

27 June 2016

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**Attention: Director, Transport Assessments**

To whom it may concern,

**Submission from NSW Masonic Club – Castlereagh Boutique Hotel to the Director of Transport Assessments, Department of Planning and Environment Regarding the Sydney Metro City & Southwest – Chatswood to Sydenham Environmental Impact Statement (SSI 15\_7400)**

We write further to the public exhibition of the Sydney Metro City & Southwest – Chatswood to Sydenham Environmental Impact Statement (SSI 15\_7400) prepared by Transport for NSW and the Sydney Metro Delivery Office.

The proposed works associated with the Pitt Street Station component of the project will have potential for an **unreasonable and unacceptable impact** on the NSW Masonic Club and Castlereagh Boutique Hotel, located at 169 Castlereagh Street, Sydney, if appropriate conditions and mitigation measures are not implemented.

The attached report specifically addresses the impacts associated with the works proposed within Pitt Street Station Precinct, and potential conditions and mitigation measures. Any approval should acknowledge the specific impacts associated with the works proposed within Pitt Street Station Precinct, incorporate all recommendations identified in the attached report.

Our client would welcome the opportunity to discuss this submission with the Department and/or Transport for NSW in further detail, having particular regard to the importance of ongoing consultation prior to the commencement of the project and throughout the demolition, earthworks and construction phase. Please do not hesitate to contact Paul Brasch, General Manager of the NSW Masonic Club and Castlereagh Boutique Hotel, on (02) 9284 1012 to discuss.

Yours sincerely,



David Hoy  
Regional Director



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Submission from NSW Masonic Club –  
Castlereagh Boutique Hotel to Director,  
Transport Assessments, Department of  
Planning and Environment Regarding the  
Sydney Metro City & Southwest -  
Chatswood to Sydenham Environmental  
Impact Statement  
(SSI 15\_7400)

It is acknowledged that the Sydney Metro Chatswood to  
Sydenham Environment Impact Statement was prepared by  
Transport for NSW and Sydney Metro Delivery Office

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# 1 Introduction

This report identifies the key impacts and implications associated with the proposed Sydney Metro project on the NSW Masonic Club, located at 169 Castlereagh Street, Sydney, incorporating the Castlereagh Boutique Hotel and other commercial and retail uses located on site.

This report specifically addresses the impacts associated with the works proposed within Pitt Street Station Precinct which adjoins 169 Castlereagh Street site. The following sections of the report provide:

- An overview of the NSW Masonic Club, focussing on the land use activities which may be affected by demolition, excavation and construction phases of the Sydney Metro;
- A brief description of the locational context of the proposed Pitt Street Station (and associated north construction site) having regard to the NSW Masonic Club and Castlereagh Boutique Hotel;
- Identification of key issues arising from the review of the Environmental Impact Statement (EIS), including recommended actions and/or conditions of development should the project be approved by the Minister of Planning.

It is noted that this report is supported by a number of independent assessments including:

- Acoustic and Vibration Assessment prepared by PKA Acoustic Consulting;
- Structure Assessment prepared by MPN Group;
- Traffic and Pedestrian Assessment prepared by The Transport Planning Partnership Pty Ltd;
- Geotechnical Peer Review prepared by Douglas and Partners; and
- Air Quality Report prepared by Northstar Air Quality Pty Ltd.

We would welcome the opportunity to discuss this submission with the Department and/or Transport for NSW in further detail, having particular regard to the importance of ongoing consultation prior to the commencement of the project and throughout the demolition, earthworks and construction phases.

Critically, this project must only proceed on the basis that the on-going viability of the operation of the Club and the Hotel is not compromised.



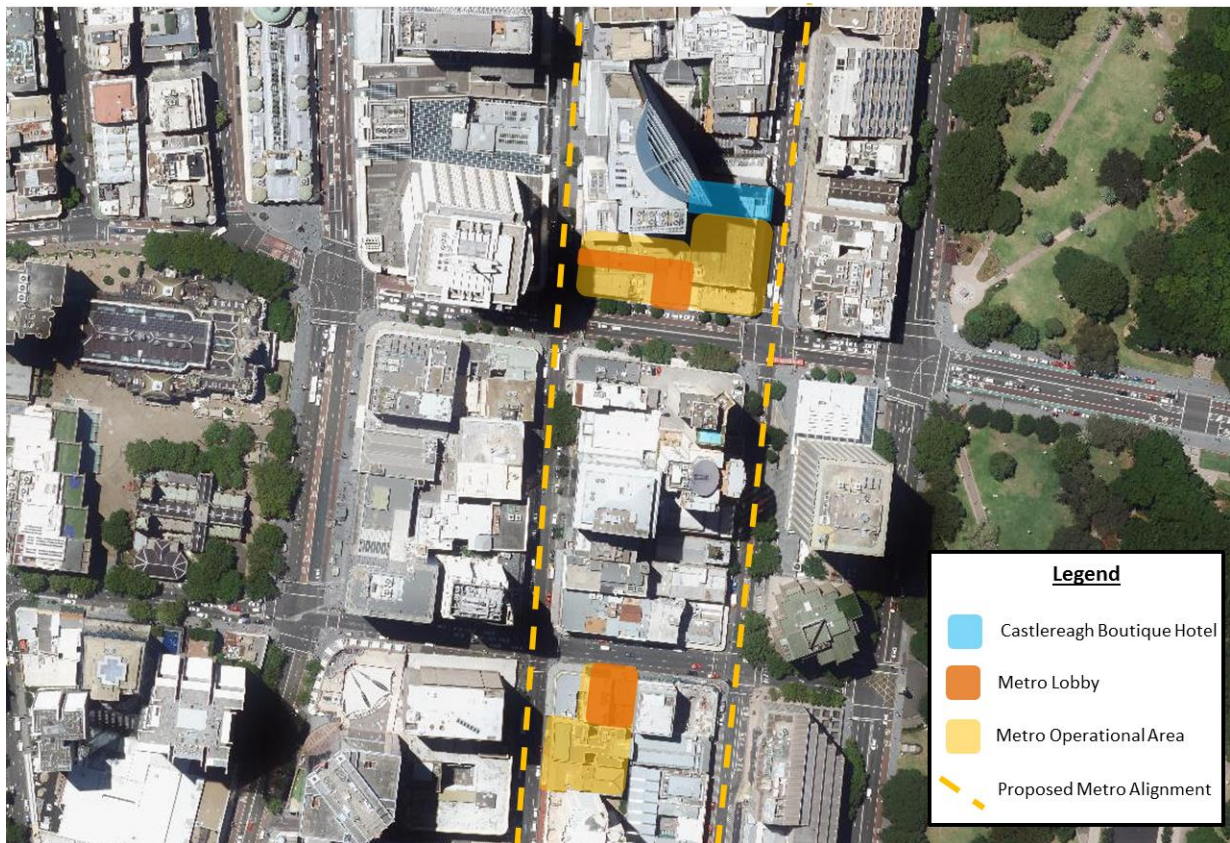
## 2 Description of NSW Masonic Club Site

### 2.1 CONTEXT

The NSW Masonic Club and Castlereagh Boutique Hotel building is a heritage listed building of extensive sandstone construction. It is understood that the Hotel recently experienced the effects of adjacent construction (ANZ Tower – Pitt Street) and, as a consequence, has a well-informed perspective of likely consequences of the proposed Metro project.

The NSW Masonic Club land holding is a rectangular shaped lot that fronts Castlereagh Street, between Park and Market Street, and is formally described as Lot 1 on DP68635 (refer to Figure 1). The building was developed in 1925, and is identified as a locally listed heritage item by the City of Sydney.

FIGURE 1 – SITE CONTEXT (SOURCE: NEAR MAP)



The land comprises four key uses, being:

- NSW Masonic Club;
- Castlereagh Boutique Hotel;
- Hotel and Club entrance, and two ground floor retail tenancies, currently occupied by a food and beverage outlet, and a jewellery retailer;
- Commercial office and education tenancies on Levels 3 and 5.

Across the site, the uses provide employment to more than 70 persons; facilitate short-term visitor accommodation as well as retail and food and beverage, and hosts general passive social events and gathering.

The Hotel includes 83 rooms/suits with associated dining and lounging facilities that are frequently used by guests and for functions. The Hotel operates a 24 hour reception, with food and beverage offerings trading daily between 7:00am to 9:00pm for on-site offerings, and 5:00am to 10:00pm for takeaway offerings.

Given the nature and myriad of uses on site, regular deliveries include:

- Garbage – once per day;
- Kitchen Deliveries – twice per day;
- Beverage Delivery – once per day;
- Contactors for maintenance/building works (e.g. air conditioning, plumbing, electrical) – up to 4 per day; and
- Other deliveries (chemicals for laundry etc.) – once per day.

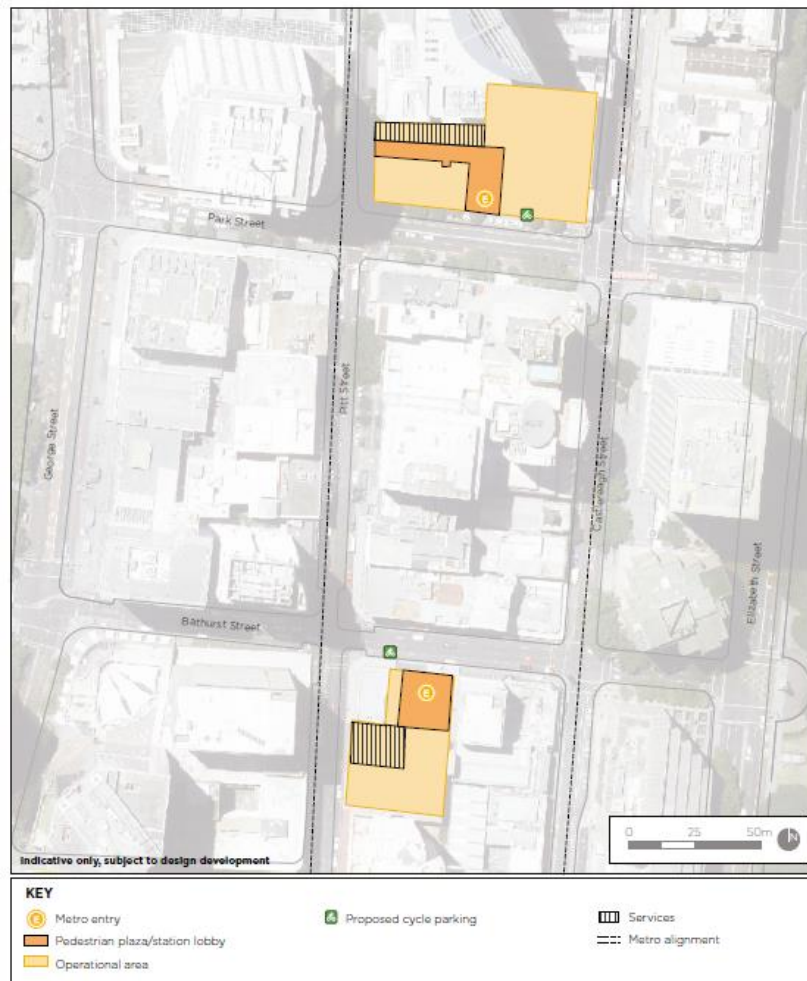
The Hotel generally has an occupancy rate of 80% with an average of 20,000 night stays per annum in the 2015/16 financial year.

