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BONFIRE STATION FARMSTAY & MICROBREWERY

**3625 MAROONDAH HIGHWAY
ACHERON**

**Consideration of Music Noise Emissions and
Patron Noise Emissions during Proposed Operating Hours**

Attention: Mr. Robert Christopher

Bonfire Station – Farmstay & Microbrewery
Lot 1 Yellow Creek Road
Taggerty
Victoria 3714

Ref: 12101-1jg
August 2017



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1. INTRODUCTION

The Bonfire Station Farmstay and Microbrewery currently operates at the site described as Lot 1 Yellow Creek Road, Acheron.

As part of planning permit application 2017/41, it is proposed to include weddings and functions at the venue.

The proposed new wedding and function operations will be suitable for up to 200 patrons, and will operate between 2:00pm and 11:00pm on Fridays, and between 11:00am and 11:00pm on Saturdays.

As part of the proposal, Watson Moss Growcott has carried out an assessment to determine the potential noise impacts associated with the proposed venue operations on nearby noise sensitive residential receivers.

Noise emissions associated with the proposed wedding and function operations will be assessed in accordance with the following relevant policies and standards:

- 1. Patron Noise:** NOISE FROM INDUSTRY IN REGIONAL VICTORIA Recommended Maximum Noise Levels from Commerce, Industry and Trade Premises in Regional Victoria (NIRV).
Referral Document: State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1.
- 2. Music Noise:** State Environment Protection Policy (Control of Music Noise from Public Premises) No. N-2 (SEPP N-2).

Further to the above, WMG has provided general commentary regarding noise management of patrons leaving the venue.

Noise emissions associated with mechanical services equipment located at the subject site has not been considered as part of this assessment.



2. SITE LAYOUT AND ENVIRONS

The subject site is located at the land described as Lot 1 Yellow Creek Road, Acheron.

The existing site includes several single level buildings which include entertainment areas, kitchen areas and accommodation areas.

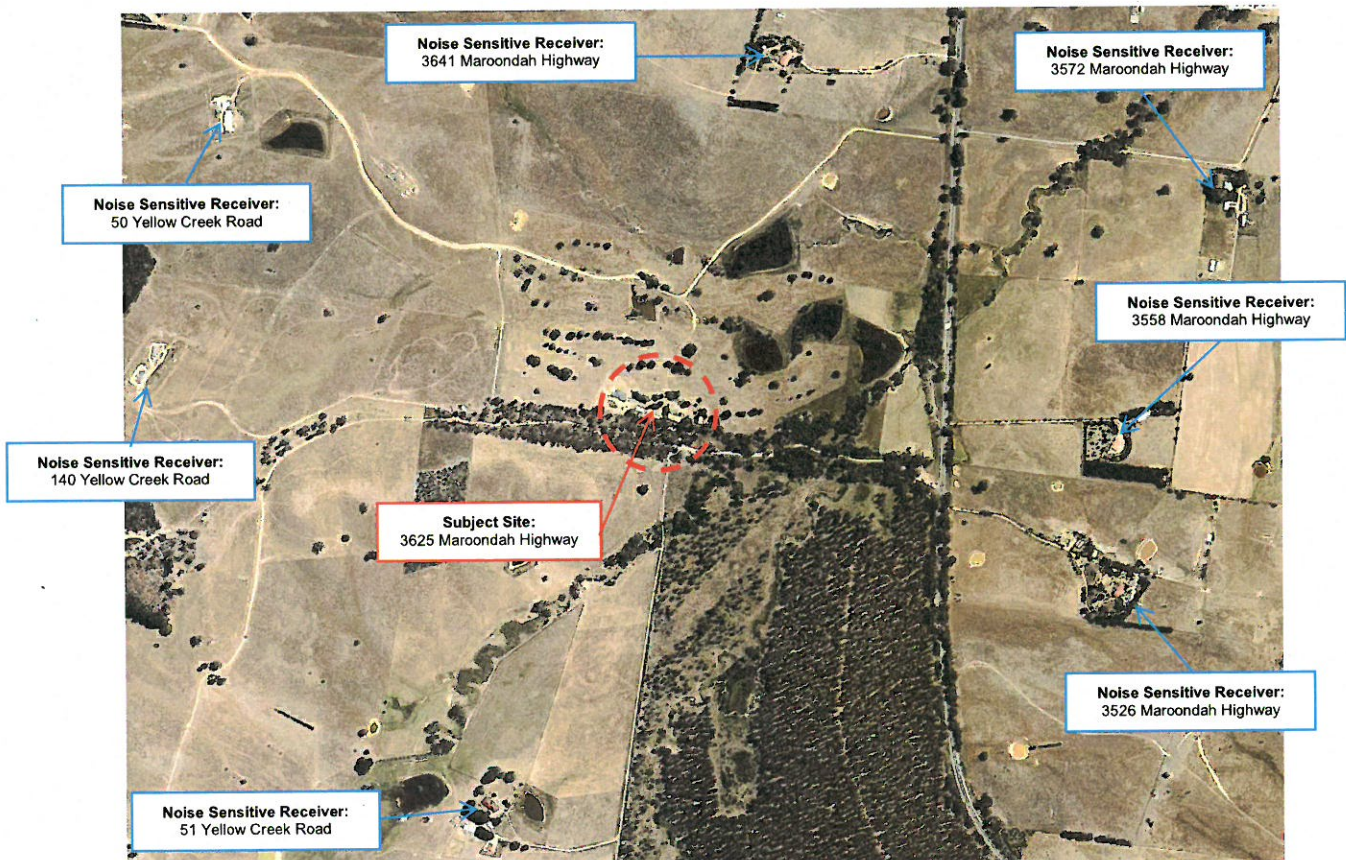
There are two existing dwellings located within the boundaries of the subject site. It has been indicated that the operator of the venue owns the nearby dwellings, and has therefore indicated that these locations will not require consideration.

