

Technical Memorandum

Project:	East and Cowper Street Granville Residential Development	Date:	Wednesday, 9 November 2016
To:	Robert Sargis	Project number:	S15235
Email:	robert@develotek.com.au	Memo reference:	S15235ME2
Copy to:		From:	Caspar Jeffrey
Subject:	In Principle Gym Noise and Vibration Mitigation Measures		

Introduction

Resonate Acoustics has been engaged by Develotek to provide some in principle noise and vibration mitigation advice in relation to the control of potential noise and vibration transfer from the proposed gym within East and Cowper Streets development to adjacent commercial and / or residential tenancies.

The types of control measures outlined within this technical memo pertain to treatments that may or may not be applicable at the detailed design stage of the gym fit-out and are aimed at highlighting the requirement to assess the potential impacts in detail during the detailed design (review of potential impacts and prediction) and pre fit-out phases (via testing).

Proposal

It is currently proposed to include provision of a gym within the East and Cowper Street mixed-use development and a review of potential noise and vibration impacts is warranted, given the proximity of the proposed gym location to residential receivers on other floors within the complex.

A list of potential noise and vibration considerations is provided below:

- Potential for airborne noise transfer from occupancy related activity (gym occupants, music noise etc)
- Potential for structure-borne noise transfer from activities that produce impacts within the structure of the building (dropping of weights, footfall from aerobic exercises, use of machinery etc)
- Potential for tactile structure-borne vibration due to the dropping of weights.

Mitigation Measures

A list of potential noise and vibration mitigation measures that should be considered as part of the detailed design and pre fit-out phases of the project relating to airborne noise, structure-borne noise and vibration is provided below:

Controlling for airborne noise:

- Limit music noise in order to comply with appropriate criteria within adjacent residential and commercial tenancies. This could be achieved by appropriately designed acoustically rated partitions, floors and other separating elements.
- Limiting hours of noisier activities to more suitable times of day. An example would be scheduling classes or group activities within the daytime hours.
- Installation of acoustically absorptive surfaces in occupied areas to reduce noise build-up. Examples include carpeted floors, acoustically rated ceiling tiles and / or perforated ceiling systems, proprietary acoustic wall panelling or similar products.

Controlling for structure-borne noise:

- The use of a combination of elastomeric and sprung floor systems in areas that incorporate impact-related activities with examples such as:
 - Treadmills
 - Dumbbells
 - Barbells
 - Deadlift exercises
 - Etc
- Floor systems are available from equipment suppliers such as Embleton, Regupol and Mason.
- Incorporation of coil spring buffers in stack weight machines to reduce the severity of an impact related event.
- Where apparatus requires hard fixing to the underlying structure, appropriate measures should be incorporated so that impact related activities from use of the apparatus do not transfer into the building structure. Examples include rubber isolated connection points, machinery mounts (where appropriate) and / or rubber buffers within the apparatus where metal contact is expected.
- Consideration for location of impact-related activities within the premises with respect to nearby common structural elements between the gym and nearby potential residential receivers (eg placement of heavy weights area away from residential tenancies etc).

Controlling for vibration:

- Controls for vibration generally follow similar requirements to that of controlling for structure-borne noise.
- Consideration for thickness and composition of the floor slab within the gym tenancy as well as adjoining residential tenancies. Additional structural mass may reduce potential vibration transfer and improve the efficiency of an isolated floor mounted on the floor slab.

Conclusion

This memorandum provides an overview of the potential noise and vibration impacts that may result from the operation of a gym within a mixed-use development and highlights the methods and options for controlling these impacts. A detailed assessment should be conducted during the detailed design and pre-fit out phases in order to select mitigation measures and confirm their appropriateness once details of the proposed gym are known

Please let me know if you have any questions on the above.