ACOUSTICS AND AIR

8 CHIFLEY SQUARE SYDNEY

SYDNEY METRO EIS IMPACT REVIEW

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PREPARED FOR

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EXECTUTIVE SUMMARY

A review of the Sydney Metro EIS with respect to noise and vibration impact on the Multi level Premium grade Commercial property and associated Tenancies indicates that there will be a significant impact associated with airborne and ground borne noise on operations. The following issues have been identified:

- The EIS fails to identify the specific uses of the Building occupants that occupy the premises at 8 Chifley Square.
- Construction Noise from early works (enabling and earthworks) will significantly impact on the outdoor café and Sushi Restaurant which faces the construction site. These receivers have not been identified or assessed. It is likely that these operations will be seriously affected for several months.
- Airborne Noise from the early works will exceed external commercial receivers noise management levels by between 10 and 20 dBA where internal noise levels of 60 to 70 dBA can be expected.
- Ground borne noise is predicted to be up to 60 dBA within occupied tenancies when rock breaking occurs. This noise levels will be clearly audible within office areas and will be of a level that will compromise on effective communication and confidentiality in some of these areas.
- The EIS does not provide the commitments that noise from construction can be adequately managed to all the receivers at 8 Chifley Square. Consideration of other construction techniques and respite periods should be considered.

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1 INTRODUCTION

Wilkinson Murray has been engaged by Mirvac Real Estate Pty Ltd to conduct a technical review of the Sydney Metro Chatswood to Sydenham Environmental Impact Statement dated 3 May 2016 on 8 Chifley Place, Sydney.

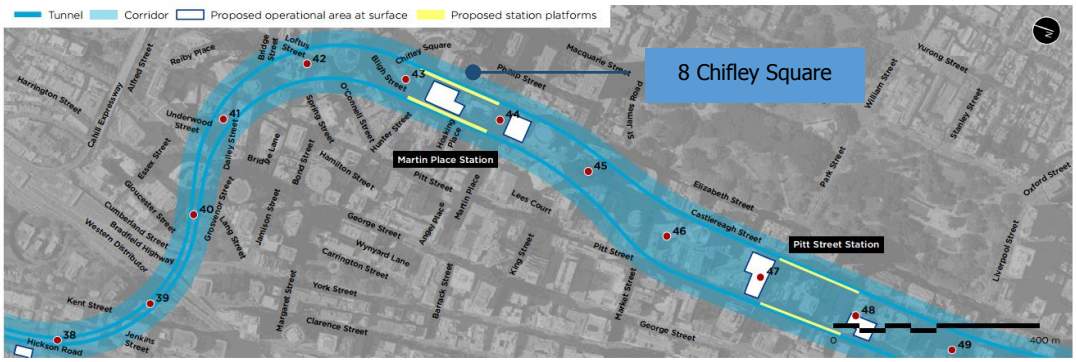
The purpose of the review is to determine the adequacy of the assessment with respect to construction and vibration impacts on the building, its operations and associated internal and external tenancies. The review has relied on information presented in the main report of the EIS and the Technical Paper 2: Noise and Vibration prepared by SLR Consulting.

It is noted that operational impacts comply with appropriate noise criteria. Therefore this issue is not dealt with further in this review.

2 DESCRIPTION OF 8 CHIFLEY SQUARE WITH RESPECT TO THE PROPOSED METRO

Figure 2-1, extracted from the EIS, shows the alignment of the proposed Sydney Metro and associated infrastructure which is near 8 Chifley Place.

