Stockland

Stockland Piccadilly Complex

Acoustic Review for Planning Proposal

AC01

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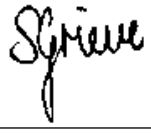
		Signature			
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Contents

1 Introduction

This acoustic report has been prepared by Arup on behalf of Stockland. It accompanies a planning proposal seeking to initiate the preparation of a Local Environmental Plan amendment for the land known as 'Stockland Piccadilly Complex' located at 133-145 Castlereagh Street, Sydney (the site) legally described as Lot 10 in DP828419, and shown in Figure 1.

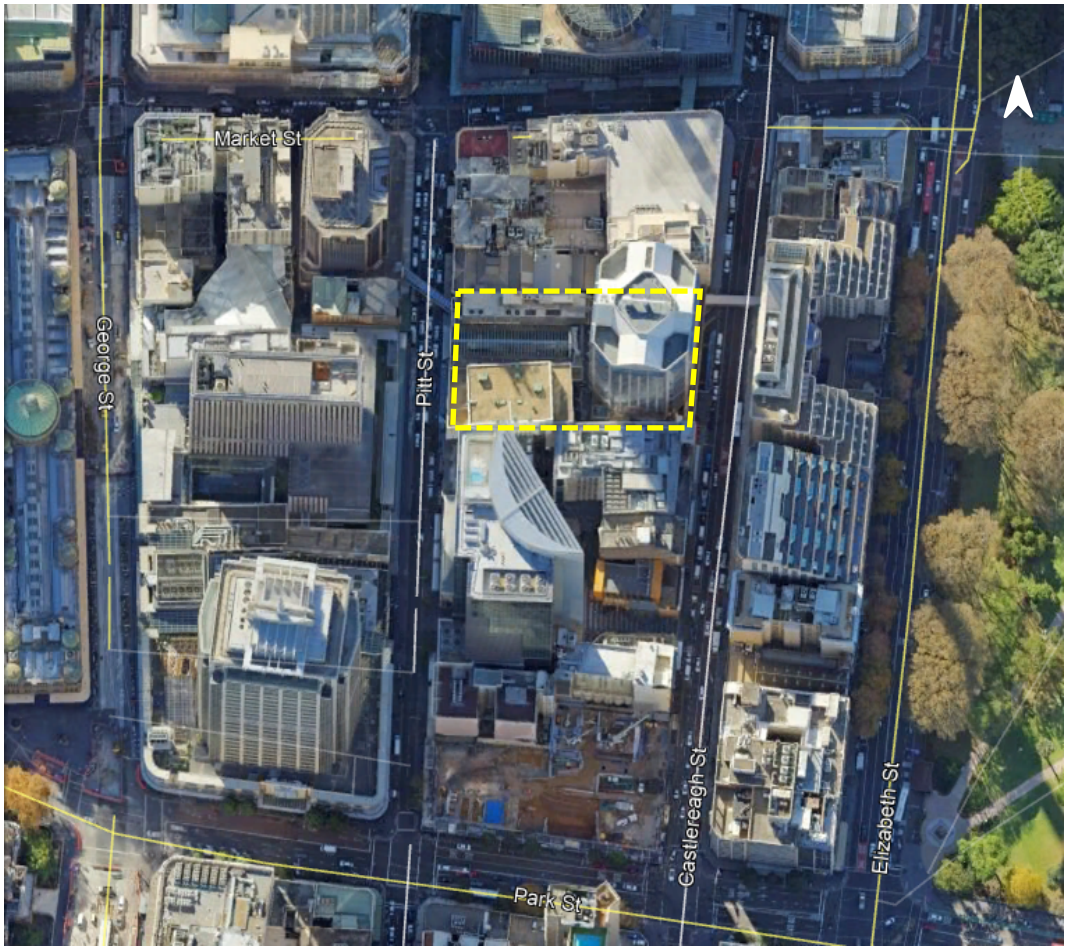

Figure 1: 133-145 Castlereagh Street, Sydney – Stockland Piccadilly Complex

The planning proposal seeks to amend the floor space ratio development standard applicable to the site, under the *Sydney Local Environmental Plan 2012* (the LEP), in accordance with Section 3.33 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

In accordance with Clause 7.20 of the LEP, this planning proposal also seeks amendments to the *Sydney Development Control Plan 2012* (the DCP) to establish site specific provisions to guide the future development, including establishing a building envelope for the site as well as other key assessment criteria.

