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SICEEP - Interactive Display System

Noise Emission Assessment

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1 INTRODUCTION

This report presents an assessment of noise emissions associated with the proposed Interactive Display Systems (IDS) to be located throughout the Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP). This report has been prepared to satisfy the Secretary's Environmental Assessment Requirement 5.

This report will:

- Identify properties which are potentially impacted by noise from the proposed IDS.
- Identify noise emission controls based on the existing Consent for the precinct.
- Determine acoustic treatments/management controls for the IDS as necessary to ensure ongoing compliance with noise emission requirements.

2 SITE DESCRIPTION AND PROPOSED IDS

The Interactive Display System is designed to assist visitors to Darling Harbour navigate the precinct. The Interactive Display Systems will be placed strategically throughout SICEEP and present:

- Building identification;
- Way finding;
- Precinct information; and
- Partnership branding and advertising.

The majority of the proposed Interactive Display Systems will be equipped with sound reinforcement to reproduce localised audio within close proximity of to the signage. The 14 Interactive Display Systems with sound reinforcement are identified in Figure 1.

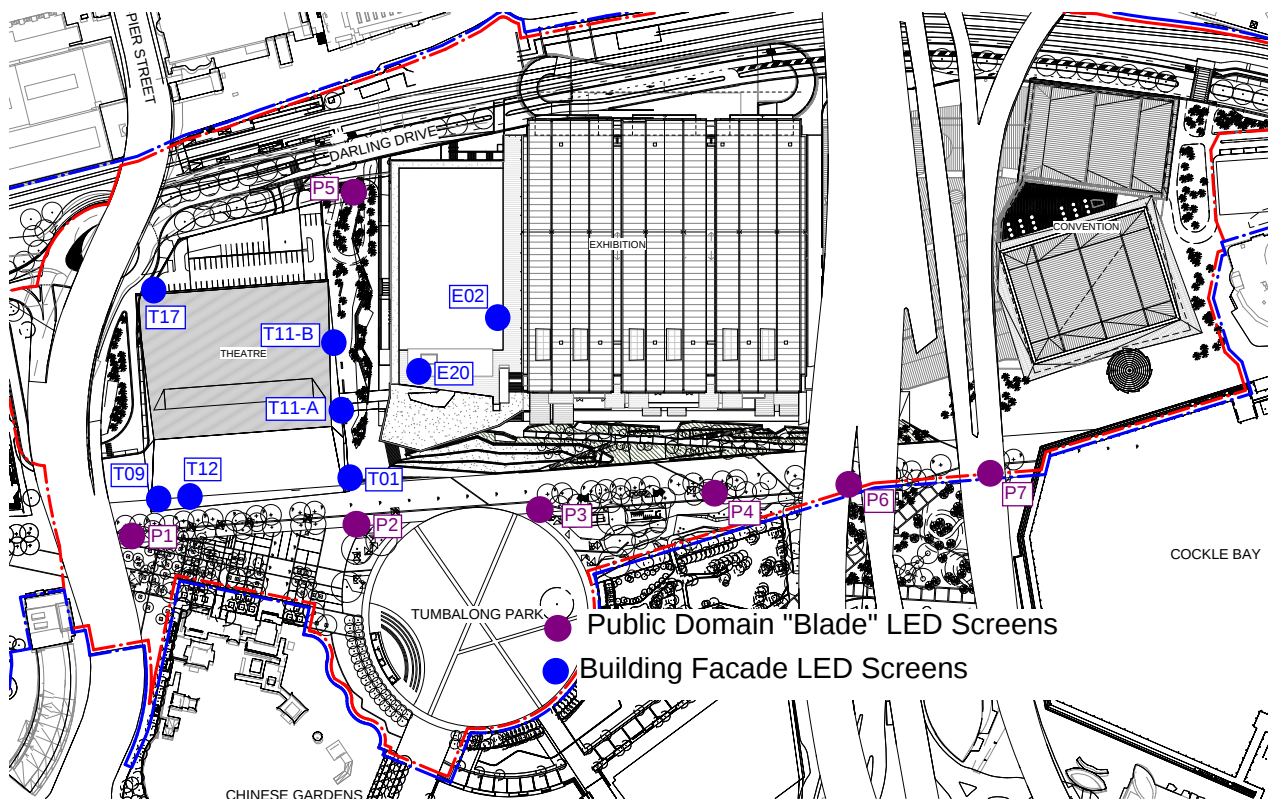


Figure 1 – Interactive Display Systems with Sound Reinforcement

The IDS zone as a whole is bounded to the north by the Harbourside Shopping Centre. To the west of the IDS is the Oaks Goldsbrough Apartments and the Bullecourt Apartments. To the south of the site, across Pier Street, are future commercial buildings. The Chinese Gardens, IMAX theatre and Commonwealth Bank development are located to the east of the IDS. These receivers represent the nearest potentially affected locations for IDS noise emissions.

3 NOISE DESCRIPTORS

In the case of environmental noise three principle measurement parameters are used, namely L_{10} , L_{90} and L_{eq} .

