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Project 5872
16 December 2022

Merri-bek City Council
C/o- Holding Redlich
Attention: Mr Jacob Atkinson
Level 8, 555 Bourke Street
MELBOURNE VIC 3000

Email: Jacob.Atkinson@holdingredlich.com
Ph: 03 9321 9892

Dear Mr Atkinson

1/294 LYGON ST BRUNSWICK EAST – PIANO BAR – MUSIC NOISE INVESTIGATION
EXPERT ACOUSTIC SERVICES & ADVICE

1 INTRODUCTION & BACKGROUND INFORMATION

1. I, Lucas Brooker have been engaged by **Holding Redlich** on behalf of **Merri-bek City Council** to conduct an investigation of music noise associated with the live music venue (the Piano Bar) located at 1/294 Lygon Street Brunswick East, Victoria.

2. I have been instructed to review documentation and correspondence relating to previous noise complaints arising from the operation of the Piano Bar, and to conduct attended noise monitoring within noise impacted rooms of apartment 108 and apartment 306, 294 Lygon Street Brunswick East.

3. The documentation that I have been provided and have considered as part of this investigation is as follows:

    i. Marshall Day acoustic report document titled "*Piano Bar – 294 Lygon Street Noise Assessment*", dated 10 January 2020, Rp 001 20190997;
    ii. Planning permit MPS/2019/594;
    iii. Waveform Acoustics acoustic report document titled "*294 Lygon Street Brunswick East*", dated 17 February 2021, # 21542;
    iv. Correspondence from Tract on behalf of the permit holder, dated 17 February 2022;
    v. Correspondence from Council, dated 3 March 2022;
    vi. Waveform Acoustics acoustic report document titled "*294 Lygon Street Brunswick East*", dated 9 March 2022, # 22138A;
    vii. Correspondence from Council, dated 16 June 2022; and
    viii. Quintas Building & Maintenance report dated 18 October 2022.

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1.1 EXPERTISE

5. I am a Senior Consultant at Acoustic Dynamics, and I specialise in environmental noise emission, building acoustics and noise control. I hold a Masters Degree from the University of Sydney in Architectural Science (Audio & Acoustics) and I am a member of the Australian Acoustical Society (MAAS).

6. I have read and understood the VCAT Expert Evidence Practice Note and agree to be bound by it. My CV is attached as an Appendix to this report.

1.2 LOCATION & DESCRIPTION OF DEVELOPMENT

7. The subject mixed-use development is located at 294 Lygon Street Brunswick East. The Piano Bar is located on the ground floor of the development whilst residential dwellings are located on the five levels above. The surrounding area is comprised of a mixture of residential and commercial tenancies.

8. It is understood that the Piano Bar conducts performances with duelling pianos whereby audience members request songs, two pianists perform and sing the songs and then the audience sings along.

9. The Piano Bar was issued a planning permit (MPS/2019/594, dated 16 June 2020) for the use of the subject land for the sale and consumption of liquor, with the following relevant conditions contained within:

"1. Before the use commences, amended plans to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plans will be endorsed and will then form part of the permit. The plans must be drawn to scale with dimensions and must be generally in accordance with the plans advertised 03/03/2020 but modified to show:

a) Any buildings and works required to implement noise attenuation measures in accordance with the acoustic report required by Condition 6 of this permit (e.g. airlocks to venue entrance).

4. The use allowed by this permit must operate only between the following hours;

- *Sunday to Thursday 10:00am to 11:00pm*
- *Friday and Saturday 10:00am to 1:00am*

5. The maximum number of patrons permitted on the premises must not exceed 110.

6. Prior to the commencement of the use, an Acoustic Report generally in accordance with the report advertised on the 03/03/202 (prepared by Marshall Day Acoustics) must be endorsed to form part of the permit and the venue must be soundproofed in accordance with the recommendations contained within the endorsed Acoustic Report. The Acoustic Report endorsed under this permit must be implemented and complied with at all times to the satisfaction of the Responsible Authority unless with the further written approval of the Responsible Authority.

7. *Within 2 months of the commencement of the use, acoustic testing is to be carried out to ascertain whether the use complies with the maximum noise levels prescribed by SEPP N-2. The testing is to be carried out by an independent acoustician approved by the Responsible Authority. If the testing reveals that the use does not meet the specified maximum noise levels the buildings and works must be modified to make the use compliant with those levels. After any modifications have been made further acoustic testing must be carried out to ascertain whether the use complies with the prescribed noise levels. All acoustic testing is to be carried out during a busy period. The results of testing are to be provided to the Responsible Authority and made available to the public*.

8. *Noise levels associated with the use must at all times comply with the State Environment Protection Policy (Control of Music Noise from Public Premises) No. N-2. Should the Responsible Authority deem it necessary, the owner and/or occupier of the land must submit an Acoustic Report to the satisfaction of the Responsible Authority to demonstrate compliance, or which outlines any measures considered necessary to achieve compliance. The recommendations of the Acoustic Report must be implemented to the satisfaction of the Responsible Authority. The endorsed plans must be amended to accord with the recommendations contained in the Acoustic Report to the satisfaction of the Responsible Authority."*

10. I have relied on the planning application drawings within this investigation. An aerial image and the drawings are attached as **Appendix A** to this report.

1.2.1 EPA PUBLICATION 1826.4

11. It should be noted that from 1 July 2022, the "*State Environment Protection Policy (Control of Music Noise from Public Premises) No. N-2."* (SEPP N-2) has been superseded by EPA Publication 1826.4 "*Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues"* and is legislated by way of The Environment Protection Act 2017.

12. The assessment methodology, and methodology for setting music noise limits within EPA Publication 1826.4 is essentially the same as SEPP N-2. Hence, achieving compliance with (or exceeding) the requirements of EPA Publication 1826.4, will be equivalent to achieving compliance with (or exceeding) the requirements of SEPP N-2.

13. EPA Publication 1826.4 establishes music noise limits that are to be complied with at a noise sensitive area. EPA Publication 1826.4 references Regulation 123 of the Environment Protection Regulations (2021), which details operating time periods in relation to music noise from indoor venues.

14. **Table 1.1** presents EPA Publication 1826.4 music noise limits and time periods applicable to the assessment of music noise from an indoor venue.

Table 1.1 EPA Publication 1826.4 Music Noise Limits for Nearest Sensitive Receiver

Assessment Period	Day	Music Noise Limit [dB]
Day / Evening	Monday to Saturday (other than a public holiday), from 7am to 11pm	Music Noise (L_{Aeq}) ≤ L_{A90} + 5dB at the Nearest Sensitive Receiver
	Sunday or a public holiday (other than if either is preceding a public holiday), from 9am to 10pm	
	Sunday or a public holiday (if either is preceding a public holiday), from 9am to 11pm	
Night[1]	Monday to Friday (other than a public holiday or a day preceding a public holiday), from 11pm to 7am the following day	Music Noise (L_{OCT10}) ≤ L_{OCT90} + 8dB at the Nearest Sensitive Receiver
	Saturday or any day preceding a public holiday, from 11pm to 9am the following day;	
	Sunday or a public holiday (if neither is preceding a public holiday), from 10pm to 7am the following day.	

Note. 1) The SEPP N-2 night time period commences from 10:00pm for music venues with more than three operations per week.