The intended outcome of the proposed amendments to the LEP and DCP is to facilitate the redevelopment of the site for a mixed-use commercial development together with basement car parking and associated facilities. Such a proposal aligns with the draft Central Sydney Planning Strategy to facilitate additional

commercial floor space capacity in Central Sydney while also delivering improved public domain outcomes. Such outcomes will include 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 and improvements

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 2-storey retail building and the Wesley Mission facilities including the Wesley Church, Lyceum, Wesley Theatre and supporting 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.

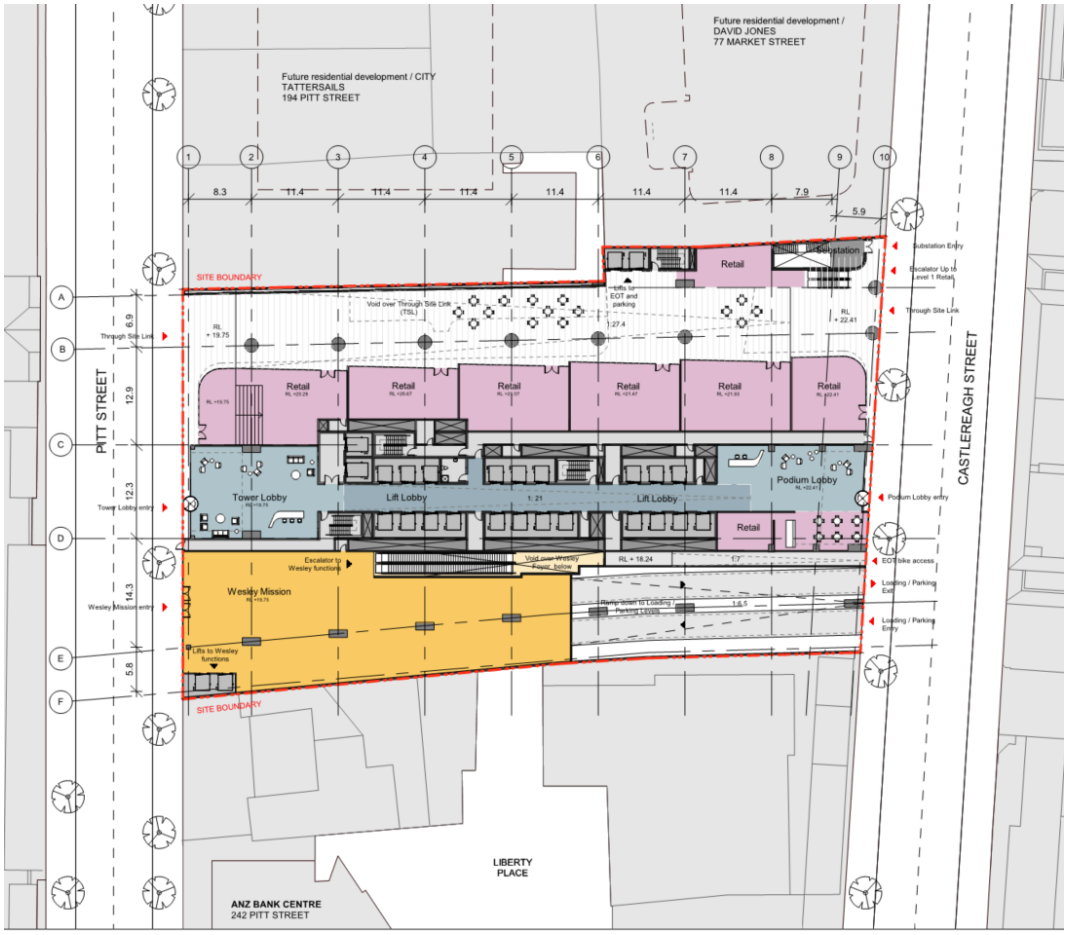

Figure 2: Stockland Piccadilly Complex – Concept Reference Design - Ground plan (3XN, 55001_200805)

