Greg Alderson Associates

REF: 18364_CHANGE OF OPERATING HOURS_5 03 24.DOCX
YOUR REF:

5/03/2024

The General Manager
Byron Shire Council
PO Box 219
MULLUMBIMBY, NSW 2482

**Attn: Environmental Health Officer**
**Re: Noise Assessment – Change to Operating Hours – Day Spa & Café, 35-37 Burringbar Street, Mullumbimby**

Greg Alderson and Associates (GAA) have been engaged to prepare a noise assessment in response to Councils Request for Additional Information Letter dated 23rd January 2024, associated with the proposed extension to operating hours for Banya Spa, 35-37 Burringbar Street, DA No. 10.2016.625.5 (PAN-350955).

Council's letter states the following with respect to noise:

> *"The proposed extension to operating hours is not supported due to the developments noise emissions and impact on neighbouring shop top housing"*

In addition to this letter, GAA and Malcolm Scott met with Council on 15th February to gain further clarity regarding council's noise concerns associated with the proposed extension of hours at Banya Bathhouse. The following is understood regarding council's noise concerns:

- *Council expressed concerns with regard to potential noise emissions upon neighbouring shop top housing – specifically 99 Stuart Street was identified as the main cause of concern.*
- *Due to the proposed extension of hours from 10pm to midnight, Council raised concerns regarding the potential for sleep disturbance – specifically at 99 Stuart Street.*
- *Council is seeking further information to justify the modelled noise level of the spa patrons. With reference to Table 2 from GAA's original noise report, it is understood that a 'normal, raised' patron vocal effort should be considered for modelling purposes.*

This noise assessment will aim to address the above noise concerns by building upon the existing information provided to Council. Further consideration will be documented regarding the potential noise impact upon neighbouring receivers (specifically 99 Stuart Street), as a result of patrons utilising the spa / pool area during the proposed extended hours of operation of 10pm to midnight.

**1. <u>Proposed Development</u>**

The Banya Bathhouse is approved under DA No. 2016.625 for a 'café and day spa', and the site is currently approved for the following operational hours:

- Monday to Saturday – 7am to 10pm
- Sunday & Public Holidays – 8am to 9pm

The original noise assessments were prepared and approved to enable the current operation.



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The application is typically seeking to extend the current trading hours by 2 hours to enable the bathhouse to remain open from 10pm to midnight, Monday to Saturday. The Proposed operating hours are summarised below:

- Monday to Saturday – 7am to 12am
- Sunday & Public Holidays – 7am to 10pm

It is understood that the proposed extension of hours past 10pm will accommodate those guests wishing to enjoy the bathhouse during a less busy period, providing options for a quiet and more intimate bathhouse experience, and to open up additional time slots where exclusive bathhouse access can be granted to neighbouring motel guests.

It is expected that a maximum of 30 patrons would utilise the facility during the proposed extended hours of operation, or a typical maximum of 15 patrons per hour. During this time patrons would utilise the pool, spas, steam room and sauna.

Current average hourly bathhouse guest data provided by the client, would suggest this is a conservative usage estimate. Current evening average bathhouse guest numbers are summarised below:

- 6pm – 10.1 avg. guests per hr (Typ. max – 15)
- 7pm – 6.3 avg. guests per hr (Typ. max. – 10)
- 8pm – 2.1 avg. guests per hr (Typ. max. – 6)

**2. <u>Neighbouring Receivers</u>**

As discussed, this assessment has focused on the potential noise impacts upon 99 Stuart Street, as a result of the proposed extension to facility operation hours. 99 Stuart Street is a shop-top residential receiver located directly to the south-east of the Banya Bathhouse.

It should be noted that an additional residential receiver is located to the south-west, 98 Dalley Street. Potential noise impacts upon this residential receiver will also be considered.

Figure 1 below shows the location 99 Stuart Street.