## 2.2 RELATIONSHIP OF METRO PROJECT SITE TO 169 CASTLEREAGH STREET

The NSW Masonic Club and Castlereagh Boutique Hotel is located immediately to the north of 175 Castlereagh Street which forms part of the project site for both construction and on-going operations of the Sydney Metro, in particular the Pitt Street Station.

The Pitt Street Station would be located between Pitt and Castlereagh streets, north of the Park Street intersection and south of the Bathurst Street intersection (refer to Figure 2). The station at Pitt Street will service the residential catchment within the southern Sydney CBD, as well as benefit from a strategic location within the midtown retail precinct and mixed employment, residential, entertainment, cultural and events based activities in the southern Sydney CBD and Chinatown. This will include station portals requiring acquisition of surface properties including the site immediately to the south of the NSW Masonic Club and Castlereagh Boutique Hotel.

FIGURE 2 – PITT STREET STATION LOCATION AND INDICATIVE LAYOUT





## 3 Proposed Project Works

### 3.1 CONSTRUCTION PHASE

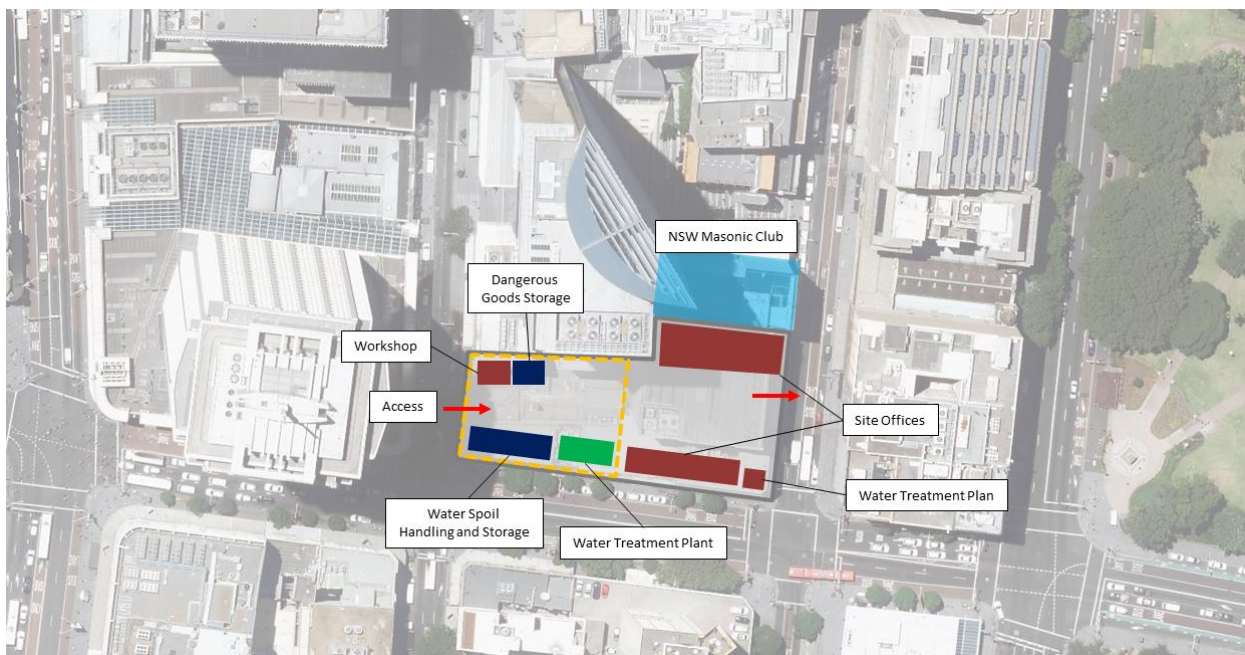
The level of information provided with the EIS to describe the construction process is very preliminary and schematic and inadequate to properly assess the implications of the project.

It is understood that the construction program would commence in 2017 and likely extend to 2024. Given the identified staging of construction, the NSW Masonic Club and Castlereagh Boutique Hotel would be most significantly impacted between 2018 to 2022, as tunnel construction, station demolition, excavation and structural works, station construction and fit out occurs. In other words some 4 years of construction impacts.

The EIS identifies that the Pitt Street north site would cover about 3,100sqm. The station could be constructed using a mined technique, with shafts excavated within the two sites to provide the future station entry and vertical transportation. It is estimated that approximately 160,000 cubic metres of spoil would be removed for the construction of the Pitt Street Station.

The proposed uses are illustrated in the following figure.

FIGURE 3 – RELATIONSHIP OF THE METRO PROJECT SITE TO THE CASTLEREAGH BOUTIQUE HOTEL



### 3.2 OPERATIONAL PHASE

The level of information provided with the EIS to describe the operation of the metro and the Pitt Street Station is very preliminary and schematic and inadequate to properly assess the implications of the project.

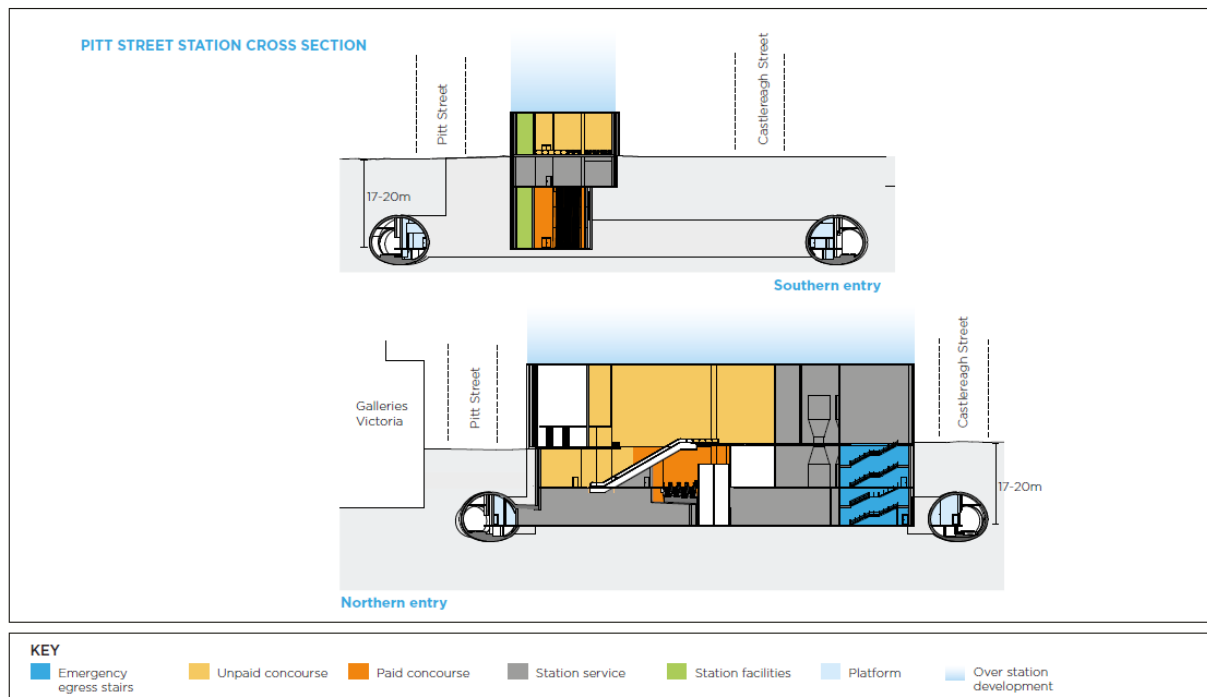
At the operational phase, it is understood that the following is proposed:

- A binocular cavern (mined) with two single side platforms;
- A northern entry via a pedestrian plaza opening to Pitt and Park Streets (with no design detail);
- A southern entry via a pedestrian plaza opening to Bathurst Street (with no design detail);

- A platform depth of approximately 17 metres at the northern end and 20 metres at the southern end;
- A platform length of approximately 170 metres and a width of 5 metres for each platform;
- New bike parking on Park and Bathurst Streets;
- Retention of existing bus stops close to Park and Castlereagh streets and existing taxi ranks.

A proposed cross section of the Pitt Street Stations is illustrated in Figure 4 below.

FIGURE 4 – PITT STREET STATION CROSS SECTION



It is understood that the proposed service frequency at the time of opening would be:

- Weekday morning and evening peaks – a six car train at least every four minutes (20 trains per hour)
- Weekday daytime off-peak – a six car train every five minutes through the Sydney CBD (12 trains per hour)
- Weekday early mornings, late at night and on weekends – a six car train every ten minutes with options to increase based on level of demand (six trains per hour).

## 4 Key Issues and Recommended Actions

The proximity of the proposed Pitt Street Metro Station to the NSW Masonic Club and Castlereagh Boutique Hotel is of particular concern for the owners of the building having specific regard to the following matters:

- Demolition, earthworks, construction and operation phases of the development, especially the duration of the proposed works and their adverse commercial impacts to the tenants and visitors to the NSW Masonic Club and guests of the Castlereagh Boutique Hotel.
- Built form and scale of the potential future above-station development at the northern entry to Pitt Street Station.

It is acknowledged that the future above-station development does not form part of the EIS and will be subject to further development consent. **It is recommended that a 6 metre setback is required of any above-ground development associated with Pitt Street Station (north).** Such a setback would enable the preservation and enhancement of the heritage listed building and facilitate increased ventilation and amenity. **The NSW Masonic Club and Castlereagh Boutique Hotel would seek to be involved in community consultation processes associated with the design and assessment of the Pitt Street Station (north) development.**

The following section of this submission provides detailed discussion regarding the particular area of concern with regard to the demolition, earthworks and construction phases of the Sydney Metro project.

