

# **BUSINESSES AND EDUCATIONAL INSTITUTIONS**

CHAPTER SEVEN



# 7 Businesses and educational institutions

This chapter provides responses to issues raised in submissions from businesses and educational institutions directly impacted by the project:

- Macquarie Bank
- Commonwealth Bank of Australia
- MLC Centre Company
- Sydney Airport
- KU Children's Services
- Labsonics
- Seven Network
- NSW Masonic Club and Castlereagh Boutique Hotel
- Monte Sant' Angelo Mercy College
- Australian Catholic University
- Mirvac Real Estate Pty Ltd and K-REIT Asia (Keppel Land Limited)
- Ambient Psychology
- Casa Del Australia Pty Ltd
- Harvey Norman Alexandria
- ISM Studios Pty Ltd
- Comfort and Fit
- The Printing Department
- Cromwell Property Group (Northpoint Tower)
- Anonymous.

## 7.1 Macquarie Bank

### 7.1.1 Building heritage fabric

#### Issue raised

Construction activity may affect the heritage listed fabric. Macquarie Bank would like to understand what modelling has been done to assess potential effects and how the current condition will be assessed and documented.

#### Response

Section 14.5 of the Environmental Impact Statement provides an assessment of the potential indirect impacts to non-Aboriginal heritage items. These indirect impacts are mainly associated with views and vistas, or the potential for impacts from vibration from construction activities.

Vibration modelling was carried out as part of the noise and vibration assessment. Vibration modelling was based on vibration levels measured on other Sydney tunnelling projects. The modelling calculates a three-dimensional slant distance from the works to each sensitive receiver. Further details on vibration modelling can be found in Section 3.3.3 of Technical Paper 2: Noise and Vibration.

The main potential impact to the Macquarie Bank building would be associated with vibration from adjacent excavation and tunnelling work (for pedestrian tunnels) beneath the building. As part of the assessment, a conservative cosmetic damage screening criterion of 7.5 mm/s has been applied to all heritage items (which is half the value when cosmetic damage would be expected to occur for light-frame structures). The assessment found that the closest façade of the Macquarie Bank building to the construction work is not predicted to experience vibration above the 7.5 mm/s screening criterion during mined excavation of the underground pedestrian connections between the station concourse and platforms.

However, the assessment found that demolition of the adjacent and adjoining structures may result in vibration levels above the screening criterion. Therefore, a more detailed assessment of the structure would be carried out to ensure vibration levels remain below a specific cosmetic damage level for that structure which would also take into account the listed heritage value of the building. This may involve determining a different cosmetic damage vibration level specific to the building and / or adjusting construction methods to reduce potential vibration levels.

Prior to construction building condition surveys would be carried out and the building condition would be monitored in accordance with the Construction Noise and Vibration Strategy.

The process for condition surveys is provided in the Construction Environmental Management Framework (Appendix B of this report).

## 7.1.2 Construction noise

### Issue raised

The Environmental Impact Statement noise impact modelling finds high to moderate exceedances above set noise management levels at various stages of the construction. Macquarie Bank would like to understand how these exceedances will be managed.

### Response

The assessment of potential construction noise impacts in the Environmental Impact Statement presents a worst-case 15-minute assessment in accordance with the approach required by the *Interim Construction Noise Guideline*. This approach assumes that all construction equipment for a particular construction scenario is operating at the same time and at the closest point on the site to any receiver. In reality, construction equipment would operate in varying locations around the site and would rarely all be in use at the same time. As such, the actual noise levels experienced would vary throughout the construction works and at most times would be lower than the worst-case scenarios provided in the Environmental Impact Statement.

In relation to the Macquarie Bank building, the noise and vibration assessment in the Environmental Impact Statement found that:

- There are anticipated airborne noise exceedances of the noise management levels of greater than 20 dB during demolition and site establishment and between 10 and 20 dB during earthworks and aboveground station building construction. Compliance with the noise management levels is predicted during other activities including underground excavation and structural works
- Ground-borne noise levels are predicted to comply with the relevant noise management levels
- Vibration levels are predicted to comply with the 7.5 mm/s screening criterion during mined excavation of the underground pedestrian connections, however, demolition of the adjacent and adjoining structures may result in vibration levels above the screening criterion.

The Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report) provides the process for carrying out more detailed construction noise and vibration impact statements prior to each construction activity based on further understanding of the construction equipment and construction processes, which would be confirmed during detailed construction planning. This process would provide further detail regarding the actual noise levels which would be experienced by individual receivers.

As part of this process, consultation would be carried out with Macquarie Bank (in accordance with mitigation measure B11 – refer to Chapter 11 of this report) to identify and develop mitigation measures to manage the specific construction impacts to Macquarie Bank.

The Construction Noise and Vibration Strategy provides standard noise mitigation measures which would be implemented on all sites. This includes measures such as provision of noise barriers around sites and use of dampened rock hammers among others. The Construction Noise and Vibration Strategy identifies additional mitigation measures which would be implemented when defined exceedances of the noise management levels are predicted to occur.

### **7.1.3 Access to loading dock and car park**

#### **Issue raised**

Access to the loading dock and car park for 50 Martin Place is via Castlereagh Street. Macquarie Bank would like to understand access restrictions to Castlereagh Street.

#### **Response**

An assessment of potential construction traffic and transport impacts around Martin Place is provided in Section 8.4.14 of the Environmental Impact Statement. In the vicinity of the Martin Place Station, the assessment identified that construction vehicles would have a negligible impact on the surrounding road network. Access to neighbouring properties (including car parking and loading docks) would be maintained during construction.

In particular, there are no proposed access restrictions on Castlereagh Street during construction. In the event that temporary night-time partial road closures are required, these would be managed in consultation with the relevant road authority. In this event, notification would be provided to affected properties and alternative arrangements provided where feasible and reasonable.

Prior to the commencement of construction, a Site Specific Access and Management Plan would be prepared. This plan would be specific to the Martin Place Station construction site and would identify proposed traffic and parking management measures to facilitate the construction activities at this site. One of the objectives of preparing these plans would be to minimise disruption to access for adjoining properties.

### **7.1.4 Martin Place access to banking chamber**

#### **Issue raised**

The main entrance to the banking chamber is from Martin Place. Macquarie Bank would like to understand details of pedestrian flow, particularly during the temporary closure of Martin Place between Elizabeth and Castlereagh streets.

#### **Response**

The potential for impacts to active transport (including pedestrian access to surrounding buildings) is considered and assessed in Section 8.4 of the Environmental Impact Statement. This section identifies that construction sites would be arranged to maintain safe access to surrounding properties at all times.

In relation to the construction works in Martin Place, Transport for NSW is reviewing and further developing construction staging and methodology for Martin Place Station. The revised methodology will be the subject of further pedestrian analysis so that pedestrian movements would be maintained at an acceptable level of service throughout construction and that appropriate access is maintained to surrounding properties.

Signage would also be provided (in accordance with mitigation measure BI3 – refer to Chapter 11 of this report) to provide visibility to businesses.

### **7.1.5 Evacuation stair discharge point**

#### **Issue raised**

The main evacuation stair of 50 Martin Place discharges onto Castlereagh Street. Macquarie Bank would like to understand hoarding arrangements around the discharge point to ensure that staff safety is not compromised in the event of building evacuation.

#### **Response**

Construction sites would be arranged to maintain emergency access and exit arrangements to adjacent buildings at all times. Provision of construction hoarding would be placed predominantly at the facade of the construction site and would be designed to limit obstruction or restriction of space to any neighbouring building and maintain clear minimum footpath widths for pedestrians.

Further consultation would occur with owners and occupiers of any affected adjoining properties to advise of proposed works and address issues regarding impacts to circulation and queuing spaces to enable safe and convenient pedestrian movement. This would include consideration of the emergency exit arrangements from 50 Martin Place so that these are maintained.

### **7.1.6 Adjustments to utility services (electricity, sewer, gas, telecommunications, sewer / drainage)**

#### **Issue raised**

Adjustments to utility services may adversely affect business operations. Macquarie Bank would like to understand how building owners and tenants will be consulted ahead of time so suitable arrangements can be made.

#### **Response**

Any works to utilities would be managed to eliminate or minimise the duration of any interruption of supply to users. Where interruption would be required, potentially affected users would be notified in advance of the disruption.

Transport for NSW would continue to consult with Macquarie Bank. The project team can be contacted via the community information line (1800 171 386) or project email ([sydneymetro@transport.nsw.gov.au](mailto:sydneymetro@transport.nsw.gov.au)).

### **7.1.7 Access to brigade booster valve assembly**

#### **Issue raised**

Booster valve assembly for 50 Martin Place is located at the corner of Castlereagh Street and Martin Place. Macquarie Bank would like to understand if there will be any impacts to firefighting ability.

#### **Response**

Potential disruption to emergency services access is considered in Section 8.4.2 of the Environmental Impact Statement. This section identifies that construction sites would be arranged to ensure emergency access to nearby buildings and precincts is maintained (including access to emergency firefighting infrastructure). In addition there would be ongoing consultation with emergency service providers and building owners in relation to any changed traffic conditions around construction sites that may affect emergency services.

## 7.2 Commonwealth Bank of Australia

### 7.2.1 Consultation

#### Issue raised

The Commonwealth Bank of Australia is a tenant of the ground floor and lower ground floor areas of 48 Martin Place Sydney. The Commonwealth Bank of Australia was not consulted or made aware of the planning exhibition until the final day of exhibition and will review the documentation and provide comments as soon as possible.

#### Response

As outlined in Chapter 5 of the Environmental Impact Statement and supported in Appendix C, community engagement around the extension to the Sydney Metro network, including Chatswood to Sydenham, commenced in June 2014.

Almost two years of engagement around an extension to the Sydney Metro network occurred, prior to the statutory required consultation. The aim of this consultation was to gather feedback during the development of the project and feed into the preparation of the Environmental Impact Statement.

Properties immediately adjacent to future construction sites or identified as being potentially affected by the project were either doorknocked by Transport for NSW Place Managers or meetings requested with major landowners and tenants so that they were aware of the project and the extent of the works and were provided with information to help them make a submission on the project.

Transport for NSW would continue to consult with the Commonwealth Bank of Australia. The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

Transport for NSW will continue to engage closely with stakeholders and affected properties owners and occupiers through all stages of design, planning, and construction. Further information regarding consultation during construction is provided in Chapter 4 of this report.

## 7.3 MLC Centre Company

### 7.3.1 Construction stage

#### Issue raised

The approved works to the podium and basement levels of the MLC Centre (D2015/66) have not been acknowledged in the cumulative impacts section of the Environmental Impact Statement. The MLC Retail Redevelopment works may be undertaken concurrently with the Sydney Metro works at Martin Place, requiring detailed coordination between the two projects.

Based on the above, MLC identify that there may be opportunities to share construction zones and potential road closures, in which the MLC Centre would welcome a further discussion.

## Response

Section 26.3 of the Environmental Impact Statement identifies the potential for cumulative impacts with a range of other projects during the construction of the Sydney Metro City & Southwest Chatswood to Sydenham project. This assessment focussed on projects where there is the potential for construction works to overlap based on project location and timing, and projects that are typically large-scale developments. Although the MLC Retail Redevelopment was not specifically identified in the Environmental Impact Statement, the approach for managing cumulative impacts (mitigation measure CU1) would still apply to this project. This approach is:

*Transport for NSW would manage and co-ordinate the interface with projects under construction at the same time to minimise the potential cumulative impacts. Co-ordination and consultation with relevant stakeholders would include:*

- *Provision of regular updates to the detailed construction program, construction sites and haul routes*
- *Identification of key potential conflict points with other construction projects*
- *Developing mitigation strategies in order to manage conflicts. Depending on the nature of the conflict, this could involve:*
  - ◆ *Adjustments to the Sydney Metro construction program, work activities or haul routes; or adjustments to the program, activities or haul routes of other construction projects*
  - ◆ *Co-ordination of traffic management arrangements between projects.*

This process would also identify potential opportunities to share road closures and construction zones to minimise overall impacts to the community, noting that shared construction zones would need to be subject to workable contractual arrangements so responsibilities and accountabilities between potentially two different contractors are clear.

## Issue raised

Pedestrian ingress and egress to the MLC Centre, across Castlereagh Street and Martin Place will be constrained and disrupted during construction of the Sydney Metro project when Martin Place is temporarily closed. The MLC joint owners would like to discuss how these impacts will be managed and minimised for all parties.

## Response

The potential for impacts to active transport (including pedestrian access to surrounding buildings) is considered and assessed in Section 8.4 of the Environmental Impact Statement. This section identifies that construction sites would be arranged to maintain safe access to surrounding properties.

In relation to the construction works across Castlereagh Street and Martin Place, Transport for NSW is reviewing and further developing construction staging and methodologies. Further detailed construction planning for the pedestrian routes to and from the existing Martin Place Station would be carried out. This would seek to maintain underground access to Martin Place Station where feasible and reasonable, to reduce impacts at street level. The revised methodology will be the subject of further pedestrian analysis so that pedestrian movements are maintained at an acceptable level of service throughout construction and that appropriate access is maintained to surrounding properties.



Construction Traffic Management Plans would be prepared for the project. These plans would address the need to minimise disruption to pedestrian flows and the safe movement around construction sites. The area allocated as available for pedestrian access through Martin Place would be consistent with and in some cases better than that adopted on a regular basis in the Amphitheatre of Martin Place during events.

The process for developing Construction Traffic Management Plans and Traffic Control Plans is provided in the Construction Environmental Management Framework (Appendix B of this report).

### **Issue raised**

Dust, noise, construction traffic, pedestrian obstructions and temporary way finding associated with the construction of Sydney Metro will impact upon the popularity, ambience and attractiveness of the bars, restaurants and cafes in the plaza (which all have outdoor seating areas) of the MLC. The MLC Food Court which utilises natural ventilation would also be affected as well as Luxury Retail outlets along Castlereagh Street in the proximity of the construction zone. Consultation and collaboration on the construction management plans would be welcomed by the MLC joint owners.

### **Response**

It is inevitable that a project of this scale and size would result in some temporary impacts on existing amenity to surrounding businesses. Consideration of potential amenity and access impacts for surrounding businesses is considered in Section 13.4 of the Environmental Impact Statement. In relation to the MLC Centre, this assessment found that:

- Construction work could result in amenity related impacts (noise, vibration and dust). These impacts would be most noticeably experienced by businesses such as outdoor cafes and bars
- Construction sites, hoardings, changes to access routes and perceived access challenges could disrupt pedestrian access in the vicinity of businesses. There could also be some loss of passing trade to the MLC Centre as a result of the closure of the existing underground pedestrian link between Martin Place Station and the MLC Centre.

Conversely, the presence of the construction site and construction workers would present opportunities for increased trade for businesses such as food and beverage outlets in the MLC Food Court.

Consultation would continue with the MLC Centre (in accordance with mitigation measure B11 – refer to Chapter 11 of this report) to identify and develop tailored mitigation measures to manage the specific construction impacts to the MLC Centre businesses. The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

### **Issue raised**

The MLC joint owners would like to further understand, when available, any potential impacts from some of the significant construction activities for the Sydney Metro project, including but not limited to:

- Site preparation, shaft and cavern excavation and spoil removal from both the Martin Place north and south work sites
- The tunnel excavation and construction
- Impacts associated with interruptions and diversions of services and communications; proposed post construction ventilation stacks (depending on where the stacks are to be located)
- Vehicular movements into and out of the Sydney Metro sites, particularly during key activities such as spoil removal.

## Response

The anticipated construction methods at the Martin Place construction sites are described in Chapter 7 of the Environmental Impact Statement, particularly in Section 7.10.7. This includes a description of the shaft and cavern excavation for the new Martin Place Station, and a description of tunnel excavation and construction.

An assessment of potential construction traffic and transport impacts around Martin Place is provided in Section 8.4.14 of the Environmental Impact Statement. This section identifies the anticipated construction vehicle numbers to and from the Martin Place construction sites during the various construction stages and vehicle access routes.

Any works to utilities would be managed to eliminate or minimise the duration of any interruption of supply to users. Where interruption would be required, potentially affected users would be notified in advance.

Consultation would continue with the MLC Centre as construction methods are refined as part of detailed construction planning. This consultation would provide an opportunity to understand the anticipated construction activities and what management and mitigation would be in place to minimise any potential impacts to the business.

### 7.3.2 Final design outcomes

#### Issue raised

The MLC joint owners request further consideration to be given to the proposed permanent closure of the direct pedestrian link from Martin Place Station to the MLC Centre, and note that the MLC Centre was not consulted on this prior to publication of the Environmental Impact Statement. MLC wish to discuss opportunities to retain, modify or provide a new pedestrian connection directly from Martin Place Station to the MLC Centre.

#### Response

Transport for NSW is proposing to reinstate areas of Martin Place affected by construction consistent with the City of Sydney's masterplan. This includes the relocation of the station entries within Martin Place to improve the public domain. The addition of a new metro entrance, with a direct connection to the existing Martin Place Station would provide the opportunity to fulfil this objective while maintaining accessibility to both the Sydney Metro and Sydney Trains services at this location. The proposed southern entry and exit to the metro station at Martin Place would provide efficient access between the stations and the MLC Centre using the existing footpath network.

