Attachment A21

Acoustic Impact Assessment – Mixed Use Scheme

ARUP

Stockland

Piccadilly Complex

Mixed-use Scheme Planning Proposal - Acoustic Review

Reference: 295375-AC04_v2

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1. Introduction

This acoustic report accompanies a planning proposal seeking to amend the Sydney Local Environmental Plan 2012 (the LEP) relevant to the land known as 'Stockland Piccadilly Complex' located at 133-145 Castlereagh Street, Sydney (the site) and legally described as Lot 10 in DP828419, as shown in Figure 1.

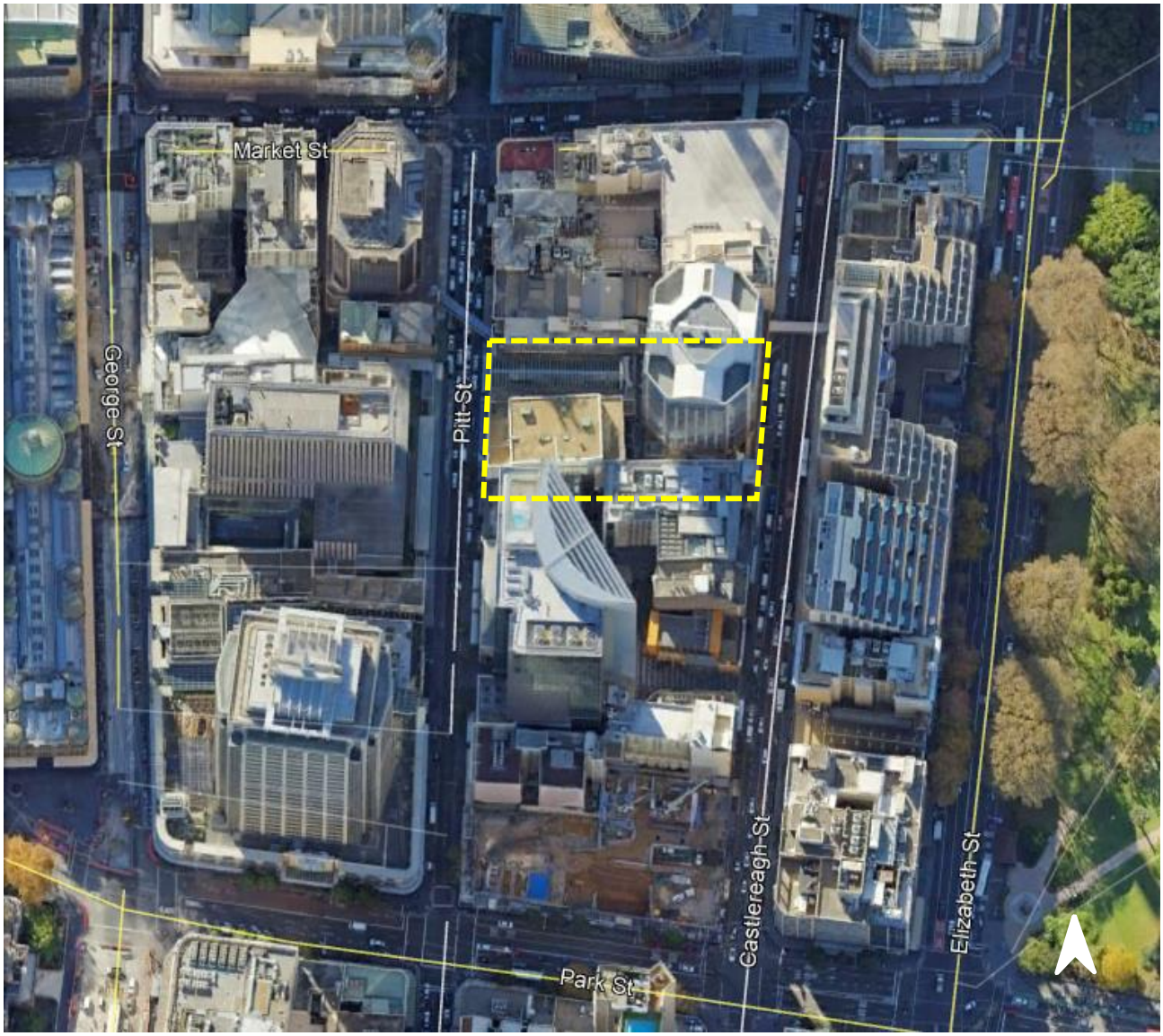

Figure 1: 133-145 Castlereagh Street, Sydney – Stockland Piccadilly Complex

The planning proposal seeks to prescribe site specific LEP provisions, including amending the floor space ratio development standard, as well as concurrently preparing a site specific Development Control Plan (DCP) to guide the future development. The DCP will establish building envelopes for the site, as well as other key assessment criteria including the establishment of a through-site link and parking and vehicular access.

The intended outcome of the proposed amendments to the LEP and DCP is to facilitate the redevelopment of the site for either an all commercial development or a mixed-use development, together with an activated ground plane, basement car parking and associated facilities. The proposal will retain the structure of the majority of the existing commercial tower as well as the basement structure. The proposal facilitates additional commercial floor space capacity in Central Sydney while also delivering improved public domain outcomes. Such outcomes will include a rectified Solar Access Plane breach to Hyde Park, a northerly aligned direct through-site link between Pitt and Castlereagh Street and enhanced pedestrian amenity and activation at the ground plane.

1.1 Subject site

The site currently comprises three buildings known as the 'Piccadilly Complex' completed in 1991 which has been the subject of progressive improvements to upgrade selected elements within the building. The buildings currently occupying the site are detailed in Table 1.

Table 1: Description of existing buildings

Building	Description
Piccadilly Court	Comprises a 14-storey office building completed in 1975 and first refurbished in 1991 with frontage to Pitt Street.