### 4.1 ACOUSTIC AND VIBRATION

An Acoustic and Vibration Assessment was prepared by PKA Acoustic Consulting to identify the potential impacts of the Sydney Metro – Chatswood to Sydenham project to the NSW Masonic Club and Castlereagh Boutique Hotel and is included in **Appendix A**.

The assessment identified a number of key impacts associated with the proposed Metro, particularly pertaining to the Pitt Street Station and surrounding Metro tunnels. These include:

- Incorrect designation of subject site's use and consequential application of incorrect standards;
- Impact of the proposed construction hours, including out of hours works;
- Lack of evidence and management of consequential sound and vibration transmissions;
- Lack of evidence and management of consequential airborne noise sources; and
- Vibration impacts of Metro operation.

For the purposes of construction, the EIS identifies and classifies each of the uses surrounding the proposed construction works. **The subject site is inaccurately classified as commercial receiver, rather than a residential receiver (refer to Figure 5). As such the assessment of predicted noise and vibration impacts and exceedance of appropriate standards is inaccurate.** It is important that all future assessments and management plans identify the NSW Masonic Club and Castlereagh Boutique Hotel as a residential receiver, and therefore apply the relevant sensitive receiver requirements.

FIGURE 5 – PITT STREET STATION CONSTRUCTION SITE AND RECEIVER AREAS



The EIS suggests that out of hours works will be required for a number of significant development scenarios, including excavation of station shafts, excavation of station caverns, operation of tunnel boring machines and spoil removal and transportation from site. Given the proposed nature of works and uses to be located in the Pitt Street Station (north) site, out of hours works will be required and likely adversely impact acoustically and vibrationally the NSW Masonic Club. Further information is required to demonstrate the ability of the proposed works to comply with the *Interim Construction Noise Guidelines* that recommends maximum internal noise levels for a Hotel of 50dBA for bars and lounges in the daytime and evening, and 40dBA for sleeping areas at night-time.

The NSW Masonic Club has concerns regarding the proposed management of vibration noise sources. Further information is required to demonstrate that ability of the proposed works to not exceed the maximum noise management level of 40dBA on all Hotel floors, particularly those including components of accommodation and not exceed maximum perceived levels of noise and vibration.

The EIS identifies a number of trucks will be servicing the Pitt Street Station (north) site. Further information is required to demonstrate that appropriate noise protection is implemented to ensure compliance with the maximum noise management level of 40dBA for the hotel as a sensitive receiver.

The EIS identified that during construction, generators will be located adjoining the boundary of the NSW Masonic Club and Castlereagh Boutique Hotel. It is requested that the acoustic impacts to Club members and Hotel guests are appropriately addressed by detailed construction management plans. The Club and Hotel must be consulted during preparation and approval of more detailed design and management plans to ensure all off-site acoustic impacts as a result of the Sydney Metro are mitigated.

Given the structural interface of the hotel and proposed station, the Hotel use is not isolated and therefore is increasingly susceptible to ongoing vibration impacts associated with the operation of the station and



metro. **It is recommended that the proposed rail track bed is isolated from the station to ensure compliance with Australian Standard AS/NZS 2107.**

It is also noted that construction noise and vibration is expected to increase as a result of the cumulative noise and vibration from the Sydney Metro Chatswood to Sydenham over station development, the CBD and South East Light Rail and the 115-119 Bathurst Street redevelopment. **It is recommended that all NSW Masonic Club and Castlereagh Hotel southern and eastern windows are double glazed to assist in the mitigation of the projected acoustic impacts.**

## 4.2 STRUCTURAL ENGINEERING

A Structural Engineering Assessment was prepared by MPN Consulting Engineers to identify the potential impacts of construction and operation of the Sydney Metro – Chatswood to Sydenham project to the NSW Masonic Club and Castlereagh Boutique Hotel (Refer to **Appendix B**). The assessment identified that the proposed demolition, excavations and construction activities of the Pitt Street Station (North) will directly impact the Castlereagh Boutique Hotel.

The assessment identified that in accordance with the EIS guidelines, the subject site is a sensitive receiver. The site is sensitive both in terms of structural integrity and operation as a Hotel. Given the structural nature of the building, it is considered to be very susceptible to both movements and vibration transmission. Although the nominated vibration limit of 7.5mm/sec for a sensitive receiver is structurally appropriate to the NSW Masonic Club and Castlereagh Boutique Hotel, the high level of vibration will potentially significantly exceed the acceptable perceived vibration for guests.

MPN Consulting Engineers identified that the most significant structural impact to the NSW Masonic Club and Castlereagh Boutique Hotel will occur during the demolition phase of the proposed Sydney Metro works. Likely adverse impacts include

- Excessive vibration from continuous rock-hammering;
- Excessive vibration from isolated rock blasting;
- Foundation movements from stress-relief of large and deep excavations; and
- Underpinning and or shoring works to retain the NSW Masonic Club site's footings and basement floor-slab.

MPN identified the potential for concussive impact on the southern wall of the NSW Masonic Club and Castlereagh Boutique Hotel site is very high, and the demolisher's Work Plan must state particular attention to this aspect, of ensuring appropriate separation of the two buildings at all times. It is understood that this may require careful manual demolition at specific times of the demolition work.

The subject site is currently well maintained and in good condition. The exterior and interior condition of the building fabric should be comprehensively recorded in dilapidation survey reports to be undertaken at various stages of construction and operation of the metro. **It is recommended that dilapidation surveys be completed at the following stages:**

- **Prior to any works commencing (just before demolition works commence);**
- **After demolition, but prior to excavation and commencement**
- **Prior to commencement of the station construction; and completion of the works and opening of the Pitt Street Station (north).**

The dilapidation surveys should be complemented by concurrent noise and vibration assessment to measure the direct impact to the building. It is also **recommended that the use of deep vertical rock-saw cuts parallel to the site's southern boundary be done ahead of nearby rock-hammering so as to isolate rock-mass below the NSW Masonic Club and Castlereagh Boutique Hotel building from on-going vibration.**

Given the projected accumulation of acoustic, geotechnical and vibrational impacts, it is likely that structural impacts may impose irreversible damage to the heritage listed structure, detrimentally impacting the significant internal and external fabric of the building.

#### 4.3 TRAFFIC AND PEDESTRIAN MANAGEMENT

A Traffic and Pedestrian Assessment was prepared by The Transport Planning Partnership Pty Ltd to identify the potential impacts of construction and operation of the Sydney Metro – Chatswood to Sydenham project to the NSW Masonic Club and Castlereagh Boutique Hotel. This assessment is included within **Appendix C**.

The primary traffic and pedestrian management concerns for the Masonic Club include:

- There is only a single access to the Hotel and Club, available from the Castlereagh Street frontage. No alternative access/loading points exist nor can any be implemented;
- It is indicated in the EIS that road network closures may be required to facilitate construction. The Pitt Street station is identified for full or partial temporary closure at night time only. Given the range of commercial, retail and residential (tourist accommodation) uses located on a site, requiring 24/7 access via a single access fronting Castlereagh Street, it is essential the pedestrian and vehicular traffic on Castlereagh Street is not temporarily or permanently closed at any time;

Accordingly, **the following recommendations are made:**

- **The retention of existing loading facilities and taxi zones located on the site's street frontage should be incorporated into the detailed construction traffic management plan, as these facilities are fundamental to the continued operation of the Hotel;**
- **The Hotel should be consulted prior to any changes either temporary or permanent being made to the existing parking, drop-off and loading zone;**
- **Construction traffic, particularly traffic that employs the secondary traffic route identified along Castlereagh Street, should be managed to ensure only low levels of light vehicles use this route to limit the commercial impact of all uses on the NSW Masonic Club site; and**
- **It is noted in the EIS that construction vehicles will load and unload inside the construction site to minimise impacts to bus travel times along Elizabeth, Castlereagh and Park streets. It should be conditioned that no construction trucks and vehicles park on-street along Castlereagh Street.**

#### 4.4 GEOTECHNICAL

A Geotechnical Desktop Assessment was prepared by Douglas and Partners to identify the potential impacts of construction and operation of the Sydney Metro – Chatswood to Sydenham project to the NSW Masonic Club and Castlereagh Boutique Hotel (refer to **Appendix D**). The assessment identified that the primary impacts of the proposed excavation would be twofold, including:

- If the proposed excavation is brought up to the NSW Masonic Club's southern boundary, and the Hotel is not founded on consistent medium strength rock (as expected by Douglas and Partners records), it will be necessary for the relevant Metro contractors to progressively and carefully underpin the Hotel; and
- Significant excavation to the station platform will allow the adjacent intact rock to stress relieve and move inwards towards the excavation. The potential impact of this movement is that the building will stretch, giving rise to cracking within the structure. This potential impact reinforces the recommendations of MPN made earlier above concerning dilapidation surveys.

**As a result, it should be conditioned that a two to three metre buffer zone is required between the proposed excavation and the Hotel foundations.**

## 4.5 AIR QUALITY

An Air Quality Peer Review was prepared by Northstar Air Quality Pty Ltd to identify the potential impacts of construction and operation of the Sydney Metro – Chatswood to Sydenham project to the NSW Masonic Club and Castlereagh Boutique Hotel (refer to **Appendix E**).

The peer review identified that the Air Quality Assessment and Construction Environmental Management Plan that informed the EIS are highly inadequate. The detailed discussion of the potential impacts to be experienced at each work site is not provided within the air quality assessment and in the case of the Pitt Street Station, no discussion of the demolition works and potential for contamination from this demolition is provided.

The EIS does not provide any level of certainty that:

- The activities to be performed at any location have been fully characterised;
- The impacts which may arise as a result of those activities have been appropriately considered; and
- The level of management, mitigation and monitoring are sufficient to manage those impacts.

