

Adelaide Aquatic Centre

Code Amendment

Acoustic Assessment

S7562.1C1

November 2022

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Acoustic Assessment

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1 INTRODUCTION

An amendment to the Planning and Design Code (the **Code Amendment**) has been initiated for Lot 1602 Jeffcott St, North Adelaide (the **Affected Area**).

The Affected Area is currently within the Adelaide Park Lands Zone of the Planning and Design Code (the **Code**). The Code Amendment proposes to introduce an *Aquatic Centre* subzone (the **Subzone**) to the Affected Area to allow for a new Adelaide Aquatic Centre to be built in the area immediately south of the existing facility. The Affected Area (**red**) and the proposed location of the Subzone (**aqua**) are shown in Figure 1.



Figure 1: The Affected Area and Proposed Subzone

This assessment considers the potential environmental noise associated with development in accordance with the proposed Code Amendment. Specifically, the assessment considers:

- The noise criteria that would apply as a result of the Code Amendment;
- The suitability of the resulting noise criteria in the context of established standards and guidelines;
- The potential for the criteria to be achieved.

2 CRITERIA

The proposed Code Amendment will result in the south western portion of the Affected Area being included into a new *Aquatic Centre* subzone, which would promote the development of an aquatic centre. The closest noise sensitive locations to the subzone are the existing residences within the *City Living* zone, on the opposite side of Barton Terrace West. The Code has been reviewed and provisions considered relevant to the noise assessment are included in Appendix A.

DTS/DPF 4.1 of the Interface between Land Uses module of the Code references the *Environment Protection (Noise) Policy 2007* (the **Policy**). The Policy provides goal noise levels to be achieved at residences from activity at a site. The goal noise levels are based on the principally promoted land use of the zone in which the subject site and the noise receivers (the residences) are located.

The Policy is based on the *World Health Organisation Guidelines for Community Noise* (the **WHO Guidelines**) to prevent annoyance, sleep disturbance and unreasonable interference on the amenity of an area. Therefore, achievement of the goal noise levels will result in a suitable level of amenity, consistent with that already achieved in other similar interface situations.

With the proposed amendment, the following goal noise levels would apply for any *new development* within the *Aquatic Centre* subzone, when measured at *existing* noise sensitive receivers within the *City Living* zone:

- an average (L_{eq}) noise level of 52 dB(A) during the daytime (7am to 10pm);
- an average (L_{eq}) noise level of 45 dB(A) at night (10pm to 7am); and,
- a maximum (L_{max}) noise level of 60 dB(A) at night (10pm to 7am).

These levels are in accordance with the WHO Guidelines and therefore protect the amenity at residences in the vicinity.

When measuring or predicting noise levels for comparison with the Policy, adjustments may be made to the average goal noise levels for each “annoying” characteristic of tone, impulse, low frequency, and modulation of the noise source.

3 ASSESSMENT

An indicative assessment of noise from a future aquatic centre has been conducted to determine the potential for the goal noise levels to be achieved. For the purposes of the indicative assessment, it has been assumed that the existing carpark will be retained and that mechanical plant will be similar to the plant from other similar facilities.

Mechanical Plant

The assessment of mechanical plant noise considers the typical air conditioning, pumps and pool water heating plant as required for similarly sized facilities, as shown in Table 1. The assessment assumes continuous operation of the mechanical plant through both day and night hours.

Table 1: Assumed Mechanical Plant Units

Equipment	Number of Units	Sound Power Level Per Unit
Air Handling Units	12	80 dB(A)
Pool Water Pumps and Heating Plant	9	98 dB(A)

The goal noise levels set by the Policy could be achieved using standard practical acoustic treatment techniques such as shielding the units from existing residences. For example, this could be achieved by placing the units on the northern side of the building, such that the aquatic centre blocks the line of sight to the residences. This example has been modelled in SoundPlan using worst case (highest noise level) meteorological conditions. The resultant predicted noise level at residences is less than 30 dB(A), easily achieving all goal noise levels for the day and night periods. It is noted that no penalty for character is warranted for mechanical plant operating at this level but if one were to apply, the goal levels would still easily be achieved.

Should the Code Amendment be approved, the noise from mechanical plant any future aquatic centre proposal should be assessed to confirm that the goal noise levels are achieved.

