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1 INTRODUCTION

Acoustic Logic Consultancy (ALC) has been engaged by Best Hooper Lawyers to conduct an Acoustic Assessment from noise associated with existing operators surrounding the development located at 21 Northumberland Street, and 26 Wellington Street, Collingwood - Victorian Distillery and Silos (VDAS). The assessment will assess noise emissions from surrounding uses and what in principle treatment measures may be considered to mitigate noise emissions to existing residents at VDAS.

2 SITE DESCRIPTION

The development under consideration is situated on 21 Northumberland Street and 26 Wellington Street, Collingwood. The property is bounded by Northumberland Street to the north, Byron Street to the East and commercial properties to the south and west. The current development has been used as a residential development in part or whole since 2001.

The following local noise sources have been identified.

- Source 1: Porsche Centre Melbourne (Porsche) (located at 109-111 Victoria Parade) back of house car wash (Porsche car wash). The car wash entrance is approximately 20m east of the subject site;
- Source 2: Melbourne Pathology building exhaust fans adjacent its car park, approximately 20m south of the subject site;
- Source 3: Melbourne Pathology building (located at 103 Victoria Parade) roof exhaust fans and mechanical equipment, approximately 30m south of the subject site;
- Source 4: Jetstar building (located at 79 Victoria Parade) roof mechanical plant, approximately 45m south-west of the subject site;

The following additional observations were made while on site

1. Telstra exchange site - located across Northumberland Street is currently undergoing significant redevelopment. Noise from the redevelopment will need to ensure compliance with SEPP N-1 and SEPP N-2 at the VDAS site to address noise emissions.
2. Noise associated with mechanical plant serving the development was not audible during site inspection. Plant and equipment within the development are related to individual apartment use and as such no further assessment or analysis is required.
3. Other commercial developments inspected do not generate noise that is audible at the subject site noting that the existing commercial tenancies operate during normal office hours and as such no further assessment is required. Several domestic style condensing units are installed but were not audible during site inspection and given the hours of operation are not expected to impact existing residential receivers.
4. No music venues were found to be within the immediate area that currently generate music noise levels that are audible at the subject site. On this basis assessment of music noise is not required.
5. ALC were advised by the Body Corporate that no complaints from residents had been with respect to existing plant and equipment serving existing surrounding commercial sites.

Figure 1 indicates the subject site and the surrounding environment. It is noted that it was not possible to gain access to either the Melbourne Pathology or Jetstar buildings to review plant and

equipment. Assessment has been based on site inspection both at ground and elevated levels on both the development and adjoining public car park.

