

4 Consideration of community submissions

ASSESSMENT AND APPROVAL PROCESS

4.1 Project assessment and approval process

4.1.1 Application of Part 3A to the project

Issues included

- *The NSW planning process has a limited time for public exhibition of a large project and is likely to lack the holding of any public hearings into the project.*
- *The Sydney Metro Stage 1, Central to Rozelle project is an example of how infrastructure projects in Sydney are released without the necessary prior strategic framework. The current legislation relies on ad hoc special state policies to circumvent normal processes.*
- *The NSW planning process uses a 'heavy handed' critical infrastructure provision.*

Response

The concern regarding the duration of the public exhibition period for Part 3A projects is noted, however this is a matter for the Department of Planning (Department of Planning).

With regards to this project, the Environmental Assessment (EA) was formally exhibited for 34 days. The submission period was extended by two weeks by the Department of Planning.

With regards to public hearings, provisions have been made in the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the use of independent hearings and assessment panels (IHAPs) to strengthen the assessment process. This could be a panel of experts or a panel of officers representing the Department of Planning and other relevant public authorities. The Minister can decide to convene an IHAP and appoint panel members at any stage in the assessment process to provide important advice on issues of concern¹.

Public hearings may also be undertaken to provide input into the panel's assessment and recommendations. The IHAP then produces a report outlining the issues and making recommendations.

The project was declared as critical infrastructure by the Minister for Planning. As indicated in the EA, the critical infrastructure declaration recognises the importance of the project as the first step of a wider metro rail network and the NSW Government's commitment to its delivery. It also reflects its importance to the state for economic and social reasons, particularly in securing Sydney's future global position.

Two metro lines would form the basis of this broader metro network:

¹ Department of Planning 2006, NSW Major Projects Assessment System: A community guide, March 2006



- Metro Line 1 (City West line) – from Westmead to the CBD and then beyond Rozelle to the north-west.
- Metro Line 2 (City East line) – from Malabar via Maroubra, the Prince of Wales Hospital and University of NSW to the city and beyond to the Northern Beaches.

These lines would support future growth in the north-west, and in the longer term, in the south-east and north. In the very long term, this network could be extended to major cross-regional corridors of demand. The future development of the metro system will be guided by a wider Metro Network Strategy being developed by Sydney Metro.

4.1.2 Adequacy of the statement of commitments

Issues included

- *There is a lack of specific mitigation measures in the statement of commitments to ensure that the property won't be adversely impacted.*
- *The Statement of Commitments are not specific enough. For example, SoC #72 (property damage) does not include information/criteria to determine whether a property is at risk of damage.*
- *Stakeholders will not have an opportunity to have input in the preparation of plans, strategies or reports and most of these documents don't require post-consent approval from Department of Planning.*

Response

The purpose of Statement of Commitment No.72 is to ensure that risks of damage to property are identified and managed. This commitment includes the undertaking of risk assessments by qualified and experienced geotechnical and construction engineering experts for properties at risk of damage, consultation with property owners, the preparation of building condition inspection reports, and the establishment of an Independent Property Impact Assessment Panel for the resolution of disputes.

It is not possible to incorporate more specific mitigation measures into the Statement of Commitments until further work has been undertaken, including finalisation of the design and the construction work method, and preparation of the risk assessments. More detailed mitigation measures would be incorporated into the construction environmental management plan, in the form of site specific construction method statements.

The Construction Environmental Management Plan (CEMP) requires approval from the Department of Planning and provides an overall framework for environmental management of the project. It also provides the principles and guidance on which all sub-plans would be based. Where relevant, sub-plans would be prepared in consultation with key government agencies and stakeholders as required, to ensure all relevant issues are addressed.



4.2 Project funding

Issues included

- *Taxpayers will be liable for funding any contracts signed for the project.*
- *The metro network would be publicly funded, which would attract private-sector operators.*
- *Any money that would have been invested in the CityRail network would be used to sustain the operation of the Sydney Metro Stage 1, Central to Rozelle project.*
- *The metro network would be privately funded and operated at a significant premium.*
- *There is concern over the privatisation of public transport. It is unacceptable for the government to sell the provision of services to private companies for profit.*
- *The project will not support its own cost. Investors are required for probably two-thirds of the construction phase. Given Sydney's record of failed PPPs, will the Government have to carry 100 per cent of the risk? If the network is extended, will extensions be saddled with heavy access costs? Will Treasury have to carry contingent liability for many years even if it reduces subsidies to the heavy rail system?*
- *There is no Federal Government funding and only 10 per cent funding from the State Government.*

Response

The estimated cost of the project remains \$4.8 billion. These estimates take into account the station construction and tunnelling both under the city and harbour.

The NSW Government has committed to fully funding Stage 1 of the Sydney Metro Network (Rozelle to Central).

While full Government funding is available for the project, private finance would be sought for the Integrated Metro Operation (IMO) works, which would be delivered as a privately financed project (PFP).

The PFP model would involve the creation of an asset, in this case the station fitout, rail systems and rolling stock, through private sector financing and operating control for a concession period.

The proposed concession period would be 35 years from contract award for IMO with payments based on availability, reliability and other key performance indicators for the Metro System. Patronage risk would be retained by the Government, allowing it to continue to control fares and the frequency of services.

The proposed model for IMO is considered to deliver a better customer outcome including improved service deliveries, reduced whole of life costs, innovation and improved risk management and better value for money to Government than a traditional procurement model.

The Government consistently develops genuine partnerships in financing, creating and managing some social infrastructure where they are in the public interest and would be of benefit to the community. Private financing of economic infrastructure is not new to NSW. Guidelines have been in existence since 1989 and NSW Treasury² notes the following:

² Working with Government, Private Financing of Infrastructure and Certain Government Services in NSW, NSW Government Green Paper, November 2000.



The NSW Government is strongly committed to the delivery of infrastructure and services to the people of NSW. Requirements arising from population growth, higher public expectations, and replacement of ageing infrastructure demand that the Government explore all avenues that may deliver better services and greater value for money. Privately financed Projects (PFPs) offer opportunities to bring together the ideas, experience and skills of the public and private sectors to develop innovative solutions to meet the community's needs, expectations, and aspirations.

As noted, the NSW Government has committed to fully funding Stage 1 of the Sydney Metro Network (Rozelle to Central) – ie 100 per cent. Funding from the Commonwealth Government is not required for Stage 1.

Importantly, the Commonwealth Government, through Infrastructure Australia, has contributed funding for the pre-construction phase of Stage 2 of the Sydney Metro Network (Central to Westmead).

4.3 Project timing

Issues included

- *There is concern about the speed of the planning and consultation process for the project. The project should be delayed until the public enquiry has been completed.*

Response

The project is fully compliant with the process and requirements for assessment and approval under Part 3A of the EP&A Act.

The Sydney Metro Stage 1, Central to Rozelle project falls within the terms of 'critical infrastructure' as a metro rail line for the Greater Metropolitan Region and has been considered to be essential to the State for economic, social or environmental reasons. The environmental assessment process for critical infrastructure projects is the same as for any other major project.

The critical infrastructure declaration recognises the importance of this project as the first step of a metro rail network and the NSW Government's commitment to delivering it. The provisions of critical infrastructure ensure that the project will be delivered in a timely and efficient manner, as a priority of the NSW Government.

The provision of a metro system for Sydney or the CBD is not a new concept. A metro network was first identified in the 2006 Urban Transport Statement, which recognised that metro would provide the key benefit of operational separation from existing road and rail networks as well as modern rolling stock and train control systems to enhance reliability and facilitate the rapid loading and unloading of passengers.

The original 'Sydney Link' proposal of March 2008 envisaged a North West Metro extending from the Sydney CBD via the Victoria Road corridor to Epping and beyond to Rouse Hill. However, after a review of available funding, the focus shifted to building the first stage of the metro network, between Central Station and Rozelle – the Stage 1 project.

With regards to the speed of the project, some time savings have been achieved in the design and assessment process by beginning with work already completed for the North West Metro project.

Working With Government, Guidelines for Privately Financed Projects, NSW Government White Paper, November 2001.

Accounting Policy, Accounting for Privately Financed Projects, Office of Financial Management (NSW Treasury) Policy & Guidelines Paper, June 2006.



COMMUNITY AND STAKEHOLDER ENGAGEMENT

4.4 Validity of consultation process

4.4.1 Consultation was not adequate

Issues included

- *Consultation has been inadequate as vocal parts of the community have been heard at the expense of other residents and businesses.*
- *Consultation has been inadequate as no valid, verifiable and detailed information has been provided.*
- *Consultation consisted of being advised, rather than being consulted.*
- *There has been a lack of proper information and consultation with the community, businesses and other stakeholders.*
- *The EA has been too technical and too large for the general public to understand.*
- *There was a lack of advertising regarding the information and public community sessions.*
- *Consultation with affected businesses has been inadequate given the scale of the project and the likely impacts.*
- *Residents had apparently been assured by Sydney Metro at a meeting in June 2009 that there would be no construction truck access from Waterloo Street.*
- *The consultation process has been inadequate in relation to finding an alternative site to Union Street terraces.*
- *Residents were not informed of the changes to the project during the consultation process and hence were not able to participate.*
- *Why put Rozelle Goods Yard back on the agenda for the Bay Precinct Community Reference Group when the whole area was going to be used by Sydney Metro as a stabling yard?*

Response

Sydney Metro is committed to meaningful community engagement and as such, carried out an extensive communication and consultation program throughout the development and approval process for the project. Reflecting the significance of the project, a wide range of stakeholders were identified and engaged with as part of the communication and consultation program that was implemented from February 2009, following publication of the Preliminary Environmental Assessment (PEA). Key stakeholders consulted included individual property and business owners, key community and environment groups, councils and government agencies amongst others.

A key focus of the consultation process was ensuring that stakeholders directly impacted by the project (such as residents and businesses along the alignment) had access to appropriate and timely project information. This meant having Place Managers dedicated to liaising with impacted property owners and businesses throughout the development and approvals process.



In order to reach as many stakeholders as possible, a range of communications tools were used, including:

- Letters: targeted letters were used to communicate formally with key community groups and stakeholders and to invite them to meetings, focus groups and other consultation events.
- Meetings with stakeholders: Regular meetings were held with affected landholders to keep them up to date on the latest information including alternative sites. Sydney Metro's property team and the CBD and Rozelle Place Managers chaired these meetings.
- Workshops and industry forums.
- One on one briefing sessions: community and stakeholders (landowners, community and environmental groups) were invited to attend one-on-one briefing sessions with members of the project team throughout June 2009.
- Meetings: Ongoing meetings have been conducted with state government agencies, utility providers, local government, special interest groups and business groups to discuss the project and gain feedback on key issues and concerns.
- Business and community workshops: Small focus groups were held with local Chamber of Commerce members where specific concerns and issues were discussed and noted. Similar workshops were held with key community and neighbourhood groups.
- Industry forums: Industry forums on metro systems were held in May and June 2008, and a formal process of one-on-one consultations was conducted between June and September 2008.
- Street and phone surveys: About 130 face-to-face street surveys were undertaken around the proposed station locations and surrounds. In addition, a telephone survey of residents and businesses was undertaken with 133 people contacted.
- Community updates: Letterbox drops were undertaken to provide information to households potentially affected by the project and for invitations to information sessions. The distribution was primarily to residents and businesses within 60 metres of the project corridor, and included the suburbs of Rozelle, Lilyfield, Balmain, Birchgrove, Pyrmont and businesses and residents around the station sites in the CBD. Over 46,000 letterbox drops were made.
- Media and advertising: Advertisements were placed in local and mainstream press including the Sydney Morning Herald, The Daily Telegraph, Inner West Courier, Inner West Weekly, The Glebe, The Central, City Hub, City News and MX.
- Information and feedback sessions: Information sessions were held in March/April, June/July and September 2009 to provide stakeholders with information about the project and to obtain feedback on key issues. Displays were produced including posters and information on the planning process, noise and vibration, station design and the EA. The updated alignment was shown in aerial route alignment maps and construction site maps. The information on displays etc was also made available on the Sydney Metro website.
- Email: A project email address was made available for community and stakeholders to request information on the project.
- Sydney Metro website: The Sydney Metro website (www.sydneymetro.nsw.gov.au) was established as a central point of up-to-date information about the project.
- Website forum: The Sydney Metro website includes an online discussion forum so the public can discuss and debate about the project.



- Project information hotline: A toll-free project information hotline (1800 636 910) was established to receive and respond to all direct public enquiries.

The information in the EA was available to view at nine display locations and available on CD and electronically through the project website. The EA was also summarised in a 16 page summary brochure available at the display locations, at community information sessions, on the project website and on request from Sydney Metro.

Other publications produced to inform stakeholders about project issues and available at information sessions and electronically on the project website, included:

- Noise and vibration fact sheets.
- Property and leaseholder fact sheets.
- Project updates (targeted specifically for each area along the alignment - CBD, Pyrmont and Rozelle). These updates were also letterbox dropped to relevant residents and businesses in the corridor, explaining the key changes and issues in the EA.
- Artists' impressions, station plan maps and network maps.

Sydney Metro has sought to identify, address and manage issues of interest or concern to the community, government agencies or other interested parties during the assessment and approval process. Throughout the project's development, consultation has provided insight into community and stakeholder views and helped to identify a wide range of potential impacts and mitigation measures. Feedback received from the community has resulted in design modifications, and has helped to refine and further develop the project.

Additionally, Place Managers were appointed to engage with individual residents and business owners / lessees around the CBD, Pyrmont and Rozelle station locations. Place Managers continually met with impacted residents and businesses, local councils, community groups and relevant residents groups. This has been an ongoing process, and consideration of community feedback was reflected in the realignment of station locations at Pyrmont and Rozelle, in line with issues raised by the community.

Sydney Metro is continuing to meet with affected stakeholders and has made direct contact with individuals and organisations in response to their submissions, particularly focused on detailed issues related to property, business operations and mitigation of potential impacts.

Sydney Metro met with representatives of the Waterloo Street Residents Group at a meeting on 12 June. At this meeting construction traffic management was discussed. The project team explained that the main vehicle access to the construction site would be via Victoria Road, with secondary access provided for vehicles, passing commercial premises only, on the south of Waterloo Street. Trucks would not pass residential properties at any time to use the secondary access point and would access Waterloo Street from Darling Street only.

Sydney Metro selected the Union Street location because it is close to both residential and commercial areas of Pyrmont as well as Darling Harbour, making it the best location for passenger access and generating the highest patronage compared with other sites. The EA has details of the other options considered for Pyrmont and why they were found to be unsuitable. A review of station options is attached to the EA for the community to read. It explains that other sites to the north of Union Street were considered but rejected because Union Street attracted far more passengers due to its proximity to key commercial and residential areas. Further, one on one meetings with members of the Sydney Metro project team have been held with the residents and businesses in the Pyrmont area at their request. Sydney Metro is happy to meet with interested parties on request to explain in further detail the design options that have been considered in Pyrmont.



A full and thorough process of consultation with all stakeholders has occurred throughout the life of the project as information has become available. In certain circumstances, this has meant that information has been provided only at the stage of exhibition of the EA as this new information has responded to ongoing feedback and resulted in a refinement of project designs.

Sydney Metro has provided input to Sydney Harbour Foreshore Authority regarding the Bays Precinct masterplanning activities. However Sydney Metro does not set the terms of reference for the Bays Precinct Community Reference Group.

4.4.2 Opportunity to provide feedback

Issues included

- *There should be a monetary incentive for community and businesses to provide feedback on the project. The community feedback system has not been well planned.*

Response

Community consultation for the EA has been conducted in accordance with Part 3A of the EP&A Act, including advertising and placing the EA on public exhibition for a minimum period of 30 days. During the exhibition period, government agencies, interested groups and organisations, and the community were invited to make written submissions to the Department of Planning in response to the assessment. There is no provision in the legislation to provide monetary incentive for submissions.

4.4.3 Availability/adequacy of project information

Issues included

- *Lack of information with regard to metro trains and stations on the Sydney Metro website.*
- *Information provided to the community (eg height of service buildings not shown in public displays and an ambiguous media release) has been planned to deliberately mislead residents.*
- *Station designs (for Pymont) were not available during public exhibition.*

Response

Details regarding the specifications of the metro trains are found in Chapter 6 of the EA. This document is also available on the project website.

Sydney Metro has engaged in an open and transparent process of community engagement with residents and businesses owners. The vent structures for Stage 1 would be carefully designed to fit in with the surrounding environment and the height of adjacent buildings. There would be opportunities for public art to be incorporated into the design. In areas like Rozelle and Pymont, vents would be placed behind building facades and would not be visible from the street.

Sydney Metro held a meeting with residents of Waterloo Street on 9 October to specifically explain the proposed vent structures for the Rozelle Station and to gain feedback on these proposals, which have since been used to further refine the designs.

The EA has details of the other options considered for Pymont and why they were found to be unsuitable. A review of station options is attached to the EA for the community to read. It explains that other sites to the north of Union Street were considered but rejected because Union Street attracted far more passengers due to its proximity to key commercial and residential areas. Further, one on one meetings with members of the Sydney Metro project team have been held with the



residents and businesses in the Pyrmont area at their request. Sydney Metro is happy to meet with interested parties on request to explain in further detail the design options that have been considered in Pyrmont.

4.5 Ongoing consultation process

4.5.1 Consultation with the community and businesses on the design process and public art

Issues included

- *The Property Council would appreciate further consultation during the detailed design process.*
- *Rozelle Neighbourhood Centre would appreciate further consultation during the detailed design of the Rozelle Station plaza adjacent to the Centre.*
- *The Reference Design plans appear to present the probable design of each station. Sydney Metro, however, is likely to vary these plans without further public consultation.*
- *Request for Sydney Metro to work with businesses and stakeholders to lessen the commercial impacts of the project.*

Response

Sydney Metro will continue to consult with the community, businesses and other stakeholders throughout the approval and construction process. This consultation will continue to identify, address and manage issues of interest or concern to the community, government agencies or other interested parties.

One example of such consultation is the Design Principles Workshop process currently being undertaken by Sydney Metro. The purpose of the workshop is to get input from a range of stakeholders regarding the development of design principles for Rozelle and Pyrmont stations. Participants include representatives from community groups, councils, professional bodies and government agencies.

Key stakeholders would be invited to participate in workshops to discuss design and public art issues.

4.5.2 Ongoing consultation with affected landowners

Issues included

- *Community notification for specifically approved exceptions should be considered for night work.*
- *Will the affected community have someone to call during construction to communicate any real or perceived problems?*
- *The school requests further consultation in the form of:*
 - Regular letter box drops.
 - Availability of face to face meetings to discuss issues with stakeholders who can make decisions.
 - A 24 hour complaints line (with a method for immediate action).



- Community involvement in some decisions involving local impacts.
- *It is very important that the impacts of the Pyrmont Station to all business owners are considered before the project is approved.*
- *Respondents request to be included in any further consultation and be invited to participate in any consultation groups for the metro project.*
- *Respondent requests that an appropriate forum is established for the affected businesses or property owners to have input into the construction phases management plans at Martin Place.*
- *The Property Council recommends formation of a stakeholder reference group comprising representatives of all major property owners affected during the construction period. Members of the Property Council with properties would like to see early, consistent and meaningful engagement.*
- *Further community consultation is required with affected residents, businesses and tenants/landlords to minimise impacts from the project.*
- *A business respondent asks for the opportunity to participate in the development of management plans (environmental, business and property risk) and the Central Project Coordination Committee.*
- *A Construction Liaison Committee comprising interested stakeholders should be established for the direct engagement of stakeholders.*
- *Request Department of Planning facilitation with respect to construction works impacting on businesses at Martin Place.*

Response

If the Stage 1 project is approved, Sydney Metro will continue to work closely with stakeholders and the community to ensure they are well informed about the project. Key activities / tools would include:

- Development and implementation of a detailed Construction Stakeholder and Community Involvement Plan for the construction phase of the project.
- Meetings with affected residents, businesses and property owners.
- Notification (including targeted letterbox drops, email and SMS) of any works that may disturb local residents and businesses (such as noisy activities and night works).
- Notification (including targeted letterbox drops) of works that may affect transport (such as road closures, changes to pedestrian routes, and changes to bus stops).
- 24-hour toll-free community project information phone line.
- Complaints management process.
- Regular community information sessions.
- Regular updates to the Sydney Metro website (www.sydneymetro.nsw.gov.au).
- Regular community newsletters, information brochures and fact sheets.
- Clear signage at the construction sites.

For more information on Sydney Metro's response to potential business impacts see section 4.64 and 4.65.



STRATEGIC NEED

4.6 Alternatives to the metro project

4.6.1 Possible extension of light rail

Issues included

- *George Street buses should be phased out and replaced with a surface light rail loop in conjunction with the pedestrianisation of George Street.*
- *The suggestion that light rail costs as much as metro is wrong.*
- *Light rail has a lower capacity than a classic Metro style railway, but this is only an issue if demand is suitably high.*
- *Enhanced CityRail capacity through the CBD, assisted by light rail, would be sufficient to meet the needs of Barangaroo commuters.*
- *A number of studies have shown that there are very suitable streets running the length of the CBD which would do exactly as is denied. In particular George, Pitt and Castlereagh Streets have all been studied in depth, and all are viable options for light rail installation.*

Response

The general issue/concern raised in these submissions was that it would be more practical, cost effective, simpler or more expedient to extend the existing light rail system. The alternative of extending the light rail was considered in the EA (refer sections 4.3.2, 5.1.2 and 5.2.3).

As indicated, the Metro provides a much broader transport function and provides a more strategic contribution to the Sydney Transport system including capacity enhancements to Sydney's rail network as well as facilitating future public transport corridors. Light rail would be unable to satisfy the forecast passenger throughput (ie between 29,000 and 40,000 passengers per hour) that can be achieved by a Metro in the major transport corridors. Nor would light rail achieve the same travel times as metro (five minutes from Rozelle to Barangaroo-Wynyard and 10 minutes to Central). Furthermore, light rail would be unable to fully address the demand generated by the future employment function of Barangaroo, which includes planned office space for 22,000 workers.

The role of light rail is recognised for areas away from major transport corridors, where metros are able to respond to commuter demand.

In summary, light rail provides local connectivity, rather than a regional transport corridor alternative, as is the case with Metro. The continued operation of light rail as a mutually beneficial service is recognised and it will continue to provide an important service. Light rail would not be able to provide the capacity required to act as an alternative service to Stage 1 Metro and would not be capable of serving the west or north-west of Sydney as effectively as future metro rail extensions as identified in the Sydney Metro network.

It is important to note that provision of a metro network through the CBD provides a catalyst to improve street amenity and reduce bus congestion, thereby facilitating the opportunity to introduce changes to the CBD environment.

A light rail system in the CBD between Central Station and Circular Quay is supported by the City of Sydney Council. Council has committed funds to study public infrastructure works required for the



extension of light rail, and will continue to call on State and Federal Governments to support the proposal.

Extension of the light rail from Lilyfield to Dulwich Hill is currently being investigated by Government and local Councils. Any extension of the light rail system would compliment the Metro Network, but as indicated above would not address the key objectives of the Metro.

Similarly, any extension of the light rail system to White Bay would compliment the Metro Network and potentially support future land uses changes in the Bays Precinct.

Any light rail extension to Balmain (via Rozelle) is likely to be difficult given the topography and land uses, which would result in considerable environmental impacts.

Alternate light rail extensions proposed in submissions, including plans to areas such as Marrickville, Ashfield, La Perouse and Waterloo, are not currently being investigated by NSW Transport and Infrastructure or local Councils.

It is noted that in the above discussion the use of light rail is considered to include the term “trams” or “tramway”. Some submissions have noted the use of trolleybus technology or monorail. Other submissions noted the use of 300-seat buses and special O-Bahn (guided busway) technology. Whilst it is noted that larger buses, O-Bahn, trolleybuses and monorail (or a “second generational monorail”) have different operating characteristics and abilities to light rail, similar issues and constraints apply as those discussed for light rail.

To clarify issues raised by Metro Transport Sydney Pty Ltd, the following responses are provided:

- Sydney Metro Stage 1 is designed as the first stage of a metro line linking both the west and north-west with the CBD with travel times significantly less than existing surface modes. The reduction in the number of services that would need to continue to operate through to the CBD would be achieved through offering travel times between Rozelle and the CBD which are up to 70-75 per cent faster than the existing bus times. Stage 2 is also likely to provide an opportunity to further reduce the number of the bus services entering the CBD, particularly from the west.
- The cost comparison between metro and light rail refers to an underground light rail system, on the basis that the absence of a suitable and feasible surface corridor for light rail which would provide similar travel times and reliability.
- Sydney Metro Stage 1 is the first stage of a metro line linking both the west and north-west and therefore is designed with the capacity to handle the increased future demand as the system expands.
- Sydney Metro Stage 1 will offer significantly higher capacity than could be provided by a light rail and upgraded CityRail station alone. Furthermore, once extended to the west and north-west, it will provide direct access to Barangaroo from Parramatta, the inner west and the Victoria Road corridor.
- The Victoria Road bus corridor is currently one of Sydney’s most congested and as a result suffers from poor peak hour service reliability. Sydney Metro stage 1 will offer additional capacity and travel time benefits of up to 70-75 per cent to residents of Rozelle. The comparison with light rail as an alternative was raised in this context.
- Sydney Metro agrees that there is scope to expand the existing light rail network in central Sydney and that the costs associated with light rail development and construction can be less than those associated with Metro facilities. Light rail, however, is unable to satisfy passenger throughput requirements (between 29,000 and 40,000 passengers per hour) that can be achieved by a Metro. Nor would light rail achieve the same travel times as metro (five minutes from Rozelle to Barangaroo-Wynyard and 10 minutes to Central). It is noted that the city waterfront development at Barangaroo is planned to become



a key commercial, residential and recreation precinct with over 22,000 workers and residents, 33,000 daily visitors and 12 million visitors each year.

- NSWTI is currently undertaking a light rail extension assessment study to examine the costs and possible benefits of an extension of the current light rail line. The study has support from four local councils: Ashfield; Marrickville; Leichhardt and City of Sydney.
- Whilst a possible light rail extension does not provide an alternative to metro, it would potentially be a complementary mode serving different markets.

4.6.2 Extension of heavy rail

Issues included

- *New heavy railway lines should be built, and existing lines should be expanded (ie duplicated and quadruplicated) before any metro is built. This should start with planned projects such as:*
 - *North West Rail Link*
 - *South West Rail Link*
 - *Parramatta to Chatswood Rail Link*
 - *Carlingford to Parramatta Link*
 - *Extension of the Eastern Suburbs railway*
 - *Metropolitan Rail Expansion Programme (MREP) projects*
- *The Rail Clearways program should be given priority. The metro project will prevent or limit further improvements/expansion of heavy rail.*
- *Sydney Metro should think of something that will complement the existing rail network, rather than starting from scratch.*
- *How is Sydney Metro planning to merge the two systems unless it starts replacing one with the other?*
- *Wouldn't it be more efficient to develop new links around the existing one and try to expand and build on it as much as possible?*
- *The metro line will not have the flexibility of being easily extended if required without the huge additional costs of more tunnels being dug. It lacks the robustness of the existing rail network.*
- *In the future a second north-south alignment (and a second new harbour crossing) also for heavy rail, will also be needed.*
- *The project holds little potential for improvement for the majority of persons who use CityRail.*
- *The Government should not have abandoned the MREP.*



Response

The NSW Government has and is continuing to invest significantly in Sydney's public transport network. A number of heavy rail upgrades and corridors are proposed or protected within Sydney and will continue to be developed.

The NSW Government has reaffirmed its commitment to completion of the rail clearways program. The Metro project will not prevent or limit future expansion of the heavy rail network within or external to the Sydney CBD. Metro corridors have been identified and are being scrutinised with other possible future heavy rail needs and opportunities in mind.

The recently completed Epping to Chatswood Rail Link (an extension of the existing heavy rail network) will assist in encouraging increased rail and public transport use at the expense of cars. The Metro will also assist in providing residents and workers with a choice other than car for a variety of trip purposes.

The Epping to Chatswood Rail Link is complete and is operational. The Sydney Metro Network Stage 1 (Rozelle to Central) is the first stage of a broader Metro network that will ultimately serve the transport needs of the north-west of Sydney.

The approved rail corridor between Epping and Parramatta is protected for future expansion of public transport. The Government will consider a range of options for the Carlingford corridor linking Epping and Parramatta as part of its long term integrated rail network.

The Metropolitan Rail Expansion Program (MREP) comprised three main elements: the North West Rail Link, CBD Rail Link and the South West Rail Link. In October 2008, the NSW Government decided to defer rail projects to the North West and stage the delivery of the South West Rail Link so the infrastructure matches growth in the area.

However, stage one of the South West Rail Link will see the delivery of a significant upgrade to Glenfield station including the construction of a major commuter car park. It is an initiative of the NSW Government to respond to issues of reliability and passenger growth on the metropolitan rail network and population growth in south-west Sydney. The Glenfield Transport Interchange and commuter car park is currently under construction and expected to be complete in 2010. Concept approval for the remainder of the South West Rail Link to Leppington has been granted and the corridor is protected.

The decision to defer the North West Metro was taken given the size of capital required and the current economic climate. Concept approval for the rail corridor between Epping and Rouse Hill has been granted and the corridor is protected.

The Northern Sydney Freight Corridor Program is an initiative of the Australian Government to remove operational impediments to rail freight traffic between North Strathfield and Broadmeadow, Newcastle. Removing operational impediments to rail freight traffic from passenger services will improve the performance of the north-south rail corridor by reducing delays caused by freight and passenger services competing for available metropolitan track capacity. The Transport Infrastructure and Development Corporation (TIDC) has commenced feasibility studies for the program, including options development and assessment.

The provision of a metro system for Sydney or the CBD is not a new concept. A metro network was first identified in the NSW Government's 2006 Urban Transport Statement, which recognised that metro would provide the key benefit of operational separation from existing road and rail networks as well as modern rolling stock and train control systems to enhance reliability and facilitate the rapid loading and unloading of passengers.

The Sydney Metro Network will become a critical component of Sydney's integrated public transport network that compliments other public transport. The Sydney Metro Network Stage 1 (Rozelle to



Central) is the first stage of a broader Metro network that will service the travel needs of our growing suburbs and established centres. Metro 1 comprises a new rail corridor through Sydney's CBD from Rozelle to Central, Stage 2 from Central to Westmead and the North West Metro from Rozelle to Macquarie Park and Epping and ultimately to the North West Growth Centre.

Stage 1, as part of a larger network will enable improvements in the existing rail system, and present the opportunity to reconfigure and reshape the network to enhance its effectiveness. There are many examples of cities in the world that operate complimentary rail networks comprising both metro and heavy rail lines which together form one complimentary integrated rail network.

Interchange will occur and has been provided for between the heavy rail system and the proposed Metro (Stage 1). The two systems are not unrelated and will continue to be developed and expanded having regard to the specific needs of each facility.

Experience in other cities reaffirms the benefits that Metro systems bring to the development of urban areas and transport within them. Metros can assist in shaping and accommodating growth in population and employment, facilitate urban renewal, connect centres, relieve public transport congestion, reduce travel times and reduce urban emissions.

Metro 1 comprises an extension from Rozelle to the north-west. This will assist in reshaping land use in the northern and western regions of Sydney improving access to jobs and residential areas.

The Metro project will assist in relieving congestion of the CityRail network and will not prevent or limit future expansion of the heavy rail network within or external to the Sydney CBD. On the contrary, by relieving the most congested part of the CityRail network, it will facilitate future upgrades and development of the CityRail network.

4.6.3 Improvements to bus and ferry systems

Issues included

- *The money would be better spent on improving ferry services. Specific suggestions included a White Bay ferry service and improvements to the Balmain ferry service.*
- *The money would be better spent on improving bus services. Suggestions included more bus lanes, specifically on Victoria Road and Anzac Bridge, and linking Barangaroo to the CBD by bus.*
- *Money should be spent on improving the already existing public transport options such as more bus lanes, increased ferry services and the reintroduction and extension of light rail from Pyrmont to Rozelle using the underused Glebe Island Bridge corridor.*
- *If the project cannot be guaranteed past Rozelle, the provision of a bus lane on Anzac bridge during peak hour would be much cheaper.*

Response

While ferries will continue to play a unique role in Sydney's transport network, especially in the morning peak for travel from suburbs along the Parramatta River and around the harbour, the scale and passenger demand for ferry operations will remain small compared with rail and bus services. Travel on Sydney ferries accounts for only three per cent of total trips to the Sydney CBD.

The NSW Government is implementing a range of measures to enhance bus services as part of its CBD Bus Strategy. The Strategy is directed at addressing short-term capacity constraints and improving access for buses into and through the CBD. An alternative to the Stage 1 Metro project would involve significant investment in bus services, which would involve many more buses on Sydney streets. However, these would provide only a partial solution to Sydney's longer term transport



capacity and congestion issues, and would not provide the enabling infrastructure for a Sydney-wide metro network.

While buses will continue to form an integral part of Sydney's public transport system, the alternative of enhancing the bus network and services is less favourable than the project because:

- Bus options alone would not be able to address passenger demand in the medium to long term. The number of buses required to provide a commensurate level of passenger capacity would potentially create major issues for the accommodation of layover and terminal space in the CBD.
- Increased volumes of buses in the Sydney CBD would significantly reduce amenity, particularly for pedestrians, through increased noise, exhaust emissions, congestion and the use of road and kerb space for bus stops.
- Buses operating on congested road corridors are currently subject to delays and unreliability associated with sharing road space with other traffic and it is very difficult, if not impractical, to give full priority (as with a bus rapid-transit type system) without complete grade separation and/or extensive land acquisition for road widening. A tunnel for use by buses over a distance such as that from the CBD to Rozelle would be impractical due to requirements for ventilation of exhaust fumes and the cost relative to the number of passengers that could be carried by a metro.
- Bus systems – even those operating within a dedicated right-of-way – are not as efficient at moving the very large numbers of people that can be carried on a rail-based metro-style operation.
- A bus rapid transit (BRT) strategy would not enable wider network benefits; it would not facilitate network benefits with regard to optimisation of the CityRail network; and it would not address the need for a new and independent transport product that has the potential to be expanded across the entire metropolitan area.
- Bus enhancement options using the existing road network would be constrained by congestion on the road network, and travel times and reliability would be inferior to the project.

It is important to note that an integrated public transport system comprises a number of different systems to undertake different transport tasks.

4.6.4 Need for public transport initiatives in other areas of Sydney

Issues included

- *There is a greater need for public transport in other areas of Sydney. Suggestions included:*
 - *the north-west (a link to Rouse Hill or the Hills District, McGraths Hill to Rouse Hill, Kellyville, Castle Hill, Epping, Ryde, under Victoria Road to the CBD)*
 - *the south-west*
 - *the west (Penrith to Liverpool)*
 - *the Northern Beaches (Dee Why to Maroubra, connecting with the North Shore Line and diverting to Crows Nest, to Mosman and the City)*
 - *Central to Taylor Square, Centennial Park, Bondi Junction, Bellevue Hill, Bondi Beach*
 - *a link to the University of NSW*



- *a north-south link (ie Western Line to Bankstown Line to East Hills Line and down into the unserviced Menai area onto Sutherland).*
- *The EA states that the most congested transport corridor is between Parramatta to the City. Why isn't this proposal being evaluated first?*
- *The metro lines should be constructed once rail projects are completed to serve areas without rail transport.*

Response

The need for focused investment in Sydney's transport system is acknowledged. The NSW Government is committed to investing in transport infrastructure and supporting jobs and industries with a transport network that helps boost the economy. In June 2009, the Premier announced the creation of NSW Transport and Infrastructure – a transport super agency with responsibility for all transport policy, planning and coordination functions as well as oversight of infrastructure delivery and asset management.

The western Parramatta Road corridor and Sydney's North West sector is in need of rail infrastructure and that is why the Government's Metro development plans provide for a Metro network.

Sydney Metro is currently preparing a Metro Network Strategy to guide and prioritise the development of a metro network for Sydney. This work includes assessment of a range of alternative alignments for future metro lines for Sydney.

The Sydney Metro Network Stage 2 (Central to Westmead) project is being examined now. The NSW Government will seek the views of the community in relation to this Stage of the Metro over coming months. In relation to Rouse Hill and the Hills Districts, Metro 1 comprises a proposed new rail corridor linking Sydney's CBD with the North West. Other alternatives to Metro or heavy rail were considered (such as Transitways). However, a metro network was considered to best meet the future transport task.

The Government remains committed to building a rail link to serve the North West. Sydney Metro Stage 1 (the project) is the first step in developing that link and provides the necessary supporting infrastructure and capacity in the CBD. While a rail link between McGraths Hill and Rouse Hill does not form part of Government's rail expansion plans at the present time, Metro 1 does embrace a proposed new rail corridor linking Sydney's CBD with the North West.

The South West Rail Link will deliver public transport services to new development areas in the South West.

The broader Metro network plan includes the Metro 2 City East Line that provides for a Metro line linking the CBD with the south-east and Northern Beaches. More information is available on the Sydney Metro web site.

The work underpinning the development of the Sydney Metro Network (and the EA) has been based on advice from metro, land use and transport experts.

In summary, there are a range of transport challenges and priorities facing Sydney. However, the need for high capacity, frequent and integrated public transport is paramount. Construction of Sydney Metro Network Stage 1 will best meet these public transport needs while at the same time establishing the new Metro Network and facilitating transport improvements across other modes.



4.6.5 Combination of possible initiatives to deliver project objectives

Issues included

- *The improvement of the existing transport modes (train, tram, bicycle routes) combined with smart land-use planning might provide similar overall benefits as the proposed metro line, at lower cost.*
- *A combination of measures would be more cost effective and quicker. Suggestions included:*
 - *A more functional RailCorp system (possibly augmented by light rail and /or a second generational monorail), improved road pricing and transferring road freight to rail.*
 - *Giving inner city services priority over cars.*
 - *Integrated ticketing system and traffic hubs, a free light rail system from Central to Circular Quay, free public transport, traffic calming to reduce road rage.*

Response

It is acknowledged that solving Sydney's transport challenges requires a combination of initiatives. NSW Transport and Infrastructure is the lead public transport agency of the NSW Government, with primary responsibility for transport policy, planning and coordination functions as well as oversight of infrastructure delivery and asset management.

Suggestions regarding complementary transport solutions will be provided to NSW Transport and Infrastructure. Suggestions included:

- Provision of free public transport.
- Integrated ticketing.
- Traffic calming measures.
- Moving walkways.

4.6.6 Demand management

Issues included

- *The government should install a congestion tax to respond to CBD congestion.*
- *Traffic and parking policies should be implemented to encourage public transport use.*
- *A metro-type solution could be implemented at one hundredth the cost by enacting Transitways from Rozelle, White Bay and Pyrmont, and installing a congestion tax on vehicles going into the city.*
- *The project does nothing to remove the number of cars clogging the inner city roads.*

Response

The issue of passenger car travel demand was address within section 5.2.4 of the EA, where it was stated that the strategies of differential pricing or 'congestion charging' and restricting parking availability and increasing parking charges would be limited in their ability to bring about significant changes to public transport networks.



In order to encourage public transport use the network needs to be in place before discouraging private vehicle use and using the funds from this congestion charging to fund the expansion of the public transport network.

Public transport infrastructure and services need to be in place to cope with the anticipated level and timing of demand, so that price-driven consumer behaviour can be reinforced by a good level of service which attracts people onto public transport.

While effective demand management can help relieve capacity concerns and are an important part of any transport strategy, they would not deliver the major capacity gains required on their own.

4.6.7 Alternative alignment – line 1 and 2

Issues included

- *Any rail line through the CBD from the north should pass through the Global Economic Corridor (via a cross-harbour link) to maximum benefit for the construction of stations.*

Response

The proposed Sydney Metro network (Metro Line 1) will provide direct access to the Global Economic Corridor via the important Victoria Road corridor to the North West. Metro Line 1 provides a “cross-harbour link” to the North West of Sydney.

Use of the Interim Rail Pitt Corridor (defined as the Global Economic Corridor in the State Environmental Planning Policy (Infrastructure)) does not reduce the ability to provide additional rail through the CBD and provide a future rail harbour crossing if required. Refer to other sections of this report regarding the safeguarding of the Interim Rail West Corridor.

4.6.8 Other alternatives

Issues included

- *The Rees Government is also planning to close the Newcastle Railway. This is like cutting back the Railway from Sydney to Redfern.*
- *A circumferential ring road in the CBD would improve amenity and functionality to a greater extent than the Gehl scheme.*

Response

Comments regarding changes to the Newcastle Railway service are noted. However, any such changes to the Newcastle Railway or related projects are unrelated to the proposed Sydney Metro network and not a matter to be considered as part of the project.

Suggestions regarding a circumferential ring road in the CBD are noted. However, any such proposal is unrelated to the proposed Sydney Metro network and not a matter to be considered as part of the project.



4.6.9 Sufficient consideration of alternatives

Issues included

- *The justification for the project and evaluation of alternatives in sections 4 and 5 of the EA is inadequate. Criticisms included:*
 - *Other alternatives were not considered (eg light rail from the CBD to Drummoyne and Ryde, Anzac metro line, heavy rail routes and high speed rail).*
 - *Arguments such as street widths not allowing expansion of the tram (light rail) are simply ignorant and untruthful.*
 - *It is difficult to voice an opinion when there aren't any options on the table.*
 - *Alternatives presented do not equate to current medium to long-term planning of those responsible for stewarding various modes.*
 - *Alternatives were assessed on their ability to meet the project objective of enabling a wider metro network.*
 - *No alternative design for the metro was considered.*
 - *Alternatives are not sufficiently detailed to consider the diligence of their development.*
 - *The alternatives were only evaluated on cost.*
 - *The 'value for money' discussion does not report any scenario testing of patronage, key economic and financial indicators, or operational indices related to customer accessibility and friction.*
- *The project would appear to justify the selected alignment choices, station location and design, stabling and other facility options without reference to the various previously studied metro options and how the selected project improves upon them.*

Response

The consideration of alternatives to the project and the justification for the project is discussed in Chapter 5 and Chapter 22 of the EA. Both the review of alternatives and the justification for the project was undertaken in accordance with the Director-General's requirements and is based on the strategic need for the project.

The Director-General's requirements for the project include the need to assess the potential impacts of the project (the preferred option). The environmental assessment is also required to justify the project in the context of potential alternatives. This involved providing a description of the project and evaluation of various alternatives to this project. The evaluation considered the alternatives against the project objectives, value for money, realisation of early benefits, engineering constraints, safety and environmental considerations, to arrive at a preferred option. A concept design developed for the project was subject to the detailed environmental assessment, as presented in the displayed report.

A similar detailed assessment of each alternative is not required as part of the environmental assessment. A detailed description of each alternative in terms of concept design and construction is not required as part of the environmental assessment.

Alternatives to the project included enhancements to the public transport networks within the city as alternatives to the project. The alternatives examined included improving CityRail's operations to embrace metro-style characteristics, and extending the system in the CBD and Inner West.



Possible metro alignments, such as those identified in the original 'Sydney Link' proposal of March 2008, are not considered alternatives to the Stage 1 project. Rather, development of the metro network and Stage 1 in particular as resulted in refinement of the alignment based on station locales and other considerations, including the need to:

- Service demand in key catchments along the corridor.
- Facilitate interchange with CityRail services and reduce overcrowding at CityRail stations.
- Provide for potential future extensions of the metro network.
- Avoid or mitigate environmental constraints and major engineering and constructability issues.

4.7 Justification for the project

4.7.1 The project proposed in an area already serviced by bus, rail and ferries

Issues included

- *The Sydney Metro Stage 1, Central to Rozelle will duplicate existing CBD transport services.*
- *The project will provide no improvement in public transport. Areas serviced by the metro are not in as much need as Sydney's west or other areas that do not have rail.*
- *The State Government should not spend \$5 billion on a public transport system to serve areas already well served by public transport.*
- *The area in and around the CBD is not the most needy area. For example, St James and Museum stations are under-utilised. Passengers should be advised to use these stations more.*
- *The majority of West Metro to Parramatta is serviced by existing heavy rail now and some could be serviced at little cost by extending the light rail.*
- *This is already a free bus along the same alignment of the CBD part of the project.*
- *The route from Rozelle largely duplicates the existing light rail.*

Response

The Sydney Metro Network Stage 1 (the project) will link important suburban, commercial and education hubs with a faster and more frequent service. It will reduce the number of buses in the congested northern part of the City and take the pressure off CityRail's Wynyard and Town Hall stations which are near capacity at peak times.

However, it is important not to look at Stage 1 in isolation. International experience is that a central component of the metro is constructed first as the "enabler" of a future, much larger metro rail system. While Stage 1 is the NSW Government's first metro priority, a Project Application and Preliminary Environmental Assessment has been lodged with the Department of Planning for Stage 2 – between Westmead and the CBD. This would be the next logical step for metro rail systems in Sydney. Possible other metro links include to the north-west, the south-east and the north.

As noted in Chapter 4.3.2 of the EA, buses are pivotal to Sydney's transport system, and will continue to perform the bulk of the task in the key non-rail CBD corridors in the immediate future. However, buses servicing Rozelle and the CBD will experience declining performance as road congestion increases with population and employment growth.



Significant congestion is likely to occur on parts of the bus network by 2031, assuming current levels of planned investment. Sydney CBD would be a constraint point because of limitations on the capacity of bus access to the CBD and the need for more buses to access CBD interchange points.

Victoria Road in particular is one of the busiest bus-based corridors in Sydney, and one of the most unreliable in terms of peak travel times due to the high levels of traffic congestion. The Inner West Busway will provide additional dedicated bus lanes to address congestion in the short to medium term. However, these roads would need significant enhancement to cater for any sustained increase in demand in the long term.

Bus congestion levels on Victoria Road approaching the CBD in the AM peak by 2031 are expected to be amongst the highest of any bus corridor in Sydney.

The project will attract passengers away from existing crowded rail networks, including at key stations such as Central, Wynyard and Town Hall. At this stage, CityRail's St James and Museum stations are not directly served by the project.

While the light rail provides a link between Pyrmont and Central, there is no such link between Pyrmont and the northern end of the CBD. The metro will put Barangaroo-Wynyard and Martin Place within 1 – 3 minutes of Pyrmont. It is noted that light rail also serves Lilyfield, providing a complimentary service to the project.

While ferries will continue to play a unique role in Sydney's transport network, especially in the morning peak for travel from suburbs along the Parramatta River and around the harbour, the scale and passenger demand for ferry operations will remain small compared with rail and bus services. Travel on Sydney ferries accounts for only three per cent of total trips to the Sydney CBD.

Servicing the new development at Barangaroo will require a significant public transport initiative such as the Stage 1 project. This need was clearly recognised in the planning, design and approval of the Barangaroo development. It would be unsatisfactory to rely only on walking as an alternative mode of transport to Barangaroo.