The design of the metro station at Martin Place does not preclude a connection back into the MLC building and attempts have been made to safeguard a location for an unpaid link at concourse level. However, at this stage Transport for NSW does not propose to provide this underground link. Further, due to significant level changes and the presence of numerous services (some heritage listed) it would be difficult to provide a compliant link.

Consultation would continue with the MLC Centre during detailed design. This would include discussions around opportunities for pedestrian connectivity to the MLC Centre.

**Issue raised**

The MLC joint owners would like to understand how potential impacts on pedestrian movements are being addressed, specifically relating to:

- The immediate locality as a result of the works in and below Martin Place, on the eastern side of Castlereagh Street and at 37-51 Martin Place
- General pedestrian movements towards the MLC Centre, especially if the underground connections to the existing Martin Place Station, to and from the MLC Centre are closed.

**Response**

Section 9.4.7 of the Environmental Impact Statement provides an assessment of pedestrian integration around the Martin Place Station. This assessment found that the majority of the footpaths in the area, including the locations identified by the MLC Centre submission, would continue to operate at a level of service B or better. Level of service B is a situation when normal walking speeds are only occasionally restricted, there is some occasional conflict with passing, crossing and reverse movements.

Pedestrians travelling from Martin Place Station to the west (towards the MLC Centre) would be able to exit the station from the new southern entry and walk through Martin Place. This would also provide access to the MLC Centre.

**Issue raised**

The MLC joint owners have concerns about the proposed main discharge of passengers from the station onto Castlereagh Street. The current proposals appear to have circa 14,500 passengers discharging onto a three metre side footpath (Castlereagh Street). Those users then need to turn north to reach the pedestrian crossing, creating potential safety issues and 'bottle necks'. The MLC joint owners would like consideration given to extending the pedestrian crossing further south and / or discharging passengers onto the expanse of Martin Place, rather than the three metre wide Castlereagh Street footpath. Consideration on how any proposed discharge locations impact on the MLC Centre will need to be reviewed and discussed.

**Response**

The current design of the Martin Place Station southern entry includes a pedestrian plaza which opens onto both Castlereagh Street and Martin Place. As such, pedestrians would be able to exit the station and use the existing pedestrian crossing across Castlereagh Street without creating a bottleneck. Efficient pedestrian movements to and from the station entries is a priority and would continue to be considered during detailed design.

**Issue raised**

The MLC joint owners would like to ensure there is appropriate activation along the Castlereagh Street frontage that is commensurate with the current and proposed (as part of the MLC Retail Redevelopment) street environment. As one of Sydney's premier luxury shopping boulevards, MLC suggest that the current 'artistic impression' included within the Environmental Impact Statement of the Martin Place Station provides for a quality of design commensurate with the Castlereagh Street and / or Martin Place precinct, and significantly limits activation at these locations.

### **Response**

Street level activation at Martin Place Station (including on Castlereagh Street) would be determined during detailed design in consultation with relevant stakeholders. This would follow the place-making principles described in the Chatswood to Sydenham Design Guidelines (Appendix A of this report) including supporting the City's public domain strategies through enhancement and activation of the public domain and designing the entries at Martin Place as new public spaces. They also include guidance on the built form design in areas of heritage sensitivity. The Design Guidelines have been updated to include additional place-based details to guide the ongoing design process. The ongoing design process would also be guided by working sessions with the City of Sydney and advice from the Sydney Metro Design Review Panel.

### **Issue raised**

The MLC joint owners would like to ensure due consideration is given to the potential adverse impacts associated with the location of ventilation shafts (the proposed location of which is currently not identifiable).

### **Response**

Tunnel ventilation and draught relief would be provided at all station sites to provide fresh air to the stations and tunnels and aid the circulation of air. The metro trains are electric and emissions would be limited to brake dust, which would be minimised through the implementation of a regenerative brake system. Any emissions from the ventilation shafts would be in very low concentrations. On this basis no adverse impacts would be expected.

The exact location of the fresh air ventilation shafts would be determined during detailed design.

### **Issue raised**

The MLC joint owners would request that adequate assurance is provided that no alteration to the existing solar access to the MLC Centre, particularly to the publicly accessible plaza areas. MLC request that due consideration is given to over station development in the location of the existing 39 Martin Place building and the setback of any future buildings is as per the site boundary of the existing building envelope.

### **Response**

The aboveground elements of the metro station at Martin Place would be relatively low in height and would not affect solar access to adjacent properties.

Over station development will be subject to a separate approval processes. This will include consideration of council planning policies regarding building setbacks and solar access planes.

### **Issue raised**

The MLC joint owners note that this Environmental Impact Statement does not cover over station development specifically, and understand that this will be addressed separately. MLC request being consulted with any proposals for the over station development as it progresses, ensuring appropriate consideration is given to how this impacts on and interfaces with both the MLC Centre, and the wider Martin Place and Castlereagh Street environments.

### **Response**

Over station development will be subject to a separate approval processes. This will include appropriate consultation activities with neighbouring stakeholders (including MLC), and assessment of potential impacts.

## 7.4 Sydney Airport

### 7.4.1 Prescribed airspace

#### Issue raised

It is of vital importance that new developments around the proposed new stations, particularly at Waterloo and Sydenham, do not compromise aviation safety or reduce the efficiency of Sydney Airport by intruding into its prescribed airspace. Given the location of the land in question relative to Sydney Airport, it would appear that the Obstacle Limitation Surface (OLS), the Procedures for Air Navigation Services- Aircraft Operations (PANS-OPS) surfaces and the Precision Approach Path Indicator (PAPI) system surfaces are the relevant components of Sydney Airport's prescribed airspace. Airlines may also have developed what are called "engine out (emergency) procedures" that may also be relevant and would also need to be taken into account.

While the future development of land around new stations in general would need to have regard to airspace-related issues, the redevelopment of the area around the proposed Waterloo Station in particular is very likely to be affected. Consideration should also be given to the temporary impact on prescribed airspace of cranes and other construction equipment at the Waterloo Station and around the Marrickville dive site.

At the site around the proposed Waterloo Station, the OLS varies between 60 and 70 metres above sea level (AHD), while the PAPI and PANS-OPS surfaces are located at or around 125 metres. Therefore if the buildings constructed as part of the urban redevelopment of this area are built to this maximum height, they may penetrate the OLS.

We also note that at the Marrickville dive site, which is much closer to the airport, the OLS varies between 30 and 50 metres AHD, with the PAPI and PANS-OPS surfaces located at around 40 to 50 metres AHD. This same issue would apply to any construction equipment, such as a crane that could potentially intrude into this protected airspace, even if only temporarily. In the case of the Marrickville dive site, this issue is especially vital, as the proposed works site is located under the extended centre line of Sydney Airport's main north south runway (ie. directly in line with the runway on final approach for aircraft landing from the north or aircraft taking off to the north.)

While a structure (including a building or crane) that penetrates the OLS is not automatically prohibited, approval from the Department of Infrastructure and Regional Development is required. However, permanent intrusions of PANS-OPS are prohibited by Commonwealth law. Sydney Airport's website outlines the assessment process in more detail.

Sydney Airport would be pleased to provide you with more definitive advice in the future concerning these proposed building height limits, and work with you to reach a positive resolution to the benefit of this proposal.

#### Response

The highest structure on the Waterloo and Marrickville dive sites are anticipated to be the acoustic sheds at around 15 metres high. This would be below the OLS at these sites. Notwithstanding, other equipment may be located temporarily at these sites (such as cranes) and are not likely to extend above the OLS. Should extension into the OLS be required, Sydney Metro would obtain the necessary approvals.

Over station development will be subject to a separate approval processes. This process would consider the potential impacts of the over station development, including Sydney Airport airspace requirements.

## 7.4.2 Future employment lands

### Issue raised

Another issue of importance when considering the development of land around stations is the protection of employment lands.

As Sydney Airport and Port Botany both continue to grow, an adequate supply of industrially zoned employment lands in close proximity to the airport and port will be vital to ensuring the full economic and employment benefits of such developments are realised. This will rely on zoning determinations, and particularly the maintenance of existing industrial zoned lands.

While we acknowledge the importance of boosting Sydney's housing supply, it is important that the rezoning of industrially-zoned land in close proximity to the airport, and in particular to the north of the airport, be undertaken in a coordinated manner with proper regard to the strategic planning implications. To this end, Sydney Airport have urged the Greater Sydney Commission to recognise within relevant district plans that an adequate stock of appropriately zoned employment lands in the vicinity of Sydney Airport must be protected to facilitate the airport's ongoing operation and long term growth.

### Response

Issues of re-zoning and protection of employment lands are outside the scope of the Sydney Metro City & Southwest Chatswood to Sydenham project. These issues are currently being addressed by the Department of Planning and Environment and UrbanGrowth NSW.

## 7.4.3 Traffic impact of construction

### Issue raised

The Environmental Impact Statement discusses the impact of increased construction vehicles upon local traffic at each of the work sites. Of particular interest to Sydney Airport are the Waterloo Station and Marrickville dive sites, which are sufficiently close to the airport that the increased traffic for each could impact on traffic heading to the airport.

In particular, Sydney Airport note that the southern haul route from the Waterloo Station site follows Botany Road and passes through the interchange with Mill Pond Road, Southern Cross Drive and General Holmes Drive. This is a critical intersection for traffic approaching the airport. While the modelling in the Environmental Impact Statement suggests that the impact on traffic could be minimal or even beneficial, there will nevertheless be an increase in the number of heavy vehicles on these roads at a time that coincides with the morning peak of traffic heading to the airport.

Therefore, Sydney Airport would like to request that project managers and representatives of the Roads and Maritime Services (RMS) liaise closely with the Ground Transport team at the airport throughout construction of the metro to ensure these impacts are minimised and can be well communicated to stakeholders.

## Response

An assessment of potential construction traffic and transport impacts around Waterloo Station and Marrickville dive site is provided in Sections 8.4.17 and 8.4.18 of the Environmental Impact Statement respectively. The construction traffic assessment for Waterloo Station presented two haul route options with the Mill Pond Road / Southern Cross Drive / General Holmes Drive interchange being assessed as part of the southern haul route option. This assessment found that there may be a slight deterioration in performance at the interchange during some periods. However, this interchange is already performing at or above capacity during peak periods. This assessment also assumes that all construction vehicles would use the southern haul route. In reality, it is likely that there would a split of construction vehicles between the two routes which would reduce the potential impacts described in the Environmental Impact Statement. Based on this assessment, there is not anticipated to be impacts to airport-bound traffic from the project.

Section 26.3 of the Environmental Impact Statement identifies the potential for cumulative impacts with a range of other projects during the construction of Sydney Metro Chatswood to Sydenham, including WestConnex.

Transport for NSW would manage and co-ordinate the interface with projects under construction at the same time to minimise the potential cumulative impacts. Co-ordination and consultation with relevant stakeholders would include:

- Provision of regular updates to the detailed construction program, construction sites and haul routes
- Identification of key potential conflict points with other construction projects
- Developing mitigation strategies in order to manage conflicts. Depending on the nature of the conflict, this could involve:
  - ◆ Adjustments to the Sydney Metro construction program, work activities or haul routes; or adjustments to the program, activities or haul routes of other construction projects
  - ◆ Co-ordination of traffic management arrangements between projects.

## 7.5 KU Children's Services

### 7.5.1 Noise and sleep disturbance

#### Issue raised

The Environmental Impact Statement identifies that KU Lance will be exposed to excessive and unsafe levels of noise for the duration of the project, levels well in excess of acceptable community standards. These excessive levels will continue not just for a few days and weeks, but for years.

KU Lance draw attention to the detrimental impact this noise will have on the development and safety of children attending this service. Elevated noise levels are known to create stress, and stimulate aggression and other anti-social behaviours in children, with toddlers and babies particularly vulnerable.

The levels predicted in the Environmental Impact Statement will make it difficult for children to hear speech from educators, from their peers, and from themselves. The first five years of life are critical for the acquisition and development of language skills. The ability to hear from others or yourself is essential for development of speech, and constant and excessive noise can have devastating, life-long impacts of affected children.

The unpredictable nature of the noise, for example from piling, blasting and traffic movements will add additional strain to the children and staff at this centre.

Unfortunately KU Lance has already experienced several years' of construction related noise from the site remediation works and the development of the Barangaroo Headland Park. These concerns are based on first-hand experience of construction noise. KU Lance is surrounded by rock, and we expect the reflected noise from the cliff wall behind the centre will accentuate the noise problem. The information supplied, indicates this new construction will experience even higher noise levels than previous works.

The teaching program at KU Lance includes music and storytelling as essential elements. Both of these experiences will be affected by noise disturbance. The children at KU Lance play and eat lunch outdoors. With the change in conditions to the environment, these experiences may not even be possible.

Language and social interactions go hand in hand. If children are having difficulty hearing and being heard, social interactions may be impaired, as children find it difficult to engage in conversations with each other or with staff.

General child wellbeing may also be affected by the unpredictable noises causing interruption to concentration and heightened anxiety particularly in our babies.

Unexpected noises are known to interrupt sleep patterns. The babies at KU Lance sleep at times throughout the day. While babies will sleep through background noises, the unexpected noises caused by trucks being filled with waste, metal on metal, or blasting is a concern for the child's wellbeing.

KU Lance identify that tired children are not happy children, and a child or baby being woken from deep sleep, changes their whole routine.

KU Lance expect all rooms, but especially the nursery, will require upgrades to the air conditioning unit, or additional air purifiers to create background noise to mask the unwanted external noise and increase sleep quality.

Suggested solutions include:

- Noise / sound abatement measures at the site of construction
- Acoustic shielding and vibration controls on all preparatory work
- Increased sound insulation in the building
- Green zones, and / or vertical gardens at the front and back of the building to assist with noise control
- Internal curtains to assist with noise control
- Air purifiers
- Upgraded air conditioner.

### **Response**

The assessment of potential construction noise impacts in the Environmental Impact Statement presents a worst-case 15-minute assessment in accordance with the approach required by the *Interim Construction Noise Guideline*. This approach assumes that all construction equipment for a particular construction scenario is operating at the same time and at the closest point on the site to any receiver. In reality, construction equipment would operate at varying locations around the site and would rarely all be in use at the same time. As such, the actual noise levels experienced by individual receivers would vary throughout the construction works.



In relation to the KU Lance child care centre, the noise and vibration assessment in the Environmental Impact Statement found that:

- There are anticipated airborne noise exceedances of the noise management levels of greater than 20 dB during demolition and site establishment, between 10 and 20 dB during earthworks and construction of the aboveground station building, and up to 10 dB during station excavation works.
- Ground-borne noise levels are predicted to exceed the relevant noise management levels by up to 10 dB
- Vibration levels are predicted to comply with the relevant screening criterion

The Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report) provides the process for carrying out more detailed construction noise and vibration impact statements prior to each construction activity based on further understanding of the construction equipment and construction processes, which would be confirmed during detailed construction planning. This process would provide further detail regarding the actual noise levels which would be experienced by individual receivers.

As part of this process, consultation would be carried out with KU Lance (in accordance with mitigation measure B11 – refer to Chapter 11 of this report) to identify and develop mitigation measures to manage the specific construction impacts to the KU Lance child care centre.

The Construction Noise and Vibration Strategy also provides a list of standard noise mitigation measures which would be implemented at all construction sites for the project. This includes some of the measures identified by KU Lance including noise abatement measures at the construction site and acoustic shielding.

## 7.5.2 Dust

### Issue raised

KU Lance expect dust and perhaps other airborne problems will change the environment at KU Lance. KU Lance are very concerned about the impact of dust and any other airborne particles on children and staff. KU Lance have many children with respiratory conditions, including asthma, and are concerned that the increase in dust and other contaminants in the environment will impact on the ability of the children to use the outdoor play spaces.

The nature of known contaminants on the Barangaroo site, including asbestos, heavy metals, PCBs and other toxins that will be disturbed during the construction phase, is of great concern.

Suggested solutions include:

- Green zones, and / or vertical gardens at the front and back of the building to assist with airborne contaminant control
- Upgraded air conditioner
- Air purifiers
- Compensation for extra cleaning costs – to reduce dust and airborne contaminants that cause respiratory problems
- Measures to absorb dust – possibly including the installation of screens.

## Response

Section 22.4 of the Environmental Impact Statement provides an assessment of potential air quality impacts of the project. This assessment found that dust emissions from the project would be readily manageable to appropriate standards through the implementation of standard mitigation measures such as installing hard surfaces on long term haul routes and regularly damping down unsurfaced work areas (as identified in Section 22.6 of the Environmental Impact Statement and revised in Chapter 11 of this report).

Specific consultation (as per mitigation measure SO2) would be carried out with sensitive community receivers (such as child care facilities) potentially impacted during construction. This consultation would aim to identify and develop specific measures to manage construction impacts for individual sensitive community and business receivers.