The subject site and surrounding area is located within Farm Zoned Land, and is surrounded by vacant farming grass fields.

For the purpose of this assessment, the nearest noise sensitive locations to the subject site will be as follows:

1. 3641 Maroondah Highway, Acheron (Located to the north);
2. 3572 Maroondah Highway, Acheron (Located to north east);
3. 3558 Maroondah Highway, Acheron (Located to east);
4. 3526 Maroondah Highway, Acheron (Located to south east);
5. 51 Yellow Creek Road, Taggerty (Located to the south west);
6. 140 Yellow Creek Road, Taggerty (Located to the west);
7. 50 Yellow Creek Road, Taggerty (Located to the north west);

The attached aerial map identifies the subject site under consideration and the nearby noise sensitive receivers.





3. NOISE ASSESSMENT METHODOLOGY

3.1 NOISE ASSESSMENT TERMINOLOGY

The following terms are used in this report:

- dB(A) Decibels recorded on a sound level meter, which has had its frequency response modified electronically to an international standard, to quantify the average human loudness response to sounds of different character.
- L₉₀ the level exceeded for 90% of the measurement period, which is representative of the typical lower levels in a varying noise environment. It is the noise measure defined by the EPA as the measure of the background noise level to use in determining noise limits.
- L_{eq} the equivalent continuous level that would have the same total acoustic energy over the measurement period as the actual varying noise level under consideration. It is the noise measure defined by the EPA as the measure of the noise to use in assessing compliance with noise limits.
- L₁₀ Commonly described as the average of the higher levels of a range of noise levels. It is the value of a range of values exceeded for 10% of the observation period, *i.e.* the level exceeded for 6 minutes for every 60 minutes of observation.

3.2 CONSIDERATION OF NOISE EMISSIONS ASSOCIATED WITH PROPOSED OPERATIONS

Noise emissions associated with the proposed wedding and function operations will include the following:

1. Noise due to patrons located within designated indoor and outdoor areas;
2. Music noise emissions.

3.2.1 Consideration of Noise Associated with Patrons in Indoor/Outdoor Areas

There is currently no regulated noise assessment procedure for considering the noise that occurs from patrons gathered in indoor or outdoor areas at licenced venues.

In the opinion of the writer, patron noise from indoor/outdoor areas can be assessed like other noise sources *ie.* the acceptability or otherwise of patron noise will rely on a comparison of the patron noise levels with the ambient noise occurring at residential locations at noise sensitive times.

The writer's firm has considered possible criteria and believes, by observation, that the noise emitted from groups of patrons in indoor/outdoor areas of licensed venues will be relatively constant in level, and be observed as "babble" by off site listeners rather than individual voices.

Further, if the individual voices can be identified within a patron group then the number of patrons will be very small (likely to be less than ten). The overall patron noise levels for such small groups will be measurably lower than for larger patron groups expected at the proposed venue.

Hence, the effective noise of a small patron group, *ie.* lower absolute noise level plus individual voice character, is expected to have similar noise impact than a larger group with the more constant babble noise character.



Watson Moss Growcott adopts State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (SEPP N-1) as the most reasonable assessment criteria.

Given the location of this subject site, this will also include consideration of NOISE FROM INDUSTRY IN REGIONAL VICTORIA Recommended Maximum Noise Levels from Commerce, Industry and Trade Premises in Regional Victoria (NIRV).

This statement is made in the knowledge that SEPP N-1 explanatory notes indicate that the EPA did not intend at the time of development, to use the policy for assessing individual voices or the noise from (sporting) crowds.

The SEPP N-1 methodology provides the following suitable attributes for assessing patron noise:

1. It has been a good predictor for many years of the subjective response from residential communities exposed to noise sources of many differing characters, and in the opinion of the writer, noise sources with the character of groups of socialising club or hotel patrons;
2. It provides the ability to determine different noise limits for day, evening and night periods;
3. Night-time noise limits have as a prime consideration the protection of residential locations especially those used for sleeping.