The role of the green CBD Shuttle bus linking Circular Quay and Central stations in a 30-minute, all-stops loop is noted. The Stage 1 project would provide a rapid service between key localities rather than an all-stops street level service.

The role of walking and cycling within and to the CBD, Pyrmont and Rozelle is noted. The project includes a range of measures and strategies to encourage walking and cycling.

The project is the critical first stage of the broader metro network and is a priority project that will provide targeted public transport improvements within the CBD (where it is needed most), Pyrmont and Rozelle. Its key strategic benefits would include:

- Relief to the greatest capacity constraint on the entire transport network – the CBD – while providing for future metros to the west and north-west.
- Provision of an alternative means for commuters to move around the CBD, relieving existing crowded rail and bus networks, particularly at key locations such as Central, Wynyard and Town Hall.
- Facilitation of wider timetable and investment choices for the commuter rail network.
- Relief of heavily congested bus services operating into and through the CBD, which currently compete with pedestrians, cyclists, delivery vehicles and cars.
- Support for the planned Barangaroo development and, in the future, the Bays Precinct and Blackwattle Bay area.



While the project would provide significant benefits on its own, it would also be of strategic importance as an enabler of the entire metro network, forming the central spine to which all other metros would link or interchange. The NSW Government therefore regards it as the critical first step in the transformation of Sydney's transport system.

4.7.2 Patronage

Issues included

- *The patronage scenarios have not been satisfactorily explained and expressed. The passenger numbers and demand rationale stated seem to be questionable.*
- *Failure to see how the metro will relieve capacity with initial limited patronage as it would only provide some CBD to CBD travel. There would not be many people in the peak hour when people are arriving or leaving the city.*
- *The project will have low patronage with one sixth capacity during peak periods, six years after its scheduled opening.*
- *There is no information or analysis of the destinations of the Pyrmont Station pedestrians or their modes of travel to work to support the conclusion that the Union Square site is a 'natural, pedestrian desire line, and the locating of a station entrance there would deliver a large passenger catchment'.*
- *There is no demand or need for this service to Rozelle.*
- *Projections indicate that the patronage will be underutilised and will not have the necessary numbers to recoup the project expenditure.*
- *Without a further extension of the project, patronage would be low as people would choose to walk or use existing transport options.*
- *Patronage from heavy rail (including North West Rail, South West Rail and Parramatta to Epping) will be higher than patronage from the metro.*
- *It is important that the capacity of the project is aligned with realistic future growth targets.*

Response

The Stage 1 project is expected to serve a range of different customer markets and patronage modelling reflects this. The project would initially be a stand-alone metro line. Later, as it develops into Metro Line 1, it would extend to Parramatta/Westmead in the west and towards the Macquarie Park area in the north-west. Specific patronage for the Stage 1 project is generated from:

- Central – passengers transferring to and from CityRail services terminating at Sydney Terminal.
- Bus – metro transfers, particularly at Martin Place, Town Hall and Barangaroo-Wynyard.
- Heavy rail – metro transfers, particularly at Barangaroo-Wynyard.
- Barangaroo – as a major employment growth area and with transfers from a future ferry terminal.
- Pyrmont – particularly as an employment destination, but also as an origin and special events station.
- Rozelle – walk up and bus transfers.



- Intra CBD – business and tourism travel.

The Sydney Metro Stage 1 project would provide additional intra-CBD services and an additional north-south route through the CBD, with a capacity of 29,000 up to 40,000 passengers per hour, depending on the metro train configuration, frequency and seating arrangement. This would relieve congestion on both the bus and rail network and represent a major injection of service quality and capacity into a currently constrained network.

Patronage forecasts, including a ramp-up profile, are described in Chapter 4.6 of the EA. It is expected that demand for the project would be high upon opening, given the substantial travel time savings it would bring to public transport users. Metro trains are not expected to run empty on day one. The predicted demand is considered realistic based on significant research and review of various new rail schemes around the world (including Joondalup Perth Urban Rail, Sydney Airport Line, Hong Kong Airport Line, Croydon (London) Tramlink, and Marseilles (France) Mass Transit).

Passenger demand for each metro station is described clearly in Chapter 14 of the EA. Passenger demand is not affected by depth of the stations, which are all accessible from the surface within acceptable walking times.

Patronage modelling is one type of analytic tool and provides a critical, but not complete picture of future travel patterns. There are many different types of models to suit different purposes.

4.7.3 Project objectives

Issues included

- *The EA has not been able to frame appropriate objectives that demonstrate how the project will deliver the outcomes that address the strategic need. The objectives should be stated in terms of transport demands that are being met and indicators should be measurable so that the extent of performance against the objectives can be assessed.*
- *The objectives of the project need to reduce the requirement for driving cars to stations to encourage ESD.*
- *The connection between the uncontested transport network challenge facing Sydney and a specific context of goals and objectives to evaluate the projects merits against is not defined.*
- *Sydney Metro has not provided objectives for the project, rather the strategic need communicated project objectives.*
- *The stated performance indicators are incomplete and inadequate.*

Response

Objectives for the Stage 1 project are described in section 4.7 of the EA and were developed in response to a strategic needs analysis. This considered the strategic policy and planning framework with respect to land use, transport and the environment, population and employment trends, travel and transport network needs and constraints and the role of a new Metro product. For each of the objectives, performance indicators were developed and the project has been justified based on how it meets these indicators – refer to Chapter 22 of the EA.

The Sydney Metro modal hierarchy promotes active and public transport users above car users. Where possible within the scope of the station precinct delivery, the modal hierarchy prioritises the delivery of footpath improvements, footpath widening, weather-protected bicycle parking and weather protected bus passenger waiting areas and real-time next bus information.



4.7.4 Second Harbour Bridge crossing

Issues included

- *Ideally a north-south heavy rail alignment in the CBD (and a harbour crossing) should be built at this point in time to cope with current levels of congestion.*

Response

NSW Transport and Infrastructure is the transport super agency of the NSW Government, with responsibility for all transport policy, planning and coordination functions as well as oversight of infrastructure delivery and asset management.

Proposals for a second Harbour crossing will be considered by NSW Transport and Infrastructure.

Whilst the Stage 1 of Metro Line 1 is an important new project, Government continues to invest heavily (approx \$1 billion per annum) in the existing CityRail network to provide an integrated transport service to Sydney.

4.7.5 The project in light of Inner West Busway project (Victoria Road upgrade)

Issues included

- *The EA does not discuss how the project is integrated with the Inner West Busway project (Victoria Road upgrade).*

Response

Victoria Road is one of the busiest bus-based corridors in Sydney, and one of the most unreliable in terms of peak travel times due to the high levels of traffic congestion. In 2008, more than 120 buses carried almost 6,000 people into the city in the morning peak two hours on Victoria Road³. Once these buses reach the city, they contribute significantly to congestion and suffer slow travel times as they traverse the northern part of George Street to reach Circular Quay. The Inner West Busway will provide additional dedicated bus lanes to address congestion in the short to medium term. However, these roads would need significant enhancement to cater for any sustained increase in demand in the long term.

4.7.6 The project is too short to be effective

Issues included

- *Severe congestion on Victoria Road will not be alleviated due to the short distance of the metro to Rozelle.*
- *At approximately 4 kilometres in length, the project only adds expense and time for people from further out. They will need to take two forms of public transport rather than one, to reach the city.*
- *This is too costly and is the wrong priority for funding for a short and impractical line that would have negligible economic and community benefit and would cause impacts such as noise, traffic and heritage during construction. It may be worth having if it was extended further north and west.*

³ Ministry of Transport/State Transit 2008, State Transit Authority corridor counts (October/November 2008).



Response

The objective of the Stage 1 project is not limited to providing improved public transport services between Central and Rozelle. It is of strategic importance as an enabler of the entire metro network, forming the central spine to which all other metros would link or interchange. The NSW Government therefore regards it as the critical first step in the transformation of Sydney's transport system.

Sydney Metro Stage 1 to Rozelle is only the first stage of a longer Metro Line 1 which will ultimately extend beyond Rozelle via the Victoria Road Corridor to the north-west, as well as from the Sydney CBD to Parramatta and Westmead.

4.8 Justification for an underground system**4.8.1 Cost of tunnelling**

- *Due to the extensive tunnelling required, the 7 kilometre line will cost almost \$700 million per kilometre to construct compared to the \$200 million per kilometre cost of the Epping to Chatswood line.*
- *Tunnelling (including two water crossing) is very expensive for areas already serviced by public transport.*
- *Why have cavern stations been chosen as opposed to stream-lined stations (eg City Circle)? These are expensive and threaten the CBD's surface and underground uses.*
- *Surface construction would be much cheaper.*
- *Tunnel boring is machine and capital intensive.*
- *Given the elevations at most stations being above 20 metres AHD, what is the estimated cost of bridges and stations vs underground tunnels and caverns?*
- *It appears that Martin Place, Barangaroo-Wynyard, Pyrmont and especially Rozelle have extremely deep stations, deeper than the existing Martin Place. Will this add immensely to the cost of the stations?*

Response

A cost comparison between the completed Epping to Chatswood Rail Line and the Metro Stage 1 project is not valid. The capital costs for the Epping to Chatswood Rail Line are based on a 12 kilometre line and five stations estimated in 2008 dollars. The capital costs for the Metro Stage 1 project are based on a 7 kilometre line, six stations (and one safeguarded station), maintenance and stabling depot and rolling stock estimated in 2015 dollars.

While tunnel construction is generally considerably more expensive than construction of a surface infrastructure, in the CBD context, the costs of acquiring property for a surface corridor would likely outweigh tunnel construction costs.

The relative environmental benefits and adverse amenity and social impacts must also be considered when comparing surface and tunnel alternatives. While linear surface infrastructure can be constructed over a shorter duration, it affects the amenity and cohesion of an entire corridor. Social impacts resulting from extensive property acquisition including heritage impacts, business impacts and community severance cannot be avoided and environmental impacts, in particular, operational noise and vibration are significantly greater and more complex to manage. The utility of public spaces and land use potential may also be stifled in the longer term.



While construction of tunnels generally requires a longer construction period relative to surface links, the impacts are confined to specific sites meaning a suite of specific management measures can be more easily and effectively implemented to minimise potential impacts. Compared to a surface link, a tunnel minimises adverse property, business and social impacts and maximises amenity benefits including relative reductions in operational noise and vibration impacts and maintenance of heritage significance.

Overall, the provision of the Sydney Metro Stage 1 in tunnel will provide better value for money to the community and result in superior environmental and social outcomes.

4.9 Project cost

4.9.1 Funding

Issues included

- *Funding from the NSW Government in the short and medium term is not guaranteed. The project should not proceed without guaranteed funding.*
- *There will not be enough funds for the metro because the financial crisis will be permanent after peak oil.*
- *Funding of the metro should be paid by the Federal Government as has been done for Western Australia and Queensland rail transport systems.*
- *Future stages of the metro network would be given a higher priority than extensions of the CityRail network. As a large proportion of the NSW budget has been given to a stand-alone link, there will be immense pressure on budgetary process to ensure that the metro network is not seen as ineffective.*

Response

The estimated cost of the project remains \$4.8 billion.

The NSW Government has committed to fully funding Stage 1 of the Sydney Metro Network (Rozelle to Central). Funding from the Commonwealth Government is not required for Stage 1.

Also, refer to 4.2 regarding the use of PFP mechanisms.

4.9.2 Expenditure

Issues included

- *The project is a waste of limited public (tax payer) money and is too expensive for areas already serviced by public transport which will only benefit a limited number of people, and only goes to Rozelle.*
- *No calculations have been done for cost estimates, cost-benefit analysis, risk assessment and critical path analyses. There is no analysis of economic and social costs, or benefits for alternatives. These should be provided.*
- *The line will be extremely expensive and dominate the public transport budget for years to come.*
- *The project will have the highest possible construction costs.*



- *The project will never make a profit and will saddle the State with unacceptable debts with no income from this metro.*
- *The opportunity cost spent on initiation and planning to date would cover the cost of remaining land acquisition for the North West Rail Link.*
- *This extremely expensive project will be of little value unless it is extended to the west, and that means another large injection of money.*
- *The severely overpriced metro stations at Martin Place and Barangaroo should not be built.*
- *Without high patronage levels, it is unlikely construction and operating costs will be met. Given the low patronage figures, it is unlikely that it will be cost-effective.*
- *Any determination to allow the Metro to proceed to construction would be a sheer waste of money in the absence of such an integrated transport plan being developed, publicly exhibited and widely discussed.*
- *Sydney's population density in inner city suburbs is still too low to justify the expenditure of a metro.*

Response

Stage 1 of the Sydney Metro Network (Central to Rozelle) is the most critical and complex component of the network and provides the enabler for the entire Metro network. The high relative cost of the project is largely derived from the complexity of station construction within a high density city environment. The variable topography, including two significant water crossings also contribute to the cost.

The Stage 1 project provides the initial maintenance and stabling depot, rolling stock and six metro stations of which four are in the CBD plus a seventh safeguarded station for future development at White Bay. These seven stations are within the 7 kilometres of main alignment, which is relatively a high number for a metro network. The four stations servicing the CBD, providing the spine for future extensions to the metro network, are located within densely populated precincts that physically constrain the design resulting in stations that are relatively deep. Construction of these stations in a CBD environment is much more expensive than they would be in a less densely populated and developed area.

The alignment includes two harbour crossings requiring the level of the tunnel to be low enough to ensure that it can be safely constructed. The Darling Harbour crossing is adjacent to the steeply rising CBD topography. The stations at Pyrmont and Rozelle are located to best serve the metro users but this has resulted in these stations being located at high points on the alignment. This results in the Stations being deeper than typically expected in a flat topography, which further increases the station costs.

Being a new rail system, the cost of establishing stabling, maintenance and operational control facilities is primarily borne by the first stage. These facilities are designed for future expansion that will become proportionately cheaper per kilometre (and per train) as the metro network expands.

Stage 1 of the project also bears future proofing costs associated with the future metro network, such as ensuring stations are constructed to accommodate trains with six carriages as patronage increases (despite only requiring trains with five carriages in 2015). Other future proofing costs are associated with ensuring future access (at stations) and extensions (at both Central and Rozelle) can be easily constructed.

Additionally, with Stations being located in the CBD, property acquisition and third party asset protection costs are higher than would occur in suburban areas.



Notwithstanding the capital costs of the project, Stage 1 would establish a positive public transport legacy for future generations. Most significantly, with the improvements to public transport, it would provide the key enabler for the wider metro network across the Sydney metropolitan area – providing long-term benefits in terms of the environment and urban living. It would link land use and transport planning and deliver on the state’s strategic objectives for improved urban environments with reliable transport access.

For further issues and responses regarding the need for an integrated transport plan refer to section 4.11.

4.9.3 Loss of funding for other projects

Issues included

- *The money would be better spent on extensions of heavy rail or extensions of light rail.*
- *The money would be better spent on other areas of Sydney that lack effective public transport including the north-west and south-west areas of Sydney and the Eastern Suburbs.*
- *The NSW State government should purchase the AirportLink and make this part of the CityRail system and therefore more affordable.*
- *Rail development is expensive and competes with other options for government expenditure.*

Response

The estimated cost of the project remains \$4.8 billion. The NSW Government has committed to fully funding Stage 1 of the Sydney Metro Network (Rozelle to Central). Funding from the Commonwealth Government is not required for Stage 1. However, Sydney Metro is seeking funding from the Commonwealth Government for Stage 2 (Central to Westmead).

The NSW Government is continuing to invest in all areas of public transport. NSW Transport and Infrastructure is the transport super agency of the NSW Government, with responsibility for all transport policy, planning and coordination functions as well as oversight of infrastructure delivery and asset management.

Connecting NSW: The Transport Blueprint is the NSW Government’s 25 year plan for integrating the delivery of transport services and land use planning in NSW.

The NSW Government has reaffirmed its commitment to completion of the rail clearways program. The Metro project will not prevent or limit future expansion of the heavy rail network within or external to the Sydney CBD. Metro corridors have been identified and are being scrutinised with other possible future heavy rail needs and opportunities in mind.

The recently completed Epping to Chatswood Rail Link (an extension of the existing heavy rail network) will assist in encouraging increased rail and public transport use at the expense of cars. The Metro will also assist in providing residents and workers with a choice other than car for a variety of trip purposes.

The Epping to Chatswood Rail Link is complete and is operational. The Sydney Metro Network Stage 1 (Rozelle to Central) is the first stage of a broader Metro network that will ultimately serve the transport needs of the north-west of Sydney.

The approved rail corridor between Epping and Parramatta is protected for future expansion of public transport. The Government will consider a range of options for the Carlingford corridor linking Epping and Parramatta as part of its long term integrated rail network.



In October 2008, the NSW Government decided to defer rail projects to the North West and stage the delivery of the South West Rail Link so the infrastructure matches growth in the area.

However, stage one of the South West Rail Link will see the delivery of a significant upgrade to Glenfield station including the construction of a major commuter car park. It is an initiative of the NSW Government to respond to issues of reliability and passenger growth on the metropolitan rail network and population growth in south-west Sydney. The Glenfield Transport Interchange and commuter car park is currently under construction and expected to be complete in 2010. Concept approval for the remainder of the South West Rail Link to Leppington has been granted and the corridor is protected.

The decision to defer the North West Metro was taken given the size of capital required and the current economic climate. Concept approval for the rail corridor between Epping and Rouse Hill has been granted and the corridor is protected.

The Northern Sydney Freight Corridor Program is an initiative of the Australian Government to remove operational impediments to rail freight traffic between North Strathfield and Broadmeadow, Newcastle. Removing operational impediments to rail freight traffic from passenger services will improve the performance of the north-south rail corridor by reducing delays caused by freight and passenger services competing for available metropolitan track capacity. Transport Infrastructure and Development Corporation has commenced feasibility studies for the program, including options development and assessment.

Accelerated implementation of strategic bus corridors and bus priority routes across Sydney, upgrading and expansion of bus fleets, increased use of technology to improve operations and greater integration of the bus and rail networks would improve travel times and reliability.

The projects identified above will continue to be developed in accordance with priorities set out by NSW Transport and Infrastructure as funding becomes available.

Sydney Metro is not proposing to purchase the Airport Rail Link from the current operators. This rail connection integrates with the existing CityRail network.

The Metro Network Strategy is being developed by Sydney Metro by a process of assessing a range of regional corridors and public transport solutions based on: potential demand, their role in strengthening and supporting existing centres, opportunities for urban renewal, and the adequacy of the existing transport in that corridor.

The Sydney Metro Network Stage 1, from Central to Rozelle, would form the central spine to which other metros would link or interchange. As such, it is considered by the NSW Government to be the logical and first critical step in the transformation of Sydney's transport system.

Furthermore, as the first stage of the metro network the project will:

- Introduce fast, frequent and reliable metro rail to the city, with services arriving every 2-3 minutes in the peak.
- Provide the foundation for a wider metro network for Sydney, enabling future extensions to be built to the West, North West and South East.
- Reduce travel times into the CBD, with a trip from Rozelle to Central taking approximately 10 minutes.
- Ease congestion of bus and rail services by providing a new public transport service within and across the CBD.
- Provide the opportunity to generate additional capacity on the CityRail network by using Central Station's underused country platforms as a gateway for the Metro through to the CBD.



- Reduce crowding at some of CityRail's busiest stations by providing new metro stations in the Barangaroo-Wynyard, Martin Place, Town Hall and Central precincts.
- Provide the first public transport link for the proposed new Barangaroo development precinct.
- Support the long-term global competitiveness and attractiveness of Sydney by bringing the world-class reliability and efficiency of a metro service to the city for employees, residents, students and visitors.

4.10 Metro network

4.10.1 The metro network

Issues included

- *If the metro is to go ahead it should at least go out to Ryde.*
- *The project and its termination at Rozelle were never revealed in any of the LEPs or other local planning instruments previously.*
- *Who is the Rozelle Station for and who wants it?*
- *No documents have been produced pertaining to the extension of the metro from Rozelle. Rozelle will become an 'end of line' station (another Bondi Junction).*
- *The Rozelle Station will not solve crowding in other areas.*
- *The initial announcement of the project from Rouse Hill to Rozelle seemed to have many more benefits than this small section.*
- *What are the plans to extend the metro. The metro should be extended further to other suburbs including:*
 - *Drummoyne and Five Dock*
 - *Eastern Suburbs*
 - *South of Strathfield*
 - *Ryde and West Ryde*
 - *Epping*
 - *South-eastern suburbs*
 - *North-eastern suburbs*
 - *North-western suburbs*
 - *Southern suburbs.*
- *Future governments are unlikely to extend this metro and have stated that they will cancel it.*
- *If the project is approved, conditions should be put in place and dates should be set to ensure that Metro line 1 is ultimately extended to the north-west.*



- *Although construction of the project is a necessary precursor of the West Metro line and other planned extensions, there have not yet been necessary political and funding decisions that will provide the necessary link between these assumptions and their realisation.*
- *Sydney is too far sparsely populated and under-populated compared to other metro cities (eg Paris and London).*
- *If the project went to Ryde instead of Rozelle it would mirror the West Metro plans for providing interlinking transport connections (ie with CityRail at Ryde).*
- *Because of their extreme cost, Parramatta or Ryde extensions could not be expected for at least a decade after completion of the project.*

Response

Sydney's complex network of road, rail and bus is already at capacity on key points of the network – points that are also experiencing the highest rates of population and employment growth. To maximise and support growth and sustainability, Sydney requires a comprehensive transport solution.

A metro network was first identified in the 2006 Urban Transport Statement, which recognised that metro would provide the key benefit of operational separation from existing road and rail networks as well as modern rolling stock and train control systems to enhance reliability and facilitate the rapid loading and unloading of passengers.

Metro rail has been investigated because overseas experience has shown that it has the ability to meet the sustainable mass transit challenges of modern cities.

Metro would be an essential addition to Sydney's transport system and, over time, it is expected to be as significant as, and fully integrated with, the roads, rail and buses that underpin Sydney's communities and economy. A metro system, capable of carrying 29,000–40,000 passengers per hour per direction would add a significant, high quality service to Sydney's constrained transport network.

The metro system – the currently proposed Stage 1 project and its later extensions– would also help to meet the land use challenges outlined in the Metropolitan Strategy, by driving population and employment growth around key transport centres and corridors, promoting urban renewal, reducing road congestion and promoting economic prosperity.

In the short term, the Stage 1 project would serve the area between the CBD and Rozelle. In the longer term, a broader metro network is planned, including an extension from Rozelle towards the north-west, following the Victoria Road corridor. The metro network would be targeted to serve major transport corridors that are not currently serviced by mass transit, or do not have the capacity to meet future needs. This is expected to include many of Sydney's most heavily used and congested bus corridors, such as Parramatta Road, Victoria Road, Anzac Parade and Military Road.

Two metro lines would form the basis of this broader metro network:

- Metro Line 1 (City West line) – from Westmead to the CBD and then beyond Rozelle to the northwest.
- Metro Line 2 (City East line) – from Malabar via Maroubra, the Prince of Wales Hospital and University of NSW to the city and beyond to the Northern Beaches.

These lines would support future growth in the north-west, and in the longer term, in the south-east and north. In the very long term, this network could be extended to major cross-regional corridors of demand. The future development of the metro system will be guided by a wider Metro Network Strategy being developed by Sydney Metro.



The proposed Metro Network Strategy links land use and transport planning and delivers on the state's strategic objectives for improved urban environments with reliable transport access. It would provide a fast and frequent rail service linking key population and employment centres, and support major destinations such as Parramatta and Macquarie Park, making them more attractive as employment locations.

Consistent with the Metropolitan Strategy's vision for Sydney in 2031, a metro network for Sydney would:

- Support a series of stronger centres within the metropolitan area, providing jobs and services closer to where people live.
- Support the growth and expansion of employment, housing, retailing and services within major centres.
- Support the development of the Global Economic Corridor.
- Support urban intensification to preserve valuable agricultural lands.
- Provide more equitable access to housing, employment, services and open space while preserving the character of existing neighbourhoods.
- Provide an expanded transport network to improve connectivity and access between centres and enterprise corridors.

It would also support the key objectives in *Action for Air* and the *NSW Greenhouse Plan* for protecting and improving air quality across NSW.

With its large catchment area and position at the start of a future North West metro, Rozelle was a natural choice for Stage 1 (refer to Chapter 5.3.2 of the EA).

More than 10,000 people live within an 800 metre radius of the metro station for Rozelle, providing a large number of potential users within a short walking distance.

Many people from Rozelle and surrounding areas will use the metro for the convenience of a four minute trip to the CBD. No buses will be forced to stop at Rozelle but many passengers, particularly working in the north of the CBD, will choose the metro because of the time savings and frequency of services.

At Rozelle, passengers arriving on buses on Victoria Road and Darling Street will have the opportunity to transfer to the Metro for a fast onward journey towards the city. Bus stops will be designed for easy transfer to other destinations by bus using a dedicated bus lane along Victoria Road. Those most likely to interchange to metro will be those travelling to the northern part of the CBD which will be only five minutes away by metro as against 18 minutes by bus. Similarly, by metro it will take only 10 minutes to reach Central, as against 19 minutes by bus.

Rozelle is not the end of the network. Stage 1 is Central to Rozelle - an extension of stage 1 to the North West is identified and Rozelle will become an intermediate station in this network.

Transport facilities of the same kind and scale as Bondi Junction are not proposed or required for the Stage 1 project. Commuter car parking is not proposed or required for the Stage 1 project.

The Sydney Metro Stage 1 has the potential in the longer term to provide extension towards the north-west to deliver better access to jobs in centres such as Ryde, Macquarie Park, Rouse Hill and Norwest, and provide communities in the newly developing North West Growth Centre with benefits from having access to the highest quality public transport service.



A metro extended towards the north-west would provide significant travel time savings for residents in the Hills District, with a reduction in travel times between Rouse Hill and Sydney CBD of about 50 per cent.

The process undertaken to develop the Reference Design for the Stage 1 project has anticipated the potential form and function of potential future projects including an expanded metro or heavy rail network through the Sydney CBD.

Currently there are two reserved rail corridors through the city known as Pitt Street Corridor on the eastern side and Western Corridor on the western side. Both are safeguarded to allow future rail extensions through the CBD.

The Stage 1 project will use part of the safeguarded Pitt Street Corridor. However, the metro project has been designed to ensure the Western Corridor is preserved to allow future extensions through the CBD of the city rail network if required.

Sydney Metro has liaised closely with RailCorp to ensure the safeguarding of the Western Corridor. The metro route through the city would not rule out further expansion for CityRail.

The Pitt Street Corridor was identified as a best fit for the Metro linking with existing transport services and areas within the Sydney CBD. The Western Corridor would not provide these linkages and would require unacceptably tight radius curves to achieve an alignment between Barangaroo and Pyrmont.

It is intended that as part of any future metro network to the south-eastern and north-eastern suburbs, forming Metro line 2 would intersect with Martin Place station. Provisions have been made in the Stage 1 design to allow effective passenger interchange in the future. Further studies are underway regarding the exact alignment and station locations of Metro line 2.

For further issues and responses regarding the length of the project refer to section 4.7.

4.10.2 Staging of the network with Stage 1 first

Issues included

- *The Sydney Metro Stage 1 project between Central and Rozelle should not be the first priority route. The first priority route should be one of the following:*
 - *western Sydney (including Parramatta)*
 - *north-west Sydney (including the Hills District)*
 - *south-east Sydney (including Kingsford).*
- *The Sydney Metro Stage 1, Central to Rozelle is not necessarily the most appropriate enabling project of the network.*
- *It is not apparent that rail traffic congestion at Town Hall will be relieved by the proposal in a manner superior to other plans nor is it apparent that the objective is best achieved by construction of this CBD section ahead of the outlying sectors that presently constitute later stages of the metro project.*
- *In 30 to 60 years time, will a plan using the CBD as the hub be appropriate? Shouldn't we be striving to decentralise services.*
- *A 'metro spine' will eventually need to run through the Sydney CBD. However it will need to run from North Sydney to south of Central Station and be part of a wider network.*



- *The ANZAC Metro line would be beautifully balanced east-west and have patronage and service comparable with world best-practice.*

Response

The project is being delivered as the initial stage of the broader Sydney Metro Network. Stage 1 forms the central spine of what would become Metro line 1, which would extend to the north-west of Sydney and include going beyond Rozelle to the northwest and including Drummoyne as a station.

Feasibility work on a north-western extension linking into the Macquarie Park area is also being conducted. This builds upon previous work undertaken as part of North West Metro. The scope of the current project for which Sydney Metro is seeking project approval does not preclude extension options. Indeed the tunnel stubs at Rozelle station have been design to allow for future extension of the line to the west and north-west.

Suggestions to delete the metro station at Central in favour of a Drummoyne Station are noted. However, the metro station at Central provides a critical component of Stage 1 as described in Chapter 5.3.2 (and throughout) the EA.

It is important not to look at Stage 1 in isolation. International experience is that a central component of the metro is constructed first as the “enabler” of a future, much larger metro rail system.

A Project Application and Preliminary Environmental Assessment have been lodged with the Department of Planning for Stage 2 – between Westmead and the CBD (including Strathfield). This would be the next logical step for metro rail systems in Sydney. Possible other metro links include to the north-west, the south-east and the north.

Chapter 4.4 of the EA describes the Metro Network Strategy, which includes:

- Metro Line 1 (City West line) – from Westmead to the CBD and then beyond Rozelle to the northwest
- Metro Line 2 (City East line) – from Malabar via Maroubra, the Prince of Wales Hospital and University of NSW to the city and beyond to the Northern Beaches.

Sydney Metro cannot speculate on future NSW Government policy. However, the NSW Government’s Transport Blueprint will be the basis for all transport decision making.

4.11 Need for an integrated transport plan for Sydney

4.11.1 Project not part of an integrated transport plan

Issues included

- *The project is not an integral part of the long-term plan for public transport expansion. A determination to allow it to proceed to construction would be illegitimate in the absence of such a plan being developed, publicly exhibited and widely discussed.*
- *It appears as poor strategic planning to not prioritise the remediation of current massive inefficiencies within the current public transport system.*
- *Prior to proceeding please reconsider and review recommendations and analysis from other well respected authorities such as the SMH sponsored review and Garry Glazebrook.*



- *There has not been adequate strategic planning at the local level along the proposed and future route to ensure that the economic, social and environmental implications have been addressed.*
- *There should be a single authority to plan, manage and govern land use and transport, responsible for strategic regional planning, delivery of all regional infrastructure, and long term funding.*
- *A system of transfer of people by an inner web of trains fed by an outer web of bus routes fed by an outer web of car parks/ bus transfer locations is the only workable solution to Sydney's overall passenger transport.*
- *The development of the NSW Transport Blueprint should be aligned with the release of a revised Sydney Metro Strategy in 2010.*
- *I would like to see both the comprehensive transport blueprint and financial commitment from the State Government for such a plan prior to commencement of one small section.*
- *The project contradicts the State Plan's Metro component in the Urban Transport Statement (2006).*
- *The EA appears to ignore the Metropolitan Strategy and the metro was not part of the Metropolitan Strategy.*
- *The Sydney Integrated Transport Strategy (developed by Chris Stapleton Consultants) is a soundly based integrated transport strategy. We commend this plan for all transport.*

Response

The Stage 1 project is proposed as part of the NSW Government's ongoing support to the City of Cities: A Plan for Sydney's Future⁴ planning framework for Sydney also referred to as the Metropolitan Strategy. The association with this plan and how the project aligns with the objectives of the plan was provided in detail at section 4.4 of the EA.

As noted in the EA the project is an opportunity to encourage a significant proportion of the anticipated population and economic growth into corridors supported by new, high quality transport, consistent with the Metropolitan Strategy.

A metro network was first identified in the 2006 Urban Transport Statement, which recognised that metro would provide the key benefit of operational separation from existing road and rail networks as well as modern rolling stock and train control systems to enhance reliability and facilitate the rapid loading and unloading of passengers.

The EA does not cite the Sydney Integrated Transport Strategy (developed by Chris Stapleton Consultants). However, Chapter 4.1 of the EA describes the relevant strategic policy and planning framework, including reference to the State Plan (2006), City of Cities: A Plan for Sydney's Future (2005), the Inner West Subregion – Draft Subregional Strategy (2008), and the Sydney City Subregion – Draft Subregional Strategy (2008).

The need for an integrated transport and land use was acknowledged through creation of NSW Transport and Infrastructure in June 2009.

NSW Transport and Infrastructure is the transport super agency of the NSW Government, with responsibility for all transport policy, planning and coordination functions as well as oversight of infrastructure delivery and asset management.

⁴ Department of Planning 2005, City of Cities: A Plan for Sydney's Future



Connecting NSW: The Transport Blueprint is the NSW Government's 25 year plan for integrating the delivery of transport services and land use planning in NSW. It will be the basis for all transport decision making between now and 2036 and includes strategies and actions necessary to achieve a transport system that boosts economic activity, has a positive impact on our social and environmental wellbeing and helps to make NSW an attractive place to call home.

The Transport Blueprint will provide for improved connections at all levels of travel, including movements across the metropolitan area and to the Sydney CBD.

Rail will be brought to new areas with a frequency and service quality that will make it a natural choice for work and recreational trips. The Blueprint will identify one rail plan for Sydney with different types of corridors. An integrated rail plan means that metro and the existing rail system will complement each other, not compete for funding or patronage. This will allow the Government to develop the rail system that Sydney needs, but also complete the task of providing rail to outer areas including a North West rail link. In some existing areas, principles of metro operation will be applied to the existing system, leading to more frequent and better services.

Stage 1 of the Sydney Metro Network is one of the highest priority transport projects in Sydney (and is considered critical infrastructure). It is the most complex component of the Metro network in the most complex urban environment. However, it is on track to be completed and operational in 2015. Therefore, in order to construct and commission the project, Sydney Metro is seeking approval for Stage 1 concurrent with the development of the Transport Blueprint. Once complete, Stage 1 will provide the enabler for future extensions that will be completed in accordance with final Transport Blueprint.



PROJECT DEVELOPMENT AND ALTERNATIVES

4.12 Project route and alignment

4.12.1 Alternative tunnel alignments

Issues included

- *The alignment of the metro should be parallel to Victoria Road on the southern side.*
- *The project should bypass inner city areas.*
- *We ask that consideration be given to tunnelling underneath the park on the northern side of the building at Pyrmont.*
- *The priority should be to start at Barangaroo, tunnel north-west and south-west and later north-east.*
- *It would be cheaper for the Central to Rozelle line to use the rail freight corridor from Broadway to Pyrmont, then underground to Balmain and Rozelle.*
- *There are other solutions and alternatives for where and how the light rail could be located which would not impact the heritage area.*

Response

The reasons for the proposed tunnel route and station locations are given within sections 5.4 and 5.5 of the EA.

The alignment shown is subject to further development within the proposed corridor and the suggestions for minor alignment changes are noted. Changes may occur as new information is obtained during the detailed design and construction phases.

4.12.2 Use of Metro Pitt corridor

Issues included

- *The proposal would compromise expansion of the CityRail network throughout the CBD and beyond by denying the reserved Pitt Street underground rail corridor from CityRail. This alignment is required for additional rail lines to support growing demand for CityRail services and has been set aside specifically for these purposes.*
- *By using the Pitt Street Corridor to expand CityRail capacity as intended, the short-term increase to CityRail passenger numbers will greatly exceed any long-term increase forecast on any of the metro lines advocated by the government.*
- *Expansion of the CityRail network could alleviate the already dangerous overcrowding at Town Hall Station.*

Response

CityRail and Sydney Metro are working together to improve public transport across Sydney – including the CBD. There are no competing agendas – in fact CityRail and metro services will complement one another, contrary to claims in recent media reports.



Sydney Metro Stage 1, Central to Rozelle, is the first part of a wider metro network for Sydney that will take rail to new places and corridors currently reliant on buses and cars. But it will also serve a more immediate need to create additional capacity in the CBD, taking pressure off CityRail and bus services.

During feasibility studies for the project, the development of the alignment took into consideration the need for separate additional heavy and metro rail alignments running north–south through the Sydney CBD.

The need to protect the rail corridors was given statutory recognition by the Infrastructure SEPP, which defines the Interim Metro Corridor (including that for the project).

Two underground rail corridors have been protected through the City. The Pitt Street Corridor is one of two feasible rail corridors through the city. Stage 1 of the Sydney Metro, from Central to Rozelle, is using part of one corridor - the Interim Rail Pitt Corridor (or Pitt Street Corridor). The other corridor available within the CBD is the Interim Rail West Corridor (or Western Corridor).

The alignment for the Stage 1 project did not use the Western Corridor alignment as this alignment failed to cover a number of station locations sought by the project. The Pitt Street Corridor alignment was selected as the best fit with the project requirements of having a metro station at Town Hall Square and Martin Place.

The Metro West alignment is proposed for a heavy rail system and although also considered suitable for a metro style system, being able to head west in the direction of Pyrmont from Barangaroo would not have been possible due to the minimum horizontal radius curves required.

Technical consultation was undertaken with infrastructure asset owners to ensure the long-term protection of existing and proposed infrastructure, including but not limited to RailCorp, particularly with regard to existing and protected rail corridors through the CBD. The Stage 1 tunnel alignment and/or design reflect the outcomes of this ongoing consultation.

The protected Western Corridor is suitable for heavy rail and remains protected for future use by RailCorp. The use of the Interim Rail West corridor for RailCorp was confirmed via detailed engineering assessments during the preliminary phases of the metro project development.

Importantly, the Stage 1 project would not preclude a heavy rail alignment utilising the Interim Rail West corridor, and would not prevent future CityRail expansion.

The NSW Government's Transport Blueprint will have more detail on future directions for a combined CityRail and Sydney Metro rail network. The Blueprint will identify one rail plan for Sydney with different types of corridors. An integrated rail plan means that metro and the existing rail system will complement each other, not compete for funding or patronage. This will allow the Government to develop the metro rail system that Sydney needs, but also complete the task of providing rail to outer areas including a link to the North West. In some areas, principles of metro operation will be applied to the existing system, leading to more frequent and better services.



4.13 Station locations

4.13.1 Barangaroo-Wynyard Station location

Issues included

- *An entry in the 2005 East Darling Harbour Design Competition suggested that the southern section of Barangaroo be developed as a new underground public rail transport hub, adjacent to the CBD. A short underground walk from Barangaroo to Wynyard would give public access to all the existing heavy rail infrastructure without the need to interfere with any existing CBD facilities.*

Response

The Stage 1 project would establish a major public transport station at Barangaroo. The project would also deliver the Barangaroo Pedestrian Link, which would provide direct pedestrian access between Barangaroo and the Wynyard precinct. The need for the Barangaroo Pedestrian Link was recognised when the Barangaroo development was approved.

4.13.2 Pyrmont Station location

Issues included

- *The Star City site has not been given balanced and complete consideration in the EA. Reasons to locate the station in the Star City development site include:*
 - *It would minimise disruption to local businesses, the community and the heritage precinct.*
 - *It is already a transport hub with light rail, bus terminal and interchange.*
 - *It is in close proximity but has clear separation from Union Square.*
- *Plans for the metro at this site should have been made years ago when the NSW Government took over planning control of the Star City site.*
- *The sites have not been compared in comparable dollar terms. There is no consideration of the overall economic impact to the local Pyrmont economy.*
- *Alternative station locations for Pyrmont should be investigated.*
- *The EA emphasises that Union Square is the cheapest option. Yet other locations would allow for major property redevelopment by Sydney Metro, providing more profit.*
- *Sydney Metro was committed to the Union Square site from the beginning, as the cheapest and easiest option.*
- *The demolition of the back sections of the four terraces for the eastern entrance reduces their size rendering them unviable as homes or businesses.*
- *The aggregated development potential of a rail station entrance together with the redevelopment of some sites to heights above two stories has not been considered.*
- *The Property Council favours Alternative 2 as it provides sound access arrangements and extends the size of Union Square.*



- *The EA claims that the Pymont Station entrance location has been driven by the proximity to prime tourist destinations and Jacksons Landing, but all alternative sites are similarly close to these destinations. Big business, in particular Star City, is the driver for the location of this project.*
- *There are no arguments as to why these options would have less patronage benefits than Alternatives 1 and 2. No values have been given to the environmental, heritage and social costs of Alternatives 1 and 2.*

Response

Options for locating the Pymont Station entrance within the boundaries of the Star City casino site were detailed within Appendix C of the EA – options 3a and 3b.

Option 3a involved locating a full entrance plus all services buildings within the Star City site. Star City have indicated that they would not agree to a full station entrance within the redevelopment of the site due to the impact on their construction programme and impact on the development including loss of parking and retail space. This option was not considered to be feasible given the stage of construction of the approved Star City hotel development and the costs associated with locating the station facilities on the site.

Option 3b involved locating a main eastern side entry on the eastern side in the Star City site, thereby partly reducing the costs associated with locating the ventilation and emergency egress facilities on the approved Star City hotel development site. However, this option would still require the acquisition of buildings on the corner of Pymont and Union streets for tunnel and station services (ie vents and emergency egress).

In addition to not resolving issues associated with the purchase of buildings on the corner of Pymont and Union streets this option also:

- Required the need to divert a number of existing underground services at a significant cost of about \$120 million and with the disruption of this utility service for a large catchment area creating a significant risk for the construction program.
- Required the agreement of Star City whom had commenced construction works on their Part 3A approval for Casino redevelopment and new hotel.
- Was significantly more expensive overall when compared to the options considered.

For these reasons Option 3b was not considered an appropriate station location entrance option.

Overall, the provision of a metro station entrance at the Union Street location will serve a large population, employment and retail catchment from a centralised location in Pymont's street grid network providing more direct walking linkages to major attractors. The preferred option retains the Union Street properties at the corner of Pymont and Union streets and has lower construction and property costs compared to other options.

Options for locating the Pymont Station entrance were detailed within Appendix C of the EA. This document identified seven primary options with additional sub-options. The Union Square option was selected based, amongst other things, on the highest patronage of all options given its central catchment and Pymont identity. The reasons documented in Appendix C remain valid.

The proposed option (Alternative 2) would require the acquisition of the buildings at 3-9 Union Street; however the main historic part of the buildings up to the rear later extensions would be retained. This scheme also provides for an extension of the pedestrian walkway in Union Street between Pymont Street and Paternoster Row.



Acquisition of the terraces on Union Street would be for the duration of construction only, with these buildings reverting back to small retail once constructed.

Union Square would be used as a temporary construction site only, with no permanent structures located within Union Square. The diversion of Paternoster Row would allow Union Square to be extended further to Pymont Street.

The location of the station on Union Street itself between Pymont and Edward Streets was considered and rejected for the following reasons:

- It would provide a poor level of access in relation to employment areas located in the eastern side of Pymont. This would result in less demand, with a projected loss of approximately five million passengers per annum in 2021 (representing a 83 per cent reduction in patronage at Pymont) compared with the Union Square option.
- The option is problematic for the Darling Harbour water crossing (under pier structures), requiring much deeper stations at Barangaroo-Wynyard and Pymont, therefore slowing travel times and increasing construction costs.
- There is limited available space, with any station box overhanging the cutting.

While the vacant car park option avoids heritage buildings and the heritage streetscape in Pymont, construction would still have a significant impact on the immediate adjacent businesses, and side access to the northern building would be restricted during the construction period. Use of this site would also impact on adjacent residents and businesses located within Harris Street and Pymont Street, particularly construction noise and vibration, and construction traffic. More importantly:

- The option provided only moderate access to the eastern side of Pymont and would reduce direct links to Darling Harbour.
- The site has considerable level changes from one end to the other making layout and access difficult.
- Construction traffic movements through the site would not be possible due to space restriction, and truck unloading would need to take place from within Pymont Street, utilising lane closures.
- The tunnel alignment and station cavern would need to be re-aligned below the existing quarry face at Mount Street, which has been stabilised with rock bolts and underpinning in some locations.

Overall the provision of a metro station entrance at the Union Street location would serve a large population, employment and retail catchment from a centralised location in Pymont's street grid network providing more direct walking linkages to major attractors. The preferred option retains the Union Street properties at the corner of Pymont and Union streets and has lower construction and property costs compared to other options.

4.13.3 Rozelle Station location

Issues included

- *The placement of Rozelle Station at the Tigers site is a situation of uncertainty, given the volatile financial situation of the Balmain Leagues Club.*
- *How will the metro station and Balmain Leagues Club interact?*
- *The current siting of the metro station at Rozelle is not in the interest of the Leichhardt community.*



- *Rozelle Station should be fully integrated beneath the Tigers site.*
- *The pedestrian tunnel should be built further down from Tigers and connect to the area outside the Rozelle Public School.*
- *Sydney Metro is not interested in looking at alternative station locations at Rozelle.*

Response

Sydney Metro and the Balmain Tigers Leagues Club agreed to work together to finalise an agreement to allow Sydney Metro to use part of the Tigers site for construction purposes, for which negotiations are ongoing. This agreement would involve leasing the Tigers site during construction, with the main construction activity for the Rozelle Station at this location.

The agreement would also involve purchasing a strip of land at the front of the Tigers site, alongside Victoria Road, for a bus bay. The bus lane would allow passengers to be safely dropped off and picked up, separated from general traffic. The inclusion of the bus bay alongside the Tigers construction site requires the vehicle entry for the proposed redevelopment to be moved.

Four properties at 168-174 Victoria Road are also proposed to be acquired by Sydney Metro. It is expected these properties would be used for construction activities, and afterwards, as a site for station services.

Some of the remaining land from 168-174 Victoria Road could be available to provide vehicle access to the Tigers site, to address overall traffic management and safety. There are no plans for this land to be used for retail but it would be required for ventilation and emergency egress for Rozelle Station.

A Metro station at Rozelle would serve the densely populated residential precincts of Balmain, Rozelle and Lilyfield, as well as the café/restaurant and shopping strip along Darling Street towards Balmain.

Station entrances are located on three corners that are easily accessible and form part of the main north-south route and the 'High Street' environment. Moving entrances further from the corners (ie south along Darling Street or within/underneath the Balmain Leagues Club site) would increase passenger travel times and decrease access to the Metro platforms. The location at the intersection of Victoria Road and Darling Street provides for effective passenger bus/metro mode change.

Provision would be made so that a future pedestrian connection could be constructed to the Balmain Leagues Club site.

In the early years of operation Rozelle Station would have a significant bus-Metro transfer function allowing rapid access to the CBD. While this function would diminish with the future extension of the Metro network towards the north-west, local level interchange would continue, particularly from the Balmain and Lilyfield/Leichhardt directions.

A number of station location options were considered for Rozelle Station. These were:

- Rozelle Central – Top of the hill at the Darling Street and Victoria Road intersection.
- Rozelle West – Bottom of the hill in the vicinity of Victoria Road and the Carrier Site.
- Callan Park.

The preferred location has the station positioned adjacent to the Victoria Road/Darling Street intersection and partially under Victoria Road. This site maximised station access and patronage and was seen as providing an opportunity to improve the community setting of the St Thomas Church Group, Rozelle Public School and St Pauls Church, while facilitating an improved link across Victoria Road.