The Concept Reference Design includes the following elements:

- Basement car parking and mechanical plant (B05-B03);
- Wesley Mission facilities including the Church, Theatre and Lyceum, and supporting offices (B2-B1);
- End of trip, back of house area and plant (B1);
- A northerly aligned east-west pedestrian through-site link connecting Pitt St and Castlereagh St (L00);
- Podium levels (L00-L09) comprising lobby (L00), retail (L00-L01), commercial (L02-L09) and plant (L09); and
- Tower levels (L10-L34) comprising commercial and plant (L19, L35-L36).

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:

- Existing road traffic noise from Pitt Street, Castlereagh Street, and to a lesser extent, Market Street and Park Street;
- Potential ground borne noise and vibration from operation of the future Stage 2 Sydney Metro City & Southwest; and
- Potential 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 components

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

- **Above ground:** retail tenancies, pedestrian link and lobby located on L00-L01 for reasons of road traffic noise and north facing commercial tenancies at the same elevation as future development plant rooms/ventilation openings;
- **Below ground:** Wesley facilities proposed to be located on B2 for reasons of potential ground borne noise and vibration from future Sydney Metro.

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. 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).

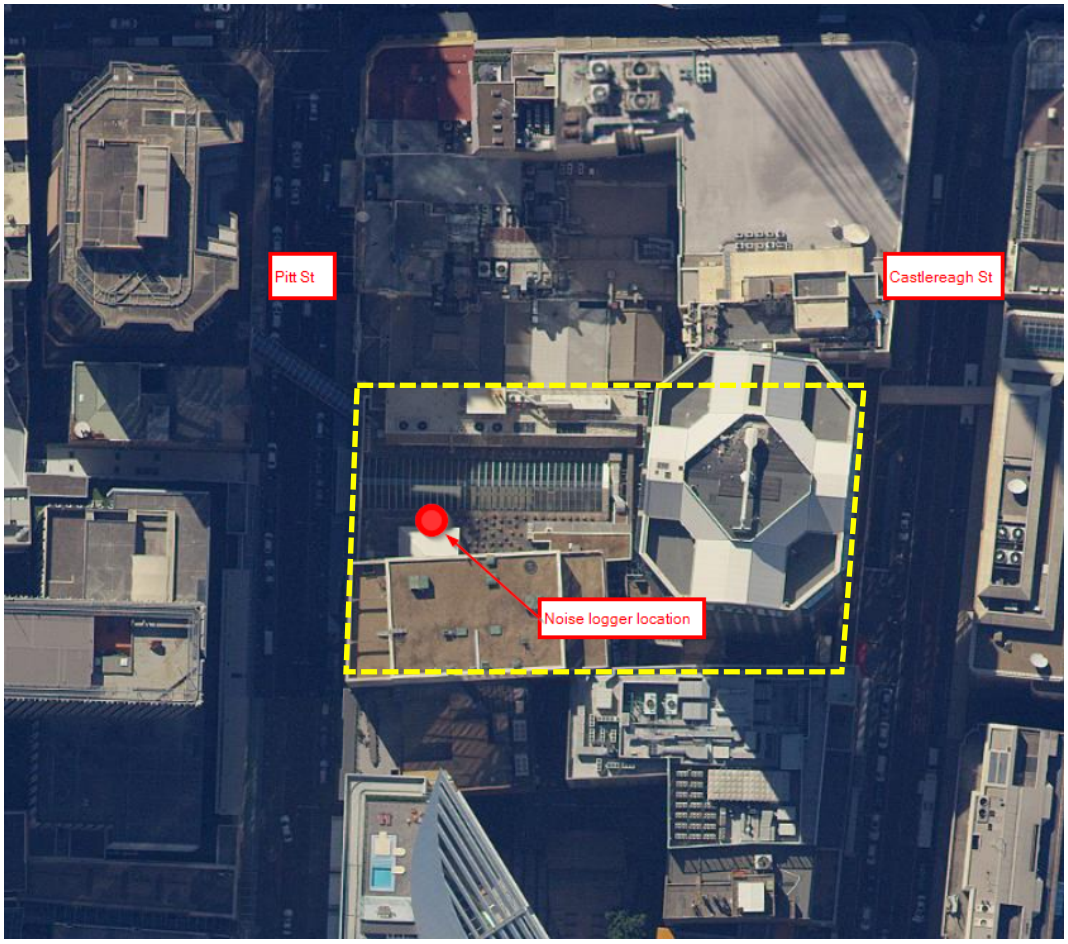

Figure 3: Arup noise monitoring location (Piccadilly Complex, level 3)