In accordance with the NIRV documentation, the recommended maximum noise level impacts on nearby noise sensitive receivers will be dependent on the existing land zoning surrounding the nearby noise sensitive receivers.

The recommended maximum values described in NIRV methodology will be the lowest applicable 'noise limit'. The recommended value will only be increased due to existing ambient background noise levels nearby to the subject site being considered high for the types of zoning surrounding the nearby noise sensitive receivers.

Given the location of the subject site, WMG has concluded that it is unlikely that the ambient background noise surrounding the subject site will be considered 'high', and has therefore adopted the recommended maximum noise levels described in NIRV.

The proposed operating hours for the wedding and function component of the facility will be 2:00pm and 11:00pm on Fridays, and between 11:00am and 11:00pm on Saturdays.

Based on consideration of the above, the adopted recommended maximum noise levels at each of the nearby noise sensitive receivers are summarised below:

Assessment Period	NIRV Recommended Maximum Noise Levels
EPA Day Period Mon to Fri - (2:00pm-6:00pm) Sat - (11:00am-1:00pm)	46 dB(A) L_{eq}
EPA Evening Period All days - (6:00pm-10:00pm) Sat - (1:00pm-6:00pm)	41 dB(A) L_{eq}
EPA Night Period All days - (10:00pm-11:00pm)	36 dB(A) L_{eq}



3.2.2 Consideration of Music Noise Emissions From Public Premises

Music noise emissions from the venue must comply with limits determined in accordance with State Environment Protection Policy (Control of Music Noise from Public Premises) No. N-2 (SEPP N-2).

SEPP N-2 requires compliance with two noise criteria conditions. These include a daytime/early evening criterion and a late evening/night time criterion. These criteria require that:

Daytime/early evening -

The higher peaks of music noise do not exceed the lower lulls of the ambient noise by more than 5 dB(A), *i.e.*:

$$\text{Music dB(A) } L_{eq} \leq \text{Background dB(A) } L_{90} + 5 \text{ dB(A);}$$

For a venue where music will be played two to three times per week, the criterion will apply up to 11pm on Thursday, Friday and Saturday nights and 10pm on other nights.

Late evening/night time (after 11pm Thursday, Friday and Saturday and 10pm other nights)-

The higher peaks of music (measured in octave bands) measured inside or outside a room used for sleeping must not exceed the lulls of the ambient noise (also measured in octave bands) by more than 8 decibels, *i.e.*:

$$\text{Music dB } L_{10} \text{ (octave 63 - 4 kHz)} \leq \text{Background dB } L_{90} \text{ (octave 63 - 4 kHz)} + 8 \text{ dB}$$

Based on the proposed operating house of the venue, the 'late evening/night time' criteria will not be applicable for the subject site.

The daytime/early evening' criteria will be applicable.

Given the location of the subject site, it is anticipated that the nearby noise sensitive receivers will be exposed to very low levels of ambient background noise, particularly during the early evening period.

For scenarios where the ambient background noise levels will be very low, SEPP N-2 methodology provides Base Noise Limits to be achieved by commercial venues.

The base noise limits for the day/early evening assessment period will be 32 dB(A) L_{eq}



4. SITE PLAN AND RELEVANT AREAS

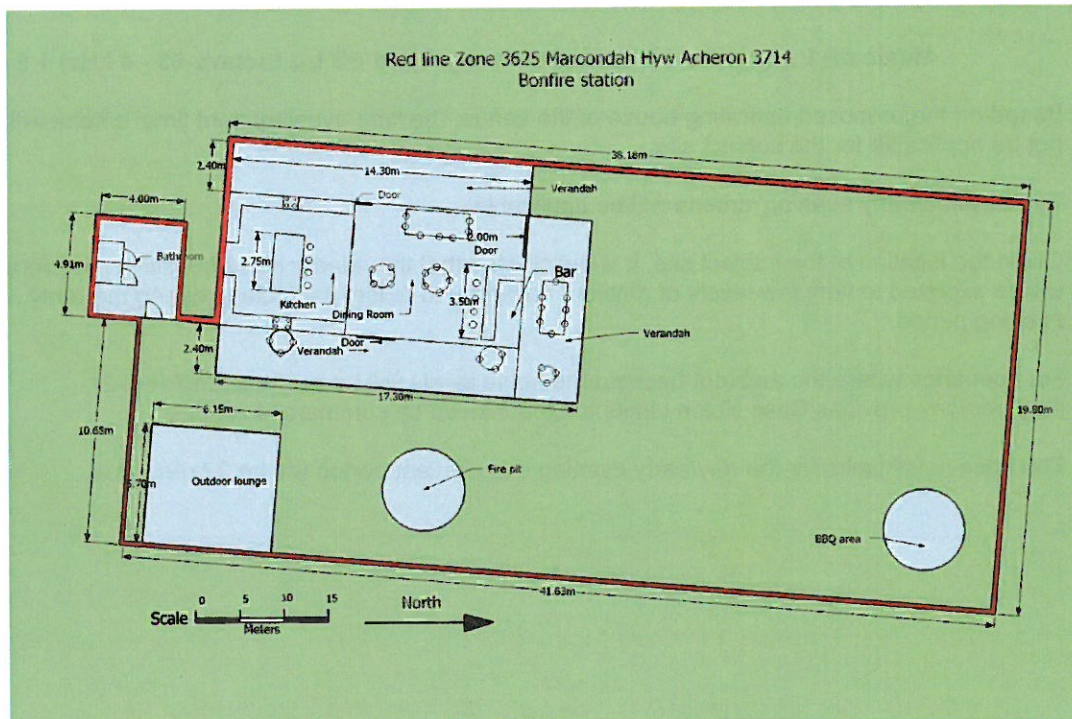
The site layout associated with the proposal includes a base building incorporating the following indoor and outdoor spaces:

1. Indoor Kitchen area;
2. Indoor Dining Area;
3. Outdoor verandah areas adjacent to the northern, eastern and southern facades of base building;
4. Outdoor bar area;
5. Outdoor lounge area;
6. Outdoor fire pit area;
7. Outdoor bbq area;
8. Independent bathroom building.

Access to the internal spaces will be provided by access doors along the northern, eastern and southern facades of the base building.

The internal dining area, and outdoor bar, lounge, fire pit and bbq areas will be suitable for patrons and music.

A mark-up of the relevant noise source locations is attached below:





5. SOURCE NOISE LEVELS

5.1 PATRON NOISE IN INDOOR/OUTDOOR AREAS

As part of previous works on similar projects, Watson Moss Growcott has carried out noise measurements of patrons located within indoor and outdoor areas associated with commercial venues.

Based on observations and measurements of noise from patrons in smoking and alcohol consumption areas at different venues, WMG has developed a formula suitable for calculating the noise level associated with the number of patrons located at a venue.

The relevant formula is described below:

Patron Noise dB(A) L_{eq} = 20 log (patron Numbers) + 43 dB(A) (measured in the area 2-3 metres above an area enclosing a group of hotel patrons).

The further refinement of this formula is that once patron numbers exceed nominally 100, then the noise per unit area will be relatively constant.

It has been indicated that the venue will be suitable for up to 200 patrons.

The venue includes a significant portion of land external to the building which will be suitable for patrons to occupy during weddings/functions.

As a result, WMG has adopted a 'worst case' scenario whereby all 200 patrons will be located external to the building.

For the purpose of this assessment, WMG has allocated six groups of 30-35 patrons to external areas associated with the venue including the following:

1. Outdoor verandah areas adjacent to the northern and southern facades of base building;
2. Outdoor bar area;
3. Outdoor lounge area;
4. Outdoor fire pit area;
5. Outdoor bbq area.

Based on the described formula and the number of patrons, the noise level associated with each group of 30-35 patrons will be in the order of 75 dB(A) L_{eq} .

5.2 MUSIC NOISE WITHIN INDOOR FUNCTION AREAS

Music noise assessed at the nearest residences must comply with SEPP N-2 derived Noise Limit Values.

The maximum allowable internal and external music noise levels complying with SEPP N-2 limits can be calculated by determining the Permissible Noise Limits at residences and by adding the noise transfer factors.

These factors will include, the location of the each of the indoor and outdoor spaces in relation to the nearest relevant residential facade, the size of the space, the distances of the space from the residence, and the materials from which the space and outer envelope will be constructed.

It has been indicated that music will form part of the entertainment at the venue, and that live bands will likely be included as part of the entertainment on occasion.



For the purpose of this assessment, WMG has adopted that up to 4 speakers will be located externally to the building corresponding with the external verandah and bar areas, as well as the outdoor lounge area.

Furthermore, it is anticipated that music speakers will likely be located within the venue base building within the dining room.

6. NOISE ASSESSMENT

6.1 PATRON NOISE FROM PROPOSED INDOOR AND OUTDOOR AREA

Based on the noise reduction provided by the external envelope construction of the base building, patrons located within the internal areas associated with the venue will not be significant relative to patrons located external to the building.

As a result, compliance with relevant noise levels due to patrons located in outdoor areas, will also result in compliance due to patrons located within indoor areas.

When assessed at the nearest noise sensitive receivers, the noise generated by patrons located in the designated outdoor areas will be reduced in level due to distance separation between the patrons, and the facades of the noise sensitive receivers.

Further to the above, noise associated with the patrons will have the potential to be enhanced to due to assisting light breezes blowing noise from the venue in the direction of the nearby noise sensitive receivers.

