

# Part B

## Submissions Report



# Part B Submission Report

## 4. Analysis of submissions

*This section provides a summary of the submissions received, including a breakdown of the types of submitters, the number of submissions received, and the key issues raised in submissions.*

### 4.1 Submissions received

During the exhibition period, submissions were invited from the community and other stakeholders. The receipt of submissions was coordinated and managed by the Department of Planning and Environment. Submissions were received and registered by the Department, and uploaded onto the Department's website. Submissions were accepted by electronic online submission or post, and were forwarded to Transport for NSW for review and consideration.

A total of 563 submissions were received from 549 submitters (14 submitters provided two submissions) and registered by the Department of Planning and Environment. This included five late submissions. An approximate breakdown of submissions by type of submitter is provided in Table 4.1.

Each submission received by the Department of Planning and Environment was assigned a unique submission number, with the exception of the late submissions. For all submissions, letters were sent to each submission author (where contact details were provided) to advise the author of their number and the availability of this report. For the late submissions, unique identifiers were assigned as part of preparation of this report, to allow the late submission authors to identify the responses to their submissions. These identifiers are as per those provided in Appendix A (Table A.3).

**Table 4.1 Breakdown of submissions received**

Submitter type	Number of submissions received
<b>Community submissions</b>	
Community members	535
Businesses	6
Community and interest groups	8
Members of Parliament	1
<i>Sub-total</i>	550
<b>Government agencies and key stakeholders</b>	
NSW Government departments/agencies	7
Councils	3 <sup>1</sup>
Other key stakeholders	3
<i>Sub-total</i>	13
<b>Total submissions</b>	<b>563</b>

Note 1: Includes the submission from the GreenWay Program

#### 4.1.1 Community submissions

A total of 550 submissions were received from members of the community. As shown in Table 4.1, community submissions included those from:

- individual community members/residents
- local community and other interest groups, including:
  - Hurlstone Park Association
  - Cooks River Valley Association
  - Marrickville Residents Action Group
  - Save Dully Action Group
  - Sydenham to Bankstown Alliance
  - EcoTransit
  - Action for Public Transport
  - Keep Our Area Suburban
- business owners, including local businesses and Vicinity Centres (the owner of Bankstown Central Shopping Centre)
- a local Member of Parliament - Ms Jo Haylen MP, the Member of the NSW Legislative Assembly for Summer Hill.

These submissions included one form letter developed by Hurlstone Park Association, which was received from a total of 324 individuals. Responses to the issues raised in the form letter are also provided as part of the responses to community submissions in Chapter 5 of this report.

For community submissions, a breakdown of the submitters location (where provided) is summarised in Table 4.2.

**Table 4.2 Submitter locations for community submissions**

Location <sup>1</sup>	Number of submitters from that location
Marrickville	48
Dulwich Hill	34
Hurlstone Park	165
Canterbury	12
Campsie	5
Belmore	17
Wiley Park	0
Lakemba	5
Punchbowl	3
Bankstown	4
Earlwood	10
Outside of the project area or anonymous	39
Anonymous	193
<b>Total</b>	<b>535</b>

Note 1: This refers to the address of the submitter (where an address is provided). A summary of the number of submissions that raised location specific issues is provided in Table 4.4.

#### **4.1.2 Submissions received from government agencies and key stakeholders**

A total of 13 submissions were received from government agencies (including local councils) and other key stakeholders. Submissions raised a range of issues relevant to their respective areas of interest and responsibility, and provided a number of recommendations, including recommendations for suggested conditions of approval for the project. Submissions were received from the following agencies:

- NSW Government departments/agencies:
  - Department of Primary Industries
  - NSW Environment Protection Authority
  - NSW Office of Environment and Heritage
  - NSW Health
  - Heritage Council of NSW
- Utility providers:
  - Sydney Water
  - Ausgrid
- Councils:
  - Inner West Council
  - Canterbury-Bankstown Council
  - GreenWay Program.

For the purposes of this report, key stakeholders are defined as peak bodies and large employers. Submissions were received from the following key stakeholders:

- National Trust of Australia
- Sydney Airport
- Australian Institute of Architects.

## **4.2 Analysis of submissions**

### **4.2.1 Issue categorisation**

The analysis of submissions involved identifying the issues raised and coding the issues into key issues (e.g. construction noise) and sub-issue categories (e.g. out of hours work). A total of 28 key issue and 131 sub-issue categories were identified and coded during the initial submission review process. The key issue and sub-issue categories used for coding are provided in Table A.1 in Appendix A. On further submission review it was determined that no submissions had raised concerns regarding one of the key issue categories (soils and contamination) and 29 of the sub-issue categories, as shown in Table A.1 (Appendix A). The categories for which issues were raised form the basis for the structure of issue specific responses, which is provided in Chapter 5 of this report.

#### **4.2.2 Review of community submissions**

An assessment of each community submission was undertaken, with each submission individually reviewed to understand the issues raised. The analysis involved identifying the issues raised, and coding them into key issues and sub-issues, as described in Section 4.2.1.

The issues raised were then summarised and grouped according to the key issue and sub-issue categories, and responses to the issues raised are provided in Chapter 5 of this report according to these categories. Where relevant, input to the responses was sought from the technical specialists who assisted with preparation of the Environmental Impact Statement.

Each issue identified in Chapter 5 is presented as a summary of the issues raised by individual submissions. This means that, while the exact wording of a particular submission may not be present in the summary of the issue, the intent of each individual issue raised has been captured. A response has been provided to each grouped issue summary.

Table A.2 in Appendix A identifies the sub-issues raised by individual community submissions, according to the submission number, and Table A.1 provides a reference to where a response to the key issue and sub-issue is provided in Chapter 5 of this report.

#### **4.2.3 Review of agency and key stakeholder submissions**

Each government agency/key stakeholder submission was reviewed, and the issues raised were categorised according to the main issue categories identified (as described in Section 4.2.1).

Summaries of the key issues raised in each submission, and responses to the issues raised, are provided in Chapters 6 and 7 of this report.

#### **4.2.4 Support/object to the project**

In addition to key issues raised, the majority of submissions (community and key stakeholder) also expressed either their support or objection to the project. Of the submissions received, 489 submissions objected to the project, 17 supported the project and 42 just provided comment on the project.

### **4.3 Summary of issues raised**

#### **4.3.1 Key issues raised in community submissions**

As described in Section 4.1.1 one form letter was received from a total of 324 individuals. The following issues were raised in this form letter:

- stakeholder and community consultation
- project need and justification
- alternatives and options
- project description – construction
- construction traffic, transport and access
- construction noise and vibration
- non-Aboriginal heritage
- socio-economic impacts
- visual impacts (including trees)
- sustainability and climate change.

A breakdown of the key issues raised in unique community submissions is provided in Table 4.3 by key issue category. Since most submissions raised more than one issue or raised the same issue more than once, the number of issues identified is greater than the total number of submissions received. Key issues were raised a total of 3,130 times in the unique community submissions.