**Northstar Air Quality Pty Ltd strongly advocates that a major re-assessment of air quality impacts be performed for this project in accordance with the recommendations included in the Peer Review. Upon completion of this re-assessment, opportunities for public consultation should occur to ensure that submissions can be made regarding direct impacts projected for land uses such as the NSW Masonic Club and Castlereagh Boutique Hotel.**

## 4.6 OPERATIONAL IMPACTS TO NSW MASONIC CLUB

The aforementioned acoustic, vibration, structural engineering, traffic and pedestrian, geotechnical and air quality impacts have the potential to both individually and cumulatively significantly impact the commercial operation of the NSW Masonic Club and Castlereagh Boutique Hotel. The Club and Hotel has been part of Sydney's CBD fabric and character for nearly 100 years and this contribution should not be lost or "glossed over" despite the broader public benefit arguments for such a significant piece of new infrastructure as a metro system. Unless potential impacts identified in this submission are addressed, the real risk is that the Club and Hotel will be lost.

For this reason, it is disappointing that the EIS fails to truly analyse economic costs and benefits at a granular scale to give our client any comfort that their use can viably continue. The EIS lacks sufficient detail to qualify or quantify the commercial impact to the NSW Masonic Club and Castlereagh Boutique Hotel. Our analysis highlights that the Masonic Club and Castlereagh Boutique Hotel is itself an already highly constrained property and therefore has little tolerance to any significant disturbance to its physical neighbourhood. These issues must be properly managed and in our opinion, the EIS does not provide any comfort that these issues can be effectively managed without affecting the ongoing viability of the Masonic Club and Castlereagh Boutique Hotel.

The NSW Masonic Club and Castlereagh Boutique Hotel has recently experienced the unfavourable commercial impacts of demolition and construction phases associated with an adjoining site, the ANZ Tower. During the redevelopment of the adjoining site, the Castlereagh Boutique Hotel on the upper 6 floors of the NSW Masonic Club, **experienced a 20% decline in patronage, due to guest's exposure to adverse impacts associated with accessibility, noise, vibration, air quality and amenity.**

Although these impacts were considered compliant by relevant approval conditions and standards, Castlereagh Hotel guests perceived these impacts as adverse to the functionality of the building and significantly diminishing the quality of the Castlereagh Hotel experience. This resulted in a significant impact to the commerciality of the Hotel, questioning its ability to adequately function in similar circumstances in the future.

It is important to note that since that redevelopment, guest experiences are increasingly shared and distributed on social media networks such as TripAdvisor. Should the projected unacceptable impacts of the construction and operation of the Sydney Metro hinder the guest experience, it is likely that the commercial viability of both the NSW Masonic Club and Castlereagh Boutique Hotel will be threatened.

The aforementioned key issues highlight that the proposed construction and operational works associated with the Metro, and particularly the Pitt Street Station (north), will have a significant impact on the southern façade of the NSW Masonic Club. **With more than 40 habitable rooms directly adjoining the southern façade, and a potential for 34 rooms (at the existing 80% occupancy rate) to be directly impacted by the proposed works, this will have a significant impact on the commercial viability of these rooms and therefore the entire hotel function.**

Therefore it is necessary that appropriate mitigation measures be imposed to all works associated with the Chatswood to Sydenham Metro that could constrain the current functionality of the NSW Masonic Club, and all associated uses.

Moreover, the NSW Masonic Club is already limited to a single pedestrian entrance via Castlereagh Street. Given the nature and myriad of uses currently accommodated on site, **it is a critical for business viability that existing access for both pedestrian and vehicular deliveries is retained as accessible 24/7.**

#### 4.7 OTHER ISSUES

The EIS identifies that the Pitt Street (north) station will include a power substation that will be used for future Metro lines. **It is recommended that potential impacts, particularly off-site impacts, and appropriate mitigation measures are assessed and identified in detail. The facilities provided in the club, including telephone, internet and WiFi should not be adversely impacted by Electro-Magnetic Radiation generated by the construction or future operation of such a substation.**



## 5 Conclusion

This submission has identified genuine and significant impacts on the NSW Masonic Club and Castlereagh Boutique Hotel as a result of the proposed Sydney Metro Project.

The proposed works associated with the Pitt Street Station component of the project will have potential for an **unreasonable and unacceptable impact** on the NSW Masonic Club and Castlereagh Boutique Hotel if appropriate conditions and mitigation measures are not implemented. Therefore any approval should incorporate all recommendations identified in the specialist assessments included in this submission.

We submit that this impact will be most effectively mitigated by implementing a number of the identified recommendations for the relevant detailed design, construction and operation phases. If this cannot be achieved, then the following outcomes are expected:

- The commercial viability of the NSW Masonic Club, including the existing retail and education tenancies and Castlereagh Boutique Hotel will be significantly adversely impacted, rendering the existing uses unviable for the duration of the major construction works, estimated at a minimum to last 3-4 years; and
- The cumulative vibrational, geotechnical and structural impacts projected during the duration of the major construction works will potentially render the entire NSW Masonic Club and Castlereagh Boutique Hotel uninhabitable and impose irreversible damage to the heritage significance of the existing building.

**The NSW Masonic Club and Castlereagh Boutique Hotel would welcome the opportunity to further outline and discuss the important concerns and details of this submission and be involved in future discussions to inform more detailed design and management of the Chatswood to Sydenham Metro.**

## Disclaimer

This report is dated 27 June 2016 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd's (**Urbis**) opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of NSW Masonic Club (**Instructing Party**) for the purpose of Public Submission (**Purpose**) and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

In preparing this report, Urbis was required to make judgements which may be affected by unforeseen future events, the likelihood and effects of which are not capable of precise assessment.

All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

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Whilst Urbis has made all reasonable inquiries it believes necessary in preparing this report, it is not responsible for determining the completeness or accuracy of information provided to it. Urbis (including its officers and personnel) is not liable for any errors or omissions, including in information provided by the Instructing Party or another person or upon which Urbis relies, provided that such errors or omissions are not made by Urbis recklessly or in bad faith.

This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.



## Appendix A

## Acoustic and Vibration Assessment



ASSESSMENT OF THE ACOUSTIC EFFECTS OF  
THE PROPOSED CONSTRUCTION OF THE  
SYDNEY METRO CHATSWOOD TO  
SYDENHAM LINE ON THE CASTLEREAGH  
BOUTIQUE HOTEL

**Project 216 088**

23 June 2016

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*This firm is a member of the Association of Australian Acoustical Consultants.*

*The work reported herein has been carried out in accordance with the terms of membership. We stress that the advice given herein is for acoustic purposes only, and that the relevant authorities should be consulted with regard to compliance with regulations governing areas other than acoustics.*

## 1.0 INTRODUCTION

As requested by our client the NSW Masonic Club incorporating Castlereagh Boutique Hotel of 169 Castlereagh St, Sydney, we have looked at the impact in both cases of noise transmission and structural borne vibration transmission would have on the day to day operation of the NSW Masonic Club incorporating Castlereagh Boutique Hotel.

In coming to this assessment we have looked at the Environmental Impact Statement (EIS) for this project together with Report No 610.14213-R3 prepared by SLR Consulting. In addition we have drawn on our vast experience of isolating buildings over the Sydney rail loop together with extensive vibration measurements of a number of buildings that are located over the existing Sydney rail loop. This also includes our experience with isolating the rail line under The Theatre Royal, Sydney.

## 2.0 EXECUTIVE SUMMARY

In the EIS the premises at 169 Castlereagh Street is shown as a **Commercial** building whereas it must be considered as a **Residential** building as it provides accommodation on a 24 / 7 basis. In my opinion this is a serious error on the part of the EIS. I have noted that the Sheraton On The Park Hotel is listed as **Residential** in the EIS therefore the premises at 169 Castlereagh Street must be considered as a Residential classification.

The noise and vibration criteria given in both the EIS and the SLR report is appropriate for this project. In particular Australian Standard AS / NZS 2107 is used for determining appropriate target levels due to the operation during the construction phase and the ongoing operating phase. In the case of AS/ NZS 2107 this was my original concept and I wrote the draft version of what was to become an Australian Standard therefore I consider this the appropriate Standard to protect against noise intrusion. In addition the NSW Department of Planning's *Development Near Rail Corridors and Busy Roads – Interim Guidelines* is an industry standard in terms of noise goals.

Despite the appropriate noise and vibration criteria being recommended in the EIS, I strongly doubt that they will be able to comply with these conditions for the NSW Masonic Club incorporating Castlereagh Boutique Hotel during the construction phase. Whilst it is possible for the Metro Construction Authority to provide double glazing to the Castlereagh Street façade and the southern façade to ensure that the designed maximum noise targets for airborne sound listed in the EIS are achieved, the possibility of structural borne noise from the adjacent construction together with the perceptible vibration most likely will not meet the established targets.



The acoustic criteria for sleep disturbance is consistent with our own office standard.

The ongoing protection from rail generated noise after the project becomes operational is of concern. Whilst I assume that the rail line will be vibration isolated my experience with The Theatre Royal, Sydney with the problem of corrugation of the rail line with wear, together with the inability to grind the rail line, makes me concerned for the ongoing acoustic protection of the NSW Masonic Club incorporating Castlereagh Boutique Hotel.

### 3.0 ACOUSTIC PROTECTION OF EASTERN AND SOUTHERN FACADES

The increased traffic due to spoils being removed from the station site together with eventually construction materials will cause an increase in the noise level on both the eastern and southern facades that will undesirably effect the amenity of the hotel. It is my opinion that the construction authority will need to provide appropriate double glazing to the eastern and southern facades to provide compliance with their own noise criteria nominated in the EIS.

This is important as the hotel section of the development is internationally recognised and therefore people may be arriving by overseas flights and looking to rest during the daytime. Therefore it is imperative that the acoustic protection is on a 24 hour basis.

### 4.0 ESTABLISHING THE EXISTING NOISE AMENITY

It is my opinion that the existing noise amenity enjoyed in the accommodation areas should be established. It is noted in the EIS that they talk of establishing the noise amenity on likely affected buildings. However I think it is important that the noise amenity enjoyed by 169 Castlereagh Street is established independently of the Construction Authority.

### 5.0 NOISE AND VIBRATION MONITORING

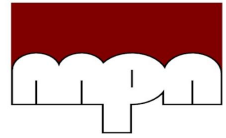
During the construction phase it is recommended that noise and vibration monitoring be carried out within a selected room of the 169 Castlereagh Street to ensure that the nominated noise targets contained within the EIS for the project together with those nominated in the SLR Report No 610.14312-R3 are not exceeded.

## 6.0 ONGOING NOISE GENERATION BY THE OPERATION OF THE CHATSWOOD TO SYDENHAM METRO

The ongoing operation of the Metro after the construction period is also a concern. The Hotel building is not isolated in terms of vibration therefore it will be necessary to isolate the rail track bed. The isolation technology used must not only provide compliance with Section 3.6.2 of the NSW Department of Planning's *Development Near Rail Corridors and Busy Roads – Interim Guidelines* when first installed but must be able to provide compliance on an ongoing basis. This may prove difficult to achieve due to the problem of maintaining rail lines within tunnels.