4.13.4 Building White Bay Station as part of the project

Issues included

- *The White Bay Station should be built at the same time as the other stations.*

Response

The NSW Government has committed to preparing a master plan for the future use of the Bays Precinct. The NSW Government recognises that the Bays Precinct is important to both the local community and to wider Sydney.

The future White Bay Station would have a station box formed for the platforms with a view to safeguarding for future station construction. Safeguarding a site for a future metro station at White Bay provides a unique opportunity for the Bays Precinct. If required, the White Bay Station could be opened with Stage 1 and this opportunity could be realised in 2015 provided resolution of planning issues was achieved by the end of 2011.

4.14 Design process

4.14.1 Community/business input into design

Issues included

- *There should be a monetary incentive for the community and businesses to provide constructive feedback on any aspects of the metro system.*

Response

There is no legislative basis for provision of monetary incentives for making a submission.

Community and business groups will be provided with the opportunity to review the design principles for Rozelle and Pyrmont stations. Sydney Metro has initiated a Design Principles Workshop process for Rozelle and Pyrmont.

4.14.2 Validity of the design process

Issues included

- *The project has not been well planned.*

Response

A rigorous planning and engineering process has been undertaken to develop the Reference Design for the project. The selection of specific locations within each locale was based on servicing the identified catchment, pedestrian flows and connectivity, interchange, environmental constraints, alignment and major engineering and constructability issues.

The design of the project and station designs would be the subject of an ongoing design development process and stakeholder/community consultation that has involved the iterative development of design options to respond to particular issues and constraints at each location.



THE PROJECT

4.15 Metro operation

4.15.1 Driver versus driverless trains

Issues included

- *The concept of driverless metros should be dropped, particularly in a time of increasing unemployment.*
- *What are the costs and benefits of being driverless rather than having a driver?*

Response

Some of the benefits of Automatic Train Control (driverless) are:

- Trains can travel at closer intervals during peak periods of operation as the virtual blocks (in software) can be made smaller than conventional track circuit infrastructure.
- The train speed is reduced automatically as it closes up to the train ahead and does not rely on driver reaction and ability to observe signals for greater safety.
- The ability to automatically add and remove trains. Automatic Train Operation allows the train controller to add and remove trains remotely and efficiently to meet unexpected passenger demands without the need to arrange drivers at short notice.
- The reduction of risk. Train movements between the Main Line and the depot are automatic, removing the risks of mixing staff (drivers) and train traffic in the stabling area of the depot.

The additional safety features for driverless trains have been fully costed by independent professional cost consultants.

Driverless trains also provide safety, flexibility and financial savings (eg life cycle cost saving in power consumption and maintenance as trains are driven to uniform and optimal specifications). The capital costs are commensurate with conventional line side signalling schemes when onboard equipment provisions are fitted during rolling stock production.

4.15.2 Metro trains

Issues included

- *Lack of detail on the web page is part of the general misinformation presented to make a false impression that the proposed metro's passenger capacity will be superior to the existing CityRail system.*
- *The metro would have shorter trains, shorter platforms and less capacity per carriage than CityRail thus limiting the maximum passenger carrying capacity.*
- *It is unlikely that the proposed system at crush capacity will achieve the promised train frequency or total capacity as claimed on the web.*
- *People will have to stand for too long as there would be too few seats (eg from Parramatta to the city)."*



Response

Some information regarding metro trains and passenger capacity is provided on the Sydney Metro website. Further detail on the metro trains was provided in section 6.8.2 of the EA. This information is indicative and not misleading.

As noted in section 6.8.2 of the EA, each five-car train could hold 965 passengers. The two-by-two transverse seating mentioned in the EA is now being reviewed to consider longitudinal seating for greater overall capacity of 1,060 passengers per five-car train.

While this is still less than an eight-car CityRail double-deck train (1,200 passengers), the metro system capacity is greater overall due to the higher frequency of train services. It should also be noted that the metro station platforms have been designed to accommodate the future operation of six-car trains if required, which would further increase the capacity of the metro trains.

While the design of the metro trains will continue to be refined (15 to 20 doors per platform per train is being investigated), the proposed design is expected to assist rapid boarding and alighting at stations in order to minimise dwell times. The frequency of the services (arriving every 2-3 minutes during peak periods and at high frequencies throughout the day) would better avoid the system operating at 'crush capacity' as passengers would be cleared from the platform with greater frequency.

At capacity the metro trains would accommodate 254 seated and 806 standing passengers. Given the short distance of the project (approximately 10 minutes between Rozelle and Central), having this number of passengers stand is not considered to be unacceptable. With the extensions of the metro, the journey from Parramatta to Central would take 24 minutes but the majority of travellers could expect to be seated. Other metro extensions under consideration would not dictate a change of seating.

Longitudinal seating is standard practice for the metros of Rome, Bangkok, Madrid, Hong Kong, Berlin and Singapore.

4.15.3 Frequency of services**Issues included**

- *It is unclear if higher service frequency is practical as it requires further stabling capacity, more rolling stock and most significantly, the station spacing and track alignment may limit operational frequency.*

Response

As noted in Chapter 6.7 of the EA, efficient signalling, communications and train control facilities are required for the safe operation of Stage 1. Trains would be automatic and driverless and controlled using an Automatic Train Control (ATC) system with associated signalling equipment. The signal system design would provide performance levels of up to 30 trains per hour.

The train stabling area would be located along the north-western boundary of the depot site, alongside the Lilyfield Road escarpment towards the Catherine Street bridge. The initial rolling stock for the project is likely to comprise 13 trains. The initial stabling area would provide space to accommodate 11 five-car trains in four stabling roads, each about 360 metres in length. The two other trains would be stabled at either end of the running tunnels.

The initial number of trains required following commissioning in 2015 is to operate 24 trains per hour. If passenger demand is increased then the frequency would be increased to up to 30 trains per hour.



The tunnels would have a maximum gradient of 4.5 per cent to accommodate a maximum metro design speed of up to 100 kilometres per hour. Six stations (plus White Bay) are located along the 7 kilometre alignment of Stage 1. Station spacing and track alignment are not limiting factors in achieving performance levels of up to 30 trains per hour.

The current station spacing and track alignment does meet the performance levels required to operate up to 30 trains per hour.

4.15.4 Travel times

Issues included

- *The proponent disputes the claim that a seven kilometre ride from Rozelle to Central will take approximately 10 minutes. The EA overstates the case for Parramatta passengers travel times.*

Response

The travel time from Central to Rozelle would be approximately 10 minutes. This is based on a speed profile that includes acceleration/deceleration rates that would not cause discomfort (or safety issues) for passengers. Travel times account for station stops. Chapter 6.8 of the EA presents conservative dwell times (the time allowed for passengers to alight and board trains) of 40 seconds at CBD stations and 30 seconds at Pyrmont Station and Rozelle Station.

Table 22.1 in the EA presents a comparison of different public transport modes in vehicle travel times from Central.

Vertical circulation at stations is specifically designed to ensure travel times from surface to platform are efficient. Typical travel times are estimated as follows:

Table 4.1 Estimated travel times to platform level (all horizontal and vertical distances)

Metro station	Depth of station (metres)	Start location (to metro platform)	Travel time (walking) (minutes)
Central	25-30	Western Forecourt	2:36
		CityRail Platform 4,5	3:21
		Platform to Bus Stand C Eddy Avenue	5:12
Town Hall Square	23-26	South West corner Park and Pitt streets	2:19
		CityRail Town Hall Station platform via sub surface link	2:53
Martin Place	36-38	Martin Place (metro entry)	3:15
		Elizabeth Street bus stop	4:56
Barangaroo-Wynyard	17 (western) 37 (eastern)	Barangaroo (metro entry)	1:46
		Clarence Street bus stop	3:07
		CityRail platform (North Shore Line)	3:08
Pyrmont	27-30	Western metro entry (Mount Street)	2:13
		Eastern metro entry (Union Square)	2:15
		Light Rail (Casino Station)	6:18
Rozelle	27-36	South-west metro entry	3:03
		North-west metro entry	3:34
		Most remote bus stop at western end of new bus bay	4:01



It is important to note that the metro provides a turn up and go service every 2-5 minutes, so passengers do not have to wait or rely on timetables. A metro system provides significantly greater reliability in terms of travel times.

Travel times from Parramatta associated with the Sydney Metro Network Stage 2 are provided on the Sydney Metro web site.

4.16 Tickets and fares

4.16.1 Cost of fares and integrated ticketing

Issues included

- *A market analysis should be provided to show whether passengers would be prepared to change mode and pay an extra fare.*
- *There is nothing in the EA about ticket prices.*
- *EcoTransit understands that an 'access surcharge' is likely to be implemented. Such a fee would have an adverse impact on patronage.*
- *The metro must operate as part of an integrated ticketing system.*
- *Will users be charged extra for changing modes?*

Response

The Stage 1 ticketing system would use the latest automatic fare collection (AFC) technology, and would be a fully gated and paperless system. Automatic fare collection gates, with locally controlled directional settings, would be provided to allow safe and smooth passenger movement between paid and unpaid station areas, as shown in Figure 6.38 of the EA. Passengers would swipe in on entry and swipe out on exit. Passengers who use the metro infrequently would be able to buy tickets at the stations.

Frequent users would be able to buy and top up Smart Cards. It is intended that the ticketing system would be part of an integrated electronic ticketing system for Sydney and would be interoperable with other transport modes (that is, there would be one single, integrated ticketing system for all of Sydney's public transport). If the fully-integrated system is not available at the time, an automatic fare collection system would be installed and operated with a possible interface to other Sydney public transport operations. Fares would be comparable to other public transport systems at the time of opening.

Sydney Metro is not in a position to lead an integrated electronic ticketing system for Sydney. Concerns regarding the implementation of integrated ticketing have been provided to NSW Transport and Infrastructure, the lead public transport agency of the NSW Government, with primary responsibility for transport policy, planning and coordination functions as well as oversight of infrastructure delivery and asset management.

Timetables for the metro would not be required given the high frequency of services (arriving every 2-3 minutes during peak periods and at high frequencies throughout the day). Information regarding Metro operating times would be displayed on the Sydney Metro website.

For more issues and responses on commuter behaviour refer to section 4.58.



4.17 Project design

4.17.1 Size, scale and location of the station facilities

Issues included

- *The size, scale and location of station facilities and entrances was raised for all stations, particularly Town Hall Square, Martin Place, Pyrmont and Rozelle.*

Response

Broadly, there are many factors that shape and influence each station location and footprint. The primary factors are connectivity, surrounding land use and built form (property), planning controls, pedestrian safety, other constraints and opportunities (as documented in Chapter 17 of the EA) and the overall station planning strategy (as documented in the Station Plans).

The size and location of the Metro entrances and surface structures (including all services) is of critical importance to Sydney Metro. Therefore, there would be stringent controls on the architectural and built form components of the project. It is acknowledged that the integration of the stations, their entry and exit points with the local built environment, would have an important influence on the character and social identity of areas surrounding the stations.

Many station and tunnel services are located underground or within building structures. However, each metro station requires a number of elements to be located above ground. Typically, each station has two areas for facilities including power supply, emergency egress, ventilation, communications and control systems and fire and life safety systems. These facilities must be at least partially located above ground to perform their functions. Appendix E of the EA provides indicative reference design drawings for the project that clearly identify that a substantial portion of station/tunnel service elements are in fact located underground.

The size and scale of station facilities is driven by availability of land, cost, land use and potential environmental impacts. It is noted that the Design Review Panel would evaluate the detailed design of stations and associated precinct works with particular focus on at-surface design. The Design Review Panel would comprise independent specialist expertise in architecture, urban design, transport, heritage and sustainability.

The future end-state appearance of the above-ground and over-site elements of the project is also considered in the master planning process. The master planning strategy and principles are described in Chapter 17 of the EA.

A Design Review Panel has been established to evaluate the detailed design of stations and associated precinct works with particular focus on at-surface design. The Design Review Panel comprises independent specialist expertise in architecture, urban design, transport, heritage and sustainability.

At all stations (and at the Rozelle stabling and maintenance depot), design principles to create safe, legible and attractive spaces would be applied. This would include the application of Crime Prevention Through Environmental Design (CPTED) principles.

Town Hall Square Station

It is noted that the project would facilitate the creation of the City of Sydney Council's proposed Town Hall Square, which would add a significant area of open space to the CBD.



Martin Place Station

Provision of a metro station entrance (and associated underground concourse) in the vicinity of Kindersley House is not proposed as part of the project. As noted in Chapter 5.5.3 of the EA, a number of issues with this scheme were identified as the design process progressed and changes at Martin Place were required.

Martin Place Station would be located under Castlereagh Street, between Martin Place and King Street amongst significant buildings including 48 Martin Place, the MLC Centre and Prudential Building. Access to Martin Place Station would be provided from one location within Martin Place, on the western side of Castlereagh Street, where there are existing entrances to Martin Place Station. It is considered inappropriate to include service facilities (vents, emergency egress) within Martin Place. Services and an emergency exit would surface within a services building located between Castlereagh and Elizabeth streets. However, tunnel vents would also be required on Castlereagh Street within the public domain.

Sydney Metro considers that the proposed vent structures within Castlereagh Street would not result in adverse visual impacts or screen active uses at ground level. Chapter 19.1 of the EA describes potential visual impacts.

It is noted that public art and/or advertising could be incorporated into the ventilation structures.

Pymont Station

Alternative locations for Pymont Station have been discussed earlier. In relation to the size and position of entrances and services at Pymont, significant review has been undertaken to minimise visual and property impacts, including positioning the eastern services building behind the retained terraces at 3-9 Union Street.

Provision of underground access to the Star City hotel development was not considered necessary given the surface level pedestrian environment.

Rozelle Station

The three proposed station entrances at Rozelle are required to:

- Maximise accessibility for Metro patrons from both sides of Victoria Road.
- Maximise accessibility to and from the two inbound (to the CBD) bus stops on Victoria Road on either side of the Darling Street intersection.
- Minimise pedestrian traffic crossing Darling Street at the surface (a single entrance on the Balmain side of Victoria Road would result in high pedestrian volumes across Victoria Road and Darling Street as patrons enter and depart the Metro station).

Retail and commercial properties on Darling Street are required to accommodate these entrances. Locating entrances (and services) within the existing footpaths along Victoria Road and Darling Street is not feasible due to the available space. A fourth entrance on the south-eastern corner of Victoria Road and Darling Street (within the York Buildings) or in the vicinity of Wellington Street is not considered necessary. Travel times associated with vertical and horizontal passenger circulation have been described previously.

The metro entrances at Rozelle have been planned and designed for the benefit of users. Alternative metro entrance locations (further south along Darling Street) would increase travel times and fail to integrate with bus facilities.



Use of the Tigers site for construction has been negotiated to reduce construction and property impacts on the northern side of Victoria Road. The ability to utilise the Tigers site for construction allows the most significant excavation activities to be undertaken away from sensitive receivers such as St Thomas' Child Care facility, Rozelle Public School and the Rozelle Neighbourhood Centre.

Station entrances are located on three corners of the Darling Street / Victoria Road intersection that are easily accessible and form part of the main north-south route and the 'High Street' environment. Moving entrances further from the corners (ie south along Darling Street or within the Tigers site) would increase passenger travel times and decrease access to the Metro platforms. Provision would be made so that a future entrance could be constructed within the Balmain Leagues Club site to connect it to the station.

Generally, services buildings would be located near the end of station platforms.

Proposals for any Masterplan West redevelopment are not currently known and would be subject to considerable planning and approvals (by Leichhardt Municipal Council).

4.17.2 Depth/location of tunnels and stations

Issues included

- *There are two very difficult water crossings between the CBD and Rozelle creating gradients that are at the limits of metro rail technology, and stations that are very, very deep underground - a circumstance that means there would be fewer stations.*
- *For proposed extension to Ryde, water crossings would be needed at Iron Cove and Parramatta River. On such an alignment, stations would be few and inconveniently located deep underground.*

Response

The technical difficulties of planning and designing an underground metro rail tunnel are noted. As discussed in section 6.2 of the EA, the rail level would generally be about 20-35 metres below street level, but up to 38 metres below street level at some locations. The tunnels would have a maximum gradient of 4.5 per cent to accommodate a maximum metro design speed of up to 100 kilometres per hour.

The depth and vertical gradient of the tunnels has been influenced by the harbour crossings as well as the need to provide sufficient clearance to existing and proposed building basement levels and numerous other transport and utility services that occur throughout the CBD area.

The depth of the tunnels and stations has not impacted the number of stations. The selection of station locales was influenced by the need to:

- Service demand in key catchments along the corridor.
- Facilitate interchange with CityRail services and reduce overcrowding at CityRail stations.
- Provide for potential future extensions of the metro network.



4.17.3 Suggestions for design

Issues included

- *There should be two sets of escalators at each end of the platform, and more standing areas on the metro (particularly around the door area).*
- *A pod design would be easier to find, occupies less space, and safer and easier to operate. Design should have the same appearance and be unique and modern.*
- *Structural poles and other obstructions should be minimised to allow quick and easy flow in/out of platforms.*
- *A catenary power supply should be selected because Line 1 will never be finished and will have to continue above ground.*
- *The ceiling of the Pyrmont Station concourse is within three metres of the heritage listed buildings on Union Square's northern side. A small amount of redesign would eliminate this unnecessary and unwanted risk.*
- *The alignment of the Barangaroo Pedestrian Link should be reconsidered.*
- *Reducing the tunnel diametre from 6 to 4 metres would more than halve the excavation volume and cost, and tunnelling timeframes. Suitable rolling stock for this type of tunnel is in use worldwide.*

Response

The stations have been designed on a modular basis and in response to a number of constraints such as subsurface structures (eg building basements and utilities), fire and life safety requirements (eg emergency exits), vertical circulation requirements (eg the number of lifts and escalators required), platform lengths and surface constraints (eg locations to bring out vent structures).

The detailed design process and selection of materials is ongoing. The detailed design suggestions provided in various submissions have been noted, including:

- Escalators arrangements at platform level.
- Catenary power supply.
- Depth and diametre of tunnels.

The location of the station concourse below Union Square is subject to further design, including consolidating the station concourse so that it is no longer below the properties located at 12-18 Union Street (as shown in the indicative Reference Design drawings). However, further design refinement is required. Notwithstanding, additional investigations were undertaken, including accessing approved Development Application drawings, to ensure that the Reference Design could be constructed and operated without adverse structural impacts on the heritage listed buildings that would be at least three metres above any excavation.

It is noted that the design of the bridge over Sussex Street (part of the Barangaroo Pedestrian Link) requires further review to reduce potential visual and spatial impacts on adjacent properties. The design of this bridge would be undertaken in consultation with adjacent land owners and the Barangaroo Delivery Authority.

In terms of the Rozelle stabling and maintenance depot, construction noise may at times impact significantly on residents in this location, particularly as the tunnels are constructed using



roadheaders. The Construction Noise and Vibration Strategy sets out a process to mitigate these short-term impacts.

The tunnel portals required for trains to access the Rozelle stabling and maintenance depot are located below Lilyfield Road at relatively shallow depths. However, it is anticipated that these tunnels and portals could be constructed without causing structural damage to buildings above. Building condition surveys would be undertaken in accordance with Statement of Commitment No. 72.

During operation of the metro it is anticipated that all noise criteria would be met at Lilyfield Road.

With regards to alternative locations for the portals, section 5.6 of the EA describes the limitations and options that were examined.

4.17.4 Kent Street tunnel (design and construction)

Issues included

- *Closure of the Kent Street tunnel for five years or more would result in a number of impacts,*
- *An underground walkway from Wynyard Station to the 275 Kent Street building and onto the Barangaroo site would improve access and safety.*
- *The existing tunnel should be retained by amending the demolition plan for the Clarence Street buildings. A covered street walkway, with disability access, should be provided from the rear of 80 Clarence Street to the entry of 275 Kent Street.*
- *A better route would be on the same alignment but at a greater depth and possibly exiting into the food court at Westpac Place.*

Response

The construction of Barangaroo-Wynyard Station requires the demolition of De la Salle House and 32-36 Clarence Street to provide the new station concourse and entry and exit portal and interchange with RailCorp services. Consequently sections of the existing Kent Street tunnel will have to be closed for part of the construction period.

Sydney Metro recognises that, whilst the existing Kent Street tunnel is not accessible to all (not being compliant with the *Federal Disability Discrimination Act 1992*), it does provide an important pedestrian link for many of the office workers in the western corridor of the CBD, including Westpac, to the Wynyard transport precinct and wider CBD.

Sydney Metro would develop access arrangements for pedestrians during construction, investigating options for the staging of works. The arrangements would seek to maximise the opportunity to keep open for as long a period as can practicably be achieved, that section of the Kent Street tunnel from Kent Street to Clarence Street. This plan would be a key input to the Construction Traffic Management Plan and Traffic Control Plans as per Statement of Commitment No.51.

Alternative pedestrian routes would be provided when this section of the Kent Street tunnel is closed for construction works. The alternative route would meet all accessibility and safety requirements for temporary routes of this nature, including providing cover and access for families using this route to attend childcare facilities.

Pedestrian and traffic counts, as well as dynamic modelling, would be undertaken to ensure that where pavement widening and other works are required to maintain access, this can be successfully provided.



In addition, pedestrian access during construction would be subject to the review and advice of the wider Traffic and Transport Liaison Group, including the City of Sydney Council and Roads and Traffic Authority (see Statement of Commitment No.52).

Further, it is the intent of Sydney Metro to undertake ongoing consultation with the wider business community and general public, to ensure that early advice is provided of any changes to pedestrian access during construction (see Statement of Commitment No.35).

It is intended that the Barangaroo Pedestrian Link (BPL) should be on the shortest and most direct route that can practicably be achieved. The temporary closure of the existing Kent Street tunnel as a result of the Sydney Metro works provides an opportunity to consider a BPL on this alignment rather than the current Margaret Street alignment.

Sydney Metro, on behalf of the NSW Government, is undertaking further feasibility studies to examine an alternative alignment for the Barangaroo Pedestrian Link and exploring the design, construction and impacts on adjoining properties, including Westpac and Dexus, owners of 1 Margaret Street and 83 Clarence Street. Once these plans have been further refined, including an understanding of the construction sequencing, ongoing consultation with both Westpac and Dexus can proceed and a decision can be made on whether to proceed with new detailed design engineering assessment.

New Statement of Commitment No.11C addresses the issues raised above.

4.17.5 Shadowing

Issues included

- *The height of the development in Pyrmont may overshadow our property.*
- *The overall effect of the height and proximity of the buildings would overshadow residences on Waterloo Street resulting in severe loss of amenity, shadowing and reduction in property value.*

Response

Potential overshadowing impacts associated with service buildings at Rozelle have been examined as identified in **Appendix F** and will be further refined to reduce over-shadowing impacts in consultation with affected property owners.

New Statement of Commitment No.11B requires that all services buildings in low-rise areas minimise over-shadowing of adjacent properties.

4.18 Operational safety and security

4.18.1 Ensuring passenger safety on metro stations

Issues included

- *Rail stations bring transients and crime. Can anyone guarantee that the people of Rozelle will be safe from crime once the station is operational?*
- *Upgrades of the Barangaroo-Wynyard catchment should include improvements to security including additional lighting and CCTV in areas such as York Lane and the Wynyard concourse.*
- *How are safety requirements met for staff on platforms and staff operating vehicles?*



- *CCTV coverage of bike parking should be included as a requirement.*
- *How safe will the pedestrian walkways under Darling Street be for children from Rozelle Public School and for women at night?*
- *It is likely that the public will be forced to use these pedestrian tunnels at Rozelle and that is unfair.*

Response

During operation, as noted in Chapter 22 of the EA, the project would provide world-class safety and security for customers, staff, contractors, neighbours and other stakeholders. Metro systems operate in tunnels throughout the world with a proven record of safety. The safety targets for the project would be based on the safety record of reputable metro operators.

Safety at station platforms and station entrance points would be provided through well-designed and efficiently controlled lighting systems, visible closed circuit television (CCTV) surveillance and the presence of metro staff within concourse areas during operational hours. Emergency egress and ventilation facilities would be provided at each station emergency intervention point.

Graffiti within stations and station entrance points would be removed.

Various improvements to the public domain would be undertaken as part of the project, with pedestrian safety a primary consideration, including a number of bridges and underpasses that would separate vehicle and pedestrian movements. Pedestrians would still be able to use road crossings on the surface and would not be forced to use pedestrian underpasses.

The design of bus transfer facilities, particularly at Rozelle has considered the safety and accessibility of users and adjacent pedestrians/cyclists.

Suggestions that a metro system would result in increased crime (or provide opportunities for criminals to access locations in the vicinity of Metro stations) are unfounded.

4.19 Rozelle stabling and maintenance depot

4.19.1 Access over depot

Issues included

- *The bridge over the Rozelle marshalling/goods yard is a non-negotiable and should be included in the approval conditions.*

Response

As noted in Chapter 6.6.2 of the EA, the Lilyfield Pedestrian Bridge is part of the Stage 1 project.

4.19.2 Alternative development plans

Issues included

- *Future development of the Lilyfield rail yards must not waste, compromise or destroy the future value of the land for future generations. If used as the depot the approaches must be located underground.*



Response

The NSW Government has committed to preparing a master plan for the future use of the Bays Precinct. The NSW Government recognises that the Bays Precinct is important to both the local community and to wider Sydney.

The Bays Precinct Masterplanning will need to acknowledge and adapt to the Rozelle stabling and maintenance depot. Opportunities to incorporate development adjacent to or above the depot could be explored as part of the Masterplanning process.

However, there are no other areas along the proposed route with the capacity to accommodate the depot. It is also a desirable location for operational reasons. Key considerations in selecting the depot site were:

- Ability for efficient metro operations.
- Stabling capacity for an initial fleet of 13 trains for the project.
- Scope for expansion to accommodate future metro lines, with stabling for 30 six-car trains and maintenance capacity for 59 six-car trains. (It is noted that any expansion of this facility would be subject to a separate planning assessment and approvals process).
- Suitable areas for presentation and washing facilities.
- Sufficient space for infrastructure maintenance areas, stores and parking.
- Access roads suitable for long vehicles.
- Suitable area for buildings that are not directly related to maintenance, including administration and training, traction power and bulk supply substations.
- Opportunity for adaptive reuse of a former rail site.

4.19.3 Landscaping**Issues included**

- *The proposed creation of a green belt between the tunnel portal and Victoria Road is to be commended.*

Response

The development of the depot site would be a catalyst for integrating the green networks of this part of Sydney with new and enhanced pedestrian and cycle corridors. Water-sensitive urban design principles would be integrated into the site and landscaping provided to improve water quality and create a more attractive environment.



4.20 Other design issues

4.20.1 Plans for improving cyclist/pedestrian facilities as part of the project

Issues included

- *Widening of the Napoleon Steps.*
- *Access to nearby properties needs to be maintained or an agreement reached.*
- *Signage and other way-finding assistance should be provided for people seeking to access the Sydney Fish Markets.*
- *The EA should specifically include the Darling Street bike route improvements in its design.*
- *The proposals for further bicycle paths and any consequential cost of alterations for items falling under the responsibility of Leichhardt Municipal Council, must be 100 per cent funded by the project.*
- *The cycleway link from Lilyfield Road to the Rozelle Bay light rail station is to be commended; however it would be of greater use if it was extended across The Crescent.*

Response

Recommendations associated with detailed landscaping and changes to the public domain in the vicinity of metro stations will be addressed via the Station Planning process.

Some public domain improvements, such as extensive cycle routes, as suggested in some submissions are not the responsibility of Sydney Metro and do not form part of the Stage 1 project. The Station Plans clearly identify proposals that are part of the Sydney Metro Stage 1 project and proposals that are to be developed and implemented by others.

As part of construction, improvements to the Lilyfield Road bicycle lane and a new shared bicycle and pedestrian overbridge are proposed. Additional provisions are provided at the Metro Depot, including Bicycle parking for visitors and depot staff (EA p. 328). Metro provides additional opportunities for local councils and other transport infrastructure providers to bring forward or improve existing bicycle route facilities (EA p. 328).

4.20.2 Provision of green space and public initiatives

Issues included

- *A tree nursery to grow trees from local seeds and a community vegetable garden for locals in the area should be provided at the depot.*
- *Parkland should be provided at the depot.*
- *Rozelle Neighbourhood Centre is keen to develop a purpose built indoor/outdoor space at the rear of our current premises.*
- *Rozelle stabling and maintenance depot should be designed with a green roof that could become part of the proposed bridge and cycle path access increasing the amount of green space available.*

Response



The viability of a community vegetable garden or a tree nursery within or adjacent to the Rozelle stabling and maintenance depot is questionable due to accessibility and potential contamination issues. Whilst these constraints may be resolvable, the availability of an appropriate space cannot be determined at this stage as the final layout of the depot is still subject to refinement.

Therefore, at this stage it is not feasible to safeguard space for a community vegetable garden or tree nursery within or adjacent to the Rozelle stabling and maintenance depot.

The offices and rolling stock buildings at Rozelle stabling and maintenance depot would be designed to a 5 Star Green Star Office Design and Office Interiors Rating and NABERS 4.5 star performance. The application of a 'green roof' technology would not be mandated, but could contribute to these design ratings.

Additionally, the development of the depot site would be a catalyst for integrating the green networks of this part of Sydney with new and enhanced pedestrian and cycle corridors. Water-sensitive urban design principles would be integrated into the site and landscaping provided to improve water quality and create a more attractive environment.

4.20.3 Protection of other utility corridors

Issues included

- *The metro line/s and especially caverns must restrict future options for underground usage - electricity and communications, emergency and security access, and car parks and related.*

Response

Section 14.3.5 of the EA notes that the design process has recognised existing structures and underground services and key constraints and has endeavoured to minimise impacts on these assets. This is evidenced by the horizontal and vertical alignment of the project and the preference for utilising existing road alignments as far as possible for that alignment.

Significant technical consultation has been undertaken with infrastructure asset owners to ensure the long-term protection of existing and proposed infrastructure.



CONSTRUCTION OF THE PROJECT

4.21 Construction sites

4.21.1 Size/boundary/hoardings

Issues included

- *Disruption to the day-to-day functioning of Martin Place should be reduced.*
- *The six metre wide pedestrian access along the footpath next to the Pyrmont construction site will limit outdoor seating and heavily impact businesses (especially smoking customers).*
- *Any hoarding for this construction should be at least four metres from the facade of 10 Shelley Street.*

Response

Martin Place

One of the two main construction sites for Martin Place Station, located within Martin Place on the western side of Castlereagh Street (shown in Figure 7.7 of the EA), has the potential to impact the day-to-day functioning of Martin Place. The size of this construction site in Martin Place is necessary to support the station shaft and cavern excavation, and to construct the station entrance. Access to CityRail's Martin Place Station and the MLC Centre would be retained during construction.

Pedestrians would be accommodated within the northern and southern edges of Martin Place, with a proposed width of 4.5 metres for each of the access ways. An assessment of walkway requirements indicates that this width would be adequate to accommodate peak flows.

The Martin Place Station Traffic Management Plan is located in Appendix H of Technical Paper 1 of the EA and details the management measures proposed to reduce impacts on pedestrian access in Martin Place. An ongoing operational review would be undertaken to determine if additional times for traffic control of pedestrian movements would be required, ie for periods such as Thursday late night shopping, Friday and Saturday entertainment and special events.

Loss of trade and business as a result of a loss or reduction of outdoor seating is addressed in section 4.64 of this report.

Pyrmont Station

The restriction of use of outdoor areas for dining or access along Union Street for Pyrmont Station has been considered to be an economic and social impact and is discussed in section 16.4 of the EA and Technical Paper 6 (section 9.7.1). The restriction of outdoor areas is required in order to maintain pedestrian access along Union Street.

Loss of trade and business as a result of a loss or reduction of outdoor seating is addressed in section 4.64 of this report.

Barangaroo Wynyard

The Demolition and Early Works Strategy prepared as part of the CEMP for each station site would demarcate the construction sites and hoardings. The Plan would ensure hoardings and construction fencing placement takes into account adjacent property ownership and the continued functioning of



that premise in terms of maintaining access, visibility of business frontages and minimising any obstruction to the business. A set distance for the hoardings would be negotiated with adjacent construction site neighbours during pre-construction consultation.

4.21.2 Location

Issues included

- *What effect will construction have on 45 Clarence Street?*

Response

The building at 45 Clarence Street is located well away from the primary construction site for the Barangaroo-Wynyard Station located at the intersection of Sussex and Shelly streets. Occupants and users of 45 Clarence Street may be affected by traffic during construction. All aspects of the impacts associated with construction and operation of the project are addressed in detail in the EA.

4.22 Construction safety and security

4.22.1 Security around worksites

Issues included

- *Additional security measures are needed around construction zones.*
- *The security of the bank, including delivery and removal of cash, is threatened by continual truck movements. The car park is near the construction zone and is used by bank staff at all hours of the day and night.*
- *Prior to construction the St Thomas Child Care Centre should be safely fenced off and safe and convenient access provided.*

Response

A Construction Environmental Management Plan, Construction Method Statements and Business Management Plan would be prepared to incorporate appropriate site security and safety measures, and to clearly demarcate the construction sites and public safety zones. All construction sites would be managed to protect the health and safety of the community and stakeholders, including users of nearby childcare facilities and schools. Suitable worksite fencing and/or barricades would be erected where practicable to ensure the safety of the public and workers.

Construction worksites would be under the control of a principal contractor who has a statutory duty under the *NSW Occupational Health and Safety Act 2000* to prevent unauthorised access to the site and protect the public place from work activities.

To ensure that there are no security issues and that staff can utilise the Commonwealth Bank building 24 hours per day, Sydney Metro and the Contractor would set up lines of communication to ensure bank staff have full knowledge of construction activities.



4.23 Utilities and services

4.23.1 Working with utilities/service providers during project construction

Issues included

- *Any potential interruption to main electrical supplies, stormwater and water supplies will need to be coordinated.*
- *The EA doesn't provide details on how utilities (particularly fibre-optic communications and power) will be maintained during construction.*

Response

Section 7.8.2 of the EA provides details on the utilities that need to be adjusted and relocated where they would otherwise be impacted by construction. Further design works would confirm the exact locations and depths of the utilities. As described in Section 7.8.2, where the design conflicts with the existing utility, it may be necessary to provide physical protection for a utility, modify construction methods to avoid the utility, support the utility to provide mechanical protection or divert the utility around the construction site. These issues are believed to be manageable through design and construction measures. Those utilities that may be potentially affected by the project and may require protection or diversion are indicated in Table 7.9 of the EA. Appropriate protection and risk management procedures would be established to protect utilities in consultation with utility owners.

4.24 Construction program and timing

Issues included

- *The EA did not provide any time frames - when work might commence, how long it would take, what disruptions there would be.*
- *The lengthy construction timeframe will disrupt businesses for a long period of time.*
- *Construction-related disruption should be condensed as much as possible, even if this impact is greater for the relevant time period.*
- *St Thomas Child Care Centre request that all demolition work on the adjacent construction site take place during annual summer breaks.*

Response

The construction program is described in section 7.2 of the EA. Subject to planning approval, construction of the project is expected to start in 2010 with the first Metro services expected to be operational from the end of 2015. It is not expected that there would be any flexibility in the program to condense activities or works. The key construction activities are shown in Figure 7.1 of the EA. Furthermore, indicative construction timeframes for each primary station construction site are shown in section 7.7.

For construction works at Rozelle Station, it is anticipated that demolition works would occur during the second and third quarter of 2010 as shown in Table 7.7 of the EA. It is necessary for demolitions works to occur at this time as delay in demolition works would extend the overall construction timeframe beyond the anticipated completion date of 2015.



4.25 Construction demolition

Issues included

- *A detailed explanation of the time period involved and the methodology for the initial demolition phase should be provided to enable a complete assessment of impacts.*

Response

Section 7.8.1 of the EA addresses the demolition of buildings. Prior to demolition, hoardings and dust and debris screens would be erected, where practicable, in accordance with the council's requirements. Prior to demolition, the inside of the buildings would be stripped of materials such as glass, metal, bricks, timber and plastic, which would be reused, recycled or sent to a waste facility, as appropriate. All services into the building would be made redundant.

More detailed information regarding the demolition of buildings will be available once the contractor is appointed. It is anticipated that demolition works would occur during the second and third quarter of 2010.

4.26 Construction methodology

Issues included

- *The EA doesn't set out how the excavations will be made.*

Response

Section 7.3 of the EA describes the tunnelling construction methods using TBMs and roadheaders. The methodology for the construction of the stations is provided in section 7.4. Station caverns would be constructed at all stations except the future White Bay Station. An access shaft would be excavated to allow a gantry crane (or similar) to be lowered into the shaft to construct the cavern. The heading (top section of the cavern) would be excavated using roadheaders, and the bench and invert (lower section and base of the cavern) would be excavated using roadheaders, excavators with rippers, rock breakers, rock saw cutting, and line drilling. Construction plant and equipment would enter/exit through the access shaft. The main concourse (and the main ticketing area) would be constructed within the station cavern.

More detailed information at each station site would be available once the contractor is appointed. Notwithstanding, considerable geotechnical investigations have been undertaken to inform the design and the environmental assessment to date.



SUSTAINABLE DEVELOPMENT

4.27 Sustainability of the project

Issues included

- *Sydney Metro provides a clear methodology to embed the sustainability focus of the project. It is unclear neither what the targets for the project are seeking to achieve nor what overall sustainable outcomes the project delivers for the community.*

Response

The sustainability targets for the project are identified in Table 8.1 of the EA as 'Sustainability objectives'. The methodology for establishing sustainability targets for the project is clearly defined and would be addressed via Statement of Commitment No.1.

The sustainable outcomes the project delivers for the community are outlined in section 8.1.2 of the EA and include:

- Improving the attractiveness of public transport compared to private vehicle.
- Allowing complementary changes to the broader transport network.
- Enhancing access for different social groups between and within the City of Sydney and Leichhardt local government areas.
- Supporting more sustainable land use and lifestyle options around the metro stations (such as Barangaroo-Wynyard) by creating the capacity for transit-oriented infill development around higher quality public transport.
- Providing a positive public transport legacy for future generations.

4.28 Renewable energy

Issues included

- *The EA indicates 30 per cent green power will be purchased to offset GHG emissions.*
- *Sydney Metro provides a clear methodology to embed the sustainability focus of the project.*

Response

The initiatives that are incorporated into the Reference Design would be written into the contracts for construction and operation of the project as project commitments. The implementation of these sustainability commitments would be tracked and reported in accordance with the requirements of the Sydney Metro Sustainability Policy and the project Sustainability Plan.

Sydney Metro has committed to 100 per cent renewable energy being purchased to off-set consumption of energy for the operation of Stage 1 as outlined in Statement of Commitment No.3.

For every megawatt of electricity used to operate the project, a Renewable Energy Certificate (REC) would be purchased to guarantee that an equal amount of renewable energy has been generated.



The REC mechanism has been established by the Commonwealth Government to provide assurance that certified renewable energy can be purchased without direct connection to a generator.

Sydney Metro is committed to delivering long term benefits to the community by providing a high quality, environmentally sustainable transport service to our future customers. Benchmarking studies show that this will be the first major transport project in Australia to commit to 100 per cent renewable energy.

The commitment to 100 per cent renewable energy is a practical step that would offset the largest environmental impact of the Stage 1 operations. The Metro will indeed be clean and green.

By purchasing Renewable Energy Certificates, the operation of Stage 1 would also help to drive demand for the generation of renewable energy.

The estimated total annual electricity demand to operate the project is approximately 100 gigawatt hours (GWh). In the early years of operation the purchase of renewable energy would prevent the emission of approximately 89 kilo tonnes of carbon dioxide per year. This is equivalent to the emissions of over 10,500 homes.

The commitment to 100 per cent renewable energy is just part of a program of Sydney Metro environmental initiatives. Others include:

- Using solar panels on the buildings for the Rozelle stabling and maintenance depot.
- Designing the depot roof to capture rainwater and allow natural daylight into the maintenance area.
- Using recycled water for all non-drinking requirements at the depot.
- Recycling 95 per cent of water used to wash the trains.
- Purchasing 20 per cent renewable energy to off-set consumption of energy for the construction of Stage 1.
- Applying energy demand management through careful design and specifications to ensure that as little energy is required to operate the metro as possible (eg regenerative braking for the trains).

4.29 Adaptability to climate change

Issues included

- *The metro is not safe from sea level rises. Putting train stations deep underground may not be a good idea.*
- *It is unclear what the comfort for passengers and workers have to do with climate change adaptation?*

Response

Chapter 19.7 of the EA presents the potential impacts of climate change on the project. Section 19.6 addresses the greenhouse gases likely to be emitted by either the operational or construction phases of the project.

The risk of impacts on the project as a result of climate change is an ongoing consideration during the development of the project. In order to treat the risks identified in Table 19.14 of the EA, a number of



'best practice' adaptation measures have influenced elements of the design. Relevant adaptation strategies fall within the following categories:

- Suitable material selection for infrastructure exposed to changed climatic conditions, based on the desired life expectancy of the infrastructure and maintenance regime.
- Design standards to cope with expected extreme events as well as accelerated degradation of materials and structures.
- Maintenance regimes to accommodate acceleration in the degradation of materials and structures.
- Technologies to meet required standards of performance or service under changed climatic conditions.

In terms of sea level rises, the risk of seawater flooding the Rozelle stabling and maintenance depot due to sea level rise and increased storm surge was identified as high in section 19.7.2 of the EA. This potential risk would be further analysed during detailed design, paying particular attention to the necessity of raising the level of the Rozelle stabling and maintenance depot with tunnel spoil. Tunnel portals have been design to withstand flood events of up to a one in 10,000 year flood. This is an accepted engineering protection measure for all underground transport systems in NSW and Australia.

In terms of increased rainfall, drainage upgrades would be designed to prevent stormwater accumulating in the Rozelle stabling and maintenance depot under projected rainfall intensities in 2100. The stations would also be designed to withstand increased rainfall and consequent flooding of stations and tunnels.

Climate change adaptation involves changing practices today in anticipation of different climatic conditions in the future. As temperatures are expected to generally increase, the design of the metro stations and carriages should take these conditions into consideration to ensure passenger comfort, particularly on extreme weather days.

4.30 Energy use and greenhouse gases

Issues included

- *Energy hungry tunnels and underground stations should not be built. Surface transport is much more energy efficient and economic.*
- *This is not a sustainable development and will not provide any star rating for environmental offsets.*
- *Inadequate attention in the EA to how energy efficiency measures in HVAC, escalators, lighting etc and further reduction of energy use and greenhouse gas emissions during the operational phase of the metro.*
- *How will the power for the system's air conditioning be provided in a sustainable manner?*
- *The EA does not recognise that each station will and needs to attract people to it. How people travel to the station is regarded as an indirect impact in terms of assessing greenhouse gas emissions.*
- *The EA shows little understanding that good sustainable buildings with Green Star ratings are required to include sustainable transport as an element - locating proximally to public transport and having secure bicycle parking and end-of-trip facilities.*



Response

It is acknowledged that tunnels and underground stations are energy-intensive constructions, however there were many other factors that influenced the decision to provide an underground system.

While the direct energy consumption required for the construction and operation of a tunnel generate relatively more greenhouse gas emissions compared to a surface link, the broader energy and greenhouse gas emissions associated with managing the adverse environmental and social impacts of a surface link also need to be considered. While a tunnel allows for many environmental issues to be treated at the source (ie through design innovation such as high performance track to reduce noise and vibration), the majority of environmental impacts associated with a surface link can only be effectively treated at the receptor and result in additional flow on energy use and greenhouse gas emissions (ie the need for artificial ventilation or air conditioning of residences so that windows can be kept closed to reduce noise).

With regards to greenhouse gas emissions it is likely that similar benefits could be achieved with heavy rail. However heavy rail would not provide the same operational benefits as metro (refer to section 4.6 for issues and responses regarding the benefit of metro over heavy rail).

The incorporation of energy efficient measures into the design was discussed in section 19.6.3 of the EA. A number of measures to reduce energy demand were committed to, including:

- Using energy efficient equipment (lighting, control systems, motors, platform screen doors).
- Incorporating solar orientation, day-lighting, glazing and natural ventilation into station designs wherever practicable.
- Designing all occupied buildings on the Rozelle stabling and maintenance depot site (excluding industrial buildings) to a minimum five-star Green Star rating.

These measures would be incorporated into the project in more detail during the detailed design phase.

Sustainability and, in particular, avoiding and minimising greenhouse gas emissions, has been a key focus in developing the reference design. The preparation and implementation of a Sustainability Strategy would ensure that benefits are maximised to the greatest extent practicable. An Energy Management Sub-Plan would also be prepared and implemented during construction to reduce embodied energy in construction materials and ensure that energy efficiency is considered in procurement. Renewable energy would be purchased to offset greenhouse gas emissions during construction and operation of the project.

As provided in the EA Statement of Commitments, the offices and rolling stock buildings at Rozelle stabling and maintenance depot would be designed to a 5 Star Green Star Office Design and Office Interiors Rating and NABERS 4.5 star performance.

The depot is located near public transport corridors, including the light rail and Victoria Road buses and bicycle routes. Bicycle parking is proposed at depot buildings, and customer bicycle parking is proposed at each metro station entry.



4.31 Sustainability of materials used

Issues included

- *No reference has been made to the transportation of tunnel linings. In the context of sustainable transport, rail or water transport for delivery of tunnel lining or constituent material to White Bay must be used.*

Response

It is not considered that there is sufficient justification for transportation of materials to the construction site through any other means than road transport. Should the option for barging or rail transport of spoil eventuate, then the possibility of alternative transport for construction materials other than road transport may be pursued then.

The construction traffic management plans would consider the necessary management of the transportation of all materials required for the project including measures to manage traffic flows through and surrounding the construction haulage routes.

Pre-cast tunnel lining is generally produced at factories with specific capability for this task and lots of space. The location of these factories would play a role in the viability of various options for the transportation of the lining. Manufacture of pre-cast tunnel lining would be further investigated at the detailed design stage and once a contractor has been appointed. Transport options would also be assessed at this time.

SPOIL MANAGEMENT

4.32 Transportation of spoil

Issues included

- *The EA presumes that spoil removal will be by trucks, but the arguments against rail and barge are not conclusive. The project should prescribe use of rail or barge transport to its fullest capacity.*

Response

The EA states that spoil would need to be removed by truck from the cavern excavations at the CBD sites (Central, Town Hall Square, Martin Place and Barangaroo-Wynyard) and from the cavern excavation at Pyrmont and Rozelle. There is no alternative to the use of trucks from those sites, although consideration was given to barging of spoil from Barangaroo. The EA indicated that trucks would remove spoil from these locations to spoil placement sites or to White Bay where they could be transported by rail or barge to appropriate locations.