The Barangaroo Station site is identified as having high and moderate contamination risks. The location of the former gasworks along Hickson Road at Barangaroo would represent a high risk and is a known source of contamination including hydrocarbons, heavy metals and metalloids in soil and groundwater and potential vapour issues. Reclaimed land within Barangaroo represents a moderate risk and is a known source of isolated contamination associated with unknown historical use and potential waste materials within the soil (ie metals, hydrocarbons, pesticides, PCB, asbestos and gasworks wastes). Further desktop contamination assessments would be carried out for the Barangaroo Station site to determine whether detailed contamination assessments, including collection and analysis of soil and groundwater samples are required (refer to mitigation measure SCW1 in Chapter 11 of this report). This would inform remediation and management plans.

### 7.5.3 Increased traffic and impact on parking access

#### Issue raised

KU Lance expect that traffic around KU Lance will increase dramatically. These concerns are for the safety of children being dropped off and collected.

Additional parking is required for the safe drop off and collection of children.

#### Response

Construction traffic to and from the Barangaroo construction site is anticipated to travel along Hickson Road to access the Western Distributor. KU Lance is accessed from High Street which is separated from Hickson Road by the Hickson Road wall. There is not anticipated to be any construction traffic on High Street associated with the project. As such, there is not anticipated to be any impacts to child safety associated with the drop off and collection of children from KU Lance.

## 7.6 Labsonics

### 7.6.1 Noise management levels

#### Issue raised

This company is the most sensitive of sensitive receivers, and have the absolute need to retain our current Studio background noise level of 25dB (as correctly reported in Environmental Impact Statement), and need to do so with zero intermittent, nor any other kind of increase to it.

The recommended “acceptable” level of  $L_{Aeq} + 5dB$  is unacceptable to the function of the Studios.

Furthermore, the *Interim Construction Noise Guideline* recommendation for higher levels of noise intrusion during working hours is precisely opposite to those that serve our functional needs.

## Response

The noise and vibration assessment in the Environmental Impact Statement was carried out in accordance with the Secretary's environmental assessment requirements. In particular, noise management levels for receivers were set based on guidance provided in the *Interim Construction Noise Guideline*.

A revised assessment of construction noise impacts at Crows Nest Station is provided in Section 9.6.1 of this report. In relation to Labsonics, this assessment found that:

- There are predicted exceedances of the airborne noise management levels of greater than 20 dB during enabling works, earthworks, construction of the acoustic shed and construction of aboveground station buildings; and predicted exceedances of 10 to 20 dB during excavation working during the daytime
- Ground-borne noise levels at Labsonics could be higher than 75 dB during the daytime period.

These predicted noise levels are based on a worst-case 15-minute assessment carried out in accordance with the approach required by the *Interim Construction Noise Guideline*. This approach assumes that all construction equipment for a particular construction scenario is operating at the same time and at the closest point on the site to any receiver. In reality, construction equipment would operate at varying locations around the site and would rarely all be in use at the same time. As such, the actual noise levels experienced would vary throughout the construction works.

It is acknowledged that some receivers are particularly sensitive to noise and vibration at different periods of the day. This would be considered as part of the Construction Noise Impact Statement process (described in the Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report)). As part of this process, consultation would be carried out with Labsonics (in accordance with mitigation measure B11 – refer to Chapter 11 of this report) to identify and develop mitigation measures to manage the specific construction impacts to Labsonics' operations.

## 7.6.2 Noise impacts

### Issue raised

Labsonics note that it is proposed for special sensitive receivers such as their facility to receive the site specific assessment attention required. However, their submission notes that excessive airborne, and especially structure-borne ground noise intrusion, as generated by blasting, rock breaking, jack hammering, excavators, bulldozers, pile drivers etc., will be almost impossible to mitigate if it is proximate.

Labsonics note that the Environmental Impact Statement identifies that as a possible additional mitigation measure Sydney Metro may provide alternative accommodation in some cases.

However, Labsonics know of no vacant commercial standard recording studios of matching size elsewhere in the city and consequently regard the proposal as likely impossible to fulfil. In which case, Labsonics remain exposed to the very real possibility of total commercial extinction at worst, or major commercial damage at least.

Given that works are scheduled to start at the end of this year / early next, and that a major lead time of 12 months minimum would be required to make any alternative arrangements – provided the assumed Government compensation allows it – the matter is now urgent.

Accordingly, with genuine urgency, Labsonics requests advice as to how Sydney Metro proposes to manage, compensate, assist or otherwise deal with the potentially massive commercial damage the project will cause to the organisation.

**Response**

Consultation would be carried out with Labsonics (in accordance with mitigation measure B11 – refer to Chapter 11 of this report) to identify and develop mitigation measures to manage the specific construction impacts to the Labsonics business. This would include a detailed examination of all high impacting construction activities. Where feasible and reasonable, specific mitigation and management measures would be identified that would best meet the requirements of maintaining the operations of the business. This would include consideration of alternative construction methods, adjustments of working hours around key period for the Labsonics business and / or options for adjustments to the Labsonics business hours around required construction activities. This consultation process would also aim to identify noise and vibration attenuation measures already in place at the Labsonics business and refine the potential noise and vibration impacts.

**7.7 Seven Network****7.7.1 Noise and vibration assessment methodology****Issue raised**

The Environmental Impact Statement refers to Australian standard AS2107 which specifically provides that it is not intended for the assessment of construction noise or railway noise.

**Response**

Australian Standard AS2107 was used in the construction noise assessment to determine the relevant construction noise management levels for some sensitive receiver types where the *Interim Construction Noise Guideline* does not provide guidance. AS2107 was not used as part of the operational noise assessment. The construction assessment was carried out in accordance with the Secretary's environmental assessment requirements for noise and vibration – amenity and noise and vibration – structural, and the *Interim Construction Noise Guideline*. In this context, the use of AS2107 is considered appropriate.

**Issue raised**

Although our Martin Place premises have been identified as a sensitive receiver in the Environmental Impact Statement with sensitivity similar to a theatre, the Environmental Impact Statement has not examined in detail the impacts of the construction noise and vibration on the Seven Network, nor set appropriate criteria.

The external noise level of 79 dB(A) indicated in the Environmental Impact Statement for our premises for construction works:

- Exceeds both the general commercial limit of 70 dB(A) nominated in the Environmental Impact Statement and the external limit of 50 dB(A) nominated for a television station in the Environmental Impact Statement
- Would not provide a satisfactory internal area for our staff and would present issues with respect to broadcasts to air within our studio.

**Response**

Appropriate criteria for the Seven Network building have been set for both construction and operation in accordance with the *Interim Construction Noise Guideline* (for construction) and the *Rail Infrastructure Noise Guideline* (for operation).

Section 10.4.8 of the Environmental Impact Statement notes that construction noise levels are predicted to be up to 79 dBA at the external façade of the Seven Network building. This section also notes that this level would be similar to external noise levels from heavy vehicles and buses using Castlereagh Street and general city noise. Internal noise levels would be much lower given the attenuation by the building walls and glass.

Consultation would be carried out with the Seven Network (in accordance with mitigation measure B11 – refer to Chapter 11 of this report) to identify and develop mitigation measures to manage the specific construction impacts to the Seven Network.

#### **Issue raised**

There is no assessment of ground-borne vibration from construction activities being regenerated into the Seven Network's premises.

#### **Response**

Potential ground-borne noise impacts are assessed in Section 10.4.8 of the Environmental Impact Statement, with specific building mapping provided in Technical Paper 2: Noise and vibration. This assessment found that ground-borne noise at the Seven Network building would comply with the relevant noise management levels.

#### **Issue raised**

There is no discussion in the Environmental Impact Statement as to the internal noise levels within our premises during construction that would be a combination of external noise and regenerated noise from ground-borne vibration.

#### **Response**

Noise levels within a building from construction works would generally be dominated by either airborne or ground-borne noise. The dominant noise type would depend on factors such as the type of construction works occurring and the nature of building itself. It would be rare that airborne noise and ground-borne noise would combine to result in a higher noise level. As a result, noise assessments do not typically provide a combined noise level from airborne and ground-borne noise.

As indicated above, internal noise levels are not expected to change significantly during construction of the project given that predicted external noise levels are similar to those currently experienced – due to buses and heavy vehicles on Castlereagh Street.

#### **Issue raised**

The nominated maximum internal limit that should be required to apply to the Seven Network studios and edit suites is NR25 for both the construction and operation of the Sydney Metro. This level would comply with the nominated 30 dB(A) Leq level suggested for the studio in the Environmental Impact Statement.

#### **Response**

Appropriate criteria for the Seven Network building have been set for both construction and operation in accordance with the *Interim Construction Noise Guideline* (for construction) and the *Rail Infrastructure Noise Guideline* (for operation).

For operational rail noise, the project would meet the nominated maximum internal limit of NR25 for the Seven Network building.

Construction noise management levels are typically higher than operational noise objectives given the temporary nature of construction activity. Issues concerning construction noise have been addressed elsewhere in this response to the Seven Network.

## 7.7.2 Construction noise and vibration impacts

### Issue raised

Seven Network's concerns need to be considered in the context of the nature of the premises.

The broadcast studio, the edit suites and the newsroom (although a busy area) require a quiet environment.

The Seven Network's premises also include high-tech equipment that is sensitive to vibration.

The master control room is used to monitor transmission and bring in live local, national and international feeds. The redundant presentation site provides a back-up presentation system for the entire network. It can control the programming and advertising content for all national markets if required. The central technical area room houses all major technical equipment to facilitate the production of television programs within our premises. The equipment includes back-end servers to support the newsroom workflow systems, graphics devices, media storage services and similar such equipment. The technical equipment has a total value in the millions of dollars. This area also includes multiple hard disk drives which are sensitive to vibration. Potentially high vibration could cause the failure of the hard disk drives, which could prevent the Seven Network's ability to produce programming from its Martin Place premises.

The Seven Network's concerns are based on reality, not on fear. Unfortunately, the Seven Network has already had experience of the disruption caused to our operations at Martin Place as a result of demolition and construction works. In 2012, the Seven Network had to take urgent injunction proceedings in the Land and Environment Court against the owner, developer and builder of 52 Martin Place in relation to construction noise and vibration as a result of refurbishment works carried out to the building. The proposed construction works for the Sydney Metro undertaken in Martin Place will be substantially greater than the refurbishment works that were carried out at 52 Martin Place.

### Response

It is acknowledged that the Seven Network building is particularly sensitive to noise and vibration impacts due to the nature of equipment and activities carried out within the building.

- The noise and vibration assessment carried out as part of the Environmental Statement found that:
- Airborne construction noise levels are predicted to be up to 79 dBA at the external façade of the Seven Network building. This level would be similar to external noise levels from heavy vehicles and buses using Castlereagh Street and general city noise. The building external to internal noise reduction would therefore adequately attenuate noise from the works to the Seven Network building
- Ground-borne noise levels are predicted to comply with the relevant noise management level
- Vibration levels would comply with the relevant cosmetic damage screening criterion.

Notwithstanding, it is acknowledged that equipment in the Seven Network building would be more sensitive to vibration impacts.

Consultation would be carried out with Seven Network (in accordance with mitigation measure B11 – refer to Chapter 11 of this report) to identify and develop mitigation measures to manage the specific construction impacts to the more sensitive equipment in the Seven Network building. This would particularly include detailed examination of all high noise impacting construction activities. Where feasible and reasonable, specific mitigation and management measures would be identified that would best meet the specific requirements of the Seven Network. This would include consideration of alternative construction methods and adjustments of working hours around key periods for the Seven Network. This consultation process would also aim to identify noise and vibration attenuation measures already in place at Seven Network and if feasible and reasonable refine the potential noise and vibration impacts.

### 7.7.3 Dust management

#### Issue raised

Seven Network's high tech equipment also requires a relatively clean environment. Dust can damage the equipment by blocking or reducing airflow into the individual cooling fans and filters on each piece of equipment.

Seven Network request a commitment to address dust generation and management in the vicinity of the Martin Place premises.

#### Response

Section 22.4 of the Environmental Impact Statement provides an assessment of potential air quality impacts of the project. While it is acknowledged that the Seven Network building contains equipment which is particularly sensitive to dust, potential dust emissions from the project are anticipated to be minor and would be managed to applicable standards through the mitigation measures, such as installing hard surfaces on long term haul routes and regularly damping down unsurfaced work areas, identified in Chapter 11 of this report.

### 7.7.4 Operational noise and vibration

#### Issue raised

The Environmental Impact Statement indicates that standard track attenuation in the vicinity of Seven Network's Martin Place premises is proposed. Seven Network request that if standard track attenuation would not be able to achieve the nominated maximum internal limit of NR25 at the Seven Network's premises, then high attenuation track or very high attenuation track measures should be used.

Seven Network request a commitment that consideration will be given by Transport for NSW and the Department of Planning and Environment to implementing high or very high attenuation track measures, and not standard attenuation measures at Martin Place.

#### Response

The project has been designed with the aim of achieving the noise and vibration objectives from the *Rail Infrastructure Noise Guideline*. Further, the assessment has been carried out to meet the Secretary's environmental assessment requirements and in accordance with the *Rail Infrastructure Noise Guideline*.

For the Seven Network building, a design objective of NR25 has been established. The operational noise level at this building is predicted to be less than NR23 with standard attenuation track treatment.

### 7.7.5 Role as an emergency broadcaster

#### Issue raised

Seven Network request a commitment to address the function of the Seven Network as an emergency broadcaster and the continuity of service of the fibre optic network used to send our broadcasts.

#### Response

The role of the Seven Network as an emergency broadcaster is acknowledged. Any works to utilities would be managed to eliminate or minimise the duration of any interruption of supply to users. This would include consideration of the need to maintain utility supply to key locations such as the Seven Network as an emergency broadcaster. Where interruption would be required, potentially affected users would be notified in advance.



## 7.7.6 Ongoing consultation

### Issue raised

The Seven Network must be given individual briefings on a fortnightly basis throughout the Sydney Metro project about the impacts of construction activities and mitigation measures that will be implemented by Transport for NSW.

### Response

Transport for NSW would continue to engage closely with stakeholders and affected properties owners and occupiers through all stages of design, planning, and construction.

The Construction Environmental Management Framework (Appendix B of this report) provides the communication and consultation strategy for the project. A range of communication methods would be used including briefings to communicate the progress of works, impacts and mitigation measures to affected stakeholders, as well as other activities such as construction notifications, doorknocks, emails, newsletters, and advertising. Further information on consultation during construction is provided in Chapter 4 of this report.

Transport for NSW would continue to consult with the Seven Network. The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

## 7.8 NSW Masonic Club and Castlereagh Boutique Hotel

### 7.8.1 Aboveground building and over station development

#### Issue raised

It is acknowledged that the future above-station development does not form part of the Environmental Impact Statement and will be subject to further development consent. It is recommended that a six 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.

#### Response

The suggestion by the NSW Masonic Club and Castlereagh Boutique Hotel regarding setbacks for new over station development is acknowledged.

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) include design requirements for aboveground station buildings. This would include consideration of adjacent heritage items.

Over station development would be subject to a separate planning approval process. This will consider potential impacts neighbouring properties and consideration of council planning policies regarding building setbacks, heritage and solar access planes.



## 7.8.2 Noise and vibration

### Issue raised

For the purposes of construction, the Environmental Impact Statement 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. 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.

### Response

It is acknowledged that the NSW Masonic Club and Castlereagh Boutique Hotel was incorrectly classified as a commercial receiver in the Environmental Impact Statement. Section 2.5 of this report provides a clarification of these receiver types and an assessment of the potential construction noise impacts.

With respect to the NSW Masonic Club and Castlereagh Boutique Hotel, the revised assessment indicated the following:

- Predicted exceedances of the airborne noise management levels of between 10 and 20 dB during enabling works and earthworks, and of up to 10 dB during aboveground station construction. Compliance with noise management levels are predicted during other activities including excavation of the station
- Internal ground-borne noise levels during rock breaking works would be greater than 75 dB during the daytime. The overall duration of this impact could be potentially reduced from around 24 days to around 13 days through the adoption of blasting as an alternative excavation technique.

### Issue raised

The Environmental Impact Statement 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.

### Response

Since the development of the Environmental Impact Statement, ongoing construction planning has identified that rock breaking for Pitt Street Station would no longer be required outside of standard construction hours. This would greatly reduce the potential airborne and ground-borne noise impacts during the more sensitive night-time period. Support station excavation activities would still occur up to 24 hours per day and seven days per week. Mitigation measures would be implemented on the site to manage the impacts of noise and vibration. Further information is provided in Section 9.6 of this report.

The revised assessment found that out of hours excavation supporting works would comply with the applicable noise management levels at the NSW Masonic Club and Castlereagh Boutique Hotel.

### Issue raised

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.

### Response

The ground-borne noise assessment found that during rock breaking excavation works internal ground-borne noise levels would be greater than 75 dB during the daytime at the NSW Masonic Club and Castlereagh Boutique Hotel. As identified above, further construction planning has identified that rock breaking works would no longer be required outside of standard construction hours. As such, ground-borne noise impacts at night from station excavation works are not anticipated at the NSW Masonic Club and Castlereagh Boutique Hotel.