15. Part 125 of the Environment Protection Regulations (2021) provides additional information relating to base noise limits when assessing noise from indoor entertainment venues:

"*125 Unreasonable noise from an indoor entertainment venue*

2) For the purposes of subregulation (1)(a), the lowest decibel value that may be set as the noise limit (the base noise limit) is—

(a) for the day and evening period, 32dB(A); and
(b) for the night period, the base noise limit corresponding to the relevant frequency set out in the Table.

Table—Indoor entertainment venue base noise limits per frequency for the night period

Column 1	*Column 2*	*Column 3*	*Column 4*	*Column 5*	*Column 6*	*Column 7*	*Column 8*
Frequency (Hz)	*63*	*125*	*250*	*500*	*1000*	*2000*	*4000*
Base noise limit (dB)	*40*	*30*	*20*	*20*	*15*	*10*	*10*

2 PROJECT BACKGROUND

16. Marshall Day Acoustics provided acoustic design advice within their report "*Piano Bar – 294 Lygon Street Noise Assessment*", dated 10 January 2020. Within the report, recommendations were made for music and patron noise mitigation measures including facade upgrades, construction upgrades to the ceiling of the bar, detailing for service penetrations and service pipe lagging.

17. Subsequent to planning approval and commencement of live music events within the bar, Council received noise complaints from residents located above the bar. It is understood that these noise complaints were received by Council on multiple occasions throughout 2021.

18. In February 2022, Waveform Acoustics was engaged by the bar operator to conduct a compliance assessment to satisfy the requirements of the planning permit. The Waveform Acoustics report "*294 Lygon Street Brunswick East*", dated 17 February 2021, identified exceedances of the relevant indoor music noise limits during the night time period, within the rear bedroom of apartment 108 and the rear bedroom of apartment 105. Noise mitigation recommendations to achieve interim compliance were detailed in the report and included relocating the roof truss mounted speakers and employing a music limiter. Recommendations were also made for further investigation of noise flanking paths and a final compliance assessment.

19. On 3 March 2022, Council notified the bar operator that they have continued to receive complaints from apartment occupants who advised there had been no noticeable improvement in noise levels. In their letter, Council advised that from 11:00pm on Fridays and Saturdays, and commencing from Friday 11 March 2022, the venue may only allow music at background levels until further acoustic testing was conducted.

20. In March 2022, Waveform Acoustics conducted another assessment of music noise. Their interim report dated 9 March 2022 found that although the music noise had reduced slightly, the night time octave band noise limits were being exceeded. Measures to further control music noise included foldback speakers to be removed and go to an in-ear monitoring system only, smaller directional foldback speakers be used for the for the artist that sits on the piano, and installation and calibration of a music noise limiter.

21. On 16 June 2022, Council again notified the bar operator that they had received further noise complaints and that the bar operator was to submit an acoustic report confirming that music noise levels comply with the relevant noise limits. The deadline for this compliance report was 8 July 2022. I am of the understanding that this 8 July 2022 compliance report was never submitted to Council.

22. On 18 October 2022, Quintas Building & Maintenance were engaged to conduct an inspection of the development to determine if service pipes were lagged in accordance with the as-built engineering and architectural drawings. Their report found instances of unlagged service pipes, deemed to be non-compliant with the requirements of the MacCormack Associates hydraulic services drawings.

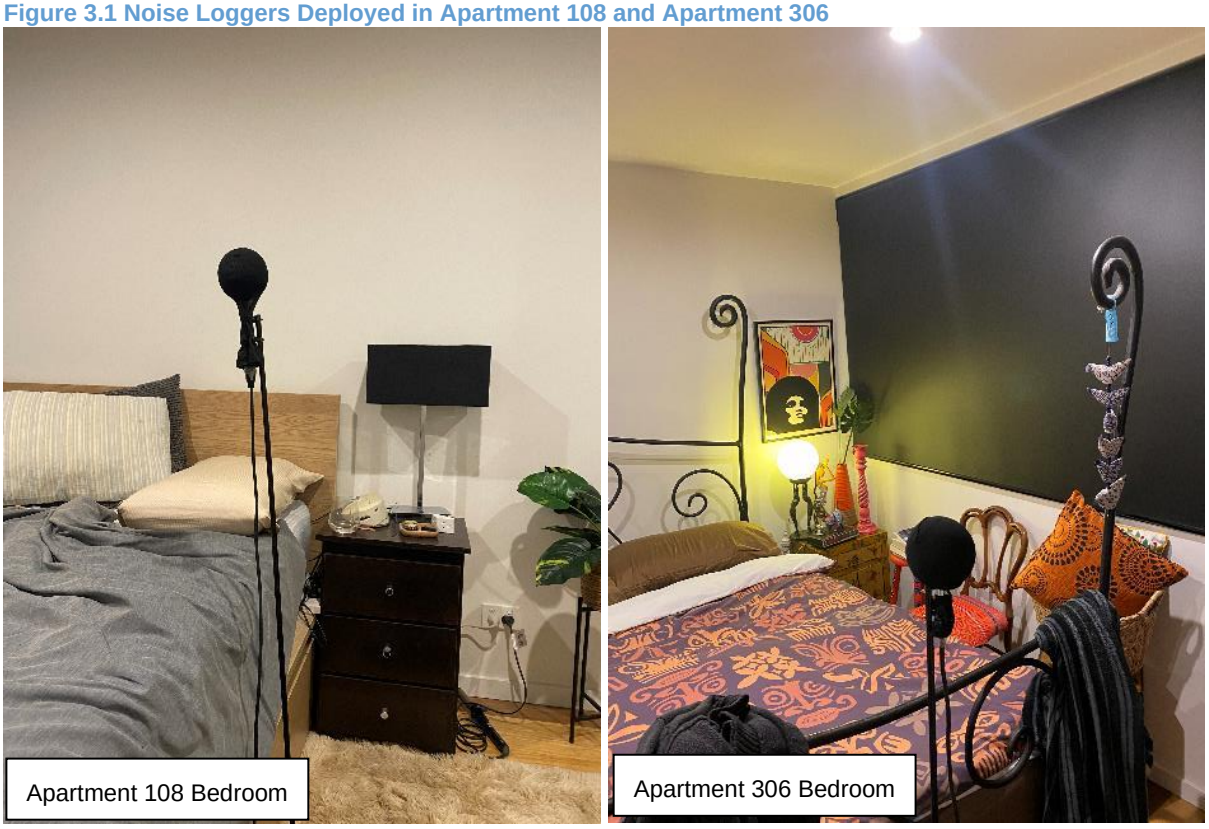
3 MUSIC NOISE ASSESSMENT

23. A site inspection, background noise measurements and music noise measurements were conducted on Friday 9 December 2022, from 9:45pm until 1:00am Saturday 10 December 2022. Access was provided to apartment 108 (on level 1) and apartment 306 (on level 3) to conduct the measurements.

24. To establish music noise limits, background noise measurements were conducted within the rear bedroom of apartment 108 and the bedroom of apartment 306 during the 40-minute period following the cessation of live music and accompanying patron noise at 12:20pm. As the bar has a license to operate until 1:00am on Fridays and Saturday, and given that the primary period of concern is during the late evening and night time, this time period is deemed to be representative of the background noise level at the time of potential noise impacts.

25. A noise logger was deployed in each bedroom at a minimum distance of 1 metre from the walls and at a height of 1.2 metres above the floor, and was set to record audio and data continuously from approximately 10:00pm until 1:00am. All doors and windows were closed during the measurements. **Figure 3.1** shows the location of the noise loggers within apartment 108 and apartment 306.