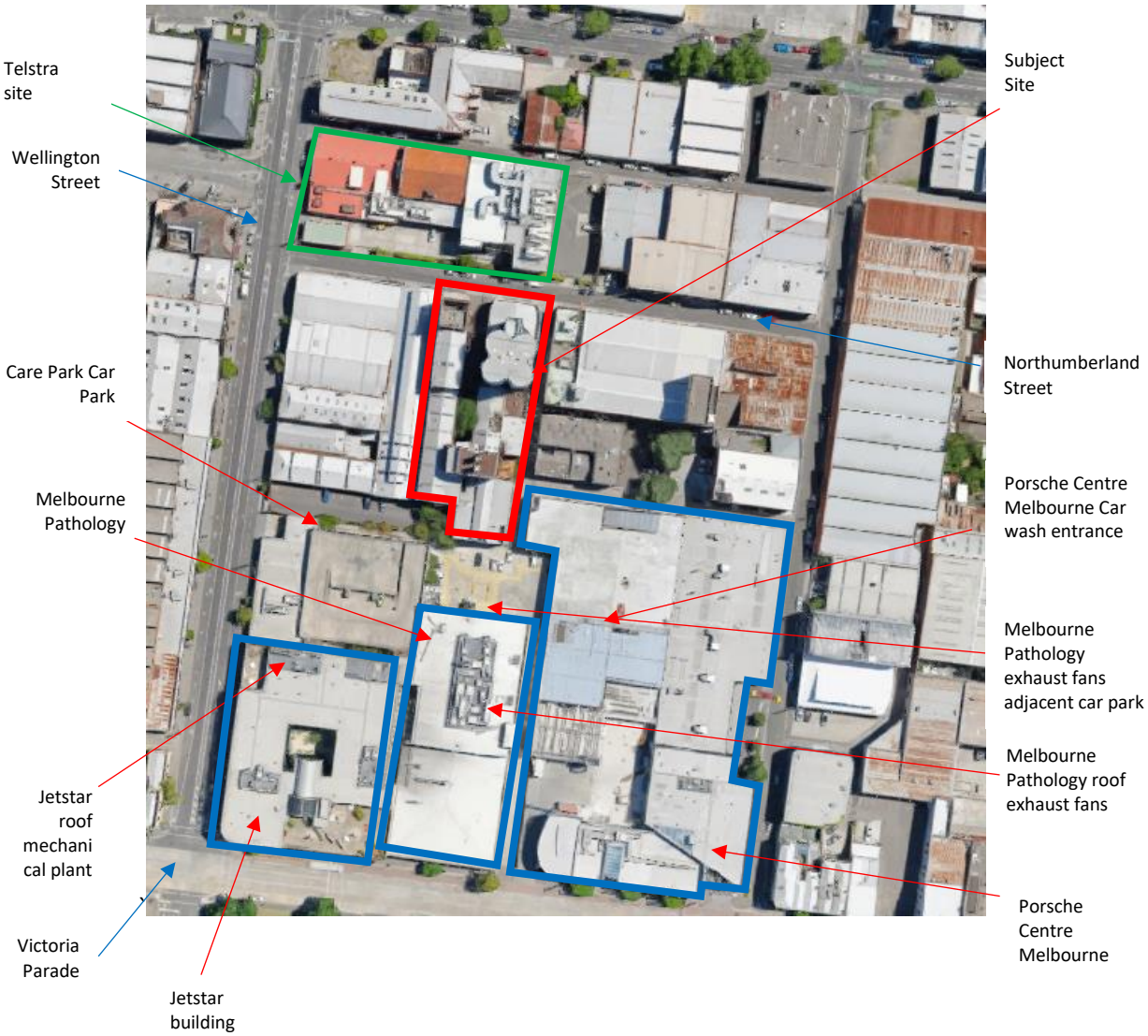


Figure 1: Site Map and adjacent noise sources (Source: Google Maps)

3 DOCUMENTS TAKEN INTO ACCOUNT

1. State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (SEPP N1).
2. State Environment Protection Policy (Control of Music Noise from Public Premises) No. N-2 (SEPP N2).
3. Clause 52.03 of the Yarra Planning Scheme.

4 ENVIRONMENTAL NOISE DESCRIPTORS

Environmental noise constantly varies in level, due to fluctuations in local noise sources including traffic. Accordingly, a 15-minute measurement interval is normally utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters.

In the case of environmental noise three principle measurement parameters are used, namely L_{10}, L_{90} and L_{eq}.

The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement intervals.

The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced by the source.

Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source depends on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. L_{eq} is important in the assessment of traffic and rail noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of industrial noise.

The L_1 parameter (or the noise level exceeded for 1% of the time) is used during the night period to assess potential sleep arousal effects due to transient noise sources.

5 MEASURED NOISE LEVELS

5.1 MEASUREMENT LOCATIONS

Figures 2 and 3 below show the subject site and measurement locations.

Figure 2 – Measurement Locations (source: Google Maps)

Figure 3 – Measurement Locations (source: Google Maps)

Unattended noise measurements were conducted on site to establish the background noise levels in the area at the location indicated in Figure 1 from the 19th to 25th October 2018. Manned noise measurements were conducted on the 19th, 24th and 25th of October 2018 and 14th January 2019.

Noise level measurements of noise sources were conducted at the locations indicated in Figure 2, at 1.5 metres above floor level:

- Location 1: Noise emitted from Porsche car wash – manned noise level measurements were conducted adjacent the façade of the subject site. Car wash is located within the Porsche dealership service centre (refer Appendix 1) and only operates during the day period.

- Location 2: Noise from Melbourne Pathology exhaust fans below Melbourne Pathology level 1 slab (under croft - free field).

- Location 3: View of both Jetstar and Melbourne Pathology roof top plant locations on the roof level of the public car park adjacent the subject site. Plant noise not audible.

- Location 4: Unmanned noise monitor installation on second-floor balcony within courtyard area.

- Location 5: Measurements conducted at roof level of the brickwork tower facing Jetstar and Melbourne Pathology buildings. Plant noise was not audible. Noise governed by general urban hum (transportation noise).

- Location 6: Noise from plant on roof of 'Results Based Training' - 6 metres from plant and equipment - level 7, Care Park car park (free field).