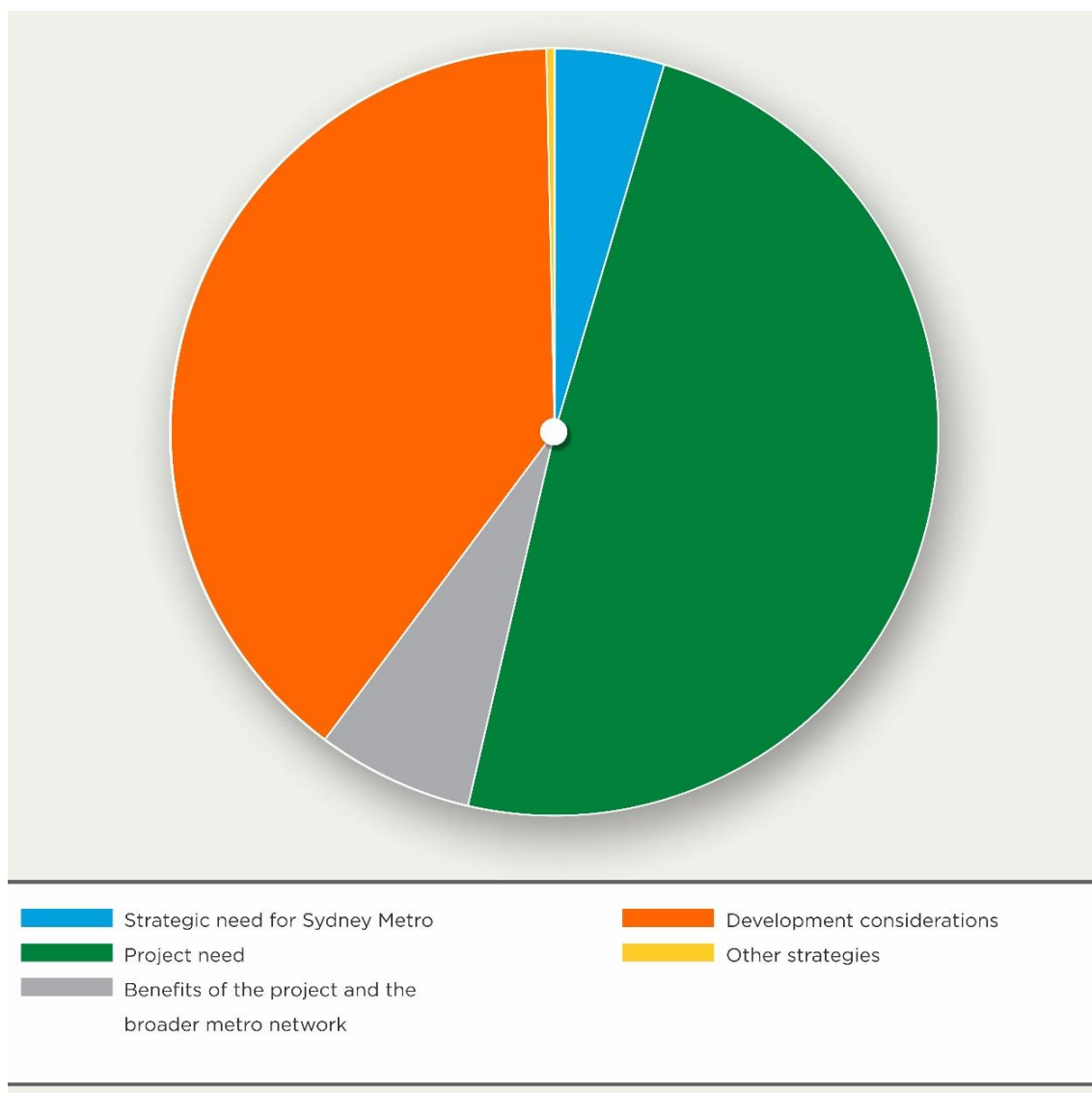
The top three most frequently raised key issues in the community submissions are:

- project need and justification
- construction traffic
- project description – design features.

A breakdown of the sub-issues raised within these key issues is provided in Figure 4.1 to Figure 4.3.

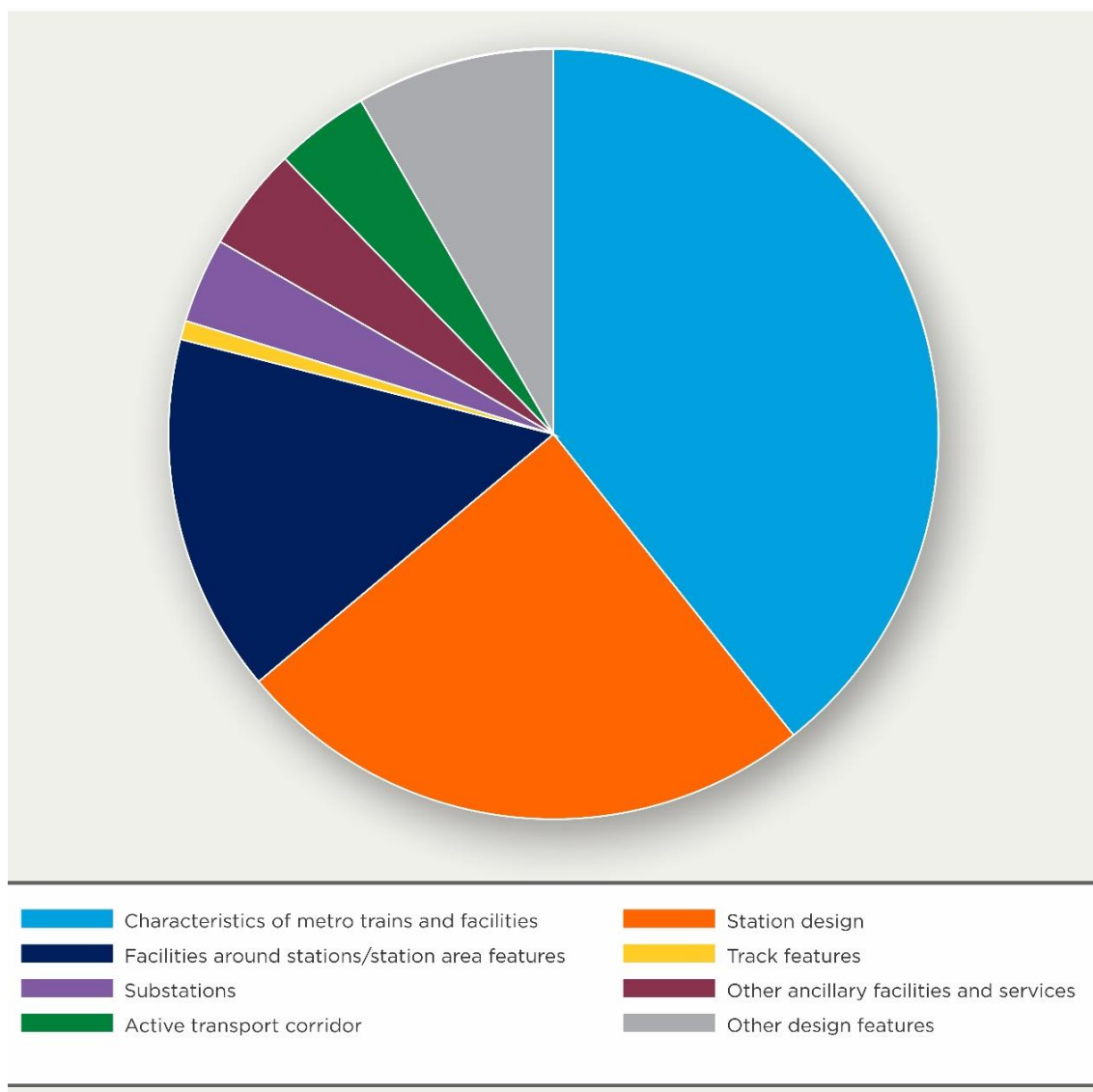
**Table 4.3 Key issues raised in community submissions**