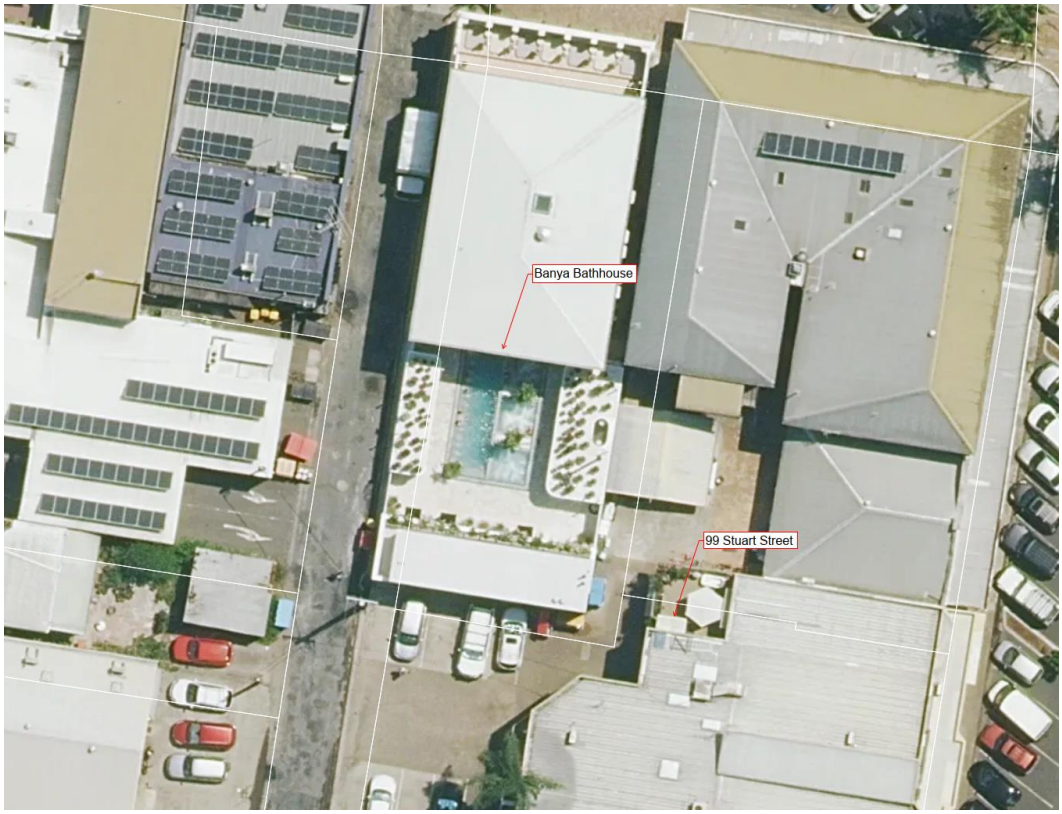



*Figure 1 - Neighbouring Noise Receiver – 99 Stuart Street (Source of Aerial Image: MetroMaps – 1/03/24)*

**3. <u>Attended / Background Noise Testing</u>**

Greg Alderson and Associates undertook a site inspection and attended noise testing at the Banya Spa between the hours of 7pm to 11pm, Thursday 29th March, 2024.

Observations were made regarding typical patron behaviour whilst utilising the pool / spa area and noise testing was undertaken within the facility and adjacent to the neighbouring receiver 99 Stuart Street.

Further attended noise testing was then undertaken after 10pm to obtain an indication of the background noise whilst the facility was closed.

Refer to Table 1 and Figure 2 below for the location and results of the attended noise testing.

The following is summarised from the attended noise testing:

- It is evident from the noise testing and site inspection that the dominant noise at the neighbouring receiver of 99 Stuart Street is the existing condenser units located directly below the residence's balcony;
- The condenser units were observed to be constantly running both whilst the Banya Bathhouse was open and also later in the night after 10pm when it was closed;
- The condenser units were shown to result in an Leq of approximately 60 to 63 dB(A) in the vicinity and most other noises could not be heard above the noise from this unit (exception of occasional call from a lorikeet);
- This condenser unit noise could also be heard within the Banya Bathhouse facility and is believed to have influenced the on-site monitoring results;
- Background noise levels due to the condenser units are significantly elevated, resulting in a 15-minute L90 of 58 dB(A). This is evident, particularly when compared to the background noise test undertaken to the north of Bayna Bathhouse, resulting in an L90 of 40 dB(A), where the 99 Stuart Street condenser unit could not be heard (after 10 pm);
- Evening time in Mullumbimby was dominated by calls from flocks of rainbow lorikeets;
- Within a 15-minute period, patrons were observed to move between the external pool / spas and the internal sauna and steam rooms;
- Conversations within the external pool / spa area typically occurred between 2 to 3 people;
- Conversation varied between different vocal efforts and could typically be described as 'relaxed, normal' or 'normal, raised' as described in Table 2 below;
- At times, patron noise would occasionally increase above this. At other times there was no conversations occurring at all.