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

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

Only residential, educational and places of worship have statutory requires for road traffic noise impact assessment, as outlined in the *State Environmental Planning Policy (Infrastructure) 2007* [2]. Further, this is only required where the Annual Average Daily Traffic (AADT) is greater than 20,000.

While traffic volumes on the surrounding network are yet to be confirmed, and will be evaluated at the detailed DA stage, in the current Concept Reference Design, the only spaces potentially categorised as ‘educational’ and/or ‘places of worship’ are the various Wesley facilities located on basement levels (B2-B1) which are not exposed to road traffic noise.

A detailed assessment will nonetheless be carried out at later application stages; however, the building design can readily address the control of road traffic noise ingress.

2.1.5 Ground borne noise and vibration from Sydney Metro

Regarding rail ground borne noise and vibration, while a detailed assessment is warranted at a subsequent DA stage, the most sensitive uses, being existing Wesley facilities, are at similar locations (RL ≥ 11.4 m) to those proposed in the Concept Reference Design, albeit different layouts (refer Figure 4 and Figure 5). It is also noted that the primary basement structure is proposed to be retained, thus limiting opportunity for additional vibration isolation control. Where additional structure is proposed, that could otherwise alter vibration transfer, it is well removed from the Sydney Metro Chatswood to Sydenham tunnels, and therefore no change to vibration and ground borne noise transfer is anticipated.

