



Alice Springs

TOWN COUNCIL

Noise Management Plan

Alice Springs Aquatic & Leisure Centre Solar Array

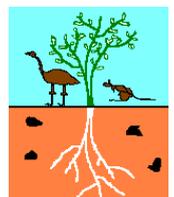
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Document Control

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1. INTRODUCTION

Alice Springs Town Council are expanding on the Photovoltaic system installed on the roof of the Alice Springs Aquatic and Leisure Centre. Initially installed during the 5 year (2008-2013) Australian Government Solar Cities program this upgrade will see the construction of a 175kW Ground-Mounted Solar Photovoltaic Array in the south-east corner of the property (Figure 1).

Including current Alice Springs Town Council solar installations in the municipality, this upgrade will bring the total amount of solar generated power to 500kW.

Due to the Solar Cities program solar energy now comprises 20% of the energy use of five of Alice Springs Town Council's major facilities - Civic Centre, Alice Springs Aquatic and Leisure Centre, Council Depot, Alice Springs Public Library and the Regional Waste Management Facility.

As the proposed solar array site adjoins a dense residential area, noise management procedures have been required by NT EPA to be in place during construction to ensure minimal impact for residents.



Figure 1. Location of Alice Springs Aquatic and Leisure Centre solar array development site and minimum distance of 30 m to the adjoining residential area.

2. OBJECTIVE

Alice Springs Town Council has proposed to The Development Consent Authority Northern Territory development of a solar array on Lot 4565 (#10) Speed Street, The Gap, Alice Springs for the purpose of power generation. Prior to The Development Consent Authority issuing a development permit several conditions must be met or planned, including *Condition 2. Prior to commencement of works (including site preparation), a construction noise management plan addressing the NT Environmental Protection Authority's (NT EPA) Noise Guidelines for Development Sites, must be registered with the EPA, to the satisfaction of the consent authority.* The consent authority will take the advice of the Environment Heritage and Arts Division of the Department of Natural Resources, Arts and the Environment on the adequacy of the plan. The plan must be registered with the NT EPA. The objective is to ensure that the Alice Springs Aquatic Centre Solar Array Upgrade construction noise does not impact on noise sensitive receptors in the area.

3. DEFINITIONS

This plan adopts the definitions contained in the Northern Territory Environmental Protection Authority (NTEPA) *Noise Guidelines for Development Sites in the Northern Territory* (Appendix A).

4. LEGAL AND OTHER REQUIREMENTS

Legal obligations are outlined in Table 4.1.

Table 4.1 Summary of Key Legal Requirements

Requirement	Purpose
Planning Act	Section 75 (3) specifies that a person must not – (a) use or develop land in a manner that is only permitted in accordance with a permit, except in accordance with the permit; or (b) subject to section 56(c), use land in a manner that is only permitted in accordance with a permit until all the conditions of the permit that must be complied with before the use is permitted have been complied with.
Waste Management and Pollution Control Act	To provide for the protection of the environment through the encouragement of effective waste management and pollution prevention and control practices. Section 12 specifies that a person must take all measures that are reasonable and practicable to prevent or minimise pollution or environmental harm. Section 83 specifies that a person must not cause an environmental nuisance (such as creating excessive noise).

The following guidance document was adopted for use in this plan:

- The NTEPA Noise Guidelines for Development Sites in the Northern Territory

5. CURRENT NOISE ENVIRONMENT

5.1 Meteorological Data

The varied terrain around The Gap indicates that katabatic winds in addition to gradient (synoptic) winds dominate the wind regime. 9 am winds are weakly dominant from the south and east and generally below 20 km per hour; calm periods make up 22% of observations. For 3pm, winds are predominantly from the southeast and east at 10 to 20 km per hour for up to 20% of observations; calm periods were at 2% of observations (Figure 2 and Figure 3).

Noise propagation during the day is expected to be slightly absorbed by east to south easterly winds.