Piccadilly Shopping Centre	Comprises a 3-storey retail building and the Wesley Mission facilities including the Wesley Church, Lyceum, Wesley Theatre and offices office space predominately located at basement level. The Wesley Centre facilities comprise the following patron capacity: • Theatre – 950 • Lyceum – 277 • Chapel – 534 A footbridge over Pitt Street connects the building to 55 Market Street to the west.
Piccadilly Tower	Comprises a 31-storey commercial building comprising office floor space and end of trip facilities and four basement levels of car parking accessed from Castlereagh Street. The building includes two lobby spaces, the main Castlereagh Street entrance and a smaller northern entrance to the through site link. A footbridge over Castlereagh Street connects the building to the Sheraton On the Park located to the east of the site.

1.2 Concept reference design

To demonstrate that the proposed building envelope is capable of accommodating a viable scheme, a Concept Reference Design accompanies the planning proposal within the Urban Design Study. The Concept Reference Design is indicative only and the final detailed design will be the subject of a competitive design process and detailed development application (DA) which will ultimately result in further refinement. The ground floor plan is shown in Figure 2.

Figure 2: Stockland Piccadilly Complex – Concept Reference Design - Ground plan (3XN, SK-11-100, 14/07/2025 Issue 4)

The Concept Reference Design includes the following elements:

- Basement car parking and mechanical plant;
- Loading dock
- Retail
- A northerly aligned east-west pedestrian through-site link connecting Pitt St and Castlereagh St;
- Commercial offices
- Plant
- Residential

1.3 Purpose of report

The purpose of this acoustic report is to provide a review of relevant aspects of the proposed planning amendments and Concept Reference Design, to evaluate their likely suitability, and requirements for future assessment and detailed design. As the planning submission does not seek consent for the specific development, a detailed quantitative assessment of the Concept Reference Design is not considered to be warranted at this stage.

Relevant to the acoustic report are the following aspects:

- Potential noise and vibration impact upon the site, from existing and future sources in proximity to the site.
- Noise and vibration emission from the use and construction of the development.