## Appendix B

## Structural Engineering Assessment



VKM:RS  
10846-VKM02

22 June 2016

Masonic Club (NSW) and Castlereagh Boutique Hotel  
169 Castlereagh Street,  
SYDNEY NSW 2000

Attention: Mr Paul Brasch – General Manager | E: [gm@thecastlereagh.com.au](mailto:gm@thecastlereagh.com.au)

Dear Sir,

**RE: CLUB AND HOTEL PREMISES AT 169 CASTLEREAGH STREET - SYDNEY,  
AND: NEIGHBOURING PROPOSED SYDNEY METRO STATION AT PITT STREET (NORTH)**

### **INTRODUCTION**

MPN Group Pty Ltd, Civil-Structural Consulting Engineers, confirm you have engaged us to offer our advice and recommendations in relation to the proposed creation of a new underground metro station as part of Transport NSW's Sydney Metro – Chatswood to Sydenham, namely Pitt Street (North) station, and how it will affect your Club and Hotel facilities.

The proposed site of the Pitt Street North station abuts your building's southern boundary, and requires, amongst others, the demolition of the commercial office building at 175 Castlereagh Street. We note that the concrete façade of 175 Castlereagh Street is immediately in contact with the stone and brick façade of 169 Castlereagh Street. There will also be substantial excavations, tunnelling and construction of a new station and ancillary facilities.

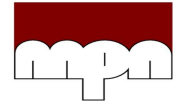
*It is our opinion that your Club and Hotel building at 169 Castlereagh Street will be directly impacted by the proposed demolitions, excavations and construction activities leading to the new metro station at Pitt Street (North).*

### **CLUB & HOTEL AT 169 CASTLEREAGH ST – DESCRIPTION**

A full description of the historic Masonic Club (NSW) is available in the Conservation Management Plan undertaken in 1999. The Club has one basement level, six levels of Club facilities, and the upper six levels operate as a commercial hotel for travelling guests (inter-state and international).

The original architectural drawings (dated 1924), indicate that this very early high-rise building, has isolated pad-footings down to a stratum approximately 2 metres below the basement level. The building frame-system appears to be a rectangular grid of columns and beams employing site-mixed concrete encasement of rolled and/or plated steel members. There are no identifiable shear walls beyond the infill brickwork around the lift and stair shafts, and those forming room partitions. In our opinion the building would be classified as a braced sway-frame, however the bracing is via non-ductile brickwork. That is, the building in our opinion would be quite susceptible to both movements and vibration transmission.

*It is our opinion that the Masonic Club (NSW) and Castlereagh Boutique Hotel at 169 Castlereagh Street be identified as a Sensitive Receiver in accordance with assessment guidelines noted in the Sydney Metro EIS at section 10.2. It is Sensitive both in the Structural sense, and in the Operational sense, particularly your hotel component.*



### **CLUB & HOTEL AT 169 CASTLEREAGH ST – CONDITION**

The club and hotel is well maintained and in very good condition, particularly given its age (90+ years). The condition of the building fabric (exterior and interior) ought to be recorded in Dilapidation Survey reports, to be undertaken at various stages of the adjoining project. We recommend Dilapidation Survey reports to be undertaken at:

- i. Prior to any works commencing (just before demolition works commence),
- ii. After demolition, but prior to excavation commencement,
- iii. Prior to commencement of the station construction,
- iv. Completion of the works and opening of the Pitt Street metro station.

Vibration and noise monitoring and their assessments will span these phases too, we presume, as will be advised by other consultants.

These monitoring works will allow a comprehensive picture of cause and effect of any damages sustained by the Club and Hotel to be established.

### **SYDNEY METRO IMPACTS ON YOUR CLUB & HOTEL – DEMOLITION WORKS**

In our opinion, the greatest potential for serious impact to your building and guests will be during the demolition phase of the metro works.

The existing building immediately to your south, 175 Castlereagh St, which is to be demolished, is a large, concrete commercial office building (constructed c. 1970s), of a similar height to your building, but of greater width.

*All demolition works must be done in compliance with A.S. 2601-2001 “The demolition of structures”. We note that demolition is not dealt with in the same level of detail as other construction and operational aspects of the Sydney Metro project. (ref. Cl. 7.11.4 – one page!). We therefore high-light the following specific major aspects of the Demolition code which must be complied with by Sydney Metro contractors:*

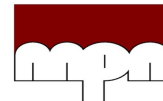
- a) A hazardous substance audit needs to be undertaken (cl 1.6.1 of AS 2601) and submitted for review;
- b) The protection of adjoining buildings must be considered in a Safe Work Method Statement, in relation to safe access/egress, damage to structural integrity, vibration and concussion, weather-proofing (of newly exposed surfaces), smoke control, dust control, noise control, and maintenance of common/public services (section. 1.7 of AS 2601),
- c) Investigation of the structure to be demolished and its environment to be considered (cl. 2.2.2 and 2.2.3) , but in particular whether the structure to be demolished has post-tensioning, or pre-cast elements which may have significant bearing on the appropriate demolition technique and safety measures,
- d) A Work Plan is to be prepared (cl. 2.3 of AS 2601) , and we suggest should be submitted for review and agreement,
- e) Prohibition of loading (rubble and debris) against walls (cl. 3.1.4 of AS 2601) – this is of particular concern as the demolition will be immediately abutting your southern wall, and the potential risk of significant damage to your building is high.

*The potential for concussive impact onto your southern wall is very high, and the demolisher’s Work Plan must state particular attention to this aspect, of ensuring separation of the two buildings at all times. This may require careful manual demolition at specific times of the demolition work.*

The nominated vibration limit of 7.5mm/sec for sensitive buildings like yours as referenced in the Sydney Metro EIS is in our opinion appropriate for the demolition phase in relation to your structure. (However, this level of vibration may significantly exceed the acceptable perceived vibration for your guests).

### **SYDNEY METRO IMPACTS ON YOUR CLUB & HOTEL – EXCAVATION WORKS**

The general site excavation extents and depths of the Pitt Street (North) metro station are not clear in the EIS. However, there is a reasonably clear indication that the metro tunnel under Castlereagh Street will come within 17m of the ground surface, which suggests the tunnel may



come as close as 12m from the underside of your building's footings (allowing a 3m basement + 2m deep footings).

The likely adverse impacts upon your building from the potential excavations as described in the EIS are as follows:

- a) Excessive vibration from continuous rock-hammering;
- b) Excessive vibration from isolated rock blasting;
- c) Foundation movements from stress-relief of large and deep excavations;
- d) Underpinning and or shoring works to retain your footings and basement floor-slab.

If the vibrations at items a) and b) are retained to a maximum of the 7.5mm/sec level previously mentioned, then damages to your building's structural fabric are quite unlikely. The Sydney Metro EIS is rather vague on noise and vibration control of blasting in particular. On-going recorded noise and vibration monitoring at various locations of your building can act as an effective control, and would help mitigate concerns from these excavation activities.

We would suggest the use of deep vertical rock-saw cuts along/ parallel to your southern boundary be done ahead of nearby rock-hammering so as to isolate the rock-mass below your building from on-going vibrations.

If the general site for the new Pitt Street station to your south (bound by Park, Castlereagh and Pitt Streets) is to be excavated, the removal of this large rock-mass could induce substantial movements in the remaining sandstone rock-mass at the base and periphery of the hole. Such movements could be of the order of 5-10mm we understand. While such movement would affect probably only the basement level and ground floor, the non-ductile nature of your building means that such foundation movements may create one of two very large cracks (as opposed to what may happen in a modern, ductile structure, where such degree of movement could be accommodated by an accumulation of dozens of very fine to hair-line cracks). That is, the creation of large (potentially alarming) cracks in your building due to such stress-relief foundation movements is quite probable. *We would suggest that the new station's design cater for a shelf of restraining rock at least 2-3 meters wide adjoining your building be kept at or above your footing level, to minimise such movements.*

Notwithstanding the depth of excavation, any adjoining excavation to your boundary would likely necessitate some amount of underpinning or shoring.

### **SYDNEY METRO IMPACTS ON YOUR CLUB & HOTEL – CONSTRUCTION WORKS**

The construction phase of the metro station, would be, in our opinion, the least likely to cause impacts upon your building in a structural sense.

However, there are a host of considerations in relation to crane-swings, hoist operations, concrete placement, percussive tools, removal (dropping) of form-work, etc., which may impact upon your building, and more particularly upon your guests.

We trust the foregoing will assist you in your overall response to the Sydney Metro EIS. If you have any questions with the contents, please contact the writer.

Yours faithfully

**MPN GROUP PTY LIMITED**

**VIKTOR MATEFFY**

Director

BE(Hons), MEngSc, MIE(Aust),  
CPEng, NER(17240)



## Appendix C

## Traffic and Pedestrian Management Assessment

Our Ref: 16104

June 24, 2016

Castlereagh Boutique Hotel & NSW Masonic Club  
169 Castlereagh Street  
Sydney NSW 2000

For the attention of Paul Brasch (General Manager)

Dear Paul,

**RE: 169 Castlereagh Street - Traffic/Transport Implications of Proposed Sydney Metro**

I have prepared this report for submission to Transport for New South Wales on behalf of The Castlereagh Boutique Hotel and NSW Masonic Club to ensure that their interests are protected during the construction of Sydney Metro and in particular the construction of the Pitt Street Station. The main concerns for the hotel are as follows.

1. There is only one access to the hotel which is from the Castlereagh Street frontage. There are no alternative access/loading points that can be implemented.
2. Consequently, existing loading facilities and areas for taxi drop off outside the hotel site need to be accommodated in the eventual construction traffic management.
3. The Hotel should be consulted prior to any changes either temporary or permanent being made to the existing parking, drop off and loading zones.
4. Construction traffic (particularly the secondary traffic route identified along Castlereagh Street) should be managed such that only low levels of light vehicles such that it should not affect the operation of the businesses along Castlereagh Street.

These concerns are explained in more detail below.

### The Castlereagh Boutique Hotel

The hotel is a heritage site property located at 169-171 Castlereagh Street. The NSW Masonic Club was established in 1893 and the building commenced in 1925. It has 83 rooms/suites with associated dining and lounge facilities (i.e. Cello's Grand Dining Room, the Reagh Bar and the Castlereagh Lounge). These facilities are used for a number of functions.