Figure 3.1 Noise Loggers Deployed in Apartment 108 and Apartment 306



26. **Table 3.1** presents the measured background noise levels and relevant day/evening noise limits for the two apartments, whilst **Table 3.2** presents the measured background noise levels and relevant night noise limits for the two apartments. As per the Environment Protection Regulations 2021, Regulation 125 (2), the base noise limits define for each of the day, evening and night periods, the lowest value the noise limit can take. The music noise limit is the greater value of the measured background noise level + 5 dB (day/evening) and + 8 dB (night), and the base noise limits.

Table 3.1 Measured Background Noise Levels and Relevant Noise Limits – Evening (10pm to 11pm)

Location	Measured Background L_{A90} [dB]	L_{A90} + 5 [dB]	Base Noise Limit [dB]	L_{Aeq} Noise Limit [dB]
Apt. 108 rear bedroom	19	24	32	**32**
Apt. 306 bedroom	18	23	32	**32**

Table 3.2 Measured Background Noise Levels and Relevant Noise Limits – Night (11pm to 1am)

Location		Frequency (Hz) [dB]						
		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
Apt. 108 rear bedroom	Measured L_{OCT90}	28	27	20	12	8	9	10
	L_{90} + 8 dB	36	35	28	20	16	17	18
	Base Noise Limit	40	30	20	20	15	10	10
	L_{OCT10} Music Noise Limit	**40**	**35**	**28**	**20**	**16**	**17**	**18**
Apt. 306 bedroom	Measured L_{OCT90}	28	18	16	10	7	9	11
	L_{OCT90} + 8 dB	36	26	24	18	15	17	19
	Base Noise Limit	40	30	20	20	15	10	10
	L_{OCT10} Music Noise Limit	**40**	**30**	**24**	**20**	**15**	**17**	**19**

27. To determine compliance with, or exceedance of the music noise limits, the time period 10:00pm to midnight was analysed from the noise logger data. During the measurement period, short-term attended measurements were also conducted within the apartments to correlate with the noise logger data. **Table 3.3** presents the (evening) music noise limits and the measured $L_{Aeq,\ (15minute)}$ noise level within the apartments during the live music performances and during the intermission period (i.e. pre-recorded music only was played over the sound system during an intermission/performer break between 10:30pm to 10:45pm). Results presented in red text indicate an exceedance of the noise limit.

Table 3.3 Measured L_{Aeq} Music Noise Levels and Relevant Evening Noise Limits

Location	Period	Measured $L_{Aeq(15minute)}$ [dB]	L_{Aeq} Noise Limit [dB]	Complies?
Apt. 108 rear bedroom	22:15 to 22:30	33	**32**	**No**
	22:30 to 22:45	28	**32**	**Yes**
	22:45 to 23:00	35	**32**	**No**
Apt. 306 bedroom	22:30 to 22:45	27	**32**	**Yes**
	23:45 to 23:00	28	**32**	**Yes**

28. **Table 3.4** below presents the (night) music noise limits and the $L_{OCT10,\ (15minute)}$ noise level within the apartments during the live music performances and during the intermission period. Results presented in red text indicate an exceedance of the octave band noise limit.

29. Note that although the time period Saturday, 10:00pm to 11:00pm is categorised as "evening" by Regulation 123 of the Environment Protection Regulations (2021), the results for that period have been included in **Table 3.4** to demonstrate the potential for exceedance during an event held in the bar on a Sunday night (which is categorised as commencing from 10:00pm by Regulation 123 of the Environment Protection Regulations (2021)).

Table 3.4 Measured L_{OCT10} Music Noise Levels and Relevant Night Noise Limits

Location[1]	Period	Music Noise Limit and Measured $L_{OCT10, (15minute)}$ (Hz) [dB]							Complies ?
		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	
Apt. 108 rear bedroom	-	**40**	**35**	**28**	**20**	**16**	**17**	**18**	**-**
	22:15 to 22:30	47	45	40	33	19	11	11	**No**
	22:30 to 22:45	45	39	33	26	16	10	11	**No**
	22:45 to 23:00	50	45	41	34	22	20	20	**No**
	23:02 to 23:17	50	46	42	33	21	20	19	**No**
	23:17 to 23:32	45	46	42	34	21	20	19	**No**
	23:32 to 23:47	52	44	41	34	20	12	12	**No**
	23:47 to 00:02	51	46	42	33	19	11	11	**No**
Apt. 306 bedroom	-	**40**	**30**	**24**	**20**	**15**	**17**	**19**	**-**
	22:30 to 22:45	39	32	25	23	14	14	15	**No**
	22:45 to 23:00	40	34	30	26	15	14	15	**No**
	23:00 to 23:15	41	35	32	25	14	13	14	**No**
	23:15 to 23:30	39	34	31	27	15	13	14	**No**
	23:30 to 23:45[2]	-	-	-	-	-	-	-	**-**
	23:45 to 00:00	37	34	32	25	17	10	10	**No**

Note 1) Measurements were conducted in the front bedroom of apartment 108 (fronting Lygon Street) however the extraneous noise (i.e. trams, traffic, pedestrians, voices) from Lygon Street contaminated the data and as such has been disregarded.

2) Domestic noise from the occupant contaminated the measurement, hence the period was disregarded.

30. Music and performance noise was continuously audible during each 15-minute increment within both apartments. The measurement results demonstrate that music noise from the bar:
    i. Exceeds EPA Publication 1826.4 music noise limits during the evening within apartment 108. This would equate to an exceedance of the SEPP N-2 music noise limits;
    ii. Complies with EPA Publication 1826.4 music noise limits during the evening within apartment 306;
    iii. Exceeds EPA Publication 1826.4 music noise limits during the night within apartment 108. This would equate to an exceedance of the SEPP N-2 music noise limits; and
    iv. Exceeds EPA Publication 1826.4 music noise limits during the night within apartment 306. This would equate to an exceedance of the SEPP N-2 music noise limits.

31. The music noise within apartment 108 could be characterised as clearly audible for the following reasons:
    i. Words to the songs can be understood;
    ii. Song tune/melody can be understood;
    iii. The pianos can be heard;
    iv. What sounds like a stomp-box, or stomping on the stage, or percussive instrumentation of some description can be heard;
    v. Performers can be heard hyping the crowd, e.g. "*Make some noise*";
    vi. Patrons can be heard singing along; and
    vii. Patrons can be heard cheering and whistling at the end of a song.

32. The music noise within apartment 306 could be characterised as audible for the following reasons:
    i. Song tune/melody can be understood;
    ii. Muffled piano music can be heard;
    iii. Muffled singing/words can be heard; and
    iv. A muffled stomp-box, or stomping on the stage, or percussive instrumentation of some description can be heard.