*Table 1 - Attended noise testing results*

| Test ID | Test Location | Start Time | Duration | Leq dB(A) | L90 dB(A) | Comment |
|---|---|---|---|---|---|---|
| Test A | On-site Monitoring Location | 8:19pm | 15min | 60.0 | 58.5 | Neighbouring condenser unit could be heard on-site. 3 patrons in external spa. |
| Test B | On-site Monitoring Location | 8:34pm | 15min | 59.5 | 56.9 | Neighbouring condenser unit could be heard on-site. |
| Test C | Neighbouring Monitoring Location | 8:19pm | 15min | 62.8 | 58.0 | Condenser unit constantly going – only very occasional lorikeet could be heard above this noise, could not hear spa noise, condenser unit also gets louder at times |
| Test D | Neighbouring Monitoring Location | 10:10pm | 3min | 59.2 | 57.7 | Condenser unit constantly going. Banya Spa was closed. |
| Test E | Monitoring Location directly to north of Banya Spa (adjacent to Burringbar Street) | 10:23pm | 15min | 52.2 | 40.3 | Test location was chosen to remove influence from condenser unit at 99 Stuart Street. Faint hum from condenser unit at Chincogan Store could be heard. |


*Figure 2 - Attended noise testing locations*

**4. <u>Noise Limiting Criteria</u>**

To manage potential patron noise at residential receivers, the original approved noise assessment under DA 2016.625 specified the following noise limiting criteria:

- 40 to 45 dB(A) at external face of neighbouring residential window
  ***Based on internal noise level for sleeping areas from Table 1 of AS2107***

Under the original assessment this noise limiting criteria was applied to potential noise emissions during the evening time of 6pm to 10pm.

The proposed extension of operating hours past 10pm, would result in the facility being open during the night-time period as defined in the Noise Policy for Industry (NSW EPA, 2017).

The original approved noise limiting criteria is arguably also applicable during the extension of hours. Particularly given the findings of the attended noise testing showing that the 15-minute L90 in the vicinity of the 99 Stuart Street is about 58 dB(A) as a result of the continuous operation of the condenser unit.

Additionally, even with the absence of the direct influence of the 99 Stuart Street condenser units, a typical 15-minute background test at approximately 10:30pm in Mullumbimby resulted in an L90 of 40.3 dB(A). Arguably, allowing for an external noise criterion at the neighbouring receiver of approximately 45 dB(A) during the night time (i.e. RBL + 5dB).

However, to cater for the more noise sensitive time period of 10pm to midnight and to cater for Council's concerns, the lower **external noise level of 40 dB(A)** will be adopted for this assessment.

To provide further justification for the use of this external noise limiting criteria, Section 2.5 of the NSW Noise Policy for Industry (NSW EPA, 2017) specifies the following external night-time noise levels at a residential locations if the potential for sleep disturbance is to be avoided / minimised:

- LAeq,15min 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or
- LAFmax 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater.

To convert this to a representative internal noise level a loss of 7 dB to 10 dB through open windows can be assumed *(it is noted that the NSW Noise Policy for Industry and the NSW Road Noise Policy both allow for the use of a 10 dB loss through open windows).* This would result in an internal noise level of 30 to 33 dB(A). This is in line with the recommended internal noise level for sleeping areas as per Table 1 from AS2107, being 30 to 35 dB (A).

Therefore, the following external noise limiting criteria is applied for this assessment:

- **10pm to Midnight: 40 dB(A) LAeq-15 minute - at external face of neighbouring residential window**

**5. Patron Noise**

The original approved noise assessment, modelled patron noise based on a 'relaxed, normal' vocal effort of 54 dB(A) at 1m as per the table below.

*Table 2 - Sound pressure levels of speech at 1m (Source: M.J. Hayne, J.C. Taylor, R.H. Rumble, D.J. Mee, 2011)*

| Vocal Effort | Speech Level (dB(A)) |
|---|---|
| Whispering | 36 |
| Soft | 42 |
| Relaxed | 48 |
| Relaxed, normal | 54 |
| Normal, raised | 60 |
| Raised | 66 |
| Loud | 72 |
| Very loud | 78 |
| Shouting | 84 |

The original assessment was considered to be representative of quiet conversations, typical of day spa environments.