Key issue category	Number of times key issue was raised	Percentage of total key issues
Assessment and approvals	22	0.70
Stakeholder and community consultation	109	3.48
Project need and justification	1080	34.50
Alternatives and options	230	7.35
Design development and place making	21	0.67
Project description - design features	252	8.05
Project description - operation	138	4.41
Project description - construction	51	1.63
Construction traffic, transport and access	300	9.58
Operational traffic, transport and access	79	2.52
Construction noise and vibration -	219	7.00
Operational noise and vibration -	30	0.96
Non-Aboriginal heritage	181	5.78
Aboriginal heritage	1	0.03
Land use and property	17	0.54
Socio-economic impacts	89	2.84
Business impacts	32	1.02
Visual impacts (including trees)	88	2.81
Hydrology, flooding and water quality	6	0.19
Biodiversity	39	1.25
Air quality	9	0.29
Sustainability and climate change	23	0.73
Hazards, risks and safety	6	0.19
Waste management	4	0.13
Cumulative impacts	38	1.21
Future design and environmental management	4	0.13
Out of scope	62	1.98

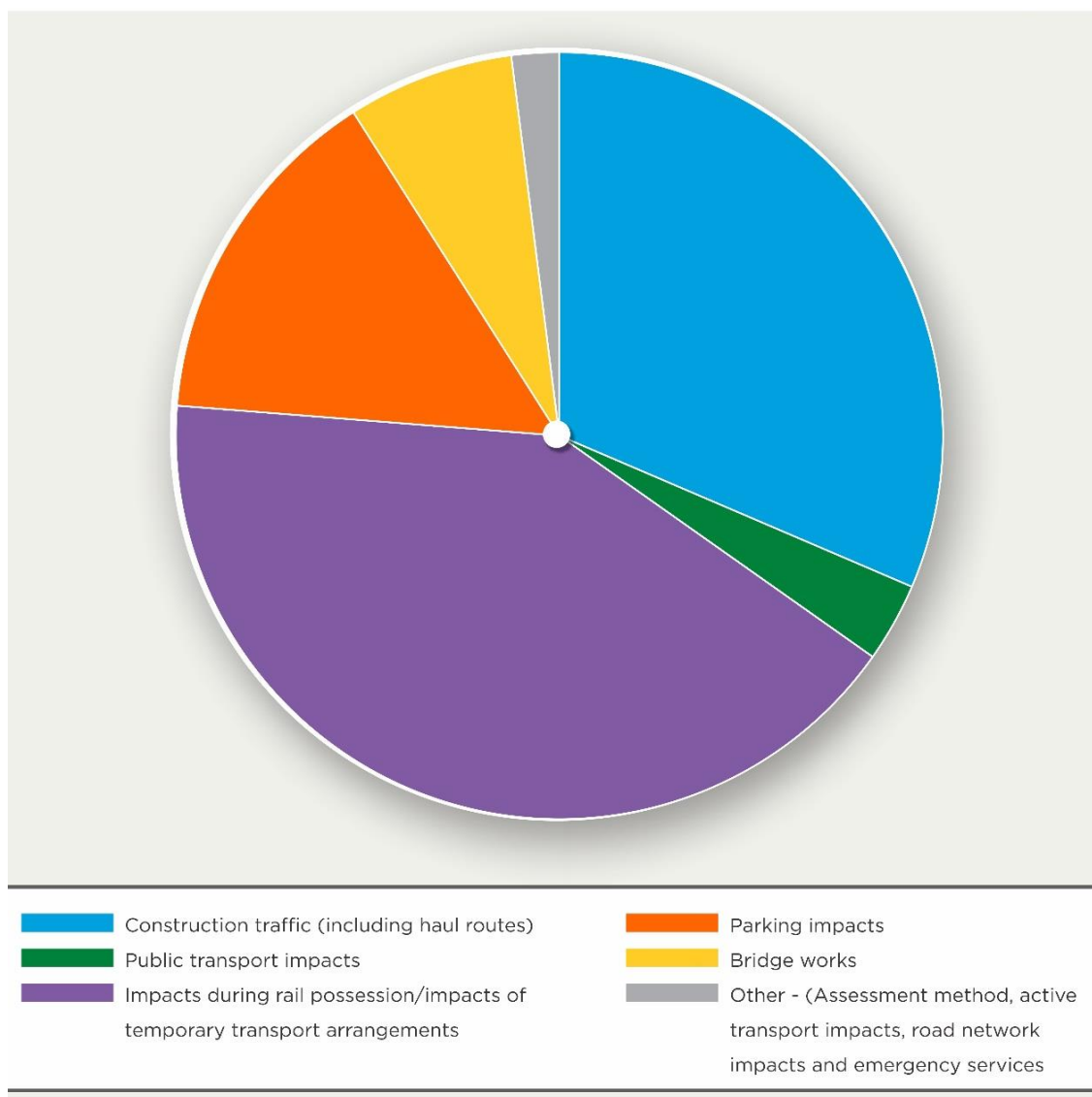


**Figure 4.1 Breakdown of project need and justification key issue**





**Figure 4.2 Breakdown of project description – design features key issue**



**Figure 4.3 Breakdown of construction traffic key issue**

#### 4.3.2 Location based issues summary

A breakdown of issues raised by location is provided in Table 4.4. This table shows a breakdown of the number of issues raised that could be attributed to a specific location or station. The number of issues raised relating to more than one location or the region as a whole, and non-location specific issues are also shown. The location specific issues have been grouped according to the suburbs in which the proposed station upgrades and other works would be located.

The number of submissions received by community members from each location is provided in Table 4.4.

**Table 4.4 Number of issues raised by location**

Location	Number of issues raised relevant to location	Percentage of total number of issues raised
<b>Issues raised relevant to specific locations</b>		
Sydenham	10	0.3
Marrickville	216	6.9
Dulwich Hill	313	10
Hurlstone Park	195	6.2
Canterbury	36	1.2
Campsie	9	0.3
Belmore	21	0.7
Wiley Park	0	0.0
Lakemba	13	0.4
Punchbowl	18	0.6
Bankstown	20	0.6
Earlwood	33	1.1
<b>Other issues</b>		
Issues relevant to multiple locations or the study area as a whole	77	2.5
Non-location specific issues	2196	69.3
<b>Total</b>	<b>3130</b>	<b>NA</b>

#### 4.3.3 Key issues raised in agency and key stakeholder submissions

Key issues of concern to government agencies and key stakeholders included:

- local impacts and integration with local government land use planning
- impacts to local character, amenity and accessibility
- hydrology, flooding and water quality
- station design
- active transport corridor
- impacts to non-Aboriginal heritage.

## 5. Responses to the issues raised in community submissions

*This section provides responses to issues raised in submissions from the community, including community members, local businesses, and community/interest groups. Unless otherwise noted, all mitigation measures referenced in this section refer to the revised mitigation measures provided in Section 16 of this report.*

### 5.1 Assessment and approvals

This section provides responses to issues raised in relation to the assessment of the project and the adequacy of the Environmental Impact Statement.

#### 5.1.1 Assessment and approval process

##### *Summary of issues raised*

One submission sought clarification as to the project's obligations under the *Biodiversity Conservation Act 2016*.