The overall duration of this impact could be reduced from around 24 days to around 13 days through the adoption of blasting as an alternative excavation technique. All blasts would be designed to meet applicable noise and vibration standards.

### Issue raised

The Environmental Impact Statement 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.

### Response

Noise impacts from construction vehicles has been assessed based on guidance in the *Road Noise Policy*. This assessment (provided in Section 10.4.9 of the Environmental Impact Statement) indicated that the predicted noise level increase associated with construction traffic would exceed the base criteria, however the increase would comply with a 2 dB allowance (2 dB is generally the limit noticeable by the human ear – as such increases of less than 2 dB are considered to be negligible).

### Issue raised

The Environmental Impact Statement 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.

### Response

The presence of generators on the site has been considered in the predicted noise impacts for Pitt Street Station as provided in Section 9.6 of this report. Mitigation measures provided in Chapter 11 of this report would be implemented to further reduce the potential noise impacts, including consideration of the layout of construction sites to identify opportunities to shield receivers from noise as well as the possibility of enclosures.

Transport for NSW would continue to consult with the NSW Masonic Club and Castlereagh Boutique Hotel. The project team can be contacted via the community information line (1800 171 386) or project email ([sydneymetro@transport.nsw.gov.au](mailto:sydneymetro@transport.nsw.gov.au)).

### Issue raised

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.

### Response

The project has been designed with the aim of achieving the noise and vibration objectives from the *Rail Infrastructure Noise Guideline*. Further, the assessment has been carried out to meet the Secretary's environmental assessment requirements and in accordance with the *Rail Infrastructure Noise Guideline*.

The indicative track form for the current design of the tunnels, trains and operations (which has been determined to meet the noise and vibration trigger levels from the *Rail Infrastructure Noise Guideline*) is shown in Section 11.4.1 of the Environmental Impact Statement. For the area in the vicinity of the NSW Masonic Club and Castlereagh Boutique Hotel, the need for high attenuation track has been identified.

As identified in Section 6.3.1 of the Environmental Impact Statement, the tunnel alignment is indicative at this stage, and has been used for the purposes of the noise assessment. During detailed design the alignment may change (horizontally and / or vertically). Any changes to the alignment would be reviewed for consistency with the assessment contained in this Environmental Impact Statement including relevant mitigation measures, performance outcomes and any future conditions of approval. The final track form would be confirmed as part of detailed design and would meet the requirements of the *Rail Infrastructure Noise Guideline*. Transport for NSW would continue to engage with the NSW Masonic Club and Castlereagh Boutique Hotel regarding any changes to the alignment.

### Issue raised

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.

### Response

Section 26.3 of the Environmental Impact Statement identifies the potential for cumulative impacts with a range of other projects during the construction of Sydney Metro City & Southwest Chatswood to Sydenham project. This included consideration of nearby the 115-119 Bathurst Street redevelopment and CBD and South East Light Rail.

Transport for NSW would manage and co-ordinate the interface with projects under construction at the same time to minimise the potential cumulative impacts. Co-ordination and consultation with relevant stakeholders would include:

- Provision of regular updates to the detailed construction program, construction sites and haul routes
- Identification of key potential conflict points with other construction projects
- Developing mitigation strategies in order to manage conflicts. Depending on the nature of the conflict, this could involve:
  - ◆ Adjustments to the Sydney Metro construction program, work activities or haul routes; or adjustments to the program, activities or haul routes of other construction projects
  - ◆ Co-ordination of traffic management arrangements between projects.

The predicted noise impacts from the project are provided in Section 9.6 of this report and outlined above. Based on these predicted impacts, mitigation measures such as at-property treatments are not considered to be justified.

### 7.8.3 Structural engineering

#### Issue raised

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 7.5 mm/s 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.

#### Response

As people will hear vibration before they feel it, the noise and vibration assessment uses the ground-borne noise assessment as a proxy human comfort vibration assessment. It is acknowledged that there may be periods during construction when the human comfort vibration management levels would be exceeded in the NSW Masonic Club and Castlereagh Boutique Hotel.

To minimise the frequency and duration of these impacts, blasting is proposed as an alternative excavation technique. All blasts would be designed to meet applicable noise and vibration standards. Additional investigation has also been carried out regarding demolition techniques. The proposed requirements in relation to demolition works would include the implementation of demolition methodologies that limit the use of hydraulic hammers, rock breakers and other appliances that emit high noise and vibration levels.

Transport for NSW would continue to engage with the NSW Masonic Club and Castlereagh Boutique Hotel as construction methodologies are finalised. Once construction is underway, consultation would occur with the NSW Masonic Club and Castlereagh Boutique Hotel prior to high noise and vibration works commencing.

#### Issue raised

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
- Underpinning and or shoring works to retain the NSW Masonic Club site's footings and basement floor-slab.

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.

#### Response

The potential impacts to adjoining structures during demolition work is acknowledged. Additional investigation has also been carried out regarding demolition techniques. As an example, the proposed requirements in relation to demolition works would include the implementation of demolition methodologies that limit the use of hydraulic hammers, rock breakers and other appliances that emit high noise and vibration levels.

The methodologies would include, as a minimum:

- Using hydraulic concrete shears in lieu of hammers / rock breakers for the removal perimeter walls where practical
- Using hydraulic concrete shears in lieu of hammer / rock breakers for the removal of the lower levels of the building where practical
- Using demolition sequencing to shield noise sensitive neighbours from high noise levels by retaining wall elements adjoining / shielding those properties to the end of the demolition sequence (eg floor by floor leaving the perimeter wall that aids noise screening to the end)
- Locating demolition material removal areas away from the nearby noise sensitive neighbours (schools, childcare, forecourt retail, etc)
- Developing construction working hours that provide respite to neighbouring properties during the higher noise output activities (this would include works that do not use high noise level appliances but create high noise levels when assessed against background and residential noise standards)
- Developing construction methodologies that would minimise structural-borne noise to buildings that are connected or the cavity between buildings is or is likely to be bridged – this would include separating the structural connection prior to demolition through saw-cutting and propping, using hand held splitters and pulverisers or hand demolition in short respite periods (at the most advantageous times)
- Installing sound barrier screening to scaffolding facing noise sensitive neighbours where the noise and vibration management plan investigations indicate that the neighbouring property / occupancy would receive noise levels higher than the levels determined by Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report)
- Modifying demolition working sequencing and / or hours to reduce noise and dust emissions during peak pedestrian and adjoining neighbour outdoor activities and movements.

### **Issue raised**

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 rocksaw 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.

## Response

Existing condition surveys would be offered to the owners of all buildings with the potential to be affected by the project. The process for carrying out existing condition surveys is provided in the Construction Environmental Management Framework (Appendix B of this report).

In relation to potential vibration impacts, a conservative cosmetic damage screening criterion of 7.5 mm/s has been set for the NSW Masonic Club and Castlereagh Boutique Hotel as a heritage listed item. The assessment in the Environmental Impact Statement found that demolition of existing adjacent and adjoining structures may result in vibration impacts above the screening level for cosmetic damage. In this case a more detailed site specific assessment of the structure would be carried out to ensure vibration levels remain below an appropriate limit for the structure.

The NSW Masonic Club and Castlereagh Boutique Hotel would be offered a building condition survey prior to works commencing.

The need for rocksaw cuts on the boundary prior to rock hammering would be determined during detailed construction planning based on more detailed geotechnical information.

### 7.8.4 Traffic and pedestrian management

#### Issue raised

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 Environmental Impact Statement 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
- It is noted in the Environmental Impact Statement 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.

## Response

The recommendations of the NSW Masonic Club and Castlereagh Boutique Hotel are acknowledged and would be considered in the development of Construction Environmental Management Plans and implemented if feasible and reasonable.

The assessment of potential construction traffic and transport impacts around Pitt Street (refer to Section 8.4.15 of the Environmental Impact Statement) found that construction vehicles would have a negligible impact on the surrounding road network.

Furthermore, access to the NSW Masonic Club and Castlereagh Boutique Hotel would generally be maintained during construction and there would be no proposed access restrictions or changes to loading and taxi zones on Castlereagh Street during construction. However, temporary night-time partial road closures may be required, which would be managed in consultation with the relevant road authority. In this event, notification would be provided to potentially impacted properties in advance and alternative arrangements provided where feasible and reasonable.

Further, as identified in Chapter 4 of this report, notification of any works which may disturb businesses would be provided at least seven days prior to those works commencing. Transport for NSW would continue to consult with the NSW Masonic Club and Castlereagh Boutique Hotel. The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

### 7.8.5 Geotechnical

#### Issue raised

The primary geotechnical issues raised are:

- 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 records), it will be necessary for the relevant Metro contractors to progressively and carefully underpin the Hotel
- 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 made 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.

#### Response

Ground movement typically results from either the release or redistribution of stress in rock formations during excavation, or from ground consolidation following the drawdown of groundwater (during construction and / or operation). While the specific risk to buildings and structures due to ground movement depends on geotechnical conditions, distance from construction activities and building characteristics, preliminary ground movement contours indicate that for most of the project alignment there would be a negligible ground movement risk, with superficial damage to buildings unlikely. Some buildings and structures close to station and dive sites excavations may be at risk of superficial damage and therefore may require future building strain and structural assessment to address settlement related risks.

Mitigation measure GWG1 commits to the development of a detailed geotechnical model that would allow more specific assessment of the potential for damage to structures, services, basements and other sub-surface elements through settlement or strain. Where building damage risk is rated as moderate or higher (as per adopted risk based criteria), a structural assessment of the affected buildings and structures would be carried out and specific measures implemented to address the risk of damage. The requirement for a two to three metre buffer zone would be subject to the outcomes of a detailed geotechnical investigation that would be carried out as part of the detailed design process.



As noted above, existing condition surveys would be offered to the owners of all buildings with the potential to be affected by the project. The process for carrying out existing condition surveys is provided in the Construction Environmental Management Framework (Appendix B of this report). The need (or otherwise) to underpin adjacent structures would be determined during detailed design based on more detailed geotechnical information.

### 7.8.6 Air quality

#### Issue raised

The submission suggests that the Air Quality Assessment and Construction Environmental Management Plan that informed the Environmental Impact Statement 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 Environmental Impact Statement 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
- The level of management, mitigation and monitoring are sufficient to manage those impacts.

The submission advocates that a major re-assessment of air quality impacts be performed for this project. 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.

#### Response

The assessment provided in the Environmental Impact Statement is considered appropriate in terms of the potential level of impact of the project.

This assessment included:

- The location of sensitive receivers around construction sites
- The potential impacts associated with dust emissions (including potential hazardous materials on contaminated soils and from the demolitions of buildings)
- The types of activities with the greatest potential to generate dust.

The assessment identifies that potential dust impacts would be minor and would be readily manageable with the implementation of well understood and tested standard environmental mitigation measures provided in Chapter 11 of this report. This includes managing demolition to minimise dust generation.

### 7.8.7 Operational impacts to NSW Masonic Club

#### Issue raised

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 Environmental Impact Statement 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 Environmental Impact Statement 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 per cent 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 per cent 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.

### **Response**

Transport for NSW acknowledges that appropriate mitigation and management measures would be important to minimise construction and operation impacts on the NSW Masonic Club and Castlereagh Boutique Hotel.

The potential impacts and the proposed measures are discussed above. Potential business impacts have been considered in the Environmental Impact Statement (refer to Section 13.4.1) and moderate adverse impacts in terms of services / delivery access, customer access / passing trade, changed consumer behaviour and impacts on amenity (noise, vibration and dust) have been identified.

Further consultation with the aim of developing measures to best manage the specific construction impacts (including access and servicing) would be carried out with the NSW Masonic Club and Castlereagh Boutique Hotel to ensure identify specific impacts and develop specific mitigation measures (refer to mitigation measures B11 to B13). Measures to address amenity related impacts during construction are discussed in the responses to the specific amenity related issued above and are detailed in Chapter 11 of this report. In particular this would include the implementation of the Construction Noise and Vibration Strategy (Appendix C of this report) and the development of Construction Noise Impact Statement. As part of this process, consultation would be carried out with the NSW Masonic Club and Castlereagh Boutique Hotel (in accordance with mitigation measure B11 – refer to Chapter 11 of this report) to identify and develop mitigation measures to manage the specific construction impacts to the business.

Transport for NSW would continue to consult with the NSW Masonic Club and Castlereagh Boutique Hotel. The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

### 7.8.8 Other issues

#### Issue raised

The Environmental Impact Statement 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.

#### Response

The potential impacts associated with electric and magnetic fields are considered in Section 19.4.3 of the Environmental Impact Statement.

The *Draft Radiation Standard – Exposure Limits for Magnetic Fields* (Draft Radiation Standard) (Australian Radiation Protection and Nuclear Safety Agency, 2006) identifies exposure limits that are typically applied when considering electric and magnetic fields from new developments.

The detailed design of electrical infrastructure for the project would require that the exposure limits as identified in the Draft Radiation Standard would not be exceeded within sensitive areas.

### 7.8.9 Ongoing consultation

#### Issue raised

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.

#### Response

Transport for NSW would welcome the opportunity to further discuss the issues and concerns as raised by the NSW Masonic Club and Castlereagh Boutique Hotel.

Transport for NSW would continue to consult with the NSW Masonic Club and Castlereagh Boutique Hotel. The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

In addition there would be a range of communication methods would be used including briefings to communicate the progress of works, impacts and mitigation measures to affected stakeholders, as well as other activities such as construction notifications, doorknocks, emails, newsletters, and advertising. Further information on consultation during construction is provided in Chapter 4 of this report.

## 7.9 Monte Sant’ Angelo Mercy College

### 7.9.1 Airborne and ground-borne construction noise

#### Issue raised

Ambient noise monitoring in the Noise Catchment Area covering Monte Sant’ Angelo College is not representative of the area. As a result construction noise management levels and operational noise criteria are at least 10 dBA too high. As a result the impacts from airborne construction noise are understated.

#### Response

The ambient (background) noise monitoring location closest to the northern construction site was at 237 Miller Street. This location is on the nearest eastern residential building to the northern construction site, on the western side of the pool area, facing the construction site. The building has apartments on levels 1 and above and review of the graphical results did not show any anomalies.

A second ambient (background) noise monitoring location was also carried out in the vicinity of Victoria Cross (on the balcony of a unit at 77-81 Berry Street). This location is on the nearest residential apartment building to the southern construction site. The building has apartments on levels 9 and above and is representative of the nearest residential receiver. Review of the graphical results did not show any anomalies.

The background (or RBL) results from these two locations are similar to each other, and are similar to those background results obtained from the Sydney CBD and are consistent with what would normally be expected in this type of environment. Review of the graphical results did not show any anomalies, and the logging locations were at locations at and representative of the nearest residential buildings to the construction sites. The results are therefore considered to be valid for the setting of construction noise management levels and design criteria.

#### Issue raised

The Environmental Impact Statement fails to identify the specific uses of the College that have a higher acoustic sensitivity, such as the Theatre, Main Hall and Recording areas. Therefore impacts from airborne and ground borne noise are significantly underestimated.

#### Response

It is acknowledged that the Environmental Impact Statement did not correctly classify some specific uses within the College. The construction noise assessment has since been revised based on reclassifying the buildings at the College consistent with its use (ie as a theatre) and relevant criteria applied (refer to Section 9.6.2 of this report). Based on this reassessment, exceedances of criteria for various construction activities are predicted at the theatre building.

The assessment of potential construction noise impacts in the Environmental Impact Statement and in this document presents a worst-case 15-minute assessment in accordance with the approach required by the *Interim Construction Noise Guideline*. This approach assumes that all construction equipment for a particular construction scenario is operating at the same time and at the closest point on the site to any receiver. In reality, construction equipment would operate at varying locations around the site and would rarely all be in use at the same time. As such, the actual noise levels experienced by individual receivers would vary throughout the construction works.

In the early phases of construction predicted noise exceedances would be primarily related to airborne noise. These in turn relate to noise levels at the facade of the theatre building, with noise levels inside the building being a function of the level of attenuation inherent in the building design. Noting the potential impacts, there a range of alternative demolition methods which are being further investigated, to minimise noise and vibration impacts. Further details on the consideration of alternative demolition methods are provided in the response to the submission from the Environment Protection Authority in Section 6.10.2 of this report and would include:

- Using demolition sequencing to shield noise sensitive neighbours from high noise levels by retaining wall elements adjoining / shielding those properties to the end of the demolition sequence (eg floor by floor leaving the perimeter wall that aids noise screening to the end)
- Developing construction working hours that provide respite to neighbouring properties during the higher noise output activities (this would include works that do not use high noise level appliances but create high noise levels when assessed against background and residential noise standards)
- Installing sound barrier screening to scaffolding facing noise sensitive neighbours where the noise and vibration management plan investigations indicate that the neighbouring property / occupancy would receive noise levels higher than the levels determined by Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report)
- Modifying demolition working sequencing and / or hours to reduce noise and dust emissions during peak pedestrian and adjoining neighbour outdoor activities and movements.