At ground level, the hotel site contains 3 tenancies two of which are occupied by 'Pie Face' and the other by a jeweller. There are also 3 education leases on one of the commercial levels.

There is no parking provided for residents or employees on site, although there is a commercial arrangement by which guests can pay to use the Hilton Hotel Secure parking.

At present, there are no loading facilities on site with all deliveries made on the Castlereagh Street frontage with supplies / deliveries wheeled in through the main lobby or via a small access door located around 5m to the north of the main lobby.

The deliveries that regularly visit the Hotel at the moment are

- Garbage – once per day
- Kitchen Deliveries – twice per day
- Beverage Delivery – once per day
- Contactors for maintenance/building works (e.g. air conditioning, plumbing, electrical) – up to 4 per day
- Other deliveries (chemicals for laundry etc.) – once per day

These deliveries all take place on Castlereagh Street in existing loading zones/restricted parking areas located directly outside the site.



In addition, there are around 2000 members of the Masonic Club who also often use the hotel. Many of the Masonic Club members, and hotel users, are elderly and therefore require access to the front door which results in significant taxi activity along the site frontage. Indeed, the Hotel had been speaking to City of Sydney about replacing the no parking on the adjacent kerbside to the south of the hotel to 5 minute drop off / pick up. The hotel is generally around 80% full, representing around 19200 night stays per annum.

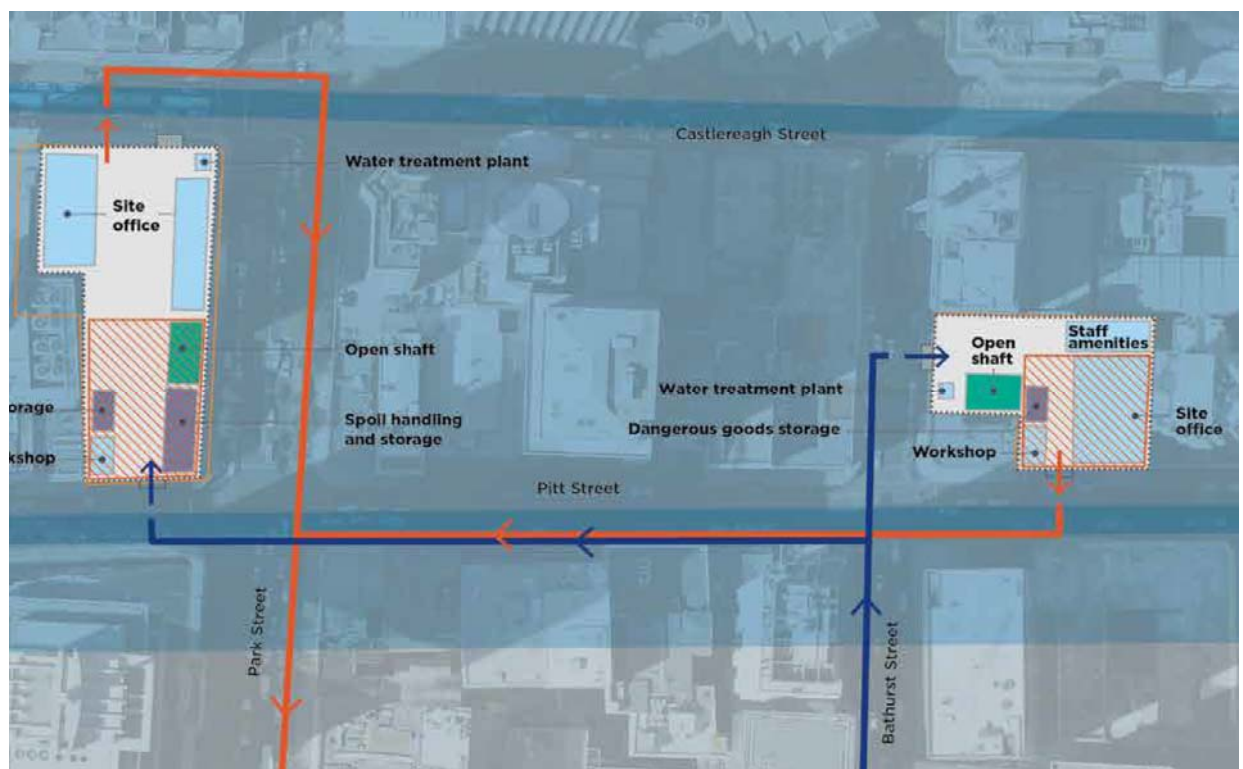
In summary, therefore, the protection of the loading / drop off facilities on Castlereagh Street are of fundamental importance to the continuing operation of the hotel.

## Sydney Metro

The project involves the construction and operation of a metro rail line, around 16.5 kilometres in length, between Chatswood and Sydenham.

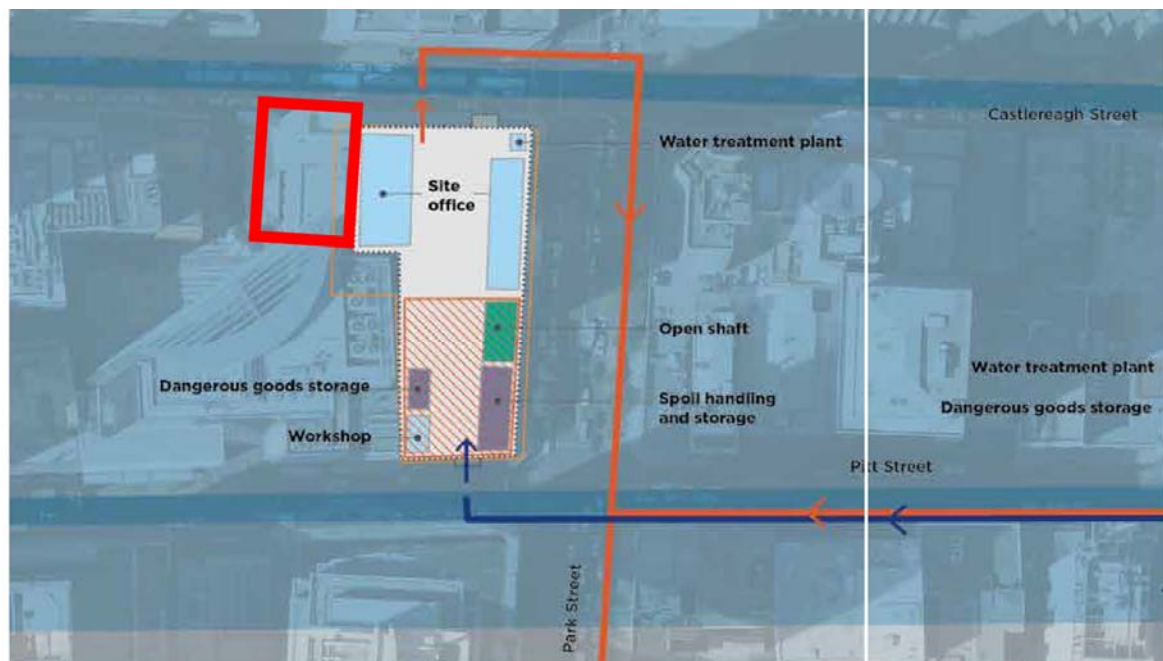
New metro stations would be developed at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Waterloo, as well as new underground platforms at Central Station.

The planned Pitt Street station is proposed to include 2 construction sites as shown below



The Castlereagh Hotel is located directly adjacent to the northern Pitt Street as shown outlined in red below.

It is proposed that access into the construction site adjacent to the hotel is primarily achieved by a right turn in from Pitt Street (as shown in blue) and exit is achieved by a right turn out into Castlereagh Street as shown in orange.



It is assumed therefore, although it is not explicit in the EIS, that construction traffic passes through the construction site as shown below. This would mean that the primary construction traffic on my assumed yellow route would not pass the hotel site.





However, it is noted that in other plans, Castlereagh Street is proposed as a secondary route for construction traffic. This would mean that the secondary construction traffic would pass the hotel site.



### Construction Traffic Volumes

It is anticipated that there will be following number of construction vehicles: -

- Demolition: Trucks 96 per day and light vehicles 78 per day
- Excavation: Trucks 234 per day and light vehicles 104 per day
- Station fit out: Trucks 202 per day and light vehicles 104 per day

Although the Environmental Impact Assessment is not specific about this, it is presumed that this is the estimated construction traffic likely to be using BOTH Pitt Street sites. Again, it is not stated whether the estimated construction vehicle truck numbers would travel along the primary or secondary routes. I have assumed that trucks would travel along the primary routes although some of the light vehicles might use the secondary routes.

The figure of 234 excavation trucks would over a typical working day of, say 10 hours, would equate to around 3 trucks per minute which if split equally between the two sites would mean one truck leaving the site adjacent to hotel every 6 minutes throughout the working day.

The volume of construction traffic throughout a typical day is shown graphically below.