Another submission raised concerns that expressions of interest and tenders for various parts of the proposal have been issued without approval having been granted.

##### *Response*

##### **Obligations under the Biodiversity Conservation Act 2016**

The exhibited project has been assessed in accordance with the environmental assessment requirements of the Secretary of the Department of Planning and Environment (the Secretary's environmental assessment requirements), which were issued on 23 March 2017. The *Biodiversity Conservation Act 2016*, which commenced on 25 August 2017, replaces the *Threatened Species Conservation Act 1995*, and introduces a new Biodiversity Offsets Scheme for NSW developments.

The *Biodiversity Conservation (Savings and Transitional) Regulation 2017* contains arrangements to facilitate the transition to the new scheme. Under the transitional arrangements for major projects, the former Threatened Species Conservation Act Biodiversity Offsets Scheme can be used where the Secretary's environmental assessment requirements were issued, or substantial environmental assessment was undertaken, prior to 25 August 2017. As the Secretary's environmental assessment requirements for the project were issued on 23 March 2017, and the majority of the biodiversity assessment was undertaken prior to mid 2017, the proposal is being assessed using the transitional arrangements.

The exhibited project was assessed in accordance with the *Framework for Biodiversity Assessment* (Office of Environment and Heritage, 2014), which includes substantially equivalent requirements to the Biodiversity Assessment Methodology and Biodiversity Offset Scheme associated with the *Biodiversity Conservation Act 2016*. Key similarities between the two approaches include: a prescribed methodology applied by an accredited assessor; determination of offsets using a credit calculator and trading rules; and delivery of offsets through purchase of biodiversity credits from offset sites assessed using a prescribed methodology applied by an accredited assessor.

The preferred project does not require biodiversity offsets as no native plant community types would be removed.

## **Tenders issued prior to project approval**

Transport for NSW is currently seeking expressions of interest or tenders for a range of contracts to support the delivery of Sydney Metro City & Southwest. This would assist the project meet its stated timeframes, thus minimising disruption to customers.

As described in Section 3.1 (NSW environmental planning approvals) of the Environmental Impact Statement, the project is subject to the assessment and approval provisions of Division 5.2 (formerly Part 5.1) of the EP&A Act, which require assessment by the Department of Planning and Environment and determination by the Minister for Planning. As a result, the assessment and approval process is separate from any project tendering, and neither the Department of Planning and Environment nor the Minister for Planning are involved in any tendering process. Contractors would be contractually obligated to comply with the planning approval documentation, including the conditions of approval imposed by the Minister for Planning, and the Construction Environmental Management Framework (Appendix D of the Environmental Impact Statement).

The Construction Environmental Management Framework provides a linking document between the planning approval documentation, including the conditions of approval, and the construction environmental management systems and documentation to be developed by contractors. The requirements of the Construction Environmental Management Framework would be included as a contract document for all design and construction contracts, ensuring a consistent approach to the management of environmental issues following project approval.

### **5.1.2 Adequacy of the Environmental Impact Statement**

#### ***Summary of issues raised***

Concerns were raised about the adequacy of the Environmental Impact Statement, and the information presented, including:

#### **Length and complexity of the Environmental Impact Statement**

- the Environmental Impact Statement is very long and complex – as a result, it is inaccessible to the public

#### **Information on the need for the project**

- the Environmental Impact Statement doesn't adequately explain to the general community/non-technical audience the need for the project

#### **Not enough detail**

- the Environmental Impact Statement is poorly developed and inadequate for the advanced stage of public consultation as it is lacking detailed information on the design, noise, substations, and proposed work sites etc
- the reports provided are desktop studies and have not been effectively researched

#### **Not enough information on management mechanisms**

- the Environmental Impact Statement does not provide effective mechanisms to reduce construction impacts such as noise, vibration, and dust

#### **Incorrect information and classification of receiver**

- many statements in the documentation are inaccurate - for example, my home has been incorrectly listed as a commercial building when it is residential

- the Environmental Impact Statement is flawed with incorrect pictures of railway stations, incorrect zoning maps, and wrong street names

### Explaining negative impacts

- the Environmental Impact Statement does little to explain the negative impacts, such as the huge disruption for commuters.

### Response

#### Length and complexity of the Environmental Impact Statement

Information on the planning and assessment process for the project, including the statutory requirements that must be satisfied, is provided in Chapter 3 (Planning and assessment process) of the Environmental Impact Statement and Chapter 1 of this report. As described in Section 3.1 (NSW environmental planning approvals) of the Environmental Impact Statement and Section 1.2 of this report the project is critical State significant infrastructure and is subject to the assessment and approval provisions of Division 5.2 (formerly Part 5.1) of the EP&A Act. These provisions require an Environmental Impact Statement to be prepared and submitted as part of the application for project approval, and for it to address the Secretary's environmental assessment requirements.

The environmental impact assessment was undertaken and the Environmental Impact Statement was prepared in accordance with the relevant provisions of the EP&A Act and the *Environmental Planning and Assessment Regulation 2000* (the Regulation) and the Secretary's environmental assessment requirements.

The primary purpose of an Environmental Impact Statement is to support an application for project approval. It must address the Secretary's environmental assessment requirements and satisfy relevant statutory requirements and guidelines. In doing so, it needs to comprehensively address a wide range of technical assessment requirements, while also providing information to explain the project, its potential impacts, and management of these impacts to the community and other stakeholders. The full results of these assessments are provided in the form of the supporting technical reports to provide transparency in relation to the assessments undertaken.

Appendix A (Secretary's environmental assessment requirements) of the Environmental Impact Statement provided a cross-reference to where each of the Secretary's environmental assessment requirements had been addressed, and each chapter provided further details regarding the relevant Secretary's environmental assessment requirements.

Addressing all these requirements can result in quite lengthy assessment and approval documentation, produced to support the application for approval. In recognition of the complexity and length of the assessment and approval documentation, Transport for NSW has also prepared a range of communication materials to provide information about the project, and the outcomes of the Environmental Impact Statement. Further information on these materials, which include the Environmental Impact Statement Overview document, is provided in Section 3.2.3 of this report.

#### Information on the need for the project

The need for the exhibited project is described in Chapter 5 (Project need) of the Environmental Impact Statement. As described in that chapter, the project consists of the upgrade and conversion of the T3 Bankstown Line between Marrickville and Bankstown to meet accessibility and metro standards. Three key reasons the project is needed include:

1. To meet the growing demand for services on the T3 Bankstown Line.
2. To resolve current accessibility and safety improvement issues on the T3 Bankstown Line.

3. To relieve existing bottleneck and capacity issues affecting the T3 Bankstown Line and the overall rail network.

As described in Section 1.3 of this report, the exhibited project has been revised in response to issues raised during submissions and to minimise potential environmental impacts. However, the need for the preferred project is consistent with that of the exhibited project. Further information about the need and justification for the preferred project is provided in Chapter 8 of this report, and in the responses to relevant issues provided in Section 5.3 of this report.

### Not enough detail

The level of detail presented in the Environmental Impact Statement is consistent with assessments completed for other similar projects. The project described by the Environmental Impact Statement was based on a reference design, with the details of works at each station subject to further design resolution and refinement. Drawings have been prepared for the preferred project and are provided in Chapter 9 of this report. Transport for NSW would continue to develop the design to a greater level of detail in conjunction with the appointed design contractor.