Ground-borne noise levels would largely be a function of the chosen excavation method. The reported levels in both the Environmental Impact Statement and Section 9.6.2 of this report are based on use of rock breakers. As detailed in Section 9.6.2 of this report, the use of blasting in combination with rock-breaking is proposed and would reduce the number of periods of exceedance by around 55 per cent compared to a rock-breaking only method. Both blasting and rock-breaking can be timed to avoid periods when there would be a higher impact on the facility. Transport for NSW would liaise with Monte Sant' Angelo Mercy College to identify such periods.

The Construction Noise and Vibration Strategy (Appendix C of this report) establishes the process for carrying out more detailed construction noise and vibration impact statements prior to each construction activity based on further understanding of the construction equipment and construction processes, which would be confirmed during detailed construction planning. This process would provide further detail regarding the actual noise levels which would be experienced by individual receivers and how these impacts would be mitigated.

### **Issue raised**

The Environmental Impact Statement fails to identify the nearest residence to the northern access shaft and the impact construction noise and vibration on these residences which will be unacceptable.

### **Response**

The residential building within the school grounds was assessed in the Environmental Impact Statement as a residential receiver. The results are presented in Table 10-15 of the Environmental Impact Statement (as location B – Residential to the west on McLaren Street). However, it had been depicted incorrectly on the corresponding Figure 10-4 of the Environmental Impact Statement as an educational receiver. However, the error on the figure does not change the assessment results.

**Issue raised**

The Environmental Impact Statement does not provide the confidence and commitments that noise and vibration from construction can be adequately managed to all the receivers associated with Monte Sant' Angelo College, therefore the northern shaft site should be relocated away from the school and residences and reassessed.

**Response**

Transport for NSW acknowledge the concerns of Monte Sant' Angelo Mercy College regarding potential noise and vibration impacts. The Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report) does however provide an extremely robust process for identifying specific construction impacts and the identification of appropriate mitigation measures. These would be discussed with the College when more detailed construction planning is underway and more specific detailed design information is available.

**Issue raised**

Operational assessment fails to take into account the Theatre which is 10 metres below the ground level whereby noise levels will be several decibels higher. Therefore the need for track isolation should be considered in light of the theatres' location and sensitivity to noise and vibration.

**Response**

Ground-borne noise has been re-assessed in Section 9.6.2 of this report on the basis of a reclassification of the theatre. This assessment takes into account the depth of the theatre below the ground. Operational ground-borne noise levels are predicted to be 24 dBA, which would be below the criterion for drama theatres.

In accordance with mitigation measure OpNV2, track form would be confirmed during the detailed design process to meet the relevant ground-borne noise and vibration criteria. Further information would be provided to the College at the conclusion of this process.

**Issue raised**

Noise objectives for the operation of services plant associated with the Victoria Cross station should be revised to reflect representative noise levels of the area.

**Response**

As discussed above, a review of the background noise levels have been carried out and the results as presented in the Environmental Impact Statement are considered to be appropriate.

**Issue raised**

In conclusion, their [*Wilkinson Murray acoustic consultants*] findings are that:

- The impacts on the education components, particularly the entire Arts and Creativity Common, around the northern shaft will be significant and will render these areas not fit for use
- In the case of residences which are immediately to the west of the northern shaft the impacts at the two residential buildings, particularly at night will render these buildings uninhabitable.

**Response**

Transport for NSW acknowledges that there would be temporary impacts to Monte Sant' Angelo Mercy College as a result of the project. Such impacts are unavoidable during the construction phase of major transport infrastructure projects in urban environments. Transport for NSW is committed to ongoing consultation with the College to minimise and mitigate impacts as far as feasible and reasonable. Further and more detailed discussions would occur through the detailed construction planning phase of the project to address residual impacts.

## 7.9.2 Impacts on student safety, access and amenity

### Issue raised

What is not however clearly explained in the Environmental Impact Statement is the projected heavy vehicle movements of approximately 23 per hour between the times of 9am to 4pm. While undoubtedly the concentration of trucks during these hours is designed to avoid the traditional peak hour periods (7am-9am and 5pm-7pm), this approach ignores the significant early peak generated by the school. This school peak occurs from around 3pm Monday to Friday.

In summary, we submit that the northern construction site is unsuitable and will have significant adverse impacts on the immediate environment which is exacerbated by the heavy truck movements that will be generated on a consistent basis throughout the daytime period both for the removal of spoil and the delivery of materials. Conversely, limiting heavy construction access to the main site at the intersection of Berry Street would alleviate this impact and should be further investigated.

### Response

The truck movement graph in the Environmental Impact Statement shows truck movements dropping from 23 per hour to six per hour between 2pm and 3pm. These are combined figures for both Victoria Cross construction sites. Of this total, 85 per cent of truck movements are predicted to be associated with the southern site and 15 per cent with the northern site. This volume of traffic is very low in the context of existing traffic flows and the changes to traffic would be minor.

The location of Victoria Cross Station was chosen partly as it:

- Provides a station entry on the eastern side of Miller Street with a direct connection to the primary station catchment within the North Sydney commercial core
- Maximises the distance from the Sydney Harbour crossing, providing a reduced depth to the platforms and improved transit time to the street level for customers.

All metro stations require services infrastructure to support station functioning. At Victoria Cross Station, the majority of the services infrastructure has been located at the southern end of the station. However, design standards require emergency egress to be provided at each end of the platform at every station. This allows for efficient and safe evacuation of the station in the event of an emergency, minimising the need for customers to walk past an incident to evacuate.

Fresh air ventilation to the station and tunnels is also required at both ends of the station to support operations, including to manage air pressure and temperatures within the station and tunnels, and to minimise energy use in operation.

Based on the need for a northern services building at Victoria Cross Station, the location was chosen based on a number of factors including:

- Proximity to the northern end of the platforms – a site as close as possible to the northern end of the platforms is required to minimise emergency egress times, and provide the optimum location for draught relief
- The minimum space requirements for the services and construction work – this is balanced against avoiding unnecessary and unjustified acquisition of oversized properties
- Avoiding heritage listed properties (there are heritage listed properties to the immediate north and south of the selected location)
- Avoiding, where possible, strata properties and large buildings due to the displacement of residents and / or commercial tenants.

Based on the above factors, the consideration of alternative sites was limited to properties to the south of McLaren Street to provide the necessary proximity to the northern end of the platforms. Alternative sites on the western side of Miller Street were ruled out due to heritage considerations. Alternative sites on the eastern side of Miller Street were ruled out due to:

- The size of the properties – would have resulted in unnecessary acquisition and poor value for money
- The use of the buildings – would have resulted in the displacement of residential properties and / or a larger number of commercial tenants
- The size of the buildings – would have resulted in a longer duration of demolition and associated impacts for surrounding receivers (such as noise, vibration and traffic).

Any alternative location for the services building would result in similar construction impacts to adjacent receivers. Although the northern services building is located adjacent to Monte Sant’ Angelo Mercy College, on balance, this site was considered to provide the best location for a services building required for the Victoria Cross Station.

#### **Issue raised**

It is our submission that any reduction in the width of the footpath along the Miller Street frontage is not sustainable based on this [*school peak*] pedestrian volume.

#### **Response**

The Miller Street footpath would only be reduced immediately (and temporarily) adjacent to the construction site. A minimum width of 2.4 metres would be maintained during construction at all times. Based on the existing width of the footpath in this location, it is likely that the remaining width would be greater than 2.4 metres. The main source of footpath crowding in this area is the bus stop. This would be relocated in consultation with Roads and Maritime Services, the CBD Coordination Office (for relevant locations), the relevant local council and bus operators to an area (to be determined) where the footpath width has not been reduced.

#### **Issue raised**

The Environmental Impact Statement recognises the loss of an existing bus stop located immediately within the frontage of the northern construction site. As illustrated in Pictures 12 and 13 [*photos included in the submission*], this is an important bus stop to service the school population. There is no indication as to the potential alternative locations for the bus stop, but one would presume that it would need to be located further to the north in Miller Street, north of McLaren Street. While inconvenient, this will also increase the level of pedestrian movement across the frontage of the construction site which is undesirable from a safety and security perspective.

#### **Response**

There has been no decision on whether the bus stop would be relocated to the north or south. The new location for the bus stop would be based on the availability of adequate footpath capacity (see the above response), and the composition of the bus stop catchment, acknowledging that Monte Sant’ Angelo Mercy College is the major contributor to this. As mentioned above, the relocation of the bus stop would be carried out in consultation with Roads and Maritime Services, the CBD Coordination Office (for relevant locations), the relevant local council and bus operators.



### Issue raised

Given the volume of movements in and out of the northern construction site, the proposed strategy to mitigate risks to the School and broader community is manifestly inadequate. The footpath access north along Miller Street is an important access point for students and there are no measures or commitments proposed to manage safety and security. This reinforces our submission that the location of a major construction site directly adjacent to the School and a highly trafficked footpath is ill-conceived and alternative locations need to be considered for the project.

### Response

The need and justification for the northern services building is provided in the responses above.

As also identified in the responses above, the relocation of the bus stop would be carried out such that the safety of school students and the broader community is not compromised. The comment regarding the strategy to minimise safety risks appears to be referring to a single sentence in Chapter 19 of the Environmental Impact Statement which states that ‘an increase in construction traffic, including heavy vehicles, on Miller Street and surrounding roads may present possible safety risks for students or impact on community perceptions of safety for students’. This section of the Environmental Impact Statement goes on to provide information on a number of strategies proposed to mitigate and manage this potential safety risk. In addition to this, a range of mitigation measures are proposed to minimise safety risks to the public. These include:

- Mitigation measure T2 – Road Safety Audits would be carried out at each construction site. Audits would address vehicular access and egress, and pedestrian, cyclist and public transport safety.
- Mitigation measure T3 – Directional signage and line marking would be used to direct and guide drivers and pedestrians past construction sites and on the surrounding network. This would be supplemented by Variable Message Signs to advise drivers of potential delays, traffic diversions, speed restrictions, or alternate routes.
- Mitigation measure T5 – The community would be notified in advance of proposed road and pedestrian network changes through media channels and other appropriate forms of community liaison.
- Mitigation measure T6 – Vehicle access to and from construction sites would be managed to ensure pedestrian, cyclist and motorist safety. Depending on the location, this may require manual supervision, physical barriers, temporary traffic signals and modifications to existing signals or, on occasions, police presence.
- Mitigation measure T7 – Additional enhancements for pedestrian, cyclist and motorist safety in the vicinity of the construction sites would be implemented during construction. This would include measures such as:
  - ◆ Use of speed awareness signs in conjunction with variable message signs near construction sites to provide alerts to drivers
  - ◆ Community educational events that allow pedestrians, cyclists or motorists to sit in trucks and understand the visibility restrictions of truck drivers, and for truck drivers to understand the visibility from a bicycle; and a campaign to engage with local schools to educate children about road safety and to encourage visual contact with drivers to ensure they are aware of the presence of children
  - ◆ Specific construction driver training to understand route constraints, expectations, safety issues, human error and its relationship with fitness for work and chain of responsibility duties, and to limit the use of compression braking



- ◆ Use of In Vehicle Monitoring Systems (telematics) to monitor vehicle location and driver behaviour
- ◆ Safety devices on construction vehicles that warn drivers of the presence of a vulnerable road user located in the vehicles' blind spots and warn the vulnerable road user that a vehicle is about to turn.
- Mitigation measure T14 – Construction site traffic immediately around construction sites would be managed to minimise movements through school zones during pick up and drop off times.

Further consultation would also be carried out with Monte Sant' Angelo Mercy College to identify additional measures which could be implemented. This may include working with the school to redistribute students to other school entry and exit points.

### 7.9.3 Operational impacts

#### Issue raised

Wilkinson Murray has identified in its assessment that no track vibration treatment is proposed in the vicinity of the school. This is a result of the failure of the proponents to have identified the sensitivity of the Arts and Creativity Common, including the Theatre and recording facilities.

As a result a higher noise criterion of 40 – 45 dBA has been adopted for a standard school. A lower noise criterion is warranted for these areas consistent with Sound Recording Studios in Table 83 of the technical report.

In addition noise predictions of train noise are based on buildings at ground level. As the performance space is located 10 metres below the ground the resultant noise levels can be expected to be several decibels higher than those presented in the Environmental Impact Statement.

#### Response

The ground-borne noise levels would comply with the relevant criterion at the theatre during operation of the project, with ground-borne noise levels predicted to be 24 dBA, which is below the criterion for drama theatres. The predicted ground-borne noise levels take into account the depth of the building below ground level.

In accordance with mitigation measure OpNV2, track form would be confirmed during the detailed design process in order to meet the relevant ground-borne noise and vibration criteria at all receivers (residential, educational class rooms, theatres, etc).

#### Issue raised

While a broad visual impact assessment has been undertaken of the precinct as part of the Environmental Impact Statement, there is no design detail of the proposed services building to be located on the northern site. It is therefore impossible to assess the likely impact of the future development when no design detail or indeed key principles are articulated. The need for such detail is heightened given the location of this site amongst heritage listed buildings.

We submit that there is insufficient design detail to satisfy the Secretary's environmental assessment requirements and to have any certainty regarding the design quality and visual impact of the future development.

## Response

The visual impact assessment in the Environmental Impact Statement is detailed in terms of its analysis of each representative viewpoint. The visual impact assessment is based on the scale of the services building which in the context of existing buildings in the area and proposed development would be minor.

Design quality would be assured through the Chatswood to Sydenham Design Guidelines (Appendix A of this report). This includes a series of specific guidelines relating to services buildings and guidelines around integration with adjacent heritage. These guidelines, among others, include:

- Services buildings and facilities should form an integrated solution with the station architecture and precinct taking into account the scale, context and purpose of the structure
- Opportunities to provide for active uses and frontages should take priority over service related structures
- Elements in major urban settings need to consider impacts including visual, environmental and acoustic on the streetscape
- Sydney Metro is to be fully integrated within, and sensitive to, its heritage context. This includes built and natural heritage, European and Indigenous archaeology and may include places, buildings, works, relics, moveable objects or precincts
- New work is to be based on an understanding of the heritage significance of heritage items, heritage conservation areas and places.

## Issue raised

The northern site will house mechanical plant, such as fans, when operational. These will need to incorporate noise controls to protect the acoustic amenity of residences to the west of the site. Currently a night time noise criterion of 56 dBA at nearby residences is presented in the Environmental Impact Statement. This is based on incorrect noise monitoring as previously detailed. If applied noise from plant would be 16 dBA above background noise levels at these residences. This would represent an unacceptable impact on these residences where a criterion of 45 dBA is appropriate.

In addition, air quality impacts associated with tunnel ventilation and the adjacency of the school grounds and the residence is of concern and requires further details to be provided.

## Response

As discussed above, the background noise data has been reviewed in response to this submission and no anomalies have been identified. The noise criterion included in the Environmental Impact Statement is therefore regarded as appropriate.

## 7.9.4 Inadequacies of the Environmental Impact Statement and consultation

### Issue raised

It is our submission that the Environmental Impact Statement has not been properly informed by this consultation noting the significant omissions and the lack of understanding of the sensitivities and specific uses on the Monte campus. As evidenced from the Wilkinson Murray report, the acoustic analysis has incorrectly and inadequately assessed the site interfaces and also overestimated the background noise levels. As a result, the impacts on the Monte Campus are completely understated.

### Response

Transport for NSW acknowledges an omission in the Environmental Impact Statement concerning the classification of the theatre. The revised assessment in Section 9.6.2 of this report addresses this issue.

As discussed above, a review of background noise monitoring has revealed no anomalies.

### Issue raised

Section 12.5.4 of the Environmental Impact Statement provides an assessment of the direct impacts on existing land uses surrounding the Victoria Cross Station. The Environmental Impact Statement states:

*The direct impact on land use at this site would be a change in land use from commercial core / mixed use to transport infrastructure. Given the small scale of the change, the land use impacts would be minor. This minor impact may be mitigated by the replacement and / or expansion of areas of mixed use land associated with potential over station development.*

This assessment completely ignores impacts associated with land uses adjacent to the northern services building.

### Response

Section 12.5.4 of the Environmental Impact Statement addresses permanent land use changes that would occur as a result of the project. Impacts on amenity of adjacent land uses are addressed in other chapters of the Environmental Impact Statement, particularly Chapter 11 (Construction noise and vibration), Chapter 11 (Operational noise and vibration), Chapter 16 (Landscape character and visual amenity) and Chapter 22 (Air quality).

### Issue raised

Despite recognition of the potential for impact, there is little or no analysis of specific impact assessment or detail of effective mitigation measures. The Environmental Impact Statement states:

The implementation of mitigation measures, in conjunction with ongoing consultation and communication with local communities, would help to manage potential impacts on community health (refer to Chapter 11 (Construction noise and vibration)).

In the absence of real and effective mitigation measures, we submit that consultation and communication is of no assistance or purpose. The Wilkinson Murray review of the acoustic report identifies that there are very limited measures capable of mitigating the expected significant impacts during the construction phase. Wilkinson Murray identify that the key uses immediately surrounding the northern construction site (the Arts and Cultural Common and the Sisters of Mercy residence) will be rendered unusable for the duration of what is a lengthy construction phase.

The only effective mitigation measure is for alternative locations to be investigated for the construction site and future services building if indeed such facility is actually required to support the Victoria Cross Station.