Patron Noise

Although no concept plan for a future Aquatic Centre proposal is available, an indicative assessment has been made of the potential noise from patrons within a future aquatic centre. Based on typical voice levels (from cheering etc), the application of a penalty for character and the separation distance to residences, the noise from patrons will be below 40 dB(A), achieving the goal noise levels with standard building materials, such as laminated glass.

Should the Code Amendment be approved, the noise from patrons in any future aquatic centre proposal should be assessed to confirm that the building design results in the goal noise levels being achieved.

4 SUMMARY

An environmental noise assessment has been conducted for the amendment to the Planning and Design Code, which has been initiated for Lot 1602 Jeffcott St, North Adelaide. The Code Amendment proposes to introduce an *Aquatic Centre* subzone to the existing *Adelaide Park Lands* zone.

Noise goals for any future aquatic centre development have been established based upon the *Environment Protection (Noise) Policy 2007*, which is referenced by the Planning and Design Code. The Policy is based on the *World Health Organisation Guidelines for Community Noise* to prevent annoyance, sleep disturbance and unreasonable interference on the amenity of an area. Therefore, achievement of the goal noise levels will result in a suitable level of amenity, consistent with that already achieved in other similar interface situations.

An indicative assessment showed that the mechanical plant and patron noise for the new Aquatic Centre can achieve the noise goals through practical acoustic treatment techniques and standard building materials. These will need to be considered as part of any future aquatic centre design proposal.

Based on the above, the existing *General Development Policies (Interface between Land Uses)* will result in a suitable level of acoustic amenity at residences, and will result in the incorporation of practical acoustic treatment measures which are typical for similar developments located adjacent to residences.

APPENDIX A

The Planning and Design Code has been reviewed, and the following *General Development Policies* apply to environmental noise:

Part 4 – General Development Policies – Interface between Land Uses

Desired Outcome:
<p>DO 1: Development is located and designed to mitigate adverse impacts on or from neighbouring and proximate land uses.</p>

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature								
General Land Use Compatibility									
<p>PO 1.2 Development adjacent to a site containing a sensitive receiver (or lawfully approved sensitive receiver) or zone primarily intended to accommodate sensitive receivers is designed to minimise adverse impacts.</p>	<p>DTS/DPF 1.2 None are applicable</p>								
Hours of Operation									
<p>PO 2.1 Non-residential development does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers) or an adjacent zone primarily for sensitive receivers through its hours of operation having regard to:</p> <p>(a) the nature of the development (b) measures to mitigate off-site impacts (c) the extent to which the development is desired in the zone (d) measures that might be taken in an adjacent zone primarily for sensitive receivers that mitigate adverse impacts without unreasonably compromising the intended use of that land.</p>	<p>DTS/DPF 2.1 Development operating within the following hours:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="background-color: #333; color: white;">Class of Development</th> <th style="background-color: #333; color: white;">Hours of Operation</th> </tr> </thead> <tbody> <tr> <td>Consulting Room</td> <td>7am to 9pm, Monday to Friday 8am to 5pm, Saturday</td> </tr> <tr> <td>Office</td> <td>7am to 9pm, Monday to Friday 8am to 5pm, Saturday</td> </tr> <tr> <td>Shop, other than any one or combination of the following: (a) restaurant (b) cellar door in the Productive Rural Landscape Zone, Rural Zone or Rural Horticulture Zone</td> <td>7am to 9pm, Monday to Friday 8am to 5pm, Saturday and Sunday</td> </tr> </tbody> </table>	Class of Development	Hours of Operation	Consulting Room	7am to 9pm, Monday to Friday 8am to 5pm, Saturday	Office	7am to 9pm, Monday to Friday 8am to 5pm, Saturday	Shop, other than any one or combination of the following: (a) restaurant (b) cellar door in the Productive Rural Landscape Zone, Rural Zone or Rural Horticulture Zone	7am to 9pm, Monday to Friday 8am to 5pm, Saturday and Sunday
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	Consulting Room	7am to 9pm, Monday to Friday 8am to 5pm, Saturday							
	Office	7am to 9pm, Monday to Friday 8am to 5pm, Saturday							
Shop, other than any one or combination of the following: (a) restaurant (b) cellar door in the Productive Rural Landscape Zone, Rural Zone or Rural Horticulture Zone	7am to 9pm, Monday to Friday 8am to 5pm, Saturday and Sunday								
Activities Generating Noise or Vibration									

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
PO 4.1 Development that emits noise (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers).	DTS/DPF 4.1 Noise that affects sensitive receivers achieves the relevant Environment Protection (Noise) Policy criteria.