As described in the project description for the preferred project (provided in Appendix B) the detailed design of the stations would be informed by the document *Around the Tracks: urban design for heavy and light rail* (Transport for NSW, 2016). This guideline recognises the role of stations as important infrastructure for local communities and the transport system as a whole.

The Environmental Impact Statement complied with the requirements of the Secretary's environmental assessment requirements. It was supported by the following technical papers, which were prepared based on field studies, surveys, modelling, and analysis, in addition to desktop research:

- Technical Paper 1 – Traffic, transport and access assessment
- Technical Paper 2 – Noise and vibration assessment
- Technical Paper 3 – Non-Aboriginal heritage impact assessment
- Technical Paper 4 – Aboriginal heritage assessment
- Technical Paper 5 – Social impact assessment
- Technical Paper 6 – Business impact assessment
- Technical Paper 7 – Landscape and visual impact assessment
- Technical Paper 8 – Hydrology, flooding and water quality assessment
- Technical Paper 9 – Biodiversity assessment report.

The technical papers were prepared in accordance with relevant guidelines and the Secretary's environmental assessment requirements.

The assessments and the Environmental Impact Statement were purposely conservative to take into consideration the fact that the design is a reference design, and is not fully resolved. Further assessment has been undertaken to assess impacts associated with the preferred project (where they differ to the exhibited project) and is summarised in Chapters 12 to 15 of this report.

Additional information and assessment would be undertaken during the detailed design phase in accordance with the mitigation measures (updated measures are provided in Chapter 16 of this report) and any conditions of approval for the preferred project.

Further information and clarification in response to issues raised about project features, and construction and operation of the preferred project, is provided Sections 5.6 to 5.8 of this report.



Further information and clarification in response to issues raised about the potential impacts of the preferred project is provided in Sections 5.9 to 5.25.

### **Not enough information on management mechanisms**

Each chapter in Part C (Environmental impact assessment) of the Environmental Impact Statement defined the approach to mitigation and management of the potential impacts identified for each environmental issue, and provided the mitigation measures that would be implemented to minimise the potential impacts identified, and in some cases remove them all together.

Section 28.4 (Approach to environmental management) of the Environmental Impact Statement provided a consolidated description of how the potential impacts would be managed during construction and operation.

The preferred project's environmental performance would be managed in accordance with the approach described in that section and in Section 17.4 of this report. This includes implementing the Construction Environmental Management Framework, Construction Environmental Management Plan, Construction Noise and Vibration Strategy, Temporary Transport Strategy, Utilities Management Framework, the mitigation measures listed in Table 16.1, and the Operational Environmental Management Plan. Further information is provided in Chapter 17 of this report.

### **Incorrect information and classification of receiver**

Inconsistencies in information provided in the Environmental Impact Statement have been identified and are discussed in Section 2.4 of this report.

As described in Section 2.4.10, since exhibition, consultation with landowners in the vicinity of the project area has identified that two properties were incorrectly classified by the noise and vibration assessment. These properties have now been re-classified as residential. It should be noted that the re-classification from commercial to residential did not change the predicted noise levels at these properties as a result of the exhibited project, rather that the degree of impact reported was different considering the change in receiver type.

However, as discussed in Section 1.3 of this report, the exhibited project has been revised to minimise environmental impacts and address issues raised during exhibition. As a result, further assessment has been undertaken to determine the predicted noise and vibration levels at these properties and other properties associated with the preferred project. A summary of the findings of this assessment is presented in Section 15.2 and discussed in further detail in Appendix E of this report.

### **Explaining negative impacts**

The potential negative impacts of the exhibited project were assessed by the Environmental Impact Statement and technical papers, and the results were summarised in Part C of the Environmental Impact Statement.

The Environmental Impact Statement acknowledged that, although the exhibited project would benefit the community during operation, there would be impacts during construction. To manage the potential impacts identified, as noted above, the Environmental Impact Statement defined a range of management and mitigation measures that would be implemented during construction and operation of the exhibited project.

Transport for NSW has revised the exhibited project to address issues raised in submissions. The preferred project would significantly reduce and minimise potential impacts of the exhibited project (particularly in respect of construction, heritage and vegetation) while still delivering a world class metro.



A comparison of the key features of the preferred project with the exhibited project is provided in Chapters 9 and 10 of this report. A detailed description of the preferred project is provided in Appendix B. A refined set of management and mitigation measures that would be implemented to further minimise impacts during construction and operation of the preferred project is provided in Chapter 16 of this report.

Further information and clarification in response to issues raised about potential impacts during rail possessions and temporary closures of the rail line are provided in Section 5.9.5 of this report.

## **5.2 Stakeholder and community consultation**

This section provides responses to issues raised in relation to previous and future consultation with the community and other stakeholders.

### **5.2.1 Consultation prior to exhibition**

#### ***Summary of issues raised***

Concerns were raised about the adequacy of consultation undertaken prior to exhibition, including:

#### **Adequacy of consultation during design and development of the project**

- the project has been marked by poor consultation
- community consultation has been inadequate and information biased and misleading
- the consultation process for the Environmental Impact Statement is flawed and tens of thousands of persons are still unaware of Sydney Metro

#### **Community involvement in the assessment of strategic alternatives and options**

- the community should have been asked whether a metro line should be built, and should have been consulted during the assessment and selection of the preferred option
- consultation has involved top down declarations of what will happen and there has been no public sharing of ideas on how Sydney's rail services might best develop in the future, other than with a metro

#### **Community involvement in the design for Hurlstone Park Station**

- the suggested impressions for Hurlstone Park have had no input from local residents, associations, or council regarding the appearance, local character, pedestrian, and commercial needs

#### **The scope of the project exceeds what was initially communicated**

- the works far exceed the minor modifications implied in early communications.

#### ***Response***

#### **Adequacy of consultation during design and development of the project**

As described in Chapter 4 (Stakeholder and community consultation) of the Environmental Impact Statement, community engagement around an extension to the Sydney Metro network, including to Bankstown via Sydenham, commenced in June 2014. The aim of this consultation was to gather feedback during the development of the project.

As described in Section 4.2 (Consultation and engagement activities to date) of the Environmental Impact Statement, consultation for Sydney Metro City & Southwest, including the Sydenham to Bankstown upgrade, included:

- early stakeholder consultation between June 2014 and June 2015
- project scope consultation following the announcement of Sydney Metro City & Southwest in June and July 2015, and during design development
- consultation during preparation and exhibition of the Environmental Impact Statement for the Sydney Metro City & Southwest Chatswood to Sydenham project, between June 2015 and June 2016, which also captured feedback on the Sydenham to Bankstown upgrade
- consultation as part of lodgement of the State Significant Infrastructure Application Report for the Sydenham to Bankstown upgrade, between February and June 2017
- consultation during preparation of the design and Environmental Impact Statement for the Sydenham to Bankstown upgrade, between February 2016 and July 2017.

With respect to consultation during the design process, the Premier of NSW announced on 4 June 2015 that funding had been secured to progress the Sydney Metro City & Southwest project. The announcement initiated a round of community consultation undertaken to:

- collect stakeholder and community feedback on the project
- inform the Environmental Impact Statement for the Chatswood to Sydenham project
- inform the planning and design process for the Sydenham to Bankstown upgrade.