- Location 7: Noise from plant on the ground floor of the Care Park Car Park and exhaust fans serving the Melbourne Pathology building– manned noise level measurements were conducted on the ground level adjacent the façade of subject site.

- Location 8: Level 6 - Care Park car park (free field).

- Location 9: Level 7 Care Park car park (free field).

- Location 10: Level 6/7 of Care Park car park (free field).

5.2 EQUIPMENT USED

The long-term noise monitoring was conducted using an ARL-315 noise monitor. The equipment was calibrated at the beginning and the end of the measurement using a Nor-1256 calibrator; no significant drift was detected. All measurements were taken on fast response mode.

A Norsonic Nor140 sound level meter was used to undertake manned noise level measurements. The noise monitor was calibrated at the beginning and end of the measurement period using a Nor-1256 and NC74 calibrator; no significant drift was detected. Measurements were taken on A-weighting and fast time constant.

5.3 MEASURED NOISE LEVELS

The measured background noise levels from unmanned monitoring are presented in Table 1.

Table 1 – Measured (Unmanned) Background Levels

Period	Time	Measured Background Level dB(A) L_{90}
Day	Monday – Friday (7am–6pm) Saturday (7am–1pm)	46*
Evening	Monday – Sunday (6pm–10pm) Saturday (1pm–6pm) Sunday (7am–6pm)	42*
Night	Monday – Sunday (10pm–7am)	39*

*Note – Noise levels have been corrected by -2.5dB to account for façade reflection and have excluded periods influenced by construction activity

Table 2 – Measured Noise Levels (Manned Measurements)

Date	Location	Time	Noise Level L_{eq} dB(A)	Comment
20/10/18	1	15:46-16:01pm	60[1]	Porsche car wash at site boundary
19/10/18	2	14:25-14:26pm	54[1]	Melbourne Pathology exhaust fans
20/10/18	3	15:21-15:30pm	53	General background noise plant noise not audible
		16:18pm-16:33pm	54	
	5	15:43-15:58pm	54	General background noise plant noise not audible
24/10/18	6	14:59-15:00pm	60	Plant noise - 'Results Based Training' building
	7	15:44-15:46pm	50[1]	Melbourne Pathology exhaust fans
	8	14:55-14:56pm	53	Melbourne Pathology exhaust fans dock
	9	14:00-14:01pm	52	General background noise plant noise not audible
	10	14:02pm-14:03pm	52	General background noise plant noise not audible
14/1/19	8	14:53-14:54pm	53	General background noise plant noise not audible

Note 1 – Measured noise levels presented have been corrected -2.5 dB(A) for façade reflection

6 ASSESSMENT CRITERIA

6.1 EPA SEPP N-1

SEPP N-1 details the methodology to be used in assessing environmental noise emissions such that protection of residential amenity may be preserved. SEPP are statutory instruments that are required to be complied with by both private individuals, and public and private sector organisations. SEPP N-1 includes both Schedule A and B that provide procedures to measure noise from premises and to determine noise emission limits respectively.

To determine the assessment criteria both the 'Zoning' level and ambient background noise levels are required to determine if the background noise level is neutral, high or low.

6.1.1 Zoning Level

The 'Zoning' level is determined by the Influencing Factor (IF) and is calculated by the formula nominated in B.2.4 of SEPP N-1. The IF is calculated from the proportion of industrial and commercial land around noise sensitive areas (in this case residential premises). Review of the surrounding area indicates an IF of 0.498 which results in the Zoning limits detailed in the table below.

Table 3 – Zoning Levels - SEPP N-1

Period	Zoning Level
Day time	59
Evening	53
Night time	48

6.1.2 Environmental Noise Limits

Table 4 summarises the SEPP N-1 criteria for the Site.

Table 4 – Internal Noise Level Criteria Based on SEPP N-1

Period	Time	Measured Background $L_{90,15min}$ (dB(A))	Zoning limit	Classification	Allowable Noise Level Emission Leq dB(A)
Day	7am – 6pm (Mon – Fri) 7am – 1pm (Sat)	46	59	Low	57
Evening	6pm – 10pm (Mon – Fri) 1pm – 10pm (Sat) 7am – 10pm (Sun)	42	53	Low	50
Night	10pm – 7am	39	48	Neutral	48

7 NOISE ASSESSMENT

Based on measured noise levels presented in Section 5 noise emissions have been assessed at the subject development and compared with environmental noise assessment criteria above. Predicted noise levels are presented in Table 5. Comparison indicates that the car wash serving Porsche and the under croft exhaust fans serving the Melbourne Pathology building exceed SEPP N-1.