### Response

The need and justification for the northern services building is provided in the responses above.

As discussed in Chapter 11 of this report and identified in the Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report), there are a range of mitigation measures, such as acoustic barriers around construction sites and using dampened rock hammers, that may potentially be implemented to reduce the impact on Monte Sant' Angelo Mercy College. Transport for NSW is committed to continuing consultation with the school during the preparation of relevant Construction Noise Impact Statements to identify a suite of specific mitigation measures tailored to the needs of the school.

Consultation would continue with Monte Sant' Angelo Mercy College (in accordance with mitigation measure SO2 – refer to Chapter 11 of this report) to identify and develop tailored mitigation measures to manage the specific construction impacts to the College. The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

### Issue raised

The proposal involves a significant shaft excavation immediately adjacent to the Monte Campus. Notwithstanding the significance of these works, there is scant detail on:

- The size and setbacks of the tunnel;
- Detail on the method of construction;
- Design and scale of the future services building.

Given the sensitive interfaces and the precinct generally (being surrounded by heritage items), a far more substantive level of design detail is required to properly assess the impacts of the proposed works.

### Response

The design has been developed to an appropriate level for an accurate (and conservative) assessment of impacts. Subsequent stages of design development would (in part) be aimed at reducing impacts from those predicted in the Environmental Impact Statement. Transport for NSW would continue to engage with the College as detailed design of the project progresses.

### Issue raised

It is our submission that the Environmental Impact Statement has not been properly informed by this consultation noting the significant omissions and the lack of understanding of the sensitivities and specific uses on the Monte campus. As evidenced from the Wilkinson Murray report, the acoustic analysis has incorrectly and inadequately assessed the site interfaces and also overestimated the background noise levels. As a result, the impacts on the Monte Campus are completely understated.

### Response

The assessment in the Environmental Impact Statement in combination with additional assessment in this document (that reclassifies some noise sensitive receivers) provides a typically conservative assessment of impacts to Monte Sant' Angelo Mercy College. Transport for NSW acknowledge that there are complexities associated with the operation of the school that will require detailed ongoing consultation during detailed design and construction planning so that mitigation is tailored to the school's specific needs. Transport for NSW would continue to engage with the College so that its specific concerns are considered.

## 7.10 Australian Catholic University

### 7.10.1 Benefits of Victoria Cross Station

#### Issue raised

The Australian Catholic University welcomes this proposed new transport network and the envisaged significance the Victoria Cross station will have in contributing positively to the public transport opportunities already available to North Sydney's business community.

For the University, the Sydney Metro station will offer additional choice in transport connections and in closer proximity to our campus for students, staff and visitors. In turn, this could have a positive effect on retail and other services through customer access along Berry Street, the short route connecting the campus with Victoria Cross station, absorbing the street level amenities of the new office developments along the Pacific Highway / Berry Street corner. The Australian Catholic University fully supports the Authority in identifying North Sydney as an important stop for the Metro line and the opportunity this station will provide in our campus' access to an important rail network almost on our doorstep.

**Response**

Support for the benefits of the project for North Sydney businesses and educational institutions is acknowledged.

**7.10.2 Station design****Issue raised**

The Australian Catholic University would welcome the opportunity, as a strong stakeholder participant in future discussions, to contribute in the design development and place-making aspects of the Victoria Cross Station. As a viable entity in this CBD, the Australian Catholic University could participate on the more micro level detail; such as naming and badging at the station and opportunities for visual branding and signage to identify the University's and other educational institutions in this locality.

We welcome all possible opportunities for continuing dialogue with the Authority on this project and to add commuter user value to this important transport node.

The North Sydney education precinct, in conjunction with the adjoining and surrounding residential community comprising an area of around 26 hectares, would equally constitute an important metro commuter group. The University's teaching timetable which commences before, and extends beyond, normal business hours, together with weekend campus access will, when combined with local residents, provide a major user group. This permanent community precinct encompassing the educational institutions would benefit in being acknowledged with place-marking in the Victoria Cross station. Other schools which extend the significant educational presence outside this zone and immediately north of Berry Street include North Sydney Girls' High School, Monte Sant' Angelo Mercy College and Cammeraygal High School, all potential commuters of the Sydney Metro network.

**Response**

The design development at Victoria Cross Station would be guided by the Chatswood to Sydenham Design Guidelines (Appendix A of this report). These guidelines include specific requirements in relation to place-making, wayfinding and signage (which would include information on destinations in the local precinct).

Transport for NSW would continue to engage closely with stakeholders and affected properties owners and occupiers through all stages of design, planning, and construction. The Construction Environmental Management Framework (Appendix B of this report) provides the communication and consultation strategy for the project. A range of communication methods would be used including briefings to communicate the progress of works, impacts and mitigation measures to affected stakeholders, as well as other activities such as construction notifications, doorknocks, emails, newsletters, and advertising, meetings and briefings to communicate the progress of works, impacts and mitigation measures to affected stakeholders.

Transport for NSW would continue to consult with the Australian Catholic University. The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

Further information on consultation during construction is provided in Chapter 4 of this report.

### 7.10.3 Pedestrian integration

#### Issue raised

An equally important aspect, and one which is a focal point in the North Sydney Council education precinct plan, is the safety consideration of pedestrians, particularly children and students, and providing input into effective communication of information regarding safe access to / from the Victoria Cross metro station to the University and the precinct schools.

#### Response

The safety of pedestrians, including children and students, would continue to be a priority for the project. The Chatswood to Sydenham Design Guidelines (Appendix A of this report) will be used to guide the ongoing design of the project. This includes the provision for adequate pedestrian weather protection, safe crossing and ensures effective interchange between different modes of transport.

Pedestrian access between the station and Australian Catholic University (and other key educational institutions) would be using the existing pedestrian footpath network and key road crossing facilities.

## 7.11 Mirvac Real Estate Pty Ltd and K-REIT Asia (Keppel Land Limited)

### 7.11.1 Duration of works

#### Issue raised

There is concern regarding the duration of demolition, earthworks and construction at Martin Place Station, and proximity to the 8 Chifley Square building.

#### Response

The construction program provided in the Environmental Impact Statement represents a realistic timeframe to complete construction of the project. The construction program and construction methodology aims to provide a balance between the efficient completion of construction and minimising impacts to adjacent receivers. Specific impact issues raised in the context of the program are addressed in the other sections of this report.

Further, detailed construction methods would be developed during construction planning. This would take into account the potential for disturbance over long durations and the issues raised, including any conditions of approval from the Minister for Planning.

### 7.11.2 Station design

#### Issue raised

There is concern with the built form and scale of future above station development at the northern entry to Martin Place Station and proximity to the 8 Chifley Square building, acknowledging that this would be subject to further planning approvals.

#### Response

The design of the aboveground station buildings would be guided by the Chatswood to Sydenham Design Guidelines (Appendix A of this report).

Over station development would be subject to a separate planning approval process. This process would include appropriate consultation with neighbouring properties and will consider the potential impacts of the over station development, including impacts on adjoining properties.

### 7.11.3 Future consultation

#### Issue raised

It is suggested that regular meetings with an Owners Group around Victoria Cross Station and Martin Place Station are undertaken by Transport for NSW to inform affected parties about imminent works, road closures, pedestrian impacts and general updates on the progress of the project

#### Response

Transport for NSW would continue to engage closely with stakeholders and affected properties owners and occupiers through all stages of design, planning, and construction. The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

The Construction Environmental Management Framework (Appendix B of this report) provides further details on the communication and consultation strategy for the project. A range of communication methods would be used including briefings to communicate the progress of works, impacts and mitigation measures to affected stakeholders, as well as construction notifications, doorknocks, emails, newsletters and advertising. Further information on consultation during construction is provided in Chapter 4 of this report.

### 7.11.4 Construction noise and vibration

#### Issue raised

There is insufficient information to understand the potential impacts on tenants of 8 Chifley Square on a day-to-day basis. In particular, the Environmental Impact Statement does not recognise that 8 Chifley operates outside of typical business hours. A 70 dBA noise management level should be applied evening and night.

There are concerns regarding impacts on commercial receivers at 8 Chifley due to exceedance of acceptable airborne noise standards by demolition and excavation works and exceedance of noise management levels during the construction period at Martin Place Station. This includes impacts on internal noise levels within commercial tenancies.

#### Response

The construction noise and vibration assessment provided in Section 10.4 of the Environmental Impact Statement and Section 3 of Technical Paper 2 has been carried out in accordance with the Secretary's environmental assessment requirements and the relevant guidelines. An external noise criterion of 70 dB(A) has been set for commercial offices consistent with the EPA's *Interim Construction Noise Guideline* (DECC, 2009).

The potential noise impacts from the Martin Place Station site to 8 Chifley are assessed in Section 10.4.8 of the Environmental Impact Statement. In summary, the assessment found that there are predicted to be exceedances of the airborne noise management levels for commercial receivers of between 10 and 20 dB during demolition, site establishment and earthworks; and up to 10 dB during aboveground station building construction.

Since the exhibition of the Environmental Impact Statement, it has been determined that rock breaking would only be required during standard daytime construction hours and has removed the predicted exceedances of noise management levels at residential receivers in Areas A, B and E (refer to Section 3.3.5 of this report). This change in construction methodology would have similar benefits to commercial tenants who currently operate outside standard business hours, such as those in 8 Chifley.



The assessment of potential construction noise impacts in the Environmental Impact Statement presents a worst-case 15-minute assessment in accordance with the approach required by the *Interim Construction Noise Guideline*. This approach assumes that all construction equipment for a particular construction scenario is operating at the same time and at the closest point on the site to any receiver. In reality, construction equipment would operate in varying locations around the site and would rarely all be in use at the one time. As such, the actual noise levels experienced by individual receivers would vary throughout the construction works.

The Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report) provides the process for carrying out more detailed construction noise and vibration impact statements prior to each construction activity based on further understanding of the construction equipment and construction processes, which would be confirmed during detailed construction planning. This process would provide further detail regarding the actual noise levels which would be experienced by individual receivers.

The Construction Noise and Vibration Strategy also provides a list of standard noise mitigation measures which would be implemented at all construction sites for the project. Further, the Strategy provides additional mitigation measures which would be implemented when defined exceedances of the noise management levels are predicted to occur. These mitigation measures would meet the outcomes of the mitigation proposed in submissions.

#### **Issue raised**

The Environmental Impact Statement does not identify food outlets located on the site, which warrant a 60 dBA noise management level. Further, there are concerns regarding amenity impacts on customer experiences at businesses providing outdoor dining at 8 Chifley, near Martin Place Station. It is suggested that mitigation measures are implemented to prevent impacts of construction noise on businesses.

#### **Response**

The *Interim Construction Noise Guideline* refers to AS 2107 which establishes recommended maximum internal noise levels for other commercial uses, including food outlets (cafes, bars and restaurants). In the case of food outlets that have external seating, the external noise goal is 60 dBA.

The nearest noise logger to the Martin Place Station construction site and 8 Chifley indicates that existing external noise levels are above this external noise goal – likely as a result of existing road traffic noise.

It is acknowledged that at times construction noise levels would be above the recommended maximum noise goal for food outlets during the various stages of construction activity at the Martin Place Station construction site, given exceedances predicted at nearby residential receivers. As acknowledged in the Section 13.4.1 of the Environmental Impact Statement, there is the potential for moderately negative impacts to businesses during construction, including impacts to amenity due to construction noise.

Further consultation with the aim of developing measures to manage the specific construction impacts would be carried on an individual business basis including the food outlets at 8 Chifley (refer to mitigation measures B11 to B13). Measures to address noise / vibration during construction are detailed in Sections 10.5 and 22.6 of the Environmental Impact Statement respectively and would include:

- Provision of noise barriers around each construction site
- The coincidence of noisy plant working simultaneously close together would be avoided
- Offset distances between noisy plant and sensitive receivers would be increased



- Residential grade mufflers would be fitted to all mobile plant
- Dampened rock hammers would be used
- Non-tonal reversing alarms would be fitted to all permanent mobile plant
- High noise generating activities would be scheduled for less sensitive period considering the nearby receivers
- The layout of construction sites would consider opportunities to shield receivers from noise
- Alternative demolition techniques that minimise noise and vibration levels would be investigated and implemented where feasible and reasonable.

The Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report) also provides the process for carrying out more detailed construction noise and vibration impact statements prior to each construction activity based on further understanding of the construction equipment and construction processes. This process would provide further detail regarding the actual noise levels which would be experienced by individual food outlets at 8 Chifley.

### 7.11.5 Ground-borne noise

#### Issue raised

There are concerns regarding exceedance of acceptable ground-borne noise standards by early works and rock breaking at Martin Place Station and impacts on commercial receivers at 8 Chifley.

#### Response

There are predicted exceedances of the ground-borne noise management level by up to 10 dB during rock breaking works. These impacts are predicted when rock breaking is occurring at the surface and would be expected to reduce as the excavation work progress.

As detailed in Section 3.3.5 of this report, rock breaking has been restricted to daytime standard construction hours and, consistent with the approach taken in the Environmental Impact Statement, blasting has been considered due to the level and duration of ground-borne noise exceedances associated with rock breaking. All blasts would be designed to meet applicable noise and vibration standards.

The results of the revised assessment (presented in Table 3-12) indicates that the adoption of blasting as an excavation technique would reduce impacts to commercial receivers during the daytime period at all sites. For the Martin Place Station (north) construction site, the use of blasting with rock breakers would significantly reduce the number of daytime periods where ground-borne noise levels are above noise management levels.

Further detailed construction planning, through the development of Construction Noise Impact Statements (as required by the Sydney Metro Construction Noise and Vibration Strategy in Appendix C of this report) would determine the exact construction activities with the aim of reducing ground-borne noise impacts to receivers. For example, this could involve the consideration of different sized rock breakers at different periods, and the positioning of rock breakers within the site during different periods.

With careful planning and positioning of equipment it may be possible to avoid consecutive periods of noise management levels exceedances to any one receiver, effectively providing respite periods. For any residual exceedances of the noise management levels, additional mitigation measures would be implemented in accordance with Chapter 11 (Revised environmental mitigation measures and environmental performance outcomes) and the Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report).

### 7.11.6 Construction noise and vibration strategy

#### Issue raised

The Environmental Impact Statement does not provide clarity as to potential impacts from noise and vibration on 8 Chifley, and the success of location specific construction noise management plans is in doubt.

It is suggested that the Construction Noise and Vibration Management Strategy for Martin Place Station is updated to include mitigation measures to mitigate noise and vibration impacts and avoid significant adverse effects on receivers at 8 Chifley.

Alternative construction techniques should also be assessed under the category of 'reasonable and feasible' consistent with EPA guidelines, and appropriate measures such as respite and rock saws should be considered.

#### Response

The Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report) provides the overall noise and vibration management approach during construction of the project.

This includes the process specific Construction Noise and Vibration Impact Statements based on a more detailed understanding of the construction methods, plant and equipment. This would also include the identification of specific mitigation measures. Depending on the nature of the works, the Construction Noise and Vibration Impact Statements may be activity specific or location specific.

With careful planning and positioning of equipment it may be possible to avoid consecutive periods of noise management levels exceedances to any one receiver, effectively providing respite periods. For any residual exceedances of the noise management levels, additional mitigation measures would be implemented in accordance with Chapter 9 (Revised environmental mitigation measures and environmental performance outcomes) and the Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report).

Section 7.7.1 of the Environmental Impact Statement provides discussion of alternative excavation techniques and notes that it is unlikely that alternative techniques would be able to achieve the required excavation rate in isolation. However, the Environmental Impact Statement does not preclude the use of these techniques and states that they could be used to supplement other excavation methods in order to reduce the overall construction timeframe. As this would be determined based on more detailed construction planning, the Environmental Impact Statement carried out a conservative worst-case assessment (consistent with the requirements of the *Interim Construction Noise Guideline*) by assessing excavation through the combined use of rock hammering and blasting. Further details on the consideration of alternative excavation methods are provided in the response to the submissions from the Environment Protection Authority in Section 6.10.2 of this report.

### 7.11.7 Construction dust emissions

#### Issue raised

There are concerns regarding localised impacts on air quality during demolition, earthworks and construction phases of the project at Martin Place Station, particularly given the scale of the works and volume of spoil generated by the project. The Environmental Impact Statement does not adequately assess the magnitude and potential impact of dust emissions on commercial premises surrounding the Martin Place Station site.

The Environmental Impact Statement does not contain sufficient detail on dust mitigation measures to limit impact on 8 Chifley, which has design features that contribute to the environmental performance of the building. Similarly, the risk of dust emissions compromising solar access is a concern.

Potential dust emissions from the construction site for the Martin Place Station will have a significant impact on the amenity and useability of the publicly accessible space on the northern side of 8 Chifley. It is suggested that mitigation measures take into account food safety for businesses providing outdoor dining.

It is requested that an Air Quality Management Plan be prepared in consultation with affected landowners surrounding the proposed Martin Place Station.