The proposed development is seeking the extension of current operating hours past 10pm. As discussed, it is understood that the purpose of this proposal will be to accommodate those guests wishing to enjoy the bathhouse during a less busy time period and to open up additional time slots where exclusive bathhouse access can be granted to neighbouring motel guests. Likely attracting patrons seeking a more intimate and quiet bathhouse experience.

Current bathhouse booking data show that the evening times are the less busy time periods, supporting the concept that opening the pool / spa area for an additional 2hrs after 10pm will cater for a quieter and more intimate bathhouse experience. Potentially justifying the likelihood of a quiet patron vocal effort.

However, as discussed, Council expressed the view that patrons using the pool / spa area should be modelled with a vocal effort of 'normal, raised' as opposed to 'relaxed, normal'.

GAA undertook a site inspection of the Banya Bathhouse on the evening of Thursday 29th March. Patron behaviour was observed to consists of periods of varying vocal efforts over a typical 15-minute assessment period.

Therefore, to cater for this observation and Council's concerns, modelled patron noise will be comprised of a mix of varying vocal efforts with a significant portion weighted by 'normal, raised' and 'relaxed, normal'. The breakdown of the modelled patron noise for this assessment is as follows:

- 15% Relaxed
- 40% Relaxed, normal
- 40% Normal, raised
- 5% Raised

This results in an equivalent 15-minute sound power level of 69.5 dB(A).

This sound power level will be used as a single point source within the model to represent a typical conversation between 2 to 3 patrons within the pool / spa area over the 15-minute assessment period during the extended hours of 10pm to midnight.

**6. Noise Predictions**

Noise emission predictions are undertaken using Sound Plan 8 software with the modelling built upon that of the original report.

Patron noise emissions are modelled as a point source with a sound power level of 69.5 dB(A), which represents a typical conversation between 2 to 3 patrons within the pool / spa area.

Two points of conversation are modelled within each pool / spa, resulting in a total of 8 conversations occurring. This can be equated to represent approximately up to 24 patrons using the external pool / spa area. Other patrons could be within the closed steamroom or sauna which would not have noise impacts due to the attenuation of the closed buildings.

This is considered to be a conservative representation of the number of patrons likely to utilise the pool / spa area during the proposed extended hours of 10pm to midnight, as it is understood that typically 15 patrons per hour are likely.

An additional 2 point sources with a sound power level of 65 dB(A) are also included in the external pool / spa area to represent the garden speakers.

Noise emissions area predicted at a height of 5m above ground level as shown in the noise maps below (typically 1.5m above the floor level of the 99 Stuart Street balcony).

Results are shown below in both Figure 4 and Figure 5. Figure 4 presents the modelled results without any additional physical amelioration measures to the existing facility. Figure 5 presents the modelled results with the inclusion of a 3.5m high noise fence / wall located between the sauna / steam room building and the amenities block. It can be seen that the 3.5m high noise fence is required to ensure compliance with the 40 dB(A) noise limiting criteria.

It is therefore recommended that 3.5m high noise fence / wall is installed to aid in reducing development related noise emissions. Refer to Figure 6 below.

