Noise Assessment

Alterations and Additions
Joe Maguires Hotel
148 Peel Street
North Tamworth, NSW

Prepared for: Studio Two Architecture
December 2024
MAC242295-01RP1

Muller Acoustic Consulting

Document Information

Noise Assessment

Alterations and Additions

Joe Maguires Hotel

148 Peel Street

North Tamworth, NSW

Prepared for: Studio Two Architecture

104 Brisbane Street

Tamworth NSW 2340

Prepared by: Muller Acoustic Consulting Pty Ltd

PO Box 678, Kotara NSW 2289

ABN: 36 602 225 132

P: +61 2 4920 1833

www.mulleracoustic.com

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by Studio Two Architecture (STA) on behalf of Watering Hole Hotels (WHH) to prepare a Noise Assessment (NA) to quantify emissions from the proposed alterations and additions of the Joe Maguires Hotel (the project) located at 148 Peel Street, North Tamworth, NSW. The NA was requested by Tamworth Regional Council as part of a Development Application (DA).

The NA has quantified potential noise emissions relating to amplified live music during the period of the Country Music Festival (CMF) and patron noise during the summer months and recommends reasonable and feasible noise management controls where required.

The assessment has been undertaken in accordance with the following documents:

- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI), 2017;
- NSW Environment Protection Authority (EPA's), Approved Methods for the measurement and analysis of environmental noise in NSW, 2022;
- NSW Environment Protection Authority (EPA), Noise Guide for Local Government (NGLG), 2023;
- NSW Government (Liquor and Gaming), 24-Hour Economy Legislation (Vibrancy Reforms) Amendment Act 2023;
- Association of Australasian Acoustical Consultants (AAAC) Licensed Premises and Patron Noise Assessment Technical Guideline Version 3, April 2023 (Licensed Premises Guideline);
- Standards Australia AS 1055:2018 - Acoustics - Description and measurement of environmental noise - General Procedures;
- International Standard ISO 9613:1993 - Acoustics - Attenuation of sound during propagation outdoors; and
- Association of Australasian Acoustical Consultants (AAAC) - Consultants Guideline for Report Writing, 2017.

A glossary of terms, definitions and abbreviations used in this report is provided in **Appendix A**.

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2 Project Description

2.1 Project Background

The Joe Maguires Hotel is located at 148 Peel Street, North Tamworth NSW. The current operating hours are 10am to 12am (midnight), Monday to Saturday and 10am to 10pm, Sunday and are not anticipated to change as a result of the project. The Development Application (DA) proposes additions and alterations to the current hotel with live outdoor entertainment and patron noise emissions from the proposed building the primary focus of this assessment.

The proposed project comprises of a hotel with indoor and outdoor dining and bar areas inclusive of an outdoor performance area. It is anticipated that live entertainment and amplified music will occur at the project during operation.

2.2 Receiver Review

The project land is zoned 'Mixed Use' area with receivers in the locality surrounding the project being primarily commercial and residential. The receiver ID, MGA(56) address and coordinates of assessed receivers are summarised in **Table 1**. **Figure 1** provides a locality plan identifying the position of predominant receivers in relation to the project.

Table 1 Receiver Locations

Receivers	Address	Height (m)	MGA56 Coordinates	
			Easting	Northing
R01	142 Peel Street, North Tamworth NSW	1.5	301705	6559563
R02	140 Peel Street, North Tamworth NSW	1.5	301695	6559576
R03	2 Brewery Lane, North Tamworth NSW	1.5	301741	6559672
R04	4 Brewery Lane, North Tamworth NSW	1.5	301756	6559655
R05	6 Brewery Lane, North Tamworth NSW	1.5	301766	6559644
R06	8 Brewery Lane, North Tamworth NSW	1.5/6.0	301793	6559644
R07	10 Brewery Lane, North Tamworth NSW	1.5	301788	6559611
R08	10 Brewery Lane, North Tamworth NSW	1.5	301807	6559619
R09	12 Brewery Lane, North Tamworth NSW	1.5	301801	6559599
R10	6A Bligh Street, North Tamworth NSW	1.5	301811	6559582
R11	6B Bligh Street, North Tamworth NSW	1.5	301829	6559592
R12	6A Bligh Street, North Tamworth NSW	1.5	301826	6559569
ED01	167-179 Peel Street, North Tamworth NSW	1.5	301704	6559489
C01	165 Peel Street, North Tamworth NSW	1.5	301669	6559535
C02	130-138 Peel Street, North Tamworth NSW	1.5	301702	6559600
C03	130-138 Peel Street, North Tamworth NSW	1.5	301688	6559643
C04	10 Jewry Street, North Tamworth NSW	1.5	301733	6559631
C05	17 Brewery Lane, North Tamworth NSW	1.5	301781	6559562
C06	164 Peel Street, North Tamworth NSW	1.5	301759	6559522
C07	164 Peel Street, North Tamworth NSW	1.5	301750	6559508
C08	150 Peel Street, North Tamworth NSW	1.5	301747	6559522
C09	150 Peel Street, North Tamworth NSW	1.5	301741	6559526

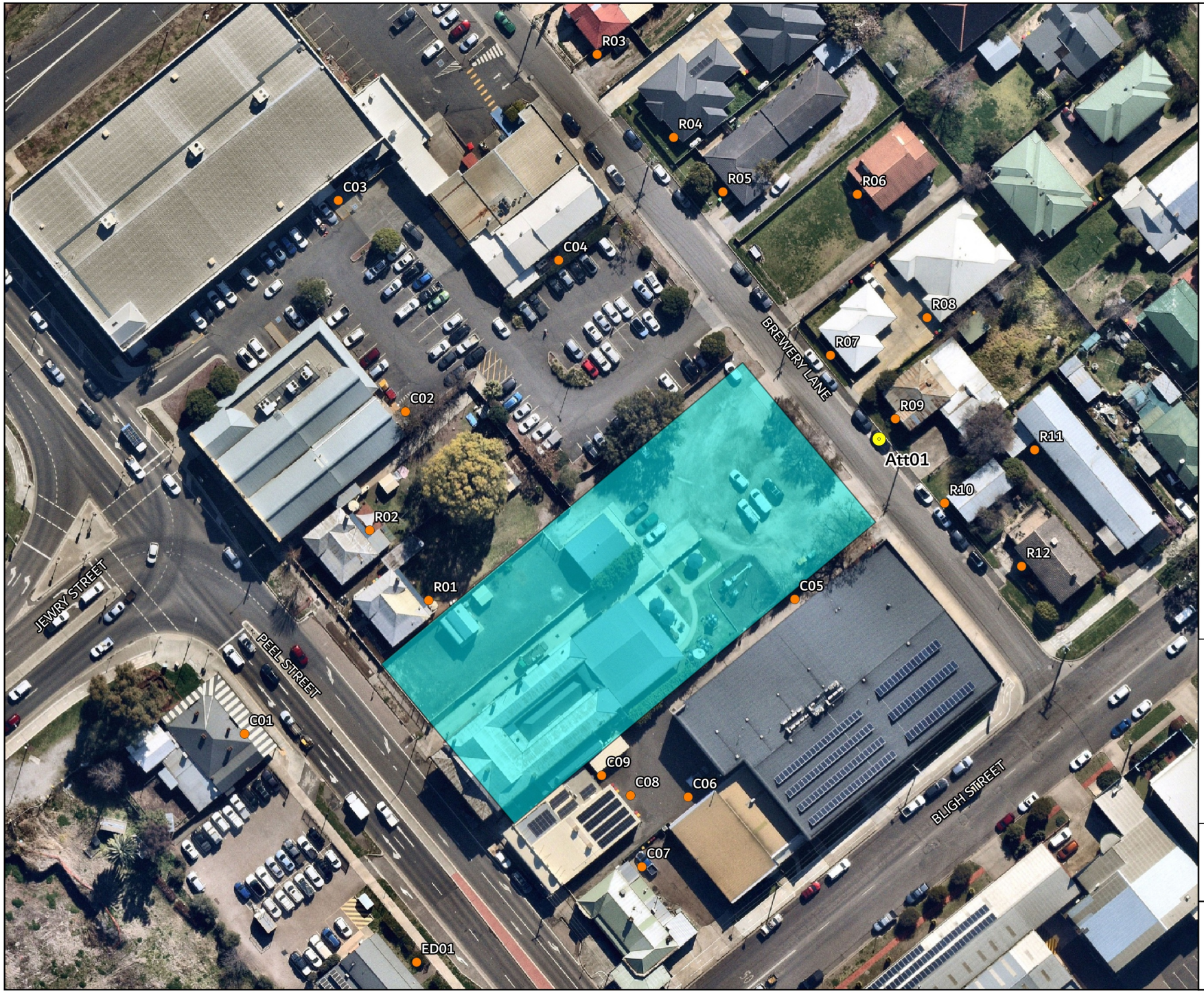

FIGURE 1

LOCALITY PLAN

MAC242295-01

Joe Maguires Hotel

North Tamworth NSW

KEY

- Receiver Locations
- Hotel Boundary
- Short-Term Attended Measurement

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3 Relevant Legislation, Policy and Guidelines

3.1 24-Hour Economy Legislation (Vibrancy Reforms) Amendment Act, 2023

The 24-Hour Economy Legislation (Vibrancy Reforms) Amendment Act, 2023, introduced by the New South Wales (NSW) Government, seeks to streamline and simplify regulations pertaining to noise, planning, and liquor licensing. The objective of the Vibrancy Reforms is to enhance the entertainment, economic, and creative potential of venues, particularly during night-time hours.