33. The songs played during the performances could be readily identified during the measurements and from the logger audio, as follows:

    i. 10:13pm: Don't Stop Me Now;
    ii. 10:14pm: What's Up;
    iii. 10:18pm: American Pie;
    iv. 10:22pm: Are You Gonna Be My Girl;
    v. 10:26pm: With or Without You;
    vi. 10:30pm to 10:45pm: Pre-recorded music played over sound system during an intermission/performer break;
    vii. 10:45pm: Take Me Home, Country Roads;
    viii. 10:50pm: Total Eclipse of the Heart;
    ix. 10:52pm: 9 to 5;
    x. 10:55pm: You Don't Treat Me No Good;
    xi. 10:59pm: Lady Marmalade;
    xii. 11:01pm: Sweet Home Alabama;
    xiii. 11:04pm: It's Raining Men;
    xiv. 11:08pm: Jailhouse Rock;
    xv. 11:09pm: Hound Dog;
    xvi. 11:10pm: Blue Suede Shoes;
    xvii. 11:13pm: Gangsta's Paradise;
    xviii. 11:17pm: Brown Eyed Girl;
    xix. 11:21pm: Drops of Jupiter;
    xx. 11:24pm: Praise You;
    xxi. 11:25pm: You Can Call Me Al;
    xxii. 11:27pm: In the Jungle the Mighty Jungle;
    xxiii. 11:29pm: Sweet Caroline;
    xxiv. 11:33pm: New York New York;
    xxv. 11:36pm: Mr Brightside;
    xxvi. 11:39pm: All the Small Things;
    xxvii. 11:41pm: Living on a Prayer;
    xxviii. 11:45pm: Angels;
    xxix. 11:49pm: Great Balls of Fire;
    xxx. 11:51pm: Hey Jude;
    xxxi. 11:56pm: I'm Still Standing; and
    xxxii. Midnight: Don't Look Back in Anger.

34. The transmission path for the music noise intrusion could be localised to the southern wall/floor junction of both apartments (as shown in **Figure 3.2** and **Figure 3.3**). No music noise could be identified as being transmitted via the facade windows.

Figure 3.2 Level 1 Floor Plan & Music Noise Transmission Path in Apartment 108

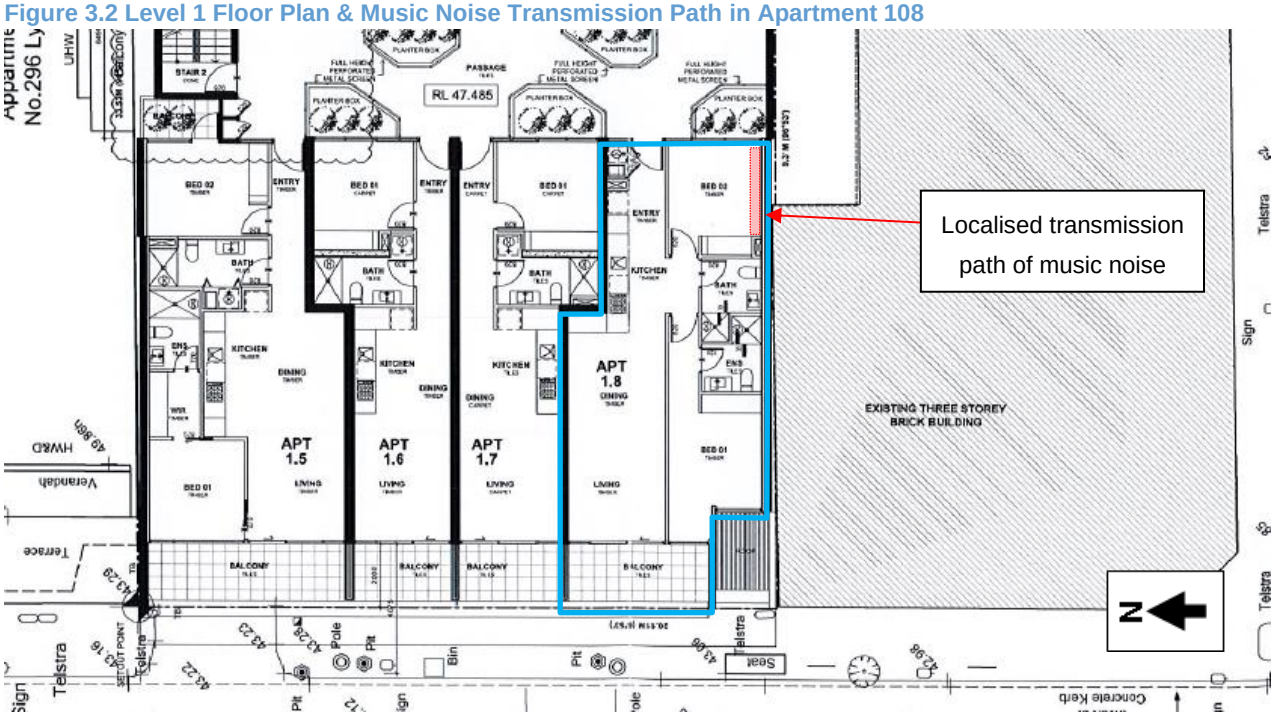
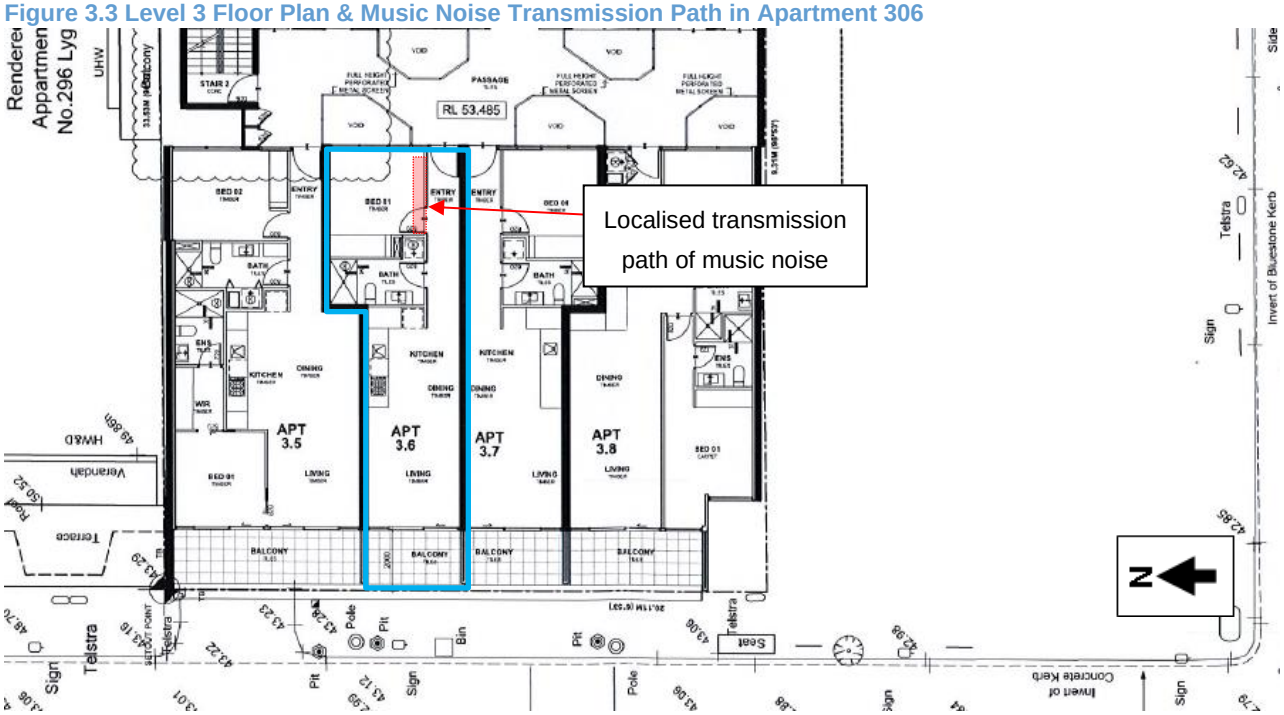


Figure 3.3 Level 3 Floor Plan & Music Noise Transmission Path in Apartment 306



35. My site inspection did not involve an inspection of the Piano Bar, nor the construction separating the venue from the apartments above. Hence, I could not fully investigate potential transmission paths and I cannot conclusively define how the music noise is being transmitted into the apartments.