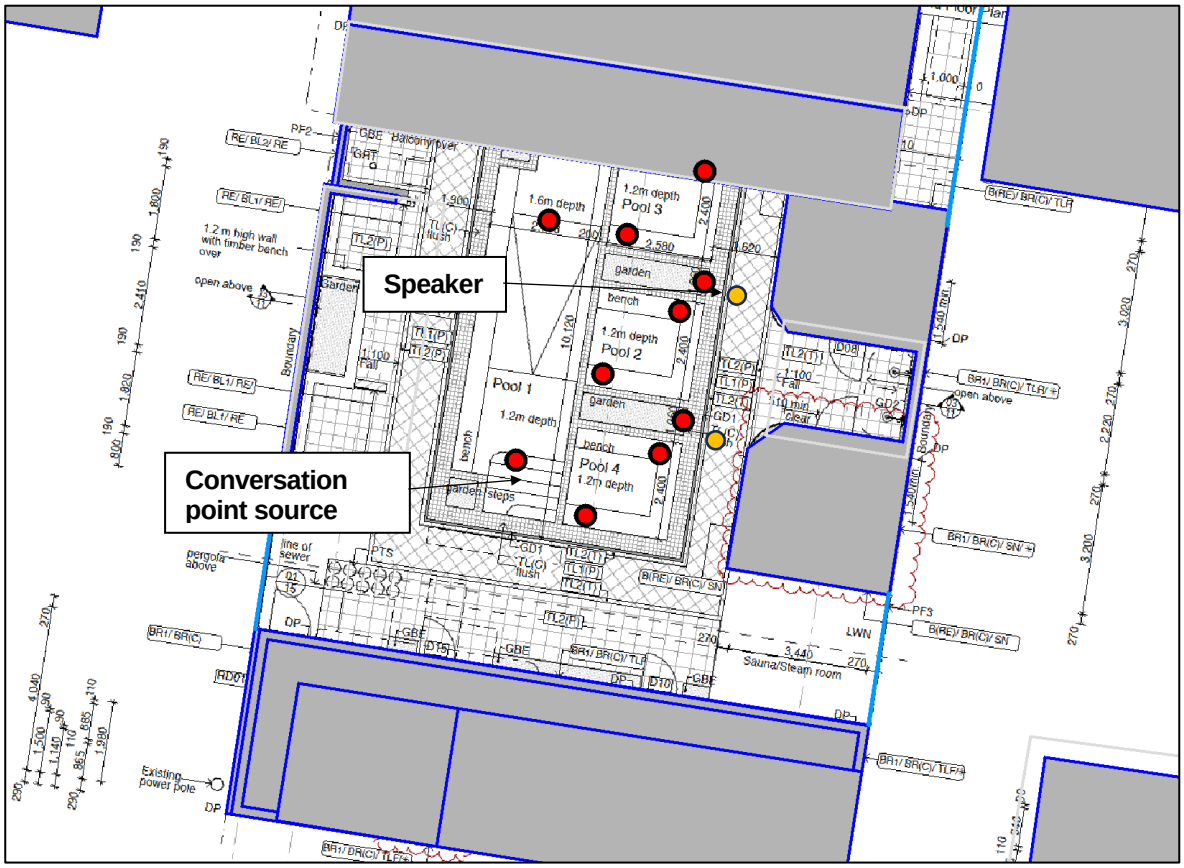



*Figure 3 - Noise Model arrangement – location of conversation point sources*


*Figure 4 - Noise predictions at 5m above ground level - 40 dB(A) limit line*


*Figure 5 - Noise predictions at 5m above ground level - 40 dB(A) limit line – increase in boundary fence to 3.5m high*

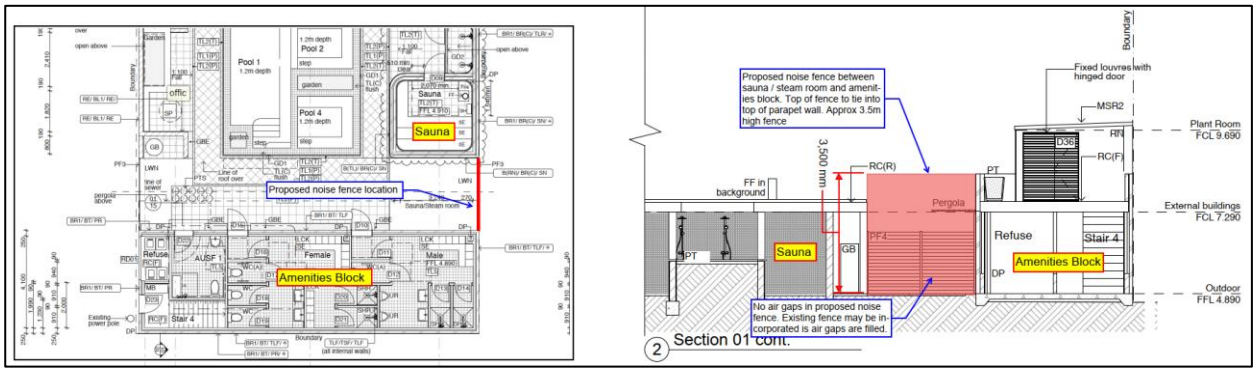



*Figure 6 - Noise Fence Location*

**7. <u>Sleep Disturbance</u>**

This section of the report aims to address Council's concerns regarding the potential for sleep disturbance at 99 Stuart Street as a result of the proposed extension of hours to the Banya Bathhouse.