The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement intervals. The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced at the source. Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period. L_{eq} is important in the assessment of environmental noise impact as it closely corresponds with human perception of a changing noise environment; like traffic noise.

4 NOISE EMISSION CRITERIA – CONDITION OF CONSENT F3

In accordance with Secretary's Environmental Assessment Requirement 5 an assessment of potential noise emissions from the IDS has been conducted. As per the requirements of Condition F3 of the SICEEP consent, cumulative noise emissions from the IDS are to not exceed the noise emission criteria presented in Table 1. (Note: "Early Night" is the period between 10pm and 11pm).

Table 1 – Noise Emission Criteria – EPA Industrial Policy

Location	Period/Time	Intrusiveness Criteria dB(A) L_{eq} (15 min)	Amenity Criteria (Ambient Adjusted) dB(A) L_{eq} (period)
Oaks Goldsborough Apartments	Day	60	60
	Evening	59	50
	Early Night	58	48
	Night	56	47
Bullecourt Apartments	Day	62	60
	Evening	60	52
	Early Night	58	50
	Night	54	48
Commercial (Commonwealth Bank, Harbourside Shopping Centre, Southern Future Commercial)	When in Use	N/A	65
Chinese Gardens	When in Use	N/A	50

As the Interactive Display Systems could potentially operate at any time, all noise emissions have been assessed against the "night" noise emission criteria as this represents the most stringent assessment period for IDS operation (10pm to 7am).

5 ASSESSMENT OF POTENTIAL NOISE EMISSIONS

Potential noise emissions from the Interactive Display Systems are assessed below. Noise emissions at each of the identified receivers are presented below and assessed against the noise emission criteria of the SICEEP consent.

Predicted noise levels are based on the following information provided by the SICEEP electroacoustic consultants:

- The sound reinforcement system for each of the audio-enabled IDS has been designed to be 10dB(A) above the ambient noise level for a 10m radius surrounding the signage.
- The sound reinforcement system for each IDS is a distributed system that focuses sound to the immediate local area surrounding the signage (10m radius).

Ambient noise levels within the IDS precinct were established using long term monitoring in multiple locations during the development application stage of the SICEEP project. Ambient noise levels over the night period were measured to be 56dB(A) L_{eq} . As a result, each IDS will reproduce noise levels of up to 66dB(A) L_{eq} in their immediate proximity.

All predictions are based on the assumption that the acoustic treatments set out in section 6 of this report will be adopted. Assessment against relevant acoustic criteria for all nearby development is shown in the following tables. Assessment of noise emissions has been made during the 10pm to 7am operational time period. Although the commercial premises surrounding the development are unlikely to be affected at this time, it represents the “worst case scenario” for operational times.

Predicted noise levels are as follows.

Table 2 – Predicted Noise Levels

Receiver	Predicted Cumulative Noise Level dB(A) L_{eq}	Noise Emission Criteria dB(A) L_{eq}	Complies
Oaks Goldsborough Apartments	<30dB(A)	47dB(A)	Yes
Bullecourt Apartments	34dB(A)	48dB(A)	Yes
Harbourside Shopping Centre	<30dB(A)	65dB(A)	Yes
Commonwealth Bank	40dB(A)	65dB(A)	Yes
IMAX	43dB(A)	65dB(A)	Yes
Chinese Gardens	42dB(A)	50dB(A)	Yes
Future commercial to the south	<30dB(A)	65dB(A)	Yes

Provided that the noise control recommendations in section 6 are adopted, noise emissions will be compliant with allowable levels.

6 RECOMMENDATIONS

Required management controls to ensure compliance with Condition of Consent F3 include the following:

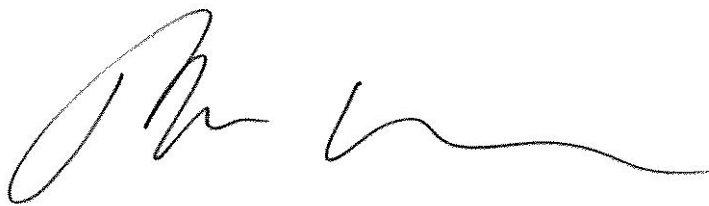
- The IDS sound reinforcement system should be selected and designed to not exceed 10dB(A) above the ambient noise level for each of the IDS locations.
- Sound levels from each of the IDS should be capable of being adjusted.
- Should the Event Deck IDS sound reinforcement system be utilised during special events (NYE celebrations, etc), these systems should be adjusted in accordance with the Approved Operational Noise Management Plan (ONMP) as per The Department of Planning's Condition of Consent F2.

7 CONCLUSION

This noise assessment has been prepared to satisfy Secretary's Environmental Assessment Requirement 5. Noise emissions associated with the proposed Interactive Display System to be located in within the Sydney International Convention, Exhibition and Entertainment Precinct have been assessed with reference to the Department of Planning's Conditions of Consent.

Provided that the recommendations presented in Section 6 of this report are adopted, noise emissions from the operation of the site will comply with acoustic criteria.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Tom Aubusson', with a long horizontal flourish extending to the right.

ACOUSTIC LOGIC CONSULTANCY PTY LTD
Tom Aubusson MAAS