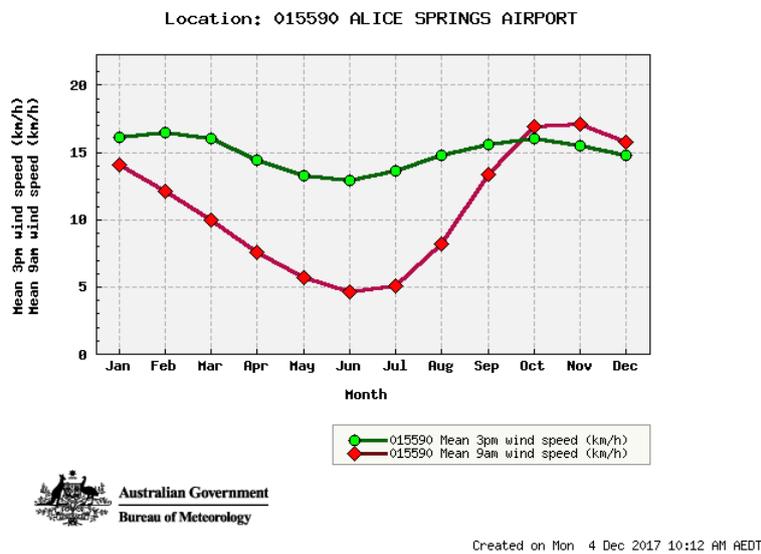


Figure 2. 2014 (most current) mean wind speed data retrieved from Bureau of Meteorology.

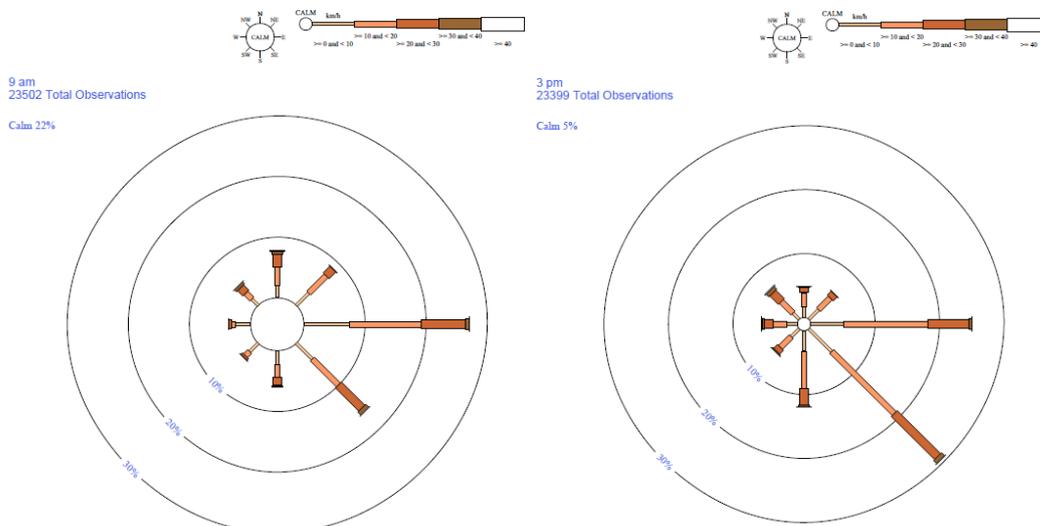


Figure 3. Wind direction rose- 9am wind rose (left), 3pm wind rose (right).

5.2 Sensitive Receptors

The Northern Territory Planning Scheme for Alice Springs classifies Alice Springs Aquatic Centre as an Organised Recreation zone adjoining a combination of Multiple Dwelling Residential, Community Purpose and Infrastructure zones (Figure 4). The adjacent residential use area for the purpose of this Noise Management Plan is considered a Noise Sensitive Receptor (NSR). The closest NSR to the purpose development site is approximately 30m from the edge of the solar array. The NTEPA Noise management guidelines state that 'construction noise should not exceed 60 dB(A) total within 15 meters of a NSR for residential use areas / commercial areas.'

For the purposes of this plan, noise management of construction of the solar array at Alice Springs Aquatic Centre will focus on:

- Assessing sources of noise
- Mitigating any noise impacts to the adjacent residential areas; and
- Complying with the recommended maximum site noise levels for a residential / commercial zone.