Accordingly, this report:

- Discusses the current and potential future acoustic environment and surrounding land use context
- Identifies the relevant acoustic policies and standards that are likely to govern the future development, to be confirmed at a later detailed DA stage
- Identifies the acoustic factors that may influence the future assessment and design of the site
- Identify the acoustic assessment approach for the subsequent DA stage

2. Acoustic review

The acoustic review is structured as follows:

- Discussion regarding potential impacts upon the development
- Discussion regarding potential impact from the development, onto both existing surrounding development and future uses within the site, and
- A summary of the acoustic factors against relevant guidelines and the approach to the future DA

2.1 Impact upon the development

2.1.1 Primary environmental factors

The primary environmental acoustic factors with the potential to influence the development are:

- Road traffic noise from Pitt Street, Castlereagh Street, and to a lesser extent, Market Street and Park Street;
- Ground borne noise and vibration from operation of the Sydney Metro City & Southwest; and
- Building services and entertainment noise from future mixed-use development located 65-77 Market Street and 194-204 Pitt Street (i.e. City Tattersalls Club).

2.1.2 Key noise sensitive spaces

The most noise sensitive components proposed as part of the Concept Reference Design are:

- Commercial tenancies up to L28 and residential uses from L29 to 42.

2.1.3 Existing acoustic environment

Long-term noise monitoring was carried out from Monday, 29 June 2020 to Sunday, 5 July 2020 on level 3 of the existing Piccadilly Complex as shown in Figure 3. This monitoring was undertaken at the time of the previous planning proposal. Updated monitoring was not considered warranted and would have otherwise been impacted by construction activities at neighbouring sites.

In addition, long-term noise monitoring results have also been obtained from two separate noise and vibration impact assessment reports prepared by WSP:

- City Tattersalls Club, Stage 1 DA – Noise and Vibration Impact Assessment, Rev 6, 13 June 2019, WSP; and
- 77 Market Street, Sydney, Noise and Vibration Impact Assessment, Rev 4, 1 March 2019, WSP.

The main purpose for monitoring at this location is to inform the preliminary assessment of the pedestrian through-site link (TSL) (Section 2.1.1).

Figure 3: Arup noise monitoring location (Piccadilly Complex, level 3)

Table 2 presents the overall single Rating Background Levels (RBL) and representative ambient L_{eq} noise levels for each assessment period, determined in accordance with the NSW EPA *Noise Policy for Industry* (NPfI) [1]. Observations on site and further analysis of the measurement data indicate that noise levels at the Arup monitoring location are influenced by existing plant associated with the Piccadilly Complex and therefore future noise levels may be lower than measured post development, however will depend on future plant noise from the adjacent development sites and the Piccadilly Complex. The measured noise levels are also lower than the WSP data, given that the location was less exposed to the street frontages and thus less traffic noise.

Table 2: Measured noise levels

Monitoring location	Rating background level (RBL) dBA			Ambient noise level, L_{eq} dBA			
	Day	Evening	Night	Period	Day	Evening	Night
133-145 Castlereagh Street (level 3)	61	57	57	Period	62	59	58
194-204 Pitt Street[2] (on awning approx. 6 m above ground fronting Pitt Street)	63	61	58	Period	67	65	65
				1-hour	70	-	67
77 Market Street[3] (on roof of building – L10, fronting Market Street)	64	62	59	1-hour	66	-[4]	63

Monitoring location	Rating background level (RBL) dBA			Ambient noise level, L_{eq} dBA			
	Day	Evening	Night	Period	Day	Evening	Night

Note:

1. Day: the period from 7:00am to 6:00pm Monday to Saturday; or 8:00am to 6:00pm on Sundays and public holidays; Evening: the period from 6:00pm to 10:00pm; Night: the remaining periods.
2. Survey conducted between 3 August and 11 August 2017.
3. Survey conducted between 16 August and 23 August 2017.
4. No evening L_{eq} was reported.