### **Response**

Section 22.4 of the Environmental Impact Statement provides an assessment of potential air quality impacts of the project. Dust emissions from the project would be readily manageable to appropriate standards through the implementation of standard mitigation measures, such as installing hard surfaces on long term haul routes and regularly damping down unsurfaced work areas (as identified in Section 22.6 of the Environmental Impact Statement and revised in Chapter 11 of this report).

Specific consultation (as per mitigation measure B11 in Chapter 11 of this report) would be carried out with businesses within 8 Chifley that may be potentially impacted during construction. This consultation would aim to identify and develop specific measures to manage construction impacts for individual sensitive business receivers. These would be incorporated into the Air Quality Management Plans.

The Construction Environmental Management Framework (Appendix B of this report) provides information on the training, awareness and competence requirements for Principal Contractors on Sydney Metro.

As a minimum this would include site induction, regular toolbox talks and topic specific environmental training, including informing workers of the environment surrounding the construction sites and appropriate measures to minimise impacts to nearby receivers.

The Construction Environmental Management Framework also outlines the requirements for the development of Construction Environmental Management Plans, Spoil Management Plans and Air Quality Management Plans. These plans would be reviewed by Transport for NSW and an independent environmental representative. Depending on the conditions of approval, certain sub-plans may also require the approval of the Department of Planning and Environment. All management plans required by the conditions of approval would be made available on a project website.

## **7.11.8 Construction traffic and transport**

### **Issue raised**

There are concerns regarding the impacts to the road network and property access during the construction of the project in the vicinity of Victoria Cross Station and Martin Place Station.

Construction works for Victoria Cross Station are to be managed to minimise disruption to the North Sydney CBD.

With regard to Martin Place Station, there are concerns regarding impacts of vehicular movements on access to 8 Chifley and general road network performance, with particular concerns regarding the expected volume of construction vehicles transporting spoil.

The proposed left-out exit driveway is located immediately opposite the access driveway to the basement level of 8 Chifley, which would have an adverse impact on accessibility and operational safety of the driveway for 8 Chifley (including safety for cyclists).

The construction vehicle exit driveway at Martin Place Station should be sited and designed to avoid operational and safety impacts on the existing access driveway to the 8 Chifley building. This should be incorporated into the Road Safety Audit for Martin Place Station.

### **Response**

The potential traffic and transport impacts due to the Victoria Cross Station and Martin Place Station construction sites are assessed in Sections 8.4.9 and 8.4.14 of the Environmental Impact Statement respectively. The construction traffic impact assessment shows that there would be a negligible change in the performance of surrounding intersections during peak periods from the introduction of construction vehicles.

Responses to specific issues raised with respect to Martin Place Station are below:

- The exact details and location of the site exit from the Martin Place Station construction sites would be determined during detailed construction planning, taking into account surrounding business operations. Access to neighbouring properties would be maintained and requirements for businesses would be considered during preparation of relevant Site Specific Traffic Access and Management Plan
- The Site Specific Traffic Access and Management Plan would be prepared for Martin Place station construction site and would be informed by the Road Safety Audit (mitigation measure T2). The audit would address vehicular access and egress, and pedestrian, cyclist and public transport safety. This would include conflicts with other driveways of adjoining or nearby properties
- Additional mitigation measures (for example T6 and T7), as detailed in Chapter 11 (Revised environmental management measures and environmental performance outcomes), would also be implemented which focus on managing construction vehicle access and egress to ensure pedestrian, cyclists and motorists safety. This includes additional enhancements for pedestrians, cyclists and motorist safety in the vicinity of construction sites.

### **Issue raised**

The six month closure of the existing Martin Place Station entrance to the south of Elizabeth Street will place additional pressure on remaining entrances, reduce their level of performance during peak periods and special events, inconvenience commuters and present a potential safety issue in an emergency situation.

### **Response**

The potential for impacts to active transport is considered and assessed in Section 8.4 of the Environmental Impact Statement.

Transport for NSW is reviewing and further developing construction staging and methodology for the pedestrian routes to and from the existing Martin Place Station, in consultation with relevant stakeholders. This would include maintaining underground access to and from Martin Place Station where feasible and reasonable, to reduce impacts at street level. The revised methodology will be the subject of further pedestrian analysis to ensure that pedestrian movements are maintained at an acceptable and safe level of service throughout construction and that appropriate access is maintained to surrounding properties.

Construction Traffic Management Plans would be prepared for the project. These plans would address the need to minimise disruption to pedestrian flows and the safe movement around construction sites, in particular during special events and emergency situations.

A process for managing construction works during special events is described in Section 8.4.3 of the Environmental Impact Statement. This section identifies that liaison would occur with the organisers of class 1 and 2 events and (as relevant) the CBD Coordination Office and Roads and Maritime Services to provide appropriate management of construction vehicles to manage potential impacts to event goers, the general public and the construction works.

#### **Issue raised**

It is requested that Construction Traffic Management Plans are prepared in consultation and in collaboration with landowners. The plans should include site specific mitigation and management measures, defined roles and responsibilities, as well as monitoring and reporting requirements.

#### **Response**

The Construction Environmental Management Framework (Appendix B of this report) provides information on the training, awareness and competence requirements for Principal Contractors on Sydney Metro.

As a minimum this would include site induction, regular toolbox talks and topic specific environmental training, including informing workers of the environment surrounding the construction sites and appropriate measures to minimise impacts to nearby receivers.

The Construction Environmental Management Framework also outlines the requirements for the development of Construction Traffic Management Plans, which will include Site Specific Traffic Access and Management Plans. These plans would detail site specific responses to potential conflicts, including the maintenance of access and safety of transport networks.

Specific consultation would be carried out with agencies, stakeholders and the community (including businesses) regarding traffic management. This includes consultation with the CBD Coordination Office and Roads and Maritime Services.

These plans would be reviewed by Transport for NSW and an independent environmental representative. Depending on the conditions of approval, certain plans may also require the approval of the Department of Planning and Environment. All management plans required by the conditions of approval would be made available on a project website.

### **7.11.9 Pedestrian integration**

#### **Issue raised**

##### ***Victoria Cross Station***

Further consideration should be given to a Greenwood Plaza to Victoria Cross Station underground pedestrian link to improve pedestrian safety and relieve pressure at the Pacific Highway / Miller Street intersection and Dennison Street, North Sydney.

There are no contingency measures to address pedestrian safety issues, in the event that Denison Street is not fully pedestrianised.

##### ***Martin Place Station***

The permanent changes to station access / egress points for Martin Place Station as a result of the closure of entries and exits within Martin Place would have an impact on tenants and visitors to 8 Chifley.

## **Response**

### ***Victoria Cross Station***

Pedestrians wishing to travel between the proposed Victoria Cross Station and Greenwood Plaza would be able to walk along the Miller Street footpath and use the escalators at the corner of Pacific Highway, Miller Street and Mount Street, thereby avoiding the need to cross at the Pacific Highway / Miller Street intersection. As such, the provision of a direct underground connection would not change pedestrian congestion levels or safety at this intersection.

The other driver for a direct connection would be to enable interchange between the proposed Victoria Cross Station and North Sydney Station. Victoria Cross Station is not proposed to fulfil a major interchange role with Sydney Trains services at North Sydney Station. This interchange function is provided at other stations along the metro line including Chatswood, Martin Place and Central stations. Notwithstanding, customers wishing to interchange between North Sydney and Victoria Cross stations would be able to use the existing footpath network- primarily along Miller Street.

As a result of the above, there are no plans for an underground connection between the proposed Victoria Cross Station and Greenwood Plaza.

Section 9.4.5 of the Environmental Impact Statement identifies that pedestrian volumes are predicted to increase on Denison Street. Transport for NSW is currently working with North Sydney Council to investigate opportunities to improve the pedestrian environment on Dennison Street while maintaining servicing and delivery access for businesses within the buildings.

### ***Martin Place Station***

Transport for NSW would implement the project in an integrated manner and in direct collaboration with relevant agencies, including the Department of Planning and Environment and the City of Sydney, to identify opportunities to integrate existing and future land uses within and around the stations. This process would include further consideration of improvement to the pedestrian network around Martin Place Station and the interface of the station with Martin Place.

The project is expected to enhance connectivity of 8 Chifley to Martin Place Station through the introduction of a new metro line and station access and exit point directly across Elizabeth Street.

## **7.12 Ambient Psychology**

### **7.12.1 Consultation**

#### **Issues raised**

Ambient Psychology was not notified by building owners regarding the proposal for Crows Nest Station or the metro tunnel. The business request a representative from North Sydney Council visit the premises to describe the construction project, impacts, staging and noise management measures. Ambient Psychology would also like to understand if there is a mandate for landlords requiring tenants to be informed of an action which will directly affect their business.

#### **Response**

As outlined in Chapter 5 of the Environmental Impact Statement and supported in Appendix C, community engagement around the extension to the Sydney Metro network, including Chatswood to Sydenham, commenced in June 2014.

Almost two years of engagement around an extension to the Sydney Metro network occurred, prior to the statutory required consultation. The aim of this consultation was to gather feedback during the development of the project to inform the preparation of the Environmental Impact Statement.

Information has been provided to the community via stakeholder meetings, three media releases, 41 advertisements, seven fact sheets, two newsletters delivered to 220,000 properties within one kilometre of the proposed route (including the property occupied by Ambient Psychology), five project booklets (Environmental Impact Statement Summary, brochures, project overviews, project updates), two online forums, updates across three website, and information provided at two community information centres. The community was also invited to attend eight community information sessions in June 2015, and six sessions and two information stalls in May and June 2016.

Properties immediately adjacent to future construction sites or identified as being potentially affected by the project were either doorknocked by Transport for NSW Place Managers or meetings requested with major landowners and tenants to provide information about the project, describe proposed construction activities and to provide information to assist in making a submission as part of the formal planning process.

Transport for NSW would continue to engage closely with stakeholders and affected properties owners and occupiers through all stages of design, planning, and construction. Specific consultation would occur with businesses adjacent to construction sites to identify and develop measures to manage the specific construction impacts for individual businesses (refer to mitigation measure B11 in Chapter 11 of this report).

## 7.12.2 Construction noise and vibration issues

### Issues raised

We are a group of clinical psychologists. We need a quiet environment from which to work as we conduct both assessments and therapy. The offices are occupied on a full time basis. Some of our interventions include hypnotherapy and mindfulness and need an ongoing quiet environment in which to discuss painful issues to these clients. Many of us work with clients that have post-traumatic stress disorder, a symptom of which is reactivity to loud noise.

We would like to understand the environmental impact that this demolition and construction will have upon us and those we support. The noise level may not be manageable and will affect the desirability of the site to clinicians that are casual renters.

### Response

The construction noise and vibration assessment has been carried out in accordance with the requirements of the Secretary's environmental assessment requirements and applicable guidelines, particularly the *Interim Construction Noise Guideline*. Details of the methodology of the assessment are provided in Technical Paper 2: Noise and Vibration of the Environmental Impact Statement. The assessment of construction and operational noise and vibration impacts for Crows Nest Station is provided in Sections 10.4.3 and 11.4.1 of the Environmental Impact Statement, and revised in Section 9.6.1 of this report. Ambient Psychology is located in receiver Area D which is predicted to have:

- Exceedances of the airborne noise management levels of greater than 20 dB during enabling works and earthworks, between 10 and 20 dB during aboveground building construction and up to 10 dB during construction of the acoustic shed
- Exceedances of the ground-borne noise management levels of up to 10 dB during the daytime.



These predicted noise levels are based on a worst-case 15-minute assessment carried out in accordance with the approach required by the *Interim Construction Noise Guideline*. This approach assumes that all construction equipment for a particular construction scenario is operating at the same time and at the closest point on the site to any receiver. In reality, construction equipment would operate in varying locations around the site and would rarely all be in use at the same time. As such, the actual noise levels experienced would vary throughout the construction works.

It is acknowledged that some receivers such as Ambient Psychology would be particularly sensitive to noise and vibration at different times of the day. This would be considered as part of the Construction Noise Impact Statement process (described in the Sydney Metro Construction Noise and Vibration Strategy in Appendix C of this report). As part of this process, consultation would be carried out with Ambient Psychology (in accordance with mitigation measure B11 – refer to Chapter 11 of this report) to identify and develop mitigation measures to manage the specific construction impacts to the business. This would include consideration of alternative construction methods, adjustments of working hours around key period for the Ambient Psychology business and / or options for adjustments to the Ambient Psychology business hours around required construction activities.

## 7.13 Casa Del Australia Pty Ltd

### 7.13.1 Traffic and parking impacts

#### Issues raised

Casa Del understands from the proposal that the elbow end of Murray Street will be closed off and the proposed main entry to the Sydney Metro will be accessed through this location. This is opposite the Casa Del drive way which means it will interfere with trucks delivering goods to customers, unloading shipping containers, receiving goods from suppliers and garbage trucks accessing bins.

Another issue is the trucks that access the Casa Del premises are quite large. 40 foot semi-trailers that cannot simply fit into the driveway use the elbow end of Murray Street to turn around / reverse and drive back to the street to exit at Edinburgh Road. Therefore the proposal of closing the elbow end of Murray Street is not acceptable and is a huge detriment to daily operations. An alternative entry should be sought for Sydney Metro.

Casa Del request that the entry to the development not be located in Murray Street and instead uses an entry at Sydney Steel Road, Marrickville.

Casa Del also request consideration of the current roundabout at Murray Street and Edinburgh Road as part of the project. This area is a major hazard without the additional large trucks the proposal will bring onto the site. Normal light vehicles do not have enough room to go around the roundabout without traveling over it. Casa Del suggest a set of traffic lights be erected for safety and for traffic to flow easily considering the extra traffic that will be there once the proposal commences.

#### Response

An assessment of potential construction traffic and transport impacts around Marrickville is provided in Section 8.4.18 of the Environmental Impact Statement. The assessment identified that construction vehicles would have a negligible impact on the surrounding road network.

The Marrickville dive site is proposed to provide two functions during construction – to support the tunnel boring machine and use as a temporary concrete pre-cast facility. Two access points are proposed for the Marrickville dive site to provide separation of vehicles accessing different parts of the site and manage potential traffic impacts.



Closing a section of Murray Street, as proposed by the project, would not block the access to Casa Del, although it is acknowledged that it could result in some access restrictions for larger trucks. Consultation would be carried out with Casa Del so that sufficient space is provided for all vehicles to access the Casa Del facility. This may involve the provision of alternative access arrangements. Consultation would continue with all relevant stakeholders regarding potential traffic impacts and changed traffic conditions associated with the project.

In relation to the roundabout at Murray Street and Edinburgh Road, further analysis would be carried out of the proposed vehicle access and egress locations (in accordance with mitigation measures T2 and T6 in Chapter 11 of this report). This would address potential pedestrian, cyclist and motorist safety issues. Depending on the location and the findings this may result in measures such as manual supervision, physical barriers or temporary traffic signals being implemented.

#### **Issue raised**

Staff parking is already limited. Staff car parking will be impacted with the proposal of closing the elbow end of Murray Street because it will take 50 per cent of the spaces available on Murray Street. Will there be extra parking available for staff during the development?

#### **Response**

Where feasible and reasonable, and in accordance with mitigation measures T19, alternative parking facilities would be provided where existing parking is removed to facilitate construction activities.

### **7.13.2 Construction stage flooding, hydrology and drainage infrastructure**

#### **Issues raised**

Murray Street is a high risk flooding area. During heavy rain periods, flooding occurs occasionally at the end of the Casa Del driveway on Murray Street.

This is a major concern especially if the proposed Sydney Metro site has mud and bacteria that can spread and worsen the already existing problem. It is important that Sydney Metro address this issue, ensure there is extra drainage in the area and advise of a procedure.

#### **Response**

Potential flood impacts during construction of the Marrickville dive structure would be managed through detailed construction planning, including the development of appropriate site layouts and staging of construction activities, to avoid or minimise obstruction of overland flow paths and limit the extent and duration of flow diversions required.

Mitigation measure FH3 (refer to Chapter 11 of this report) has been revised to identify the following criteria to be met, where feasible and reasonable, during construction at the Marrickville dive site:

- Not worsen existing flooding characteristics up to and including the 100 year average recurrence interval event in the vicinity of the project (this includes not increasing the potential for soil erosion and scouring)
- Dedicated evacuation routes would not be adversely impacted in flood events up to and including the probable maximum flood. This may include the requirement for changes to existing arrangements for flood warning systems and signage.

Construction planning for the Marrickville dive site would be carried out in consultation with the State Emergency Services and Inner West Council.

### 7.13.3 Construction dust emissions

#### Issues raised

Casa Del is a highly sensitive food manufacturing factory which must meet certain legal requirements and standards. If the standards are not met, NSW Food Authority can order Casa Del to shut down until rectified.

Trucks which are used to deliver goods on a daily basis are parked outside the premises. It is crucial to ensure there is no dust inside these trucks to maintain the quality assurance of our goods.

Casa Del also has suppliers who deliver ingredients which contain raw products. Casa Del would like to know how dust can be managed when the rollers doors must be opened to accept raw material deliveries and stop the dust from going onto stocked raw materials, other ingredients, unused cartons and factory machinery. Casa Del would like to know what will be implemented on an ongoing basis to manage and mitigate dust impacts to ensure Casa Del is not affected.