For the purpose of this assessment, the most relevant noise sensitive receiver will be the dwelling located approximately 670 metres to the north of the subject site at 3641 Maroondah Highway.

Due to the relative distance separation when compared with each of the other nearby noise sensitive receivers, compliance with the relevant noise limits at the 3641 Maroondah Highway dwelling will result in compliance at each of the other relevant nearby noise sensitive receivers.

Based on calculations, noise impacts associated with patrons located within the outdoor areas associated with the venue will achieve **compliance** with NIRV recommended maximum noise levels at each of the nearby noise sensitive residential locations.

The table below summarises the patron noise propagation assessment at the most critical assessment locations:

Assessment Location (3641 Maroondah Highway)	
Adopted patron noise level for associated with patrons located in venue designated outdoor areas (200 Patrons)	83 dB(A) L_{eq}
Noise Reduction due to separation distance towards the nearest noise sensitive residence	- 64 dB(A)
Enhancement of noise due to light breezes assisting propagation of noise in the direction of the noise sensitive receiver	+7dB(A)
Predicted residual patron noise level outside nearest relevant residential facade	26 dB(A) L_{eq}
Adopted Noise Limit during critical late evening period at noise sensitive receiver	36 dB(A) L_{eq}
Compliance achieved	YES



6.2 MUSIC NOISE ASSESSMENT

It has been indicated that music will form part of the entertainment at the venue, and that live bands will likely be included as part of the entertainment on occasion.

Based on previous experience with venues including live and recorded music, WMG provides the following descriptions of the style of music, and the relevant range of noise levels associated with the style of music:

Style of Music	Typical Range of Noise Levels
Background Music	70-75 dB(A) L_{eq} when measured at 3 metres from speakers located within the space. The character of background music does not include dominant low frequency 'duff duff' noise, but is more of a broadband noise level spectrum to allow occupiers of the space to communicate with relative ease.
Raised Background Music	75-80 dB(A) L_{eq} when measured at 3 metres from speakers located within the space. The character of background music does not include dominant low frequency 'duff duff' noise, but is more of a broadband noise level spectrum to allow occupiers of the space to communicate with relative ease.
Controlled Upbeat Music	80-85 dB(A) L_{eq} when measured at 3 metres from speakers located within the space. Communication becomes more difficult. Consistent with Acoustic style live music.
Amplified Live and/or Recorded DJ music	85-95 dB(A) L_{eq} when measured at 3 metres from speakers located within the space. Communication is difficult. Consistent with night clubs, and amplified live music.

Based on noise level calculations including separation distance between the adopted music speaker locations and the nearby noise sensitive receivers, as well as the building envelope of the base building, WMG has concluded the following:

1. Music within the designated outdoor areas can include 'controlled upbeat music' up to 85 dB(A) L_{eq} when measured at 3 metres. The octave band noise level spectrum associated with the music will have maximum allowable noise levels as follows:

Noise Levels dB Octave Band Centre Frequency, Hz						
63	125	250	500	1k	2k	4k
85	85	85	82	80	75	70

2. Music within the internal dining area of the venue can include music noise levels in the order of 85-95 dB(A) L_{eq} . The octave band noise level spectrum associated with the music will have maximum allowable noise levels as follows:

Noise Levels dB Octave Band Centre Frequency, Hz						
63	125	250	500	1k	2k	4k
95	95	95	95	95	90	90



3. During times when music is being played within the internal dining areas, the external façade openable sections including doors and windows must be closed;
4. Music noise emissions associated with the venue must be controlled by a suitable music noise limiter.

Based on noise level calculations, and with the implementation of the relevant noise limiting, residual music noise associated with the venue will comply with SEPP N-2 daytime/early evening music noise limits at the nearby noise sensitive receivers.

It must be noted that achievement of the SEPP N-2 noise limits will not result in inaudibility of music noise. As a result, it is anticipated that music noise will be audible at the nearby noise sensitive receivers on occasion.

7. SUMMARY OF NOISE CONTROL REQUIREMENTS

In order to achieve compliance with the relevant recommended maximum noise levels, and noise limits, WMG provides the following noise control recommendations, and operating parameters:

1. The proposed operations must not occur outside the nominated hours of 2:00pm and 11:00pm on Fridays, and between 11:00am and 11:00pm on Saturdays;
2. A maximum of 200 patrons will be located in external areas at any time within the nominated operating hours;
3. A maximum of four speakers will be located in the outdoor areas associated with the venue;
4. Music entertainment must be run through the in-house system which must include spectrum shaping capabilities and/or be fitted with a music limiter to ensure that maximum allowable noise levels described in the report are not exceeded.