2.1.4 Road traffic noise

Statutory requirements for road traffic assessment apply only to residential, places of public worship, hospitals, educational establishments or centre-based child care facilities, where the Annual Average Daily Traffic (AADT) is greater than 20,000, as outlined in the *State Environmental Planning Policy (Transport and Infrastructure) 2021* [2]. None of the surrounding roads are identified on the traffic volume maps [3].

Notwithstanding, within the current Concept Reference Design, the spaces requiring assessment would be limited to the residential uses on L29 to L42. The City of Sydney also require assessment of noise ingress for residential development in accordance with their DCP [4].

For residential development, the SEPP (Housing) 2021 [5] and Apartment Design Guideline (ADG) [6] must be addressed. The City of Sydney's interpretation of SEPP (Housing) and the supporting ADG is that natural ventilation must be provided while also satisfying specific noise criteria. This requirement is not stated in the ADG. The City of Sydney has released a draft guideline for the assessment of alternative natural ventilation [7]. Providing alternative natural ventilation solutions at noise affected sites can have a considerable impact on apartment design, amenity, and sustainability outcomes, including, but not limited to:

- additional spatial requirements, reducing net floor space,
- added complexity for cleaning and maintenance,
- added complexity for user operation. There are no standards or requirements regarding ease of operation. Suitable ventilation performance may be contingent on specific external openings and ventilation paths though the apartment being open to achieve the ventilation rates, which is also a function of the current wind speed and more importantly direction.
- Need for controls or ability to close the ventilation system under high wind speeds. Variable dampers would be needed to maintain usage, else closure would inadvertently reduce the time when the background ventilation is provided. Dampers increase the risk of aeroacoustic noise when not well sealed.
- Inability to provide filtering of external air quality due to airflow restriction.
- Potential need for automated control systems to minimise impacts under high wind and pollution events.
- Large openings will impact building thermal performance and may otherwise need to be sealed during high and low temperatures.
- Overall design complexity and certification due to the need for often bespoke and untested design solutions.

Notwithstanding, it is expected that an assessment will be required at the detailed DA stage.

2.1.5 Ground borne noise and vibration from Sydney Metro

Regarding rail ground borne noise and vibration, the Concept Reference Design proposes land uses that are less sensitive to rail ground-borne noise and vibration than the current site.

The Sydney Metro project was required to appropriately mitigate ground borne noise and vibration to the existing Wesley facilities, located below ground. While the Sydney Metro City and Southwest Preferred

Infrastructure Report (PIR) [8, pp. 520-521] classified the site as 'commercial' and 'other (Educational)' receiver types, the later has the same criteria as a place of worship. As the primary basement structure is to be retained, the proposal should not impact the Sydney Metro design outcomes and requirements.

Residential uses are proposed at upper levels and therefore sufficiently removed from the rail tunnels. It is also noted that neighbouring residential development did not require mitigation of rail vibration.

Notwithstanding the above, any new structure that could alter vibration transfer from the rail tunnels should be reviewed at a future design stage.

2.1.6 Plant noise from adjacent buildings

A future assessment would also need to consider any major plant equipment, particularly that located on rooftops or major ventilation openings of adjacent sites that the project may overlook. Where appropriate, consideration of building services regarding future development to the north should also be given.

2.1.7 Impact from the development

Noise and vibration emission from the site, notwithstanding the construction phase, would not be anticipated to have a significant impact on the surrounding land uses.

2.1.8 Pedestrian through-site link (TSL)

The primary activation of the site is the TSL located on ground level along the northern boundary connecting Pitt and Castlereagh Streets. The TSL is intended to comprise various retail premises with a view to creating an activated public 'destination' rather than offering just a link. The Concept design includes an open void above the TSL such that it will be 'open to sky' in the centre of the northern boundary.