The Vibrancy Reforms designates Liquor & Gaming NSW as the lead regulator of entertainment and sound-related complaints for all licensed premises under the Liquor Act, 2007. Consequently, noise-related conditions specified in development consents and 'offensive noise pollution' laws will no longer be applicable when regulated by the Liquor Act, 2007.

To facilitate the effective execution of these reforms, Liquor & Gaming NSW will undergo amendments to the following relevant legislation:

- Gaming and Liquor Administration Act, 2007, No. 91;
- Liquor Act, 2007, No. 90;
- Liquor Regulation Act, 2018;
- Environmental Planning and Assessment Act, 1979, No. 203;
- Environmental Planning and Assessment Regulation, 2021;
- Local Government Act ,1993, No. 30; and
- Protection of the Environment Operations (General) Regulation, 2022.

For local government, the most relevant amendments are those in the EP&A Act; EP&A Regulation; and the PoEO Regulation, which rescinds development consent conditions relating to noise generated from licensed premises, trading hours of licensed premises and exempts licensed venues from noise pollution provisions contained in the PoEO Act including offensive noise laws.

Local councils are no longer the Appropriate Regulatory Authority (ARA) relating to matters of noise emitted from a licensed premises. This is affirmed in the NGLG which states "*The Liquor, Gaming and Racing Division of the Department of Customer Service administers the operation of liquor-licensed premises under the Liquor Act 2007, including handling noise complaints and setting noise conditions on licences.*"

Since the introduction of the Vibrancy Reforms on 1 July 2024, Liquor & Gaming NSW (L&G NSW) are the lead regulator in managing noise (disturbance) from licensed premises. As the regulator, L&G NSW have adopted a risk based approach to disturbance noise issues from licensed premises. L&G NSW deal with noise complaints and statutory disturbance complaints relating to entertainment sound associated with licensed venues; lodged under the Liquor Act 2007.

Noise complaints and statutory disturbance complaints that L&G NSW **will consider** / include (noise related) matters relating to:

- Amplified and live music coming from the licensed premises;
- Use of speakers and PA systems for announcements;
- Other forms of entertainment, such as, karaoke, trivia, bingo, comedy and raffles;
- Patron noise coming from the licensed venue, including noise from patrons entering and exiting, talking, singing to music; and
- Patron behaviour when leaving a venue, including anti-social behaviour, yelling or swearing.

In consideration of these amendments, a semi quantitative noise impact assessment will be conducted in lieu of (previously used) formalised criteria with reference to the methods and noise descriptors described/ defined in the NPI and NGLG.

Noise complaints and statutory disturbance complaints that L&G NSW **will not consider** / include (noise related) matters relating to:

- Noise from waste disposal and collection, including recycling material;
- Noise from delivery services, such as food and liquor supplies, including loading and unloading operations;
- Mechanical and industrial noise including ventilation, air conditioners, kitchen exhaust fan systems and refrigeration units; and
- Noise from construction works.

L&G NSW suggest that a cumulative noise impact assessment of all noise sources at the premises be conducted to provide an indication of the potential for disturbance to community.

The following standards, policies and guidance are relevant to the assessment. **Table 2** outlines the types of assessments completed, the applicable guidance, activities assessed, the responsible authority and the relevant report sections.

Table 2 Applicable Standards, Policies and Guidance Relevant to Assessment Type				
Assessment Type	Guidance Document	Relevant Noise Generating Activities	Responsible Authority	Report Section
Disturbance Assessment	Liquor Act 2007	Licensed Premises Amplified and live music, speakers, PA systems and entertainment activities. Patron noise and behaviour.	Liquor & Gaming NSW, NSW Police	6.1 - 6.4
Cumulative Assessment	Noise Guide for Local Government Noise Policy for Industry	All Activities	Council	7.1 - 7.3

In consideration of the relevant policies, guidance and responsible authorities, the following assessments have been completed:

- **(L&G NSW) Disturbance Assessment** of noise emissions from entertainment, patrons on the licensed premises relating to the likelihood of disturbance to the community in recognition to the requirements of the Liquor Act; and
- **Cumulative Noise Assessment** pertaining to emissions from all significant project related noise sources (Combined Operational and Disturbance Assessment) on the licensed premises as guided by the methodologies in the NGLG and NPI relating to potential amenity impacts.

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4 Existing Environment

4.1 Existing Noise Environment

The NPI (Fact Sheet B1) outlines two procedures for determining existing background noise levels – based on completing long-term or short-term measurements. The long-term method involves a two-step process to determine the rating background noise level for projects during the planning and approval stage where there is significant potential for noise impact, e.g. extractive industries and industrial developments. The short-term method involves only one step for complaint assessments, compliance checks, when determining the effect of background noise on a source noise measurement, and for low-risk developments.

To quantify the existing background noise environment of the area, short-term attended noise monitoring was conducted at one location representative of the ambient environment surrounding the project site. The selected monitoring location is shown in **Figure 1** (Att01) and is considered representative of ambient background noise of surrounding residential receivers as per Fact Sheet B1.1 of the NPI. The attended noise survey was conducted in general accordance with the procedures described in Standards Australia AS 1055:2018, "Acoustics – Description and Measurement of Environmental Noise".

The measurements were carried out using one Svantek 971 noise analyser on Wednesday 20 November 2024 during the evening and night periods. All acoustic instrumentation used carries appropriate and current NATA (or manufacturer) calibration certificates with records of all calibrations maintained by MAC as per Approved Methods for the measurement and analysis of environmental noise in NSW (EPA, 2022) and complies with AS/NZS IEC 61672.1-2019-Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ±0.5dBA.

Noise measurements were of 15 minutes in duration and where possible, throughout each survey the operator quantified the contribution of each significant noise source. Results of the attended noise measurements are presented in **Table 3**.

Table 3 Operator-Attended Noise Survey Results					
Date/Time (hrs)	Noise Descriptor (dB re 20µPa)			Meteorology	Description and SPL, dBA
	L_{Amax}	L_{Aeq}	L_{A90}		
Att01					
20/11/2024 20:45	79	56	45	WD: E WS: 2.5m/s Rain: Nil	Traffic 40-79 Wind in vegetation 40-57 Venue cars exit 40-53 (1 minute) Venue patrons <50 (10 seconds)
20/11/2024 23:26	65	42	35	WD: NE WS: 1.0m/s Rain: Nil	Traffic 35-65 Birds 35-44 Operator 44-48 Insects 30-35 Construction noise 40-53 Venue cars exit 40-48 (10 seconds) Venue music <30 (barley audible)

Attended noise results show that venue emissions such as cars in the carpark, music and patrons exiting the venue were audible during lulls, although generally remained inaudible at Att01. Extraneous sources such as traffic, wind in vegetation, birds, residential, operator and construction noise were dominant sources and contributed to the ambient background noise during the respective evening and night periods.

4.2 Liquor and Gaming (L&G) NSW Noise Criteria

Due to the varying level of emissions from the venue, a cumulative noise assessment has been completed, assessing the total $LA_{eq(15min)}$ received noise levels against the LA90 criteria derived from background + 5dB to assess for the potential to cause undue disturbance at surrounding receivers.

To establish the L&G noise criteria the LA90 statistical levels from the short-term attended noise monitoring data have been analysed for the period representative of the evening period (6pm to 10pm) and night period (10pm to 12am). The measured background noise levels and the derived criteria for the purpose of assessment are presented in **Table 4.**

Table 4 L&G Noise Criteria

Location	Receiver Type	Period[1]	Measured RBL dB LA_{90}	$LA_{eq(15min)}$ Criteria (background +5dB)
Att01	Residential	Evening	45	50
		Night	35	40

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

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5 Assessment Inputs and Methodology

For the prediction of noise emissions from the project, the following calculation methodology was used for the prediction of noise levels from the project for all assessment scenarios. Two assessment scenarios were developed to determine noise emissions from the Hotel:

- **Scenario 1** - During Country Music Festival when there will be live entertainment in the outdoor performance area; and
- **Scenario 2** - Typical evening during the warmer months when windows / doors are more likely to be open and people are using the premises without live entertainment occuring.

5.1 Modelling Methodology

For the prediction of noise emissions from the project, a computer model using DGMR (iNoise, Version 2024) noise modelling software was used to quantify noise emissions from the project. iNoise is an intuitive and quality assured software for industrial noise calculations in the environment. 3D noise modelling is considered industry best practice for assessing noise emissions from projects.

The model incorporated a three-dimensional digital terrain map giving all relevant topographic information used in the modelling process. Additionally, the model uses relevant noise source data, ground type, attenuation from barrier or buildings and atmospheric information to predict noise levels at the nearest potentially affected receivers. Where relevant, modifying factors in accordance with Fact Sheet C of the NPI have been applied to calculations.