It is recommended that calibration of the device/s is carried out by Watson Moss Growcott Acoustics or other company with a suitably qualified person with experience in setting up these types of devices;

5. During times when the maximum allowable music noise levels are being played within the internal dining areas, the external façade openable sections including windows and doors must be closed;

6. Noise Associated with Patrons Entering and Exiting the Subject Site

It is recommended that the venue prepare a noise management plan for patrons leaving the venue at any time, in particular during the late evening/night period.

Based on previous experience with similar venues, management of patrons will include the following:

1. Signage indicating that patrons must be aware of neighbours and control voices;
2. Security guards carrying out patrols of car park areas to ensure patrons are respecting neighbours and not creating unnecessary noise.



8. OVERVIEW

The Bonfire Station Farmstay and Microbrewery currently operates at the site described as Lot 1 Yellow Creek Road, Acheron.

As part of planning permit application 2017/41, it is proposed to include weddings and functions at the venue.

As part of the proposal, Watson Moss Growcott has carried out an acoustic assessment to determine the potential noise impacts associated with the proposed use on nearby noise sensitive receivers.

The assessment has included consideration of patron noise and music noise emissions associated with the proposal.

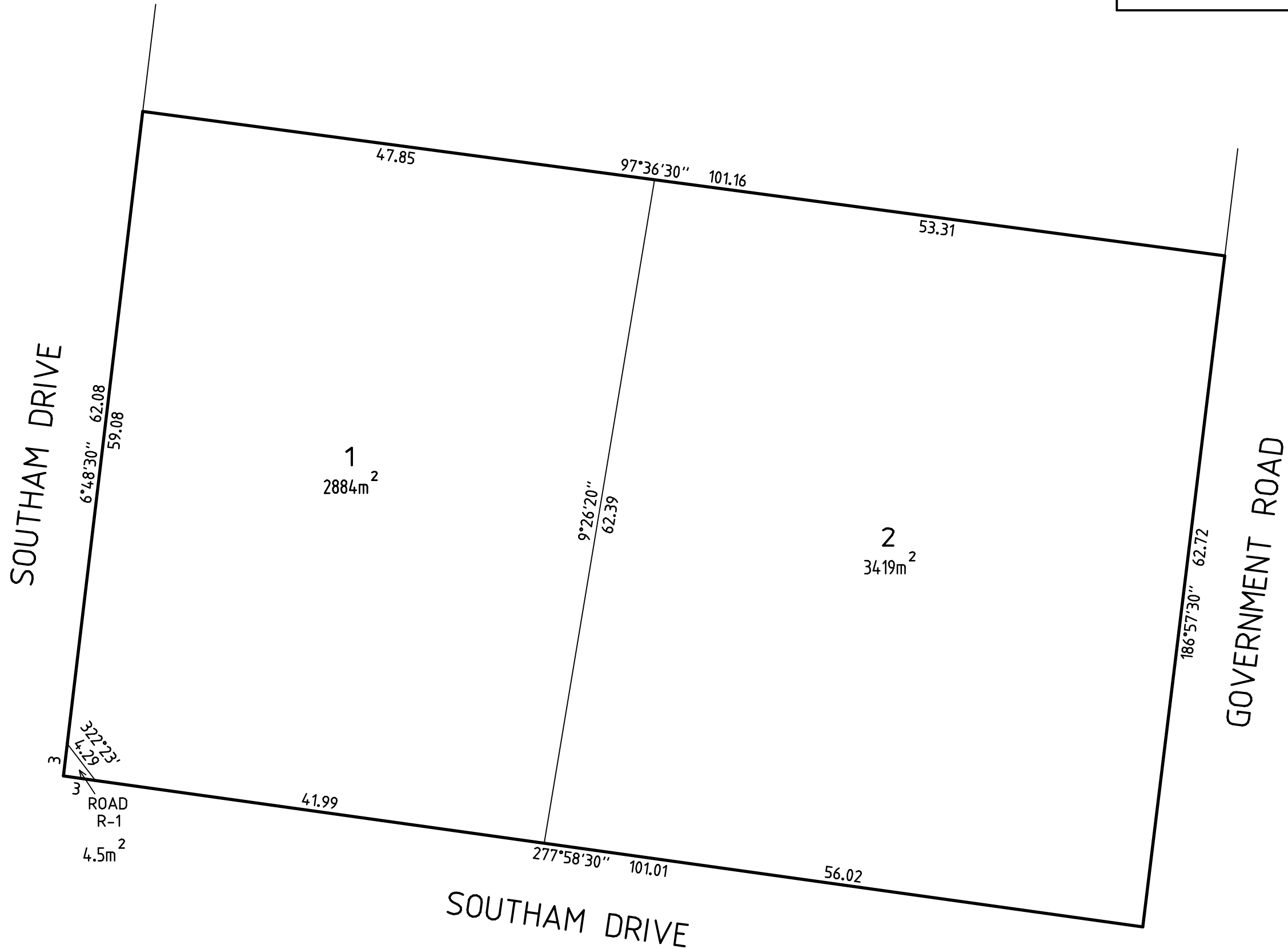
Based on noise level calculations, WMG has concluded that with the incorporation of the recommendations described within the report, the proposal will result in the following:

1. Patron noise emissions complying with recommended maximum noise levels described in Noise from Industry in Regional Victoria (NIRV) guidelines; and
2. Music noise emissions complying with State Environment Protection Policy "*Control of Music Noise from Public Premises*" No. N-2.