Most spoil would be generated by TBM or roadheader operations and would be transported via the excavated tunnel to White Bay. From White Bay three options were investigated – trucking to spoil placement sites, rail transport to various sites including Port Kembla, and barging to Port Kembla.

All options were fully evaluated but a decision as to the means by which spoil would be transported would depend on the timing of the availability of sites, costs associated with infrastructure and the intent of the construction contractor.

The form of transportation for spoil from the Barangaroo–Wynyard and White Bay sites would be determined through the procurement and delivery phases of the project. The availability of existing wharf infrastructure at these sites and rail access in Rozelle may facilitate spoil to be transported by



rail or barge. The options for transport by other than truck would be valued in the market place by the Sydney Metro tenderers and a decision taken in the evaluation process.

4.33 Disposal and reuse of spoil

Issues included

- *The excavated material should be barged from White Bay to Barangaroo to create the headland and entry for the Barangaroo headland/park.*
- *We note that the potential sites for spoil recycling and reuse in the EA no longer includes any facility operated by Benedict Industries (as included in the PEA).*
- *Where will the spoil be dumped and how long will it remain at White Bay?*

Response

Consideration was not given to barging spoil to Barangaroo to create the headland as there is no such requirement identified by the Barangaroo Delivery Authority. Should there be a requirement in the future then that would be a potential opportunity.

The form of transportation for spoil from the Barangaroo–Wynyard and White Bay sites would be determined through the procurement and delivery phases of the project. The availability of existing wharf infrastructure at these sites may facilitate spoil to be transported by barge. The options for transport by barge would be valued in the market place by the Sydney Metro tenderers and a decision taken in the evaluation process.

The availability of the Moorebank Quarry for recycling and reuse would be provided to the Sydney Metro tenderers.

A re-evaluation was undertaken of sites identified in the PEA for spoil placement. The sites identified in the EA were considered to be likely to be available when the spoil placement was needed. It should be noted, however, that at the appropriate time the contractor would reassess all opportunities for spoil placement locations and the means by which the spoil is transported.

The spoil storage areas at White Bay would have space for about 10,000 cubic metres and would be able to accommodate about a week of high productivity from the TBMs. Spoil may also be able to be stored at White Bay if used as a transit point to other locations.



CONSTRUCTION TRAFFIC

4.34 Construction traffic management

4.34.1 CBD and Pyrmont

Issues included

- *GPT and QIC are concerned about the impacts on vehicular egress onto Castlereagh Street from the MLC Centre's basement car park, and the impacts arising from removal of loading and parking bays along the western side of Castlereagh Street.*
- *No information is provided on how conflicts with construction vehicles will be avoided and sight lines preserved to ensure a safe exit.*
- *Construction traffic will severely diminish the quality of the surrounding environment in the CBD.*
- *Significant truck movements may have an adverse impact on construction and operation of Star City.*

Response

The MLC Centre car park egress would be maintained to ensure the safety of car park traffic (including providing adequate sight lines for exiting drivers), pedestrians on the footpath and the construction site. Management of these aspects would be incorporated into the Sydney Metro Traffic Management Plan, a requirement of the construction contracts and would be closely scrutinised by authorities responsible for approving the proposed traffic management and road occupancy arrangements.

Work hours and methods would be developed with consideration given to the requirements, and traffic controllers would monitor the pedestrian and vehicle conflicts. Given the sensitivities of Castlereagh Street and Martin Place, controllers are proposed to be available for the hours of operation of the construction site.

At present, an indicative workzone area for Castlereagh Street has been developed, although the exact extent required at any one time would be subject to detailed consideration by the contractor, and subject to authority approvals.

The high utilisation of loading facilities in this section of Castlereagh Street is acknowledged. Alternative on-street locations for compensatory additional loading zones were investigated, however standing restrictions on both King Street and Castlereagh Street in the PM peak period mean that loading areas in close proximity are not available during this time. Similarly, alternative off-street locations, such as off-street car parking areas (subject to adequate height clearance), are not conveniently located.

Once the exact extent of the workzone required at any one time is identified, it may be practical to maintain a small number of loading spaces, which would be progressively relocated as the workzone shifts. This level of detail would be provided at the construction phase.

The removal of parking bays during construction would be incorporated into the relevant Sydney Metro Traffic Management Plans. Work hours and methods would be developed with consideration given to the servicing requirements. The permanent bay allocation would be developed in consideration of City of Sydney Council requirements.



The construction site on Castlereagh Street is a minor site related to shaft construction. Forecast truck movements in the AM peak hour are low and would be managed to minimise impacts on pedestrian and traffic movements. Trucks would access the Castlereagh Street construction site primarily outside of normal business hours.

The cumulative truck movements on the southern section of Castlereagh Street (south of Martin Place) from all Martin Place Station construction sites would also be low (ie about five trucks per hour entering the Martin Place site and about four exiting, with a total of about nine trucks in and about seven out per hour from both the Martin Place and Castlereagh Street sites).

The main truck traffic for the construction site between Castlereagh and Elizabeth streets would not pass the southern section of Castlereagh Street, with entry from Castlereagh Street, north of Martin Place and exit to Elizabeth Street.

Trucks would access the Martin Place and Castlereagh Street construction sites primarily outside normal business hours. There would however be construction vehicle movements during normal business hours and these would be managed through a Sydney Metro Traffic Management Plan that would consider to the extent possible the public use and business activity of the surrounding environment.

All construction sites generate construction traffic with potential impacts. A number of alternative options for truck movements are would be further scrutinised with the aim to minimising impacts. To facilitate this, Sydney Metro proposes two stakeholder liaison groups be established – the Central Project Coordination Committee (CPCC) and the Traffic and Transport Liaison Group (TTLG).

The CPCC would provide a strategic and tactical forum for ensuring metro construction works are coordinated with other development and public works; and would aim to mitigate impacts on events, local businesses, residents, and CBD visitors by ensuring that construction impacts arising from the project are integrated and balanced against the construction impacts of wider redevelopment and other changes occurring within the CBD.

The TTLG would ensure that all relevant traffic and transport management authorities, including the RTA and relevant councils, are aware of the proposed construction activities, upcoming works and related transport implications and have the opportunity to comment on the mitigation measures proposed prior to the start of construction.

Development of vacant land located north of Union Street between Pyrmont and Union street by Star City Casino may coincide with construction at Pyrmont Station worksites. Sydney Metro would work closely with Star City to ensure that construction vehicle routing under Alternative 2 would not adversely impact Star City operations. Sydney Metro would consult with Star City to determine to what extent the construction and operation of the Pyrmont eastern construction site would impact both day to day operations at Star City and any proposed construction activities at Star city.

4.34.2 Rozelle

Issues included

- *Safe access to the Rozelle Neighbourhood Centre during is particularly important for young children and carers bringing people with disabilities.*
- *The following should be considered:*
 - *Restrict truck routes and access to Balmain Leagues site to avoid trucks using residential streets and in particular Waterloo Street. Access from, or to Waterloo St, should be denied after 9pm and before 7am.*



- *Restrict truck standing areas to avoid queuing trucks waiting to load/unload.*
- *Ensure traffic signals, etc can enable truck flow to enter road network without disruption.*
- *Traffic control to minimise delays and ensure safe truck movements.*
- *Monitoring and maintenance of roads affected by construction traffic.*
- *Given the proximity of Rozelle Public School, Wellington Street should be avoided as a truck route.*
- *The noise, dust and pollution level from construction trucks five metres from our property would not be bearable and would be considered a health risk.*
- *Traffic impacts during the five year construction period have not been assessed. Rozelle streets (including Darling Street and Waterloo Street) will be subjected to up to 626 daily truck movements around the three construction sites at Rozelle (Table 10.7, Volume 2, p250). The traffic modelling is incomplete with impacts on critical intersections and roads still to be assessed. The modelling already undertaken indicates that the intersections on Victoria Road around Rozelle will operate at an unsatisfactory traffic level (LoS F) at the PM peak.*
- *We would like assurance that the impact of construction on traffic congestion has been considered on weekends as well as the weekday peak periods. The local peak traffic times are Saturday and Sunday mornings.*
- *The use of Waterloo Street for truck entry and egress from the main construction site is unacceptable.*
- *Additional construction related traffic (eg concrete delivery vehicles) have not been addressed in the EA.*
- *Trucks will park on local streets whilst waiting to be called into the site posing a serious risk to the health and safety of the local residents.*
- *At a minimum access to Waterloo Street should be restricted to light vehicles only and barriers should be erected to prevent west-bound traffic travelling beyond the entrance of the site.*
- *Truck marshalling areas should be restricted to the White Bay site and/or the Rozelle stabling and maintenance depot site only.*
- *The FTMP and CTMP for Rozelle should be discussed in draft form to allow community consultation prior to being finalised.*
- *The proposed construction route in Figure 10.3 of the EA significantly differs from the construction route in Figure 3.4 of Technical Paper 1. Is this a purposeful decision or an error?*
- *I would like confirmation of truck movement times, number and period of operation during construction along Victoria Road.*
- *The traffic modelling has not included the impact of the completed Tigers, Multiplex and metro developments.*
- *The EA indicates in excess of 23,000 large truck movements from 2010-2012 for removal of spoil. These figures do not include any vehicles movements during the construction of the station and associated works. Appendix D (pg 238 to 251) indicates a higher number of truck movements. Traffic congestion throughout Rozelle will increase substantially due to the high level of construction traffic from 2010-2015. No adequate traffic management planning appears to have been done (pg 235 of the EA). All traffic and pedestrian safety mitigation measures should be*



mandated as part of any consent and done after consultation with those impacted such as the school.

- *The majority of truck convoys should occur outside of school hours.*
- *Most parents/caregivers drop off and pick up the children using their private cars. Short term parking is difficult at present. Will there any steps taken to minimise this impact?*
- *Restrictions should be put in place to limit truck movement in Waterloo Street after 9pm and before 6.30am.*

Response

Movements on local streets would be assessed and issues addressed through the contractors' Traffic and Transport Management Plan, which includes required Construction Traffic Management Plans (CTMPs) and Construction Traffic Control Plans (TCPs). Traffic impacts during the construction period have been assessed for the highest impact phase occurring during excavation of the station shafts and caverns.

The hours of operation and the location of truck loading would be subject to a noise impact assessment of the work methods (refer to Statement of Commitment No.38).

Sydney Metro would establish a monitoring regime with its contractors and DECCW. Vehicles on the public roads would be registered and subject to the pollution emission requirements of DECCW.

Estimates of truck generation reported in the EA and accompanying TMP's show the expected period of maximum truck movements for spoil removal, however truck access will also be required for demolition and IMO stages and for the movement of structural concrete and steel, plant and equipment, fittings and fixtures, escalators, and other material during construction and fit out of the site.

These deliveries are anticipated to generate lower numbers of truck movements than the peak movements associated with spoil removal reported in the EA and accompanying TMP's.

Rozelle

The traffic studies undertaken for Leichhardt Municipal Council indicate that impacts from the proposed Multiplex development and Tigers Club redevelopment are acceptable.

The traffic management requirements associated with the work hours and methods would be developed with consideration given to the impacts upon Victoria Road. Communication with the community would be in place in accordance with Statement of Commitment No.35.

Rozelle Primary School

The Rozelle Primary School, Rozelle Neighbourhood Centre and St Thomas Child Care Centre access and traffic management requirements would be incorporated into the Sydney Metro Traffic Management Plan. Work hours and methods would be developed with consideration given to the requirements.

Balmain Leagues Club

Trucks would primarily use Victoria Road to access the Balmain Leagues Club (Tigers) construction site with a secondary access from Darling Street along Waterloo Street. The Sydney Metro Traffic Management Plan would not incorporate a standard truck route from Moodie Street along Waterloo Street. Access to and from Waterloo Street would be required at all times. The management of vehicle



type, hours of access to Waterloo Street and management of truck 'call up' would be incorporated into the Sydney Metro Traffic Management Plan. Whilst there would be impacts on local traffic from truck movements, the traffic management approach adopted throughout the project and at Rozelle is to restrict truck ingress and egress to Victoria Road and other higher order arterial roads where possible.

Traffic impact assessment and management for the streets around the Balmain Leagues Club construction site would be undertaken to inform the Sydney Metro Traffic Management Plan. The traffic management requirements would be developed from local surveys, with considerations given to activities outside of normal business hours.

4.34.3 White Bay and depot

Issues included

- *There is no evidence of a traffic management study to assess increased (and 24 hour) traffic movements on Lilyfield Road, City West Link, Gordon Street, Victoria Road and surrounding suburban roads.*

Response

These impacts and suggested mitigation responses are addressed in the White Bay and Depot Construction sites TMP. Section 7 of the Traffic and Transport Technical Paper addresses the peak period intersection impacts of the additional truck activity at White Bay and the Depot sites. The traffic management approach adopted throughout the project and at White Bay and the Depot is to restrict truck ingress and egress to City West Link Road and Victoria Road and other higher order arterial roads where possible.

4.35 Impacts to peak hour traffic

4.35.1 CBD and Pyrmont

Issues included

- *Any reduction in access or lanes will result in gridlock from Castlereagh Street into King Street and beyond, causing delays in entering and exiting our car parks.*

Response

There would be some interruption to traffic flows along Castlereagh Street at certain times, however, this would be minimised by maintaining one through traffic lane and one bus lane at all times during the daytime.



4.36 Disruption to other transport modes

4.36.1 Changes to interchange locations

Issues included

- *The coach stops at Central Station should not be moved.*

Response

There may be scope to move some or all of the coaches along the Pitt Street frontage to Central Station as one means of managing UNSW bus diversions stemming from the proposed Belmore Park construction site. It is not proposed to impact the Eddy Avenue coach spaces.

4.37 Traffic congestion and amenity impacts

Issues included

- *With over 250 car parking places lost during the Tigers renovation, the area around Rozelle Public School will suffer from increased traffic congestion.*
- *The metro construction and 24/7 truck movements will exacerbate city traffic congestion.*
- *The construction traffic report (Chapter 10) states the intersections of Victoria Road/Darling Street and Victoria Road/Wellington Street will no longer operate within acceptable limits because of construction traffic, yet no solutions are provided for this situation.*

Response

Construction traffic would replace the existing traffic associated with the current business functions at the properties that form the construction sites. However the pattern of vehicle movements would be different and the net number of movements is likely to increase. Congestion issues would be managed through the Sydney Metro Traffic Management Plan.

The access and traffic management requirements for Rozelle Public School would be incorporated into the Sydney Metro Traffic Management Plan. Work hours and methods would be developed with consideration given to the requirements.

The Victoria Road corridor is congested during peak times. The construction methodology and associated traffic and access measures would aim to reduce adverse impacts on congestion during construction.

Options to reduce impacts on traffic signal operation at Rozelle include reductions in truck traffic activity at specified busy periods. This would be explored in the Contractor's TMPs and TCPs.



4.38 Pedestrian issues

Issues included

- *The construction of the metro in Rozelle will result in pedestrian conflict with trucks crossing footpaths, particularly during the regular Saturday markets, church services and school times.*
- *Traffic movements to and from the site would cause damage to streets and footpaths and be a hazard to pedestrians, particularly small children.*
- *Pedestrian access to and around buildings in the CBD is a concern.*
- *There is no evidence of a traffic management study to assess impact on pedestrian movements resulting from road reconfiguration and diversions.*
- *Pedestrian accessibility into and out of the MLC Centre to and from Castlereagh Street and Martin Place will be obstructed and disrupted. It also appears that the existing underground pedestrian link from Martin Place Station into the MLC Centre will also be closed. This needs to be clarified.*
- *Given the intensity of pedestrian movements in Martin Place there is insufficient information in relation to hoardings (type, location, duration and visual treatment).*
- *If large quantities of concrete are delivered by ready-mix agitator trucks and then pumped from the street, further disruptions to pedestrian movements in the area and additional noise will occur.*
- *Objection to the eastern entrance of Pyrmont Station as this busy pedestrian access to and from the CBD will be drastically affected.*

Response

Movements on local streets would be assessed and issues addressed through the contractors' Traffic and Transport Management Plan, which includes required Construction Traffic Management Plans (CTMPs) and Construction Traffic Control Plans (TCPs) – developed in consultation with neighbouring businesses and occupiers, the RTA, Emergency Services, and the local Council Traffic Committee. The CTMP's will detail proposed traffic and pedestrian management responses to required road carriageway changes, diversions and lane closures.

Traffic impacts during the construction period have been assessed for the highest impact phase occurring during excavation of the station shafts and caverns.

The traffic management requirements would be developed with consideration given to pedestrian movements at road crossings and at entries to business premises for times of special events and normal business hours. Work hours and methods and material deliveries would be developed with consideration given to the requirements for traffic and pedestrian management. The hoarding and gates design would be developed from inputs from Traffic and Transport Liaison Group (TTLG) including local councils.

Martin Place

Pedestrian access to the MLC Centre will be maintained from Martin Place in lieu of the eastern footpath along Castlereagh Street. Pedestrian access in Martin Place along either side of the worksite will be possible via 4.5 metre wide accessways, similar to those adopted for special events that occur on many occasions in Martin Place throughout the year.

Details of hoarding design, location and associated pedestrian management responses are provided in the TMP for Martin Place.



Pymont

Section 5.3 of the Pymont TMP acknowledges that pedestrian changes will be required in Union Street as a result of the eastern station entry works, but that these are manageable and will not adversely impact pedestrian access or throughput.

Rozelle

At Rozelle most truck ingress and egress will be limited to Victoria Road in an effort to minimise pedestrian conflicts at the Markets and adjoining churches. Where trucks are traversing footpaths, traffic controllers will manage truck access to avoid conflict with pedestrians.

4.39 Cyclist issues

Issues included

- *Traffic movements to and from the site will be a hazard to cyclists.*
- *There is no evidence of a traffic management study to assess impact on bicycle movements resulting from road reconfiguration and diversions.*

Response

The hierarchy of access adopted for planning and construction phases of the project, gives priority to the most efficient and sustainable transport modes. Pedestrians and cyclist safety is imbedded throughout the project. Construction Traffic and Transport Management Plans must be completed by contractors, detailing safety measures for pedestrians and cyclists and reducing delay to these vulnerable members of the public.

The traffic management approach documented in all the TMPs is based on the need to mitigate and minimise impacts to pedestrians and cyclists.

The pedestrian and cycle traffic management requirements alongside the construction sites would be developed from local surveys, with considerations given to:

- Bicycle movements at road crossings and entries to business premises
- Maintaining pedestrian and cycle movements on the northern side of Victoria Road.
- Maintaining pedestrian movements with access to business premises.

Work hours and methods would be developed with consideration given to these requirements.

These considerations would be incorporated into the Sydney Metro Traffic Management Plan.



4.40 Parking issues

4.40.1 Residential areas

Issues included

- *The following should be considered:*
 - *Construction workers must use public transport - no private parking or parking on residential streets.*
 - *Loading zones should be provided in suitable areas.*
 - *Waterloo Street should be designated as 'residents only'.*
 - *Alternative parking should be provided for residents and businesses.*
 - *The removal of the community car park (behind Balmain Leagues) parking will impact on the viability of businesses. The community car park should remain on Waterloo Street during the construction period with a noise wall behind it.*
- *There is no evidence of a traffic management study to assess increased car parking along Lilyfield Road.*

Response

The worker parking and travel arrangements would be developed on a site by site basis. In general, car pooling and public transport would be encouraged. A plan to manage project worker parking requirements would be developed around the use of the White Bay and the Rozelle depot construction sites.

At the Balmain Leagues Club construction site consideration would be given, in consultation with the Leichhardt Municipal Council, to replacing the 30 (approximate) car parking spaces lost with 90 degree parking on the site fronting Waterloo Street.

4.40.2 Businesses

Issues included

- *Probable obstruction to the rear lane parking access of the medical centre and loss of patient and staff parking at and next to Balmain Leagues Club.*
- *Rozelle Public School staff should be provided with parking permits for the Council car park outside the school. The unofficial driveway from Darling Street into the front of the school playground should be legalised to be used by staff who wish to park in the playground.*
- *Parking along Pyrmont Street will be restricted and will impact trade coming from customers.*
- *The EA states that "Access to the hotel car park at the corner of Castlereagh and King Streets would be maintained" (pg 189). We believe the reference to the hotel car park should be to the MLC Centre car park egress.*



Response

As discussed in section 10.4.2 of the EA, on-street parking spaces at a number of construction sites would be temporarily occupied by 'works zones' to facilitate truck movements and minimise impacts on through traffic.

A Business Management Strategy (refer section 10.5 of the EA) would be prepared and implemented to minimise impacts on businesses adjacent to major construction sites. This would include measures to maintain vehicular and pedestrian access during business hours.

The access to rear of properties serviced by the lane from Victoria Road would be retained at all times.

The matter regarding the unofficial driveway from Darling Street into the front of the school playground is an issue for Leichhardt Municipal Council and not Sydney Metro.

The reference in the EA to 'Access to the hotel car park at the corner of Castlereagh and King streets would be maintained" (pg 189) should refer to the MLC Centre rather than the hotel.

At the Balmain Leagues Club construction site consideration would be given, in consultation with the Leichhardt Municipal Council, to replacing the 30 (approximate) car parking spaces lost with 90 degree parking on the site fronting Waterloo Street.

Sydney Metro would work with Council to develop a Local Area Parking scheme in conjunction with the development of the Traffic Management Plan.



CONSTRUCTION NOISE AND VIBRATION

4.41 Excessive noise and vibration

4.41.1 Assessment criteria

Issues included

- *Vibration levels for human discomfort are significantly lower than 7mm/sec, more in the order of 1.5mm/sec. The EA makes no reference to how the works will be managed to control vibration to this level.*
- *It is not reasonable to regard the construction period as 'temporary' given it will occur over such a long period of time. The NMLs should therefore be set at the current background levels. The night-time complying distance for rock breaking is 50-70 metres. Some properties are located within 15 metres of the site.*

Response

Sydney Metro Network Stage 1 (Central to Rozelle) in its Construction Noise and Vibration Assessment (the assessment) adopted noise and vibration management levels consistent with the Department of the Environment, Climate Change and Water's (DECCW) current "Interim Construction Noise Guideline", DECCW's "Assessing Vibration: a technical guideline", and British Standard BS 7385 Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2", (as referenced by Australian Standard Australian Standard AS 2187: Part 2-2006 "Explosives - Storage and Use - Part 2: Use of Explosives"). These guidelines and standards apply to residences, schools, places of worship, recreation areas, buildings, structures and other noise and vibration sensitive receivers.

The noise and vibration assessment stated that, during construction, noise and vibration levels are anticipated to exceed the management levels at some locations even after implementation of all feasible and reasonable mitigation measures. In these situations the Sydney Metro Construction Noise and Vibration Strategy requires management of these impacts through the introduction, by the Contractor, of site specific Management Plans.

4.41.2 Impacts to businesses

Issues included

- *The construction zone in will have a huge impact on the quiet enjoyment of our tenants and our tenant's ability to service their clients' requirements.*
- *We are concerned about noise and vibration in the building during construction.*
- *Explosive and blasting methods must be such that no over excavation will occur and the noise and vibration level doesn't exceed specified for the property users.*
- *Accommodation rooms in the our hotel and recreational areas, immediately adjacent to both Martin Place and Castlereagh Street, will be subject to excessive noise arising out of the proximity and duration of construction works.*
- *Appropriate noise mitigation measures for demolition, excavation and tunnelling adjacent to and under premises at Martin Place have not been identified.*



- *Construction will impact our Pyrmont business as passing trucks and construction machinery will create intolerable noise that will disturb the customer experience in our shop.*

Response

The Sydney Metro Construction Noise and Vibration Strategy illustrates the procedure for applying the Strategy and identifying all feasible and reasonable mitigation measures - and undertaking community consultation. This process also includes a requirement for the construction contractor to consider potential mitigation measures in the DECCW's *Interim Construction Guideline* and AS 2436:1981.

At each site a Construction Noise and Vibration Impact Assessment will be prepared by the construction contractor, based on the contractor's proposed methods. Where noise and/or vibration issues have been identified after all feasible and reasonable mitigation measures have been implemented, the construction contractor is required to produce a Construction Noise and Vibration Management Plan (CNVMP). This process provides flexibility to the successful contractor to identify alternative work practices or scheduling to reduce noise and vibration impacts by other means. The Sydney Metro Construction Noise and Vibration Strategy requires the CNVMP to be prepared by an AAAC accredited acoustical consultant and liaison with DECCW is required.

These management plans will be used for day to day management of noise and vibration issues. They will identify all nearby sensitive receivers so that in cases of potential exceedances of the noise management levels, consultation and liaison with that receiver can be initiated to determine appropriate mitigation options.

The management plan will identify monitoring requirements and procedures to be followed in cases of actual or expected non compliance with the noise management levels.

Consultation and liaison with the community will be an important element of this management plan so that the construction can be carried out with minimum disruption to the everyday working of the local businesses/community.

The CNVMP's are both project wide and site specific and cover all aspects for all sites. The Sydney Metro Construction Noise and Vibration Strategy will be updated to more clearly describe the requirements of the plans and how they are to be prepared.

For commercial premises, which include offices, retail outlets and small commercial premises an external noise management level of LAeq(15minute) of 70 dBA has been adopted for the assessment of airborne noise. This level is consistent with current practice and the DECCW's current "*Interim Construction Noise Guideline*."

The DECCW's *Interim Construction Noise Guideline* does not currently cover potential noise impacts on outdoor dining areas. However, the Sydney Metro Construction Noise and Vibration Strategy will be updated to include a noise management level to be adopted for outdoor dining areas which will be the higher of LAeq(15minute) of 60 dBA or RBL plus 5 dBA (ie equivalent to the NML for residential receivers).

DECCW Assessing Vibration: a technical guideline is applicable to the assessment of vibration in offices. For continuous vibration the preferred RMS velocity level is 0.40 mm/s and the maximum is 0.80 mm/s. For intermittent vibration the preferred vibration dose value (derived using the procedures in British Standard 6472) is 0.40 m/s^{1.75} with a maximum level of 0.80 m/s^{1.75}.

The DECCW vibration guideline notes the following in relation to the preferred and maximum vibration levels:

"There is a low probability of adverse comment or disturbance to building occupants at vibration values below the preferred values. Activities should be designed to meet the preferred values where an area is not already exposed to vibration. Where all feasible and reasonable measures have been



applied, values up to the maximum value may be used if they can be justified. For values beyond the maximum value, the operator should negotiate directly with the affected community.”

In situations where the preferred levels are anticipated to be exceeded the procedures in the Construction Noise and Vibration Strategy will be followed which will have required the contractor to produce a management plan for the site.

4.41.3 Impacts to residents

Issues included

- *Waterloo street will experience noise above the "acceptable level" 90 times per day including 30 breaches between the hours of midnight and 5am during the first two years" which is unacceptable for two years.*
- *With the noise, vibration and air quality levels predicted in the EA for some Rozelle residents, we will not be able to live here during demolition and construction.*
- *The EA highlights the use of penetrating cone fracture (PCF) methodology. We are inside the 30 metre sleep disturbance mark for PCF, making dwelling at our residence impossible during the construction phase. Our property is inside the distances set for night-time ground borne NMLs from rockbreakers.*
- *Following demolition of the Tigers site adjacent properties will be subject to increased ambient noise levels as 'dwellings to the south of the site are currently shielded by the Tigers Leagues Club...'*
- *One particular concern regarding vehicle movements is the type of reversing beeper used.*
- *The mitigation measures suggested in the EA will not sufficiently mitigate the noise impacts, and this is acknowledged in the report.*
- *Acoustic barriers such as noise walls, even up to 6 metres in height, are inappropriate for properties overlooking the sites.*
- *The EA states that the indicative night-time complying distance to avoid sleep disturbance for PCF is 30 metres, yet some resident's properties are within 5 metres of the construction site.*
- *The EA does not appear to acknowledge that St Thomas rectory is a residence on this site. As it is a multi storey building on fairly high ground, 3-6m plywood noise walls may not work.*
- *As stated in Table 11.1 of the EA, we will suffer unacceptable ongoing breaches of noise during both night and day. We note that little can be done to prevent noise from demolition. Our property is within five metres of the construction works.*

Response

The noise and vibration management levels adopted by the project are consistent with Department of the Environment, Climate Change and Water's (DECCW's) current "Interim Construction Noise Guideline". This applies to residences, schools, places of worship and other noise sensitive receivers.

Sleep disturbance assessments follow the DECCW's "Application Notes – NSW Industrial Noise Policy".

The noise and vibration levels presented in the assessment were based on typical worst case impacts of excavation and construction noise and included indicative levels of mitigation. The assessment presents a worst case, potentially during the night-time period, to identify the upper level of impact.



The assessment identified a number of situations where the Noise Management Levels would be exceeded even with mitigation. The project's "Construction Noise and Vibration Strategy" was developed to provide guidance for the management of construction noise and vibration in these particular situations.

As responded in the section above, site specific Construction Noise and Vibration Impact Assessments will be prepared by the construction contractor, based on the contractor's methods. Where noise and/or vibration issues have been identified after all feasible and reasonable mitigation measures have been implemented, the construction contractor is required to produce a CNVMP. The plan will present final construction procedures and whether limitation on hours of working in specific situations will be necessary.

The question of appropriate reversing beepers would be one of the issues for the CNVMP to resolve during the consultation phase prior to commencement of construction, however it is noted that the Sydney Metro Construction Noise and Vibration Strategy requires all permanent on site plant to be fitted with non-tonal reversing alarms (subject to OH&S requirements).

Project commitments on construction noise and vibration are contained in the Statement of Commitments.

4.41.4 Other excessive noise and vibration issues

Issues included

- *We don't believe that the targeted noise levels for St Thomas should exceed 45dBA.*
- *Noise levels from demolition, excavation and truck movements will impact services, staff and clients at the Rozelle Neighbourhood Centre.*
- *Our son has autism and is extremely sensitive to noise. We ask for special consideration given our circumstances.*

Response

The internal noise management level for schools and places of worship is LAeq(15minute) 45 dBA in accordance with DECCW's current "Interim Construction Noise Guideline".

In preparing the Construction Noise and Vibration Impact Assessment and subsequent CNVMP the successful contractor is required to identify all sensitive receivers in accordance with the Sydney Metro Construction Noise and Vibration Strategy. Where very sensitive receivers are identified the contractor is required to undertake a special investigation on a case by case basis to determine suitable noise levels and suitable mitigation and/or management measures.

4.41.5 Continuous 24 hour construction

Issues included

- *Noise levels in Martin Place are predicted to significantly exceed the nominated Noise Management Levels during all periods of the day. No noise levels have been provided for the night-time period.*
- *Reference to an article in the Sydney Morning Herald titled '5 years of 24 hour construction noise' that states 'Noise levels would exceed government targets at all but one of the construction sites...as construction goes on 24 hours a day, seven days a week...'*



- *Noise should be kept to a minimum particularly at night and on weekends.*
- *Construction hours should be reviewed and construction of the proposed stabilising yards should be required to be limited between the hours of 8am-6pm weeknights and 8am-5pm weekends.*
- *I am concerned with the adverse noise and vibration from construction associated with tunnelling and building of facilities at stabling yards.*

Response

Program and site constraints require that 24 hour working would most likely be required at all metro construction sites for a significant proportion of the total construction period. In particular, noisy activities such as:

Excavation of tunnel and station caverns by Tunnel Boring Machines (TBMs) and roadheaders would be required over a 24 hour day, seven days a week. Note that TBMs typically require routine maintenance of equipment on the 7th day. Impacts from the use of TBMs and roadheaders at sensitive receivers would however only be expected to be apparent at a particular location for a maximum of one to two weeks, whilst the tunnelling equipment passes underneath.

Bulk excavation of station entry and ventilation shafts by rockbreaker, raised boring, line drilling and milling head would be required over two 9 hour shifts (nominally between 6.00 am and midnight); and blasting or equivalent methodology (eg Penetrating Cone Fracture). Excavation activities will be licensed by DECCW.

Truck movements would be required during the period 6.00 am to 10.00 pm. Some truck movements are likely to be required during the night time.

The construction contractor will be required to produce a management plan, which will be required to be kept on site and used for day to day management of noise and vibration issues.

The Management Plan will identify monitoring requirements and procedures to be followed in cases of actual or expected non compliance with the Noise Management Levels.

4.41.6 Construction traffic

Issues included

- *We are concerned about noise from construction and truck movements, and vibration. We would like the department to impose specific conditions to minimise construction noise and vibration within and outside standard NSW construction hours.*
- *No mitigation is proposed for construction traffic noise.*
- *Proposed 24 hour truck movements in and out of the Rozelle site adds noise and dust pollution right next to Rozelle Public School.*

Response

The Construction Contractor's Management Plan will contain auditing of actual construction traffic used, induction of drivers to operate vehicles for "minimum noise" and community consultation and liaison for construction traffic movements.

Sydney Metro Network Stage 1 (Central to Rozelle) in its Construction Noise and Vibration Strategy has defined the maximum allowable sound power levels from construction equipment including construction traffic, but details of the anticipated construction traffic movements (and types of vehicles to be used) have yet to be finalised.



Construction traffic routings in and around the construction sites will be planned to access the primary haulage routes taking account of local sensitive receivers.

Site access will be designed to give as smooth transitions as possible to minimise noise and vibration.

The majority of truck movements will be required during the period 6.00 am to 10.00 pm however some truck movements are likely to be required during the night time.

4.42 Impacts to educational facilities

Issues included

- *Issues relating the establishment being able to continue to be able to provide a learning environment for teaching and exams.*
- *Constant drilling during construction near Rozelle Public School will exceed environmental and safety levels for children. The noise and vibration will be very disruptive and hinder their learning.*
- *The noise and vibration levels from construction of the metro is expected to consistently exceed environmental guidelines and will therefore adversely affect the wellbeing of staff and children attending the Rozelle Public School.*
- *Full encapsulation including sound-proofing of all construction sites and double glazing and air conditioning to all affected classrooms should be considered for Rozelle Public School.*
- *The metro will produce lots of noise all through the day and night. The school (Rozelle Public) will have teachers trying to teach over the noise which will be hard for both the teachers and students.*
- *Rozelle Public School is located within 30 metres of the construction site. The construction of the new school will severely reduce the available outdoor space for students and staff.*
- *Noise will affect children's learning and concentration at school. At the very least the school will require double glazing and air conditioning in all affected classrooms as well as hoardings around the western side of the school. We also ask that the site is fully encapsulated, using the best quality soundproofing of all construction areas.*

Response

DECCW's current "Interim Construction Noise Guideline" has been used to set the project's noise management levels for schools. This results in an internal noise management level of LAeq(15minute) 45 dBA, and the Interim Construction Noise Guideline notes at this level characteristic activities should not be unduly disturbed (Interim Construction Noise Guideline –section 4.1.2). The assessment assumed an external noise to internal classroom noise reduction of 10 dBA with openable windows resulting in an external noise management level of 55 dBA.

At each site a Construction Noise and Vibration Impact Assessment will be prepared by the construction contractor, based on the contractor's methods. Where noise and/or vibration issues have been identified at schools after all feasible and reasonable mitigation measures have been implemented, the construction contractor is required to produce a CNVMP. This provides flexibility to the successful contractor to identify alternative work practices or scheduling to reduce noise and vibration impacts by other means. The Sydney Metro Construction Noise and Vibration Strategy requires the noise and vibration management plan to be prepared by an AAAC accredited acoustical consultant and liaison with DECCW is required. As part of the plan, options such as increasing the noise insulation performance provided by the school building to the sensitive internal spaces can be explored.



These management plans will be used for day to day management of noise and vibration issues. They will identify all nearby sensitive receivers and sensitive internal school areas so that in cases of potential exceedances of the noise management levels, consultation and liaison with that receiver can be initiated to determine appropriate mitigation options.

The management plan will identify monitoring requirements and procedures to be followed in cases of actual or expected non compliance with the noise management levels.

Consultation and liaison with the school will be an important element of this management plan so that the construction can be carried out with minimum disruption to the everyday working of the school.

The noise levels inside classrooms and external play areas are well below those which are considered hazardous to hearing.

The Construction Noise and Vibration Strategy provides a commitment for particularly noisy activities to be scheduled outside normal school hours, where possible and recommends establishing cooperative relationships with schools, local residents and building owners to assist in managing impacts from noisier operations.

4.43 Noise and vibration management

Issues included

- *The EA does not indicate the erection of any noise mitigating enclosures and the nature of such enclosures. Mitigation measures will be left to contractors. All noise and vibration mitigation measures should be mandated as part of any consent and done after consultation with receivers.*
- *All construction sites should be encapsulated to ensure that noise levels are minimised.*
- *We would like to be consulted regarding the level of insulation in acoustic sheds, rockbreaking techniques, the type of 'beeper' to be used on vehicles and the additional measures we require.*
- *There should be ongoing measurement by an independent 3rd party of noise and vibration at regular intervals throughout and following construction.*
- *While the EA talks about construction not occurring during times of worship and special services, it does not clearly specify how we are to bring it to the attention of management that such services are about to occur.*
- *Mitigations measures for trucking or train removal of spoil have not been fully addressed and conditions should be imposed for both methods.*
- *A noise barrier should be constructed directly adjacent to the City West Link from Victoria Road to the intersection with The Crescent to mitigate noise levels from trucks entering/exiting James Craig Road.*
- *Assistance to compensate for negative impacts through temporary relocation should be considered.*
- *It is possible for the Proponent to significantly mitigate noise and vibration impacts to acceptable levels by lowering the depth of tunnels. Dropping the vertical alignment of both tunnels by 3 metres (from 5 to 8 metres) will result in significantly lower noise and vibration impacts. This would result in less stringent track design requirements and greater maximum speeds.*
- *We would like a condition requiring Sydney Metro to consult with us in the development of the Construction Noise and Vibration Strategy for Martin Place.*



- *St Thomas Child Care Centre (STCCC) request that airborne noise levels during STCCC's operating hours to remain strictly below the NML of 55dbA. Continuous monitoring to be installed at STCCC and construction to halt if NML exceeded.*

Response

The project "Construction Noise and Vibration Strategy" identifies the project's noise management levels for airborne noise, ground borne vibration and ground-borne (regenerated) noise.

The effectiveness of different mitigation options will be assessed for each work site where impacts are predicted. This includes choice of plant, construction/demolition equipment, removal of spoil, barriers, enclosures, hours of working etc. The details of each application will emerge as the construction programme is developed through the consultation process.

The construction contractor will be required to produce a CNVMP, which will be kept on site and used for day to day management of noise and vibration issues. The management plan will identify sensitive receivers at each site, initiate a monitoring programme and implement additional measures which could include the offer of alternative accommodation where high impacts are predicted to occur at night. These issues will be considered as part of the consultation/liaison with the local community both before the construction commences and during the construction programme.

4.44 Impact of vibration on buildings

Issues included

- *The Pyrmont Station concourse is located beneath the heritage listed buildings on Union Square's northern side. Sydney Metro cannot guarantee that the Pyrmont Station would not cause possible damage to these fragile heritage-listed buildings.*
- *The following should be considered:*
 - *Pre-construction and post completion building condition surveys (this is offered in EA for properties directly above tunnelling but needs to be extended to properties within 30 metres).*
 - *Independent arbitrator to handle property damage disputes.*
- *No vibration survey has been undertaken and will impact on my residence and structural integrity.*
- *The project threatens to cause irreparable damage to the valuable heritage-listed properties.*
- *Vibrations from construction of the tunnels using roadheaders may cause structure damage or cracking to the improvements to property.*
- *Explosive and blasting methods must be such that no over excavation will occur and the noise and vibration level doesn't exceed those specified.*
- *A vibration management plan should be implemented and involve as a minimum a real time monitoring system to provide feedback to the construction team and the tenants monitoring team.*

Response

The assessment set project specific 'trigger' levels for building damage based on British Standard BS 7385 Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2, (as referenced by Australian Standard Australian Standard AS 2187: Part 2-2006 "Explosives - Storage and Use - Part 2: Use of Explosives"). It is noted that BS 7385 states:



“Some data suggests that the probability of damage tends towards zero at 12.5 mm/s peak component particle velocity. This is not inconsistent with an extensive review of the case history information available in the UK.”

And also that:

“A building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive.”

Based on BS 7385 a project specific vibration damage (cosmetic) screening level of 7.5 mm/s (peak) was adopted for the assessment. As discussed above, lower screening levels may be appropriate for buildings that are structurally unsound and are of historic value. These buildings will be identified as part of the site specific construction noise and vibration assessments.

At locations where the predicted and/or measured vibration levels are greater than the screening levels, a more detailed analysis of the building structure, vibration source, dominant frequencies and dynamic characteristics of the structure would be required to determine the applicable safe vibration level.

Construction vibration for Sydney Metro Network Stage 1 (Central to Rozelle) will be managed in accordance with the Sydney Metro Construction Noise and Vibration Strategy. The strategy provides a Noise and Vibration Impact Assessment Procedure, whereby Construction Noise and Vibration Assessment and Construction Noise Impact Statements (CNIS) would be prepared for each site prior to the commencement of construction works. The predicted levels, work practices and mitigation measures to be applied would be documented in the CNIS.

The Construction Noise and Vibration Strategy also requires an Existing Condition Inspection of items to be undertaken in accordance with AS 4349.1 “Inspection of Buildings”, where construction activities may cause damage through vibration to nearby public utilities, structures, buildings and their contents.

It is also noted the assessment presented ‘safe’ (or complying) working distances from vibration intensive plant such as impact hammers and vibratory rollers to comply with the project specific cosmetic damage limit of 7.5 mm/s. The corresponding distances range from 1 m to 15 m for a small to large impact hammer, and 1 m to 6 m for small to large vibratory roller. Peak vibration levels from the Tunnel Boring Machine (TBM) will be typically 0.6 mm/s at 10 metres (which is typically the closest distance from the TBM to building foundation), and 0.2 mm/s for a roadheader, also at a 10 metre offset distance.

Statement of Commitment No.22 established a process for property surveys and independent dispute resolution.



NON-INDIGENOUS HERITAGE

4.45 Central Station heritage

Issues included

- *This project is a nice way of preserving the historical Central Station.*

Response

Noted.

4.46 Town Hall Square Station heritage

Issues included

- *At the Town Hall work site, artefacts may be present as deep wells are largely unaffected by modern basements and the majority of artefacts tend to cluster in the lower levels of wells.*

Response

The findings regarding the various sites potential to retain archaeological remains is based on our experience of nineteenth-century sites in Sydney. Regarding the Town Hall Park Street worksite and the potential for deeper features such as wells, it is assumed that the excavation of the basement level for the extant buildings will have removed all archaeological features. As part of the southern extent of the Tank Stream valley and adjacent to the swampy area feeding the stream, the original water table need not have been at significant depth, which has obvious implications for the level of the bottom of any wells.

The potential for the Town Hall Bathurst Street worksite to retain remains is recognised and the need for archaeological input has been made.

4.47 Martin Place Station heritage

Issues included

- *No 7 Elizabeth St should be protected for its heritage. There has been no information or satisfactory reason as to why this property needs to be acquired and demolished.*

Response

Heritage values of this building are known and were identified within Technical Paper 5 (p54) of the EA. No.7 Elizabeth Street would be retained adjacent to the primary construction site for Martin Place station. The project does not require acquisition or demolition of this building.

To reduce the risk of damage to these buildings careful planning and execution of demolition of nearby buildings would be undertaken. This would include protection of adjacent structures and monitoring of the demolition process, and if deemed necessary, under the advice and supervision of a heritage specialist.



4.48 Barangaroo-Wynyard Station heritage

Issues included

- *All developments adjacent to the Railway House frontage to York Street should enhance the significant heritage value of this building.*
- *The position of the Barangaroo Pedestrian Link so close to the northern side of Moreton's would be detrimental to the presentation of this heritage building. The bridge should be moved in a northerly direction some distance from the heritage hotel building to avoid these impacts.*
- *At Barangaroo-Wynyard work site, wharfage areas can be rich sources of artefacts.*

Response

The significance of the former Railway House is noted within the EA. No work is to take place on the Railway House frontage to York Street. There will be alterations to the York Lane frontage at ground level. At the level of the CityRail station concourse, the Barangaroo Pedestrian Link would be constructed through the basement of Railway House, with some existing structural columns demolished.

To reduce the risk of damage to any original significant fabric at the former Railway House, careful planning and execution of demolition of nearby buildings would only be undertaken under heritage advice and supervision.

The EA has acknowledged the negative impact to the former Big House Hotel (Moretons Hotel) that the proposed Barangaroo Pedestrian Link would give rise to. Technical Paper 5 notes that the new bridge would interfere to some extent with the setting of the hotel as viewed from Sussex Street. The Metro project will provide for a bridge to the south of the hotel, and it is considered that a bridge in this location would give rise to only a slight negative impact. A bridge to the north is not proposed as part of the Stage 1 Metro project. This new footbridge would be carefully designed to minimise its visual impact to Moretons Hotel.

The archaeological sites identified at Barangaroo-Wynyard Station construction sites, were identified and assessed within the EA Technical Paper 4. Appropriate management measures, that include a program of archaeological investigations before construction works in the area commence, have been included within the Statement of Commitment No.40.

4.49 Pyrmont Station heritage

4.49.1 Protection of heritage at Union Square

Issues included

- *Without the heritage impact statement, we do not know if the facades will hold up during construction.*
- *Construction will endanger all the heritage buildings in the vicinity of Union Street and Union Square.*
- *The terraces on Harris Street are the only intact commercial sandstone terraces in Sydney in Regency style and are heritage items.*



Response

The scheme proposed for the eastern entrance of Pymont Station is to be Alternative 2 as identified within the EA. Under Alternative 2, the front sections of the existing buildings would be retained and parts of the altered rear sections and later additions to the buildings would be demolished and replaced by a station services building.

The project would thus preserve the significant full-width front parts of the buildings including the original principal rooms. Following construction of the new station, these buildings would continue to be used for retail purposes. The approach adopted for Pymont Alternative 2 is not façade retention. It is the retention of the great majority of the existing buildings, and the contribution of the buildings to the Pymont Conservation Area will be retained.

The proposed arrangement and the extent that the existing heritage fabric would be affected is shown in Figure 5.3.

The new station entrance would be located at 11 Union Street at the corner of Pymont Street, adjacent to the existing buildings at 3-9 Union Street. The station entrance would be sympathetically designed to interpret the original building and relate to the existing buildings opposite and adjacent.

Commitments relating to the protection of heritage at Pymont have been provided. Although the pedestrian precinct at Union Square is a relatively recent development, the historic buildings and street pattern are recognised in the heritage listings of some individual buildings and of the Pymont Conservation Area (EA Technical Paper 5, p 64).

No works are proposed to the commercial terrace on Harris Street.

The construction techniques to be adopted are tried and proven on numerous occasions over many years of construction. Sydney Metro will complete detailed modelling for noise and vibration, and plan mitigation strategies and monitoring measures for structures or buildings considered vulnerable to vibratory damage.