During this period, consultation was undertaken along the project corridor between Chatswood and Bankstown, to proactively engage with the community prior to the commencement of the formal environmental impact assessment process for both components of Sydney Metro City & Southwest. Consultation activities included:

- provision of contact details including an information line (toll free), email address, website and postal address
- establishment of a mobile community information centre
- appointing Place Managers
- community information sessions (June and July 2015)
- interactive online forums (June to August 2015)
- industry consultation and briefings (June 2015, September 2016, and April 2017)
- media releases
- advertisements in local newspapers including foreign language newspapers
- issue of various project collateral (e.g. newsletter and project updates)
- preparation of an animation/fly-through.

Engagement was also undertaken with customer focus groups to inform the designs of stations, and two community design workshops were held. Further information is provided in Section 4.2 (Consultation and engagement activities to date) of the Environmental Impact Statement and Chapter 3 of this report.

Transport for NSW is committed to continuous improvement and has welcomed feedback on how to improve communication with the community. Feedback can continue to be made via phone by calling 1800 684 490 or email [projects@transport.nsw.gov.au](mailto:projects@transport.nsw.gov.au). Every effort has been and would continue to be made to accommodate suggestions.

## Community involvement in the assessment of strategic alternatives and options

The delivery of Sydney Metro was a key commitment of the *NSW Long Term Transport Master Plan* (Transport for NSW, 2012b) and *Sydney's Rail Future* (Transport for NSW, 2012a) and is now a committed initiative in the *Future Transport Strategy* (Transport for NSW, 2018a).

Various alternative transport solutions were considered as part of strategic rail planning undertaken to develop the *Transport Master Plan* and *Sydney's Rail Future* (Transport for NSW, 2012a). *Sydney's Rail Future* is a key element of the *Transport Master Plan*. The NSW Government released the *Transport Master Plan* in December 2012 following 12 months of consultation and analysis. Consultation involved extensive collaboration with the community, transport users, industry, government, and business, including:

- advisory groups involving 55 customer, community, industry, transport specialists, and local government representatives
- over 1,000 people attended 14 regional forums across NSW
- 270 key stakeholders participated in workshops at the Master Plan launch and an industry briefing session
- a Discussion Paper was released to invite comments from stakeholders and the community, and more than 1,200 comments were received
- over 480 comments were received when the draft Master Plan was released.

## Community involvement in the design for Hurlstone Park Station

In addition to the consultation undertaken for the project as a whole (described above and in Chapter 4 (Stakeholder and community consultation) of the Environmental Impact Statement), the design team held two workshops with the Hurlstone Park Association and the Save Dully Action Group. The workshops covered:

- the station designs presented for the exhibited project
- explaining negotiable and non-negotiable elements of the design, and those aspects that could be influenced, such as accessibility and maintenance requirements
- opportunities, constraints, and challenges.

The participants were encouraged to provide feedback on what they liked and disliked about the existing station, their concerns, priorities for the upgrade, ideas for the station precincts, materials to be used, and areas to be enhanced and preserved. Where possible, the feedback provided has been, and would continue to be, incorporated into the design.

It is noted that the artist's impressions provided in Chapter 8 (Project description – operation) of the Environmental Impact Statement were prepared to support the Environmental Impact Statement and provide an indication of what the design of the stations could look like. Artist impressions and design drawings showing the station upgrade works proposed at Hurlstone Park Station as part of the preferred project are provided in Appendix B of this report. The designs would continue to be developed during the detailed design phase, as described in Section 5.5.2 of this report.

As described in Section 4.2 (Consultation and engagement activities to date) of the Environmental Impact Statement, regular consultation (including meetings and briefings) has been undertaken with key government agency stakeholders, including the Inner West and Canterbury-Bankstown councils.

Consultation with the community and key stakeholders would continue during further stages of the preferred project, as described in Section 3.5 of this report.

## **The scope of the project exceeds what was initially communicated**

Consultation prior to, and during lodgement of the State Significant Infrastructure Application Report for the Sydenham to Bankstown upgrade (i.e. between June 2014 and June 2017) defined the initial proposed scope of the exhibited project. The scope communicated in the State Significant Infrastructure Application Report is consistent with the scope of the exhibited project described by the Environmental Impact Statement.

However, based on community and stakeholder feedback received during the public exhibition period for the Environmental Impact Statement, Transport for NSW has revised the exhibited project to address issues raised.

A comparison of the key features of the preferred project with the exhibited project is provided in Chapters 9 and 10 of this report. A detailed description of the preferred project is provided in Appendix B.

### **5.2.2 Consultation during exhibition**

#### ***Summary of issues raised***

Some submissions raised concerns about the adequacy of consultation during exhibition of the Environmental Impact Statement. Issues raised included:

#### **Adequacy of consultation during exhibition**

- community consultation during exhibition was inadequate, with information biased and misleading
- consultation was not straightforward or professional
- concerned about the inadequate consultation and no communications officers at Lakemba Station talking to the public
- a lot of people in the local community are not aware of the project
- concern that the community does not have enough involvement in the assessment of large infrastructure projects
- consultation has focused on glossy marketing rather than substance, more akin to information sessions on a pre-defined option than genuine consultation
- a project with such overwhelming impacts on the area demands a thorough, sensitive, all-inclusive approach to consultation

#### **Exhibition period length**

- concerned about the inadequate time to make a submission – not enough time was provided to allow for review and comment
- concerned about the short exhibition period and time to respond
- requested an extension to the community consultation period

#### **Adequacy of consultation material**

- concerned about inaccuracies in consultation material and that the material does not describe the negative impacts
- the project updates present a one-sided view while failing to describe any of the impacts
- the Environmental Impact Statement is not a good consultation tool, as it is too long and complex

- the construction material is incorrect as Edgeware School is a special needs school for behaviourally challenged students, not a school for year 9 to 12 students as stated
- the Environmental Impact Statement overview and graphics are deceptive as they don't show the planned high-rise development around stations, and have no reference or connection to surrounding buildings

#### **Adequacy of community information sessions and advertising**

- community information sessions have been poorly attended, which reflects the lack of community engagement
- community sessions were biased, misleading, and staff were not informed about the project
- the sessions were poorly advertised.

#### **Response**

#### **Adequacy of consultation during public exhibition of the Environmental Impact Statement**

Consultation undertaken during exhibition is described in Section 3.2 of this report. As described in that section, a comprehensive range of consultation activities were undertaken, and a range of materials were made available.

The Environmental Impact Statement was placed on public exhibition by the Department of Planning and Environment for a period of eight weeks, from 13 September 2017 to 8 November 2017.

The Environmental Impact Statement and accompanying technical papers were made available on the Department of Planning and Environment's website ([www.majorprojects.planning.nsw.gov.au](http://www.majorprojects.planning.nsw.gov.au)) and on the Sydney Metro project website ([www.sydneymetro.info](http://www.sydneymetro.info)). Hard copies of the Environmental Impact Statement were available at nine locations.

The following consultation activities were undertaken to support the exhibition:

- community contact and information points
- community information sessions
- community information events
- stakeholder contacts
- station handouts
- door knocks
- direct engagement with the community by Place Managers.

The following consultation materials were developed to support exhibition and the above consultation activities:

- media releases
- newspaper advertisements
- email alerts to the project mailing list
- newsletters
- project website updates
- display materials
- Environmental Impact Statement Overview document.

To cater for the main non-English language groups around the project area, the newsletter was translated into seven languages – Greek, Arabic, Chinese, Hindi, Korean, Bengali, and Vietnamese. Translated versions of the newsletter were provided on the project website.