The model calculation method used to predict noise levels was in accordance with ISO 9613-1 'Acoustics - Attenuation of sound during propagation outdoors. Part 1: Calculation of the absorption of sound by the atmosphere' and ISO 9613-2 'Acoustics - Attenuation of sound during propagation outdoors. Part 2: General method of calculation' including corrections for meteorological conditions using CONCAWE[1]. The ISO 9613 standard from 1996 is the most used noise prediction method worldwide. Many countries refer to ISO 9613 in their noise legislation. However, the ISO 9613 standard does not contain guidelines for quality assured software implementation, which leads to differences between applications in calculated results. In 2015 this changed with the release of ISO/TR 17534-3. This quality standard gives clear recommendations for interpreting the ISO 9613 method. iNoise fully supports these recommendations. The models and results for the 19 test cases are included in the software.

[1] Report no. 4/18, "the propagation of noise from petroleum and petrochemical complexes to neighbouring communities", Prepared by C.J. Manning, M.Sc., M.I.O.A. Acoustic Technology Limited (Ref.AT 931), CONCAWE, Den Haag May 1981

5.2 Noise Modelling Assumptions and Recommendations

The following parameters were incorporated as assumptions in the noise model.

5.2.1 Modelling Inputs and Assumptions

- a sound power level range of 83dBA to 100dBA has been adopted to represent venue music entertainment as it may range between ambient background music to live bands;
- mechanical plant refrigeration condensers are assumed to remain on the ground floor next to the respective cool rooms on the main building and outdoor bar (see **Figure 2**);
- mechanical plant AC units were assumed to be located in two areas along the southern and northern facades of the main building (see **Figure 2**);
- the fence along the northern boundary is to be 3.0m in height eliminating the line of sight between the outdoor entertainment area and neighbouring residential receivers, the remaining fence height is assumed to be 1.8m in height (see **Figure 2**);
- noise emissions from approximately 340 patrons were modelled in the outdoor entertainment areas and approximately 750 patrons were modelled internally, with one in two patrons (50%) talking simultaneously;
- internal to external transmission loss from internal patron noise was modelled through the weakest path, such as open windows and doors; and
- internal patron emissions were assumed to be modelled at the centre of the respective rooms.

FIGURE 2

MODEL ASSUMPTIONS

MAC242295-01

Joe Maguires Hotel

North Tamworth NSW

KEY

- Condenser Location
- AC Area Location
- 3.0m Barrier
- 1.8m Barrier
- Receiver Locations
- Hotel Boundary

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6 Disturbance Assessment (L&G NSW)

6.1 Relevant Legislation

In accordance with Section 79A of the Liquor Act, a liquor licence does not authorise business to be conducted on licensed premises in a way that unduly disturbs, or unreasonably and seriously disturbs, the quiet and good order of the neighbourhood in which the licensed premises are located.

6.2 Disturbance Assessment Criteria

In lieu of specific formalised criteria and consideration of the requirement being not to create disturbance, a qualitative assessment is appropriate. Therefore, to assess potential disturbance on a community, a cumulative assessment of noise emissions from entertainment, patrons and fixed plant on the licensed premises (ie from all sources) is compared to the existing ambient noise levels ($LA_{eq(15min)}$) at potentially noise sensitive receiver locations within the area of influence of the project. The measured existing background (LA_{90}) and ambient noise levels ($LA_{eq(15min)}$) are provided in **Table 5**.

Table 5 Disturbance Assessment Criteria

Location	Measured background noise level, RBL, dB LA_{90}		Intrusiveness Noise Level dB $LA_{eq(15min)}$	
	Evening	Night	Evening	Night
Att01	45	35	50	40

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

The NPI defines 'intrusive noise' as a 'noise that exceeds the background level by more than 5dB', where the background level is described by the LA_{90} descriptor, and the level of noise source is represented by the LA_{eq} descriptor. This intrusiveness noise level seeks to limit the degree of change a new noise source introduces to an existing environment.

Therefore, the introduction of a noise source that is at or below the intrusiveness noise level is unlikely to create disturbance as there would be limited change in the ambient noise environment. Furthermore, where a noise source that is below the background noise level then this is a positive indication that disturbance is highly unlikely. Conversely, where a noise source exceeds the intrusiveness noise level, the potential for disturbance increases. The greater the difference, the greater likelihood of disturbance. The characterisation of this is presented in **Table 6**.

Table 6 Characterisation of Potential for Disturbance		
Difference between source and background noise level (LAeq - LA90)	Likelihood of Disturbance	Characterisation of impacts
<0dBA	Highly Unlikely	Negligible
0 to 5dBA	Unlikely	Acceptable
5 to 10dBA	Possible	Marginal[1]
>10dBA	Likely	Significant

Note 1: Depending on context.

6.3 Disturbance Assessment Inputs

6.3.1 Sound Power Levels

An assessment of potential noise emissions associated with live entertainment, amplified music, patrons inside the venue and leaving the venue has been completed adopting the sound power levels in **Table 7.**

Table 7 Acoustically Significant Sources - Sound Power Levels dBA (re 10^{-12} Watts)			
Item and number modelled per 15 minute period	Individual Sound Power Level	Modelled Sound Power Level dB $LA_{eq(15min)}$	Location
Disturbance Assessment			
Entertainment Sound (x1)[1]	83-100	83-100	Outdoor
External Patrons (group of 4) 85 Groups[2, 3]	71	90	Outdoor
Internal Patrons (group of 4) 188 Groups[2, 3]	71	79	Indoors

Note 1: Source - MAC database.

Note 2: Assumes two in four patrons speaking.

Note 3: Source: Appendix B of the Association of Australasian Acoustical Consultants (AAAC) - Licensed Premises Noise Assessment Technical Guideline Version 2.0, 2020.

6.4 Disturbance Assessment Results

Results of Scenario 1 assessing patrons and entertainment music occurring at the venue following the implementation of noise controls and assumptions in **Section 5.2** are presented in **Table 8**. It is assumed that live entertainment will cease, and patron noise will begin to dissipate at 10pm therefore predicted noise levels are compared against evening criteria.

Table 8 L&G Disturbance Assessment Results – Scenario 1

Receiver	Predicted Noise Level dB $LA_{eq(15min)}$	Difference between source and background noise level (LA_{eq} - LA_{90})	Likelihood of Disturbance	Characterisation of impacts
R01	51-54	5 to 10dBA	Possible	Marginal[1]
R02	44-50	0 to 5dBA	Unlikely	Acceptable
R03	34-39	<0dBA	Highly Unlikely	Negligible
R04	40-45	<0dBA	Highly Unlikely	Negligible
R05	40-46	0 to 5dBA	Unlikely	Acceptable
R06	41-45	<0dBA	Highly Unlikely	Negligible
R07	42-47	0 to 5dBA	Unlikely	Acceptable
R08	40-44	<0dBA	Highly Unlikely	Negligible
R09	41-47	0 to 5dBA	Unlikely	Acceptable
R10	38-45	<0dBA	Highly Unlikely	Negligible
R11	34-40	<0dBA	Highly Unlikely	Negligible
R12	30-36	<0dBA	Highly Unlikely	Negligible

Note 1: Depending on context.

Predicted noise levels were calculated between <0dB to 9dBA above the background (LA_{90}) and therefore the risk of disturbance is expected to be unlikely. The characterisation of impact may range between negligible to marginal on surrounding residential receivers, notwithstanding management controls in **Section 8** should be considered and implemented where necessary.

Results of Scenario 2 assessing only patron emissions during the evening period at the venue following the implementation of noise controls and assumptions in **Section 5.2** are presented in **Table 9.** It is assumed that patron noise will begin to dissipate at 10pm therefore predicted noise levels are compared against evening criteria.

Table 9 L&G Disturbance Assessment Results – Scenario 2

Receiver	Predicted Noise Level dB $LA_{eq(15min)}$	Difference between source and background noise level (LA_{eq} - LA_{90})	Likelihood of Disturbance	Characterisation of impacts
R01	51	5 to 10dBA	Possible	Marginal[1]
R02	44	<0dBA	Highly Unlikely	Negligible
R03	34	<0dBA	Highly Unlikely	Negligible
R04	39	<0dBA	Highly Unlikely	Negligible
R05	40	<0dBA	Highly Unlikely	Negligible
R06	41	<0dBA	Highly Unlikely	Negligible
R07	42	<0dBA	Highly Unlikely	Negligible
R08	39	<0dBA	Highly Unlikely	Negligible
R09	41	<0dBA	Highly Unlikely	Negligible
R10	37	<0dBA	Highly Unlikely	Negligible
R11	34	<0dBA	Highly Unlikely	Negligible
R12	29	<0dBA	Highly Unlikely	Negligible

Note 1: Depending on context.

Predicted noise levels were calculated between <0dB to 6dBA above the above the background (LA_{90}) and therefore the risk of disturbance is expected to be unlikely. The characterisation of impact may range between negligible to marginal on surrounding residential receivers, notwithstanding management controls in **Section 8** should be considered and implemented where necessary.

7 Cumulative Noise Assessment

7.1 Relevant Policy & Guidance

In consideration of these amendments resulting from the Vibrancy Reforms, a semi quantitative noise impact assessment will be conducted in lieu of (previously used) formalised criteria with reference to the methods and noise descriptors described / defined in the NPI and NGLG.