36. Analysis of the logger audio indicates that noise from patrons singing and cheering is a contributor to the non-compliance. As such, it is likely that the installation and calibration of a music noise limiter (which can control amplified music and vocals only) would provide limited benefit, i.e. a music noise limiter will not reduce the level of noise emitted by patrons whilst singing.

4 CONCLUSION & OPINION

37. I have conducted an investigation of music noise associated with the live music venue (the Piano Bar) located at 1/294 Lygon Street Brunswick East, Victoria.

38. **Acoustic Opinion**: Further to my review of the relevant acoustic criteria and requirements, and my noise measurements conducted on site, the measured music noise emitted from the Piano Bar was found to exceed the evening and night noise limits in apartment 108, and the night noise limit in apartment 306, as determined in accordance with EPA Publication 1826 "*Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues"*. This would equate to an exceedance of the SEPP N-2 music noise limits.

39. Furthermore, the measured music noise emitted from the Piano Bar does not satisfy Condition 8 of planning permit MPS/2019/594 during the night time period.

40. I, Lucas Brooker declare that:

"*I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance which I regard as relevant have to my knowledge been withheld from the Tribunal*."

Kind Regards
ACOUSTIC DYNAMICS

LUCAS BROOKER
Senior Consultant, MArchSci (Audio & Acoustics), MAAS

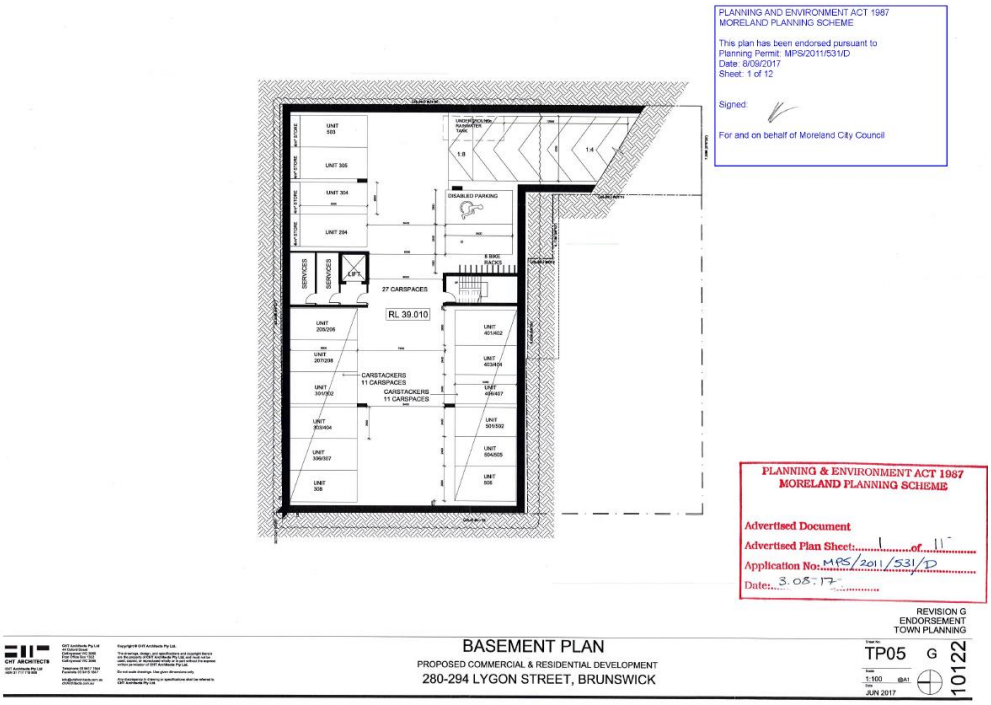
Document	Rev	Date	Prepared	Reviewed	Authorised	Approved
5715L001.LB.221216	0	16 December 2022	LB	RH	RH	