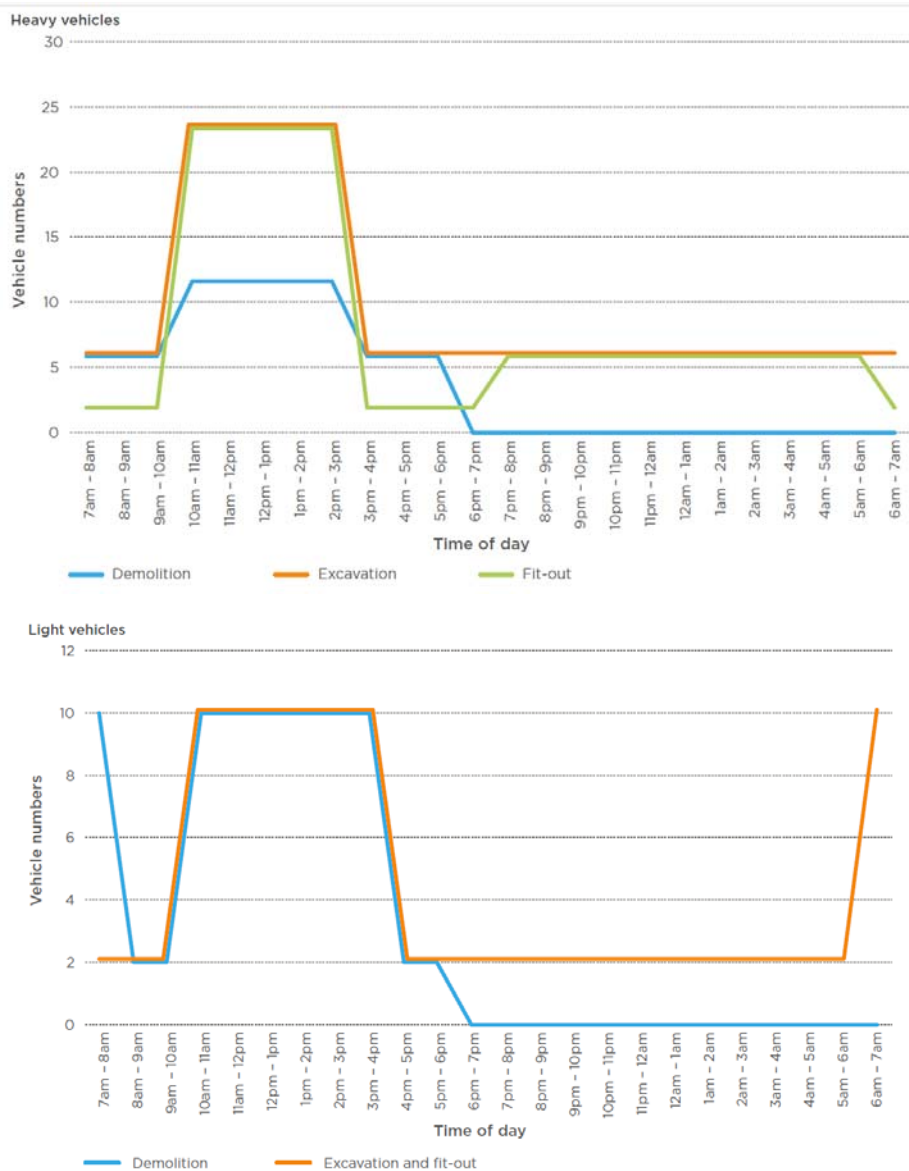


Figure 8-38 Pitt Street Station construction vehicle movements

It is noted that construction vehicles will load and unload inside the construction site to minimise impacts to bus travel times along Elizabeth, Castlereagh and Park streets so there will be **no construction trucks parked on-street along Castlereagh Street.**

#### Parking

It is noted that the EIA states that will be **nil street parking changes** resulting from the proposal in the vicinity of the Pitt Street station construction. Furthermore, the existing taxi bays in the vicinity of the proposed stations on Castlereagh and Pitt streets will be retained.

It is also noted that four to 10 parking spaces for use by engineers and other management staff **will be provided on site** although generally contractors, other than those workers arriving using public transport, are likely to consider 'park and shuttle' services to transfer the majority of workers to this site

#### Operational Traffic Impacts

It is noted that in terms of operational impacts resulting from the new station following completion of the project, it is anticipated that there will be no change to the Level of Service experienced by traffic locally on the road network.

Peak period	Without construction			With construction		
	Average delay (second per vehicle)	Level of Service	Degree of saturation	Average delay (second per vehicle)	Level of Service	Degree of saturation
<b>Park Street / Castlereagh Street</b>						
AM	23	B	0.67	23	B	0.67
PM	30	C	0.72	30	C	0.72

Finally, it is also noted that in order to enable cycle interchange with the station, cycle parking would be provided at the northern station entrance near the Park Street / Castlereagh Street intersection

### **Summary**

I would submit therefore that TfNSW need to ensure that the following critical matters be accommodated within the proposed construction traffic management plan.

5. There is only one access to the hotel which is from the Castlereagh Street frontage. There are no alternative access/loading points that can be implemented.
6. Consequently, existing loading facilities and areas for taxi drop off outside the hotel site need to be accommodated in the eventual construction traffic management. The Hotel should be consulted prior to any changes either temporary or permanent being made to the existing parking, drop off and loading zones.
7. Construction traffic (particularly the secondary traffic route identified along Castlereagh Street) should be managed such that only low levels of light vehicles such that it should not affect the operation of the businesses along Castlereagh Street.

If you require anything further, please feel free to call me at this office

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Ken Hollyoak', written in a cursive style.

**Ken Hollyoak**  
Director

## Appendix D

## Geotechnical Assessment

**Masonic Club & Castlereagh Boutique Hotel**  
169 Castlereagh Street  
Sydney NSW 2000

Project 85527.00  
24 June 2016  
85527.00.R.001.Rev1  
JCB:mm

Attention: Mr Paul Brasch - General Manager

Email: gm@thecastlereagh.com.au

Dear Sirs

## **Likely Effects of Proposed Pitt Street Metro Station on Club and Hotel at 169 Castlereagh Street, Sydney**

### **1. Introduction**

Douglas Partners Pty Ltd (DP), Geotechnical Consultants, were retained by yourselves to review the Environmental Impact Statement (EIS) for the Chatswood to Sydenham section of the proposed Sydney Metro, City and Southwest particularly in relation to the likely effects of the Pitt Street Station and tunnels, on the NSW Masonic Club and Castlereagh Boutique hotel, located at 169 Castlereagh Street Sydney..

The proposed site of the Pitt Street station abuts the southern boundary of 169 Castlereagh Street. The adjacent building, 175 Castlereagh Street, is to be demolished followed by substantial excavations for entries into the proposed underground station.

### **2. Excavation Effects**

Apart from noise and vibration, which have been addressed by others, the other main effects of a significant excavation down to station level and the tunnel excavation will be:

- It is understood that the Hotel building has one basement level. Based on DP records of drilling adjacent to the Hotel, it appears that consistently medium strength rock is not present until a depth of approximately 6 m. Hence, if the proposed excavation is to be brought up to the Hotel's southern boundary and if the Hotel is not founded on consistent medium strength rock, it will be necessary for the Metro Contractors to progressively and carefully, underpin the Hotel;
- A significant excavation down to station platform level will allow the adjacent intact rock to stress relieve and move inwards towards the excavation. The movement will "raft" any adjacent building or infrastructure towards the excavation while the differential movement back from the excavation will stretch the building, giving rise to cracking within the structure. The greatest



movement will be at points approximately half-way along all excavation faces. This means that the southwest corner of the Hotel building, which will be at about the midpoint of an excavation, may move in the order of 5 -10 mm in a south-westerly direction, giving rise to diagonal cracks, at least within the basement and depending on how brittle the building is, possibly in some of the floors above; and,

- Excavation of the platform/tunnel will induce settlement of the overlying strata. From our experience on similar projects, settlement in the order of 2 to 5 mm might be expected. This may give rise to some cracking in the building above. Numerical modelling would be required to properly assess the amount of settlement. It would be important to assess the degree of differential settlement between footings along the alignment of the platform and tunnel.

### 3. Potential Mitigating Measures

Both the above effects could be mitigated or reduced by leaving a buffer zone between the proposed excavation and the hotel foundations. The wider the zone, the less the stress relief effects will be experienced.

We would suggest that to negate the requirement for underpinning the buffer zone should be at least 2 - 3 m wide, though such a width would probably only reduce the stress relief movement at the southwest corner of the Hotel by 2 - 3 mm.

In summary, the proposed Pitt Street Station excavation will give rise to a number of potentially adverse effects to the Club and Hotel at 169 Castlereagh Street, Sydney.

Please contact the undersigned if you have any questions on this matter.

Yours faithfully  
**Douglas Partners Pty Ltd**

**John Braybrooke**  
Principal

[Attachments](#)

[About this Report](#)

Reviewed by



**Hugh Burbidge**  
Senior Associate

# About this Report

# Douglas Partners



## Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

## Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

## Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

## Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

## Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

# *About this Report*

## **Site Anomalies**

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

## **Information for Contractual Purposes**

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

## **Site Inspection**

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

## Appendix E

## Air Quality Assessment

# Peer Review



Date: Friday, 24 June 2016

Castlereagh Boutique Hotel & NSW Masonic Club  
169 Castlereagh St, SYDNEY NSW 2000

FAO: David Hoy (Urbis)

**Project Name:** Independent Peer Review – Sydney Metro EIS – Air Quality

**Reference:** 16.1031.L1V1

Please find detailed overleaf the findings of the requested peer review of the Sydney Metro Environmental Impact Statement (EIS) (Chatswood to Sydenham) which outlines our findings and recommendations.

Please note that the observations presented in this letter are offered without conflict of interest or prejudice.

If you require any further information or clarification, please do not hesitate to contact the undersigned at your convenience.

For and on behalf of

**Northstar Air Quality Pty Ltd**

**Dr Martin Doyle**  
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## 1. Summary

The air quality assessment and construction environmental management plan are considered to be highly inadequate for the purposes of such a major infrastructure project. Locations of work sites within densely populated urban environments and the scale of works proposed clearly warrant a more detailed air quality assessment to be provided. The level of assessment provided is cursory at best and is broad brush in its application. Detailed discussion of the potential impacts to be experienced at each work site is not provided within the air quality assessment and in the case of the Pitt St Station, no discussion of the demolition works and potential for contamination from this demolition is provided.

Given that the Secretary's Environmental Assessment Requirements (SEARs) require an assessment of air quality to be performed (not identified within the EIS), the level of assessment performed is not sufficient.

It is strongly advocated that a major re-assessment of air quality impacts be performed for this project. The air quality assessment and construction environmental management framework should include (as a minimum and specific to each location):

- A discussion of the relevant air quality standards.
- A detailed outline of the existing air quality likely to be experienced (without the impact of the project) surrounding each construction / operational activity.
- A detailed discussion of the activities to be performed at each construction / operational site including information on:
  - the activities to be performed at each location; and
  - the quantities of material to be excavated, stored, transported.
- the potential for off-site air quality impacts to occur.
- the potential emission control measures which may be employed to mitigate/minimise any impacts. These should be specific and take into account the potential high risk activities to occur at each location.
- a detailed plan of how the control measures would be employed, managed and audited in reference to minimising off-site impacts.
- a detailed and site specific method for assessing potential off-site impacts (specific to activity where required). This should not rely solely on visual inspections.
- a detailed plan of back-up measures or activity modification should off-site impacts be identified;

At present, the air quality assessment and environmental management framework do not provide any level of certainty that:

- 1) the activities to be performed at any location have been fully characterised;
- 2) the impacts which may arise as a result of those activities have been appropriately considered; and
- 3) the level of management, mitigation and monitoring are sufficient to manage those impacts.