While the Planning Proposal does not seek consent for specific uses or final design, a preliminary assessment has been carried out to evaluate potential implications upon nearby noise sensitive development, such as the future residential development approved for 77 Market Street and 194 Pitt Street. Given the desire to create a 'destination', it is anticipated that there may be desire for activity or events that may be of a higher intensity than a passive pedestrian thoroughfare. Accordingly, the development should consider how such activation may impact on the surrounding environment and how the built form might best mitigate such impact to maximise the opportunities for the space.

While the City of Sydney have standard noise criteria for individual uses, such as cafes, restaurants, bars and the like, there is no standard criteria for the evaluation of activity that may occur in the public realm. Furthermore, the future acoustic environment may be influenced by general activity in the public realm, not specifically associated with a business operation or organised activity. Determination of appropriate criteria for this specific use in the context of the surrounding development is likely to require further consultation with the City of Sydney as part of a future DA process.

It is noted that noise sensitive development, such as the future residential development approved for 77 Market Street and 194 Pitt Street, are required to achieve specific internal noise levels, which would be based on the existing ambient noise environment. This preliminary assessment has been guided by existing ambient noise levels outlined in the respective development applications (refer to Table 2), however the specific basis of design for each of the future development would need to be confirmed.

Noise modelling has been carried out for the Concept Reference Design, with a primary focus on noise propagation via the central void to the future development to the north. The modelling was not based on any specific or detailed arrangement of uses within the TSL, but rather a uniform source level along the length of the TSL, to evaluate the reduction in noise level at nearby receiver locations. Table 3 below presents three notional scenarios, being categorised as 'low', 'medium' and 'high' levels of activation.

Table 3: TSL acoustic assessment

Assessment scenario	Predicted noise levels, $L_{Aeq(15minute)}$		
	TSL – mid point	**77 Market St - Residential**	**194 Pitt St – Hotel Podium**
Low: Typical pedestrian activity, active frontages and some outdoor patron areas etc.	65	46	55
Medium: Higher density gathering of people, some low-level music or entertainment in the public realm or spilling from open frontages.	75	56	65
High: Low scale 'entertainment' in the public realm in addition to active retail uses etc.	85	66	75

While more detailed assessment is warranted to take into account the detailed architecture and uses within the TSL, based on the measured background noise levels of between 58 to 62 dB(A) (night and day respectively) and background levels between 57 and 61 dB(A) (night and day respectively), low to medium type activation uses would be appropriate for the TSL in consideration of the surrounding sensitive receivers. A more detailed assessment will be carried out to inform the architecture through the Design Competition process and as part of the future DA.

2.1.9 Building services

The primary operational noise associated with the Concept Reference Design is expected to be building services equipment. However, through appropriate design, building services equipment may be selected and provided with noise and vibration attenuation measures as required to meet Project goals.

Where low noise equipment selection alone is insufficient, standard noise control methods may be adopted such as attenuators, acoustic louvres, acoustic screening around plant areas, acoustic enclosures and use of sound absorptive treatments to screens and plant rooms.

2.1.10 Road traffic generation

The Concept Reference Design is not expected to give rise to a material increase in road traffic generation. The NSW *Road Noise Policy* states that "*an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person*", which would require a 60% uplift in traffic generation. In addition to general traffic generation, it is considered that noise from basement loading docks can be appropriately managed.

2.1.11 Construction noise and vibration

Noise and vibration during the construction phase will also warrant further detailed assessment during the planning and design phases having regard to impacts onto adjacent development and infrastructure such as the Sydney Metro tunnel. Regarding impacts to the Sydney Metro Tunnel, it is noted that similar works have been successfully conducted in closer proximity to metro tunnels.