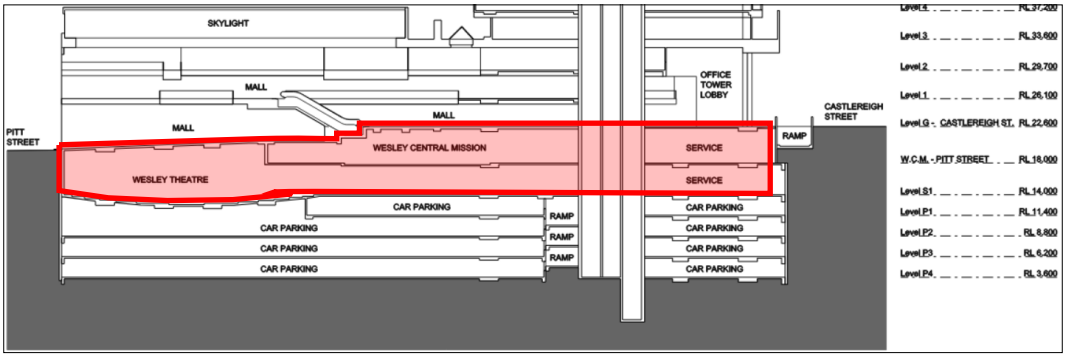

Figure 4: Indicative location of existing Wesley facilities

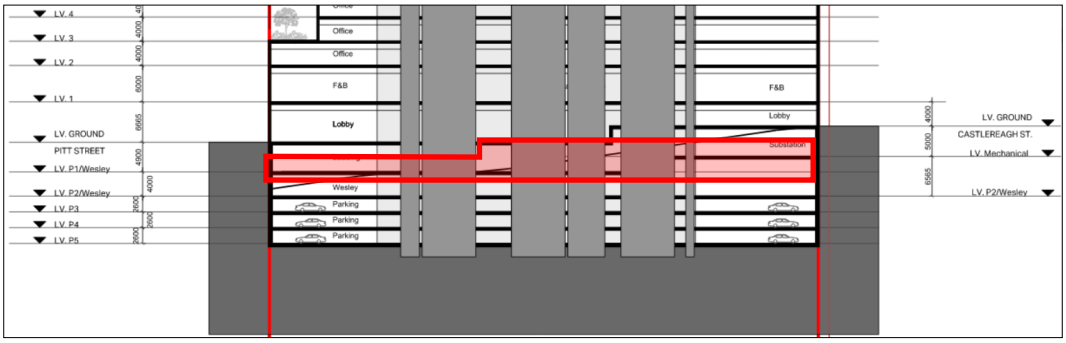

Figure 5: Indicative location of proposed Wesley facilities

As the Wesley facilities are existing, it is required that the Sydney Metro project appropriately mitigate ground borne noise and vibration. The Sydney Metro City and Southwest Preferred Infrastructure Report (PIR) [3, pp. 520-521] classified the site as ‘commercial’ and ‘other (Educational)’ receiver types, the later having the same criteria as a place of worship. The proposal will be referred to Sydney Metro for comment and confirmation that the current uses are included in their assessment.

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.

2.2 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.

2.2.1 Pedestrian through-site link (TSL)

The primary activation of the site is the TSL located on L00 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. Consideration is being given to incorporating an open void above the TSL such that it will be 'open to sky'.

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

Assessment scenario	Predicted noise levels, $L_{Aeq(15minute)}$		
	TSL – mid point	77 Market St - Residential	194 Pitt St – Hotel Podium
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.

2.2.2 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.

2.2.3 Road traffic generation

No additional road traffic associated with the Concept Reference Design is expected given the reduction in number of car parking spaces in the current basement will be reduced by approximately 10%. Furthermore, future loading dock arrangements can be appropriately managed.

2.2.4 Construction noise and vibration

Noise and vibration during the construction phase will also warrant further detailed assessment during the planning and design phases. It is noted, the proposed minor extent of excavation to the south-west corner of the site has potential vibration impacts on the Sydney Metro tunnel situated beneath Pitt St. Planning of construction works will need to consider appropriate methodologies to minimise the effects of vibration, however similar works have been successfully undertaken in proximity to other operating rail lines.

2.3 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 (Infrastructure) 2007 [2][1] NSW DoP Development Near Rail Corridors and Busy Roads – Interim Guideline [4]	The SEPP (Infrastructure) is required for development near rail lines and roads over 20,000 AADT. It applies to noise sensitive development, which includes residential accommodation, place of public worship, hospitals, educational establishments or centre-based child care facilities. If required, 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]	Building services noise from surrounding development would typically be designed to meet noise criteria at the site boundary. As the Concept Reference Design does not propose uses that are more noise-sensitive than current, building services noise should not unduly impact upon the development. 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.

Acoustic aspect	Noise and vibration sources	Policies and standards	Assessment approach for future development applications
	Road Noise	NSW EPA Road Noise Policy (RNP) [5]	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.
	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 [6] Assessing Vibration: A Technical Guideline [7]	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.

References

[1] NSW Environmental Protection Authority, “NSW Noise Policy for Industry,” NSW EPA, Sydney, 2017.

[2] NSW Government, “State Environmental Planning Policy (Infrastructure) 2007,” NSW Government, 31 May 2019. [Online]. Available: https://www.legislation.nsw.gov.au/#/view/EPI/2007/641. [Accessed 29 June 2019].

[3] Transport for NSW, “Sydney Metro—City & Southwest, Chatswood to Sydenham Submissions and Preferred Infrastructure Report,” TfNSW, Sydney, October 2016.

[4] NSW Department of Planning, “Development Near Rail Corridors and Busy Roads - Interim Guideline,” NSW Department of Planning, Sydney, 2008.

[5] NSW Environmental Protection Authority, “NSW Road Noise Policy,” NSW Environmental Protection Authority, Sydney, 2012.

[6] Department of Environment & Climate Change NSW (DECC), “Interim Construction Noise Guideline (ICNG),” NSW DECC, Sydney, July 2009.

[7] Department of Environment and Conservation (NSW), “Assessing Vibration: A technical guideline,” Department of Environment and Conservation (NSW), Sydney, 2006.

[8] NSW Government, “State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development,” 2017.

[9] NSW Department of Planning and Environment, “Apartment Design Guide - Tools for improving the design of residential apartment development,” NSW Department of Planning and Environment , Sydney, 2015.