Syzygy Group Pty Ltd

17-21 University Avenue, Canberra ACT Mixed Use Development

Noise Management Plan

September 2025

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17-21 University Avenue, Canberra ACT
Mixed Use Development
Noise Management Plan

Syzygy Group Pty Ltd

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WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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Executive summary

WSP Australia Pty Ltd (WSP) has been engaged by Syzygy Group Pty Ltd to prepare a Noise Management Plan for inclusion in the Development Application for the proposed mixed-use development at 17-21 University Avenue, ACT.

The assessment has been prepared in reference to the planning requirements of *Territory Plan 2023,* ACT *Planning (Commercial Zones) Technical Specification*, *Environment Protection Regulation* (ACT) and the *Guidelines for the Preparation of Noise Management Plans for Development Applications* (ACT Environment Protection Authority).

The required façade construction requirements have been assessed with regard to noise intrusion into the residential components from adjacent land uses.

A glazed façade achieving ≥32 R_w+C_{tr} for bedrooms and ≥30 R_w+C_{tr} for living rooms that is capable of being fully closed, is determined to be suitable. These are subject to further assessment and optimisation during the detailed design stage. It is also noted that the glazing frame selected for the development should not degrade the performance of the glazing pane.

On potential noise emission from possible noisy uses within the proposed development, a possible future restaurant use has been assessed. It was found that ACT noise planning requirements were predicted to be generally achievable, provided that noise mitigation in the form of building construction or noise limiting system are implemented.

Further assessment is recommended to be undertaken during the detailed design stages to finalise the acoustic design and detailing to be implemented.

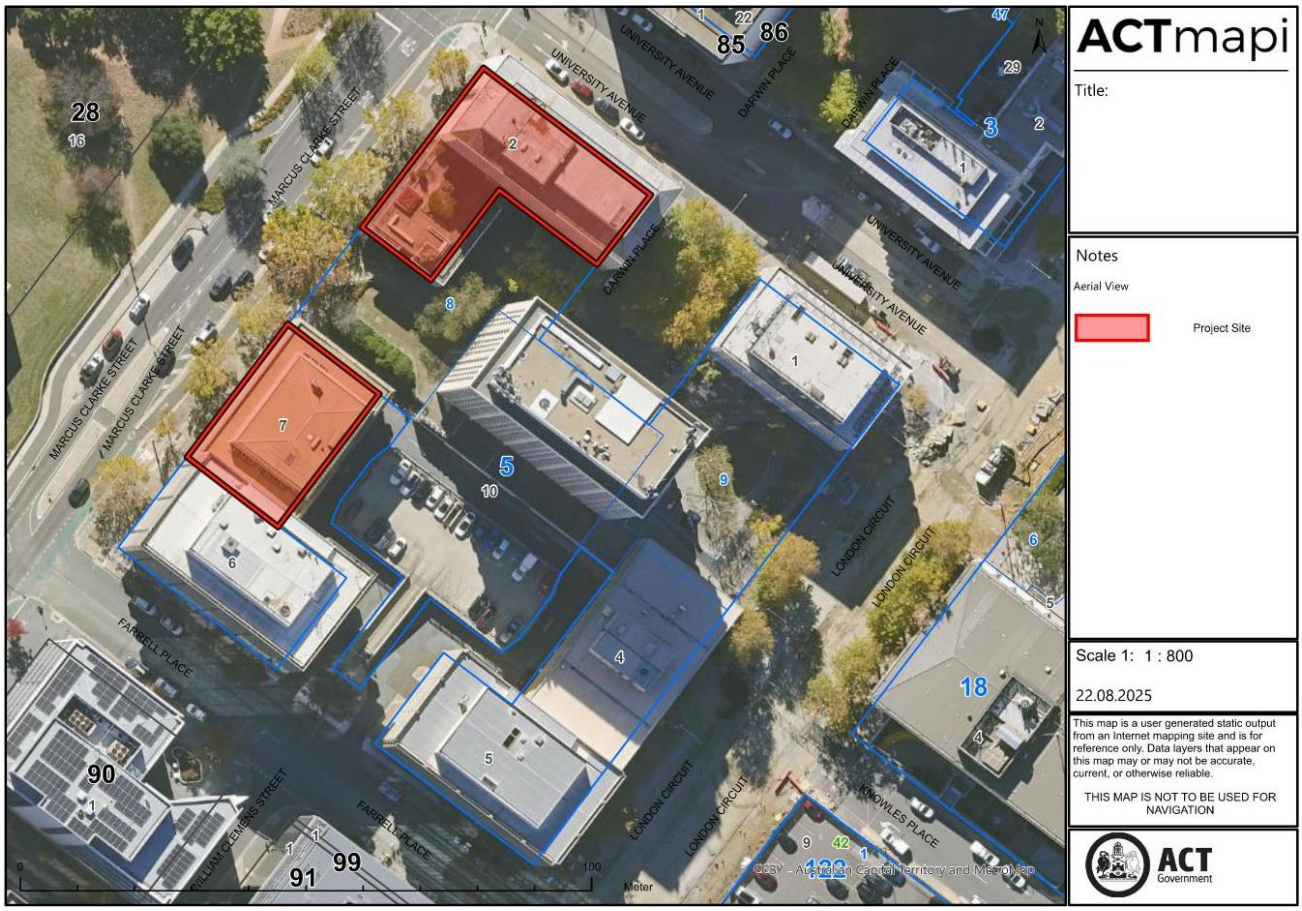
1 Project background

WSP Australia Pty Ltd (WSP) has been engaged by Syzygy Group Pty Ltd to prepare a Noise Management Plan (NMP) for inclusion in the Development Application (DA) for the proposed mixed-use development at 17-21 University Avenue, ACT. It is understood that the development will consist of residential, retail and commercial spaces.

This report provides a NMP in response to the requirements outlined in the *Notice of Decision (NOD) for DA 202241098/S144D* dated 5 December 2024.