Building condition surveys of sites potentially affected by the works would be undertaken before any works commence. Work on heritage buildings and sites will be monitored during construction to ensure the minimum disturbance to significant fabric, with a mandatory reporting requirement on completion, and use of suitable construction methods, especially for demolition and salvage of significant materials and components.

As part of the design process, Sydney Metro is conducting studies into noise levels and potential vibration, and treatment techniques using international and Australian standards and specifications. In relation to damage to surface structures, a vibration trigger level of 7.5 mm/s at a residence or vibration sensitive receiver will be adopted for the project. The trigger level provides a threshold for further assessment and/or monitoring.

4.49.2 Loss of amenity at Union Square

Issues included

- *The commercial precinct is comprised of small scale and individually owned retail premises that make up its character. A large scale station and entrances would be better located in a similar scale precinct (eg fish markets, Star City). Option 2b retains part of the facades of the buildings which leads to the rejected practice of heritage conservation known as 'facadism'.*



Response

The proposed option for Pyrmont is not facadism. It is the retention of the buildings and the demolition of the altered rear additions of the buildings.

Although the works below ground are large in scale, the above-ground works are not necessarily so, and would be integrated into the surrounding heritage precinct, as has successfully been achieved in many examples throughout the world where Metro systems have been successfully integrated into the historic areas of cities such as Paris and Moscow.

Options for locating the station, and associated advantages and disadvantages, were described in detail within Appendix C of the EA.

4.49.3 Loss of heritage value

Issues included

- *Option 2 for Pyrmont is to rebuild a mock old building on a corner site in a pastiche faux-heritage style, now the site of a beer garden (see p9 of brochure) to 'conserve the majority of [the current] buildings'. But without any plans, how can the public be satisfied. This is not an acceptable design outcome.*
- *The metro will destroy the heritage value of Pyrmont.*
- *To save only the facade of a building is not to save its essence.*
- *The ceiling of the Pyrmont concourse is three metres below the heritage-listed buildings on Union Square's northern side. A redesign will eliminate any risk.*
- *Alternative 2 is preferable to Alternative 1. The NSW National Trust should be involved with preserving the building to ensure that only outbuildings/20th century additions that do not meet preservation standards be demolished.*
- *The Australian Institute of Architects does not support the faux-heritage building included in the station concept images document as Pyrmont View 2. Design for the station entrance should observe the design principles in the Institute's 2005 publication (with Heritage Council) Design in Context; it should be a contemporary design that matches the bulk and scale of the building at the other end of the Union Street row.*

Response

Sydney Metro recognises that there will be many views in the community about the architecture selected for the station building at Pyrmont.

Two of many possibilities were illustrated in the EA for the construction of a station entrance on the corner of Union Street and Pyrmont Road. Recreating the former corner building demolished some years ago is only one option available for Pyrmont. Other options are presented in the EA, and include more modern structures that are still in keeping with the streetscape. Artists impressions of some of these other options are provided for both Alternative 1 and Alternative 2.

Refer to issue above regarding how it is intended to conserve heritage in Union Square under the Alternative 2 scheme proposed for the eastern entrance of Pyrmont Station.

Alternative 2 would not involve preserving only the façade. It will also preserve the significant full-width front parts of the buildings including the original principal rooms, ensuring that the buildings could continue to be used for retail purposes following construction of the new station.



Sydney Metro has initiated a Design Principles Workshop process for Pyrmont. In addition, Statement of Commitment No.10 establishes a Design Review Panel to assist in resolving integrated design issues at the stations.

Furthermore, Sydney Metro has prepared nine draft heritage principles to guide its management of heritage matters during planning and construction. They were drafted following consultation with a number of stakeholders including the National Trust of Australia (NSW), in recognition that Sydney Metro will be developing Sydney's future transport network in areas where heritage and conservation are key issues.

1. Existing significant elements of listed heritage items or conservation areas will be conserved wherever feasible.
2. Station structures and public domain areas will be sympathetic and in context to surrounding streetscapes.
3. Design for new building or structures will be in context of significant heritage buildings or areas, responding to key proportions and materials.
4. Historic views and vistas will be preserved wherever possible.
5. Heritage will be considered at all phases of the project as follows:
 - a. Heritage specialists will be included in contract design documentation and construction.
 - b. The Design Review Panel, consisting of eminent architects including the NSW Government Architect, will consider heritage in its oversight of architectural design.
 - c. A suitably qualified heritage architect will be employed to assist in development of station and public areas designs.
6. When a final design is proposed, a heritage impact assessment should be undertaken to clearly identify the nature and extent of any heritage impacts (either positive or negative).
7. Archival recording of affected sites will be undertaken.
8. Heritage monitoring of works will be undertaken during construction.
9. Ongoing consultation will be undertaken with the Heritage Council, the National Trust and peak bodies.

The process of excavation and construction in the vicinity of historic buildings is not new. It has been undertaken for many decades both in Australia and overseas, and the engineering and construction techniques for achieving it successfully are well established.

Building condition surveys would be undertaken before any works commence. The heritage significance of both Union Square and the buildings contained within the conservation area were covered in detail within Technical Paper 5 of the EA.

Work on heritage buildings and sites will be monitored during construction to ensure the minimum disturbance to significant fabric, with a mandatory reporting requirement on completion, and use of suitable construction methods, especially for demolition and salvage of significant materials and components.

As part of the design process, Sydney Metro is conducting studies into noise levels and potential vibration, and treatment techniques using international and Australian standards and specifications. In



relation to damage to surface structures, a vibration trigger level of 7.5 mm/s at a residence or vibration sensitive receiver will be adopted for the project. The trigger level provides a threshold for further assessment and/or monitoring.

Sydney Metro will complete detailed modelling for noise and vibration, and plan mitigation strategies and monitoring measures for structures or buildings considered vulnerable to vibratory damage.

Also refer to the Noise and Vibration responses of this report at section 4.44.

4.50 Rozelle Station heritage

Issues included

- *Removal of these three heritage buildings in Rozelle (the health and beauty chemist, 670 Darling Street - currently leased to Retravisoin and 669 Darling Street) is irresponsible with regards to heritage.*
- *Please consider either a heritage sensitive facade or ultra modern with glass transparent facade.*
- *The shops adjacent to the chemist do not have the same architectural merit as the chemist building.*
- *In the context of the proposed Tigers development it is even more important that the heritage buildings on Darling Street are preserved.*

Response

As noted in 5.5.7 of the EA, the proposed scheme for Rozelle responds to the principles set for the station location and the constraints posed at this location.

The five Edwardian commercial buildings on the northern side of Victoria Road to be demolished for the metro station are not individually listed structures, however they are within a broader conservation area. The station design and development process determined that the sites of these buildings were the most appropriate location for entrances to Rozelle Station, given its key intersection location and significant walk up catchment potential. In locating the station, impacts to a number other more significant buildings in the surroundings were avoided. The buildings to be demolished at the intersection were not designed as corner buildings but became so through later widening of Victoria Road. Their demolition will allow an improved urban design response to the intersection, and enhancement of the setting of the two listed churches on either side of Darling Street.

The Victorian and Edwardian commercial buildings on the southern side of Victoria Road (681-691 Darling Street) are also not individually listed structures but are within the conservation area. The character of the conservation area can be responded to by their replacement with new buildings of an appropriate scale and detail.

Sydney Metro has engaged some of Sydney's top architecture and design practitioners to participate in Station Design Principles Workshops to help shape the look and feel of Rozelle Station. This process will ensure that the design takes into account the community's vision, design stations entrances that fit into the streetscape and result in a clear direction for the contractors.

For the preferred option the number of properties directly affected has been reduced (compared to the Preliminary Environmental Assessment) and the Balmain Leagues Club site used for construction as it would be more accessible for construction purposes. Its use would result in fewer construction impacts and provide an opportunity for the future development to integrate with the metro station. Alignment constraints that originally precluded a station cavern in the proposed location have now been resolved.



4.51 Other heritage

4.51.1 Building demolition

Issues included

- *I am concerned about the number of heritage buildings that will need to be destroyed for the project.*
- *The proposed demolition of Transport House and other heritage-listed buildings in the CBD should not be allowed for a project with minimal benefit.*

Response

There are no listed heritage buildings that would be demolished for the project although it is acknowledged that a number of buildings that are not listed yet still have heritage values would need to be demolished. Transport House is not one of those building that would be demolished. Mitigation measures and commitments as part of the project would serve to protect heritage buildings that do not require demolition.

4.51.2 Archaeology

Issues included

- *Contrary to the EA assessment, the worksites at Pymont and Rozelle at locations where 19th century buildings or parts of buildings may be demolished have the potential for archaeological remains. This should be investigated during the archaeological reach and excavation program.*
- *The development of a Research Design and Treatment Plan for archaeology requires as much lead time as possible. With construction due to begin in 2010, this task should commence as soon possible.*

Response

The finding that the later nineteenth-century sites in Pymont and Rozelle have limited archaeological potential is in line with current best practice in Sydney and the archaeologist's own testing of a wide range of sites of similar date in Sydney. While sites overseas may be different, the assessment's finding is seen as accurate based on our local experience.

Full archaeological investigations will be undertaken where the EA has identified this requirement. Statement of Commitment No.40 addresses this requirement.



OPERATIONAL TRANSPORT

4.52 Parking issues during operation

4.52.1 Commuter parking at metro stations

Issues included

- *No provision has been made for people parking their car to catch the metro from Rozelle to the city.*
- *Will there be increased traffic and noise from parking?*
- *The Tigers site will provide parking for metro passengers.*
- *The metro will encourage people to drive their car to Rozelle, park and catch the metro.*
- *Further traffic modelling should be undertaken to analyse the impacts on parking at Rozelle.*
- *Inner urban metro stations in other parts of the world rarely have 'park and ride' facilities.*
- *Where will metro passengers park their cars at Pymont?*

Response

Commuter car parking will not be provided as part of the Metro project. Metro customers will either walk or cycle to metro, or transfer between the metro and existing public transport, such as bus and rail.

The introduction of the Stage 1 Metro will necessitate a reappraisal and possible extension of the existing resident parking schemes as one means of managing parking in the vicinity of Rozelle and Pymont stations. It is not anticipated that the Metro will encourage commuter car parking, especially where resident parking schemes are extended and adequately enforced.

Any future redevelopment of the Rozelle Villages site will incorporate on-site car parking with appropriate use restrictions. This parking will not be for Metro users. Provision will be made for kerbside "kiss-and-ride" car pick up and drop offs in Darling Street east and west.

Further traffic analysis may need to be undertaken in consultation with Council to determine the need for and extent of expansion of its existing resident parking scheme at Rozelle.

4.52.2 Impacts on residential parking around metro stations

Issues included

- *Parking could be prohibited in Rozelle to minimise congestion, but this would impact local residents and businesses.*
- *Don't narrow Pitt and Castlereagh streets to one lane, I don't want to get stuck behind parked vehicles.*
- *GPT and QIC are extremely concerned about the permanent removal of loading and car parking spaces along the western side of Castlereagh Street as a consequence of the proposed ventilation shafts.*



- *This car parking in front of St Thomas Church appears to be retained in the Metro Delivery Plan, but not in the longer term Master Plan for Rozelle Station. Removal of adjacent parking would have a significant impact on users of St Thomas Child Care Centre and should be retained.*

Response

Town Hall Square and Martin Place stations

At Martin Place station, Castlereagh Street will retain the through bus lane and a through traffic lanes as is the case under existing conditions. Narrowing of Castlereagh Street traffic lanes is not proposed; however there may be a loss of some parking/loading zones in order to accommodate vent structures.

At the Town Hall Station, Pitt Street will retain the existing through and turning traffic lanes as is the case under existing conditions. Widened footpaths on the western side of Pitt Street are proposed to accommodate the metro entrances and pedestrian flows.

Pymont and Rozelle stations

No commuter car parking will be provided at Rozelle station as part of the Metro proposal. Some kerbside changes will occur around stations, such as the provision of kiss and ride and taxi facilities. Final locations for kerbside facilities will be determined by Sydney Metro and the contractor.

The Rozelle Station master plan provides a vision for the Rozelle Station precinct. The Metro Delivery Plan (**Appendix B**) identifies the work that Sydney Metro would deliver. The provision of trees on the eastern side of Darling Street in front of St Thomas Church on the Rozelle Station master plan denotes that new landscape areas could be added by others in the future to improve the setting of the church. The car park at St Thomas Church, which is used by St Thomas Child Care Centre and others, would be retained as part of the Sydney Metro Stage 1 project.

4.53 Traffic issues during operation

4.53.1 Managing increased pedestrian traffic as a result of the metro

Issues included

- *The metro will increase pedestrian volumes around Rozelle.*
- *The metro will increase pedestrian traffic around Wynyard Green. Sydney Metro needs to undertake a major upgrade of the pedestrian network to cater for this growth.*
- *Bus loads of commuters will add to 'stranger danger' around Rozelle Public School.*
- *The metro will increase congestion on platforms and stations as people change transport modes.*

Response

The Sydney Metro Stage 1 proposal incorporates a range of initiatives designed to accommodate pedestrian activity both during construction and Metro operation. Metro stations are designed to facilitate access and multi-modal interchange for multi modal interchange, with the capacity to accommodate patronage growth.

For more information on safety around schools refer to sections 4.67 and 4.68.



Barangaroo-Wynyard

At Barangaroo-Wynyard station, the proposed Barangaroo Pedestrian Link will assist in accommodating east-west pedestrian demand during Metro operation. Possible footpath widening along Margaret and York Streets will also assist in accommodating pedestrian demand.

Rozelle

At Rozelle Station, the Metro will result in increased pedestrian activity in the precinct around the proposed station. Future traffic growth as a result of the Rozelle Villages development and other nearby residential and commercial developments is a matter for Leichhardt Municipal Council to consider.

Increased passenger activity around stations is not expected to result in reduced safety around schools. The additional pedestrian activity will contribute to improved passive surveillance across the precinct.

4.53.2 Impact of proposed bus facilities at Rozelle

Issues included

- *Bus passengers interchanging with metro at Rozelle will transform Rozelle into a major transport hub. There is concern for the safety of students going to and from Rozelle Public School. The Rozelle Public School basketball courts should be screened to minimise noise and pollution from the new bus stop.*
- *The bus bay at Tigers is not guaranteed and the DA Tigers recently placed with Council made no provision for the bus bay.*
- *It is absurd to put a bus interchange on a major road when all local streets and buildings are of heritage value and character.*
- *Buses should not terminate in Rozelle; it could not cope with the added traffic.*
- *A bus bay on the northern side of Victoria Road, adjacent to Rozelle Primary School would be more logical only if the buses are going to terminate at Rozelle for commuters to catch the metro.*
- *We were assured there would be no bus interchange as at Bondi Junction.*

Response

Forecasts indicate that the travel time benefits delivered by the Stage 1 Metro will encourage passengers to interchange from buses to Metro at Rozelle Station. Interchange with buses will occur on Victoria Road, with inbound buses stopping in the bus lane (constructed as part of the Inner West Busway) and outbound buses stopping in a new bus bay adjacent to the Rozelle Village (Tigers) development. There will, however, be no dedicated off-street interchange.

Bus services will operate along Victoria Road as they currently do, utilising the inbound bus lane. Existing levels of noise and airborne pollution are not expected to increase on Victoria Road as no additional buses are proposed as part of the Metro project.

The Metro proposal incorporates new underground pedestrian links which will reduce pedestrian-vehicular conflict at the Victoria Road / Darling Street intersection. For more information on safety around schools refer to sections 4.67 and 4.68.



Sydney Metro will continue to work with all stakeholders to deliver an optimal transport outcome at Rozelle and integration of the station with its surrounding setting. The bus facilities proposed can be delivered without adversely impacting surrounding heritage buildings.

The opposition to terminate citybound buses at Rozelle Station is noted. Bus planning in association with the Stage 1 Metro is continuing, but has always been based on giving passenger choice and, by continuing to run some services to the City, not forcing interchange. As well as operating some Victoria Road services to new destinations, it is likely that some buses could terminate at Rozelle in the future once passenger demand for buses continuing to the City has been clarified. These can, however, be accommodated without adversely impacting traffic or local residents, potentially through the use of either Leichhardt Bus Depot or White Bay as a short-term layover area.

4.53.3 Traffic congestion in Rozelle once the project is operational

Issues included

- *Traffic congestion in Rozelle will be exacerbated by passengers being dropped off and increased parking demand.*
- *A speed camera should be placed in front of Rozelle Public School and a roundabout constructed at the intersection of Merton and Darling streets to slow traffic and enable parents to turn into Darling Street safely.*
- *The effects of parking provided by the Tigers redevelopment was not addressed in the EA. Changes to the entry and exit points of the club (due to the bus interchange) have not been examined with traffic modelling, particularly the effects of the signalised intersection of Wellington Street providing access to the site.*
- *Traffic impacts on Rozelle have been assessed based on no more than 6 per cent of passengers accessing the station by car; this is some 300 cars in peak hours.*
- *Further traffic modelling should be undertaken to analyse how the saturation of Victoria Road/Darling Street can be avoided. This should include traffic flows following completion of the Tigers development, traffic flows on local streets, and traffic flows on Saturday mornings.*

Response

Patronage analysis reported in the EA for Rozelle Station forecasts that by 2021 between 4,300 and 5,000 people may board metro in the AM peak hour. The forecast number of alighting passengers could be between 800 and 1,000 people per hour. Total AM peak hour patron demand is therefore forecast to be between 5,100 and 6,000 passengers per hour. Traffic and transport analysis indicates that this volume of patrons will not result in adverse impact upon pedestrian amenity or intersection operation at this location.

The design of the station will incorporate subterranean pedestrian links beneath Darling Street and Victoria Road. This will assist in reducing surface congestion around the station precinct and also reduce the extent of traffic delay at the Victoria Road / Darling Street intersection.

Traffic analysis suggests that after the commencement of Metro operations the intersection of Victoria Road and Darling Street will operate at level of service D (LoS D) with an average vehicle delay of about 50 seconds in the AM peak hour, similar to operations under existing conditions.

Significant park and ride at Rozelle Station is not anticipated. No commuter car parking will be provided at Rozelle Station as part of the Metro proposal and the suggested Council extension of their resident parking scheme will assist in reducing park and ride traffic generation.



Kiss and ride locations are proposed on Darling Street, serving the Balmain side and the Rozelle side. The ultimate location of taxi and kiss-and-ride zones will be further developed with the RTA and LMC. No kiss and ride operations are proposed for Victoria Road due to potential interference to the inbound bus lane at this location.

Aspects of the Station Plan urban design form that Sydney Metro would deliver at Rozelle Station are detailed within **Appendix B**. The provision of a round-about at Merton and Darling Streets, speed cameras or additional kiss-and-ride zones for school traffic is outside the scope of the project.

4.53.4 Changes to traffic conditions around stations

Issues included

- *The proposed location of the taxi 'kiss and ride' zone on the Rozelle side of Darling Street is currently a clearway in peak times.*
- *The proposed alternative cycleway would have cyclists riding the wrong way down one-way Belmore Street. This is probably not in their best interests.*
- *Navitas supports the intention to rationalise street alignments and traffic movements, particularly along Margaret Street.*
- *Plans refer to the pedestrian area at Mount Street, a pedestrianised area with vehicle access. What vehicle access does this refer to - will cars or motorbikes be allowed down/or to stop on Mount Street?*
- *An issue of concern is traffic flow and control during operation of the metro.*
- *Objection to eastern entrance of Pyrmont station, as this will lead to the southern side of Union Square becoming a vehicular road to provide an entrance to Paternoster Row.*
- *Vehicular egress from Paternoster Row will be relocated to take cars through the existing Square to Harris Street, thus reducing its width at the Harris Street end.*

Response

Metro stations are located and designed to integrate with the existing pedestrian, bicycle and public transport networks and services, facilitating direct access and transfer from different modes of transport. The hierarchy of access adopted for planning of metro stations gives priority to the most efficient and sustainable transport modes.

Proposals for changes to the road network in association with metro would accommodate pedestrians, public transport services, goods and service vehicles, general traffic, on-street parking and emergency vehicle access.

Pyrmont

At Pyrmont station, the pedestrian area at Mount Street will allow access for metro service and maintenance vehicles. Shared zone arrangements may be reviewed to accommodate short-stay parking.

Paternoster Row is currently one-way northbound toward Union Square with exit available via Union Street to Pyrmont Street. During Metro operation, the station design at Pyrmont provides for the retention of the Paternoster link to Harris Street in order to create a better pedestrianised area within Union Square between Pyrmont Street and Paternoster Row.



Barangaroo-Wynyard

The support for rationalising street alignments and traffic movements near the proposed Barangaroo-Wynyard Station, particularly along Margaret Street, is acknowledged.

Rozelle

At Rozelle station, the ultimate location of taxi and kiss and ride zones will be further developed with the RTA and LMC, as part of the end-state precinct works. A kiss and ride zone is required for both the Rozelle and Balmain Darling Street approaches to Victoria Road.

The alternative outbound cycleway for Victoria Road is promoted by the RTA as part of the Inner West Busway project (Victoria Road upgrade) and is not within the scope of the Metro project. The outbound route is in the direction of Belmore Street traffic flow (westbound). An alternative arrangement on the Balmain side of Victoria Road is proposed for inbound cycling.

4.54 Project integration with transport modes

4.54.1 Distances between Metro and existing bus and rail services

Issues included

- *Transfer times between CityRail and Metro at Wynyard or Town Hall are not specified.*
- *The platforms are too far away from the existing suburban CityRail platforms to make changing modes desirable (eg 200 metres from Wynyard concourse).*
- *Why has the extreme western end of Central been selected for a terminal, so far away from the suburban platforms but close to buses and trams, both surface routes?*

Response

Vertical circulation at stations is specifically designed to ensure travel times from surface to platform are efficient. Transfer times from the Metro to CityRail are estimated in Table 4.1.

Interchange flows between rail services and Metro are facilitated via dedicated, high quality interchange concourses that minimise interchange times and congestion between metro and rail. This has been addressed throughout the EA and Technical Paper 1 and underpins the Metro design and the design of stations.

Central

The location of metro station at Central provides integration with the existing structure of the Central Station buildings. The station location allows direct and efficient connections and interchange links with CityRail services and main concourse hall of Central Station, as well as facilitating direct and efficient connections to other transport modes such as the light rail and bus interchanges in Railway Square and Eddy Avenue. The location of station and the metro corridor alignment are designed to allow for future metro extensions, including the proposed extensions to the west (Stage 2).

Barangaroo-Wynyard

The location of the metro station Barangaroo-Wynyard Station provides optimal interchange times between metro and CityRail services and the unpaid concourse of Wynyard station. The station location also allows convenient bus interchange with bus services at Wynyard.



4.54.2 Comparison of using metro versus bus from Rozelle to CBD

Issues included

- *By the time the change of modes is made, the time savings of trips to the CBD are at best marginal and outside of peak hour there is probably no time saving. No comparison studies or models have been done between modes during peak and off-peak with the Inner West Busway in place.*

Response

Analysis indicates that the travel time benefits delivered by the Stage 1 metro will encourage interchange from buses to Metro at Rozelle Station. Metro patrons will choose to commence their outbound journey from the CBD using the Metro and change to a bus at Rozelle because of the time saving derived from the Metro part of the trip. From the northern end of the CBD (about five minutes on metro compared with about 18 minutes by bus) or from the southern end of the CBD (about 10 minutes by metro compared with about 19 minutes by bus). Metro will also offer much greater travel time reliability than existing bus services.

Stage 1 of the metro also reduces travel and waiting time for other parts of the city. For example, the options for travelling to and from Pymont (particularly to and from the north of the CBD) are greatly improved with fast and frequent services which are unaffected by surface level road traffic delays. In addition, people travelling within the city to or from the financial district will have a fast and frequent service via Martin Place.

4.54.3 Integration with bus services

Issues included

- *There needs to be greater clarification around the details of bus-rail interchange arrangements given the current traffic management issues at Rozelle.*
- *Termination of a bus service at Rozelle will force commuters to join the metro.*
- *A metro ending in Rozelle needs a high capacity bus interchange for onward transport along Victoria Road.*
- *Most buses coming from Victoria Road and from Lilyfield/Haberfield should terminate in Rozelle. Why are so many buses shown to be going to the city in the AM? Isn't the metro going there too?*
- *White Bay Station should be the major transport interchange for termination of most Victoria Road buses to make the CBD less polluted.*
- *The change at Central from metro to heavy rail/bus would increase passenger congestion at Central.*

Response

There would be no forced interchange at Rozelle Station from bus to Metro. As it is at present, Victoria Road would continue to be a major bus corridor. Buses approaching from the west (Iron Cove direction) would stop and give passengers the choice of transferring to metro or continuing their journey by bus. Those most likely to transfer would be those travelling to the northern end of the CBD (about five minutes on metro compared with about 18 minutes by bus) or southern end of the CBD (about 10 minutes by metro compared with about 19 minutes by bus).

The metro project would increase public transport passenger choice. Some buses would continue to the city, some would proceed to other destinations such as Sydney University and Broadway, others



would terminate at Rozelle. By terminating services at Rozelle, there is scope to commence some services at Rozelle by using either the Leichhardt Bus Depot or White Bay. The actual bus services that may terminate are yet to be defined.

Two stops would be available for Victoria Road bus passengers wishing to interchange on the approach and departure sides of Darling Street, both of which would be adjacent to metro station entrances. Passengers would also be able to interchange from Darling Street buses from Balmain and Leichhardt. The outbound indented bus bay and bus lane is designed to allow for easy access from metro to bus for passengers alighting to continue their journey by bus, whilst protecting traffic flow efficiency along Victoria Road. The design of the Metro facilities at Rozelle has taken into account the access needs of less mobile and elderly persons.

As noted in section 14.3.1 of the EA, there would be the opportunity to terminate or commence some services at Rozelle, by using either Leichhardt Bus Depot or an alternative, temporary site in the vicinity of White Bay. Sydney Metro would work in partnership with the NSW Transport and Infrastructure, Roads and Traffic Authority, Sydney Transit Authority, private bus operators and local councils to integrate the future bus network with the metro and bring forward bus network improvements.

Any review of inbound bus services is a matter for NSW Transport and Infrastructure and the State Transit Authority.

As noted in section 6.4.7 of the EA, a bus interchange at White Bay does not form part of the project. A station planning strategy for White Bay Station has not been prepared, as Sydney Metro proposes to provide a station box at White Bay as part of this project with the station to be provided at a later date. Any further development of this site would be in accordance with the Glebe Island and White Bay Master Plan⁵ and any subsequent plans developed for the Bays Precinct.

4.54.4 Integration with taxi services

Issues included

- *It is important for people with limited mobility (eg the elderly, parents with small children, people in wheelchairs) that taxis are in convenient and accessible locations.*
- *Consideration should be given to ensure taxi routes and ranks can function effectively when the metro is operational.*
- *Consideration needs to be given to metro stations at Barangaroo-Wynyard and Pyrmont and how these will connect to new or existing taxi ranks.*
- *NSW Taxi Council would appreciate any opportunity to provide advice and input throughout the detailed design stages.*
- *The EA refers to efficient interchanges between the metro and other forms of transport but does not present the evidence of these interchanges within the context of an overall transport plan.*

⁵ Sydney Ports 2000, Glebe Island and White Bay Master Plan



Response

Sydney Metro has identified works within each precinct to integrate each metro station with the current and future urban context and public transport infrastructure networks, to facilitate interchange; encourage walking, cycling and public transport usage; and create a customer journey that is seamless and intuitive from trip origin to destination.

The hierarchy of access adopted for planning of metro stations gives priority to the most efficient and sustainable transport modes.

Metro stations provide access for people with disabilities to comply with Disability Standards on Accessible Public Transport and the intent of the *Disability Discrimination Act 1992* (DDA).

Taxi demand is anticipated in the planning of metro stations and Technical Paper 1, Chapter 6, outlines taxi stand requirements for each station, including additional taxi stands where appropriate.

Rather than require additional taxi stands at Pymont and Barangaroo-Wynyard, it is proposed to integrate metro station operations with existing taxis ranks.

Sydney Metro proposes two stakeholder liaison groups: the Central Project Coordination Committee (CPCC) and the Traffic and Transport Liaison Group (TTLG) to ensure that on-going Stage 1 works are coordinated with other development and public works and that construction traffic accommodates pedestrians, public transport and traffic. It is anticipated that the NSW Taxi Council would be part of the TTLG.

4.54.5 Integration with cycling

Issues included

- *There does not seem to be any specific planned integration with cycling as a mode of transport.*
- *An assessment of the likely bicycle demand generated by students at Wynyard Green should be undertaken as the existing infrastructure is limited and improved facilities are likely to generate demand.*
- *Chapter 4 of the EA understates the amount of cycling.*
- *The principles of improving pedestrian and cycle access have been overlooked and must be incorporated into the draft SoCs.*
- *The DGR "achieving additional public transport capacity to, from and within the Sydney CBD" has been overlooked with respect to any analysis of the station walking and cycling catchments. This omission is inconsistent with the objects of encouraging ESD.*
- *We request greater integration of the metro station changes with the recognised commuter and recreational cycling needs identified by each local government authority in the study area.*
- *The bicycle maps in the EA do not show all the local and recreational routes identified in the Leichhardt Municipal Council Bike Plan.*

Response

Sydney Metro will continue to ensure that the design and operation of the Sydney Metro Network Stage 1 (Rozelle to Central) is integrated with all modes including bicycles.

Bicycles are a supported access mode. Folding bicycles are allowed in Metro stations and on Metro services at all times, in the folded condition.



Non-folding or “traditional” bicycles are not comparable to mobility aids for the disabled (DDA 1992) and as such should not preclude the use of facilities provided for persons with a disability. Similar to other deep-tunnel metro systems, traditional bicycles would not be allowed in Metro stations or on trains due to risks associated with evacuation and impact on overall system capacity. Technical Paper 1 notes that deep-tunnel metro systems do not allow carriage of bicycles. Research on international metros indicates that most deep metro systems do not allow bicycles at any time (eg Stockholm, Singapore, Hong Kong, and Beijing).

Convenient, secure and weather-protected bicycle parking facilities will be provided at all Sydney Metro station entries to support the increased rates of cycling for the whole trip or part of a trip, combined with Metro. Bicycle parking provision will be coordinated with surrounding land uses, destinations and bicycle routes – as documented in the EA (EA p. 327). Design principles including: safety, security, integration, connectivity and maintenance, are addressed.

Initial and long-term bicycle parking provisions, by station, are as follows:

- Central (50 initial, 100 long-term)
- Town Hall Square (25 initial, 50 long-term).
- Martin Place (15 initial, 25 long-term).
- Barangaroo Wynyard (25 initial, 50 long-term).
- Pyrmont (25 initial, 50 long-term).
- Rozelle (50 initial, 100 long-term) (EA p. 327)

A bicycle parking monitoring strategy will ensure that abandoned bicycles are removed regularly and the additional provision of bike parking / safety and security measures at stations (Technical Paper 1, p. 51) will be undertaken when necessary.

CCTV provisions are not included as part of every station entry bicycle parking location. Bicycle parking would be provided near station entries and will naturally be afforded active surveillance by shops, retail frontage or nearby active travel corridors. CCTV or other passive security measures may be investigated by the IMO contractor where less active surveillance is afforded bicycle parking locations.

Metro works provide an opportunity to bring forward City of Sydney plans to provide a Cycle2City type bicycle parking facility as part of the Town Hall Square. (EA p. 318)

Communication is another important aspect of the cyclist strategy and Sydney Metro will promote cycling facilities and operational requirements for cyclists through its website, with links or maps showing the location of facilities and connections to bike paths for onward journeys as part of a route planner service.

Graphics (EA, Chapter 14) show purpose-built bicycle infrastructure provided as part of the project. Though delivering the bicycle strategy of each council is outside the scope of the metro project, several opportunities to bring forward bicycle infrastructure have been identified when restoring station and depot work sites.



4.55 Project integration with transport plans

4.55.1 Integration with other plans and visions for CBD

Issues included

- *There is little documentation available regarding long-term integration.*

Response

NSW Transport and Infrastructure is the lead transport agency of the NSW Government, with responsibility for transport policy, planning and coordination functions as well as oversight of infrastructure delivery and asset management.

Connecting NSW: The Transport Blueprint is the NSW Government's 25 year plan for integrating the delivery of transport services and land use planning in NSW. It will be the basis for transport decision making between now and 2036 and includes strategies and actions necessary to achieve a transport system that boosts economic activity, has a positive impact on our social and environmental wellbeing and helps to make NSW an attractive place to call home. It will be a companion document to the Metropolitan Strategy and both documents will be reviewed together every five years.

The integration of the project with other transport plans is assessed in the following sections of the EA:

- Section 4.1 and 4.4 outline how the project relates to strategic policies such as the Metropolitan Strategy and other planning frameworks.
- Section 14.3.4 describes how the project would form part of a greater metro network and how it would assist or complement other transport plans such as future extension of heavy rail through the CBD, extension of the light rail, new bus routes and potential road network changes.
- Section 22.2.4 outlines how the project would integrate with the long-term plans for the new development at Barangaroo and future development at the Bays Precinct.
- Technical Paper 1 Chapter 4 identifies how the metro integrates with each transport mode and further identifies opportunities to reconfigure access modes to increase efficiency, accessibility and sustainability across an integrated transport network.

4.55.2 Integration with CityRail network plans

Issues included

- *The Metro does not integrate into the heavy rail network or help alleviate rail congestion.*
- *The project should ensure strong interchange capacity between existing and new CityRail and metro rail lines and stations.*

Response

Physical integration

Interchange with the heavy rail network will be possible at Central, Town Hall Square, Martin Place and Barangaroo-Wynyard. Station entries and subsurface connections between stations are part of the metro project. These elements integrate with the existing heavy rail network.



Service integration

As discussed in sections 14.3.1 and 22.2.3 of the EA, the project would enable improvements to and enhancement of the heavy rail network. This would be achieved by relieving pressure off the CityRail Main West corridor and potentially unlocking capacity, enabling additional services from the Western, South or Northern Lines. It could also provide the opportunity to offer a greater number of express services from the Parramatta/Blacktown corridor, which would improve travel times from that area and improve service frequencies from the Liverpool and Inner West lines.

This reconfiguration reflects the opportunities available for the CityRail network as a result of the project. Further analysis is being undertaken with RailCorp to determine if there are further benefits to the rail network, particularly if Sydney Metro Stage 2 (West Metro) is also constructed.

The introduction of a metro system to Sydney can help encourage the transition of the heavy rail network from a CBD-focused, largely peak-hour market, to a more versatile mode of choice for all trip types, which would help to ensure the development of a comprehensive and fully integrated transport network.

In recognition of the importance of the Sydney Metro Stage 1, the Chief Executives of both RailCorp and Sydney Metro made a partnership commitment in May 2009 for the delivery of public transport services. It was agreed that the two organisations would work together with NSWTI to develop transport strategies to best meet the needs of the community. In particular, it was agreed to meet the Government's commitment to deliver the Metro, including a cooperation agreement relating to construction and infrastructure interfaces, corridor protection, station precinct management, delivery timeframes and other matters.

4.55.3 Integration with RTA plans

Issues included

- *The project should not preclude or complicate future M4 East and Inner West Bypass motorway tunnels.*
- *The project will block action by the RTA in placing a Victoria Road underpass under Darling Street to allow Parramatta based traffic to bypass localised traffic.*
- *The Sydney Metro policy, as stated on its website, is to follow road tracts in the CBD. Rozelle is not in the CBD and Victoria Road should be protected for direct use by the RTA.*

Response

Considerable consultation with state and local authorities has been undertaken to inform the design and construction activities associated with the metro project, including reservation of land to account for potential future transport proposals.

Connecting NSW: The Transport Blueprint is the NSW Government's 25 year plan for integrating the delivery of transport services and land use planning in NSW. It will be the basis for all transport decision making between now and 2036 and includes strategies and actions necessary to achieve a transport system that boosts economic activity, has a positive impact on our social and environmental wellbeing and helps to make NSW an attractive place to call home.

The Transport Blueprint will provide for improved connections at all levels of travel, including movements across the metropolitan area and to the Sydney CBD.



There are currently no plans for a Victoria Road vehicular underpass of Darling Street at this intersection. This has been confirmed through discussions with the RTA and NSW Transport and Infrastructure.

4.56 Pedestrian issues during operation

4.56.1 Pedestrian access at metro stations

Issues included

- *The capacity to expand pedestrian access links into Richard Johnson Square should be preserved to increase the station's northern catchment and provide more options for office workers.*
- *St Thomas Child Care Centre should be able to approve how the property interconnects with the metro forecourt and access arrangements once operational.*
- *The pedestrian tunnel should be extended beyond its current connection to the country train platforms to ensure complete integration of the metro and CityRail.*
- *Funding should be allocated to the extension of a pedestrian tunnel under College Street to access UTS.*

Response

Central

Proposed works for a pedestrian tunnel extensions are not included as part of the project and would be subject to separate approvals and funding.

Barangaroo-Wynyard

At Barangaroo-Wynyard, the proposed footpath widening along the southern side of Margaret Street between York and Clarence Street will assist in better distributing existing and likely future pedestrian demand in and around this location. There is scope to bring forward some of the Barangaroo-Wynyard pedestrian network initiatives in order to assist in management during Stage 1 Metro construction. Possible longer term pedestrian improvements have taken into account likely demands from the proposed Barangaroo development.

Martin Place

The existing footpath network would provide pedestrian linkages to Richard Johnson Square.

Rozelle

The Rozelle Station Plan (Illustrative Master Plans) shows the opportunity to extend paving across Darling Street. This would not form part of Sydney Metro's work (which is detailed in **Appendix B**). Should LMC decide to provide this, the design would need to address equitable access.

Ongoing communication and consultation will be undertaken with key stakeholders, including St Thomas Childcare Centre, throughout the detailed design process. Access to properties will be maintained throughout construction for businesses, customers and neighbours.

The provision of additional subsurface links under Victoria Road, other than that proposed (as shown within **Appendix B**) is not within the scope of the metro project.



4.57 Cyclist issues during operation

4.57.1 Enhancing cyclist access to metro stations

Issues included

- *The metro station design should involve areas for a bicycle pick-up and deposit network.*
- *The carriage of bicycles on the proposed West Metro line needs to be considered concurrently. Suggestions that bicycle carriage will be superseded by bicycle-sharing schemes operating at railway stations seem overly ambitious.*
- *The EA states that bikes (except folding bikes) will not be allowed on trains, as this is 'the same as other metro networks'. In fact, many metro networks have favourable policies on the carriage of bikes and almost all make at least some provision for this. Arguments that platform doors, the need for short dwell times and concerns that congestion in circulating areas bring special challenges to bike riders are hardly relevant when luggage, prams and wheelchairs will be designed for, and allowed to travel without restriction.*
- *Sydney Metro has not responded to how it might encourage walking and cycling to its station. Only a macro-level transport model has been used that excludes cycling.*
- *Partnerships with local councils and bicycle user groups to develop promotional and educational initiatives should be pursued and funded by Sydney Metro.*
- *We object to the Pyrmont Station entrance in Union Square. The Square is one of the most heavily used pedestrian/cycling routes from the Inner West into the city.*

Response

Bicycle hire schemes are complementary to the operations of the metro and widen the catchment of stations. As discussed in Technical Paper 1 (p. 53) local bicycle hire schemes are usually run independently of metro systems. Within the station precincts, Sydney Metro does not preclude any potential future bicycle hire scheme at the metro station entry and does not preclude the establishment of bicycle hire docking stations (p. 54) at station entries. There is opportunity to investigate, in partnership with City of Sydney Council, the feasibility to accommodate future self-contained bicycle hire docking stations in the future.

Line 1 Stage 2 is outside the scope of the EA.

Similar to other deep-tunnel metro systems, traditional bicycles would not be allowed in metro stations or on trains due to risks associated with evacuation and impact on overall system capacity. Non-folding or "traditional" bicycles are not comparable to mobility aids for the disabled (DDA 1992) and as such should not preclude the use of facilities provided for persons with a disability. Technical Paper 1 notes that deep-tunnel metro systems do not allow carriage of bicycle. Research on international metros indicates that most deep metro systems do not allow bicycles at any time (eg Stockholm, Singapore, Hong Kong, and Beijing).

At all times folded bicycles would be allowed in metro stations and on metro services, in the folded condition. Weather-protected bicycle parking would be provided at each metro station to allow cyclists to secure bicycles and continue their journey by metro. A monitoring strategy has been identified to ensure additional bicycle parking is provided as metro passengers require it.

Metro stations are located and designed to integrate with the existing pedestrian, bicycle and public transport networks and services, facilitating easy and simple access and transfer from different modes of transport. The hierarchy of access adopted for planning of metro stations gives priority to the most



efficient and sustainable transport modes. Technical Paper 1 notes that walking would be the primary access/egress mode to metro and that Stage 1 would encourage walking by connecting metro stations to existing and planned pedestrian networks, providing localised pedestrian improvements around metro stations, and becoming a catalyst for pedestrian improvements within metro station precincts.

Technical Paper 1 notes that cycling increases the catchment of public transport stations and serves different journey types and markets. The patronage models identify all Metro users by their mode of access: rail, car, bus and 'walk'. The walk mode actually consists of all active transport modes, including cycling.

The delivery of bicycle encouragement programs is outside the scope of a metro as is the upgrade of existing and planned pedestrian and cycle path networks is outside the scope of a metro project, wider network improvements are a matter for local councils and the RTA.. Sydney Metro will work with the RTA, DECCW and local councils to investigate the delivery of encouragement programs.

4.57.2 Use of bicycles at the depot

Issues included

- *There would be large advantages of bike use by staff at the Rozelle Maintenance Depot at noise sensitive times. The IMO contractor should be encouraged to provide facilities for the use of fleet bikes for staff transport around Rozelle Maintenance Depot Site.*

Response

Bicycle parking is proposed for depot buildings and the IMO operator may use fleet bicycles at their discretion.

4.58 Commuter behaviour

4.58.1 Changing from other modes of transport to the metro

Issues included

- *At Central Station it would be easier for a passenger to transfer to a suburban train than a metro.*
- *It doesn't make sense for bus passengers to change onto the metro at Rozelle when their bus would already be going to the city anyway.*
- *Table 4.3 (Technical Paper 1) does not demonstrate passenger numbers that would interchange from heavy rail and/or buses (eg at Central). Interchange passenger flow data should be provided, along with a market analysis to show whether passengers would be prepared to change modes and pay another fare.*
- *It is unclear what improvement the project will provide for journeys with destinations in the CBD or through the CBD north across the harbour bridge via public transport. Quantum origin-destination data and behavioural studies with respect to journeys to and via the CBD have been done, yet none are referenced. Although the Zenith model has been benchmarked with some of this data, the material provided appears to be limited to considering a more parasitic modal shift analysis. This approach limits the consideration of land use changes and underestimates the mode loyalty that interchanges create.*



Response

General

Sydney Metro Stage 1 (Central to Rozelle) is designed to provide additional capacity within the CBD, and provide an alternative onward route into the city for CityRail passengers arriving on InterCity Services that terminate at the Central Station 'country' platforms.

Passenger interchange flows have been considered in the EA. An analysis is provided in Chapter 6 of Technical Paper 1. For each station an indication is provided of the interchange passenger flow - see Table 6.1 for Central, Table 6.14 for Town Hall, Table 6.24 for Martin Place, Table 6.35 for Barangaroo-Wynyard, Table 6.47 for Pyrmont, and Table 6.59 for Rozelle.

Sydney Metro does not propose forced passenger interchange at Central or Rozelle.

The project would provide a new high quality mass transit service operating every 2-3 minutes in peak periods and every five minutes at other times between Rozelle and the city, providing new travel choice and significantly faster travel times, especially to the northern end of the CBD, including Martin Place which is currently only reachable by transferring to platform 24 on the extreme eastern side of Central station.

Metro would have no impact on CityRail services coming from lines such as the Bankstown Line. These services would continue to operate into the city and around the City Circle as at present without the need for transfer.

Not all trips are work trips, last year just 15 per cent of travel on a week day was for commuting. Integrating the bus network with metro stations improves mode choice for passengers of varying degrees of mobility, extending the catchment of metro stations and the bus network.

Effective passenger interchange would be provided at all station entries. The metro would be integrated with the current and future urban context and public transport infrastructure and networks. (refer to Chapter 6 of Technical Paper 1).

Central Station

The design of the Central Metro station is such that interchange from CityRail trains to Metro trains and vice versa would be quick and easy. A pedestrian connection would link directly to the Central Station Western Forecourt and the suburban platforms. Some transfers can now be avoided such as those CityRail passengers who now transfer from a suburban CityRail train to the Eastern suburbs line by changing trains and walking to Platform 24.

Metro service at Central would increase public transport passenger mode choice. Sufficient passenger interchange facilities would be provided for the metro, augmenting several existing subsurface and surface passenger connections.

Rozelle

At Rozelle, passengers arriving on buses on Victoria Road and Darling Street would have the opportunity to transfer to the project for a fast onward journey towards the city. Bus stops would be designed for easy transfer other destinations by bus.

Bus passengers accessing Pyrmont and Wynyard may prefer the faster 1-2 stop metro services from Rozelle, especially to Barangaroo-Wynyard and Martin Place. Metro patrons would choose to commence their outbound journey from the CBD using the Metro and change to a bus at Rozelle because of the time saving derived from the Metro part of the trip. From the northern end of the CBD (about five minutes on metro compared with about 18 minutes by bus) or from the southern end of the CBD (about 10 minutes by metro compared with about 19 minutes by bus).



Some people would use bus for the entire length of their outbound journey from the CBD. However, some would choose to use the Metro for part of the journey as it would reduce the overall travel time for the journey. The design of Rozelle Station minimises interchange time between the Rozelle platforms and the bus stops in Victoria Road and Darling Street delivering travel time benefits for Metro and bus users.

4.59 Changes to the bus network

Issues included

- *The justification for the Inner West Busway was to reduce bus travel times, but the metro project proposes to reduce the number of buses travelling via Anzac Bridge to the city to force people to change to the metro system at Rozelle.*
- *No bus services should be changed to terminate at Rozelle.*
- *Where will all the terminating buses park and turn?*

Response

The Sydney Metro Stage 1 project will increase public transport passenger choice. Nor will all passengers be forced to interchange at Rozelle. The project enables the redistribution of some Victoria Road bus services to new destinations such as Broadway and Railway Square and there is also scope to terminate/commence some services at Rozelle by utilising either Leichhardt Bus Depot or White Bay as a short-term layover for buses (EA p55-56).

The redistribution of these bus services increases public transport passenger choice, enabling either increased frequencies, or services to underserved areas or new destinations.

