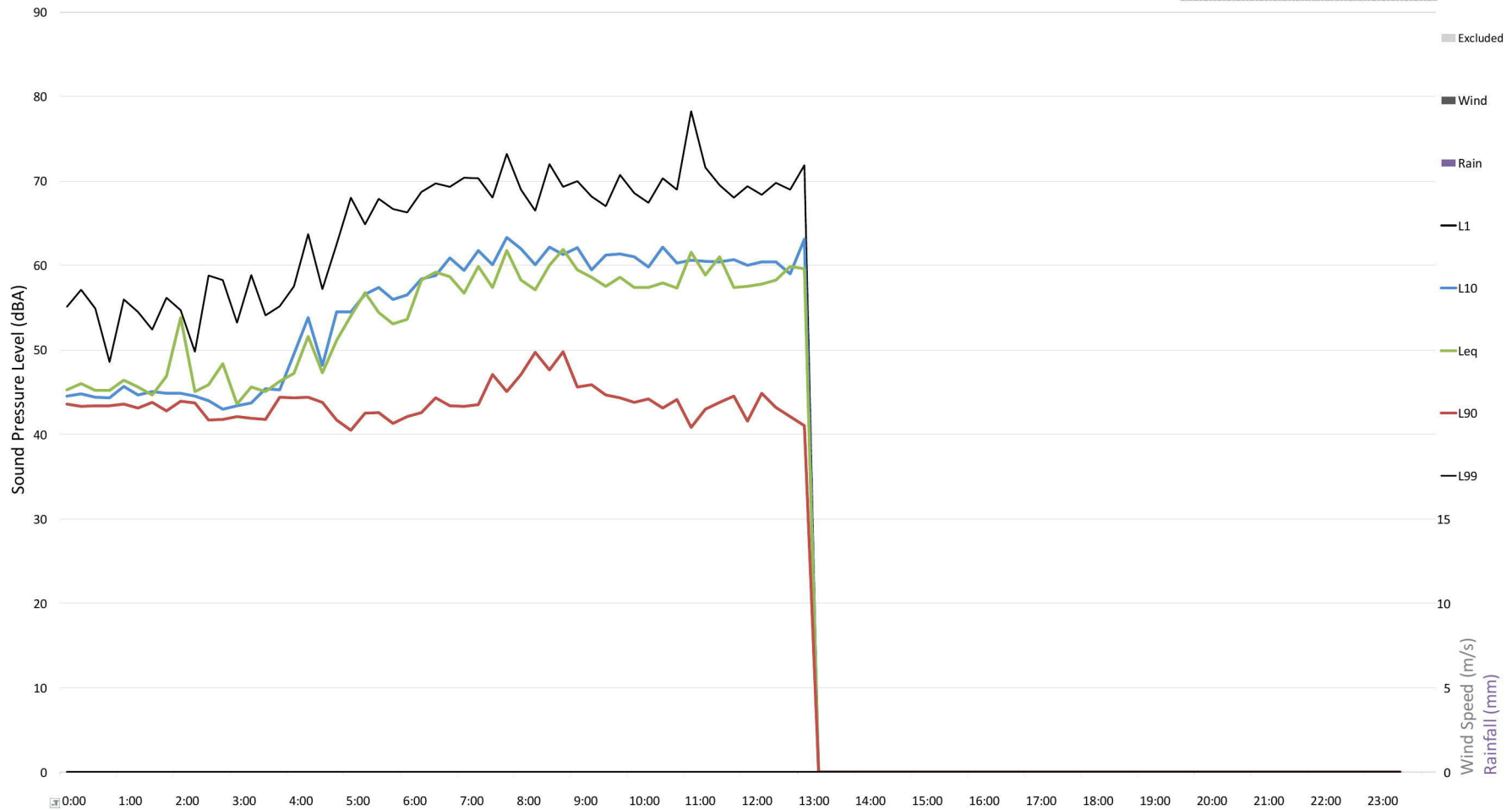
BOM weather data: Penrith IDN60901



21-02-19 Thursday

Existing Ambient Noise Levels (dBA)

| | Daytime 07:00 - 18:00 | | Evening 18:00 - 22:00 | | Nighttime 22:00 - 07:00 | |
|---------------------|--------------------------|-----------|--------------------------|-----------|----------------------------|-----------|
| | Measured | Corrected | Measured | Corrected | Measured | Corrected |
| L _{Aeq} dB | 59.1 | 59.1 | | | | |
| L _{A90} dB | 41.8 | 41.8 | | | | |





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