7.2 Cumulative Assessment Inputs

7.2.1 Sound Power Levels

An assessment of potential noise emissions associated with the project has been completed. The assessment has identified several noise sources that may contribute to potential acoustic impacts at surrounding residences and include mechanical plant, patron vehicles, live entertainment and / or ambient music and raised vocal efforts from patrons. Sound power levels for live venue entertainment have been sourced from the MAC measurement database and are listed in **Table 10.**

Table 10 Acoustically Significant Sources - Sound Power Level, Lw dBA (re 10^{-12} Watts)

Item and number modelled per 15 minute period	Individual Lw	Modelled Lw dB $LA_{eq(15min)}$	Source Height[5]
Cumulative Assessment			
Entertainment Sound (x1)[1]	83-100	83-100	1.5m
Group of 4 Patrons (85 groups)[2, 4]	71	90	1.2m
Group of 4 Patrons (188 groups)[2, 4]	71	79	1.2m
A/C Units (x8)[1]	76	85	0.5m
Refrigeration Condenser (x2)[1]	75	78	0.5m
Light Vehicles (x18)[1]	73	85	1.0m
Car entering/exiting carpark (10 cars per 15min)	81	81	0.5m

Note 1: Source - MAC database.

Note 2: Assumes two in four patrons speaking.

Note 3: Source: Appendix B of the Association of Australasian Acoustical Consultants (AAAC) - Licensed Premises Noise Assessment Technical Guideline Version 2.0, 2020.

Note 4: Source M Hayne et al – Prediction of Noise from Small to Medium Sized Crowds – AAS Paper Number 133 presented at AAS Conference November 2011.

Note 5: Height above the relative ground or building below source.

7.3 Cumulative Assessment Results

Results of the cumulative Scenario 1 assessing fixed plant, light vehicles, patrons and venue entertainment occurring internally and externally at the project site inclusive of the noise controls and assumptions in **Section 5.2** are presented in **Table 11** at the nearest identified residential receivers.

It is assumed that live entertainment will cease, and patron noise will begin to dissipate at 10pm therefore predicted noise levels are compared against evening criteria

Table 11 Cumulative Assessment Results - Scenario 1

	Predictive Levels	
Receiver	Predicted Noise Level dB $LA_{eq(15min)}$	Evening Criteria dB $LA_{eq(15min)}$[1]
R01	51-54	50
R02	45-50	50
R03	36-40	50
R04	41-45	50
R05	41-46	50
R06	42-46	50
R07	46-49	50
R08	42-45	50
R09	46-49	50
R10	43-47	50
R11	39-42	50
R12	37-39	50

Note 1: Refer to Existing Environment in Section 4.2

Results from the predictive model show that noise levels associated with the project generally remain below the specified criteria except for R01 which is calculated to exceed the evening criteria by 4dBA. Therefore management controls in **Section 8** should be considered and implemented where necessary.

Results of the cumulative Scenario 2 assessing fixed plant, light vehicles and patrons occurring internally and externally at the project site inclusive of the noise controls and assumptions in Section 5.2 are presented in Table 12 at the nearest identified residential receivers.

It is assumed that patron noise will begin to dissipate at 10pm therefore predicted noise levels are compared against evening criteria

Table 12 Cumulative Assessment Results – Scenario 2

Receiver	Predictive Levels	
	Predicted Noise Level dB LAeq(15min)	Evening Criteria dB LAeq(15min)[1]
R01	51	50
R02	44	50
R03	36	50
R04	40	50
R05	41	50
R06	42	50
R07	46	50
R08	42	50
R09	45	50
R10	43	50
R11	39	50
R12	37	50

Note 1: Refer to Existing Environment in Section 4.2

Results from the predictive model show that noise levels associated with the project generally remain below the specified criteria except for R01 which is calculated to exceed the evening criteria by 1dBA. Therefore management controls in Section 8 should be considered and implemented where necessary.

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8 Licensed Premises Noise Mitigation and Management Measures

The results of the assessment identify that levels are generally calculated to be below the adopted disturbance threshold level at surrounding residential receivers to the project. Notwithstanding, to further protect the quiet and good order of neighbourhood, it is recommended that noise management and mitigation measures be adopted to manage the calculated levels that exceed the management threshold.

8.1 Practical Tips to Manage Noise Emissions[2]

- Remind patrons leaving your venue to do so quickly and quietly to mitigate instances of anti-social behaviour and install signage at all egress points requesting patrons leaving your venue do so quickly and quietly (e.g. no loitering);
- Encourage the gradual dispersal of patrons leaving your venue to assist in crowd control (e.g. by closing certain areas of your venue or reducing the level/volume of entertainment or music during the later part of the trading period);
- Where required utilise security to assist in patron egress and management to ensure patrons leaving your venue do not loiter in the immediate vicinity and cause disturbance to the neighbourhood;
- Actively promote and display information about nearby public transport services that are available, or ride share pick up/drop off zones;
- Establish an internal complaint handling process, including maintaining a register of disturbance complaints received and any steps or actions taken to address them;
- Provide a contact number and link on your venue's website for enquiries and complaints, and ensure the number is actively monitored;
- Set clear expectations and communicate operating procedures with staff members, including procedures relating to the provision of entertainment and noise mitigation controls. These internal policies and procedures can be set out in a Plan of Management;
- Train staff in handling incoming calls or complaints regarding noise, including during times where a licensee may not be on duty;
- Notify local residents of upcoming entertainment and live music events through your venue's website and/or via letter drop;

[2] Source: Sound Management Guidance for licensed venue operators, NSW Government, 2024.

- Initiate community meetings to discuss any disturbance issues and build good relationships with your local community;
- Attend local liquor accord meetings; and
- Monitor responsible service of alcohol practices at your venue. These strategies may also be included in a Plan of Management.

8.2 Acoustic Guidance and Mitigation Strategies

- Consider the type of entertainment provided, and the frequency and timing of any entertainment programming hosted at your venue;
- Consider the placement of amplifiers, speakers, band instruments, or stage set up within your venue and be mindful of locating such equipment near windows and doors or on surfaces through which sound or vibration may travel into adjoining residences or businesses;
- Consider re-directing the angle of speakers to minimise noise leakage from your venue and reverberation impacts;
- Conduct regular perimeter checks and monitor sound levels at the boundary of your venue and any neighbouring residences;
- Consider lowering the volume of any amplified speakers or PA system in use at your venue, particularly during later trading periods;
- Consider closing doors and windows when amplified music and entertainment is hosted at your venue, particularly those facing residential areas and during late trading periods;
- Limit the use of speakers or hosting amplified entertainment in outdoor areas after certain times or during late trading periods;
- Engage an accredited acoustic engineer to undertake acoustic testing at your venue and consider implementing any acoustic recommendations, if appropriate;
- Consider installing soundproofing and sound attenuation materials at your venue, such as sound absorbing insulation within walls, floors and ceiling, double-glazing windows, installing sound dampening curtains or acoustic seals on windows and doors;
- Install and utilise a noise limiter; and
- Prepare and adopt a noise management plan.

9 Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Noise Assessment (NA) for the proposed additions and alterations of the Joe Maguires Hotel, 148 Peel Street, North Tamworth, NSW.

The Noise Assessment has undertaken attended noise monitoring to determine background noise levels at representative receiver location surrounding the Hotel.

Noise predictions were calculated from two scenarios during the evening period for the disturbance assessment and cumulative noise assessments;

- Scenario 1 - During Country Music Festival when there will be live entertainment in the outdoor performance area; and
- Scenario 2 - Typical evening during the warmer months when windows/ doors are more likely to be open and people are using the premises without live entertainment.

Sources for the disturbance assessment included patron noise and live entertainment that are predicted to have negligible to marginal disturbance, hence noise management controls should be considered where necessary.

Sources for the cumulative noise assessment included mechanical plant, venue cars, patron noise and live entertainment that are predicted to generally satisfy the relevant Liquor and Gaming (L&G) NSW Noise Criteria derived from the short-term attended measurements, except for R01.

Therefore, it is recommended that the Hotel implement management controls within Section 8 to reduce potential disturbances on surrounding residential receivers.

In summary, the Noise Assessment demonstrates that the project satisfies the requirements of the L&G NSW and supports the Development Application for the additions and alterations to the project albeit once noise management controls are implemented when required.

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Appendix A – Glossary of Terms

A number of technical terms have been used in this report and are explained in **Table A1**.