OPERATIONAL NOISE AND VIBRATION

4.60 Station noise

4.60.1 CBD stations

Issues included

- *There is concern about noise and vibration in office buildings during operation (specifically 20 Martin Place and 55 Clarence Street).*

Response

During operation of the CBD Stations, the main source of noise and vibration will be from train passbys, commuters and equipment such as escalators, lifts, mechanical ventilation equipment and public announcement systems. The noise and vibration from train passbys will be addressed as part of the track form design and is predicted to comply with the applicable limits at all locations. Noise and vibration issues associated with commuters, mechanical ventilation equipment, escalators, lifts and public announcement systems will be addressed as part of the detailed design process for the CBD Stations, to ensure that noise and vibration levels meet the requirements in the applicable Australian Standards.



4.60.2 Pyrmont Station

Issues included

- *Will there be any additional bus services in Pyrmont? More services before 7am in the morning will create noise.*
- *Will there be any pushbike racks or motorbike spaces close to the Mount Street station entrance? Any consideration should take into account any increased noise for residents.*

Response

The EA did not assess the impacts from noise due to bus movements on public roads, as the State Transit Authority is responsible for matters pertaining to local bus changes including noise. However, as noted in section 14.3.2 of the EA, patronage from bus passengers at Pyrmont is not expected to be significant. As such, no additional bus services are considered necessary in this location and no increased noise from this source would be expected.

In the event that the project resulted in a significant change to the number of bus movements during either daytime or night-time periods, there would need to be an assessment of traffic noise levels in accordance with the DECCW guideline *Environmental Criteria for Road Traffic Noise*⁶. This assessment would likely require an assessment of the change in LAeq noise levels as a result of the project and consideration of feasible and reasonable noise mitigation measures if the noise level increase from the project is greater than 2 dBA.

The project does not provide commuter parking for either vehicles or motorbikes, therefore no additional noise is expected from these sources, and no additional noise is expected from passengers arriving by pushbikes. There will be sheltered bus passenger areas at Harris and Miller Streets, however these would not be expected to generate significant noise.

4.60.3 Rozelle Station

Issues included

- *What noise attenuation measures will be put in place between the property and Victoria Road once construction is complete? Currently, Victoria Road vehicle noise is dampened by the existing buildings, which won't exist at the end of construction.*
- *We are concerned about operational noise impacting Darling Street Anglican Church.*
- *What level of noise will be experienced once the metro is operational?*

Response

The change in road traffic noise levels resulting from the permanent demolition of existing buildings has not been addressed in the EA. The need for noise attenuation measures will be considered in parallel with resolution of the built form and public domain at the station entrances. An investigation of the change in road traffic noise levels at existing sensitive receiver locations at Rozelle will be undertaken based on the ultimate design. At this stage, it is not expected that significant additional road traffic noise would be experienced at residential receivers (using DECCW's Environmental Criteria for Road Traffic Noise (ECRTN) guideline). However, this assessment will determine the

⁶ EPA 1999, Environmental Criteria for Road Traffic Noise



change in noise levels associated with the proposed demolition of existing buildings and identify any feasible and reasonable mitigation measures that are required.

4.61 Noise from the Rozelle stabling and maintenance depot

Issues included

- *The Rozelle stabling yards will be a source of continual noise from 5am to 1.15am - with a respite of less than four hours. This is a smaller period of respite than the curfew period imposed on Sydney Airport.*
- *The area affected is described as Industrial Zoning, however under a Land and Environment Court ruling, construction of Type 2 and Type 5 buildings were allowed which means the lower part of Justin Street is substantially residential.*
- *The residents of lower Justin Street request that acoustic testing is undertaken to determine that noise will not exceed the permissible levels for a residential area.*
- *The residents of lower Justin Street request that construction plans include a sound wall of at least 2-3 metres. The existing cut in the FGL changes in height according to level changes of Lilyfield Road and cannot be relied on alone to attenuate the noise.*
- *The EA should have more detailed noise assessments and mitigation measures to indicate it 'will' comply with intrusive and amenity noise goals at all residential receiver locations. There is also no information as to where residential receiver locations are to be located, as the stabling yard is faced by the hill at Lilyfield and noise will penetrate some distance from the yard.*
- *The issue of track grinding has not been addressed in the EA and mitigation needs to be conditioned.*

Response

The proposed train stabling facility will be operational on a 24/7 basis, comprising train operations between the stabling facility and tunnel portals during the operational period and train stabling/maintenance during the night-time shut down period. Noise levels from train passbys during operating hours have been assessed in accordance with the DECC's *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* and the DECC's *Industrial Noise Policy* (for maintenance activities). During the night-time 'shut down' period, noise levels from maintenance and train stabling have been assessed in accordance with the DECC's *Industrial Noise Policy*.

The noise assessment indicates that the appropriate noise design goals will be achieved at the nearest sensitive receiver locations for all of the activities proposed to be undertaken on a regular basis. It is noted that the *Industrial Noise Policy* criteria are designed to protect against intrusiveness and to preserve amenity. They are based around identifying the upper (rather than the average) level of impact and seek to restrict the risk of people being highly annoyed to less than 10 per cent, and to meet this for at least 90 per cent of the time. The *Industrial Noise Policy* notes that "there is no single identifiable noise level that all people will find acceptable or unacceptable" and that "annoyance increases with increasing noise, but at any given noise level there will be a wide variation in the range of individual reactions to noise". The noise trigger levels in the *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* also aim to protect 90% of the population from being highly annoyed.

The noise assessments indicate that the noise goals will be achieved at the depot without the need to consider noise barriers. Compliance testing will be undertaken following commissioning to ensure that the noise goals are achieved. An Operational Noise and Vibration Management Plan (ONVMP) will be



prepared by the operator to manage any concerns raised by the public as a result of the train operations or maintenance. The ONVMP will identify any additional mitigation measures to be implemented if levels are found to exceed the design goals. Regular track and rolling stock monitoring and track maintenance requirements are discussed within the Noise and Vibration Technical Paper No. 3 of the EA.

4.62 Noise or vibration from tunnels beneath property

4.62.1 From trains operating within the tunnel

Issues included

- *Both alternatives at Pyrmont place part of the station platform and the train line under our building (corner 104 Miller Street and Mount Street). Any trains passing underground should not create any sound in the apartment block.*
- *We do not have confidence that there will be no property damage or discomfort caused during operation.*
- *Although required to achieve the ground-borne noise design goals, it is not clear that any commitment to use high-attenuation trackform has been made.*
- *I cannot find a detailed map showing the location of the metro lines and their distance to local houses, and what noise and vibration will affect these houses when the metro will operate 24 hours a day.*
- *What noise and vibration will I experience (Ellen Street, Rozelle) when the metro is operational.*
- *GPT and QIC are concerned about the impacts from operational noise and vibration.*
- *The proposed location of the tunnel in relation to 33-39 Hunter Street is not entirely clear, but we remain concerned about the possibility of damage from vibration from construction and operation.*

Response

At some locations above the tunnel, it is anticipated that ground-borne noise levels from train operations may be audible inside buildings. The fact that ground-borne train noise may be audible does not necessarily indicate that it will be offensive or disturbing. In many cases, the train noise may pass unnoticed due to the “masking” effect of other ambient noise sources, activities or distractions.

The ground-borne noise limits for the project have been determined in accordance with the DECCW's *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects (IGANRIP)*. Sydney Metro has undertaken to design the underground railway to achieve the recommended limits at all receiver locations. At residential receivers, the ground-borne noise design limits are 40dBA during the daytime period and 35dBA at night. The ground-borne noise design limits at other receiver locations are documented in the EA (section 15.1).

In determining reasonable design limits for ground-borne noise emissions from underground railway operations, the DECCW undertook a review of the available information and concluded the following (as documented in IGANRIP):

- It appears reasonable to conclude that ground-borne noise at or below 30dBA LAmax will not result in adverse reactions, even where the source of noise is new and occurs in areas with low ambient noise levels.



- Levels of 35dBA to 40dBA L_{Amax} are more typically applied and likely to be sufficient for most urban residential situations, even where there are large numbers of noisy events.
- For a good night's sleep, the World Health Organization (WHO) recommends that individual noise events exceeding 45dBA L_{Amax} indoors (measured on 'fast' response setting) should be avoided.
- The noise trigger levels (40 dBA daytime and 35dBA night-time for residential receivers) and the associated measurement methodology described in Section 3 of IGANRIP are aimed at providing a reasonable basis for triggering the assessment of impacts from ground-borne noise. They are necessarily set to the lower end of the range of possible trigger values so that potential impacts on quieter suburban locations are addressed. In practice, higher levels of ground-borne noise than the trigger level for assessing impacts may be suitable for urban areas where background noise levels are relatively high.

Sydney Metro has undertaken to adopt the IGANRIP noise trigger levels as design limits and ensure that the underground railway line is designed and maintained accordingly (by the successful contractor) to achieve the design limits at all receiver locations.

In the EA, it is not appropriate to make a commitment to build a specific track form design, but to set the noise design standards and demonstrate that an engineering solution is feasible and reasonable to achieve the design limits. Experience on the Epping to Chatswood Rail Line indicates that the proposed ground-borne noise limits are achievable using the proposed track form designs discussed in section 15.3 of the EA. The Epping to Chatswood Rail Line passes beneath several hundred residential buildings and to date, no complaints have been received in relation to ground-borne noise and vibration levels associated with train passbys.

The vibration assessment indicates that there is a negligible risk of building damage as a result of the proposed excavation works and train operations. The potential damage due to differential settlement is addressed in the geological section of this report.

4.63 Noise from ventilation shafts

Issues included

- *Concerns regarding potential noise impacts of vents located in proximity to buildings, particularly residential premises.*
- *Given the box valley effect, the noise from the proposed stack will intensify the noise. It and needs to be above the roof level of the surrounding buildings.*
- *The project, along with the expansion of Star City will increase total noise from ventilation plants surrounding my residence.*

Response

The two main noise issues associated with the proposed ventilation shafts are from train passbys and steady noise from tunnel ventilation fans. For train passby noise, maximum train noise levels will be designed to be less than 55dBA to 60dBA outside residential buildings (depending on the ambient noise level environment). These levels are not considered to be significant and are comparable with many other typical noise events in suburban environments such as car passbys on local roads.

For steady noise emissions, lower noise goals are normally required to ensure that the noise amenity of a given area is maintained - this ensures that the cumulative noise from all industrial-type noise sources remains acceptable. The design noise goals for the ventilation shafts will be designed to comply with the maximum noise goals for train passbys and the amenity and intrusive noise goals in



the *NSW industrial Noise Policy*. Sydney Metro are not aware of the “box valley effect” terminology, however, if this refers to the additional increased noise due to reflections, then this and all other acoustics effects has been included in the EA and will be further defined as part of the detailed design process.

ECONOMIC AND SOCIAL ISSUES

4.64 General business impacts (construction)

4.64.1 Compensation for impacts/relocation

Issues included

- *The project should not cause financial hardship or negatively impact businesses. Landlords will not renew leases given that it will become a future potential redevelopment site.*
- *Compensation in accordance with the 1991 Fair Trade Compensation Act for loss of business and disruption due to diverted traffic, noise and dust impacts.*
- *It is not clear how the business management strategy (SoC #34) would compensate tenants or building owners for inconvenience/reduced access or for likely loss of trade.*
- *The Consultation Involvement Plan, which identifies 'effective means for ongoing cooperation and communication with the business community' does not provide comfort to the small businesses who will face going broke during construction.*
- *Resumption of affected business or monetary compensation under the Land Acquisition (Just Terms Compensation) Act 1991 (1991 Fair Compensation Act).*

Response

Construction activity of any type is a part and parcel of life, particularly in the Sydney CBD. Such works can typically comprise road and pavement works, replacement of utilities along roads and footpaths, and redevelopment of city buildings. The carrying out of such works always causes some inconvenience to owners and occupiers of adjoining land. Some retailers will claim that this extends to a loss of revenue while the works are being carried out. The retailers are not entitled to a contribution from the entity carrying out the works and no compensation is payable in such circumstances. By the same token the constructing entity is not entitled to a percentage of the increase in any retail revenues that may result from the improved street or trading environment.

Sydney Metro recognises that its construction activities at some sites may have potential temporary impacts upon the current retail trading environment of some retail businesses in the area immediately adjacent to some worksites. The impact of construction activity would vary from site to site, both in intensity and duration. The EA and Statement of Commitments for the project document these impacts and the mitigation measures proposed to deal with them.

Individual business management plans would be prepared for each construction site as identified in Statement of Commitment No.34 and would include, but not be limited to, maintaining access/delivery arrangements, signage, dust control and noise mitigation. Relocation of businesses in the vicinity of construction sites is generally not anticipated provided adequate mitigation measures are implemented during construction.

Cases of severe personal financial hardship may, however, still arise where Sydney Metro's construction activities may have contributed to a reduced flow of customers into a retailer's shop. In



these cases small independent retailers who directly rely on the weekly turnover of a shop to maintain a wage may experience severe personal hardship and Sydney Metro is prepared to consider assisting these retailers financially via a Small Business Owners Support Program.

There are likely to be three categories of retailers who may be affected by Sydney Metro's construction works. These are:

- Large retailers including branches of chain stores.
- Destination shops (ie shops that do not rely on passing trade) that are affected in a relatively minor way by the works.
- Small independent retailers who rely on passing trade and are more significantly affected.

Retailers in the first two categories will generally comprise larger corporate retailers including those having national store operations. These retailers are not considered appropriate for inclusion in this program because they are better able to manage any adverse impacts on the trading environment resulting from the temporary works. Destination shops are not considered appropriate for inclusion in the program because they generally do not rely on passing trade, and therefore it is unlikely that they will be affected in any significant way by the temporary works, provided adequate mitigation measures are implemented during construction.

Small independent retailers will generally comprise traders who have only one (or perhaps two) stores and whose livelihood is directly related to the operation of the shop. Home offices may also be considered on a case-by-case basis. Sydney Metro acknowledges that its worksite activities may impact on the retail trading revenues of some retailers in this category and if this occurs, there is a prospect that such retailers could suffer severe personal financial hardship.

Sydney Metro is establishing this Small Business Owners Support Program to administer financial assistance to eligible retailers.

Sydney Metro will establish a process by which small independent retailers who believe that they have suffered severe personal financial hardship as a result of the construction activities of Sydney Metro in constructing the project may apply for assistance under the program.

Any payments to be made under this Small Business Owners Support Program are not compensation for loss of trade, revenue or profit. They are to help overcome severe personal financial hardship. Severe personal financial hardship must be demonstrated.

Small independent retailers who are eligible to make a claim for compensation under the *Land Acquisition (Just Terms Compensation) Act 1991*, in connection with land acquired in relation to the construction of the project, would not be eligible to apply for assistance under the Small Business Owners Support Program.

Sydney Metro will establish a Retail Advisory/Support Panel who will administer the Small Business Owners Support Program, receive and assess all applications and make recommendations to the CEO of Sydney Metro, or his/her delegate, for the awarding of financial support.

The Retail Advisory/Support Panel will include external professional advisors with appropriate expertise in areas such as retailing, law, finance and property.

Sydney Metro is unable to comment on, nor negotiate, lease arrangements between third parties. Nor is Sydney Metro able to comment on loss of business that may be associated with current or future office tenancies.



4.64.2 Loss of trade/business/productivity

Issues included

- *There will be loss of business and disruption due to diverted traffic, noise and vibration, lighting, pedestrian obstruction, disruption to utilities and dust impacts during construction. Businesses may not survive through the construction works, and jobs will be lost.*
- *Leichhardt Municipal Council will lose money as the affected businesses close and will no longer be able to be collected.*
- *There are no comparable premises for the businesses and homes to be relocated to in Pyrmont.*
- *Revenues have dropped significantly as the customer base from nearby vacated demolition buildings has been lost, which have financial implications on owners and employees of businesses.*

Response

Concerns regarding potential impacts during construction raised by individual businesses, tenants and property owners are valid.

The potential for impacts on businesses during construction due to loss of trade was addressed in section 16.3.2 of the EA. A series of business stakeholder workshops were held during the environmental assessment as part of the economic and social assessment. Feedback from the workshops was collated and used to inform the assessment and design process.

The EA identified that some businesses within the station radii would be moderately negatively affected during the construction of the project in terms of business viability. The negative impacts during construction would include noise, access issues, traffic, vibration disturbances and changes to the customer base.

One of the objectives of the project, with regards to social and economic issues, relates to the minimisation of potential impacts of the project to businesses. This would occur by proactively working with potentially affected businesses to identify likely impacts prior to construction, and by putting in place measures to minimise these impacts. Businesses would be kept informed of the project and consulted in advance of major works that would have a direct economic impact.

Statement of Commitment No.34 commits specifically to minimising the impacts on businesses adjacent to major construction sites during construction and includes a Business Management Strategy to address these impacts. This would include measures to maintain vehicular and pedestrian access during business hours.

Sydney Metro will continue to liaise closely with all businesses that have made a submission (as well as businesses adjacent to worksites).

Significant endeavours have been undertaken to minimise construction footprints and impacts at all construction sites, including within Martin Place and Union Square.

Sydney Metro is unable to comment on, nor negotiate, lease arrangements between third parties. Nor is Sydney Metro able to comment on loss of business that may be associated with current or future office tenancies.

It is not considered that construction of the project would result in a loss of local Council income from rates.

Section 16.3 of the EA notes that as a result of the necessary property acquisitions, about 175 business tenants would require relocation to facilitate the construction of the project. It is



conservatively estimated that these businesses directly generate about 3,350 jobs; 94 per cent of which are based within Sydney CBD. It is considered likely that the vast majority of these businesses would choose to relocate within Sydney CBD owing to the benefits of agglomeration, the prestige of the address, and the accessibility to other services, businesses and clients/customers. Accordingly, the majority of these jobs would not be lost on account of the project, but redistributed within the Sydney CBD.

Some displaced businesses within Rozelle and Pyrmont may choose to relocate to alternative commercial or retail premises. The small scale of some of these businesses may result in a minor proportion choosing not to relocate and therefore become extinguished. Given the modest scale of these businesses, the corresponding loss of jobs would be slight and should be balanced against the net increase in direct and indirect employment generated by the project.

4.64.3 Parking and access

Issues included

- *The construction works will impact traffic, pedestrian flows, access to properties, removal of loading/unloading spaces and parking bays. How will these be maintained and/or managed?*
- *The street address for the building should be maintained in some form.*
- *Access to the KPMG car park at Shelley Street should be kept available 24 hours a day, 7 days a week. Ongoing dialogue with traffic management coordinators should be maintained.*

Response

As noted, a Business Management Strategy (Statement of Commitment No.34) would be implemented during construction to proactively identify businesses that may be adversely affected by the project. Individual business management plans would describe specific needs and requirements related to business parking, access, deliveries and pedestrian movements to minimise the impact of the project on the effective operation of businesses.

Traffic management plans would be produced in accordance with Statement of Commitment No.51. A number of solutions for business parking and access related issues have already been identified in Technical Paper 1 of the EA, which would be reviewed and refined during detailed construction planning.

4.64.4 Impact on public events

Issues included

- *The project will impact significant public events such as the Rosemount Sydney Fashion Festival at Martin Place, the Rozelle Markets, the Anzac Day service, Carols by Candlelight and the Pyrmont Art Festival at Union Square. Alternative locations should be identified.*

Response

A new Statement of Commitment (No.9A) is proposed to minimise impacts on events adjacent to major construction sites during construction. It includes measures to maintain pedestrian movement and the visibility of the event appropriate to its reliance on such.

The Sydney CBD is impacted by several significant scheduled events, which affect visitor numbers on city streets, bus and rail services, and general traffic lanes, but are generally of limited duration (eg



Australia Day, Anzac Day services, Mardi Gras, major sporting events, festivals and other marches/parades for which prior approval has been granted).

For traffic and transport management purposes, the RTA special event management guidelines process identifies four distinct classes of special event:

- Class 1 is an event that impacts major traffic and transport systems and where there is significant disruption to the non-event community. For example, an event that affects a principal transport route in Sydney, or one that reduces the capacity of the main highway through a country town.
- Class 2 is an event that impacts local traffic and transport systems and where there is low scale disruption to the non-event community. For example, an event that blocks off a main street town or shopping centre but does not impact a principal transport route or a highway.
- Class 3 is an event with minimal impact on local roads and negligible impact on the non-event community. For example, an on-street neighbourhood Christmas party.
- Class 4 is an event that is conducted entirely under Police control (but is not a protest or demonstration). For example a small march conducted with a Police escort vehicle.

During construction, special consideration and traffic planning would be undertaken to address the road user needs during special events, including City of Sydney festivals, public holidays and events, marches, protests etc.

The traffic management requirements of special events may require adjustment to times of operation and routes used by haulage or delivery operations as well as varying approved road occupancy licence (ROL) conditions for project construction. The City Of Sydney Council or RTA ROL approval would identify time and day restrictions, where potential conflicts are known at the time of submission.

The Framework Traffic Management Plan outlines a process that would enable management of special events, with coordination through the Central Project Coordination Committee (CPCC). Statement of Commitment No.9 addresses this requirement.

The CPCC would provide a strategic and tactical forum for ensuring the works are coordinated with other development, events and public works; and would aim to mitigate impacts on local business, residents and CBD visitors by ensuring that construction impacts arising from the project are integrated and balanced against the construction impacts of wider redevelopment and other events or changes occurring within the CBD.

The participants of this group may include organisations such as:

- Department of Environment and Climate Change
- Department of Planning
- COS and Leichhardt Municipal Council
- Sydney Metro
- RTA
- Barangaroo Delivery Authority
- Sydney Harbour Foreshore Authority
- RailCorp



- Major Special Event proponents
- Major CBD redevelopment proponents – ie Energy Australia, land owners etc
- PRI and IMO Contractor.

A Traffic and Transport Liaison Group (TTLG) would be formed to ensure that all Authorities affected by construction traffic are aware of the proposed construction activities, upcoming works and related transport implications and have the opportunity to comment on the mitigation measures proposed prior to implementation.

Major special events include the following:

Anzac Day services

The dawn service at the Cenotaph on Martin Place is an integral component of Anzac Day services. The focus of activity is in the section of Martin Place, between George and Pitt streets. Participants may currently travel to the Martin Place rail station to the service. Pedestrian access would be affected by construction of the new Metro station in Martin Place. During this time, pedestrian access would be maintained, however there may be capacity constraints on the diverted paths.

Anzac Day services are also undertaken at Union Square in Pyrmont focused around the War Memorial.

No construction activities would be undertaken during the Anzac Day services and preparations at Martin Place or Union Square. It is noted that Anzac Day/Dawn Service preparations start from the evening before (the Cenotaph is guarded overnight).

Christmas retail

Pedestrian activity in the CBD increases significantly in the lead up to Christmas and through to the post-Christmas sales. This period coincides with a general increase in tourist activity. The City of Sydney Council has a policy of not permitting disruptive works within the retail core during the period from the first week to the end of December. Where feasible, works affecting pedestrian paths and station access should be minimised, and/or increased site supervision by traffic controllers provided.

Premium retail outlets on Martin Place, generally extending south along Castlereagh Street, will be sensitive to disruption. The staged worksite required on Castlereagh Street would be scheduled outside of the period from the first week to the end of December.

Cruise ship activity

Summer cruise ship arrivals, from November to March, generate increased visitor numbers in the CBD and The Rocks and the northern portion of the CBD in particular, due to the Overseas Passenger Terminal, tourist precinct of The Rocks, Opera House, Walsh Bay, hotels and premium retail core. This increase in tourist activity means more pedestrians who are unfamiliar with the city and related traffic operations on CBD streets. Increased site supervision by traffic controllers would assist in ensuring the safety of trucks crossing footpaths and directing/controlling pedestrian movements. Additional traffic control may be required to address times of peak pedestrian activity.

Other scheduled events

Increased visitor movements occur within the CBD on Australia Day, New Years Eve and around the Mardi Gras and other scheduled marches/parades. These events may involve temporary closures on CBD streets, restricted access for private vehicles and altered public transport schedules, and bus layover requirements. Major sporting events on the periphery of the CBD generate increased pedestrian and public transport activity. These events will generally be scheduled well in advance, are



subject to City of Sydney Council/RTA approval conditions, and occur in the evening or weekend. Construction activities involving truck movements and impacts on CBD streets would generally not coincide with these times, however consultation and monitoring of upcoming events by the contractor would permit contingency plans to be developed to mitigate potential conflicts with pedestrian or public transport movements.

Short events in and around Martin Place

In addition to Anzac Day services, Martin Place hosts events of various scales and duration, including the Rosemount Sydney Fashion Festival (August) and the Sydney Festival (January). Pedestrian access would be affected by construction of the new Metro station in Martin Place. During this time, pedestrian access would be maintained, however there may be capacity constraints on the diverted paths.

The layout and exact location of short events would need to consider the Martin Place construction site, including the management of pedestrians. In some cases events may have to move to alternate locations, such as George Street (under temporary closure arrangements), in consultation with the City of Sydney Council and the RTA.

Major special event proponents would participate in the Network Coordination Liaison Group.

Union Square and Union Street

Union Square has developed as a focal point for social interaction with an ability to host public events such as Christmas carols, Anzac Day services and street fairs.

The majority of Union Square (approximately west of Paternoster Road) would not be directly affected by construction activities and would be available to host public events. Increased site supervision by traffic controllers would assist in ensuring the safety of trucks crossing footpaths and directing/controlling pedestrian movements. During significant events, such as Anzac Day services, no audible construction activities would be undertaken.

Rozelle activities

Unlike the CBD, which hosts several significant events that affect visitor numbers on city streets, Rozelle is affected by community related activities associated with the market days, special days for Church services and school activities.

Potential issues are associated with construction activities affecting pedestrian footway capacity and bus access, together with noise and vibration sensitivities for these occasions. These potential impacts would need to be managed so as to avoid or mitigate impacts. Measures would include, but would not be limited to, staged work activities and adjustment to working hours.

4.64.5 Acquisition process

Issues included

- *There will be negative impacts on the suburbs of Rozelle, Lilyfield and Pyrmont, especially the resumption of long-term businesses.*
- *Objection to the eastern entrance of Pyrmont Station as local businesses will be destroyed by compulsory acquisition.*



Response

To enable the construction and operation of the project, it would be necessary to acquire about 33 properties within the project corridor, including three residential properties.

All property acquisition would be managed in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. Every effort would be made to acquire the affected properties through negotiated purchase. Where negotiation fails, properties would be acquired through compulsory acquisition in accordance with the provisions of the Act. This requires appropriate compensation to be paid; including associated legal costs, valuation fees, relocation and removal expenses, and mortgage costs. For residential acquisitions, solatium is also applicable, which is compensation for the non-economic cost of inconvenience attributed to moving residence.

Sydney Metro would liaise with the affected parties to identify alternative location options. In some cases, it would be necessary to provide additional support owing to the age or special needs of residential tenants or the important social service provided by some facilities. These requirements would be assessed on a case-by-case basis.

4.65 General business impacts (operation)

4.65.1 Parking and access

Issues included

- *The Barangaroo Pedestrian Link and stairway on the eastern side of Moretons Hotel will restrict access.*
- *The car parking area for the Rozelle Neighbourhood Centre has been allocated as part of the Rozelle plaza.*

Response

The specific design of public domain works in the vicinity of Napoleon Street and Moretons Hotel have not been resolved at this stage of the project. Further design would be undertaken in consultation with adjacent businesses, residents and property owners to ensure that appropriate access is maintained. It is considered that an acceptable solution is feasible at this location.

The specific design of public domain works in the vicinity of the Rozelle Neighbourhood Centre have not been resolved at this stage of the project. Appropriate access and parking arrangements would be maintained.

4.66 General property impacts

4.66.1 Effect of tunnel alignment on property values

Issues included

- *Have studies been done on the impact to property prices as a result of the project?*
- *Concern over value of properties.*
- *Concern over decreased quality of life.*



Response

The ability to predict the effect of a project on property values is difficult due to the complex range of factors that affect the value of a property. A number of studies have been undertaken that conclude that a correlation between a tunnel corridor and a long-term decrease in property value cannot be made.

A report titled 'Proposed Parramatta Rail Link – Impacts on Property Values – Independent Peer Review'⁷ was also included in the Director General's Assessment Report for the Parramatta Rail Link, which is available from the Department of Planning.

An extensive range of research has previously been conducted into the medium to long-term impacts of new public transport systems on property prices. Over 150 previous studies were identified in a brief review. The majority of this research has been in North America with the United Kingdom and Europe also contributing significantly to the range. These studies produce a broad range of results with the overwhelming majority indicating that the post opening impact on property values is positive.

However, until construction is complete and the metro is operational, Sydney Metro recognises that the project may create negative perceptions. If a property owner is wishing to sell their property, Sydney Metro is willing to brief the real estate agent on the issues so they can then provide informed information to potential buyers.

The presence and location of a rail tunnel and/or rail corridor should not result in physical impacts to properties or facilities on the surface above the tunnel. Both ground-borne noise and vibration would be subject to stringent design requirements to ensure that potential impacts are minimised.

4.66.2 Loss of potential future development**Issues included**

- *Concern over future constraints to development.*
- *Objection to the eastern entrance of Pyrmont Station due to impacts to the viability of homes and businesses.*

Response

As noted in section 14.3 of the EA, the design process has recognised existing structures and underground services and key constraints and has endeavoured to minimise impacts on these assets. This is evidenced by the horizontal and vertical alignment of the project and the preference for utilising existing road alignments as far as possible for that alignment.

Proposed development above, below and adjacent to the rail tunnel, or otherwise potentially impacting on the construction and operation of the project, would have to be designed taking the project into consideration.

The presence of the project does not preclude future development (or redevelopment of existing properties). The extent of the potential constraint can only be determined based upon the type of development proposed and the location of the development. Sensitive design of any surface development could successfully mitigate the potential for physical impacts of the development on the

⁷ Proposed Parramatta Rail Link – Impacts on Property Values – Independent Peer Review' - prepared by Hill PDA consulting in December 2001



project. The project would also incorporate appropriate design parameters to ensure that the potential for operational impacts (for example, ground-borne noise), are minimised.

The resulting floor space within the properties located at 3-9 Union Street is considered more than adequate to run a viable business. In addition, there would be opportunities for the tenant at 9 Union Street to utilise part of the first floor above the services building (subject to detailed design).

4.66.3 Acquisition process / property acquisition

Issues included

- *Option 1 at Pyrmont is a blatant 'land grab'.*
- *A survey should be undertaken of owners of non-heritage buildings to determine alternative station locations.*
- *Sydney Metro has aggressively challenged local property owners to acquire their properties.*
- *There will be negative impacts of the project on the suburbs of Rozelle, Lilyfield and Pyrmont, especially the resumption of long-term residences.*
- *If Sydney Metro purchases our land by compulsory acquisition then they will subsequently transfer rights of access over our land to Balmain Leagues Club.*
- *Compulsory acquisition of properties prior to consideration of submissions and project approval amounts to pre-determination of the planning approval process.*
- *Property acquisition will be a waste of funds if the project is called off due to lack of funds.*

Response

To enable the construction and operation of the project, it would be necessary to acquire about 33 properties within the project corridor. The properties to be acquired are predominantly commercial and accommodate about 175 business tenants. Notwithstanding, three residential properties would also be acquired. Only land required to construct and operate the project would be acquired by Sydney Metro.

All property acquisition would be managed in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. Every effort would be made to acquire the affected properties through negotiated purchase. Where negotiation fails, properties would be acquired through compulsory acquisition in accordance with the provisions of the Act. This requires appropriate compensation to be paid; including associated legal costs, valuation fees, relocation and removal expenses, and mortgage costs.

Sydney Metro would liaise with the affected parties to identify alternative location options. In some cases, it would be necessary to provide additional support owing to the age or special needs of residential tenants or the important social service provided by some facilities. These requirements would be assessed on a case-by-case basis.

In addition, a number of the properties directly affected by acquisition are leased to individual business tenants. Where businesses have a lease that has a period to run after such time that the property is required, Sydney Metro would negotiate to acquire the remaining lease period from the tenant. Tenants have the same rights with respect to relocation and disturbance as property owners under the *Land Acquisition (Just Terms Compensation) Act 1991* and would be compensated for reasonable disturbance costs if the business is required to relocate.



Sydney Metro and the Balmain Tigers Leagues Club agreed to work together to finalise an agreement to allow Sydney Metro to use part of the Tigers site for construction purposes. Negotiations are ongoing. This agreement would involve leasing the Tigers site during construction, with the main construction activity for the Rozelle station at this location. It would also involve purchasing a strip of land at the front of the Tigers site, alongside Victoria Road, for a bus bay. A 'land swap' is not part of the negotiations.

Four properties at 168-174 Victoria Road are also proposed to be acquired by Sydney Metro. These properties would be used for construction activities, and afterwards, as a site for station services and to allow for the provision of like-for-like access arrangements consistent with the Local Environmental Plan and approved Development Control Plan. Sydney Metro or the Integrated Metro Operator would retain ownership of properties at 168-174 Victoria Road with a right of way access for any approved development on the Tigers site.

The inclusion of the bus bay alongside the Tigers site requires the vehicle entry for the proposed redevelopment to be moved. Some of the remaining land from 168-174 Victoria Road could be available to provide vehicle access to the Tigers site, to address overall traffic management and safety. There are no plans for this land to be used for retail or any other purpose.

Sydney Metro has made (and will continue to make) every effort to acquire the affected properties through negotiated purchase. Where negotiation fails, properties will be acquired through compulsory acquisition in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

Sydney Metro is responsible for planning, delivering and commissioning the Sydney Metro network. In the long-term it will oversee the ongoing Metro operations and dictate the service delivery standards to the private operator. Sydney Metro is not a property developer.

Retail spaces within the station complexes would be owned (and rented) by Sydney Metro or the Integrated Metro Operator to ensure that station precincts are active and vibrant.

4.66.4 Compensation

Issues included

- *Compensation should be provided for property owners as a result of difficulty in finding tenants due to the proximity of construction.*
- *There is no compensation for residents in Wellington Street whose properties will be unliveable.*
- *Adequate compensation is required for residents in close proximity to the works who need to relocate or experience property damage, disturbance, infringement etc. Request indemnify buildings for any structural or other damage.*

Response

It is acknowledged that the carrying out of construction activities always causes some inconvenience to owners and occupiers of adjoining land. Some residents (or tenants) will claim that this extends to a right for monetary compensation. However, residents are not entitled to a contribution from the entity carrying out the works and no compensation is payable in such circumstances. By the same token the constructing entity is not entitled to a percentage of the increase in any property value that may result from the improved public transport services or street/public domain.

Similarly, Sydney Metro is unable to acquire adjoining properties under the *Land Acquisition (Just Terms Compensation) Act 1991*.



There is no compensation proposed for owners and occupiers of adjoining land during the construction of the project. Sydney Metro and its contractors will work closely with affected residents to ensure that impacts are minimised and managed to ensure the least possible inconvenience.

During construction, mitigation measures would be implemented as identified by the Statement of Commitments, including implementation of the Construction Noise and Vibration Strategy, which includes provisions for temporary relocation under certain circumstances.

4.66.5 Damage to property from construction

Issues included

- *Concerns raised regarding impacts to the structural integrity of buildings during construction (particularly 55 Clarence Street, Star City, MLC Centre and 48 Martin Place). Requests included consultation, structural/condition surveys, and monitoring.*
- *What will occur if structural damage is found during monitoring of impacts?*
- *Concerned that specific water management measures may be adversely impacted.*

Response

The risk of damage to buildings or other structures from vibration during construction is low given the proposed tunnel depths. The vibration level encountered at buildings above the tunnel during construction would be less than levels at which damage would be expected.

Statement of Commitment No.72 addresses this issue. As a precautionary measure, property owners within a specified distance based on a geotechnical risk assessment would be offered a pre-condition survey at no cost to the owner prior to construction commencing. If a property owner believed damage had been caused as a result of construction, the precondition survey would be used to assess the claim.

If damage to property has occurred as a direct result of construction activities, this damage would be rectified at no cost to the property owner.

A number of property/building surveys have already been undertaken (or are scheduled) for significant buildings in the vicinity of future metro stations. In particular, building condition surveys have been undertaken for properties within the heritage area at Pyrmont and heritage listed buildings in Martin Place, as well as a number of other sensitive locations along the alignment. Ongoing consultation and monitoring would continue.

Sydney Metro would work closely with adjacent developments to ensure that construction works would have minimal impacts on assets including water management measures. Sydney Metro would consult with Star City to determine to what extent the construction and operation of the Pyrmont eastern construction site would impact the sustainable water management measures for the new Star City hotel.

For further information on potential property damage from vibration during construction refer to section 4.44 of this report.



4.67 General community impacts

4.67.1 Safety and health of community and stakeholders including childcare and schools

Issues included

- *There will be a public safety risk in the vicinity of Rozelle Public School during construction (eg limited access and construction vehicles) and operation (mass transit and increase in the general public accessing Metro).*
- *The potential for increased crime is not addressed. There is concern over security at stations, graffiti management and the need for a police presence.*
- *Construction dust and noise will affect our customers' and our employees' health.*
- *Noise, vibration and air quality levels would pose a severe health and life risk to stay in our property during the construction period.*
- *Noise, dust and pollution from construction would be a health risk for school children and childcare places as well as pregnant women and children.*
- *St Thomas Child Care Centre request that prior to the commencement of any work on the metro site, it is safely fenced off and that safe and convenient access to the child care centre is provided for children, parents, staff and others.*

Response

Construction would be undertaken by an experienced contractor utilising an experienced and professional construction workforce. Safety of the workforce and community are paramount during all phases of construction.

As noted in Chapter 7 of the EA, all construction sites would be managed to protect the health and safety of the community and stakeholders, including users of nearby childcare facilities and schools. Regular communication with childcare facilities and schools would be prescribed within the Community Involvement Plan. This would include notification of works, updates, and feedback on concerns regarding the project.

Construction worksites would be under the control of a principal contractor who has a statutory duty under the *NSW Occupational Health and Safety Act 2000* to prevent unauthorised access to the site and protect the public place from work activities and comply with provisions of the Occupational Health and Safety Regulation 2001 that relate to work sites adjoining a public place.

Chapter 7 of the EA also identifies that Traffic Management Plans, which include a significant focus on safety, would be prepared for each construction site. Chapter 10 of the EA includes a plethora of best-practice construction traffic measures that maximise safety for pedestrians, cyclists and other traffic. The use of construction traffic controllers would be undertaken as required.

Regarding demolition activities, Chapter 7 of the EA notes that, prior to demolition and where practicable, hoardings that comply with Council requirements would be erected and dust and debris screens would be raised over the entire site. Hoarding design and placement in the CBD would be in accordance with the City of Sydney Council's Hoardings and Scaffolding (Local Approvals Policy). Similar formal codes as approved by Leichhardt Municipal Council for Rozelle Station would also be adhered to. The hoardings would be a safety and security feature and would also serve as a noise barrier.



Potential long-term impacts on human health during the construction phase are unlikely given environmental mitigation measures proposed.

The impacts of construction noise were assessed and acknowledged in Chapter 11 of the EA. While different people can be expected to respond to noise in different ways, the consideration of psychological stress and sleep disturbance is inherent in the consideration of relevant noise criteria (which were developed with these types of impacts in mind).

The EA acknowledges that construction of the project could result in relevant noise goals being exceeded. The predicted construction noise levels and exposure duration are not expected to present a risk of hearing loss, and are below the levels generally associated with clinical health problems. However, a commitment to noise monitoring and implementing feasible/reasonable best practice noise management measures (potentially including respite periods or temporary attenuation) is provided in the Construction Noise and Vibration Strategy.

The potential impacts of dust during construction and impacts to residents are addressed in section 19.2 of the EA. The potential for health issues associated with dust would be managed through the implementation of dust mitigation measures and also through notification of residents in the event of likely high levels of dust emission (based on activities, soil condition and prevailing weather conditions). Measures to reduce/manage dust emissions during construction would be detailed in the Air Quality Management Plan.

During operation, as noted in Chapter 22 of the EA, the project would provide world-class safety and security for customers, staff, contractors, neighbours and other stakeholders. Metro systems operate in tunnels throughout the world with a proven record of safety. The safety targets for the project would be based on the safety record of reputable metro operators.

Safety at station platforms and station entrance points would be provided through well-designed and efficiently controlled lighting systems, visible closed circuit television (CCTV) surveillance and the presence of metro staff within concourse areas during operational hours. Emergency egress and ventilation facilities would be provided at each station emergency intervention point.

Graffiti within stations and station entrance points would be removed.

Various improvements to the public domain would be undertaken as part of the project with pedestrian safety a primary consideration, including a number of bridges and underpasses that would separate vehicle and pedestrian movements.

The design of bus transfer facilities, particularly at Rozelle has considered the safety and accessibility of users and adjacent pedestrians/cyclists.

Suggestions that a metro system would result in increased crime (or provide opportunities for criminals to access locations in the vicinity of Metro stations) are unfounded.

4.67.2 Construction hours for the project and mitigating impacts on businesses and residents

Issues included

- *As the drilling will occur 24 hours a day there will be a flow on effect to parents, staff and children at Rozelle Public School. The majority of drilling should be scheduled to occur during school holidays and outside of school hours. There should be a reduction in times machinery can operate without a break.*
- *Work from home will be impossible.*



- *The construction site will operate 24 hours a day, seven days a week for up to five years, and then followed by construction at the Tiger's site.*

Response

Construction hours are described in section 7.8.6 of the EA. The majority of the aboveground construction activities would be undertaken within standard NSW construction hours (7.00am–6.00pm on weekdays and 8.00am–1.00pm on Saturdays), but some activities (as identified in Table 7.10) would need to be undertaken outside of these hours. The underground construction activities (tunnelling works and the construction of station caverns) would be undertaken 24 hours per day, up to seven days per week.

Importantly, there may be instances where construction works could be undertaken outside standard construction hours to avoid potential impacts on sensitive receivers. For example, some specific sensitive receivers are less active (or have no activities) during the weekend or night. Therefore, flexible construction hours would be investigated where there would be a better environmental outcome.

The duration of different construction activities, such as demolition, excavation and station fit-out are described for each station in Chapter 7 of the EA.

Issues regarding construction noise are discussed in more detail in section 4.41 of this report.

4.67.3 Loss of community services

Issues included

- *There will be a loss of local businesses/community services in the vicinity of the Metro project (eg Rozelle Medical Centre).*
- *A station at Rozelle is harmful to the local community organisations.*
- *The local community will no longer be able to use these businesses, some of which have had a very long standing, good service and loyalty in the community (eg the Chemist on the corner of Victoria Road and Darling Street).*

Response

Section 16.2 of the EA states its first objective is to 'Minimise the potential impact of the project to the operation of businesses and enjoyment of private and public spaces across the study area'. This objective is to be achieved by proactively working with potentially affected stakeholders to identify likely impacts prior to construction, and by putting in place measures to minimise impacts. Any mitigation strategy should be regularly reviewed and monitored to ensure it is effective.

Sydney Metro recognises that during construction, some businesses would benefit from increased local activity and demand for goods, but others would be negatively affected as a result of traffic and access and noise and vibration disturbances.

Specific mitigation measures would be adopted to minimise or ameliorate any negative economic impacts on the Rozelle Medical Centre as a result of construction. These measures would include:

- A Construction Noise and Vibration Strategy would be adopted by all contractors. The Strategy would provide guidance on minimising airborne and ground-borne noise and vibration impacts. The Strategy would set a framework for detailed construction phase noise assessment, the implementation of reasonable and reliable mitigation measures, and monitoring and reporting. This



strategy would be used to inform the Construction Noise and Vibration Management Sub-Plan, which would be implemented to manage the potential noise and vibration impacts.

- A Construction Stakeholder and Community Involvement Plan would be implemented throughout the delivery of the project. The Plan would provide procedures for the community and stakeholders to be able to provide feedback to the construction team and for the construction team to be able to respond to any enquires or feedback.
- A Business Management Strategy is also being prepared and would be implemented to minimise impacts on businesses adjacent to major construction sites during the period of construction.

Sydney Metro needs to purchase a number of strategic properties so it is able to build the metro. When designing the metro, every effort is made to minimise the needs to acquire privately owned property. As the metro would run through a densely developed area, some privately owned property would need to be acquired.

There are standard processes used by government to purchase any property interest that is required for a public purpose, such as the metro. The *Land Acquisition (Just Terms Compensation) Act 1991* prescribes the process that must be followed including how the amount of compensation is calculated.

It is Sydney Metro's preference, consistent with the objectives of the Act, to acquire interests required for the project by negotiated agreement, rather than through the compulsory acquisition process. This includes the acquisition of existing leases that undertake community roles such as a birth advisory counsellor and a physiotherapist at 670 Darling Street.

It is Sydney Metro's preference, wherever possible, to relocate businesses rather than extinguish them.

Compensation is generally payable for costs incurred as a result of an acquisition including certain costs associated with the business. In these circumstances, the assessment of compensable costs would consider the issue of whether it is reasonable for the business to be relocated or whether the business would be extinguished by the acquisition.

Sydney Metro is currently holding negotiations with the Rozelle Health and Beauty Pharmacy business owner in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. These negotiations would also cover the compensation payable for possible relocation of the business.

Impact on the community in terms of pharmacy services is minimised owing to the alternative pharmacies presently operating within Rozelle and within walking distance of the site to be acquired. Both of the existing alternative pharmacies operate seven days a week and close at 9pm at night as opposed to the 10pm closing time of the Rozelle Health and Beauty Pharmacy in its temporary location.



4.68 Socio-economic issues at Rozelle

4.68.1 Impact on the St Thomas Childcare Centre, Rozelle Public School and Rozelle Neighbourhood Centre

Issues included

- *There are safety concerns for the community centre (disabled care) within Rozelle Church and the loss of continuance of community programs and activities.*
- *There is concern over demolishing the building adjacent to St Thomas Childcare Centre as it provides noise and privacy screening. It is unlikely the childcare centre can continue to operate under these conditions.*
- *Concerns regarding the health and safety of students and staff of Rozelle Public School due to increased traffic, noise and dust. Requests for mitigation measures included fencing and noise reduction measures, 'Frontrow prodigital' sound amplification for classrooms (for child with hearing disability).*
- *Sydney Metro intends to acquire the property housing a tennis court used by Rozelle Public School.*
- *Due to major construction already underway by the Government, children will be forced to access Rozelle Public School from Victoria Road, placing them closer to construction works and associated impacts. Demolishing the shops on Victoria Road and Darling Street removes the shielding affect these have on the school.*
- *Clarification of noise and vibration monitoring frequency and mitigation to be implemented where there are exceedances.*
- *The car parking area for St Paul's Neighbourhood Centre is on the southern boundary side and has been allocated as part of the plaza.*
- *The exposed plaza would create a major noise and security problem.*
- *The security and welfare of the children at the St Paul's Neighbourhood Centre is a major concern.*
- *Concern over access to church hall through hoardings.*

Response

St Thomas Childcare Centre and Rozelle Neighbourhood Centre

Sydney Metro recognises the important community services that are provided to the community through the St Thomas Childcare Centre (on the grounds of St Thomas Church) and the Rozelle Neighbourhood Centre (on the grounds of St Paul's Church). Sydney Metro considers that two significant factors have been addressed through the environmental assessment that will ensure that both of these facilities are able to continue to provide services during both the construction and operation of the Stage 1 project. These factors are the reduction in land requirements and further construction mitigation.