APPENDIX A – AERIAL IMAGE & PLANNING APPLICATION DRAWINGS

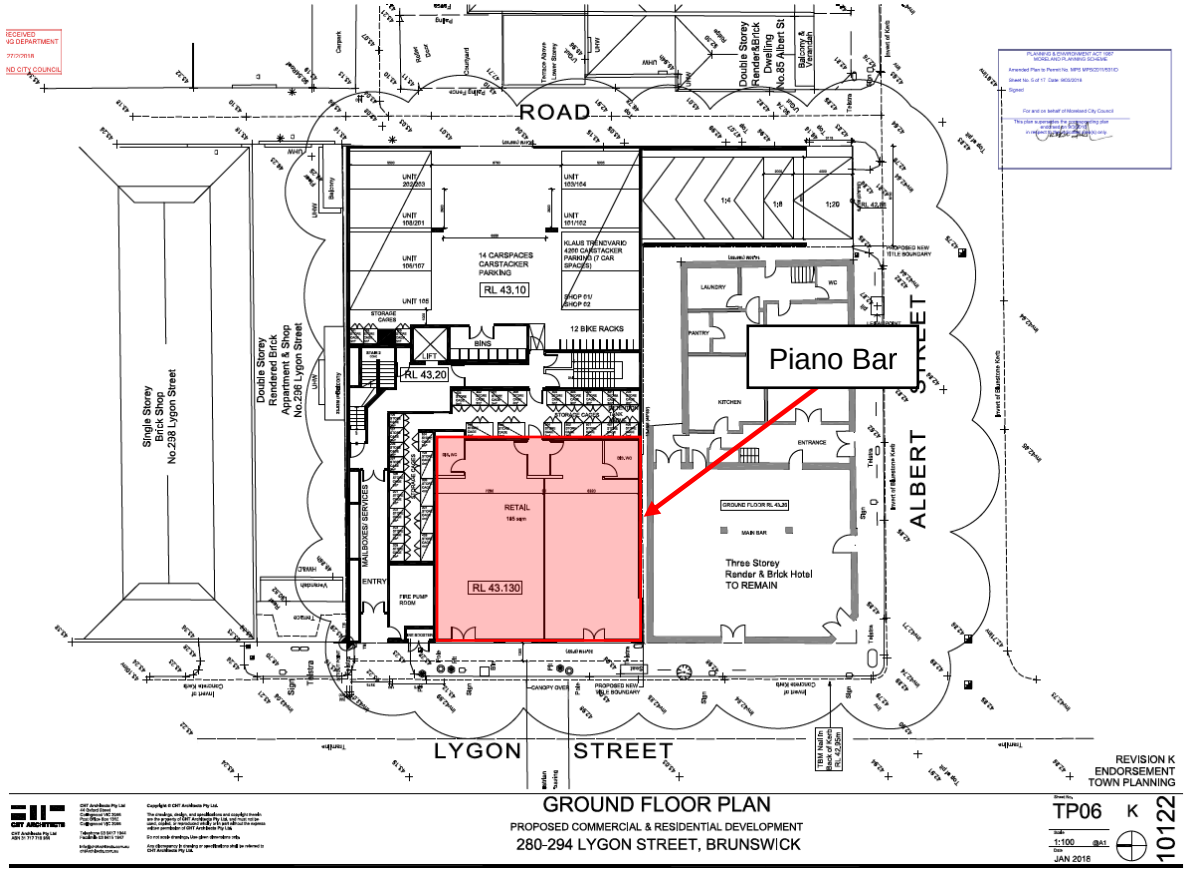
A.1 AERIAL IMAGE

A.2 DRAWINGS

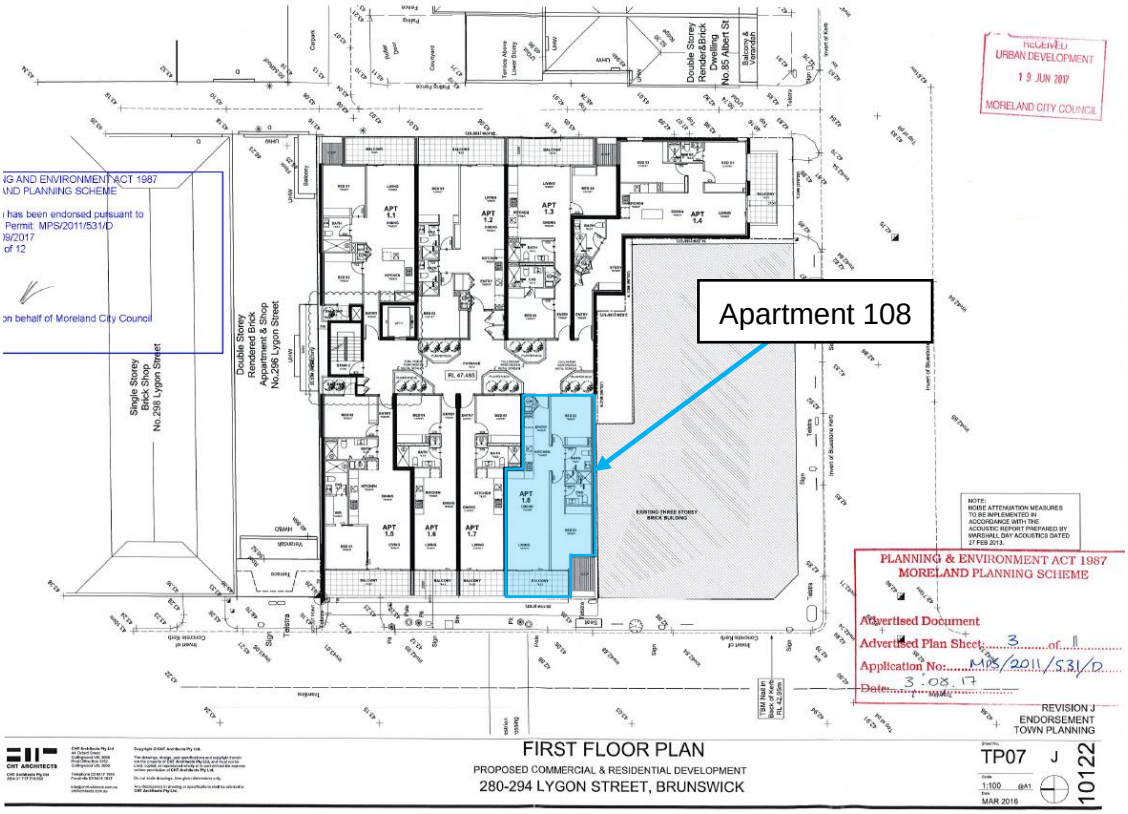
A.2.1 BASEMENT PLAN



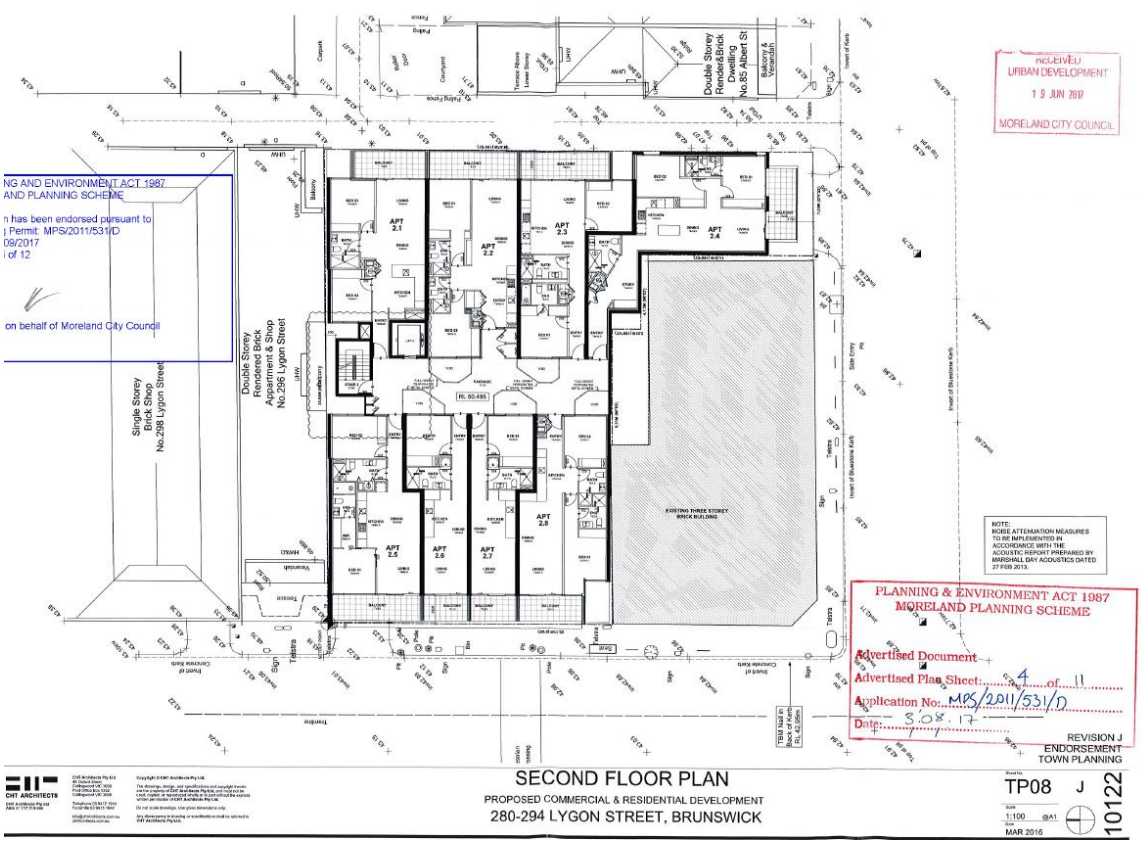
A.2.2 GROUND FLOOR PLAN



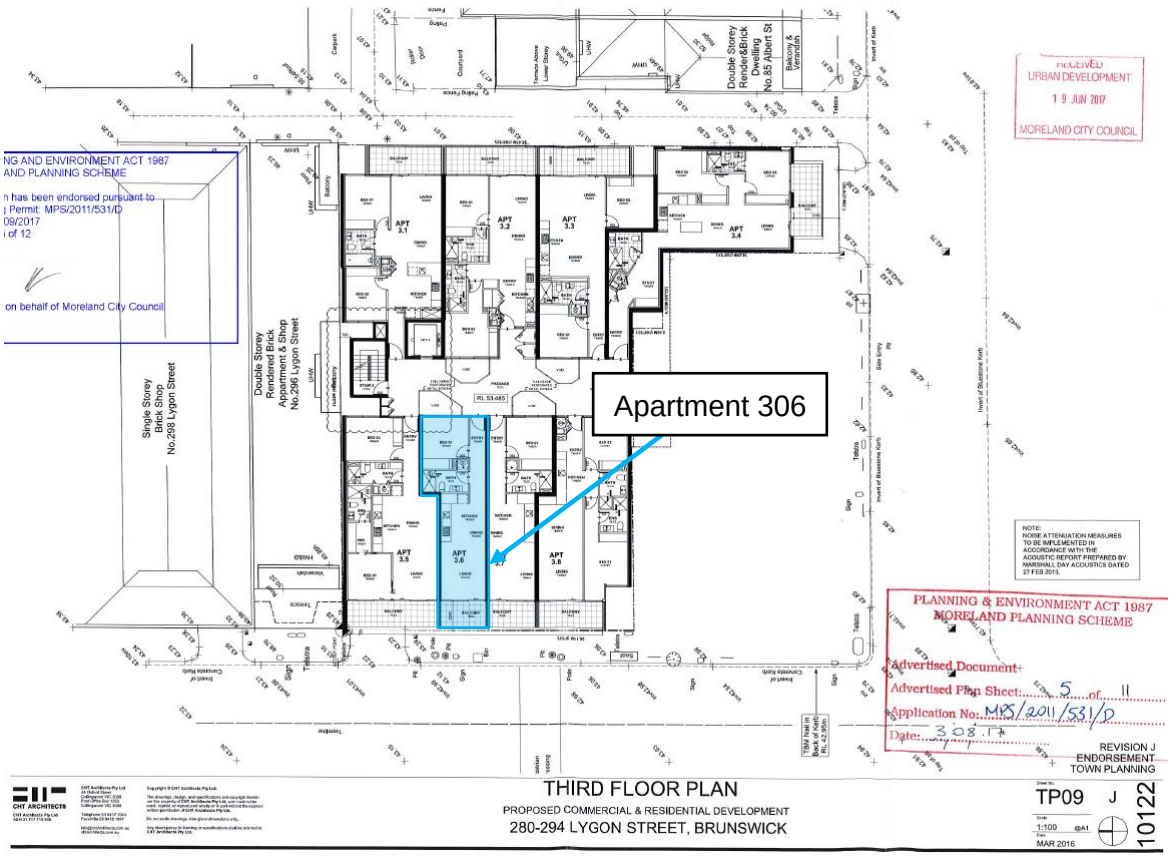
A.2.3 LEVEL 1 FLOOR PLAN



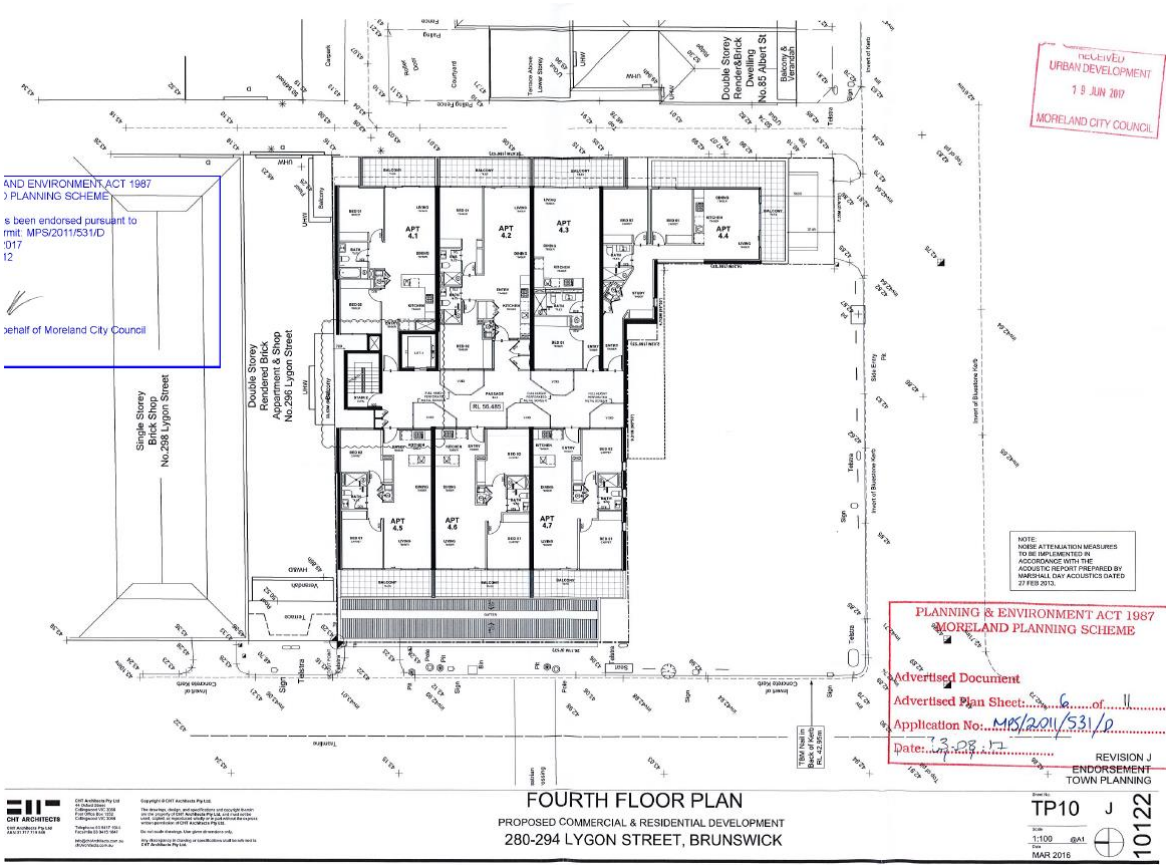
A.2.4 LEVEL 2 FLOOR PLAN



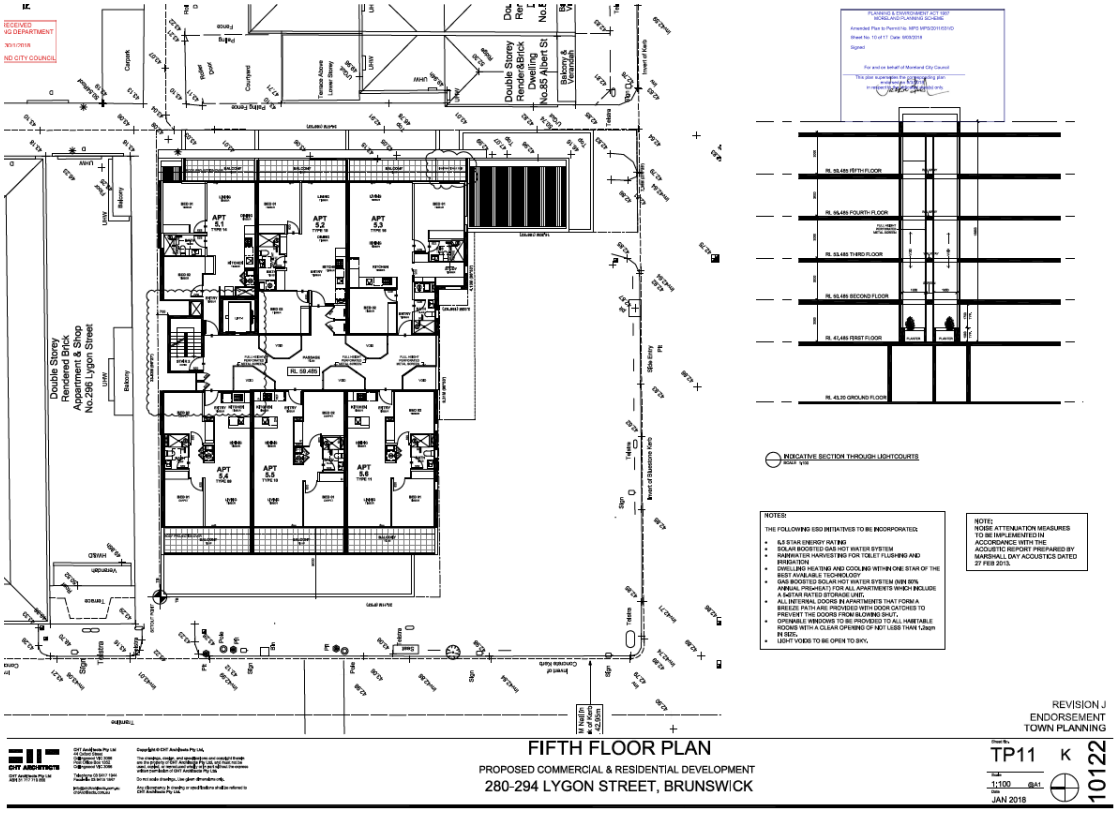
A.2.5 LEVEL 3 FLOOR PLAN



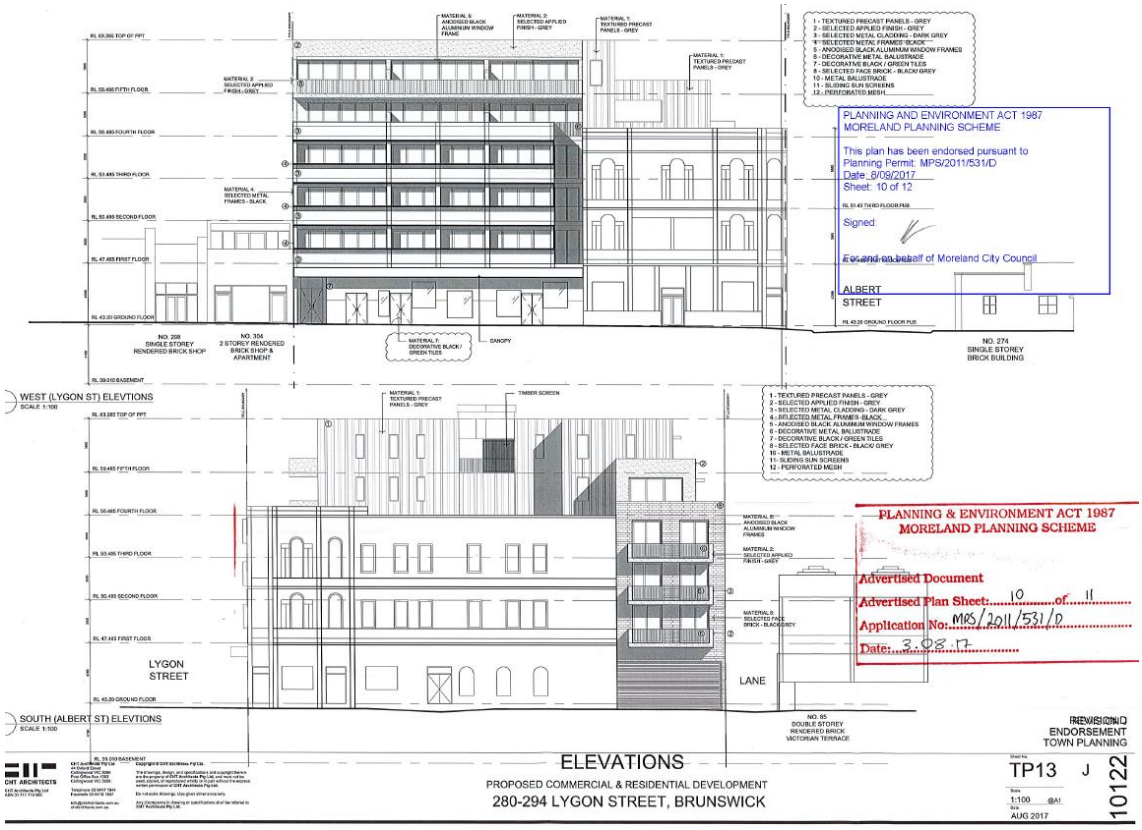
A.2.6 LEVEL 4 FLOOR PLAN



A.2.7 LEVEL 5 FLOOR PLAN



A.2.8 ELEVATIONS



ROLE: SENIOR ACOUSTIC CONSULTANT

QUALIFICATIONS

Master of Design Science (Audio & Acoustics) – University of Sydney
Bachelor of Creative Technologies (Audio Engineering and Sound Design) – JMC Academy
Currently holds OH&S (Construction) - White Card
Member Australian Acoustical Society

EMPLOYMENT

2017 to Present - Acoustic Dynamics (Acoustic Consultant)
2009 to 2017- JMC (Audio Engineer)

BACKGROUND