Further information on these activities and materials is provided in Section 3.2 of this report.

Members of the community and other stakeholders had the opportunity to be involved in the assessment and approval process by providing formal submissions during the exhibition period. Transport for NSW has considered and provided a response to the issues raised in submissions in this report. The Department of Planning and Environment will consider the submissions and the responses summarised in this report as part of the decision whether to approve the project and, if approved, the development of any conditions of approval.

Transport for NSW is committed to continuous improvement and has welcomed feedback on how to improve communication with the community. Feedback can continue to be made via phone by calling 1800 684 490 or email [projects@transport.nsw.gov.au](mailto:projects@transport.nsw.gov.au). Every effort has been and would continue to be made to accommodate any suggestions.

### **Exhibition period length**

The minimum public exhibition period for State significant infrastructure is 30 days, as per clause 194 of the Regulation. The Environmental Impact Statement was placed on public exhibition for a period of 57 days to allow additional time for community feedback.

### **Adequacy of consultation material**

The consultation material prepared for the public exhibition (including the newsletters and Environmental Impact Statement Overview) provided a summary of the key features of the project and the findings of the Environmental Impact Statement.

The potential negative impacts of the exhibited project were assessed by the Environmental Impact Statement and technical papers, and the results were summarised in the Environmental Impact Statement Overview.

The information that was distributed to the community (summarised above and described in Section 3.2 of this report) was written in 'plain English' and edited for readability to ensure it was readily comprehensible by the public. The technical papers that supported the Environmental Impact Statement were longer and more technical, but were also available for review by those people and government agencies who may be familiar with particular technical disciplines and/or those who wanted to know more detailed information about the assessments completed.

One of the aims of the community consultation program was to make key staff available throughout the exhibition period and (particularly at community information sessions) assist in explaining technical details of the proposal or the assessments undertaken to the community. The project contact number (1800 171 386) and email ([sydneymetro@transport.nsw.gov.au](mailto:sydneymetro@transport.nsw.gov.au)) were promoted on all communication materials to encourage the public to seek further clarification and information where needed.

With regard to the use of the Environmental Impact Statement as a consultation tool, the primary purpose of an Environmental Impact Statement is to support an application for project approval. In addition to the statutory requirement to prepare the Environmental Impact Statement, Transport for NSW provided information about the exhibited project and the results of the Environmental Impact Statement in a range of formats. These included an Environmental Impact Statement Overview document; meetings, displays and information sessions; information flyers and project updates; and the project website.

Further information about consultation undertaken during project exhibition, including a full list of the activities undertaken and the tools implemented, is provided in Section 3.2 of this report.

With regard to the graphics, the form and nature of future development around stations is not shown, as these do not form part of the project for which approval is sought.

With regard to Edgeware School, Technical Paper 5 (Social impact assessment) of the Environmental Impact Statement described the school as catering for year 9 to 12 students. It is noted that Edgeware is a school for Specific Purposes, and provides an alternative Department of Education facility, mainly for year 9 to 12 students who have been unsuccessful in mainstream schools. However, the exact nature of this or any other school does not affect its consideration by the environmental assessment, as schools are considered equally as educational facilities for the purposes of assessing impacts.

### **Adequacy of community information sessions and advertising**

As described in Section 3.2.2 of this report, eight community information sessions were held at four locations. In addition, information about the project and the Environmental Impact Statement was made available at two community events during the exhibition period.

A total of 316 people attended the eight information sessions, and 621 people interacted with the project team at the community events.

People were made aware of the sessions by the following materials/tools (described in Section 3.2.3 of this report):

- project newsletter
- Environmental Impact Statement Overview document
- project website
- advertisements in 12 local and Sydney newspapers.

An email alert was sent to over 4,000 community members registered on the Sydney Metro City & Southwest project database. The email advised of the exhibition dates and encouraged recipients to visit the project website for more information.

A project newsletter was issued in September 2017 to 80,200 properties as part of a letterbox drop around the project area. A total of 9,875 project newsletters also were distributed to customers at each station between Marrickville and Bankstown on 21 September and 9 October 2017. The newsletter included information on consultation activities during the exhibition period.

A total of 4,266 properties in the vicinity of the project area were door knocked during the exhibition period. Consultation material was distributed during this process.

Project team staff from various technical disciplines (e.g. design, Environmental Impact Statement, and technical specialists including traffic, and noise and vibration) attended each community information session to clarify the information presented in the Environmental Impact Statement, and to listen to and consider any suggestions or concerns that members of the community had in relation to the project.

### **5.2.3 Future consultation and engagement**

#### ***Summary of issues raised***

The following issues were raised in regards to future consultation:

- requested to be further consulted on issues raised
- requested to be notified of any changes to the proposal
- further consultation is required to determine better alternatives to the project



- property has been identified in the Environmental Impact Statement as a 'highly affected residential receiver' and the property owner would like to discuss what options are available to mitigate noise impacts both during the construction period and when the new station is operating
- should advise residents of the construction timetable and when the most severe impacts will be felt
- requested further consultation and would like further information about potential impacts on the business and patients.

### **Response**

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

The Construction Environmental Management Framework (provided in Appendix D of Environmental Impact Statement) provides the communication and consultation strategy for the project. A range of communication methods would be used, including construction notifications, doorknocks, emails, newsletters, advertising, meetings and briefings to communicate the progress of works, impacts and mitigation measures to affected stakeholders.

Further information on consultation during future stages of the preferred project is provided in Section 3.4 of this report.

Further information about the approach to noise mitigation and management during construction and operation, which would include consultation with affected community members, is provided in Sections 5.11 and 5.12 of this report.

Members of the community with any specific information requests or queries are invited to contact the project team via the community contact and information points provided in Table 3.1 of this report.

## **5.3 Project need and justification**

This section provides responses to issues raised in relation to the need and justification for the project, including why the project is proposed, its relationship to future development in the study area, its consistency with existing and future planning, and project costs.

### **5.3.1 Support/objection**

#### **Summary of issues raised**

A number of submissions expressed their support for the project, and/or Sydney Metro as a whole. Comments made in support of the project included:

- fully supportive of the project
- we need new trains
- change is inevitable in a big city
- please build as soon as possible
- a big city has big needs and change is inevitable
- having seen the metro in other cities it is a highly capable and agile transport option and is well overdue for our city
- the population is increasing so is the demand for public transport
- Campsie needs this as soon as possible



- the upgrade of Punchbowl Station is well overdue
- upgrading Punchbowl Station to include lift access for people with disabilities and parents with prams is critical for a suburb like Punchbowl with such a growing population
- the project is a long overdue improvement to transport in Sydney
- even though the disruption during construction will cause some problems, the final result will be worth the inconvenience.

Some submissions also commented on the benefits of the project. These issues are considered in Section 5.3.3.

A large number of the submissions expressed their objection to the project. Comments included:

- the project would bring massive disruption to all users of the current service
- the project will take away the convenience of catching one train to the city
- the project should be stopped and re-conceptualised
- the project has not been well thought out and is rushed to satisfy developers with no community consultation
- the impacts on the community are unacceptable
- the impacts on heritage are unacceptable
- the project is not in the public interest.

### **Response**

The support for and objections to the project are noted.

Responses to issues raised in relation to the need and justification for the project are provided in Sections 5.3.2 to 5.3.5 of this report. Comments regarding the benefits of the project are considered in Section 5.3.3.