It is Sydney Metro's policy to minimise both the temporary and permanent land acquisition requirements for the construction and operation of the project to assist in minimising impacts on both the owners and occupiers of affected land, together with the wider community.



The preliminary environmental assessment (PEA) for the project and the revised June 2009 design for the Rozelle Station identified land acquisition based upon a construction method that assumed that substantial excavation and mining of the Rozelle Station would take place from adjacent to St Thomas Childcare Centre and from the St Paul's land where the Rozelle Neighbourhood Centre is located.

Sydney Metro has since undertaken further design and construction reviews, resulting in a significant reduction in both the area of temporary and permanent land required. There has also been a significant reduction in the nature and extent of construction work that would take place adjacent to St Thomas Childcare Centre, from the St Paul's land and from the immediately adjacent properties at 665 – 669 Darling Street. The earlier proposal required a temporary construction lease over the access driveway of the St Paul's land and much of the land's rear garden, including the land occupied by the Garden Room. The Garden Room is a critical facility to the Rozelle Neighbourhood Centre where a number of its services are offered.

However, Sydney Metro's revised scheme only requires a construction lease over the currently unused area of land between the existing fence and Victoria Road, and no longer encroaches into the operational area of the Rozelle Neighbourhood Centre. The proposed construction lease would enable ongoing access to the lane driveway and the garden land, including the Garden Room.

Sydney Metro recognises that the mitigation of construction impacts is an important consideration for these facilities. Construction impacts associated with the project were identified in the EA together with a range of mitigation measures and construction techniques to be used during construction. The deployment of these mitigation measures would be critical in continuing to ensure that the St Thomas Child Care Centre and the Rozelle Neighbourhood Centre are able to effectively provide their services.

The mitigation measures Sydney Metro anticipates using include temporary noise barriers or enclosures, well planned site layouts to create noise shields, good construction planning, and scheduling work as much as possible during standard construction hours. In particular, this would include a solid fence (with a minimum height of 2.4 metres) along the boundary with the construction site, to provide protection and noise attenuation (including from Victoria Road traffic noise). The final extent, height and materials would be subject to the contractor's acoustic advisor recommendations and relevant conditions of approval.

The project would require a partial acquisition of a small parcel of the St Paul's church land (approximately 60 square metres) adjoining Victoria Road, but this would not impact on the current grounds in use by the Rozelle Neighbourhood Centre. Accessible and safe access to the church and the Rozelle Neighbourhood Centre would be maintained throughout construction and once the project is operational.

Rozelle Public School

The issue of safety and health of community/stakeholders including childcare and schools has been addressed previously in section 4.67. More specifically, Sydney Metro recognises that the mitigation of construction impacts will be an important consideration for the Rozelle Public School. Construction impacts associated with the project were identified in the EA together with a range of mitigation measures and construction techniques to be used during construction. The deployment of these mitigation measures would be critical in continuing to ensure that the Rozelle Public School is able to operate.

The EA acknowledges that construction of the project could result in relevant noise goals being exceeded. The predicted construction noise levels and exposure duration are not expected to present a risk of hearing loss, and are below the levels generally associated with clinical health problems. However, a commitment to noise monitoring and implementing feasible/reasonable best practice noise management measures (potentially including respite periods or temporary attenuation) is provided in the Construction Noise and Vibration Strategy.



Sydney Metro considers that its mitigation measures need to ideally operate from the source first, with wider treatment measures being used as needed. The mitigation measures Sydney Metro anticipates being able to use include temporary barriers and enclosures, well planned site layouts to create noise shields, good construction planning, and scheduling work as much as possible in standard construction hours. In particular, this would include a solid fence along the boundary of the construction site to provide protection and noise attenuation. The use of full acoustic enclosures would also be considered if noise goals are expected to be exceeded. The use of specific wireless sound amplification products within classrooms is not considered a reasonable or feasible approach to construction noise mitigation.

Sydney Metro has met with the Rozelle Public School on a number of occasions to develop a better understanding of the needs and requirements of the school. As a result of these meetings, Sydney Metro is aware of the construction activity planned at the Rozelle Public School during 2010, which includes the construction of a new, multi-purpose hall. During the hall's construction the outdoor space available for staff and students will be reduced. The staging of the construction of the metro would mean that the majority of the construction activity on the north-west corner of Victoria Road/Darling Street intersection would occur after the construction of the school hall is complete.

Construction of Sydney Metro's site on the north-eastern corner of the Victoria Road/Darling Street intersection would not interrupt the staff and students' use of Rozelle Public School's land.

The proposed worksite near the Rozelle Public School does not include the tennis court within the school grounds. In fact, no acquisition of school grounds is proposed.

Use of the Tigers site for construction has been negotiated to reduce construction and property impacts on the northern side of Victoria Road. The ability to utilise the Tigers site for construction allows the most significant excavation activities to be undertaken away from sensitive receivers such as St Thomas' Child Care facility, Rozelle Public School and the Rozelle Neighbourhood Centre.

Other related issues include:

- Health and safety of the community - section 4.67.
- Noise and vibration – sections 4.41-4.44.
- Air quality – section 4.79.
- Environmental management – section 4.82.
- Station plans – section 4.88.

4.68.2 Impact on places of worship

Issues included

- *Noise impacts at St Thomas' church from traffic.*
- *Concerns over noise and dust for St Thomas Church and request for mitigation in the form of sealing of buildings and sound insulation.*

Response

Potential noise impacts on places of worship/churches are discussed in the noise and vibration section of this report at section 4.41.



4.68.3 Metro's impact on character of area

Issues included

- *Heritage places and the 'village' feel and sense of community of Rozelle is under threat from the project. The project fails to appreciate that Darling Street is already a distinct and successful public space. The development would reduce the number of Victorian era shops and has the potential to damage the public space by diffusing continuity of the high street.*
- *Use of the Balmain Leagues Club owned land (Byers Butcher) would preserve the heritage chemist building and provide an aesthetic balance of architectural importance with the York buildings and the chemist shop.*
- *Rozelle will be a more attractive place to live in as a result of the metro.*
- *The cumulative effect of Metro and Tiger's will have a negative effect on the surrounding community.*
- *Should a public transport organisation (Metro) be undertaking 're-imagining' of an area like Rozelle? Joint planning (Metro, Department of Planning and LMC) should be undertaken to maintain or exceed the current levels of high street retail.*
- *I am concerned about the unacceptable style of landscaping proposed for Rozelle after construction.*
- *The replacement buildings in Rozelle (as per the artist's impressions) are unacceptable in their style and architectural character.*
- *Without firm plans for extension to the north-west, the project could result in transformation of the Rozelle area into a transport hub.*

Response

The metro station entrance on Darling Street would respond to the urban form and activity that typifies this part of Rozelle. It has been recognised that Rozelle is located in a unique village-style location. Section 19.1.2 of the EA outlines the factors that were considered in the design of the metro structures (including heritage buildings and the heritage conservation area), the design principles that have been used thus far, and those that would continue to guide future detailed design (eg station entrances designed relating to the scale and consistency of adjacent buildings).

A Design Principles Workshop has been initiated and would be used to form the appearance and character of Rozelle Station. The workshop would be an opportunity to explore a large range of options to retain the original character of Rozelle's area. Workshop participants would be selected with advice from the Royal Australian Institute of Architects, the Planning Institute of NSW, the Australian Institute of Landscape Architects and the National Trust.

A Design Review Panel, comprising independent specialists, has been established to evaluate the detailed design of stations and associated precinct works with particular focus on at-surface design.

The detailed design associated with landscaping has yet to be determined. However Sydney Metro has provided benchmarks of quality of design in the contract documentation and has referred to City of Sydney Council's public domain treatments (eg paving type) to ensure consistency with Council's approach. A number of the policies and guidelines cited by City of Sydney Council remain valid and Sydney Metro would apply these as relevant and in consultation with Council.

It is noted that Council would not have an approval role for works in the public domain with the exception of approvals required under the *Roads Act 1993*.



The EA consistently states (Chapters 6, 16, 17 and section 19.1 in particular) that development at Rozelle and Pyrmont would be required to reflect the existing scale and definition of the streetscape heritage character. At Rozelle active retail uses would be incorporated into the station complex on the north-west corner of Victoria Road and Darling Street, which would comprise a two-storey development consistent with the existing streetscape.

Suggestions that the introduction of public transport *per se* would alter the character and 'village atmosphere' of Rozelle are speculative and unsubstantiated.

Any potential impacts on local character as a result of the proposed Rozelle Village (Tigers) development would be a matter for Leichhardt Municipal Council as part of the Development Application process.

Any other new residential or commercial development proposed would be subject to local planning controls.

4.69 Socio-economic issues at Pyrmont

4.69.1 Metro's impact on character of area

Issues included

- *The heritage and village area of Pyrmont, in particular Union Square, will be destroyed or altered in such a way that the character and community feel will be lost. Design plans are not in keeping with the character of the area.*
- *An upgrade of Union Square should be included as part of the works.*
- *Concerns of impacts to amenity of residents in the vicinity from noise, access lanes etc.*

Response

Sydney Metro's preferred design for Pyrmont Station would minimise impacts on Union Square by retaining the front of the existing buildings (which would have been demolished under previous alternatives). Following construction, the terraces would be available to reopen as shops, reinforcing Union Street as a local commercial hub. The project also includes extension of the existing pedestrian space at Union Square between Paternoster Row and Pyrmont Street. This would create a social benefit for the local community through the extension of available space within the centre.

It is acknowledged that local residents and businesses may experience impacts during construction. Construction would remain focused on the corner of Miller and Mount streets, as originally proposed, with the eastern construction site being managed to expediate the most significant excavation activities.

Sydney Metro recognises the importance of Union Square and Union Street to the community of Pyrmont. Considerable effort has been made to find an acceptable solution to providing an effective outcome while retaining the character and amenity of the area. The proposed solution substantially retains the whole section of the shops along Union Street with new Metro services being located to the rear.

The proposed concourse link would require a temporary construction site within Union Street. It is recognised that this is an important area for the community and construction may impact some business activity, therefore work would be fast tracked to ensure inconvenience is minimised and the majority of construction is contained within the main construction site. Based on the current impact



assessment, all work in Union Street itself would be targeted to be completed in two years or less, with the street returned to the community at the end of this period.

The Statement of Commitments establishes a management framework to mitigate residual impacts of construction, including implementation of the Construction Noise and Vibration Strategy and a Small Business Owners Support Program.

Event management within Union Square would be undertaken in accordance with a new Statement of Commitment (No.9A) related to events management (refer section 4.64).

It has been recognised that Pymont is located in a unique village-style location. Section 19.1.2 of the EA outlines the factors that were considered in the design of the metro structures (including Union Square and heritage buildings) and the design principles that have been used thus far, and those that would continue to guide future detailed design (eg station entrances designed to contribute to the streetscape of Union Square buildings). The metro station entrance within Union Square would respond to the urban form and activity that typifies this area.

A Design Principles Workshop has been initiated and would be used to form the appearance and character of Pymont Station. The workshop would be an opportunity to explore a large range of options to retain the original character of the Pymont area. Workshop participants would be selected with advice from the Royal Australian Institute of Architects, the Planning Institute of NSW, the Australian Institute of Landscape Architects and the National Trust.

A Design Review Panel, comprising independent specialists, has been established to evaluate the detailed design of stations and associated precinct works with particular focus on at-surface design.

The EA consistently states (Chapters 6, 16, 17 and section 19.1 in particular) that development at Rozelle and Pymont would be required to reflect the existing scale and definition of the streetscape heritage character. At Pymont, active retail uses would be reinstated within the existing buildings at 3-9 Union Street and additional pedestrian space would be created (by realigning Paternoster Road). The types of retail would be determined by Sydney Metro under an open and transparent commercial process.

Suggestions that the introduction of public transport *per se* would alter the character, history or atmosphere of Union Square are unsubstantiated.

Any other new residential or commercial development proposed would be subject to local planning controls.

4.70 Socio-economic issues at the depot

4.70.1 Impacts to community (eg noise and light, staff parking)

Issues included

- *Concern over increased traffic as well as safety of residents and cyclists from vehicle traffic. Suggestion of additional speed humps to manage.*
- *We are concerned about light pollution from the depot on nearby residences.*
- *Concern over noise from depot at night and in early mornings and the effect this will have on residences in the vicinity.*



Response

Traffic due to operations at the Rozelle stabling and maintenance depot would be minimal. Access to the administration building, infrastructure maintenance facility, wash plant and electrical substations would be from Gordon Street and would comprise mostly light vehicles. Access for heavy vehicles to the rolling stock maintenance facility and wheel maintenance facility would be provided from James Craig Road (or City West Link Road).

The provision of speed bumps on Lilyfield Road is a matter for Leichhardt Municipal Council. However, this will be considered when updating the Station Plans.

Section 19.1 of the EA notes the following measures to minimise light spill:

- Directing lights away from adjacent residences, properties and roads, where possible.
- Designing and positioning light fittings to comply with relevant light spill limitations onto the surrounding properties (such as AS 4282-1997 Control Of The Obtrusive Effects Of Outdoor Lighting).

4.71 Lifestyle issues

Issues included

- *Assistance requested to compensate for negative impacts including relocation, disruptions to lifestyle and additional costs incurred as result of project.*
- *Property uninhabitable due to the proximity of the works.*
- *A social impact analysis should be undertaken to assess the impact of having a major poker machine venue co-habiting a metro station and bus interchange.*

Response

The suggestion that the project would provide a catalyst to increase opportunities for problem gamblers to access poker machines is unfounded. Sydney Metro is not aware of any link between improved transport access to gambling establishments and problem gambling.

Further issues and responses regarding lifestyle impacts may be found at the following sections: construction noise impacts (section 4.41), construction traffic impacts (section 4.37) and operational noise impacts (sections 4.60-63).



LAND USE IMPLICATIONS

4.72 Land use and planning at Barangaroo

4.72.1 Future planning and impact on site development

Issues included

- *There has not been sufficient consideration on how the project will affect major development plans for Barangaroo.*

Response

Preliminary discussions have been held with the Barangaroo Delivery Authority. The Barangaroo Delivery Authority supports the Sydney Metro Stage 1, Central to Rozelle project and considers the project to be an important initiative in the NSW Government's commitment to the redevelopment of the Barangaroo site. The Barangaroo-Wynyard Station will provide access to the Barangaroo development. In addition, the Barangaroo Delivery Authority also strongly supports the inclusion of the Barangaroo Pedestrian Link as this will provide pedestrian access from the Barangaroo development to the Barangaroo-Wynyard Station.

The timing of the Stage 1 of the Barangaroo development will coincide with the construction of the project from 2010 to 2015. Sydney Metro will continue to work closely with the Barangaroo Delivery Authority to manage cumulative impacts during construction and any subsequent plans developed for the Barangaroo area.

4.73 Land use and planning at White Bay

4.73.1 Future planning for Bays Precinct

Issues included

- *There has not been sufficient consideration of how the project will affect major development plans for the Bays Precincts, particularly the areas of Glebe Island and White Bay.*

Response

The NSW Government has committed to preparing a master plan for the future use of the Bays Precinct with particular emphasis on the renewal of White Bay and the former Rozelle Marshalling Yards.

The future safeguarded metro station site will be within the State Environmental Planning Policy (SEPP) corridor in the White Bay precinct. A SEPP protects the future rail corridor, ensuring that all future planning and development is coordinated with Sydney Metro.

A metro station will be needed at this location to cater for the future urban growth of the Bays Precinct under Sydney Harbour Foreshore Authority development plans. The metro will be integrated into these



development plans and would be in accordance with the Glebe Island and White Bay Master Plan⁸ and any subsequent plans developed for the Bays Precinct.

As part of this work, an underground station 'box' will be built for the future White Bay station. The White Bay Station fitout would occur at a later date.

4.74 Land use and planning at the depot site

4.74.1 Integration with future land uses, eg transport corridors

Issues included

- *Will the Rozelle depot inhibit proper redevelopment of the large area of railway land? The space should be master planned properly.*
- *The construction of the stabling facilities has not considered its impact on extension of the light rail to the White Bay Overseas Passenger Terminal and residential developments in East Balmain.*

Response

The depot, located on the former Rozelle Marshalling Yards land, would be required for the operation of Sydney Metro Stage 1, Central to Rozelle. Preliminary discussions have been held with the Sydney Harbour Foreshore Authority and NSW Ports Authority regarding the possible future uses of the Bays Precinct and potential impacts of the depot within the precinct. Sydney Metro will consult with stakeholders to ensure that the depot will be designed and constructed to minimise impacts on the Bays Precinct, and would be incorporated into any plans developed in the future including any extension of the light rail.

4.75 Land use changes

4.75.1 Possibility of high-density commercial and residential redevelopment

Issues included

- *The planning for routes and station siting should look at opportunities for value capture early in the planning process.*
- *Density and public transport must be linked. High intensity land uses cannot reasonably function without quality mass transport systems.*
- *The potential to increase the catchment of the station at Rozelle by assessing any FSR and zoning changes has not been considered by the Government. The area has the potential to absorb medium density housing to reinforce the Government's substantial investment in metro rail lines.*
- *The station will increase the value of immediate surrounding land, hence local council acceptance to rezone should be part of any transport project.*
- *Only limited medium density residential developments should be allowed within close proximity of the station.*

⁸ Sydney Ports 2000, Glebe Island and White Bay Master Plan



- *It appears that the huge glass building at Town Hall Square has been designed to provide extra commercial space, and consequent income to Sydney Metro.*
- *The surrounding zonings have been manipulated in excess of the norm in the placement of the Rozelle Station.*
- *The Tigers development has proposed high rise apartment blocks directly opposite the school, giving people the opportunity to look into the playground and watch children playing. The apartment blocks should be low rise to suit the village-style atmosphere of this historic area, and a high screening wall should be constructed along the Victoria Road side of the school."*
- *I do not want to see Rozelle become another Chatswood or Bondi Junction with high levels of retail and residential development.*
- *The 'car focused' Tigers redevelopment is at odds with Sydney Metro's aim to 'encourage greater use of public transport'.*
- *New investors will want to cash in on people in transit at Rozelle Station with fast food chains, convenience stores or possibly even a mall.*
- *The metro may lead to increased pressures for higher density development around Rozelle Station and put pressure on local services.*

Response

General

Rezoning is not required for the project, and therefore has not been prepared as part of the metro stations for Sydney Metro Stage 1. The existing planning controls would continue to regulate new development at all stations. Existing and potential land use changes as a result of the project were included in Chapter 17 of the EA.

Sydney Metro has prepared Draft Station Plans which aim to provide the spatial framework and design guidance for the development of metro Stations and their integration with surrounding precincts. The Station Plans provide the context for the metro project described in the EA and show how the project can integrate with the wider area of each station. In turn they will provide the spatial context for the preparation of future planning strategies or documents (such as DCPs) as well as provide guidance in the development of future works.

A background analysis has been undertaken for each Station, which has included analysis of surrounding land use, potential future development and walk-up catchment areas as well as the broader strategic planning context provided by the Sydney Metropolitan Strategy and City of Sydney 2030 Strategic Plan. This analysis has informed the design and orientation of the station entrances and public domain.

Further land use planning will be undertaken by Department of Planning and respective councils and Sydney Metro cannot speculate on value capture mechanisms.

Town Hall Square

The Town Hall Square Station buildings would be designed with relevant planning controls, including relevant Local Environmental Plans (LEPs) and Development Control Plans (DCPs) (eg floor space ratio, height and setback controls). The proposed Town Hall Square site is zoned City Centre under the *Sydney Local Environment Plan 2005* as indicated in section 17.3.3 of the EA. The proposed site is within the bounds of the existing zone, and therefore rezoning is not required. The Town Hall Square Station building will be within the CBD where high density development is typical.



Rozelle Station buildings

The Rozelle Station buildings would be designed with relevant planning controls, including relevant Local Environmental Plans (LEPs) and Development Control Plans (DCPs) (eg floor space ratio, height and setback controls). Rezoning is not required for Rozelle Station or any of the other Sydney Metro Stage 1, Central to Rozelle stations. Therefore, the zoning surrounding the stations will remain unchanged. The Rozelle station will be located within an existing medium to high density walk-up catchment. Future development around the station is guided by Leichhardt Municipal Council's planning controls. The general floor space ratio control on the Rozelle side of Victoria Road is 0.5:1 while on the Balmain side it is 0.7:1.

Any development surrounding the station would be subject to planning controls and local council development approval processes. It would be Leichhardt Municipal Council's decision, and not Sydney Metro's decision, on whether to approve developments (including high rise buildings and higher density retail developments) in the vicinity of the stations.

The Balmain Leagues Club site (Tigers site) would be the primary temporary construction site for Rozelle Station. The site has already been earmarked for demolition and redevelopment, and development applications for the site have been received by Leichhardt Municipal Council.

Any proposals for the site after construction of the project would be the responsibility of the Balmain Leagues Club and subject to planning controls and local council development approval processes and do not form part of the project.

CUMULATIVE IMPACTS AND INTERACTIONS

4.76 Relationship to other projects and infrastructure

Issues included

- *The cumulative impacts of the project and the Inner West Busway project in Rozelle must be addressed.*
- *The scale of the Tigers development was restricted based on the volume of traffic that was estimated the development would generate. Any additional increase in vehicle movements caused by the metro could easily have exponential effects.*
- *The Rozelle Public School works combined with noise, vibration and dust from the metro construction will severely limit outdoor play areas and exacerbate noise, dust, vibration and truck movements*
- *A DA has been submitted for demolition and construction of the eastern half, and refurbishment of the western half of 120 Pitt Street.*
- *Any impacts and monitoring of Sydney Metro excavation and piling works relative to the existing railway lines will need to be undertaken.*
- *Concern that construction activities will have an adverse impact on the implementation of measures designed to address environmental impacts associated with a nearby redevelopment.*



Response

Road works in Rozelle for the Inner West Busway project are expected to be completed in the first quarter of 2010, with the completion of all construction work for the project (ie bridge works) by the end of that year⁹. Construction of the metro station at Rozelle is expected to commence in mid 2010 (demolition and site establishment), with shaft and cavern excavation commencing at the end of 2010. Therefore there is likely to be little or no overlap between the construction periods of these projects.

However, Sydney Metro does acknowledge that some residents may experience 'construction fatigue' as a result of multiple projects being constructed in the vicinity of their homes over a long period of time, with little or no breaks between construction periods. The potential for cumulative impacts from other nearby projects has been taken into consideration when determining detailed mitigation measures, particularly relating to traffic and noise impacts.

Traffic analysis suggests that after the commencement of Metro operations the intersection of Victoria Road and Darling Street will operate at a level of service D (LoS D) with an average vehicle delay of about 50 seconds in the AM peak hour, which is similar to operations under existing conditions.

In addition, an environmental impact assessment of the Balmain Tiger's Leagues Club development is still required before any development on the site is approved. That assessment should address potential land use changes as a result of the metro.

Sydney Metro and RailCorp have entered into a partnership agreement and various interface agreements to ensure construction impacts are mitigated, including stringent monitoring regimes.

Coordination with other development, including approved Development Applications in Martin Place, is proposed via Statement of Commitment No.9.

4.77 Cumulative traffic issues

Issues included

- *More extensive traffic studies are needed to take into consideration other developments planned in this busy area (eg Tigers Club redevelopment, Callan Park and White Bay).*
- *Construction of the new school hall at Rozelle Public School will generate additional construction traffic throughout 2010.*
- *The current disruption along Victoria Road due to the Iron Cove Bridge redevelopment is already creating dangerous traffic conditions and will be exacerbated by metro construction.*

Response

Sydney Metros' traffic and transport advisors note that based on the Paramics modelling undertaken for the project, the provision of a bus lane and bus lay-by at Rozelle Station should improve traffic over the alternative of a bus stop in the existing outbound traffic lane. The construction of a cross intersection at Waterloo Street will allow right turns out of the Tigers Club which will aid accessibility and improve the operation of the Darling Street / Victoria Road Intersection through a small reduction in traffic using the intersection. The traffic studies undertaken for Leichhardt Municipal Council indicate that impacts from the proposed Multiplex development and Tigers Club redevelopment are acceptable.

⁹ RTA 2009, Program of works July 2009-April 2011, http://www.innerwestbusway.com.au/program_of_works_july_2009_-_april_2011.pdf



The Tigers redevelopment will provide a pedestrian bridge over Victoria Road. Pedestrian underpasses will be constructed as part of the project beneath Victoria Road and Darling Street to provide safe passageways for users of the Metro as well as general pedestrians.

Traffic analysis suggests that after the commencement of Metro operations the intersection of Victoria Road and Darling Street will operate at LoS D with an average vehicle delay of about 50 seconds in the AM peak hour, similar to operations under existing conditions. Nevertheless, there may be the need for supplementary traffic analysis in the vicinity of the Rozelle Station precinct to assess the traffic and transport implications of aspects of the Metro proposal.

As discussed above, road works in Rozelle for the Inner West Busway project are expected to be completed in the first quarter of 2010, with the completion of all construction work for the project (ie bridge works) by the end of that year¹⁰. Construction of the metro station at Rozelle is expected to commence in mid 2010 (demolition and site establishment), with shaft and cavern excavation commencing at the end of 2010. Therefore there is likely to be little or no overlap between the construction periods of these projects, and therefore no or only minor cumulative traffic impacts.

It is proposed that construction traffic changes and impacts will be monitored by a Traffic and Transport Liaison Group. The CTMPs and TCPs will address any cumulative impacts of multiple construction sites to build the metro project.

OTHER ENVIRONMENTAL ISSUES

4.78 Visual and urban design

4.78.1 Loss of amenity of area during construction

Issues included

- *Since buildings and factories have been removed from the rail yard, we have been left to experience a high level of aural and visual pollution.*
- *The construction phase will be 24 hours a day, seven days a week for five years, hoardings and truck movements will make our business an unpleasant place to visit.*
- *Three metre hoardings will block some natural light to the first floor and six metre hoardings will severely affect the first floor and partially affect the second floor. We suggest a condition imposing the height limit of hoardings in this location to three metres.*

Response

Hoardings will be constructed around construction sites to alleviate noise, dust and visual impacts during construction. Hoarding design and placement will be in accordance with relevant local Council policies including the City of Sydney's Hoarding and Scaffolding (Local Approvals Policy). Adjacent residents and businesses will be consulted regarding hoarding design. Potential issues such as visual amenity, the need to maintain visual access for businesses and solar access will be considered on a case by case basis.

Existing visual and amenity issues are noted.

¹⁰ RTA 2009, Program of works July 2009-April 2011, http://www.innerwestbusway.com.au/program_of_works_july_2009_-_april_2011.pdf



4.78.2 Loss of urban trees

Issues included

- *The vegetation on the cliff face provides camouflage of some of the aural and visual pollution of the Rail Yard and City West Link.*
- *There will be a loss of mature trees in Union Street due to the eastern entrance.*

Response

The clearing of vegetation and, in particular, mature trees will be minimised to the greatest extent practicable and trees to be retained during construction will be clearly marked on Environmental Construction Method Statements.

The preferred Pymont station location will necessitate the loss of mature trees in Union Street. The Pymont Station Plan includes extensive planting of street trees along Union Street to replace the trees to be lost during construction and improve visual amenity.

4.78.3 Impacts to public domain

Issues included

- *The preservation and improvement to Wynyard Park and other proposed public spaces that will form part of the Barangaroo-Wynyard Station master plan is supported.*
- *The upgrade of York Lane is a very positive initiative.*
- *Landscaping will impact on ground floor tenancies.*
- *An open plaza at Rozelle would have unacceptable impacts to the very sensitive historical buildings and uses, and also would be noisy.*
- *Adjacent and corner buildings currently shield St Thomas Anglican Church from noise, wind and rain. It would be a disaster to have the buildings exposed to the full noise of Victoria Road. Church and school services would be unworkable and buildings would have to be sealed, double glazed, sound insulated and air conditioned. Outdoor activities would have to be restricted. This may affect its long-term viability.*

Response

The retention and enhancement of public spaces adjacent to the Sydney Metro Stage 1 stations is a key objective of the Station Plans. Each Station Plan is focused on integrating public spaces and surrounding land uses with transport interchange facilities to maximise public domain utility.

Station entrances have been strategically located in developing the Barangaroo-Wynyard Station Plan to improve accessibility and assist in revitalising the York Lane precinct. Personal safety including the need for additional street lighting will be considered during detailed design.

Improving urban amenity and maintaining heritage significance is a key objective of the Rozelle Station Plan. Potential noise impacts and changes to the micro-climate of this precinct would be considered during design development

Landscaping adjacent to businesses will be developed in accordance with the Business Management Strategy and will consider the need for visual access on a case by case basis.



The ventilation infrastructure required in Castlereagh Street as part of the Martin Place Station will be designed and located to maximise amenity and visibility of surrounding retail shopfronts.

4.78.4 Visual impact of the metro structures

Issues included

- *The area of the Rail Yard and City West Link has been a considerable eyesore for many years.*
- *The vents outside the MLC Centre in Castlereagh Street will have negative impacts on the surrounding precinct.*
- *The stabling yard will have visual impacts on nearby residences.*
- *The residents of lower Justin Street request a landscape plan that includes substantial shrub and tree planting to mask the visual and illumination impact of the stabling yards.*
- *The 7.5 metre high services building on the northern boundary of north-facing courtyards of Waterloo Street residences would result in overshadowing, visual impact, loss of amenity etc.*
- *The vents for Martin Place should not occur on a street frontage but be carried through any new construction to roof level.*
- *Concern over impact of station.*

Response

The Rozelle stabling and maintenance facility will be landscaped in accordance with a site specific Landscape Management Sub-Plan. The Rozelle Depot Master Plan outlines potential landscaping treatments that will be considered during detailed design including:

- Edge planting along the boundaries with Lilyfield Road and the City West Link, and a various locations within the depot.
- Creation of an open space and wetland area along the north-eastern boundary with the City West Link.
- Provision of a wide landscape strip along the northern boundary above the portal entry.
- Integration of water-sensitive urban design features (such as water detention basins) to improve water quality and create a more attractive environment.

External operational lighting will be designed in accordance with relevant Australian Standards to minimise the potential for light intrusion impacts on adjacent residences.



4.79 Air quality

4.79.1 Dust issues relating to spoil/hazardous construction dust

Issues included

- *Dust during demolition, excavation and spoil removal has not been adequately addressed. Without full encapsulation of the site during demolition and the truck loading areas, airborne dust will be an ongoing hazard to residents.*
- *The EA does not indicate whether dust enclosures will be erected and the location and nature of the enclosures. Mitigation measures will be left to contractors who will presumably put in place the cheapest rather than the most effective measures.*
- *The Tigers demolition in itself will create a large amount of dust.*
- *Dust levels will affect businesses and people living or working near construction sites, and will affect the health (including hayfever and asthma) of residents, staff and children at Rozelle Public School.*
- *Specific dust management measures should be specified. The following should be considered: encapsulated site, dampening sites, covering loads, controlling and covering spoil heaps, wheel wash or wheel rubble, maintaining or providing air conditioning to buildings.*
- *Polluted air will be discharged from the construction sites' shafts and tunnels.*
- *Strong wind will carry dust from construction sites and affect a larger area.*
- *Fresh air unit filters in the buildings will be blocked easily, which will reduce the fresh air supply.*
- *Sydney Metro should specify compensation they will provide if specific dust management measures are not applied or are not effective.*
- *The marshalling yard site will be cleared and excavated for about 18 months. The only method to stop the dispersion of contaminants is to keep the ground constantly wet. We are concerned about exposure to contaminants (eg lead and asbestos) if this procedure is not adequately enforced.*
- *An independent third party should perform regular and frequent monitoring of dust and enforce air quality requirements (eg halt construction if outside DECCW standards).*
- *There is a concern that emissions from Air vents and water treatment facilities may have adverse impacts on construction and operation of the new Star City hotel.*

Response

Section 19.2 of the EA describes the potential impacts of the Sydney Metro Stage 1 project on existing air quality at each of the construction worksites. The EA identified that the main potential impact to air quality during construction would be associated with dust. The major sources of dust during construction would be from demolition of existing buildings, excavation works and spoil stock piles at the station and depot construction sites. Dust is most likely to be generated during initial construction site establishment, with controls such as sealing of sites (hardstanding) and enclosing spoil handling areas greatly reducing the potential for dust generation during later construction phases.

Overall, construction air quality impacts would be short term in nature and managed in accordance with established standard practices. While some dust generation during construction is inevitable,



dust emissions are unlikely to substantially alter background air quality and would not present an unacceptable risk to human health.

Construction dust emissions would be managed in accordance with the Environment Protection Licence from the Department of Environment, Climate Change and Water (DECCW). The DECCW would regulate and independently review dust monitoring and management across the project.

Where practicable, the demolition of buildings would commence with internal works and external walls would be left intact as long as possible to minimise potential dust impacts. The EA identifies a range of mitigation and management measures to control impacts on air quality (section 19.2.3). These measures include the dampening down work areas and ensuring materials likely to be a potential source of dust are enclosed or stored in a shielded location. Additional controls for specific sites or phases of construction deemed to be high-risk dust activities may include the screening of buildings where dust-producing activities are taking place, and the consideration of full enclosure of sites.

A Construction Air Quality Management Sub-Plan would be prepared and implemented to manage air quality impacts during construction. Monitoring of air quality during construction would be undertaken to ensure compliance with the Sub-Plan and the DECCW Licence. The Sub-Plan would also include a dust contingency plan to address instances where observed dust levels are elevated or dust-related complaints. The contractor is obliged to conduct construction activities in accordance with the CEMP, Sub-Plan, Statement of Commitments and conditions of approval. The construction contractor would be internally and externally audited on their environmental compliance with the CEMP, Sub-Plan, Statement of Commitments and Conditions of Approval.

Impacts on businesses would be managed in accordance with the Business Management Strategy. Measures to minimise and mitigate construction impacts on businesses including dust impacts would be considered on a case by case basis.

Any asbestos encountered during construction will be managed and disposed of in accordance with the Code of Practice for the Safe Removal of Asbestos (National Occupational Health and Safety Committee 2002 [1998]) and Australian Standard AS-2601 1191 – Demolition of Structures.

4.79.2 Ventilation shaft air quality

Issues included

- *Will effective filtration be fitted to the vents?*
- *There are a number of children at the centre who have asthma. What can Sydney Metro do to ensure their health is not compromised?*
- *The placement of the ventilation stack in such close proximity to residential premises is unacceptable due to particulate dust (from brakes).*
- *Where will the exhaust fans be placed for air conditioning units etc?*

Response

Each Station will include a ventilation system incorporating ventilation shafts. The metro trains are electric and emissions will be limited to brake dust, which will be minimised through the implementation of a regenerative brake system. The quality of air emitted from the ventilation shafts will be consistent with background ambient air quality and no additional management measures will be required.



4.79.3 Construction vehicle/plant emissions

Issues included

- *Traffic jams from loading trucks will result in high levels of carbon dioxide emissions.*
- *The use of bio-diesel should be investigated in place of mineral-diesel.*

Response

The emissions from construction vehicles and plant and equipment will not be of a magnitude likely to result in substantial changes in local road side air quality. Emissions would be minimised where reasonably practicable through:

- Ensuring that engines of all vehicles and plant are not left running unnecessarily.
- Using low emission vehicles and plant fitted with catalytic converters, particulate filters or similar devices.
- Using ultra-low sulphur fuels.
- Requiring that plant is well maintained and serviced regularly.
- Siting haul roads and operating plant away from sensitive receivers

The use of biodiesel in plant and equipment will be considered during construction planning. Feasibility considerations will include quality and availability of biodiesel, fuel price comparison and any impacts on maintenance regimes.

4.80 Indigenous heritage

Issues included

- *Buried sites may exist in the project area.*
- *Monitoring for indigenous sites should be recommended across the project.*
- *If a site is discovered, the appropriate course of action is for an archaeologist to be present on site to monitor heavy equipment and for an archaeologist to remain on site until he or she is satisfied that undisturbed natural deposits or bedrock have been reached.*

Response

The material extracted from bores and other test excavations conducted to date for the Sydney Metro Stage 1 has not contained any archaeological relics. All construction personnel will be trained on their responsibilities under the *National Parks and Wildlife Act 1974* and the procedure to be implemented in the event that any archaeological relics are uncovered.

If any archaeological relics are uncovered during construction, work in that area will cease and an indigenous heritage specialist will be consulted. Work in the affected area will not resume until any required approval(s) have been granted.



4.81 Geology and groundwater

4.81.1 Subsidence

Issues included

- *Tunnel excavation and associated lowering of groundwater levels may cause possible subsidence/ground settlement that may damage properties (including those of historical importance) and utilities.*
- *Sydney Metro is requested to submit the following: structural drawings and geotechnical reports, predicted settlement (in particular, differential settlement), predicted lateral movement, built information of tunnels and support details (including geological maps).*
- *Selection of the tunnelling methods must consider the ground conditions (including groundwater), and potential impacts on underground services/structures.*
- *Exploration ahead of the tunnel borer should be undertaken to identify any unexpected ground conditions.*
- *Concern regarding settlement or rock collapse impacting buildings, including 55 Clarence Street, 48 Martin Place and Star City.*

Response

In addition to project specific investigations, the previous geotechnical studies and tunnel and basement excavations completed within the CBD to date indicate that the tunnel and stations caverns will predominately be driven through Hawkesbury Sandstone. These conditions are favourable for the excavation of tunnels using conventional techniques. Groundwater inflow into the excavations will be generally low due to low rock permeability and this, combined with the storage capacity of Hawkesbury Sandstone reduces the possibility of ground settlement resulting from excavation.

Geotechnical and groundwater considerations have been a focus in developing the reference design. A Geotechnical and Settlement Management Strategy will be prepared and implemented to ensure that geotechnical conditions and the likely effects of any groundwater drawdown is considered during detailed design and construction planning. The development of a detailed model of ground conditions including the full details of existing and approved excavations, basements, tunnels and other sub surface infrastructure will be a central element of this Strategy. Settlement criteria for utilities and other potentially sensitive structure including heritage buildings will be identified prior to the commencement of excavation in the vicinity of these structures.

Where the geotechnical model indicates the potential for ground settlement, reasonable and feasible management measures to minimise ground settlement would be implemented. Building condition surveys will be undertaken on all building and structures in the vicinity of the tunnel and station cavern excavations and groundwater levels will be periodically monitored.

Any damage to property resulting from the project will be rectified at no cost to the owner.



4.81.2 Groundwater treatment

Issues included

- *An issue of concern is groundwater impacts such as collection and treatment.*

Response

The presence of perched aquifers and the nature of the geology along the route alignment suggest that some limited groundwater inflows may be encountered during excavation. The main tunnels will be designed to be watertight so no groundwater egress is expected in these areas. All practicable measures to limited operational groundwater inflows for station caverns and crossovers to between 6.5 and 11 litres per day per square metre will be implemented, subject to ground conditions.

Groundwater in the Sydney Basin generally has a low pH (high acidity), is relatively high in total dissolved salt and may contain manganese and other contaminants. All groundwater captured during construction and operation would be treated prior to discharge. As a minimum, treatment will include flocculation to remove any suspended sediment and the addition of caustic to neutralise the pH. The required treatment strategy would be finalised in close consultation with DECCW during detailed design taking into consideration the results of groundwater quality monitoring.

4.82 Environmental management

4.82.1 Reporting and monitoring of environmental impacts

Issues included

- *An independent assessor should be required to:*
 - *Test the impacts on Rozelle Public School.*
 - *Measure noise and vibration at regular intervals during and after construction.*
 - *Monitor and enforce contractual conditions and standards.*
- *A mechanism should be adopted to ensure appropriate measures and safeguards are implemented during construction, are not removed to reduce costs and are complied with.*
- *No consideration has or will be given to measure sound, lighting and vibration levels at St Thomas Church.*
- *How will noise, dust and vibration be managed and controlled?*
- *There is no assessment of management or minimisation of pollution for maintenance activities at the stabling yard including cleaning of trains.*
- *A mechanism should be adopted to ensure appropriate measures and safeguards are implemented during construction, are not removed to reduce costs and are complied with.*

Response

A detailed draft Statements of Commitments is included in the EA for Minister for Planning to consider in determining appropriate Conditions of Approval. These commitments are based on the detailed assessment documented in the EA and set out a comprehensive Environmental Management System



(EMS) that will be adopted by Sydney Metro and its contractors to maximise environmental benefits and avoid and minimise potential environmental impacts over the project lifecycle.

Key elements of this EMS include the preparation and implementation of a Sustainability Plan, a Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan. In accordance with ISO 14001, continual improvement will be a key focus of the EMS and comprehensive procedures for inspections and auditing and incident and emergency response will be incorporated into the CEMP. The Operational Environmental Management Plan would apply also to the metro operator (IMO) and all activities required to be undertaken at the Rozelle stabling and maintenance depot.

Specialist advisors on key environmental issues such as noise and non-indigenous heritage will continue to provide guidance on management strategies during construction. In addition, an independent Environmental Representative will oversee compliance with the Statement of Commitments and any Conditions of Approval required by the Minister for Planning.

Construction of the project will be managed in accordance with the Environment Protection Licence from the Environment Protection Licence from the Department of Environment, Climate Change and Water (DECCW). The DECCW will regulate and independently review environmental monitoring and management across the project.

ENVIRONMENTAL ASSESSMENT DOCUMENTATION

4.83 Sufficiency of assessment

4.83.1 Insufficiency of planning studies

Issues included

- *A preliminary environmental, social and cost-benefit analysis has not been presented for public scrutiny.*
- *Legal planning and environmental studies have not been carried out for the project.*
- *The EA does not demonstrate what strategic transport need is being addressed and therefore cannot justify that the project is the best choice to meet a strategic transport need.*
- *The EA fails to adequately consider an assessment of the environmental impact of the project and suitability of the site for the project.*

Response

The EA documentation is fully compliant with the processes and requirements of the *Environmental Planning and Assessment Act 1979*. Prior to exhibition, the EA was reviewed by the Department of Planning and other regulatory agencies, including the Heritage Branch, DECCW and RTA, to ensure adequacy of the assessment.

Specialist technical papers were prepared and exhibited as part of the EA as follows:

- Technical Paper 1 – Transport and traffic.
- Technical Paper 2 – Spoil management.
- Technical Paper 3 – Noise and vibration.



- Technical Paper 4 – Archaeological heritage.
- Technical Paper 5 – Non-archaeological heritage.
- Technical Paper 6 – Economic and social.
- Technical Paper 7 – Ecology.

The EA and all Technical Papers have been prepared by experienced professional organisations using established methodologies.

The studies prepared for the EA were presented within the EA and were available as part of the exhibition of the documentation. The Department of Planning provided advice to the community as to how copies of the documents could be inspected.

4.83.2 Inadequate plans

Issues included

- *The Reference Design was inadequate and unclear.*
- *The plans on exhibition didn't show the height, scale and design of large air stacks proposed and didn't show the heritage buildings to be demolished or individual scaled, station floor plans as publicly promised.*

Response

The plans provided in the EA are conceptual and would be available in more detail when the detailed design is undertaken. The detail provided is adequate to allow an understanding of what is proposed and to assess the impacts of the proposal. The ventilation areas and station floor plans are shown in sufficient detail to understand the intent of the work and the possible extent of impacts. The effects on heritage buildings are described in Technical Paper 5 – Non archaeological heritage assessment.

The studies prepared for the EA were presented within the EA and were available as part of the exhibition of the documentation. The Department of Planning provided advice to the community as to how copies of the documents could be inspected.

4.83.3 Strategic need and business case

Issues included

- *It should have undergone both the Strategic Review and Business Case review prior to reaching the EA development.*
- *The Treasury guidelines should have been applied.*
- *A description of current transport demand and supply has been substituted for an analysis of the transport requirements to identify the highest priority strategic needs.*

Response

Chapter 4 of the EA addresses the strategic need for a metro system for Sydney. The need for improved public transport systems to cater for future population is demonstrated and a case is made for that population to be served by a metro system. The Stage 1 is presented as the enabler for a city wide metro network.



There is no requirement to provide a review of the business case in the EA. The strategic need in Chapter 4 and project justification in Chapter 22 of the EA provided an overview of why the metro project is needed and what benefits would result from it.

There is no requirement to undertaken an assessment according to Treasury guidelines within an EA context. A more general economic assessment of the project was summarised within Chapter 22 of the EA.

4.83.4 Inadequate heritage reporting

Issues included

- *A heritage impact statement has not been prepared.*
- *The heritage impact assessment of Union Square is inadequate.*
- *The heritage assessment did not recognise the heritage values of Union Square (local heritage) and the former Pyrmont Post Office (state heritage) and all other buildings forming the northern perimeter which are items of local heritage significance.*

Response

Heritage buildings affected by the proposal are detailed in Chapter 13 – Non-Indigenous Heritage, Technical Paper 4 – Non-Indigenous Archaeological Heritage and Technical Paper 5 – Non-archaeological Heritage of the EA. Scaled plans are provided for each station and the depot in Appendix E of the EA. Plans provided include (but are not limited to):

- Location plans
- Street level plans
- Concourse level plans
- Mezzanine and platform plans
- Sections and elevations.

A heritage impact assessment detailing the potential impacts on heritage buildings was undertaken in accordance with the Heritage Council’s Guidelines “Archaeological Assessments”¹¹, and the revised criteria for assessing heritage significance in “Assessing Heritage Significance” a NSW Heritage Manual update¹².

Technical Paper 5 – Non-archaeological Heritage identifies Alternative 2 as a preferred option from a heritage perspective. The scheme proposed for the eastern entrance of Pyrmont Station is to be Alternative 2 as identified within the EA.

Further responses regarding potential heritage impacts are in sections 4.45 to 4.51 of this report.

¹¹ Heritage Office & Department of Urban Affairs and Planning 1996, Archaeological Assessments (NSW Heritage Manual)

¹² NSW Heritage Office 2001, Assessing Heritage Significance (NSW Heritage Manual).



4.83.5 Traffic assessment

Issues included

- *The current traffic assessment is inadequate as it does not address impacts to local roads, does not consider truck movements relating to all construction activities, doesn't consider local traffic conditions (eg Saturday morning flows), and doesn't fully assess the demand for parking on local streets.*
- *Full traffic modelling has not been undertaken.*

Response

Information on construction traffic was provided in Volume 2 of the EA, comprising Technical Paper 1 – Traffic and Transport. This working paper provides an analysis of the potential impacts associated with construction works on the road network operation. The report is supported by a series of draft Traffic Management Plans for each construction site. These plans address issues associated with parking, access, cyclists and pedestrians. They will be further developed by the contractor as the design and construction methodology is further developed.

Technical Paper 1 and Chapter 14 of the EA provide an assessment of the existing use of walking and cycling in NSW and proposed integration of pedestrians and cyclists with the metro system.