Table A1 Glossary of Acoustical Terms

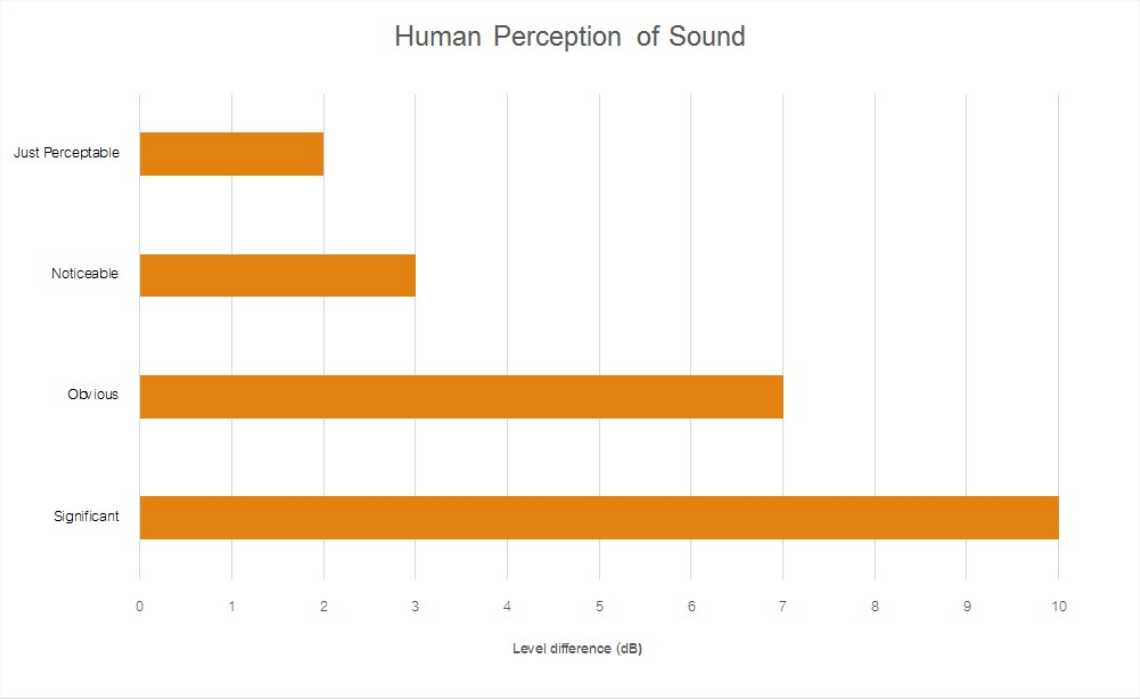
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured L90 statistical noise levels.
Ambient Noise	The total noise associated with a given environment. Typically, a composite of sounds from all sources located both near and far where no particular sound is dominant.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to sound.
Background Noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is usually represented by the LA90 descriptor
dBA	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(Z), dB(L)	Decibels Z-weighted or decibels Linear (unweighted).
Extraneous Noise	Sound resulting from activities that are not typical of the area.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A sound level which is exceeded 10% of the time.
LA90	Commonly referred to as the background noise, this is the level exceeded 90% of the time.
LAeq	Represents the average noise energy or equivalent sound pressure level over a given period.
LAmax	The maximum sound pressure level received at the microphone during a measuring interval.
Masking	The phenomenon of one sound interfering with the perception of another sound. For example, the interference of traffic noise with use of a public telephone on a busy street.
RBL	The Rating Background Level (RBL) as defined in the NPI, is an overall single figure representing the background level for each assessment period over the whole monitoring period. The RBL, as defined is the median of ABL values over the whole monitoring period.
Sound power level (Lw or SWL)	This is a measure of the total power radiated by a source in the form of sound and is given by 10.log10 (W/Wo). Where W is the sound power in watts to the reference level of 10^{-12} watts.
Sound pressure level (Lp or SPL)	the level of sound pressure; as measured at a distance by a standard sound level meter. This differs from Lw in that it is the sound level at a receiver position as opposed to the sound 'intensity' of the source.

Table A2 provides a list of common noise sources and their typical sound level.

Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA

Source	Typical Sound Pressure Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawn-mower (operator position)	90
Heavy traffic (footpath)	80
Elevated speech	70
Typical conversation	60
Ambient suburban environment	40
Ambient rural environment	30
Bedroom (night with windows closed)	20
Threshold of hearing	0

Figure A1 – Human Perception of Sound



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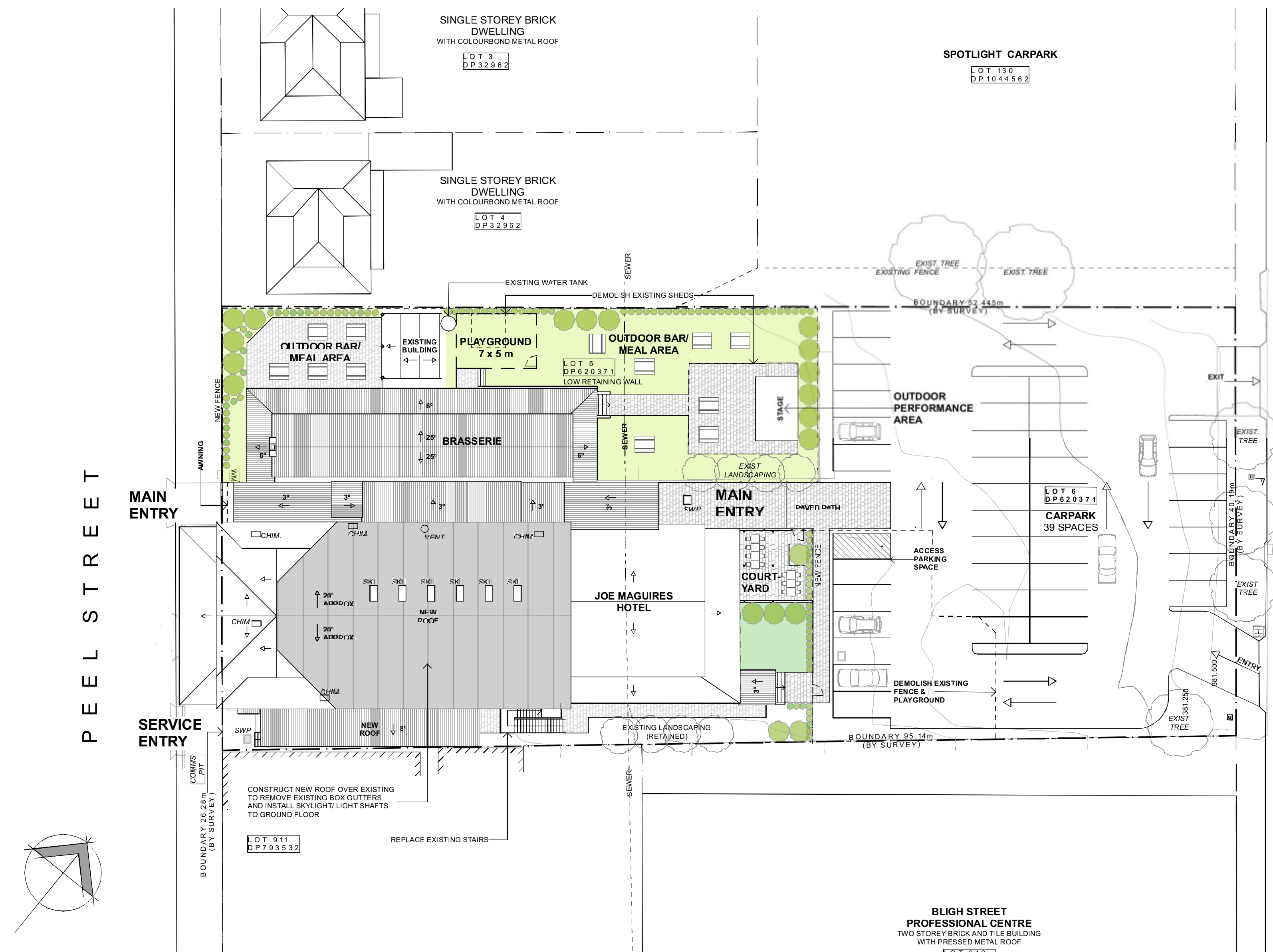
Appendix B – Site Plans