1.1 Project description

The proposed project is located at Block 2 and Block 7 Section 5 City as presented in Figure 1.1 and situated adjacent to University Avenue and Marcus Clarke Street.



Source: ACT Mapi, accessed 22 August 2025

Figure 1.1 Arial imagery indicating the approximate location of the project site

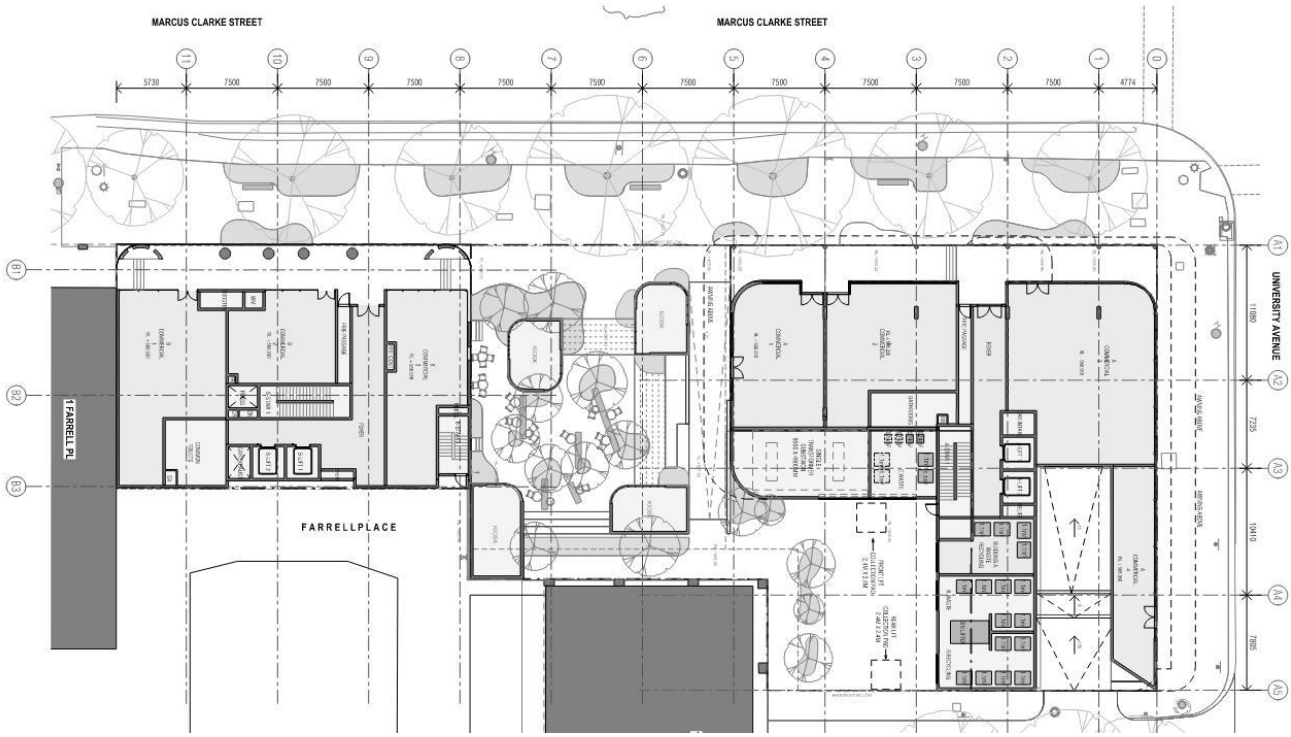
It is understood that the following land uses are located near the project site:

- Office buildings to the northeast, east, south and southwest
- Restaurants and cafes to the northeast and east,
- Bus station to the north
- University buildings including ANU School of Music concert hall to the west

1.2 Project proposal

Figure 1.2 shows the site plan of the ground floor of the proposed mixed-use development, which is understood to entail 155 residential units over two (2) buildings consisting of the following:

- Building A (Block 2) - Total of 13 levels above ground, consisting of:
  - Four (4) commercial spaces on Ground Level
  - Residential units on Levels 1 to 13
  - Car parking on four (4) basement levels beneath the entire development blocks
- Building B (Block 7) - Total of 15 levels above ground, consisting of:
  - Three (3) commercial spaces on Ground Level
  - Residential units on Levels 1 to 15
  - Car parking on three (3) basement levels beneath the entire development blocks



Source: turcoandassociates General Arrangement Drawing ASK.03.05, dated 06 August 2025