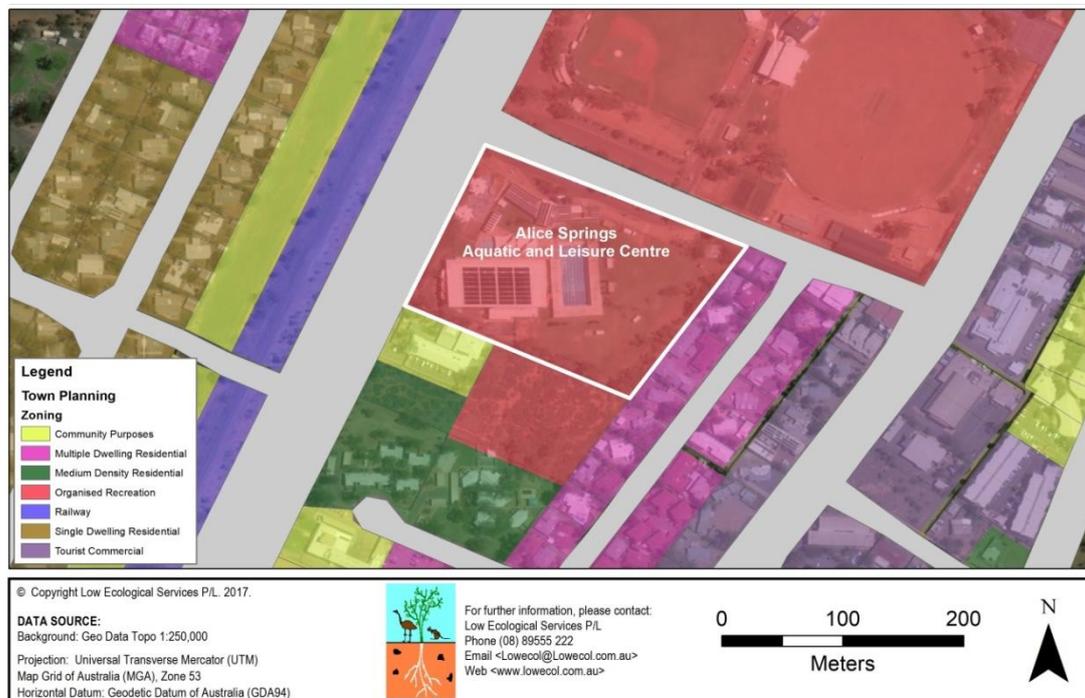


Figure 4. Northern Territory Planning Scheme land use zones adjacent proposed development site.

5.3 Background Noise Levels

Background noise monitoring was conducted from the 1st – 4th of December 2017 by Low Ecological Services P/L in the following location:

- The southeast corner of the Alice Springs Aquatic and Leisure Centre property, 10 meters from boundary of residential area.

The results of the noise monitoring showed a LAF_{mn} (Noise Average Pressure Level Minimum reading) of 40.7 dB(A) and a LAF_{mx} (Maximum reading) of 67.6 dB(A) throughout the duration of the survey.

The location and nature of the Aquatic and Leisure centre indicates it generates or is subjected to higher than normal background noise. The Aquatic Centre is adjacent to the Stuart Hwy and in close proximity to emergency services and sports ovals. All of which are contributors to the background noise levels affecting this site.

6. POTENTIAL NOISE IMPACTS DURING CONSTRUCTION

6.1 Grader Operation

Grader operation will take place during the initial site preparation works. Expected duration of these works including installation of a stormwater drain is 1 month. As per described in Table 2 the typical noise emission is 85 dB(A).

6.2 Turchi Pile Driver

Use of the Turchi Pile Driver to drive in support legs for the array is essential to the project and will take place in the second phase of development. As described in Table 2 the typical noise emission is 101 dB(A) for an impact driver. Noise reduction techniques outlined in section 7.2 of this report will need to be closely followed during the operational hours of this piece of equipment.

6.3 Hand Held Power Tools

Powered hand-held tools will be in use for a large portion of the project from initiation to completion. As per described in Table 2 the typical noise emission is 90 dB(A).

6.4 Vehicles

Vehicles will be entering and exiting the site throughout the entire project. As per described in Table 2 the typical noise emission of a large vehicle (truck) is 88 dB(A).

6.5 Calculated noise reduction due to distance

Table 6.1 indicates the level of noise reduction which will occur due simply to increasing distance from the source. The NSR, in this case the residences, are a minimum distance of 30 m from the nearest noise source and the level of noise the NSR may receive from the listed machinery if it is operating at the closest boundary is shown in the third column of Table 6.1. Since the noise attenuates in proportion to the square root of the distance, the table can provide an indication of the relative noise drop at greater distances.