As mentioned above, Section 2.5 of the NSW Noise Policy for Industry provides a methodology for considering the potential for sleep disturbance from maximum noise level events from the facility during night-time periods.

> *Where night time noise emissions from the proposed development exceed the following:*
>
> - ***Leq 15-minute 40 dB(A) or RBL plus 5 dB, whichever is the greater, and/or***
> - ***Lmax 52 dB(A) or RBL plus 15 dB, whichever is the greater,***
>
> *Then there is a potential for sleep disturbance and a detailed maximum noise level event assessment should be undertaken.*

As discussed previously the existing background noise levels exceed this criteria and the Banya Spa cannot be heard due to the condenser unit operating constantly below the balcony of 99 Stuart Street. Notwithstanding this however, Section 6 of this assessment showed that the LAeq 15-minute noise emissions from the Banya Bathhouse during the hours of 10pm to midnight will theoretically be less than the 40 dB(A) noise criterion if a 3.5m high noise fence is constructed on the property boundary between the current sauna / steam room building and the amenities block.

Additionally, due to the elevated background noise level measured at 99 Stuart Street of 58dB(A), a higher development related noise level would likely be required prior to the potential for sleep disturbance being reached. As alluded to by the RBL plus 5 dB criteria referred to above, that is the noise level is already 58 dB(A) near 99 Stuart Street, which is well above the 40 dB(A) sleep criterion.

To assess the potential for maximum development related noise level disturbance, an additional noise model was prepared and compared against the Lmax 52 dB(A) criteria.

The model used in Section 6 was recreated with the 3.5m high noise fence and the addition of the most southern conversation point source increased to represent a typical maximum noise event. This is represented by a sound power level of 83 dB(A), typical of a loud vocal effort.

Figure 7 shows that the typical maximum noise event is within the 52 dB(A) criteria representing the potential for sleep disturbance.

It is acknowledged that maximum noise events from patron noise emission can vary greatly and is thus difficult to predict. However, as the development is a day spa, loud, intrusive and offensive patron noise is not conducive to the proposed site use and is considered unlikely.

Further assurance can be provided to Council that the potential for sleep disturbance from maximum development related noise events is significantly reduced due to the elevated background noise at 99 Stuart Street, as shown by the measure L90 of 58 dB(A) and the suggested potential sleep disturbance trigger point of RBL + 15 dB.


*Figure 7 – Lmax - Noise predictions at 5m above ground level - 52 dB(A) limit line – increase in boundary fence to 3.5m high*

**8. <u>Recommendations</u>**

The modelling shows that noise emissions from the facility are likely to be within the noise limiting criteria at neighbouring receivers during the proposed extended hours of 10pm to midnight.

To aid in the reduction of potential noise emissions at 99 Stuart Street a 3.5m high noise fence is recommended to be installed between the current amenities block and sauna / steam room building as shown in Figure 6 above. The recommended noise fence shall be constructed with no air-gaps from the ground to the specified height and shall have a typical surface density of approximately 10kg/m$^2$.

Typically, a lapped timber paling fence (25mm panelling) of treated pine construction is the base-line construction method to achieve the above requirement. Alternative materials that would be suitable for the noise screen construction based on surface density are listed below for guidance:

- 9mm fibre cement sheeting;
- 6mm glass;
- 9mm Perspex; or
- 3 layers of 0.55mm custom orb roof sheeting

The following general noise recommendations are provided to aid in minimising potential noise emissions during the proposed extension of hours from 10pm to midnight:

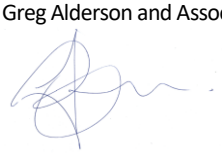
- Educate staff members on the location of noise sensitive neighbours;
- Staff to encourage patrons to be quiet and respectful of neighbours during the period of 10pm to midnight;
- Minimise any music level in the pool / spa area to a level suitable for 'background' ambient music only. Modelling allowed for a sound power level of 65 dB(A) per garden speaker.

Based on the assumptions and recommendations in this report, it is shown that noise emissions from the use of the pool and spa area during the hours of 10pm to midnight area unlikely to result in intrusive noise emissions upon neighbouring receivers.

We trust that the information provided above will aid in Council's assessment of the proposed development.

Yours faithfully,

Greg Alderson and Associates.



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