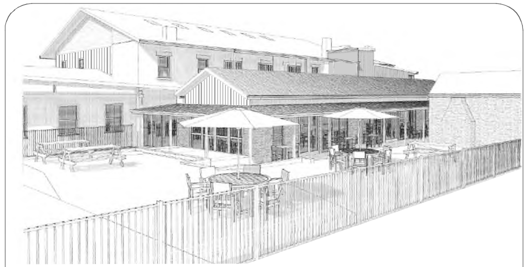


SITE / ROOF PLAN

SCALE 1:200

CHIM.	NEW CHIMNEY
CHIM.	EXISTING CHIMNEY
SKL	SKYLIGHT

PERSPECTIVE 1
FROM PEEL STREET
NOT TO SCALE



PERSPECTIVE 2
FROM THE NEW BEER GARDEN
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LAYOUT
SITE PLAN

DESIGN	SHEET SIZE & SCALE	DRAWING NUMBER
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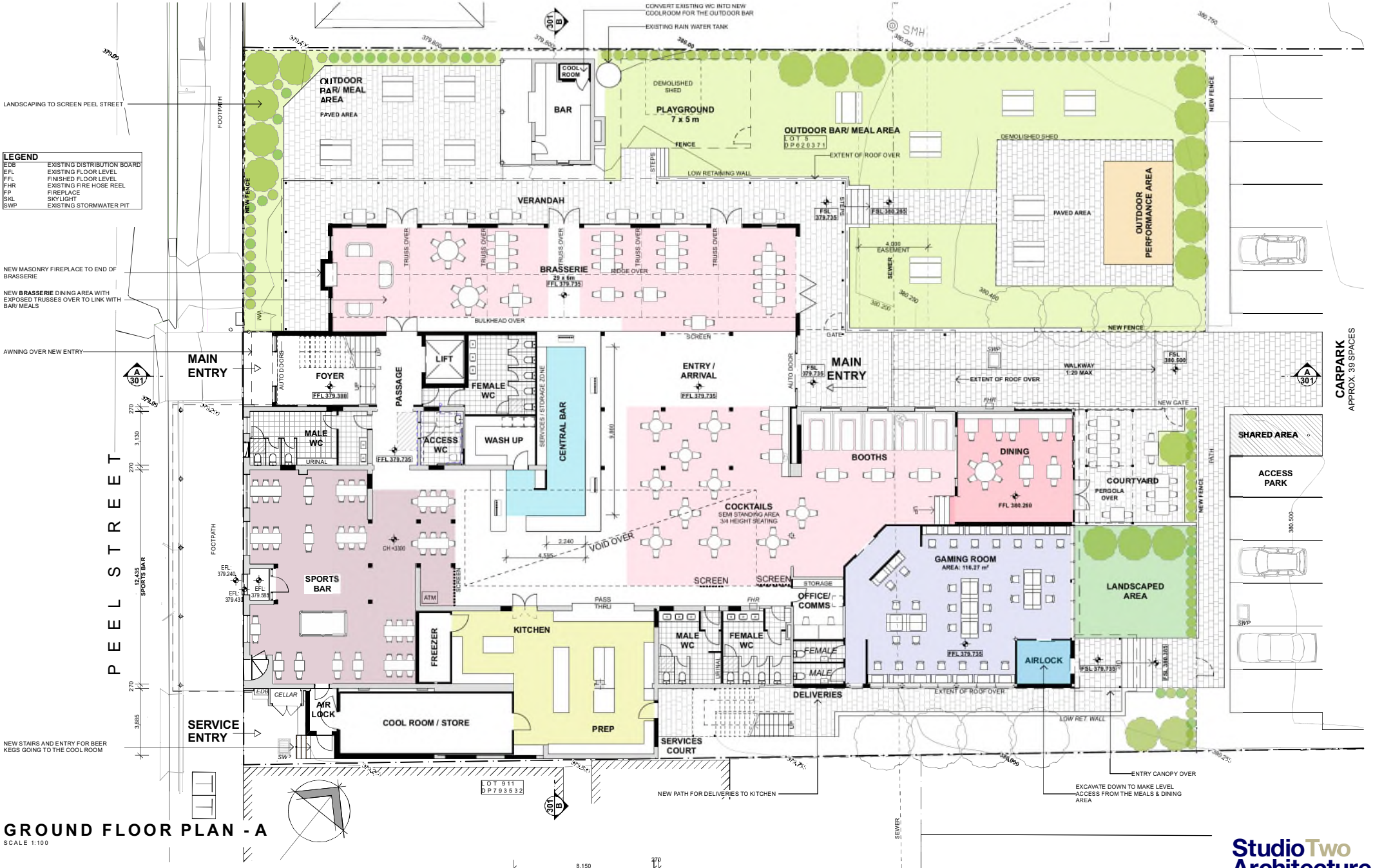

GROUND FLOOR PLAN - A

SCALE 1:100

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PROJECT
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LAYOUT
GROUND FLOOR PLAN

DESIGN	SHEET SIZE & SCALE	DRAWING NUMBER
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DOCUMENTATION	PLOT DATE	REVISION
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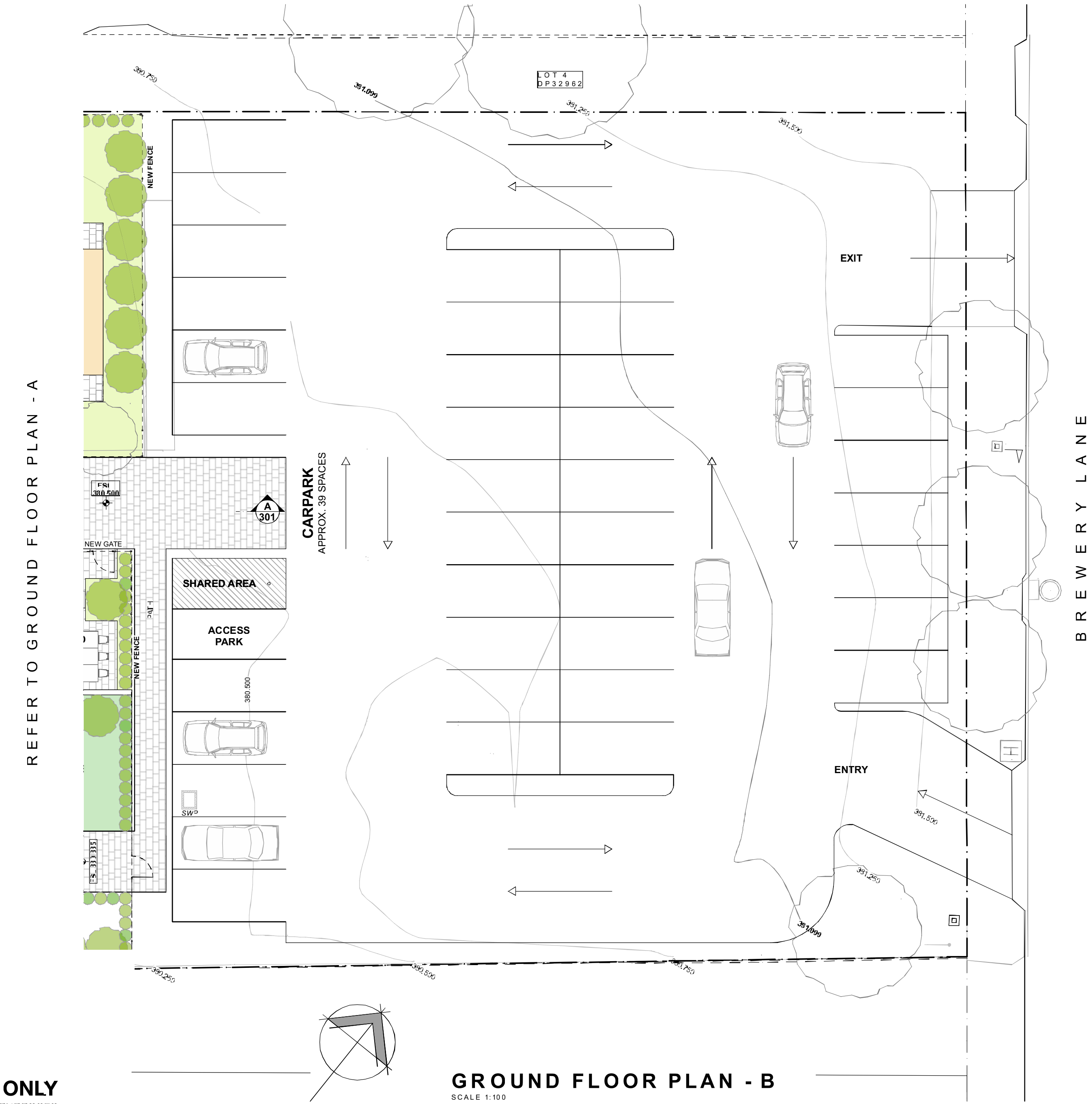

G R O U N D F L O O R P L A N - B

SCALE 1:100

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LAYOUT
GROUND FLOOR PLAN - B

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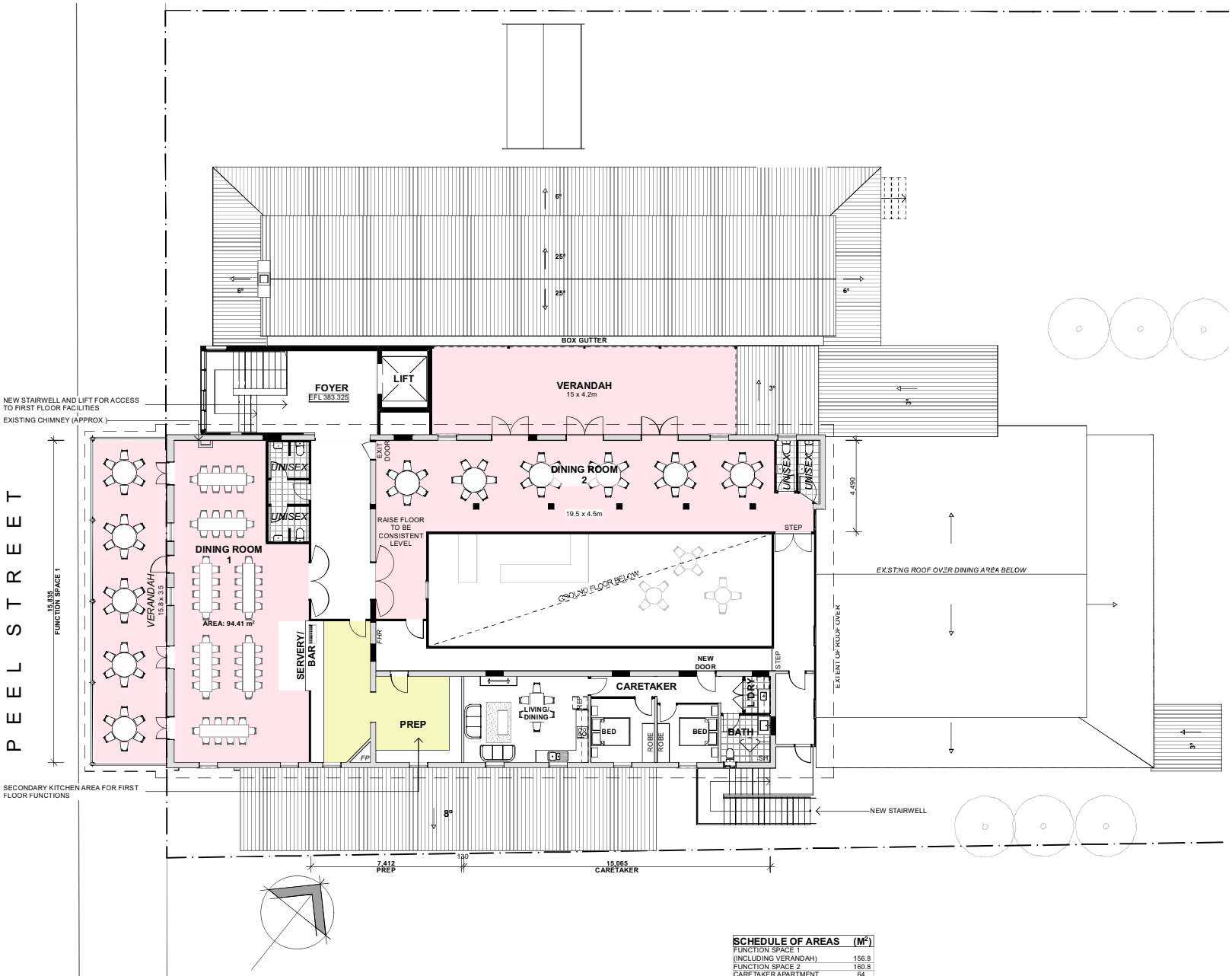