Table 5 – Internal Noise Level Criteria Based on SEPP N-1

Source	Plant/Item	Predicted/Measured Noise level Leq dB(A)	Criteria dB(A)	Complies / Exceedance	Comment
Eastern boundary	Porsche car wash	60	59[1]	No / 3 dB	Refer below
Melbourne Pathology Building	Undercroft Exhaust fans	54	48[2]	No / 6 dB(A)	Refer below

Note 1: The car wash only operates during the day period and as such is assessed against day time criteria only.

Note 2: The Melbourne Pathology building fans operate 24 hours a day and as such assessment has been made against the night time criteria. If compliance is achieved during this period noise emissions will comply at all other times.

8 DISCUSSION

No existing operators were found to generate music noise that is audible at the subject development. Noise levels at the subject site are typically governed by transportation noise from the surrounding road network. During inspection and testing noise from the Porsche car wash and Melbourne Pathology under croft fans were found to generate noise emissions that are above SEPP N-1 criteria. Currently noise levels at the subject site are generally low in level and consistent with residential development throughout Melbourne and acceptable acoustically for residential development.

Porsche car wash

A minor exceedance of 3 dB was determined for operation of the Porsche car wash at the VDAS site at ground level. A 3 dB exceedance is a just perceptible increase in level above SEPP N-1 criteria. The levels are not excessive and would not represent and loss of amenity given current operation is restricted to the daytime period only. On this basis current operation is considered acceptable and *no ameliorative treatment or measures are required*.

Melbourne Pathology exhaust fans

Noise emissions from the under croft Melbourne Pathology exhaust fans comply with daytime criteria but are 4 dB(A) and 6 dB(A) above the evening and night time criteria at the boundary of the VDAS site (Figure 4 below shows fans within the under croft).

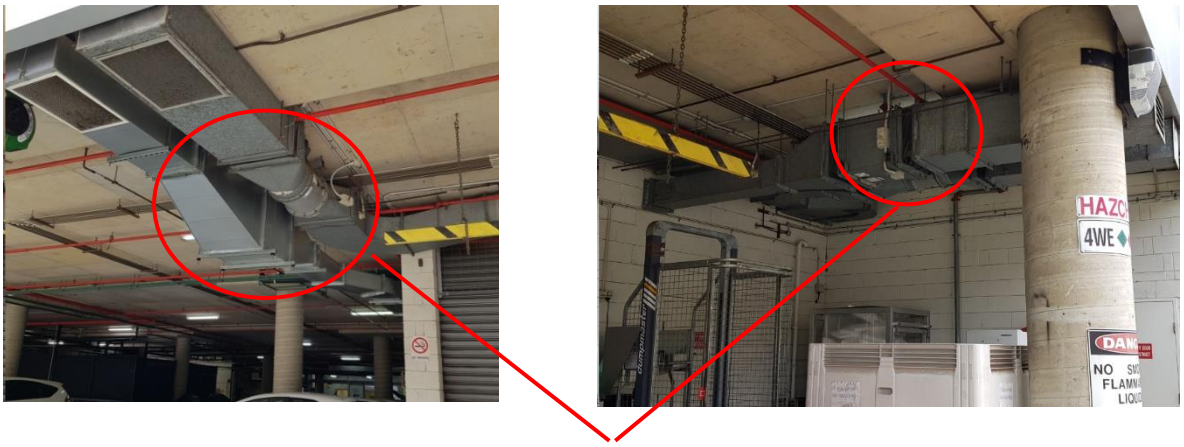


Figure 4: Location of Melbourne Pathology exhaust fans

Although noise levels are higher than SEPP N-1 the overall level of noise is similar to that generated by a domestic air conditioning unit at 1.5 metres. These levels are low in level and unlikely to impact existing residents which is evidenced by the fact that no complaints from existing residents within the VDAS have been made with respect to their operation. If noise levels from fan were required to be treated acoustically lined duct could be installed to fans to meet SEPP N-1 criteria.

Notwithstanding the levels generated by both the Porsche car wash and Melbourne Pathology the noise levels are low in level and have not resulted in complaint or would be considered as offensive noise. The levels are commensurate with levels found at surrounding residential areas are low and this is evidenced by the fact that no complaints with respect to operation have been made by existing residents within VDAS which has been occupied since 2001.