Figure 1.2 Site plan of ground level of proposed development

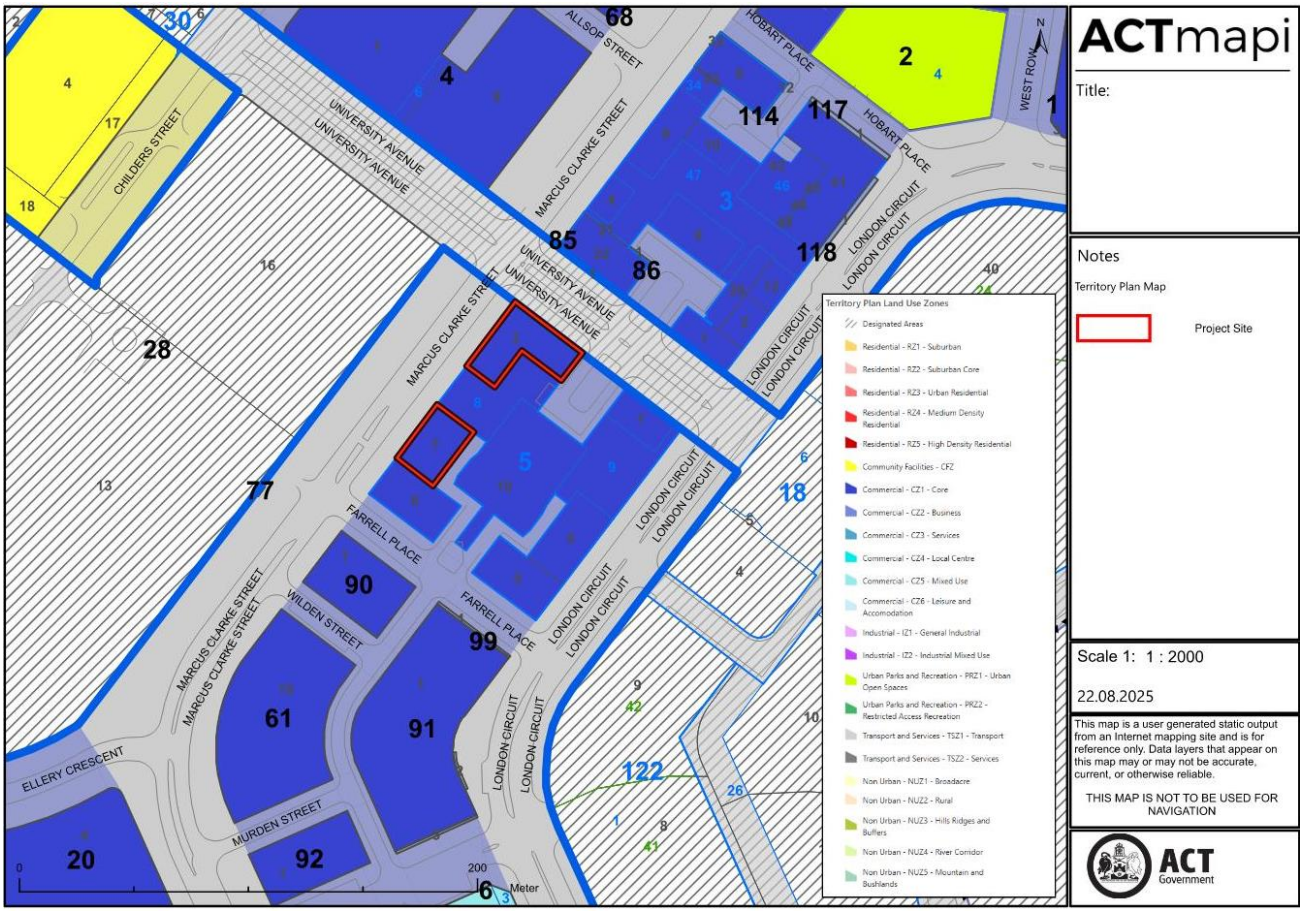
1.3 Site zoning

Based on review of the ACT Territory Plan, reproduced in Figure 1.3, the proposed development is currently zoned as Commercial Zone (CZ) 1 – Core.

Surrounding land uses include blocks zoned as:

- Other Blocks zoned as CZ1
- Land designated as being in the Central National Area (City Hill Precinct)
- Community Facilities Zone (CFZ)

- Urban Parks and Recreation Zone (PRZ)1: Urban Open Space
- CZ5: Mixed use



Source: ACTmapi, accessed 22 August 2025

Figure 1.3 ACT Territory plan excerpt indicating site location and surrounding land uses

2 Planning requirements

The relevant criteria applicable to the project site have been established in accordance with the following documents:

- Planning (Commercial Zones) Technical Specifications 2024 (No 2) (ACT Territory Plan 2023)
- ACT Environment Protection Authority Guidelines for the Preparation of Noise Management Plans for Development Applications (February 2023)
- Environment Protection Regulation (ACT)
- Noise Environment Protection Policy (ACT)

2.1 Planning (Commercial Zones) Technical Specifications

The proposed development will be required to meet the provisions of the *Planning (Commercial Zones) Technical Specifications 2024 - No 2* (CZTS), ACT. Rule 23.1 of the CZTS requires the preparation of an NMP for certain potentially noisy uses. These uses are shown in Table 2.1. Uses that require a noise assessment have been identified and emboldened within the table. Rule 23 also states that:

> *Development complies with a noise management plan prepared by a suitably qualified person and endorsed by the Environment Protection Authority (EPA). The noise management plan will detail the proposed design, siting and construction methods that will be employed to ensure compliance with the Zone Noise Standard as detailed in the Environment Protection Regulation 2005, based on estimated noise levels when the facility is in use.*

All WSP staff involved with the preparation of this report are 'suitably qualified' through:

- Membership of the Australian Acoustical Society (AAS), and/or
- Being based in locations that hold membership of the Association of Australasian Acoustical Consultants (AAAC)
- These personnel have completed a wide range of Noise Management Plans and undertaken associated activities that have been endorsed previously by the ACT Environment Protection Authority (EPA).

Table 2.1 CZTS potentially noisy uses, compared with the proposed commercial uses for 17-21 University Avenue

Potentially noisy uses within a commercial zone for which an NMP is required by the CZTS		**Commercial uses proposed for 17-21 University Avenue development**	
		Block 2 Section 5 City	**Block 7 Section 5 City**
— Club — Drink establishment — Emergency services facility — Hotel — Indoor recreation facility	— Indoor entertainment facility — Industry (except light industry) — Outdoor recreation facility — **Restaurant**	— Shop — Hairdresser — **Restaurant** — Café — Non-retail	— Shop — Hairdresser — **Restaurant** — Café — Non-retail

This NMP has been prepared in accordance with the ACT EPA Guidelines for the Preparation of Noise Management Plans for Development Applications (February 2023) which states that the NMP must address noise from all permitted uses identified as being noisy, regardless of whether the permitted use is utilised.

If a noisy use is permitted by the Crown lease, the noise must be attenuated at the building design stage or by measures that allow the attenuation to be incorporated in the future should a permitted use be activated.