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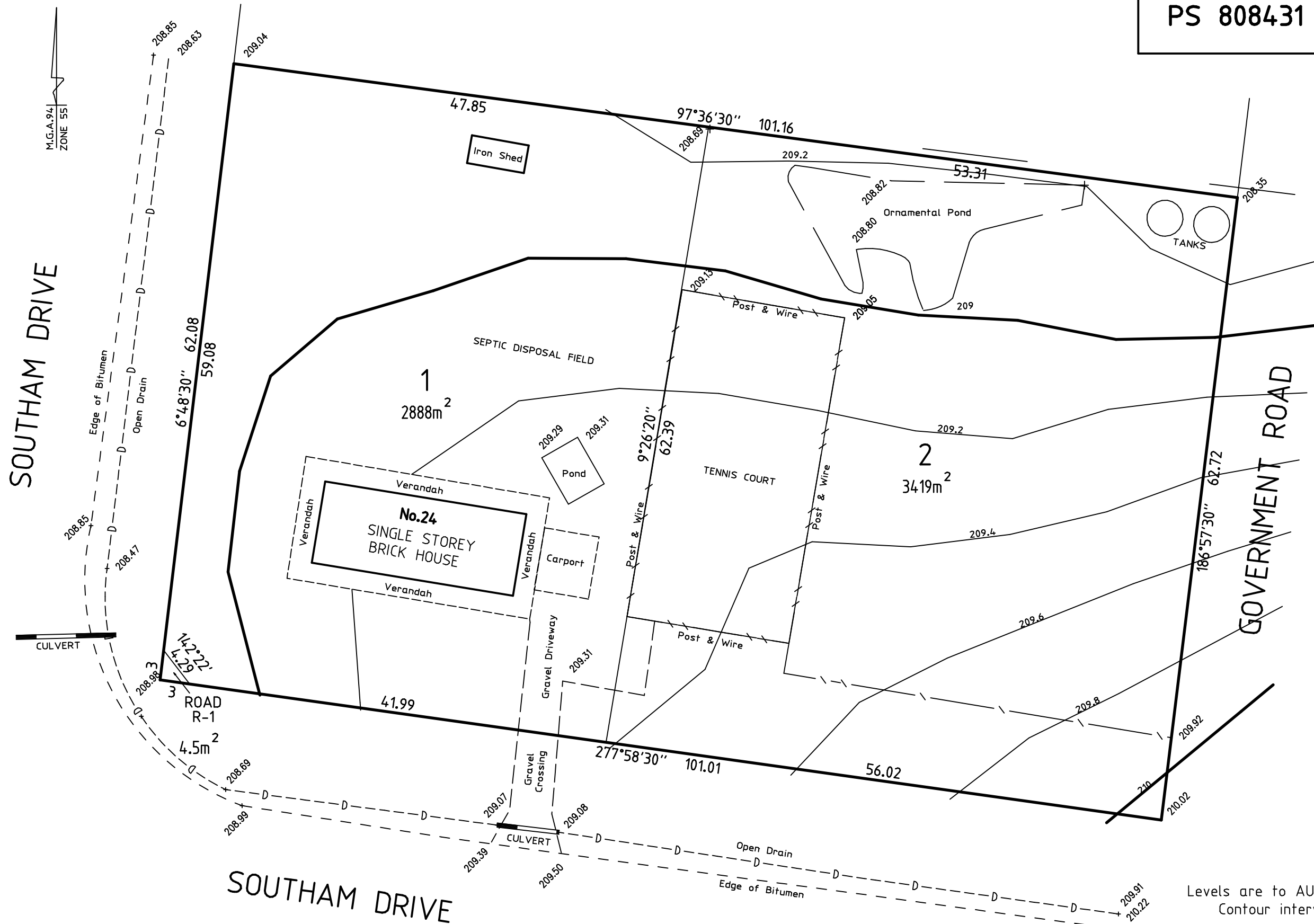
RODNEY AUJARD & ASSOCIATES
Licensed Land Surveyors
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Ph. 9813 2222 Fax. 9813 2244
81 Grant Street, ALEXANDRA. 3714. Ph. 5772 1530
aujard@bigpond.net.au
Surveyors Ref. 18988