9 CONCLUSION

Inspection of the VDAS site indicates that existing noise levels at the subject site are typically governed by transportation noise from surrounding streets and generally low in level. Assessment of existing noise emissions from surrounding uses indicated the following:

1. There are no existing live music venue / operators within the vicinity of the VDAS site which generate music noise that is audible at the development and as such there is no exceedance of SEPP N-2.
2. The Porsche car wash operates during the day period only. Levels measured were 3 dB above the daytime criteria. 3 dB(A) is just perceptible increase in level and not considered to be a significant loss of amenity given current operation is restricted to the daytime period only. On this basis current operation is considered acceptable and no ameliorative treatment or measures are required.
3. Noise from operation of the Jetstar building does not impact the VDAS based on testing and inspection conducted at the site.
4. Noise from operation of the four under croft exhaust fans serving the Melbourne Pathology building were found to comply with day time criteria and were 4 dB(A) and 6 dB(A) higher than the evening and night period criteria. The levels are currently low in level and unlikely to impact existing residents and currently do not cause offensive noise and commensurate with inner city living and acceptable. Notwithstanding conventional acoustic treatment could be implemented on the fans to address noise from operation.

Review of the subject site also indicates that existing residents at the VDAS site have co-existed with existing commercial development without complaint from 2001. This is consistent with the existing low levels of noise emission from existing operators and as such the existing site is considered suitable for residential occupation with respect to noise emissions from surrounding operators.

We trust this information is satisfactory. Please contact us should you have any further queries.

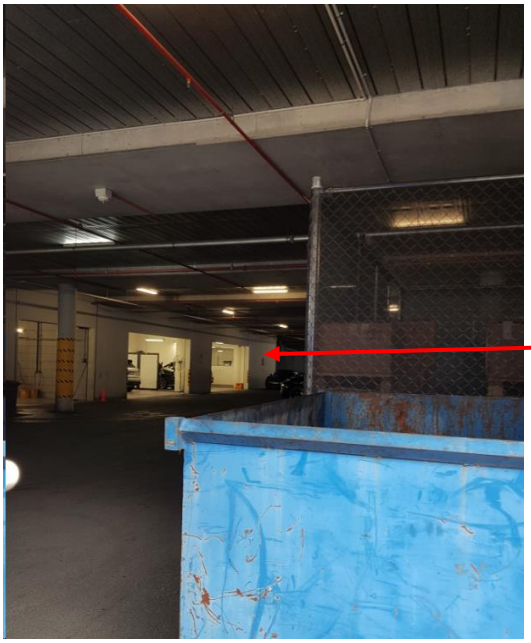
Yours faithfully,

Matthew Shields

APPENDIX 1: PHOTOGRAPHS

Location 1 as depicted in Figure 2 - Porsche car wash noise measurement location

Porsche car wash is behind these grilles.



Porsche car wash area

Location 2 – Melbourne Pathology Fan Noise at site boundary

Four exhaust fans within Melbourne Pathology under croft as indicated in area in above photo

Receiver balcony

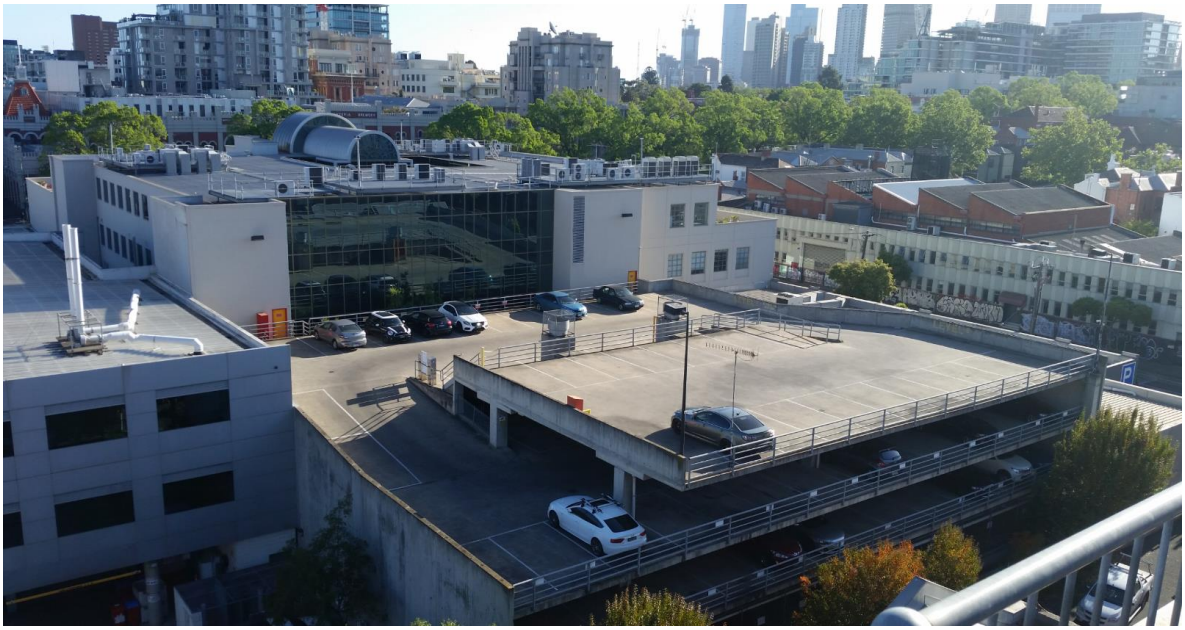
Location 2 – Pathology Fan Noise at site boundary