Throughout his employment within acoustics, Lucas has conducted acoustic assessments, investigations and managed projects across a multitude of developments within the industrial, commercial and residential sectors.

Lucas is proficient in the use of a wide variety of acoustic instruments and analysers to conduct environmental acoustic surveys, field testing, noise and vibration prediction, design and validation.

Lucas has conducted noise and vibration surveys, measurements and assessments for industrial, commercial and residential projects including design construction and certification phases of the project. Additionally, Lucas is proficient with noise modelling software to simulate complex internal and external acoustic scenarios.

SPECIAL EXPERTISE

- Environmental 3D Noise Modelling
- Internal Acoustic Modelling & Auralisations
- Mechanical Design
- Road/Rail/Aircraft Noise
- Noise and Vibration Investigation
- Environmental Noise Assessment
- Building Acoustics and Acoustic Privacy
- Gym Noise and Vibration
- Impact Floor Testing and By-Law Advice
- Architectural Acoustic Advice
- Vibration monitoring

SELECTED PROJECT EXPERIENCE

Civil Assessments and Advice
Melbourne-Lancefield Road Upgrade (Civilex)

Noise and Vibration Emission and Assessment
East Sale Radar Tower (RAAF Victoria)
Eulie Piggery Eulie
Royal Motor Yacht Club Port Hacking
Hall Road Carrum Downs
Heidelberg-Kinglake Road Hurstbridge
Liverpool Street Sydney
Elizabeth Street Melbourne
Bankstown Sports Club Flinders Centre
The Corso Manly
Carlton Baths (City of Melbourne)

Mechanical Noise Emission and Design
High Street Malvern
Barkly Street West Footscray
Victoria Street Abbotsford
Donald Street Brunswick East
Heidelberg-Kinglake Road Hurstbridge

System Design
Bluescope Steel System Design Glen Waverly
Steel Frame Development (National Assoc. Steel Framed Housing)

Road / Rail Noise
Boundary Road Maraylya
Glebe Point Road Glebe
Pascoe Vale Road Strathmore
Bridge Road Richmond
Crescent Street Rozelle
Hillmont Ave Thornleigh

Aircraft Noise Intrusion Assessment
Arcade Way Keilor East
Unwins Bridge Road Sydenham
The Boulevarde Lilyfield

Architectural Acoustics
Stockland Point Cook
Carlisle Street Balaclava
Blanche Street Collingwood
Buckley Street Seddon