SCHEDULE OF AREAS	(M^2)
FUNCTION SPACE 1	
(INCLUDING VERANDAH)	156.8
FUNCTION SPACE 2	160.8
CARETAKER APARTMENT	64
KITCHEN, PREP, SERVERY	39

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FIRST FLOOR PLAN
SCALE 1:100

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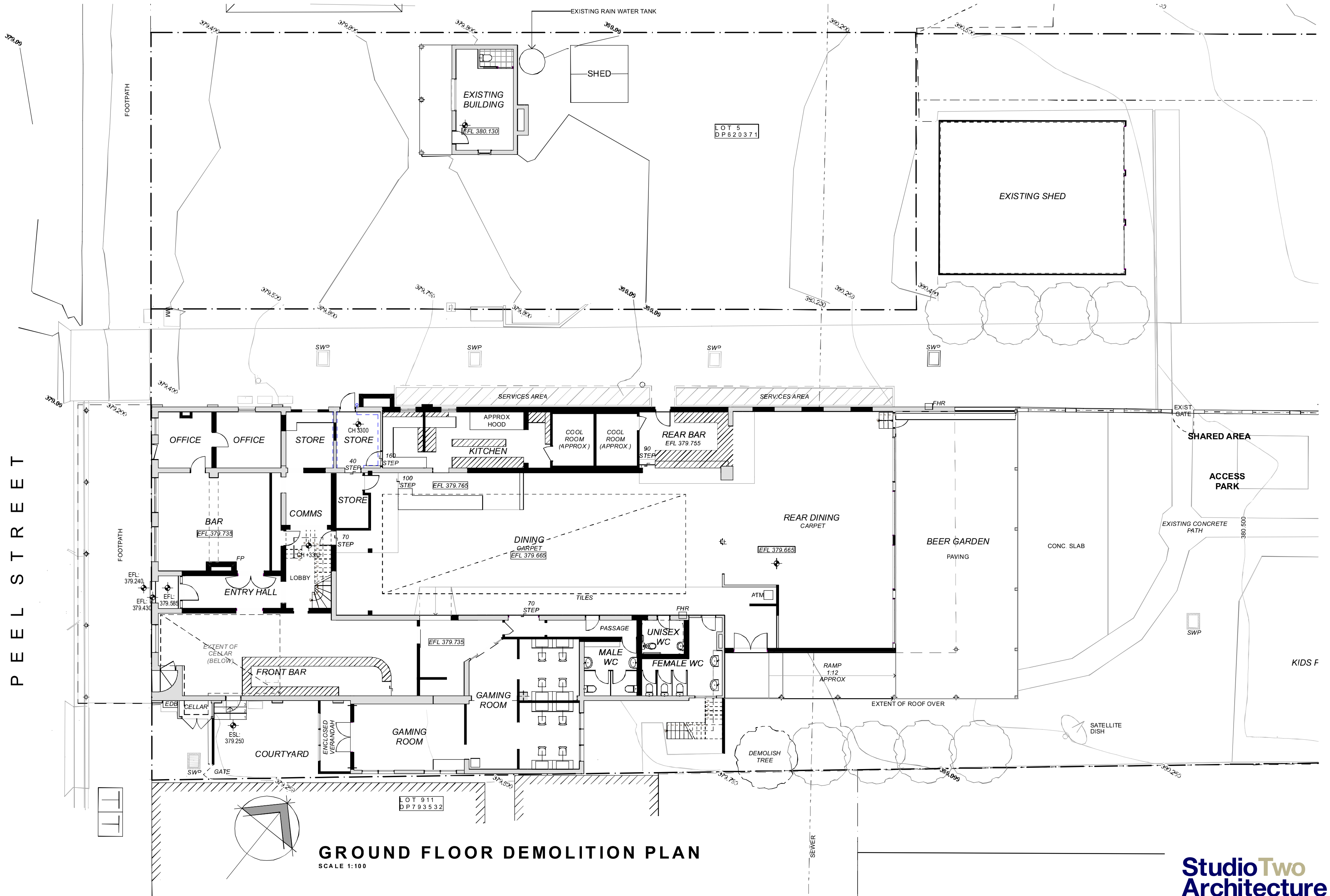

GROUND FLOOR DEMOLITION PLAN

SCALE 1:100

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LAYOUT

GROUND FLOOR DEMOLITION PLAN

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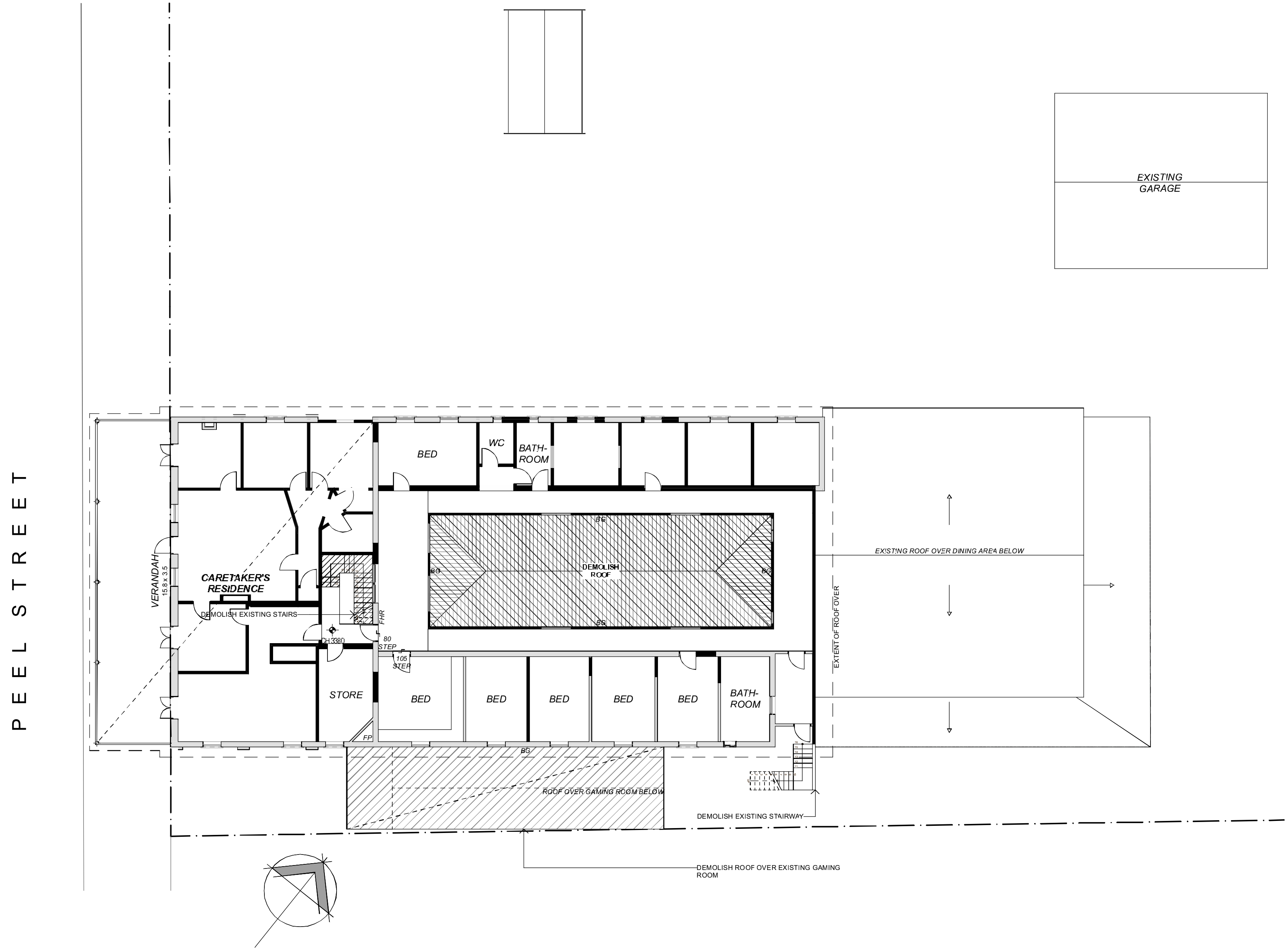