Jetstar roof

Measurement location 3 - Melbourne Ppathology roof plant

Location 3 – Car park top floor – View to Melbourne Pathology and Jetstar roof plant

Location 4: Unmanned noise monitor location



Location 5 (Roof terrace on balcony Brick Stack Vent) – Towards Jetstar Building
Plant noise not audible above general background level

Location 5 – (Roof terrace balcony Brick Stack Vent) View to Melbourne Pathology Building
Plant noise not audible above general background level

Photo viewed from Care Park car park – Small condensing units serving commercial buildings along western boundary of VDAS site – daytime operation

Photo from Care Park car park - commercial buildings to west of VDAS site – Daytime operation

View to East from (Roof terrace balcony Brick Stack Vent)

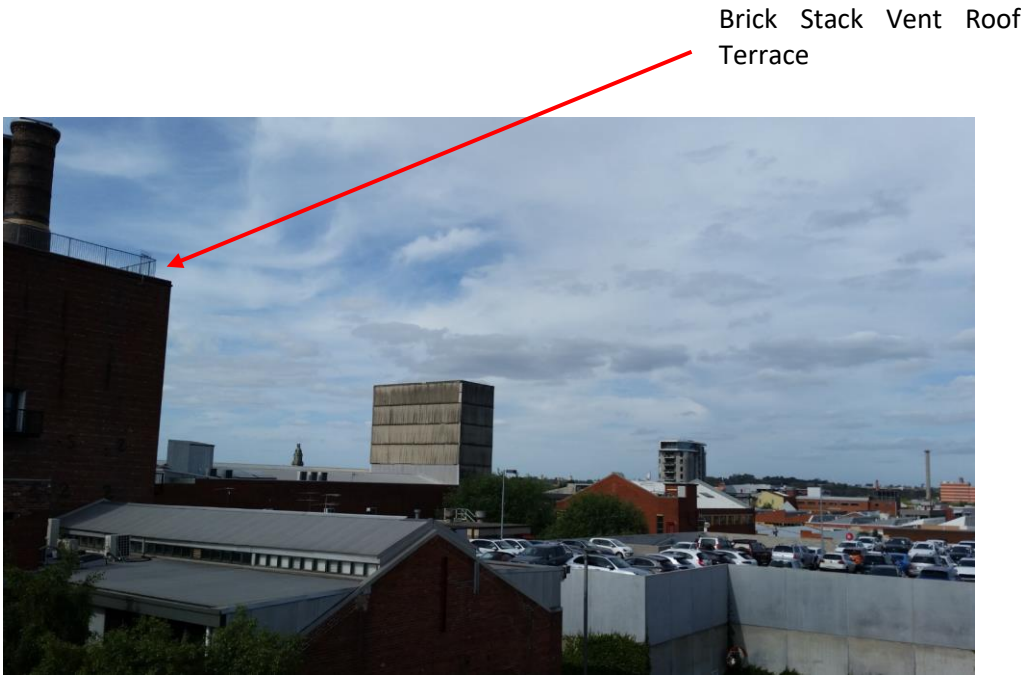


Photo from Car park car park Facing toward VDAS Brick Stack Vent Balcony