2.1.1 Noise management and acoustic treatment – dwellings

Where residential dwellings are proposed to be development within a Commercial Zone, Rule 23.2 of the CZTS states below:

The development complies with the following:

- **a** *Where a block is located adjacent to a road carrying or forecast to carry traffic volumes greater than 12,000 vehicles per day:*
  - **i** *Dwellings are designed and constructed to comply with AS/NZS 3671 -Acoustics –Road Traffic Noise Intrusion Building Siting and Design; and*
  - **ii** *A noise management plan, prepared by a suitably qualified person, is endorsed by the government department responsible for road transport planning.*
- **b** ***Where a block is identified as being potentially noise affected in a district policy/specification***
  - **i** ***Dwellings are designed and constructed to comply with the relevant sections of AS/NZS 2107:2000 - Acoustics –Recommended design sound levels and reverberation times for building interiors (the relevant satisfactory recommended interior design sound level); and***
  - **ii** ***A noise management plan, prepared by a suitably qualified person, is endorsed by the EPA***

As emboldened in the quotation above, the proposed development triggers Rule 23.2 by being identified as being located in a Commercial Zones, where residential dwellings will be noise affected.

2.2 ACT noise zone limits

The Environment Protection Regulation (ACT) 2005 (EPR) prescribes requirements designed to control or govern conduct regarding how the environment is impacted from activities and developments. Part 2.2 from Schedule 2 of the EPR define noise zones and their associated noise standards, as summarised in Table 2.2. The noise standards applicable to this project are highlighted for clarity.

Once a noise zone has been identified according to the ACT Territory Plan, the Noise Standard for that zone is applicable as an upper limit. Section 8.2 of the *Noise Environmental Protection Policy*, ACT (NEPP) states that the limits shown in Table 2.2 are to be measured as $L_{A10\,T}$, where 'T' is not less than 5 minutes or greater than 15 minutes. In assessing the noise impact at sensitive receivers, the EPR describes the compliance point as any point as near as practicable to the property boundary.

Table 2.2 ACT *Environment Protection Regulation* (2005) Schedule 2 Noise Zones and Standards

Noise zone	ACT land	Noise Standard (dBA)	
		Day	Night
Zone A	Land in an industrial zone	65 (1)	55 (2)
Zone B1	Land in the city centre or a town centre	60 (3)	50 (4)
Zone B2	Land in the Central National Area (City Hill Precinct)	60 (1)	50 (2)
Zone C1	Land in a group centre	55 (5)	45 (6)
Zone C2	Land in a corridor site or an office site. Land in the Central National Area (Parliamentary Zone and Other Areas)	55 (1)	45 (2)
Zone D	Land (other than land in the city centre, town centres and group centres) in a commercial CZ4 zone	50 (1)	35 (2)
Zone E	Land (other than land in the city centre, town centres and group centres) in – — A restricted access recreation zone — A broadacre zone	50 (1)	40 (2)
Zone F	Land (other than land in the city centre, town centres and group centres) in – — A commercial CZ5 zone — A TSZ2 services zone — A community facility zone — A leisure and accommodation zone	Same as noise standard for the adjoining noise zone with the loudest noise standard for the time period	
Zone G	All other land, other than land in the Central National Area (Fairbairn)	45 (1)	35 (2)

(1) Noise standard Monday to Friday: 7am - 10pm; Sunday and public holidays: 8am - 10pm

(2) Noise standard Monday to Friday: 10pm – 7am; Sunday and public holidays: 10pm – 8am

(3) Noise standard Monday to Thursday: 7am - 10pm; Friday and Saturday: 7am - 12am; Sunday and public holidays: 8am - 10pm

(4) Noise standard Monday to Thursday: 10pm – 7am; Friday and Saturday: 12am - 7am; Sunday and public holidays: 10pm – 8am

(5) Noise standard Monday to Thursday: 7am - 10pm; Friday and Saturday: 7am – 11pm; Sunday and public holidays: 8am - 10pm

(6) Noise standard Monday to Thursday: 10pm – 7am; Friday and Saturday: 11pm - 7am; Sunday and public holidays: 10pm – 8am

2.3 Project-specific criteria (noise emission)

This section provides an overview of the noise limits applicable to the proposed development. Table 2.3 summarises the project-specific noise assessment criteria.

According to Section 24(2) (a) of the Regulation, noise transfer between units within the same unit plan is required to be limited to 5 dB below the noise limit applicable for the site. Section 7.2 of the Policy describes the intent of this part of the Regulation is to provide equity to residents not in “free-standing houses” who do not have the ability to close doors or windows to reduce noise intrusion to their part of the building.

Table 2.3 Project specific noise emission assessment criteria (L_{A10})

Assessment scenario	Compliance location	Noise standard (dB)	
		Mon – Sat **7 am – 10 pm** **Sun and Pub. Hols** **8 am – 10 pm**	**Mon – Sat** **10 pm – 7 am** **Sun and Pub. Hols** **10 pm – 8 am**
Noise emission from the proposed non-residential components to the residential units internal to the development block	Within residential units internal to the proposed development	**Regulation:** 55 $L_{A10,5\text{-}15min}$ (external) **CZTS** 30 $L_{Aeq,T}$ (sleeping area) (1) 35 $L_{Aeq,T}$ (living area) (1)	**Regulation:** 45 $L_{A10,5\text{-}15min}$ (external) **CZTS** 30 $L_{Aeq,T}$ (sleeping area) (1) 35 $L_{Aeq,T}$ (living area) (1)
Compliance points (north, east, south and west)			
Noise emission from the proposed development to subject block boundary	— Blocks 2 Section 5 City — Blocks 7 Section 5 City	**Regulation:** 60 (external)	**Regulation:** 50 (external)

(1) Internal noise based on the recommended 'satisfactory' level (L_{Aeq}) given in AS2107:2000 as required by the CZTS.

2.4 Project-specific criteria (noise intrusion)

This section discusses the assessment of potential noise impact associated with intrusion to the residential units in the proposed development, in accordance with the requirements of the CZTS.

2.4.1 AS/NZS 2107:2000

The recommended (satisfactory) and maximum internal noise levels for residential developments were sourced from AS/NZS 2107:2000 *Acoustics – Recommended design sound levels and reverberation times for building interiors* (AS 2107). It is noted that the ACT EPA Noise Management Plan guidelines references the revised version of AS 2107 (AS 2107:2016). However, AS 2107:2000 has been used to assess potential noise impact to residential units, as per strict reading of the CZTS.