Figure 2-1 Metro Alignment and Proposed Martin Place Station

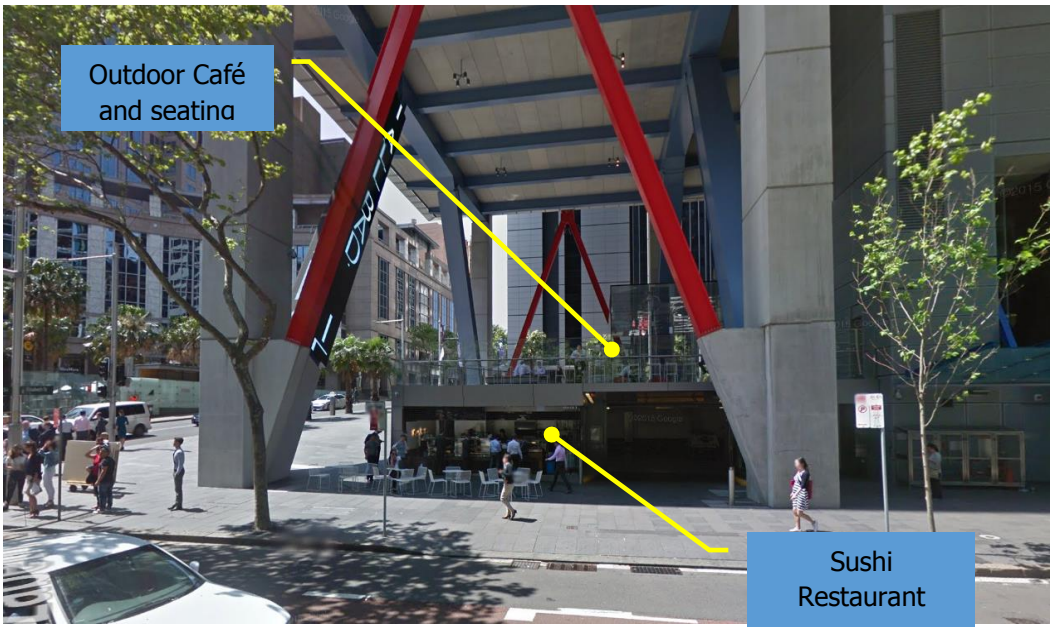


8 Chifley Square is a recently completed premium grade commercial building in the legal / financial precinct of Sydney, which consists of 32, levels that include:

- **2 Levels of basement** which includes a Sushi Restaurant on Level B1 (facing Elizabeth Street Level) which operates from 9 am to 3 pm.
- **Ground Level** which includes an internal entrance Foyer, an outdoor café which operates between 7 am and 4 pm and outdoor seating.

Figure 2-1 shows these areas.

Figure 2-1 8 Chifley Square looking from Proposed Northern Access Site



- **Commercial Tenancies** from Level 1 to Level 30.

  In the case of these tenancies it is noted the tenants consist of Legal and Financial companies that operate beyond the "normal" day periods. These include:

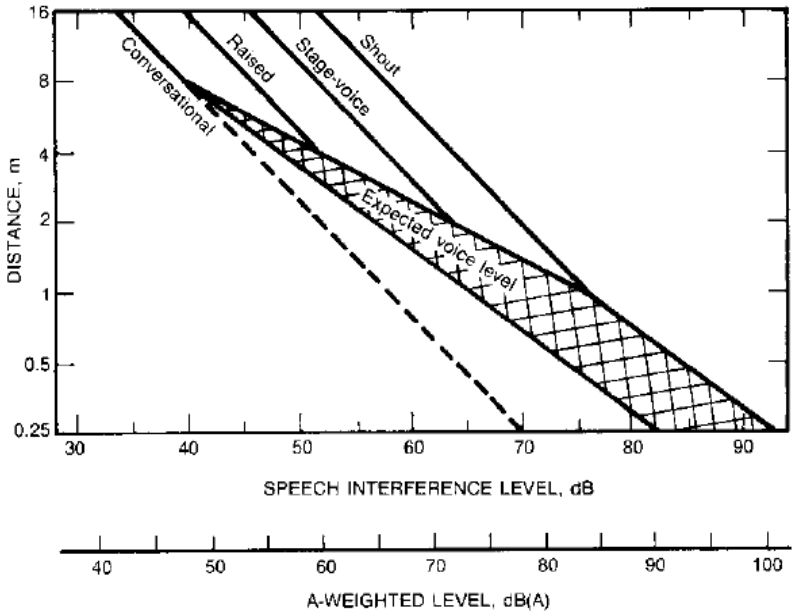
  - ❖ Corrs Chambers Westgarth Lawyers which have standard operational hours of 7 am to 7 pm with occupants regularly in the office beyond these hours.
  - ❖ QBE Insurance which as standard operational hours of 7:30 am to 7 pm with occupants regularly in the office beyond these hours.
  - ❖ Quantium – Data Analytics – the occupants of this tenancy deal with overseas and as such can be in the office outside normal office hours.

It is noted that the EIS classifies all of the building as general commercial receivers and fails to identify the above uses and therefore recognise the acoustic sensitivity and hours of operation of occupants these areas that occupy these tenancies.

3 EFFECTIVE COMMUNCIATION AND NOISE MANAGEMENT LEVELS

Apart for annoyance, construction noise can reduce effective communication. Australian Standard AS 2822 – 1985 Acoustics – Methods of Assessing and Predicting Speech Privacy and Speech Intelligibility provides guidance on the relationship between distance, speech interference and required speech effort for effectively communication.

The figure below, from the standard, shows the relationship where the higher the ambient noise level the closer persons need to be to effectively communicate. The hatched area in the figure shows the expected voice effort that is required.



NOTES:
1. The auxiliary abscissa scale, of A-weighted sound pressure level, is for the purpose of Clause 6.3.2.
2. The shaded area shows the range of expected voice levels due to the normal raising of a talker's voice in high ambient sound levels.
3. This figure has been adapted form ANSI S3.14-1977 (Ref. 2).

Fig. 1. TALKER-TO-LISTENER DISTANCES FOR JUST RELIABLE COMMUNICATION

For example, when ambient noise levels are around 60 dBA a person can effective communicate at distances up to 4 metres. However the level of voice effort would increase to a raised effort to achieve this outcome.

3.1 Construction Airborne Noise Objectives

Construction airborne noise objectives for the uses at commercial receivers have been stated as 70 dBA for the day and OOH hours which is consistent with the NSW EPA's Interim Construction Noise Guideline. However the EIS fails to recognise that the commercial building operates outside the normal daytime construction hours, as such the 70 dBA noise management level (NML) should be applied at this building for the evening and night periods.