Casa Del suggest a dust containment system is considered to protect and aid the business in meeting Occupational Health and Safety requirements as well as ensuring maintenance of quality assurance.

#### Response

Section 22.4 of the Environmental Impact Statement provides an assessment of potential air quality impacts of the project. Dust emissions from the project would be readily manageable to appropriate standards through the implementation of proven management and mitigation measures as identified in Section 22.6 of the Environmental Impact Statement.

It is acknowledged that some receivers such as Casa Del are particularly sensitive to dust emissions. Specific consultation (as per mitigation measure B11) would be carried out with Casa Del in relation to the potential impacts of dust to their business operations and to identify and develop specific measures to manage construction dust impacts.

The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

### 7.13.4 Disruption to services and utilities during construction

#### Issues raised

Casa Del is a power sensitive business with no back up of power to the site and has high power consumption. Casa Del wish to be assured that there is a procedure in place to deal with any loss of business due to unforeseen incidents during construction.

#### Response

Any works to utilities would be managed to eliminate or minimise the duration of any interruption of supply to users. This would include consideration of the need to maintain utility supply to power sensitive businesses such as Casa Del. If interruption were to be required, potentially affected users would be notified in advance of any disruption.

### 7.13.5 Consultation

#### Issues raised

Casa Del request effective communication before and during construction to ensure business needs are understood and issues are resolved immediately.

**Response**

Transport for NSW would continue to engage closely with stakeholders and affected properties owners and occupiers through all stages of design, planning and construction. Specific consultation would occur with adjacent businesses to identify and develop measures to manage the specific construction impacts for individual businesses; including access and servicing (refer to mitigation measure B11 in Chapter 11 of this report).

Transport for NSW would continue to consult with Casa Del. The project team can be contacted via the community information line (1800 171 386) or project email (sydneymetro@transport.nsw.gov.au).

**7.14 Harvey Norman Alexandria****7.14.1 Consultation****Issues raised**

Harvey Norman was not notified of the proposed underground tunnel alignment and associated corridor underneath their property, despite the extent to which our client's property will be potentially adversely affected.

**Response**

As outlined in Chapter 5 of the Environmental Impact Statement and supported in Appendix C, community engagement around the extension to the Sydney Metro network, including Chatswood to Sydenham, commenced in June 2014.

Almost two years of engagement around an extension to the Sydney Metro network occurred, prior to the statutory required consultation. The aim of this consultation was to gather feedback during the development of the project and feed into the preparation of the environmental impact assessment.

Information has been provided to the community via stakeholder meetings, three media releases, 41 advertisements, seven fact sheets, two newsletters delivered to 220,000 properties within one kilometre of the proposed route (including the property occupied by Harvey Norman), five project booklets (Environmental Impact Statement Summary, brochures, project overviews, project updates), two online forums, updates across three website, and information provided at two community information centres. The community was also invited to attend eight community information sessions in June 2015, and six sessions and two information stalls in May and June 2016.

As noted in Section 6.3.1 of the Environmental Impact Statement the tunnel alignment may change during detailed design. Once the tunnel alignment (horizontal and vertical) has been confirmed, Transport for NSW would contact property owners with more information regarding potential impacts and mitigation measures, and the substratum acquisition process.

It will be necessary to acquire an area of land for the tunnel corridor below the surface of properties under the *Transport Administration Act 1988*. Properties above the corridor would be contacted by the project team once the project has been approved and the tunnel alignment has been finalised. Tunnelling would occur using the best technology available so that impacts are minimised.

## 7.14.2 Tunnel alignment

### Issues raised

Harvey Norman understand that there would be a future statutory corridor for the project established under the *State Environmental Planning Policy (Infrastructure) 2007* and any future development in this corridor would require referral to Transport for NSW for concurrence. The Environmental Impact Statement indicates that the project corridor would extend 30 metres either side of the tunnel alignment. It is also noted that the Environmental Impact Statement indicates that the current proposed alignment is subject to change. To that extent, there is concern that any such change has the potential to further adversely impact on the Harvey Norman property. Accordingly, we seek an assurance that any such change will be subject to further consultations with affected landowners.

### Response

Indicatively, the project corridor would extend 30 metres either side of the tunnel alignment. The project would require a substratum acquisition envelope around the tunnel, including any tunnel anchors required. The introduction of the subsurface stratum, and the tunnel itself, has the potential to limit development above the alignment. The project alignment is generally shallowest at stations and at tunnel portals (at stations tunnel depths are typically greater than 20 metres). Between stations the tunnel depth increases to typically between 25 and greater than 40 metres. Based on proposed tunnel depths there would be a minor impact with respect to limiting future development potential above the project.

Development applications within the project corridor would be referred to Transport for NSW for concurrence and to ensure that project infrastructure is not impacted by proposed developments.

Transport for NSW will continue to engage closely with stakeholders and affected properties owners and occupiers through all stages of design, planning, and construction. The project team can be contacted via the community information line (1800 171 386) or project email ([sydneymetro@transport.nsw.gov.au](mailto:sydneymetro@transport.nsw.gov.au)).

## 7.14.3 Substratum acquisition

### Issues raised

According to the Environmental Impact Statement, we understand that where tunnel will be constructed, it will be necessary to acquire stratum below the surface of the properties for the construction of the project. There appears to be no discussion with regards to the impact upon future excavation, foundations, piers depths and density of development that could be supported above the tunnel alignment / corridor. The extent to which the development potential of the Harvey Norman property will be limited is therefore not clear. Accordingly, we request that this be clarified as it has the potential to have a direct and material impact on the value of the property.

We note that the Environmental Impact Statement suggests that for the purposes of acquiring stratum below the surface properties for the construction of the project including where required for the development of underground infrastructure, compensation is not payable under the *Transport Administration Act 1988*. To the extent to which the Harvey Norman property is affected by the proposed alignment and corridor, we note our strong concern in relation to the potential financial implications on the value of the property.

**Response**

Property values are based a number of complex factors including demand at a certain point in time, general location, accessibility, traffic and traffic noise on the street and proximity to transport infrastructure. Properties located above the rail tunnels are not anticipated to experience a reduction in value as a result of the project. A decline in property values above the tunnels has not been evident along the Epping to Chatswood Rail Line or other underground rail lines in Sydney.

**7.14.4 Restrictions on future development****Issues raised**

The property is in an area the City of Sydney has identified as “investigation areas”. These “investigation areas” are not currently zoned for market housing however the City of Sydney has indicated (by way of site specific planning guidelines) that they will consider planning proposal requests to rezone sites and allow mixed used (residential) development in these areas at significantly increased densities.

In short, the Harvey Norman property is considered to have significant residential redevelopment potential. We request the proponent realign the tunnel and associated corridor between Waterloo Station and Sydenham Station away from the “investigation areas” and the Harvey Norman property to ensure the future development potential of the site is not unreasonably impacted.

**Response**

The existence of tunnels below the property would not necessarily impact the ability to redevelop a site for residential purposes. In the vicinity of the Harvey Norman property in Alexandria, the tunnels would be around 36 to 37 metres below ground level. Based on this depth, there would be a minor impact with respect to limiting future development potential, although this would be dependent on the specifics of the development proposed in the future.

**7.15 ISM Studios Pty Ltd****7.15.1 Noise and vibration****Issue raised**

ISM Studios operate two sound recording studios – one located at 20 Clarke Street, Crows Nest and one at 8 Clarke Street, Crows Nest. ISM Studios have concerns regarding noise and vibration from the project, in particular the transmission noise through the building from large equipment and blasting / mining.

**Response**

The construction noise assessment in Section 10.4.3 of the Environmental Impact Statement and revised in Section 9.6.1 of this report found that the ISM Studios ground-borne noise levels could be higher than 75 dB during the daytime period.

These predicted noise levels are based on a worst-case 15-minute assessment carried out in accordance with the approach required by the *Interim Construction Noise Guideline*. This approach assumes that all construction equipment for a particular construction scenario is operating at the same time and at the closest point on the site to any receiver. In reality, construction equipment would operate in varying locations around the site and would rarely all be in use at the same time. As such, the actual noise levels experienced would vary throughout the construction works.

It is acknowledged that some receivers such as ISM Studios would be particularly sensitive to noise and vibration at different periods of the day. These particular receivers would be considered as part of the Construction Noise Impact Statement process (as described in the Sydney Metro Construction Noise and Vibration Strategy in Appendix C of this report). As part of this process, consultation would be carried out with ISM Studios (in accordance with mitigation measure B11 – refer to Chapter 11 of this report) to identify and develop mitigation measures to manage the specific construction impacts. This would include a detailed examination of all high impacting construction activities. Where feasible and reasonable, specific mitigation and management measures would be identified that would best meet the requirements of maintaining the operations of the business. This would include consideration of alternative construction methods, adjustments of working hours around key period for the ISM Studios business and / or options for adjustments to the ISM Studios business hours around required construction activities. This consultation process would also aim to identify noise and vibration attenuation measures already in place at the ISM Studios business and refine the potential noise and vibration impacts.

## 7.16 Comfort and Fit

### 7.16.1 Customer access

#### Issue raised

The Comfort and Fit store at 372 Pacific Highway has parking at the back on Nicholson Place (which is a one way street from Hume Street to Shirley Road). Currently customers need to come via Hume Street crossing the Pacific Highway to enter to the car park. The Pacific Highway doesn't have right turn on Hume Street currently. It isn't convenient at all if Hume Street is closed or right turn isn't allowed from the Pacific Highway onto Hume Street to enter into Nicholson Place.

#### Response

As described in Section 7.10.3 of the Environmental Impact Statement, Hume Street would need to be closed for a short period (around six months) whilst cut-and-cover station excavation is carried out through this section.

During the period when Hume Street is closed, motorists would be able to use a number of alternative routes to access the western side of the Pacific Highway. For example, this could include left at Albany Street, right at Oxley Street then straight across the Pacific Highway.

## 7.17 The Printing Department

### 7.17.1 Artarmon Industrial Area Station

#### Issue raised

The Sydney Metro is a much needed addition to the Sydney's current infrastructure that The Printing Department wholeheartedly support but believe improvements need to be made to maximise the return for the huge amounts of capital being spent on this project and other North Shore important infrastructure it should provide access to.

The Printing Department note with interest that the planned station for the Artarmon Industrial Area / Royal North Shore Hospital precinct has been deleted from the planned route. The concerns regarding this missing station impact issues including traffic, noise, business impacts, social impacts and community infrastructure, sustainability and cumulative impacts.

Traffic and noise / congestion at Chatswood Station, Central Station or North Sydney Station will increase markedly as workers / hospital patients and visitors change trains to reach the Artarmon Industrial / Hospital Area.

Business will be impacted by the lack of access for employees. The Printing Department note Artarmon is an industrial area. By very nature this provides jobs of lower remuneration. The employees of these businesses currently commute from either the Central Coast or the South West of Sydney where this train line will continue. The Lower North Shore real estate is desirable and therefore expensive and out of reach of the vast majority of industrial employees. To attempt to maintain an industrial area without transport links to the areas industrial employees can afford does not add up. Already it is difficult to find employees willing to make the 1 1/2 hour commute from these areas and to have to change to a second form of transport to complete the trip will make it prohibitive. It is suspected that the biggest employer on the north side, Royal North Shore Hospital's medical staff will make the Hills trip to Chatswood and then have to change, and the hospitality staff will be travelling from the South West and have to change at Central to complete the journey. Two modes of transport for these groups while the metro essentially passes their workplace will not attract the calibre of staff required who are willing to spend the extra time and money to work on the North Shore.

Social impacts and community infrastructure are the concerns for the patients and visitors to Royal North Shore Hospital. Patients are by their very nature less mobile and easy access is required or they will need to use other government services like the ambulance service or their own vehicles to reach the destination, creating more traffic and parking issues.

Sustainability of the whole Artarmon area is called into question if the above traffic, parking and congestion issues are not addressed.

Cumulative impact of all this will be to see frustration at lack of access reduce Artarmon Industrial Area in viability.

### **Response**

A range of station locations north of Sydney Harbour were investigated as part of the stations options evaluation process described in Section 4.4 of the Environmental Impact Statement. The round of consultation in June 2015 also sought feedback on the station locations to the north of Sydney Harbour.

A station in the Artarmon Industrial Area was considered as part of the station options evaluation process as the Artarmon Industrial Area provides an important role with light industrial, and specialist health and media activities. Consultation with stakeholders, including Willoughby Council, indicated that there was limited support for such a major land use change due to the importance of the existing industrial use. As a result of the above factors, a station within the Artarmon Industrial Area was not pursued.

People accessing the Artarmon Industrial Area (including workers and patients / visitors at the hospitals) would be able to continue to access these areas as they do now. Further, they may be able to use the new metro network for part of their journey, providing a benefit in travel time savings.

Customers changing trains at Chatswood, North Sydney and Central stations are not anticipated to have a major impact on the road network or have a noise impact on the surrounding areas. Efficient interchanges would be provided between the Sydney Trains network and the Sydney Metro network at key locations including Chatswood, Martin Place and Central stations. Interchanges would occur within the station areas without the need for customers to exit one station and enter another.



## 7.18 Cromwell Property Group (Northpoint Tower)

### 7.18.1 Geotechnical

#### Issue raised

The commercial tower at Northpoint sits on a rock pedestal at level 6 with the basement carpark being excavated around this pedestal. Cromwell Property Group understands that a number of issues were encountered during the excavation works to expose this pedestal. These issues related to stress relief of the pedestal during excavation and the presence of seams and soft layers running through the pedestal. As a result of these seams and soft layers, a significant underpinning exercise was undertaken to enhance the vertical capacity of the pedestal. A concrete buttress (some 11 metres x eight metres in section) was also constructed in the south east corner of the pedestal to bridge the seam.

Given that the Northpoint tower foundations lie within the Transport for NSW typical zone of influence, we believe that it would be prudent to make a formal submission alerting the tunnel designers to the remedial works that were undertaken on the site.

#### Response

Transport for NSW appreciates the geotechnical information being provided by Cromwell Property Group in relation to Northpoint Tower in North Sydney and the information has been provided to the tunnel designers.

Geotechnical investigations would continue to occur to inform the design development and further investigations would be conducted as required during detailed design. The information provided by Cromwell Property Group would be considered as part of this process. At this stage, given the known geotechnical conditions, distance from construction activities and building characteristics, preliminary ground movement contours indicate that for most of the project alignment there would be a negligible ground movement risk, with superficial damage to buildings unlikely. Some buildings and structures close to station site excavations may be at risk of superficial damage and therefore may require future building strain and structural assessment to address settlement related risks.

Mitigation measure GWG1 commits to the development of a detailed geotechnical model that would allow more specific assessment of the potential for damage to structures, services, basements and other sub-surface elements through settlement or strain. Where building damage risk is rated as moderate or higher (as per adopted risk based criteria), a structural assessment of the affected buildings and structures would be carried out and specific measures implemented to address the risk of damage. Pre-excavation condition surveys of buildings and structures in the vicinity of the tunnel and excavations are also planned (refer to mitigation measure GWG2).

## 7.19 Anonymous

### 7.19.1 Property damage

#### Issue raised

Concerns raised regarding damage to property including tanks and LPG pumps which are susceptible to vibration. Any damage due to vibration will need to be rectified immediately and any contamination that results from the damage will be the responsibility of the entity conducting the proposed works, and the entity will be liable for any damages that result from contamination to our site and any adjacent site.



### **Response**

The assessment of construction vibration in Section 10.4 of the Environmental Impact Statement has adopted cosmetic damage screening levels based on guidance from British Standard BS 7385 Evaluation and Measurement for Vibration in Buildings. The assessment shows that a number of buildings adjacent to the construction sites are predicted to have vibration levels above these screening criteria. In this case, and in accordance with mitigation measure NV4, a more detailed site specific assessment of the structure would be carried out to ensure vibration levels remain below appropriate limits for that structure.

The Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report) identifies that some structures may be particularly sensitive to vibration and more stringent damage goals may need to be adopted. In this case, consultation would be carried out with the owner of the structure to determine acceptable vibration levels on a case by case basis.

In the unlikely event that damage does occur as a result of the project, this would be rectified by the project at no cost to the owner.

## **7.19.2 Business impacts**

### **Issue raised**

Concerns raised that the proposed works may directly impact the business by obstructing traffic entering and exiting the site.

### **Response**

Given the anonymous nature of the submission, it is difficult to provide a specific response to the issue. In general terms the potential impacts to businesses are assessed in Section 13.4 of the Environmental Impact Statement. Specifically, this section acknowledges the potential for negative impacts on businesses during construction in terms of customer access and passing trade. Potential positive impacts may also occur such as increased trade from construction workers, or greater pedestrian volumes increasing passing trade when operational. Access would be maintained to all businesses in consultation with the property owner / business operator (refer to mitigation measures T8 and B11 in Chapter 11 of this report).

The traffic assessment in Section 8.4 of the Environmental Impact Statement identifies that the addition of construction traffic would have a negligible impact on the surrounding road network. The project would have minimal operational traffic impacts.

*This page has intentionally been left blank*