AS 2107 uses the L_{Aeq} descriptor, which describes a steady state sound level of equivalent energy to the time varying noise level over a given period. The time period used for assessment purposes should be representative of the time period that the building will be in use.

The sound transmission loss performance of the façade of the development shall be designed to achieve the recommended internal noise levels shown in Table 2.4.

Table 2.4 AS 2107 recommended design sound levels (dB L_{Aeq})

Occupancy types	AS2107 design sound level, dBA		Proposed project assessment level
	Satisfactory	Maximum	
Sleeping areas (1)	30	40	≤30 dB $L_{Aeq,\ 9\text{-}h}$ (2) ≤35 dB $L_{Aeq,\ 15\text{-}h}$
Living areas (1)	35	45	≤40 dB $L_{Aeq,\ 15\text{-}h}$

(1) Based on AS2107 recommended design targets for the category of Houses and apartments near major road.

(2) Satisfactory recommended interior design sound level to present a more stringent design goal.

2.4.2 *Noise intrusion from adjacent land uses*

As discussed in Section 1.3 the proposed development is located within and adjacent to land uses zoned as Commercial Core CZ1 and Central National Area (City Hill Precinct). It is assumed that existing and potential future developments on adjoining land will comply with their requirements under the EPR to meet the relevant zone noise limits at the boundary of this development, as this is enforceable by the ACT EPA under the EPR.

The noise from adjacent land uses impacting the proposed development is therefore assumed to be maximum the noise levels given in Table 2.5.

Table 2.5 Zone noise standards for adjacent blocks

Land use zone	**Noise zone**	**Zone noise limit, dB $L_{A10,5\text{-}15min}$**	
		Mon – Sat **7 am – 10 pm** **Sun and Pub. Hols** **8 am – 10 pm**	**Mon – Sat** **10 pm – 7 am** **Sun and Pub. Hols** **10 pm – 8 am**
CZ1: Commercial Core	B1	60	50
Land designated as being in the Central National Area (City Hill Precinct)	B2	60	50

The zone noise limit can then be assumed to be the maximum external noise level that would be incident on the development site for the purposes of assessing noise from sources other than road traffic.

3 Noise intrusion assessment

Based on the assumed levels determine by the relevant zone noise limits, the noise attenuation requirements of the residential facades to limit noise intrusion are summarised in Table 3.1.

Table 3.1 Required noise reduction facades of the proposed development

Period	External intrusive noise level	AS2107 internal noise criteria (see Table 2.4)	Required noise reduction
Noise from adjacent land uses (1)			
Day time (7 am to 10 pm)	60 dBA	≤40 dBA (living room) ≤35 dBA (bedroom)	≥20 dB ≥25 dB
Night time (10pm to 7 am)	50 dBA	≤30 dBA (bedroom)	≥20 dB

(1) Assuming adjacent land uses meet the noise zone limits at the boundary of the project site.

The required noise reduction provided by the façade is determined to be ≥25 dBA.

To assess the necessary façade construction to achieve the required noise reduction for the proposed residential units, a noise ingress assessment has been carried out. Due to the proposed development being located in and adjacent to commercial zones, the assessment must allow for the possibility of noisy uses (e.g. restaurants and drink establishments) around the entirety of the residential development's external façade, where the potential use of amplified music in these surrounding locations is likely to be acoustically most onerous.

The noise assessment has therefore been made against the external noise levels of 60 dBA and 50 dBA from adjacent land uses, as limited by the EPR, outside the façade for all residential apartments in the proposed development. The amplified music noise levels presented in Table 3.2 was used to form the basis of the noise ingress assessment.

These amplified music noise levels are based on the sound spectrum characteristic of previously measured amplified music and adjusted to meet the EPR external noise level limits of 60 dBA L_{10} and 50 dBA L_{10}.

Table 3.2 Amplified music noise spectrum used for noise ingress assessment

Amplified music, assumed external sound pressure levels	Octave band centre frequency, Hz							dBA
	63	125	250	500	1k	2k	4k	
Daytime external noise levels	62	63	56	58	52	54	46	**60**
Night-time external noise levels	52	53	46	48	42	44	36	**50**

3.1 Recommendations

Table 3.3 provides the recommended façade sound insulation performances and typical glazing systems normally capable of meeting these performances. All solid wall components are recommended to be a well-pointed masonry construction. If non-masonry construction is intended, this should be further reviewed during detailed design stage.

Table 3.3 Recommended glazed façade constructions to address noise intrusion requirements of the CZTS

Proposed configuration	Room types	Recommended sound insulation performance	Typical glazing normally capable of this performance
Facades of Building A and Building B	Bedrooms	≥ 32 $R_w + C_{tr}$	— ≥ 10.38mm laminated glazing; or — A double-glazed system with the configuration of ≥ 6mm glass | ≥ 12mm air gap | ≥ 6.38 mm laminated glass The façade should be capable of being fully closed and incorporate acoustically effective seals. Glazing sound insulation must not be compromised by the performance of frames or construction junction detailing.
	Living rooms	≥ 30 $R_w + C_{tr}$	— ≥ 6.38mm laminated glazing; or — A double-glazed system with the configuration of ≥ 6mm glass | ≥ 12mm air gap | ≥ 6mm glass The façade should be capable of being fully closed and incorporate acoustically effective seals. Glazing sound insulation must not be compromised by the performance of frames or construction junction detailing.

Achieving the indoor noise criteria described in Table 2.4 is facilitated by keeping external windows and doors closed. Meeting ventilation requirements through open windows is unlikely to be acoustically appropriate and may result in non-compliance. If fresh air intake is required for the apartments, it should be provided via an acoustically attenuated passive mechanical ventilation system that provides this same transmission loss performance. This system may include features such as air-to-air heat exchangers or energy recovery ventilators, internally acoustically lined sheet metal ductwork of sufficient length, and in-duct acoustic attenuators. Prospective residents should be informed of the building's acoustic façade design and ventilation strategy.