The EIS fails to identify either the café or Sushi Restaurant which are located on the site. As

such a lower noise management level of 60 dBA is applicable at these receivers.

3.2 Ground borne Noise Management Levels

Ground borne noise management levels of 50 dBA have been applied to the project to identify potential impact at receivers. These objectives are considered reasonable for application at internal areas of the building.

In the case of outdoor areas it is noted that airborne noise will be higher and therefore assessment of this issue at these receivers is not considered appropriate.

3.3 Vibration Criteria

The vibration criteria of the EIS are considered appropriate.

4 CONTRUCTION NOISE IMPACTS

Noise impacts from construction will consist of airborne and regenerated noise from shaft and station excavation along with noise from tunnel excavation.

It would appear from the EIS that all works will be conducted on a 24 hours / 7 day a week basis and will include:

- Rock breakers,
- Blasting,
- Road headers, and;
- Tunnel Boring Machines

Of these sources it is the use of rock breakers and blasting of shafts at the northern station site that will have the greatest impact on 8 Chifley Square and its users. Whilst tunnel boring activities may be audible it is noted that the duration of this activity with be of a relatively short duration and therefore the impact from tunnel boring is likely to be acceptable.

The following conclusions can be drawn from the EIS.

4.1 Airborne Construction Noise

Airborne noise from construction works is predicted to be greater between 80 to 90 dBA at the ground level of the Building for up to 14 months during the enabling and earthworks stages of the project.

This will result in an exceedance of noise management levels at the café and Sushi Restaurant of between 20 and 30 dBA. In lower office areas of the building this translates to an internal noise level at the Northern and Western Facade of approximately 60 to 70 dBA. This will:

- Limit effective communication in the outdoor café area and Sushi Restaurant to 0.25 metres and require a shouting voice effort.
- Impact on communication on in the Foyer.
- Impact on communication in the lower levels of office areas on the western side of the building where effective communication would require raised voice efforts at distances of 1 metre.
- Impact on the internal acoustic amenity of office workers on lower levels.

It is noted that these impacts are predicted before an acoustic shed is installed over the site.

4.2 Ground borne Construction Noise and Vibration

Ground borne construction noise is presented in Appendix F of the report.

Noise from ground borne noise (due to rock breakers) is predicted to be up to 60 dBA in the office areas of the building. These noise levels will be quite noticeable and likely to affect a larger part of the building than airborne noise. In particular the impulsive nature of rock breakers makes this noise more disturbing than other more continuous sources.

Vibration from these activities is also likely to be perceptible at times at lower levels.

4.3 Construction Noise and Vibration Management Strategy.

It is noted that the significant exceedances detailed in the EIS are based on noise controls being implemented. In addition a project Construction Noise and Vibration Management Strategy is included in the EIS which proposes to address noise and vibration from construction. It is stated that General and Location Specific Construction Noise and Vibration Impact Statements (CNIS) are to be prepared for work components. However, apart from offering using blasting, there is little clarity on how the proponent is going to manage the identified impacts.

Much of the strategy is aimed at assessment, prediction, notification and monitoring which in themselves will do nothing to reduce noise and vibration impacts.

We would expect that the areas café and restaurant areas at 8 Chifley would be significantly affected. In the case of office area a lower impact can be expected, however the resultant noise levels have the potential to affect communication and normal operations of these areas for several months.

The EIS indicates that sensitive area would be the subject to a Location Specific Construction Noise and Vibration Impact Statements however given the magnitude of reported exceedances there is no confidence in the strategy that noise and vibration can be adequately managed in this area.

4.4 Discussion of Construction Noise and Vibration Impacts

Based on a review of the EIS and technical paper it is clear that there will be significant noise impacts associated with the construction of the Martin Place Station and Northern Access shaft to Martin Place Station on the subject premises. The impacts on the café and restaurant, around the northern shaft will be significant and will likely render these areas not fit for use during early stages of the project until the Acoustic shed is installed.

Based on these facts and findings it is considered that the EIS does not provide commitments that these noise impacts can be adequately managed. All that is presented is the option of blasting whilst other techniques have been dismissed due to program schedules.

Alternative excavation techniques, such as rock sawing should also be considered as a reasonable and feasible method of excavation. In addition periods of respite should also be considered.

5 CONCLUSION

A review of the Sydney Metro EIS with respect to noise and vibration impact on the 8 Chifley Place indicates that there will be significant impact on café and restaurant operations associated with construction airborne noise. The impact to these receivers has not been assessed in the EIS.

The EIS fails to identify specific uses in the commercial tower which require a higher sensitivity to intelligibility and confidentiality due to the nature and hours of the tenants operations. As a result the potential impacts to these areas have not been fully considered. Given these findings, it is likely that the commercial operation in the building will be adversely affected for several months at the beginning of the project.

It is considered that alternative construction techniques should be assessed under the category of "reasonable and feasible" consistent with the EPA's guidelines. Appropriate measures such as respite and rock saws should be considered.