Further responses regarding construction traffic management are provided in section 4.34.

4.83.6 Socio-economic impacts

Issues included

- *There is no examination of the financial and social cost benefit analysis.*

Response

The economic and social impacts at a local scale are addressed in Technical Paper 6 – Economic and social assessment. Relevant economic impacts on Pymont due to construction are addressed in the report.

The social impact assessment of likely impacts resulting from a particular development proposal allows for the identification, prediction and where possible quantification, of impacts as either likely benefits or negative impacts. Unlike other sciences it is difficult to always quantify benefits or impacts in numeric terms. The assessment was, however, undertaken from the point of view of the person or business affected. A financial cost analysis at a local scale was not undertaken as part of the EA, but financial issues would be considered in negotiations with leaseholders and land owners where property acquisition is required.

4.83.7 Station locations

Issues included

- *Specific station designs for Pymont Station options were not available during the public exhibition and consultation period.*
- *Insufficient detail is provided in the Preliminary Environmental Assessment (PEA) to undertake detailed assessments of potential impacts.*



Response

Alternative sites for station entrances were assessed as part of the process for selecting station locations. This is discussed in section 5.5 of the EA.

Alternative sites for a metro station at Pyrmont and the reason for selecting the preferred site were addressed in section 5.5 of the EA. The assessment of alternatives was in sufficient detail to demonstrate how the preferred site was chosen.

4.83.8 Other impacts**Issues included**

- *No details are provided as to the materials to be used in the construction of the above-ground structures.*
- *There is a lack of detail on how work sites are configured, location of hoardings, etc. This makes the impact to these businesses impossible to assess.*
- *The EA provides only an outline of the construction methodology and a reference design, all of which are subject to change by the contractors without further review by concerned stakeholders.*
- *The treatment of dust and air quality is flawed and should be key issues. The proposal to deal with air quality in Construction Air Quality Management Sub-Plan of the CEMP is inadequate.*
- *There is little assessment on ecology.*
- *There is inadequate information provided within the EA to undertake detailed assessment of the nature and significance of the potential adverse impacts.*
- *There is a lack of information and assessment regarding the environmental impacts on local amenity, traffic and environment from the stabling and maintenance yard and future extension of the yard.*

Response

Construction methods and operation of work sites are described in Chapter 7 of the EA. The detail provided is based on the reference design provided and is in sufficient detail to allow an adequate assessment of the construction impacts. More detail on construction activities will become available as the design is further developed.

The construction methodology and reference design were provided in the EA as an indication of what the project would look like, how it would be constructed and what the potential consequences on the environment would be. The design and construction methodology will be further developed by the contractors and designers and the details of these would be subject to further scrutiny by the department of planning through the requirement for it to review and authorise management and design plans prepared by the contractors.

Details on the management of traffic at the construction sites is provided in Technical Paper 2 – Traffic and transport and in the draft Traffic Management Plans for each site found in the appendices.

Key issues were identified by the Department of planning when the Director-General's requirements were issued. The DGRs also required the proponent to review other issues with a view to determining whether they should be regarded as key issues and assessed accordingly. This was undertaken in Chapter 20 of the EA and air quality and ecology were regarded as having a low residual risk rating.



Potential impacts and appropriate mitigation measures for air quality control and impacts to ecology were described in section 19.2 and 19.3 of the EA.

55 Clarence Street is not addressed specifically within the EA as it is not directly affected by the proposed development. Where possible indirect impacts may result these are addressed within the relevant impact categories.

It was noted in the EA in section 6.5 that any extension to the stabling facilities to accommodate Stage 2 of the Sydney Metro Network would be addressed in a separate EA prepared for Stage 2. That EA is currently being prepared.

4.83.9 Cyclists and pedestrian issues

Issues included

- *There is no mapping of cycle catchments or pedestrian flows.*
- *No proposals are listed to improve accessibility for pedestrians or cyclists apart from the immediate vicinity of the stations or the depot.*

Response

An assessment of the existing cyclist and pedestrian environment was provided in section 4.3.2 of the EA.

Some public domain improvements, such as extensive cycle routes, as suggested in some submissions are not the responsibility of Sydney Metro and do not form part of the Stage 1 project. The Station Plans clearly identify proposals (including pedestrian and cyclist facilities) that are part of the Sydney Metro Stage 1 project and proposals that are to be developed and implemented by others.

4.84 Methodology of assessment

Issues included

- *The Social Impact Study is packed with value judgements. What might be a 'slight' impact to those who focus on the bottom line, can be described as 'significant' by those directly affected.*

Response

The social impact assessment of likely impacts resulting from a particular development proposal allows for the identification, prediction and where possible quantification, of impacts as either likely benefits or negative impacts. Unlike other sciences it is difficult to always quantify benefits or impacts in numeric terms. The assessment was, however, undertaken from the point of view of the person or business affected.

4.85 Quality of documents

Issues included

- *The brochure is poorly designed and misleading as it shows an image of the QVB building on its front cover as representing the Pyrmont precinct.*
- *The Reference Design plans - Revision 1 drawings are unclear and inadequate.*



Response

The summary brochure refers to the entire project from Central to Rozelle. The cover design therefore includes images of the city generally and these do not represent specific proposed stations. It is a graphic representation of life within the study area – the city of Sydney.

Figures relating specifically to Pyrmont are provided in the EA.

Public communications as part of the EA display process included direct mail information sheets for the CBD, Pyrmont and Rozelle respectively.

The purpose of the Reference Designs is described above.

ENVIRONMENTAL ASSESSMENT EXHIBITION**4.86 Duration of the display****Issues included**

- *The period available for reading and commenting - 30 days - is far too short, particularly for such a large and complex project. The period should be at least three months.*
- *The Department of Planning should allow a reasonable 'grace' period for submissions to be received and considered beyond the nominated deadline.*

Response

The Department of Planning sets out the consultation requirements to be undertaken by the proponent for the project for which it is seeking approval. This is done through the Director-General's requirements (DGRs) for the proponent's environmental assessment.

The NSW Department of Planning clearly defines the exhibition period for public display of Environmental Assessments under Part 3A of the EP&A Act. This includes advertising requirements and a requirement to place the EA on public exhibition for a minimum period of 30 days. Once on exhibition, the community is invited to make formal submissions.

The EA for the project was available to view at nine locations, at community information sessions, and was available on CD and electronically through the project website. The EA was also available through the Department of Planning.

Submissions on the project were still accepted after the end of the formal exhibition period to allow community and stakeholders additional time to complete their submissions.

The information in the EA was also summarised in a 16 page summary brochure, which was available at the display locations, at community information sessions, through the project website and on request from Sydney Metro for the duration of the exhibition period.

Other publications produced to inform stakeholders about project issues and available at information sessions and electronically on the project website, included:

- Noise and vibration fact sheets.
- Property and leaseholder fact sheets.



- Project updates (targeted specifically for each area along the alignment - CBD, Pyrmont and Rozelle). These updates were also letterbox dropped to relevant residents and businesses in the corridor, explaining the key changes and issues in the EA document.
- Artists' impressions, station plan maps and network maps.

4.87 Availability of the documents

Issues included

- *There was no full Environmental Assessment, just a brief, glossy summary brochure.*
- *The full environment and heritage impact assessments should both be available to the public, as should the detailed station plans, including the locations and design of air vent stacks.*
- *Metro station plans and route plans need to be provided on a free CD.*
- *It has been difficult to access the relevant documents online or in hard copy as they are large in volume and complex in content.*

Response

The full EA was on display from Wednesday 9 September to Monday 26 October (inclusive) at the following locations:

- Department of Planning – Information Centre, 23-33 Bridge Street, Sydney, Monday to Friday 9am – 5pm.
- Nature Conservation Council of NSW – Level 2, 301 Kent Street, Sydney, Monday to Friday 9am – 5pm.
- City of Sydney Council – Level 2, Town Hall House, 456 Kent Street, Sydney, Monday to Friday 8am – 6pm.
- Pyrmont Community Centre – corner John and Mount Streets, Monday to Thursday 9am – 9pm, Friday 9am – 6pm, Saturday 10am – 4pm.
- Ultimo Community Centre – 40 William Henry Street, corner Harris Street, Monday to Friday 10am – 8pm, Saturday and Sunday 10am – 4pm.
- Leichhardt Municipal Council Citizen's Service Centre – 7-15 Wetherill Street, Monday to Friday 8.30am – 5.15pm.
- Leichhardt Library – Italian Forum, Piazza Level, 23 Norton Street, Monday to Friday 9.30am – 8pm, Saturday 9.30am – 4pm, Sunday 10am – 4pm.
- Balmain Library – Rear of Balmain Town Hall, 370 Darling Street, Monday, Thursday, Friday 9.30am – 5.30pm, Tuesday-Wednesday 9.30am – 8pm, Saturday 9:30am – 4pm.
- Rozelle Neighbourhood Centre – 665a Darling Street, Monday to Friday 9am – 4.30pm.

In addition, the full EA was (and currently remains) publicly available on the Sydney Metro and NSW Department of Planning websites, as well as on free CDs that were available at information days and on request.



Sydney Metro's detailed Station Plans were on public display from Wednesday 9 September to Monday 26 October inclusive. Printed copies of the Station Plans were available at each of the EA display locations, and were available to view on the Sydney Metro website.

STATION PLANS

4.88 Station planning process

Issues included

- *We would like to see Wynyard Green recognised as an educational attraction given it is the largest teaching campus in the Sydney CBD.*
- *Should Sydney Metro, whose main role is public transport, be undertaking a re-imagining of an area like Rozelle?*
- *Local council and Sydney Metro should have joint planning for any urban development in and around the station.*
- *Sydney Metro documents identify 55 Clarence Street as a 'future development site'.*

Response

Section 55D of the *Transport Administration Act 1988* enables Sydney Metro to prepare station plans for land on which metro stations are to be situated, and land in the vicinity of such metro railway stations, for the purpose of developing a metro railway system.

The role of the Station Plans is to ensure that the station entrances and their public domain integrates with the station precinct environs by providing the strategic context, vision and guiding principles to achieve this.

The master planning process has included a background analysis of various elements implicating the location and design of station entrances and their public domain. Included in this analysis the consideration of potential development sites to consider customer demand.

Local councils have been involved in the preparation of the Station Plans as well as the Design Principles Workshops that focus on developing design principles for Rozelle and Pyrmont stations.

Sydney Metro has also consulted with other relevant public authorities such as the RTA, Ministry of Transport, Department of Planning, Premiers Department, Sydney Harbour Foreshore Authority and Barangaroo Delivery Authority.

The aim of the station plans is to consolidate existing strategies and provide a vision for the future development of the station and surrounding precincts. The station plans identify the works required for delivering this vision, and as such, they illustrate what is delivered by Sydney Metro. What is to be delivered by Sydney Metro at each station site is depicted in plans within **Appendix B** of this submissions report.

The property at 55 Clarence Street would not require acquisition for the Sydney Metro Stage 1, Central to Rozelle project. Potential for future development sites have been analysed from Land Use Zoning, Height Controls and Floor Space Ratio Controls from the City of Sydney LEP. The LEP has identified 55 Clarence Street as an 'opportunity site'. The City of Sydney Council has determined a number of 'opportunity sites' in the CBD where the existing buildings do not adequately contribute to the amenity of pedestrians, the street or the public environment, whereby the Council could achieve a



higher level of amenity through a variety of mechanisms. Use of the site occupied by 55 Clarence Street does not form part of the proposed Sydney Metro Stage 1, Central to Rozelle project.

Sydney Metro recognises the importance of Navitas Wynyard Green teaching campus to the Sydney CBD.

4.89 Integration of station design and local character

4.89.1 Rozelle

Issues included

- *Objection to the Rozelle station plan proposals from an urban design perspective.*
- *Should all planning and construction options be exhausted, then the proposed station entries should fit into new buildings of the same urban form.*
- *Visual objectives such as "the view towards the Rozelle gateway" are overriding more important objectives such as maintaining the integrity of the main street built form and retail experience.*
- *Retail/pedestrian energy is strongest where block edge buildings occur on both sides of Darling Street and weakest where built frontage is broken by open space.*
- *Rozelle Station should also offer floor space for mixed uses on the upper floors similar to the York Buildings opposite.*
- *The car park in front of St Thomas Church should be retained.*
- *The 'car focused' Tigers redevelopment is at odds with Sydney Metro's aim to 'encourage greater use of public transport'.*

Response

Rozelle urban form

The metro station entrance into Darling Street would respond to the urban form and activity that typifies this part of Rozelle. It has been recognised that Rozelle is located in a unique village-style location. Section 19.1.2 of the EA outlines the factors that were considered in the design of the metro structures (including heritage buildings and the heritage conservation area) and the design principles that have been used thus far, and those that will continue to guide future detailed design (eg station entrances designed relate to the scale and consistency of adjacent buildings).

The five Edwardian commercial buildings on the northern side of Victoria Road to be demolished for the metro station are not individually listed structures, however they are within a broader conservation area. The station design and development process determined that the sites of these buildings were the most appropriate location for entrances to Rozelle Station, given its key intersection location and significant walk up catchment potential. In locating the station, impacts to a number of other more significant buildings in the surroundings were avoided. The buildings to be demolished at the intersection were not designed as corner buildings but became so through later road widening. Their demolition will allow an improved urban design response to the intersection, and enhancement of the setting of the two listed churches on either side of Darling Street.

Statement of Commitments No.10 in the EA identified that a Sydney Metro Design Review Panel would be formed to oversee the design process and review the design of stations and associated precinct works developed by the IMO contractor. The Design Review Panel would comprise



independent specialists and would be established to evaluate the detailed design of stations and associated precinct works, with particular focus on at-surface design.

Sydney Metro is also undertaking Design Principles Workshops to develop and test design principles for the station entrances and public domain at Rozelle and Pyrmont. These workshops have involved representatives from a range of government, professional, stakeholder and community groups in order to enable an inclusive approach to informing and guiding the design of the stations at Rozelle and Pyrmont.

The treatment of the Rozelle Station entrances will be tested by design teams and presented at the workshops to assist in establishing guiding design principles for the station designs. This will include the exploration of built form at the station entrances on the northern corners of Victoria Street and Darling Streets.

The outcomes of the workshops will be a refined set of design principles for Rozelle and Pyrmont Stations that will be appended to the IMO contract. This will act as a design brief for the IMO contractor when designing the station entrances and their public domain.

Sydney Metro will deliver works identified within the delivery boundary. Suggestions relating to works outside this boundary provide strategic guidance for future improvement works. This work will be subject to further design and planning by the relevant delivery agency.

St Thomas Child Care Centre

The Rozelle Station master plan provides a vision for the Rozelle Station precinct. The Metro Delivery Plan (included in **Appendix B**) identifies the work that Sydney Metro would deliver. The provision of trees on the eastern side of Darling Street in front of St Thomas Church on the Rozelle Station master plan denotes that new landscape areas could be added by others in the future to improve the setting of the church. The car park at St Thomas Church, which is used by St Thomas Child Care Centre and others would be retained.

Balmain Leagues Club redevelopment

Sydney Metro and the Balmain Tigers Leagues Club have agreed to work together to finalise an agreement to allow Sydney Metro to use part of the Tigers redevelopment site for construction purposes. These negotiations are ongoing. This agreement would involve leasing the Tigers site during construction, with the main construction activity for the Rozelle Station occurring at this location.

Sydney Metro is working with the proponent of Rozelle Village Development for the integration of the Rozelle Village Development Application and the project.

The Development Application lodged by Tigers is independent of the Sydney Metro proposal and is being considered by Leichhardt Municipal Council. In regard to car parking, Sydney Metro is not seeking approval for any commuter parking at Rozelle. Rather, customers would walk, cycle, or transfer between the metro and existing public transport (bus).

Sydney Metro encourages sustainable travel behaviour measures including restrictive parking policy in areas of high transport accessibility. The proponents of the Rozelle Village Development will be encouraged to provide parking commensurate with the level of accessibility provided by the Metro. However, any decision regarding vehicle parking spaces below the proposed Rozelle Village Development is a matter for Leichhardt Municipal Council as part of the Development Application process.



4.89.2 Pymont

Issues included

- *The urban design and form of Pymont Station and precinct is likely to conflict with and adversely affect the approved urban form and fabric of adjacent development.*

Response

A Design Review Panel has been established to evaluate the detailed design of stations and associated precinct works with particular focus on at-surface design. The Design Review Panel comprises independent specialist expertise in architecture, urban design, transport, heritage and sustainability.

Furthermore, a number of design principles workshops have been held to develop and test a set of design principles for the metro station entrances and public domain at Rozelle and Pymont. These workshops have involved a range of stakeholder and community representatives in order to enable an inclusive approach to informing and guiding the design of the stations at Rozelle and Pymont.

4.89.3 Barangaroo-Wynyard

Issues included

- *The location of an island kiosk behind the Moretons Hotel building.*
- *On the plan there appears to be a triangular shaped structure in the new forecourt area with no clear explanation. We believe that the positioning of a structure in front of the hotel would hinder pedestrian flows.*

Response

The “island kiosk” shown near Moretons Hotel was indicative only. The purpose was to indicate means of activating the BPL. It is recognised that Moretons (and the adjacent tenancies) require access to their property. The design of the Napoleon Street area, including incorporation of the BPL, would be developed further in consultation with stakeholders.

4.89.4 Depot

Issues included

- *The residents of lower Justin Street request that revised plans be made available to residents for community consultation.*

Response

Sydney Metro will continue to work closely with stakeholders and the community to ensure they are well informed about the project, including any changes that will potentially impact the community.



OTHER

4.90 Other issues raised

4.90.1 Peak oil

Issues included

- *The project doesn't replace car traffic and will therefore not help in the second phase of peak oil.*
- *Sydney is ill-structured and unprepared for a period of declining oil and energy supplies.*
- *The objective must be to provide rail connectivity (independent of oil) for all subcentres not yet served by rail. Only surface rail on existing road corridors can be implemented fast enough. As an emergency measure, electric trolley buses are the best solution.*
- *All buses should be converted to compressed natural gas.*
- *Large and expensive metro or other rail projects (except for short sections at critical points) and long tunnels should not be started up as they will get stuck in funding problems and diesel shortages.*
- *A properly planned metro (which will be longer than the project) will assist in reducing dependence on imported oil.*

Response

“Peak oil is the point in time when oil production reaches its maximum annual rate, after which the annual production rate declines each year. While the term is currently used to describe a possible peak in total world oil production, in practice a succession of peaks have already occurred in different oil-producing regions throughout the world.”¹³

While there is considerable debate about this contention¹⁴ (Bureau of Transport and Regional Economics Working Paper 61: *Is the world running out of oil?*) governments and industry are taking the view that, whilst the timing remains problematic, it is prudent to assume that peak oil is likely to happen (or may have already happened) and that there is a need to establish alternatives to oil as a fuel for transport and to improve the energy efficiency of transport. This aligns with recognition of the greenhouse effect and the need to reduce greenhouse gas emissions.

Initiatives to reduce energy consumption by the project are detailed in section 19.6.3 of the EA.

The conversion of all buses to natural gas is not a part of this project. The government has committed to a \$34 million redevelopment of State Transit's bus depot at Leichhardt. The redevelopment will support a fleet of up to 200 buses, the vast majority of which will be environmentally friendly, low-emission gas-powered buses making this the home for Australia's largest environmentally friendly bus fleet¹⁵.

¹³ Source: CSIRO 2008, Future fuel forums June 2008

¹⁴ Bureau of Transport and Regional Economics 2005, Working Paper 61: *Is the world running out of oil?*

¹⁵ Source: <http://www.leichhardtdepot.com.au/>



The fact that tunnels are energy-intensive constructions is acknowledged, however there were many other factors that influenced the decision to provide an underground system as detailed in section 4.8 of this report.

The metro would improve the attractiveness of public transport compared to private vehicle by relieving pressure on existing public transport modes (by providing additional public transport capacity) and integrating with the existing public transport system to improve commuter choice and travel experience (for example, through shorter travel and interchange time).

The metro system is being planned to provide additional capacity to the existing public transport system so that it is able to manage larger numbers of commuters. Metro lines are also being planned to the west, north-west and south-east to improve services to these regions.

The metro system has been planned as part of a long-term solution for Sydney's transport problems. Although it is acknowledged that some alternatives could be implemented within a shorter timeframe (eg increasing bus and ferry services), these alternatives would not deliver the long-term gains to be provided by a metro system.

In terms of enhancing the existing surface rail, the government did consider enhancements to the CityRail network as a possible alternative to the project (refer section 5.2.3 of the EA).

The project has not been planned as an isolated project; it is the critical first stage of a wider metro network. While the Stage 1 project would provide significant benefits as a standalone project, it would also be of strategic importance as an enabler of the entire metro network, forming the central spine to which all other metros would link or interchange.

4.90.2 Funding of light rail

Issues included

- *The City of Sydney light rail proposals from Central to Circular Quay and Barangaroo should be financed by the City Council and a private operator to provide an important link for commuters similar to Melbourne.*

Response

The funding of light rail is not a matter than can be addressed within this project submissions report.

4.90.3 Old coal mines

Issues included

- *There is no mention of 'fugitive' CO₂ or methane gases escaping from old mine workings although Rozelle station is less than 1,000 metres from the old main shaft.*
- *No mention of coal appears in the EA although it is well known that Rozelle and Balmain have coal mines under them.*

Response

Sydney metro advisors are aware of the historical mining activities in the area. As discussed in section 19.5.3 of the EA, a detailed geotechnical model for the route and its surroundings would be developed and progressively updated during design and construction.

Site investigations include the sampling of rock and testing for a range of characteristics including for the presence of coal. There has been no evidence found of methane or CO₂ gases to date.



4.90.4 Transport Administration Amendment Bill (Rail Trails) 2009

Issues included

- *Opposition to the Transport Administration Amendment Bill (Rail Trails) 2009.*

Response

The Transport Administration Amendment Bill (Rail Trails) 2009 does not apply to the Metro network. As such, this Bill has no application to the Sydney Metro Stage 1, Central to Rozelle project.



5 The Preferred Project

5.1 Design changes

5.1.1 Overview

Subsequent to the consideration of the submissions received and additional design information becoming available, Sydney Metro proposes a number of minor modifications to the project design as presented in the Environmental Assessment. The proposed design changes to the project are described in the following sections.

The following sections also provide an assessment of the impacts likely to be associated with each design change. These assessments demonstrate that such design changes are minor and can be adequately managed with the application of suitable mitigation measures, and as such do not require a Preferred Project Report in accordance with Section 75H(6) of the EP&A Act.

5.1.2 White Bay Station location and rail alignment

The proposed rail alignment and associated location of the White Bay Station box, as described in section 6.4.7 and shown in Figure 7.12 of the Environmental Assessment, has been amended. The new preferred horizontal alignment of the White Bay Station box would be approximately 25 to 50 metres further south than the location described in the Environmental Assessment (refer Figure 5.1).

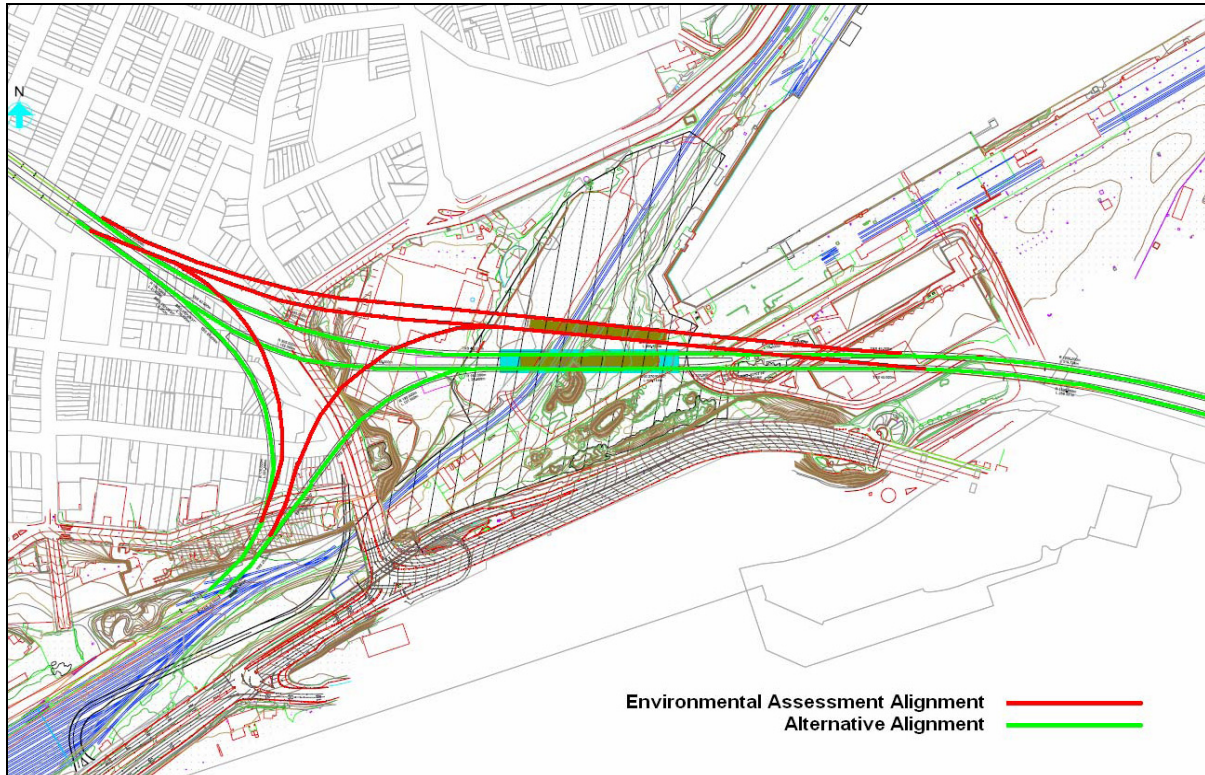


Figure 5.1 Alternative alignments at White Bay Station

The amendment is primarily due to new geotechnical borehole data and the consequential re-assessment of the ground conditions at the White Bay Power Station. Additional geotechnical investigations conducted along the Sydney Metro Network Stage 1 (Central to Rozelle) alignment have shown that the ground conditions beneath the power station and the proposed areas of excavation surrounding the White Bay Station, comprise poor, soft ground material extending to depths of RL-16m AHD or greater and contain the remnants of timber piles used in the construction of the power station. These conditions pose significant program and safety risks as it would not be possible to support the soft, water logged material without high risks to construction workers. As a result, an alternative alignment has been developed to avoid the soft ground where possible.

Moving the alignment south would be sufficient to avoid any piles below the boiler house structure. This would also result in the depot connection being situated within rock, making tunnelling of the necessary turnout cavern more viable, but also allowing for cut and cover construction should mining prove unfeasible.

White Bay Station would be rotated approximately 6 degrees in an anti-clockwise direction to more of an east-west orientation. In addition, to increase the clearance to the power station and optimise the radii between White Bay and Rozelle stations, the station box has been moved eastward towards the construction boundary.

Horizontal alterations to the alignment extend from Johnsons Bay to the Rozelle crossover. Vertical alterations extend fully from Pymont to Rozelle due to the need to tie in the grades.

As a result of the alignment alterations the total tunnel length would be increased by 16 metres on the Rozelle Down Main and by 15 metres on the Up Main. The main line gradients would also be altered for the new station location and chainages however these changes are not significant. The eastern depot connection from the main line to the portal is decreased in length by 47 metres and the western depot connection by 15 metres.

The revised main line tunnels would impact on the alignment of the depot connections. To avoid significant alterations at the tunnel portal, the radius on the western connection has been reduced to 180 metres. Track radii of 160 metres would allow the eastern connection to remain predominantly within the existing SEPP corridor boundary until nearing the station, where of necessity the whole construction is outside of the existing boundary. As this is an undesirably tight radius, it has been realigned outside of the SEPP boundary for a short distance within the White Bay development site and the 190 metre radius has been retained. This will produce significant improvements in rail wear and track maintenance over the life of the project and reduce ground borne vibration below the residences in this area.

Further detail regarding the design changes at White Bay and the surrounding features affected by the station is shown in Figure 5.2.

5.1.3 Assessment of White Bay Station location and rail alignment

Noise and Vibration

An assessment of the revised alignment for White Bay was undertaken and is provided at **Appendix E**. The assessment was made on the basis of a more southern alignment and a changed horizontal alignment of the east and west depot connection, as compared with the Environmental Assessment design for White Bay Station.

The purpose of the assessment was to calculate the ground-borne noise and vibration levels during operations and determine whether the future ground-borne noise and vibration levels would comply with the design goals.



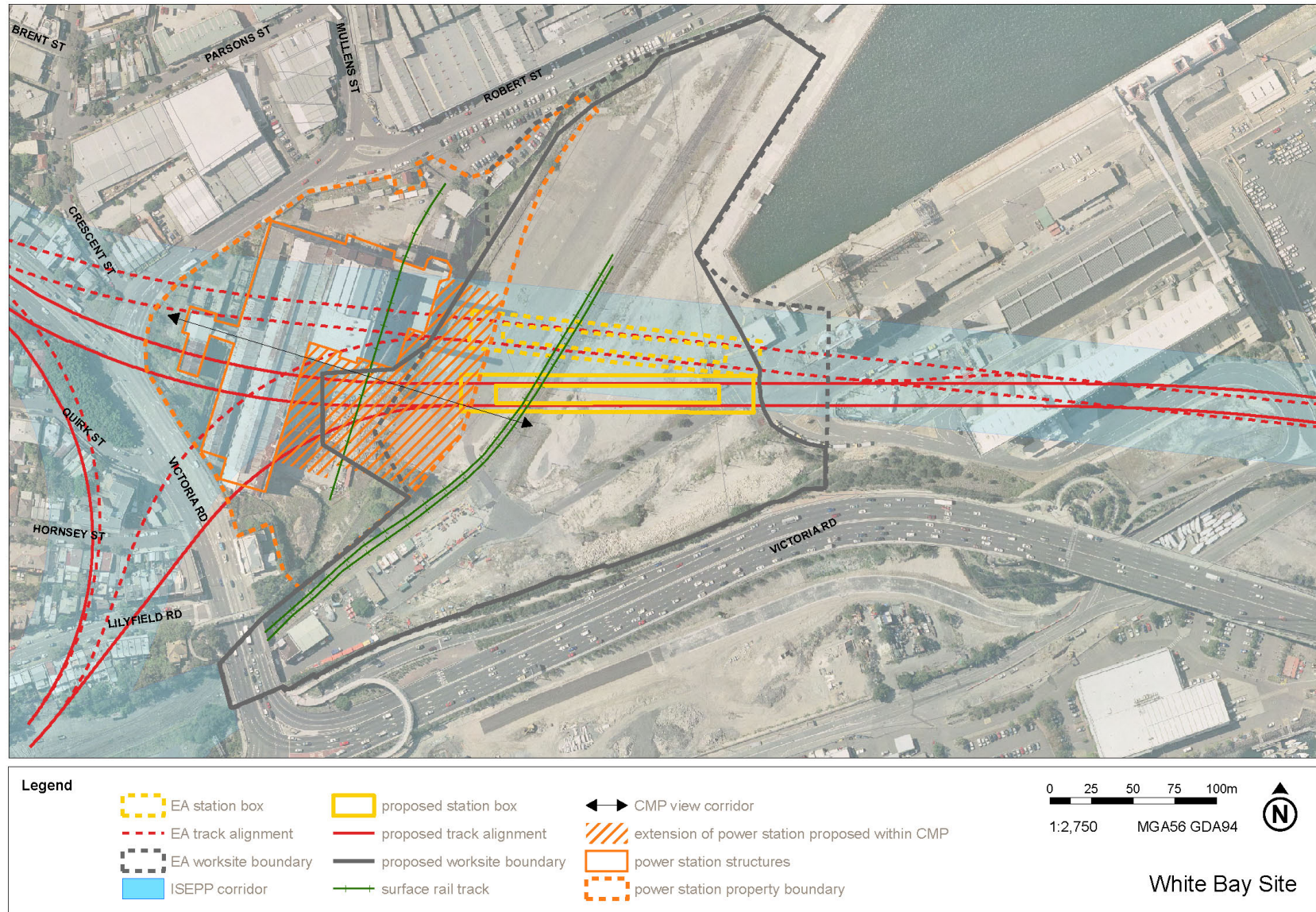


Figure 5.2 White Bay Station box and alignment changes



Ground-borne noise and vibration – main alignment

As shown in Figure 2 of **Appendix E**, the modelling results indicate that predicted ground-borne vibration levels for buildings located above or near the main alignment between Anzac Bridge and Gordon Street would be below the residential design goal. Compliance with the ground-borne vibration goals would be achieved for all sensitive receiver locations above or near the alignment, with the predicted ground-borne vibration levels below 90 dBV at all receivers.

Consistent with the Environmental Assessment, a high attenuation trackform is proposed for both depot connections (near Lilyfield Road) and the main alignment (near Robert/Gordon streets) in order to achieve compliance with the ground-borne noise design goals.

A summary of the predicted ground-borne noise levels with the proposed trackform is provided in Figure 3 of **Appendix E** for buildings located above or near the alignment between the Anzac Bridge and Gordon Street. The modelling results indicate that compliance with the ground-borne noise goals would be achieved for all sensitive receiver locations above or near the alignment.

Ground-borne noise and vibration - depot connection

The predicted ground-borne noise levels at the depot connections are provided in Figure 4 of **Appendix E**. The modelling results indicate that compliance with the ground-borne noise goals would be achieved for all sensitive receiver locations above or near the alignment.

Mitigation and management

The ground-borne noise and vibration modelling indicates that a trackform design that incorporates high attenuation rail fasteners would be sufficient to achieve compliance with the ground-borne noise and vibration goals at all sensitive receiver locations between the Anzac Bridge and Gordon Street, Rozelle for the revised alignment at White Bay. This is consistent with the ground-borne noise and vibration assessment for the alignment assessed in the Environmental Assessment.

Property and Master Planning

The re-positioning of the station box would require the alignment to move outside of the State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) interim corridor in the vicinity of the White Bay Station box (as shown in Figure 5.2). This would affect additional industrial land at White Bay. No additional residential land outside the interim corridor would be affected. The construction zone would also need to extend to the western boundary adjacent to the power station, thereby temporarily affecting the lands owned and managed by Sydney Harbour Foreshore Authority.

The new station location possibly improves the future development potential of the site. So that the future use of the site is not compromised and maximum flexibility remains in the site, the design of the station box would sustain development loads.

There is currently no requirement for surface buildings at the site other than a large, low level roof structure covering the station box, thereby having minimal impact on the view corridor. However the reference design does include two-storey service buildings at the platform ends, housing plant and ventilation vents and these buildings may be perceived as having an unacceptable impact on the view corridor. Given the open site, the current reference design would be amended as part of a master planning exercise to incorporate the view corridor.

Mitigation and management

The station should be designed so that the temporary and future permanent structures facilitate adaptive reuse of the Power Station and its future conservation.

Sydney Metro would consult with Sydney Harbour Foreshore Authority during the development of the detailed design. Upon finalisation of the detailed design, Sydney Metro would advise Sydney Harbour Foreshore Authority of land acquisition requirements for the project.



Heritage

As described in the Environmental Assessment (section 13.5.5 Volume One and in section 8.5 of Technical Paper 5 *Non-archaeological heritage*), the White Bay Station (item WB1 in Figure 8.1 of the Technical Paper) has been assessed as having state significance and is listed on the State Heritage Register.

The Environmental Assessment determined that the construction site on the eastern side of White Bay Power Station would likely impact archaeological items, including any remnant rail lines and services connected to the operation of the power station, should they exist in the area. These items were regarded as having low heritage significance. It was assessed that the permanent works of the station would lie outside of the power station boundary and the overall heritage impact on the power station would be neutral to slight.

In the revised design the station box would be moved approximately 25 to 50 metres south. No movement of the station box west would be required, However the extended construction zone for the cut-and-cover construction of the turn-out to the stabling yard would extend into the power station curtilage by approximately 35 metres further than the previous reference design. These changes are shown in Figure 5.2.

The relocated station box would extend into the area of the former Coal Yards, which are assessed in the Conservation Management Plan (CMP) for the White Bay Power Station (Design 5 Architects 2004) as being of little or neutral significance.

The CMP includes a plan showing areas appropriate for future development. The plan identifies a significant view corridor through the site to the south of Boiler House No. 1 that needs to be protected in any future development. The design of the station box assessed in the Environmental Assessment would not have interfered with either the development area or the view corridor. However, under the revised design the station box would impact on both.

In summary, the relocation of the station box would intrude into the curtilage of a building that is of state heritage significance and could influence the future development potential (and thus the conservation) of the power station. However, the final design of the above-ground elements of White Bay Station (height, scale etc) would address the significant view corridor within the power station group.

The western extension to the construction zone, to enable cut-and-cover construction of the turn-out to the stabling yard, would extend into an area assessed in the CMP as having high heritage significance (the site of the former Boiler House No. 2) and another area of exceptional significance (the Railway Corridor). The revised design would not include permanent above or below ground structures other than the running tunnels, which would be located below the existing ground surface.

The CMP envisages a new building on the site of the former Boiler House No. 2 to recreate its original volume, and the maintenance of the former railway corridor as an open area. This suggests that, at least in the case of the Boiler House site, the surviving physical fabric may be less significant than the ability to interpret the former structure. Policy 1.1.2 of the CMP states:

It may be that a proposal for change may include alteration to some highly significant elements or spaces. Where such changes retain and, most importantly, respect the overall significance and quality of the space or element, and are ultimately reversible (i.e. the removed or altered elements can be returned to their original configuration without damage should the use or requirements change again) then such changes may be considered acceptable.

Therefore, provided appropriate prior investigation and recording is undertaken before works commence (possibly involving careful relocation of significant elements), and the affected area is reconstructed on completion of the works in a way that does not preclude the future redevelopment of



the Boiler House No 2 site, the heritage impact of the western extension of the construction zone into the power station site should be able to be managed without undue adverse heritage impact.

Mitigation and management

Although the exposed railway tracks in concrete paving do not appear to be affected by the proposed construction zone, there may be more track concealed under the later bitumen/gravel finish to the west and this would need to be investigated carefully before work begins. In addition, the site of the former Boiler House No 2 could be expected to retain a range of remains connected to the operation of the power station, some of which would be disturbed by any sub-surface impacts within the extended worksite.

Further physical investigation would be carried out in accordance with the Statements of Commitment to identify the likelihood of encountering any surviving sub-surface items. Any significant items found would require appropriate recording and may also require careful relocation and storage, followed by reconstruction on completion of the works. Any existing stored items on the site affected by the project should be relocated by SHFA before work begins.

The impacts associated with the relocation of the station box could be reduced through detailed design of the western end of the above ground component. There may also be opportunities for the integration of a future metro station into the redevelopment of White Bay Power Station.

5.1.4 Preferred station design for Pyrmont Station (eastern entrance)

The environmental assessment provided two main alternatives for the station entrance design for the eastern entrance of Pyrmont Station. The preferred alternative, as highlighted in the Environmental Assessment, was the Alternative 2 option. Alternative 2 is confirmed as being the proposed option that will be developed further during the detailed design phase of the project.

The design for Pyrmont Station will have the following inclusions:

- Partial demolition of the rear of the terraced shops (about 145m²) at 3-9 Union Street to allow construction of the eastern entrance building, a services building and egress shafts behind the four retail tenancies.
- Retention of about 90 per cent of the buildings that make up the terraced shops at 3-9 Union Street, including the facade and the bulk of the buildings that have pre-1900 structural elements.
- A new three-story station entrance structure on the vacant corner block (currently occupied by *Bartino's Cafe* outdoor seating at 11 Union Street). The structure would re-establish a building in keeping with the scale of the Victorian-era terrace that once stood at the end of the row of shops at the corner of Union and Pyrmont streets.
- Construction of the station box using open-cut construction methods, within a Union Street construction site that is approximately 1230 m² in size, with hoardings within three metres of the front of the properties on the northern side of Union Street.
- The acquisition of the four tenancies (No's 3, 5, 7 and 9 Union Street) for the duration of the construction phase, which is necessary to allow construction in front of these buildings in the area currently occupied by Union Street. Following construction of the new station, the terraced buildings would be available to reopen for retail purposes.
- Provision of a rear lane at the back of the terraces for access to the service buildings and to the rear of the terraces.
- Extending Union Square between Paternoster Row and Pyrmont Street and reconfiguring Union Square to allow access from Paternoster Row.



The proposed arrangement and the extent that the existing heritage fabric would be affected are shown in Figure 5.3. It is noted that the terraced shops at 3-9 Union Street are not individually heritage listed, but are within the Pyrmont Heritage Conservation Area.

Figure 5.3 demonstrates that whilst some of the building structure and heritage value would be lost due to the construction of Pyrmont Station eastern entrance, the majority of the original 1888 construction would be retained. In addition, a preliminary survey of the buildings found that much of the 1888 building fabric in the areas proposed for demolition has been significantly altered, with little of the original fabric (wall mouldings, fireplaces etc) remaining.

The adoption of this station design would also require a shift in the alignment to the north, so that the station cavern would be located below more terrace properties on Union Street. This adjustment of the station box to the north is depicted in Figure 5.4.

Given the importance of designing the station entrance within the Heritage Conservation Area, Sydney Metro has initiated a Design Principles Workshop process for Pyrmont. The aim of the Workshops is to seek input from a range of stakeholders in the development of design principles. Participants include representatives from the community, local businesses, local councils, professional bodies and government agencies. The design principles will be developed further in consultation with the Design Review Panel (Statement of Commitment No.10). In addition, Statement of Commitment No.17 notes that the design of these elements will be guided by established principles for contextual design, such as those set out in the publication *Design in Context* (NSW Heritage Office and Royal Australian Institute of Architects).

In addition, Statement of Commitment No. 10 establishes a Design Review Panel to assist in resolving integrated design issues at the stations.

5.1.5 Barangaroo-Wynyard Station - interface with Kent Street Pedestrian Tunnel

The Environmental Assessment indicates that the Barangaroo-Wynyard Station would be located beneath Margaret Street between Clarence and York streets, about 17–37 metres below street level. The eastern station entrances are proposed at the current Kent Street pedestrian subway entrance at 1 Margaret Street and at 30-38 Clarence Street at the De La Salle House building adjacent to York Lane.

The Environmental Assessment notes that the most significant pedestrian impact associated with construction of the subway entrance at 1 Margaret Street would be the closure of the Kent Street pedestrian tunnel, which provides pedestrian access between CityRail's Wynyard Station, Erskine Street and Kent Street.

The closure of the existing Kent Street tunnel as a result of the Sydney Metro works provides an opportunity to consider the Barangaroo Pedestrian Link on this alignment rather than the current Margaret Street alignment. A new Statement of Commitment will establish a mechanism to review the feasibility of an alternative alignment for the Barangaroo Pedestrian Link along the alignment of the existing Kent Street tunnel.

Construction impacts would still be anticipated, including the short-term closure of the Kent Street pedestrian tunnel. However, Sydney Metro will develop options for the staging of works seeking to maximise the opportunity to keep open for as long a period as can practicably be achieved, that section of the Kent Street tunnel from Kent Street to Clarence Street.

Alternative pedestrian routes will be provided when this section of the Kent Street tunnel is closed for construction works. This route will meet all accessibility and safety requirements for temporary routes of this nature, including providing cover and access for families accessing this route to attend childcare facilities.





NOTE: INITIAL SURVEY INDICATES ALTERATIONS AND ADDITIONS BOTH AT REAR AND WITHIN FOOTPRINT OF 1888 BUILDINGS

Indicative only, subject to detailed design.

Figure 5.3 Proposed Pymont Station design overlaid with current building outlines and 1888 building survey outlines



Figure 5.4 Change in project alignment at Pyrmont Station



6 Final Statement of Commitments

As a result of the submissions received during the exhibition period, the draft Statement of Commitments outlined in Chapter 21 of the Environmental Assessment has been amended and finalised. The final modified Statement of Commitments proposed is provided in **Appendix A**.

The final Statement of Commitments aims to specify what environmental outcomes would be achieved and is presented in a format that is readily auditable and transparent.

Following project approval, the finalised Statement of Commitments would guide subsequent phases of the proposed development. Any consortium or contractor selected to undertake planning, design, construction and/or operation of Stage 1 would be required to undertake all works in accordance with the final Statement of Commitments and the Conditions of Approval set by the Department of Planning.

The Statement of Commitments provided in **Appendix A** requires documentation preparation and the implementation of a management structure as detailed in the following listings.

General commitments

- 1) A sustainability plan
- 2) Sydney Metro / RailCorp interface Agreement
- 3) Establishment of an agency Central Project Coordination Committee

Design phase commitments

- 4) Establishment of a design review panel
- 5) Station design plans
- 6) Design principles report
- 7) Joint design groups for:
 - Barangaroo / Wynyard precinct
 - Central Station
 - Town Hall Square Station
- 8) Heritage interpretation strategy
- 9) Public art plan
- 10) Transport integration
- 11) Geotechnical and settlement management
- 12) Noise and vibration limits

Construction phase commitments

- 1) Events Management Strategy
- 2) Barangaroo Construction Management Committee
- 3) Demolition and other early works strategy
- 4) Assistance to affected businesses
- 5) Stakeholder and community involvement strategy
- 6) Environmental management strategy, with sub-plans and strategies for:
 - Heritage management
 - Spoil management (including Yellow Block sandstone, contaminated spoil and acid sulfate soil)
 - Waste management
 - Noise and vibration
 - Construction air quality management
 - Construction water management
 - Carbon/energy management
 - Landscaping
 - Compliance tracking
 - Site-specific environmental management
- 7) Traffic and transport management



Operational commitments

- 1) Sustainability strategy.
- 2) Environmental management, including:
 - Carbon and energy management
 - Water resources management
 - Waste management
 - Noise and vibration management
- 3) Transport integration strategy



7 Conclusions and next steps

This Submissions Report has addressed the outcomes of the consultative process conducted during and following the public exhibition of the Environmental Assessment for the proposed Sydney Metro Network Stage 1 (Central to Rozelle) project.

In addressing compliance with legislative requirements and the requirements of the consultative process, this Submissions Report demonstrates that:

- Sydney Metro has considered all issues arising from the submissions and provided a written response to the issues (chapters 3 and 4).
- Where required, minor modifications to the reference design have been proposed and a justification that each modification is minor or beneficial has been included (Chapter 5).
- The final Statement of Commitments (**Appendix A**), which has been amended as a result of the submissions received, demonstrates the proponent's commitment to a comprehensive management approach to minimise environmental impacts.

In consideration of the above, Sydney Metro seeks the approval of the Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979* for the proposal as described in Chapter 6 and 7 of the Environmental Assessment and Chapter 5 of this Submissions Report.



Appendix A Final Statement of Commitments





Appendix B Project design alignment





Appendix C Station plan elements delivered by Sydney Metro





Appendix D Submissions database





Appendix E Acoustic assessment





Appendix F Shadow assessment