It should be noted that the sound insulation requirements determined above represents the most onerous necessary façade construction. Sound insulation requirements in certain areas are likely to reduce dependent on the position of the façade relative to the noise sources and glazing sizes. For example, smaller window areas would be a strategy to reduce sound insulation requirements for glazing. This will be further assessed during detailed design stage to optimize façade constructions.

4 Noise emission assessment

This section discusses the assessment conducted for the noise impact associated with the potentially noisy uses that are proposed on the Crown lease for the development, in accordance with the requirements of the relevant ACT planning guidelines.

4.1 Potentially noise generating uses

4.1.1 Patron noise

Note 1 to Part 3 of the Regulation states that "*The Environment Protection Act 1997 does not apply to noise made by {...} a person using his or her body*". Therefore, noise generated by patrons within the proposed development does not require assessment here.

4.1.2 Amplified music in 'Potentially noisy' commercial uses

Some of the potentially noisy uses, as defined by the CZTS, form part of the list of permitted uses proposed to be included in the Crown Lease for the development blocks, as presented in Table 2.1. Based on our experience with the preparation of noise assessments in the ACT and understanding of ACT City and Environment Directorate (CaED) and the ACT EPA's current view on developments with similar permitted uses, amplified music noise is typically considered to be the primary source of concern.

The ACT EPA has provided guidance on typical internal reverberant sound pressure levels associated with specific noisy uses that should be used when preparing a Noise Management Plan and they are summarised in Table 4.1.

Table 4.1 Potential noise uses, assumed internal sound pressure levels

Noisy uses listed in the CZTS that are permitted for this development	**EPA assumed internal sound pressure levels, dB $L_{A10\ (5\text{-}15min)}$**
Restaurant	85

4.2 Possible noise mitigation strategies

To manage possible music noise impact on the surrounding receivers, mitigation in the form of building construction and amplified music limiting system can be considered.

4.2.1 Option 1: Mitigation in the form of building construction

For assessment and planning purposes, the internal reverberant amplified music sound pressure level is assumed to not exceed the levels set out in Table 4.2, which include a relatively high low-frequency (bass) component to provide a worst-case assessment.

Table 4.2 Assumed amplified music sound pressure level, dB $L_{A10\ (5\text{-}15\ min)}$

Amplified music, assumed internal reverberant sound pressure levels	**Octave band centre frequency, Hz**							**dBA**
	63	**125**	**250**	**500**	**1k**	**2k**	**4k**	
Restaurant	87	88	81	83	77	79	71	**85**

Using these assumed internal levels for restaurant use as the basis of the noise emission assessment, calculations were performed to determine the corresponding indicative construction requirements to meet the external noise emission criteria, as indicated in Section 2.3.

Examples of typical construction requirements that are expected to be required are provided in Table 4.3 and illustrated in Figure 4.1 to Figure 4.3.

It is predicted that daytime and night-time noise standards can be met at the assessed compliance locations with these construction implementations.

Table 4.3 Typical constructions required to meet noise standards for restaurant use (85 dBA)

Item	Receiver	Minimum R_w rating and an example of suitable system
Façade glazing	Subject block boundary — Blocks 2 Section 5 City — Blocks 7 Section 5 City	≥ 48 R_w e.g., a double-glazed system with the configuration of ≥6mm glazing | ≥ 200mm air gap | ≥4mm glazing with minimal doors or other openings, all fully sealed when closed. The ability to operate with all doors and windows closed when the highest levels of amplified music are employed. High degree of attention to surrounding flanking detailing is required. Access to tenancy shall be a 'Sound lock' door lobby.
Separating floor construction – Building A and Building B	Residential units internal to the proposed development (Level 1)	≥ 65 R_w — ≥150mm concrete slab — ≥200mm cavity that includes ≥75mm fibrous insulation (≥11kg/m^3) — ≥1x13mm layer of standard plasterboard (≥8.4kg/m^2 each layer) suspended on a steel grid. Shall there be any requirements to penetrate this sound insulating ceiling, these should be reviewed for sound insulation impact prior to implementation Specific and detailed sound flanking design (in the detailed design stage) for all adjacent and connecting elements.

Based on the findings above, the following considerations are recommended:

- As the sound insulation requirements are very high for the noisiest uses, there will be a significant onus on construction detailing and the control of flanking sound. This means that the acoustic design of these elements will need to be undertaken as overall building design progresses. At this point, it is necessary to include sufficient space and structural allowances such that this coordination can be achieved in later stages.
- The actual construction requirements are to be determined during detailed design stage and/or tenancy fitout stage.
- Upon practical completion of the development and as a condition of the Certificate of Occupancy, in-situ sound insulation tests should be undertaken to ensure the minimum sound insulation performances requirements of the separating constructions between the commercial tenancies and residential receivers are met.