2.2 Summary of relevant policies, standards and assessment approach

Table 4: Summary of relevant acoustic policies and standards

Acoustic aspect	Noise and vibration sources	Policies and standards	Assessment approach for future development applications
Noise and vibration impact on the development	Road noise Rail noise and vibration	State Environmental Planning Policy (Transport and Infrastructure) 2021 [2][1] NSW DoP *Development Near Rail Corridors and Busy Roads – Interim Guideline* [9] State Environmental Planning Policy (Housing) 2021 [5] NSW Apartment Design Guide (ADG) [6] City of Sydney DCP [4]	The SEPP (Transport and Infrastructure) applies to development near rail infrastructure and roads over 20,000 AADT. As the site is not identified to be bound by roads above 20,000 AADT, assessment is not required. It is noted that the Housing SEPP and ADG, largely defer to the SEPP (Transport and Infrastructure) requirements. Assessment for residential uses will however be required against the City of Sydney DCP 2012 requirements. A detailed acoustic assessment during DA stage will need to be carried out to demonstrate appropriate methods by which the acoustic criteria could be achieved.
	Building services noise	NSW EPA *Noise Policy for Industry* (NPfI) [1] City of Sydney DCP [4]	Building services noise from surrounding development would typically be designed to meet noise criteria at the site boundary. As the Concept Reference Design includes uses that are more noise-sensitive than the current commercial use (residential), building services noise from adjacent development will need to be evaluated cumulatively with other noise intrusive sources per the City DCP for residential uses. For internal areas of the development, external building services noise can be readily mitigated by the building envelope design. However, should external areas be proposed, lower noise levels maybe desirable, which may require more careful consideration to their siting.
Noise emission to the environment	Industrial noise including building services equipment	NSW EPA *Noise Policy for Industry* (NPfI) [1]	The NSW NPfI is typically applied by the City of Sydney, not only to industrial sites, but also industrial type noise sources, such as building services equipment. Other onsite operations, such as loading docks and carparks are also typically assessed by reference to the NPfI criteria. Acoustic assessment at the development application stage should quantify existing ambient noise levels, establish appropriate acoustic criteria, assess sources where appropriate detail is available and/or propose appropriate acoustic mitigation and management measures. Detailed design measures are typically not determined until construction documentation is prepared prior to issue of the construction certificate.
	Road Noise	NSW EPA *Road Noise Policy* (RNP) [10]	Noise from road traffic generated by the development and its potential impact to nearby noise sensitive premises would generally be assessed in accordance with the RNP. Acoustic assessment for the potential noise impacts from the traffic generated by the development and loading dock usage should be carried out at the DA stage. It is not expected that traffic generated by the subject development would adversely influence the surrounding environment.

Acoustic aspect	Noise and vibration sources	Policies and standards	Assessment approach for future development applications
	Retail uses/pedestrian link	-	The City of Sydney has noise criteria that is typically applied to individual retail and food and beverage type uses. Assessment would not typically be carried out for the overall site DA, however it is recommended to be included for the subject development for the pedestrian link activation. The initial DA should aim to establish appropriate criteria for the individual uses that it reflective of the intended uses and activities.
	Public realm	-	There are no NSW policies or standards specific to activity in the public realm. While assessments can be carried out for structured activities or events, mitigation and management are limited, and it is preferred that the use is not unnecessarily regulated for risk of reducing community benefit. Early consultation with the City of Sydney should occur in preparation for the subject development application stage to confirm appropriate criteria and approach to assessment for the pedestrian link activation.
Demolition and Construction noise and vibration	Construction noise and vibration emission	*Interim Construction Noise Guideline* [11] *Assessing Vibration: A Technical Guideline* [12]	The construction phase of the project has potential to impact surrounding development, and therefore is recommended to be assessed and managed in accordance with relevant NSW policies and standards. Typically, early stage DAs may present a preliminary assessment along with mitigation and management guidelines. More detailed noise and vibration management plans would be required of contractors prior to the commencement of works.

Note

1. Subject to confirmation of existing AADT traffic volumes along Pitt and Castlereagh Streets.

3. Conclusion

Based on the acoustic review of the Planning Proposal for the Stockland Piccadilly Complex, it is considered feasible to comply with relevant acoustic policies and standards. Detailed acoustic and vibration studies will be required during the development application stages to inform the detailed building design, including confirmation of relevant criteria, assessment of proposed uses and development of more specific mitigation and management strategies.

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