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PROJECT
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LAYOUT
FIRST FLOOR DEMOLITION PLAN

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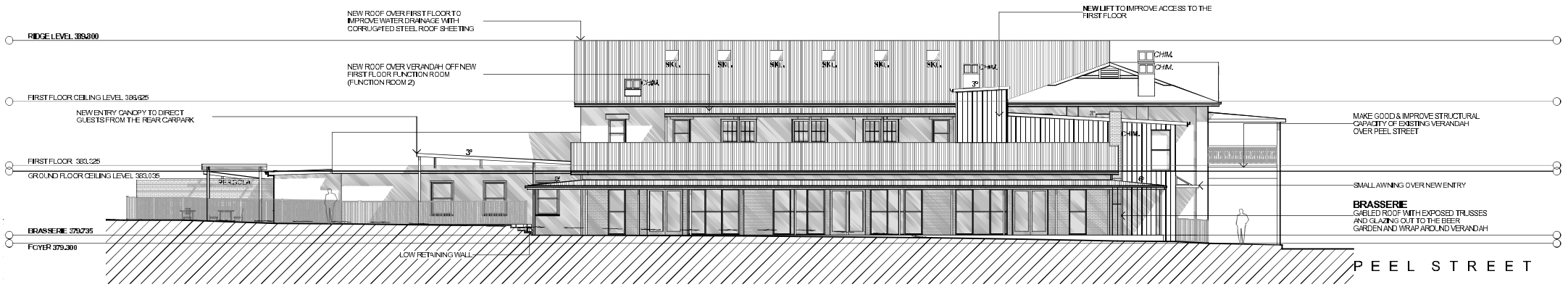
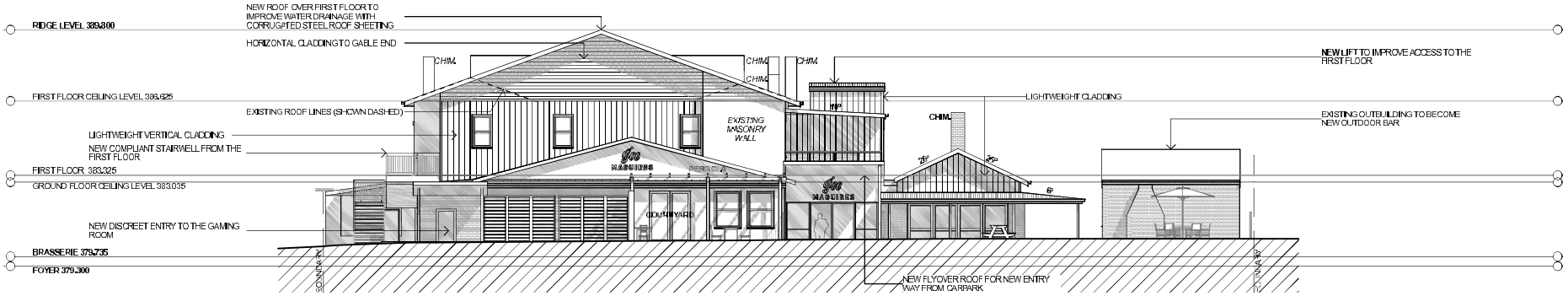


NORTHERN ELEVATION

SCALE 1:100



EASTERN ELEVATION

SCALE 1:100

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PROJECT
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For WATERING HOLE HOTELS
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LAYOUT
ELEVATIONS (NORTH & EAST)

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DOCUMENTATION	PLOT DATE	REVISION
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SOUTHERN ELEVATION

SCALE 1:100

WESTERN ELEVATION

SCALE 1:100

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PROJECT

Alterations & Additions to Joe Maguires Hotel

For WATERING HOLE HOTELS

148 PEEL STREET, TAMWORTH NSW 2340

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LAYOUT

ELEVATIONS (SOUTH & WEST)

DESIGN	SHEET SIZE & SCALE	DRAWING NUMBER
N. BROWN	1:100 @ A1	J2334, SD202
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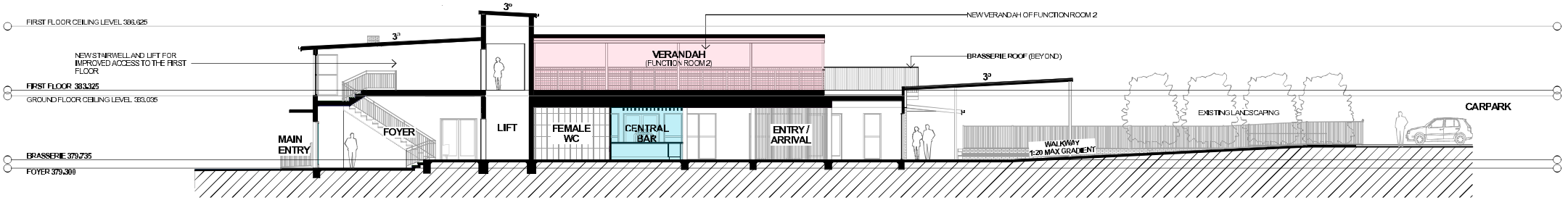
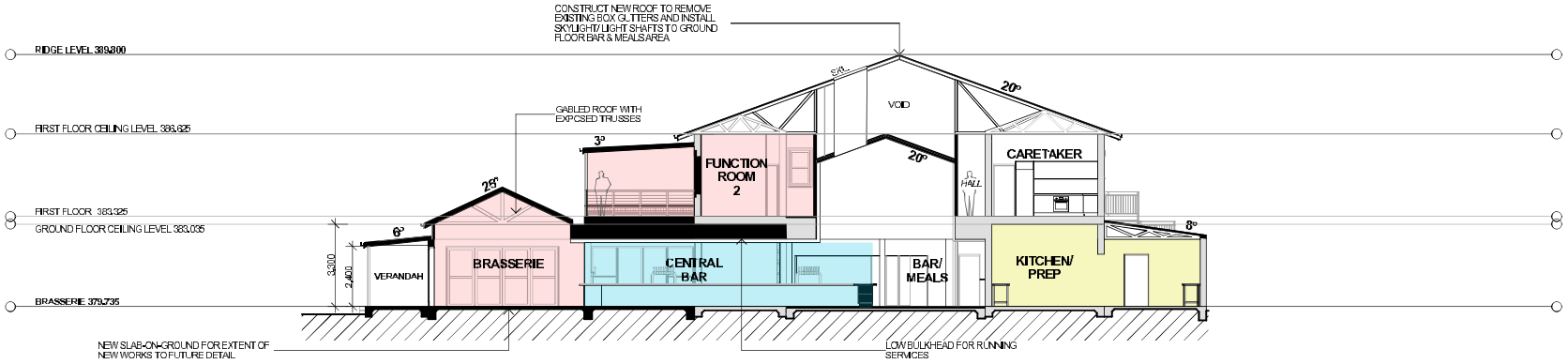
PERSPECTIVE 3
LOOKING DOWN THE DOUBLE HEIGHT SPACE
NOT TO SCALE

PERSPECTIVE 4
SPORTS BAR
NOT TO SCALE

PERSPECTIVE 5
LOOKING DOWN THE BRASSERIE TOWARD THE BAR
NOT TO SCALE



SECTION A
SCALE 1:100



SECTION B
SCALE 1:100

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REV	DATE	AMENDMENT
A	01/12/2023	ISSUED FOR REVIEW
B	03/01/2024	ISSUED FOR REVIEW
C	29/06/2024	ISSUED FOR REVIEW
D	29/07/2024	ISSUED FOR REVIEW
E	28/08/2024	ISSUED FOR REVIEW
F	04/09/2024	ISSUED FOR REVIEW
G	29/09/2024	ISSUED FOR REVIEW
H	24/10/2024	ISSUED FOR INFORMATION

NOTES
- Do not scale from this drawing - use figured dimensions only.
- All dimensions and levels are to be verified on site and the Architect notified of any discrepancies prior to the commencement of construction.
- Drawings are to be read in conjunction with all other contract documents.
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THIS DRAWING MAY NOT BE TO SCALE
REFER TO GRAPHIC SCALE BELOW
1:200 0 5 10m
1:100 0 1 2 3 4 5m
1:50 0 1 2 2.5m
1:20 0 0.5 1m

PROJECT
Alterations & Additions to Joe Maguires Hotel
For WATERING HOLE HOTELS
148 PEEL STREET, TAMWORTH NSW 2340

LAYOUT
SECTIONS

DESIGN	SHEET SIZE & SCALE	DRAWING NUMBER
N. BROWN	1:100 @ A1	J2334, SD301
DOCUMENTATION	PLOT DATE	REVISION
J. CLARKE	24/10/2024	H

Studio Two Architecture and Design Pty Ltd - 104 Brisbane Street, Tamworth NSW 2340 Australia - Nominated Architect, Nicholas Brown, NSW Architects Registration Board No. 6027 - E: info@studiotwoarchitecture.com.au
www.studiotwoarchitecture.com.au - Ph 02 6766 8134

Muller Acoustic Consulting Pty Ltd
PO Box 678, Kotara NSW 2289
ABN: 36 602 225 132
Ph: +61 2 4920 1833
www.mulleracoustic.com

MAC
Muller Acoustic Consulting