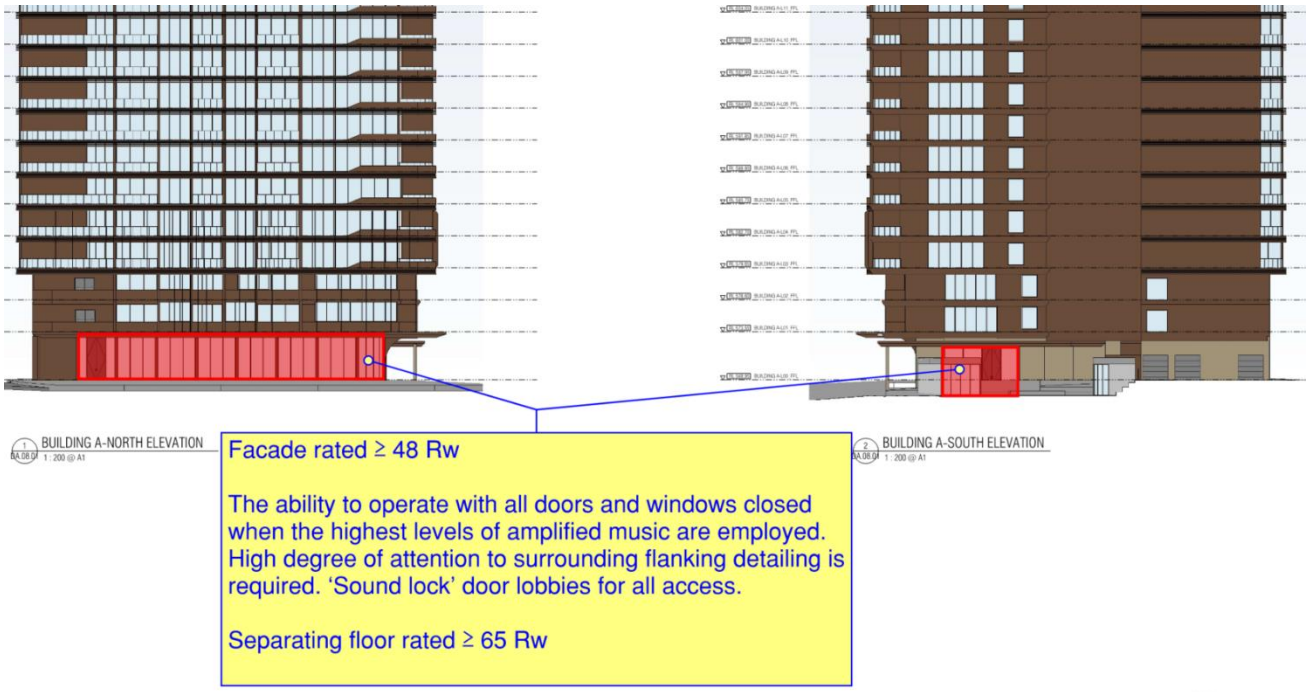


Figure 4.1 Building A façade construction requirements to mitigate amplified music (85 dBA $L_{10(5\text{-}15min)}$) – north and south façade

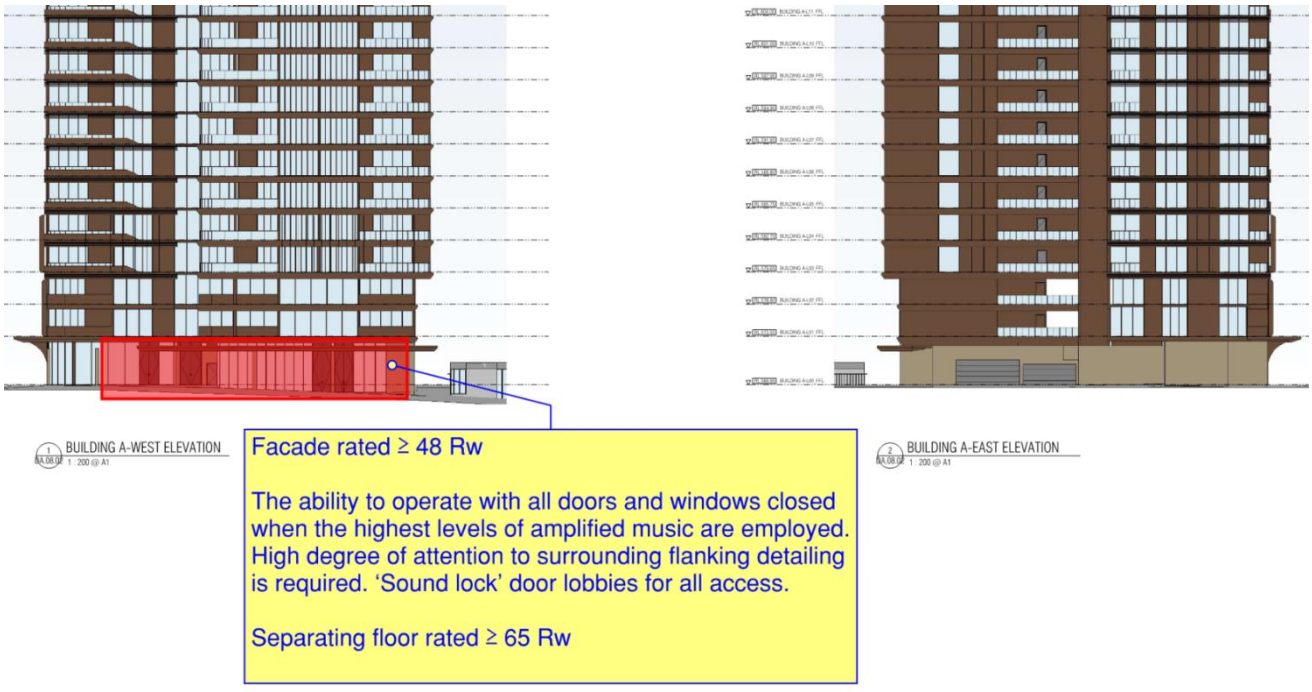


Figure 4.2 Building A façade construction requirements to mitigate amplified music (85 dBA $L_{10(5\text{-}15min)}$) – west façade