Table 6.1 Construction Equipment Typical Noise Emission Levels retrieved from US EPA data surveys

Equipment	Typical Noise Levels dBA (15 metres from source)	Estimated noise level 30 m from source
Air Compressor	81	75
Backhoe	80	84
Compactor	82	76
Concrete Mixer	85	79
Concrete Pump	82	76
Crane, Derrick	88	82
Crane, Mobile	83	77
Dozer	85	79
Generator	81	75
Grader	85	79
Impact Wrench	85	79
Jack Hammer	88	82
Loader	85	70
Pole Driver - Impact	101	95
Powered Hand Drills	90	84
Roller	74	68
Saw	76	70
Truck	88	82

7. NOISE MANAGEMENT

The noise level management plan aims to control the noise level to comply with AS 2436: Guide to Noise and Vibration Control on Construction sites and prevent environmental nuisance. Noise levels at the NSR are to be kept to less than 60 dBA where practical. The noise production values shown in Table 6.1 are a guide to potential noise levels. The boundary fence of the Aquatic and Leisure Centre is constructed of colorbond steel and is capable of noise reduction of up to 10 dBA. The shrubbery in front of the residences will further reduce the noise reaching the residences. Thus noise levels from most of the sources will be less than 60 dBA by the time it reaches the NSR. The noise production from the Turchi pole driver may require appropriate noise reduction techniques to be put in place to reduce the noise to acceptable levels.

For workers on site, it may be necessary to provide appropriate PPE to enable them to be protected from the noise levels in close proximity to machinery.

7.1 Time and Notification of Construction Activities

The construction and erection of the Solar Array at Alice Springs Aquatic Centre will generate noise typical of most construction sites. All noisy construction activity will be undertaken and restricted to the hours outlined in the *Northern Territory's Waste Management and Pollution Control Act*.

1. 7am – 7pm Monday to Saturday
2. 9am – 6pm on a Sunday or public holiday

Varied construction works will involve occasional short term high impact noise events such as the use of graders and Turchi pile drivers. These activities will be programmed during the appropriate hours outlined above. As per the NTEPA Noise guidelines for development sites in the Northern Territory (2014), occupants of adjacent noise-receiving premises will be advised with no less than 48 hours' notice of:

1. Proposed activities likely to cause a nuisance
2. Time, date, and duration of proposed activities
3. The name and contact details of the person to which complaints can be made about the noise emissions from the site

7.2 Noise Reduction Techniques

1. Plan noisy activities to coincide with higher wind noise if possible.
2. Use of portable barriers between the noise source and the NSR to absorb the noise emissions from various equipment and processes may be beneficial. This could be in the form of a temporary transportable structure erected between residential area and site, or simply by parking larger vehicles on site between equipment causing noise emissions and NSR. The potential use of noise matting may be useful to absorb noise emissions to the NSR in the adjoining properties if substantial amount of complaints are received.
3. Limiting use of equipment with higher noise propagation to times of higher ambient noise and winds (Figure 3 shows higher wind speeds in the afternoon) blowing from the east and south-east aspects will be beneficial to noise perception. Use of the Australian Government, Bureau of Meteorology MetEye data base will assist with works planning in regard to forecast wind direction and speeds.

7.3 Responsibility for Noise Control

All workers on the site will be responsible for ensuring noise generation from the site is kept to a minimum. The Site Supervisor will be informed if noise generation is expected to exceed threshold levels. Complaints about noise will be directed to the Site Supervisor for resolution.

8. MONITORING

It is recommended noise monitoring be conducted at appropriate times during the project using appropriate noise monitoring meters to provide a record of noise levels. Noise monitoring should be programmed to align with the noisy phases of the project. The first survey should be conducted within the first week of works beginning and then again monthly or at specific occasions related to higher noise generation to ensure compliance until completion of the project.

9. COMPLAINTS MANAGEMENT

Public complaints arising from any construction works or ongoing operation of Alice Springs Aquatic Centre Solar Array shall be managed within Alice Springs Town Council / Alice Springs Aquatic and Leisure Centre Complaints Management System.

Significant incidents will be reported to the NTEPA in accordance with section 14 of the *Waste Management and Pollution Control Act* and resolved in consultation with the complainant.

10. REFERENCES

Australian Government, Bureau of Meteorology, (2014). *Climate statistics for Australian locations*. Retrieved from <http://www.bom.gov.au/jsp/ncc/cdio/cvg/av>

MAS Environmental. (2006). *Noise Calculator – Point Source Model*. Retrieved from <https://www.masenv.co.uk/noisecalculator>

New South Wales Environmental Protection Agency. (2017). Noise policy for industry. Retrieved from <http://www.epa.nsw.gov.au>

Northern Territory Environmental Protection Authority. (May 2014). *Noise guidelines for development sites in the Northern Territory*. Retrieved from <https://ntepa.nt.gov.au/waste-pollution/guidelines/guidelines>

US Environmental Protection Agency. (1971). *Noise from construction equipment and operations building equipment and home appliances*. Retrieved from https://planning.lacity.org/eir/HeraldExaminer/DEIR/IV_H-4.pdf