Scale
1:400
4 0 4 8 12 16 20
Lengths are in metres

Licensed Surveyor
John. F. Egan
Version 1

Original Sheet
Size : A3
SHEET 2

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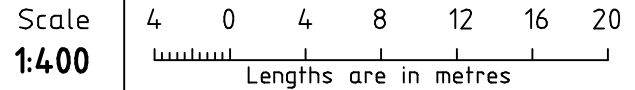


Levels are to AUSTRALIAN HEIGHT DATUM
Contour interval is 0.20 metres

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Licensed Land Surveyors

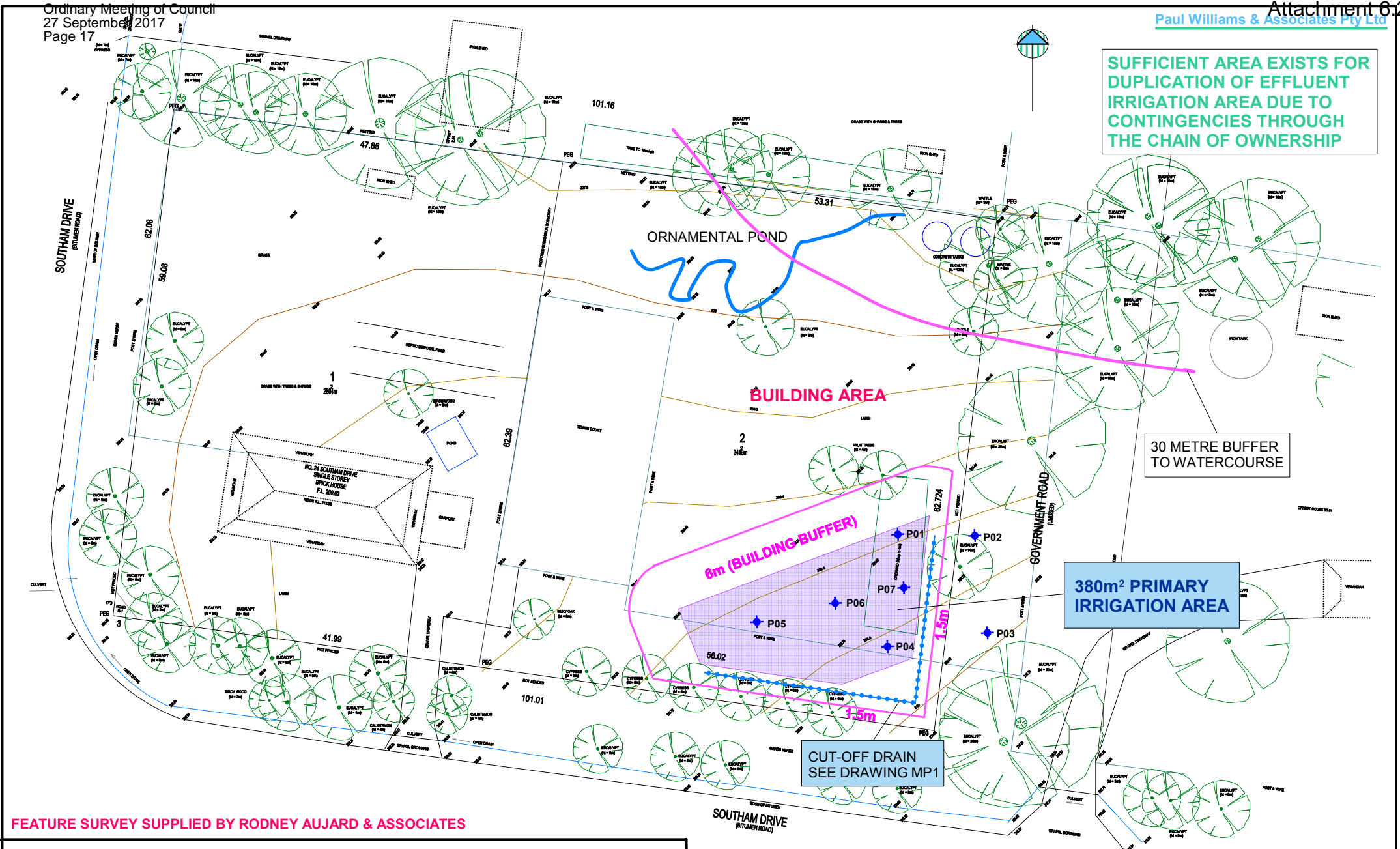
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Surveyors Ref. 18988



Original Sheet Size : A3
SHEET 2A

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John. F. Egan
Version 1



FEATURE SURVEY SUPPLIED BY RODNEY AUJARD & ASSOCIATES

LOCATION OF PROPOSED DEVELOPMENT SHOWING CONTOURS		
24 SOUTHAM DRIVE, TAGGERTY		
CARROLL FORBES-BAILEY & SAEID KARIMI		
Scale: 1:600	Drawn: P.R.W.	Report Number: A170302
Contour Interval: 0.2m	Date: 13 March 2017	Drawing Number: 2