Once the air quality assessment has been re-performed, it is recommended that a further round of review be performed to ensure that the potential impacts and management measures are appropriate for each location. Given the major inadequacies in the assessment, the following review is necessarily broad.

## 2. Introduction

Castlereagh Boutique Hotel & NSW Masonic Club (the Hotel & Club) has requested an independent peer review of the Sydney Metro City & Southwest, Chatswood to Sydenham Environmental Impact Statement and specifically those chapters which relate to air quality impacts. The Castlereagh Boutique Hotel & NSW Masonic Club is located at 169 Castlereagh St, Sydney and is located immediately north of works proposed as part of the Pitt St Station construction. This review is primarily concerned with those issues identified within the EIS which have the potential to impact upon the Hotel & Club although many of the issues identified are common across all locations. This review does not seek to identify and discuss issues as they relate to every geographical location but where possible, focus on the construction of the Pitt St Station and specifically the activities proposed to the immediate south of the Hotel & Club is provided.

The review does not seek to identify minor typographical errors but identifies broader issues of relevance

## 3. Review

The peer review contained within this document relates to the Sydney Metro City & Southwest, Chatswood to Sydenham Environmental Impact Statement (hereafter, 'the EIS'). The main volume of the EIS contains a number of chapters which have been reviewed in detail:

- Chapter 1 – Introduction and Appendix A (Secretary's Environmental Assessment Requirements).
- Chapter 2 – Planning and assessment process (adopted legislation).
- Chapters 6 & 7 – Project description operation and construction.
- Chapters 8 & 9 – Operational and construction traffic and transport.
- Chapter 18 – Soils, contamination and water quality.
- Chapter 22 – Air quality.
- Chapter 24 – Waste management.
- Chapter 27 – Consolidated environmental mitigation measures.
- Chapter 28 – Environmental risk analysis.
- Appendix D – Construction environmental management framework; Chapter 16 – Air quality.

Although chapter 22 provides assessment specifically related to issues of air quality, the additional chapters reviewed provide background and information which is pertinent to the likely impacts on air quality (e.g. spoil volumes moved, traffic generation and demolition schedules).

The peer review has considered the following:

- Adoption of relevant/appropriate criteria/guidelines and standards.
- The methodology adopted in performing the assessment.

- The appropriateness of the data obtained to inform the assessment.
- The suitability of the analysis performed.

The review also provides recommendations where applicable.

The review has highlighted a number of matters that should be addressed. The aim of this peer review is not to provide a value judgement on the quality of the work performed, but identify matters that may be regarded as a risk to the conclusions drawn from the report. The observations have been categorised as:

Significance	Description
Comment only	Observation only
Low	Issues identified are not likely to change the conclusions of the report
Medium	Issues identified may have the potential to change the conclusions of the report
High	Issues identified have the potential to change the conclusions of the report

A tabulated summary of identified issues is provided overleaf.

Comment	Section	Comment	Significance
1	Chapter 22 (Section 22.1) – SEARS Appendix A (Page A-11, Point 16)	<p>Chapter 22 (Air quality), section 22.1 states that:</p> <p><i>"There are no Secretary's environmental assessment requirements that relate specifically to this chapter".</i></p> <p>The Secretary's Environmental Assessment Requirements (Appendix A) does in fact contain a requirement for assessment of dust (SEAR 16 [waste]) which states that (our <u>emphasis</u>):</p> <p><i>"The Proponent must assess potential environmental impacts from the excavation, handling, storage on site and transport of the waste particularly with relation to sediment/ leachate control, noise <u>and dust</u>."</i></p> <p>A review of chapter 24 (Waste management), section 24.1 (Secretary's environmental assessment requirements) states the relevant SEAR [16] but indicates that</p> <p><i>"Dust is addressed in Chapter 22 (Air quality)."</i></p> <p>The relevant SEAR [16] as it relates to air quality does not seem to have been addressed in the detail required in the chapters of the EIS relating to either air quality or waste.</p>	High
2	Chapter 2 – Planning and assessment process	<p>The SEARS require an assessment of dust, yet no specific assessment requirements related to air quality are provided within the SEARS. Mention is made of air quality criteria within Table 22-1 of the air quality chapter (22) although only in relation to background (i.e. existing) air quality. How these criteria relate to the Project itself is not discussed. It would be usual for the SEARS to require assessment of air quality in accordance with the NSW DEC <i>"Approved Methods for the Modelling and Assessment of Air Quality in NSW"</i> (NSW DEC, 2005). Specific criteria related to air quality are included within the Approved Methods document which also relate in-part to the National Environmental Protection Measure (NEPM) for Ambient Air Quality.</p>	Medium

Comment	Section	Comment	Significance
3	Chapter 22 – Air quality General comments	<p>In general terms, the air quality chapter is very broad in scope and does not address any specific impacts upon specific receptor locations nor does it identify any site specific management or mitigation measures.</p> <p>The potential air quality impacts identified and discussed at each proposed construction / operation site (11 in total) are highly limited and in the case of the Pitt St Station are limited to one sentence (Table 22-3):</p> <p><i>"During handling and management of spoil, dust impacts could arise under any wind conditions owing to the proximity of receivers around the construction site."</i></p> <p>Although this statement is not questioned, the failure to discuss potential impacts associated with demolition, potentially contaminated material and, most significantly, the failure to provide any clear and specific management or mitigation measures to control these specific impacts is of concern. Further discussion of management and mitigation measures is provided in comment # 6.</p>	High
4	Chapter 22 – Air quality General comments	<p>The qualitative nature of the assessment is not appropriately justified. Given that the SEARS require an assessment of potential air quality impacts to be performed, and given the identified sensitivity and proximity of receptor locations to emission sources, the provision of a broad, generic and qualitative air quality assessment is inadequate.</p>	High

Comment	Section	Comment	Significance
5	Chapter 22 – Air quality Specific comments Section 22.4 – Potential impacts - construction	<p>This section of the air quality assessment identifies a number of activities which have the potential to result in particulate ('dust') emissions. The section correctly states that:</p> <p><i>"without the implementation of adequate mitigation measures, dust emissions from those activities could result in reduced local air quality....at the nearest potentially affected receivers due to the small distance between these receivers and the construction sites".</i></p> <p>This is especially true in the case of the Hotel &amp; Club given the close proximity to demolition and construction activities. However, notwithstanding that there are no site specific mitigation measures proposed, there is seemingly a disconnect between this statement and Chapter 28 (Environmental risk analysis) which identifies the unmitigated consequence of construction activities on air quality as <i>minor</i> and provides an unmitigated risk rating of <i>medium</i>. The definition of '<i>minor</i>' risk consequence in Chapter 28 is:</p> <p><i>"Short-term (less than 1 month), reversible or minor impacts that are within environmental regulatory limits and within site boundaries.</i></p> <p><i>Minor or short-term impacts to stakeholder(s) or customers."</i></p> <p>Given that enabling works and site establishment and station excavation (assuming to include demolition) at Pitt St Station is to be performed between Q3 2017 and Q3 2019 (Table 7-14) (a period of 27 months), these impacts cannot justifiably be termed "<i>short-term (less than 1-month)</i>". Furthermore, given that the air quality assessment has identified that dust emissions may result in reduced air quality at the nearest receptors, these impacts cannot justifiably be described as "<i>minor or short-term impacts to stakeholders(s) or customers</i>".</p>	High

Comment	Section	Comment	Significance
6	Chapter 22 – Air quality, Specific comments Section 22.6 – Mitigation measures	<p>Chapter 22 includes a description of eight general mitigation measures which are applicable to air quality. Appendix D, Chapter 16 (Construction environmental management framework) also provides ‘examples’ of air quality mitigation. Chapter 28 (Environmental risk analysis) considers these mitigation measures and provides an assessment of residual risk (following mitigation measure employment). The determined residual risk rating as it relates to air quality has been determined to be <i>low</i>.</p> <p>Given the lack of site specific mitigation measures provided in both the air quality assessment and construction environmental management framework (which runs to a total of two pages), it is questioned how the residual risk rating can be justifiably and transparently determined to be <i>low</i>. The identification of specific mitigation measures should be determined from the risks evaluated for each specific location, and clearly defined mitigation measures identified to manage those risks, rather than mitigation suggested in a generalised way. Further information regarding the risks to construction dust specific to each location is required, and justification for the determined risks should be provided. This needs to determine the specific mitigation measures required for each site.</p>	High

Comment	Section	Comment	Significance
7	Chapter 22 – Air quality, Specific comments Section 22.6 – Mitigation measures Appendix D – Construction environmental management framework	<p>Air quality mitigation measures provided in both the air quality assessment and the construction environmental management framework are highly generic and do not consider the particular issues at each location. Discussion of how these management measures will be implemented at each site is not provided and therefore the efficacy of each of these measures in reducing or managing the (non-quantified) impacts on air quality is highly questionable and non-quantifiable.</p> <p>Wording of the mitigation/management measures is very loose including wording such as “<i>consider</i>”, “<i>regularly</i>”, “<i>will be managed</i>” and “<i>as appropriate</i>”. No discussion of the particular impacts and associated mitigation measures required at each site is provided.</p> <p>In the case of the Pitt St Station for example, it can be determined from the EIS that the total quantity of spoil to be removed as part of the construction is of the order of 160,000 m<sup>3</sup> (Chapter 7.11.1), with 12 commercial buildings to be demolished (Chapter 7.11.4) with demolition of these buildings resulting in a potential contamination source (Chapter 18). No discussion of mitigation measures specific to the control of emissions during building demolition is provided in the air quality assessment (Chapter 22) or in the construction environmental management framework (Appendix D).</p> <p>Given the close proximity of the Hotel &amp; Club to the demolition and excavation activities proposed to occur as part of the Pitt St Station development, it would be expected that specific assessment of the potential impacts and specific consideration of the mitigation and management measures to be employed to minimise those impacts would be provided, for example. Given the potential significance of the impacts and proximity to receptors a more detailed assessment should be provided.</p>	High
8	Chapter 22 – Air quality Specific comments Section 22.5 – Potential impacts - operation	<p>Potential impacts during operation are discussed in Section 22.5 of the air quality assessment. A broad discussion of the ventilation system and emissions potentially emitted during operation is provided although no specific information relating to the ventilation system at each station (e.g. locations of emission points or information relating to the likely composition of emissions) is provided.</p> <p>It would be expected that details of the ventilation system would be available within the EIS, or at the very least discussion of how these emission points would be located to ensure minimal impacts upon surrounding properties.</p>	High





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