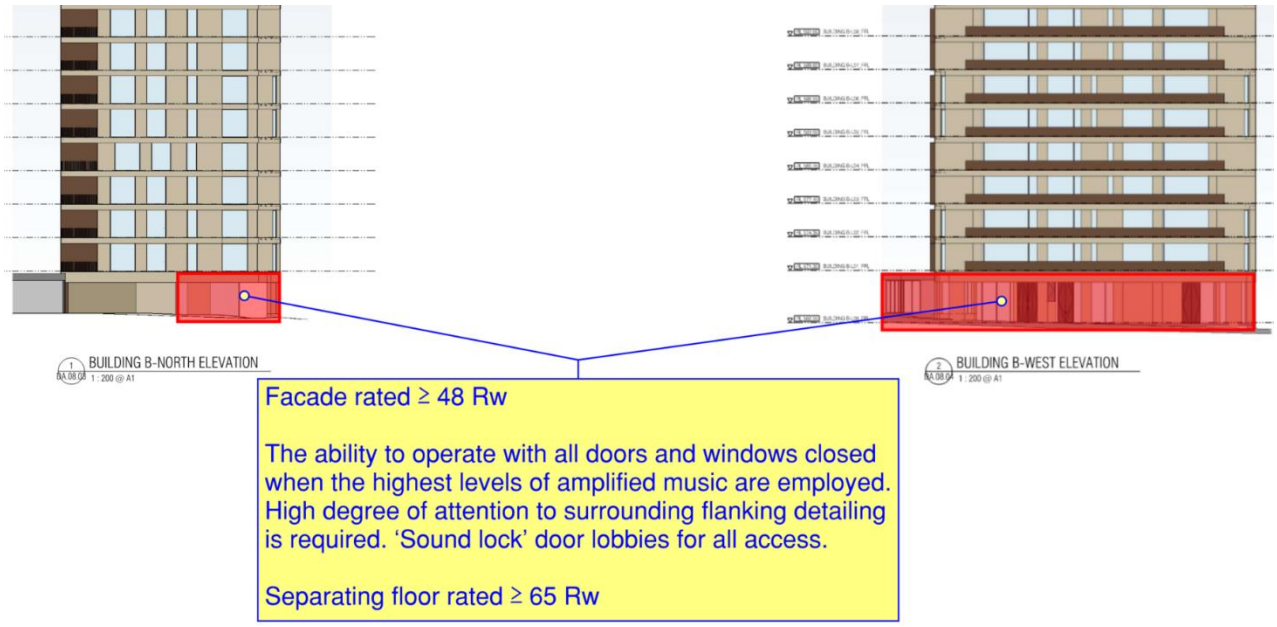


Figure 4.3 Building B façade construction requirements to mitigate amplified music (85 dBA $L_{10(5\text{-}15min)}$)) – north and west façade

4.2.2 *Option 2: Mitigation in the form of an amplified music limiting system*

Based on the current design, the internal noise levels inside the commercial tenancies need to be controlled to not exceed 82 dB $L_{A10\ (5\text{-}15min)}$ during the daytime and 72 dB $L_{A10\ (5\text{-}15min)}$ during the night-time, at 1 m internally from the façade of the buildings. Emitted sound pressure levels can be managed by use of an 'automatic volume controller'-type electronic sound limiter system.

At installation the sound limiter system will need to be calibrated and commissioned by the supplying contractor. The sound pressure level at the limiter microphone should be set (potentially by experiment using simultaneous measurements outside the tenancy) such that the noise standards are met.

The sound limiting device will need to be made inaccessible to site staff (by e.g., being stored in a locked cabinet, with access limited to the tenancy manager).

Subject to consultation with ACT CaED and EPA, this NMP may need to be included as a Miscellaneous Encumbrance in the Crown Lease for the development in order to meet the ACT EPA's requirements for institutional controls that are enforceable. This is an approach that has been used for other mixed-use development projects in ACT.

4.3 Waste collection

Noise emitted during the collection of waste from residential premises is not deemed to cause environmental harm according to the EPR, provided that the activities are in accordance with the *Commercial Waste Industry Code of Practice* (ACT), which is accredited under Table 2.3 Item 18 of the EPR, and under the *Environment Protection Act 1997* (ACT; the Act).

The code of practice allows for waste collection to occur between 2 am and 10 pm in Noise Zone b, also requiring that:

- *Any contractor who receives a complaint relating to the noise from its operations shall attempt to resolve the complaint to the complainant's satisfaction in accordance with the following procedures.*
- *Where possible, the business shall reschedule the collection or take other appropriate action to resolve the problem, taking into account:*

- *the impact any rescheduling may have on other persons. In any rescheduling, priority should be given to minimising noise impacts on residential premises;*
- *access problems which may prevent collection at other times; and*
- *any other measures, such as relocating garbage hoppers, which may reduce noise impacts.*

Noise associated with waste collection activities is not considered to be significant, as it occurs at a general maximum frequency of once a week and the duration of impact to an individual resident is typically short. Therefore, it is regarded that no specific acoustic treatment is required for the new residences to mitigate noise from waste collection.

4.4 Mechanical services plant

Noise from the proposed development will need to meet the relevant zone noise limits given by the EPR. In this case, the noise limits are the same as those summarised in Table 2.3. These criteria apply to noise from fixed sources associated with the building (i.e. local external air-conditioning units, major plant items or the like).

Detailed design information is not currently available for review at this stage. The zone noise limits set out in Table 2.2 would be met through judicious selection and siting (e.g. using fences or walls as localised barriers, and selection of equipment with low operating noise levels). In this case, it is recommended that the final air-conditioning selections and any external mechanical services design (such as mechanical plant associated with the proposed supermarket and residential swimming pool) be reviewed by an acoustic consultant at detailed design stage, to ensure that the applicable zone noise limits will be met.

5 Conclusion

WSP has prepared a Noise Management Plan (NMP) for inclusion in the Development Application (DA) for the proposed mixed-use development at 17-21 University Avenue, Canberra ACT.

The assessment has been prepared in reference to the planning requirements of the ACT *Planning (Commercial Zones) Technical Specification*, *Environment Protection Regulation* as well as noise assessment guidelines provided by the ACT Environment Protection Authority.

With regards to noise intrusion into the residential component due adjacent land use, the required façade construction requirements have been assessed and provided in Section 3.1

With regards to potential noise emission due to possible noisy uses within the proposed development, “restaurant” use have been assessed. It was found that ACT noise planning requirements were predicted to be generally achievable, provided that noise mitigation in the form of building construction and noise limiting system is implemented. Examples of construction elements capable of achieving the planning requirements are provided in Section 4.2.1 and the required minimum noise levels of the noise limiting system in Section 4.2.2.

Further assessment is recommended to be undertaken during the detailed design stages to finalise the acoustic design and detailing to be implemented.