Responses to issues relating to strategic alternatives to the project, and the options and alternatives considered, are provided in Section 5.4.

Responses to issues relating to the impacts of the project are provided in Sections 5.9 to 5.25.

## **5.3.2 Need for the project**

### **Summary of issues raised**

A large number of submissions questioned the need for the project and for Sydney Metro as a whole. This included concerns with changing an existing rail line to metro operations, concerns with the justification for the project, and project costs. Comments made and issues raised included:

#### **Need for the project**

- the project is not needed or justified
- the project would replace an already efficient and effective rail service
- why fix a train system that works well and disrupt a busy service for a new train that isn't needed
- the project would bring chaos to the heavy rail network which successfully moves 1.2 million people every day and coped very well during the Sydney 2000 Olympic Games
- the existing line provides sufficient coverage and could be improved without the huge expense of a completely different operating system

- the service is not expanded to an extent to justify the expenditure
- the current Bankstown train line timetable meets the needs of its customers
- funding should be redirected to better uses such as health and education
- the proposed change affects the least busy T3 train line, which does not require a capacity increase
- there is no patronage demand for it
- the project is justified on the basis of population growth, but in fact a key objective is to act as a catalyst for, and to stimulate growth

#### **Need for Sydney Metro as a whole**

- there is no need for a metro system, we should just be expanding the existing rail system

#### **Accessibility and the need for the project**

- accessibility and safety issues can be addressed now with station upgrades without Sydney Metro, such as at Marrickville Station

#### **Capacity and congestion**

- the capacity and congestion issues are overstated
- capacity and congestion issues could be resolved by alternative means, including signalling and a timetable upgrade
- trains could be run more frequently on the existing rail lines
- tearing up an existing heavy rail line for a metro, single deck line, which provides considerably reduced passenger seating - and thus comfort - and no overall increase in volumes carried
- double deck trains provide greater capacity
- the extension of the metro from Sydenham to Bankstown has nothing to do with the City Circle
- the justification for the project to free up other lines is questioned
- it is possible to run double deck trains every two minutes, as is regularly done on the Paris RER, which is planning to increase the number of services on some of their lines to a train every 90 seconds i.e. 40 trains per hour
- if the service were to be operated by double deck trains, the capacity would be 22,500 passengers per hour, compared with only 15,000 passengers per hour with single deck metro trains

#### **Costs and economic justification**

- a cost benefit analysis has not been provided
- the project is a waste of money
- questioned how the project is justified in terms of cost versus benefit to the community
- there is no justification for expenditure on this project
- billions wasted to replace one train with another
- much of the information on the business case has not been released and no details have been released as to the cost of the project.

## The public interest

- the project is not in the public interest
- the project should only proceed if it has bipartisan and community support.

Other submissions suggested that alternatives to the project and/or Sydney Metro should be considered. Responses to these issues are provided in Section 5.4. Responses to issues relating to the impacts of the project, including impacts during construction, and heritage impacts, are considered in Sections 5.9 to 5.25.

## Response

### Need for the project

The need for the exhibited project is described in Section 5.1 (Need for the project) of the Environmental Impact Statement. The need for the preferred project is consistent with this. The project need is driven by three key factors:

#### *1. To meet the growing demand for services on the T3 Bankstown Line*

As described in the Environmental Impact Statement, the NSW Government's strategy for accommodating Sydney's future population growth over the next 20 years aims to ensure that a competitive economy is fostered with world class services and transport. As part of Sydney Metro, the project is a key component of *Sydney's Rail Future*.

Analysis undertaken by Transport for NSW identifies that by 2036, based on the annual growth rate of six per cent between 2014 and 2016, there will be around twice as many customers attempting to use the T3 Bankstown Line.

#### *2. To resolve current accessibility and safety improvement issues on the T3 Bankstown Line*

Parts of the T3 Bankstown Line are over 120 years old with infrastructure in varying conditions.

Dulwich Hill, Hurlstone Park, Canterbury, Wiley Park and Punchbowl stations do not have lifts.

There are large gaps between the trains and the platforms, making it difficult for many customers to board the train. At many places people have to step up into trains – making travel in a wheelchair or with a pram or luggage difficult.

Upgrading the line to metro standards would make all stations accessible, with lifts and level access between the platforms and trains.

#### *3. To relieve existing bottleneck and capacity issues affecting the T3 Bankstown Line and the overall rail network*

The T3 Bankstown Line creates a significant bottleneck for the existing rail network. The line effectively slows down the network because of the way it merges with other railway lines close to the Sydney CBD, including the T2 Inner West & Leppington Line, and the T8 Airport & South Line. Crowding at Town Hall and Wynyard stations further limits the capacity of the network.

By making the T3 Bankstown Line part of the new metro system, this bottleneck would be removed, providing faster and more reliable journeys for customers.

For customers travelling on the network into and out of the Sydney CBD, the limited network capacity restricts the number of services that can be provided, resulting in increased crowding on trains and platforms and within train carriages, as well as decreased reliability of services.

The rail network is particularly complex through and around the Sydney CBD, where up to 15 lines converge into six inbound tracks. This constrains the network and creates a more complex rail operation.

With at least 15 trains an hour or a train at least every four minutes in the peak when services start in 2024, the upgrade of the T3 Bankstown Line would deliver benefits across Sydney's rail network.

The preferred project forms one of two components of Sydney Metro City & Southwest, which has been declared to be of critical State significance. The preferred project is needed to complete Sydney Metro City & Southwest, and to realise its full strategic benefit as part of Sydney Metro. The need for Sydney Metro is summarised below.

### Need for Sydney Metro as a whole

The need for Sydney Metro was established by *Sydney's Rail Future* (Transport for NSW, 2012a), which is a long-term plan to increase the capacity of Sydney's rail network through investment in new services and upgrading existing infrastructure. *Sydney's Rail Future*, which aims to modernise and transform Sydney's rail network, will deliver a three-tiered system to respond to changing customer needs:

- Tier 1: Metro
- Tier 2: Suburban
- Tier 3: Intercity.

As described in Section 5.1.2 (Regional demands and drivers) of the Environmental Impact Statement, the need for Sydney Metro is based on public transport capacity requirements for Sydney, to meet the needs of future growth. For Sydney to continue to be one of the most economically productive and liveable areas in Australia, its growth needs to be managed. To maintain the liveability of the city, transport capacity is required to enable the development of affordable housing and to enable people to move around the city to enjoy their daily lives.

The need for Sydney Metro is driven by the challenges being experienced in responding to this growth, including the existing and future capacity of Sydney's transport infrastructure. Over the next 15 years, Sydney will require transport infrastructure to support 40 per cent more train trips, 30 per cent more car trips, and 31 per cent more households (Transport for NSW, 2016).

As noted in Section 5.1 (Need for the project) of the Environmental Impact Statement, the rail network is heavily congested, with customers on most rail lines regularly experiencing significant crowding on trains and station platforms during the morning and evening peaks. As population and employment continue to grow, rail is forecast to experience the highest growth in travel demand, with an additional 100,000 trips expected during the morning peak by 2036. It is forecast that without further investment, Sydney's rail network will reach capacity in the Sydney CBD and on critical suburban rail lines by the mid to late 2020s (Transport for NSW, 2012).

By 2036, demand on a number of lines, including the T2 Inner West & Leppington Line, the T3 Bankstown Line, and the T8 Airport & South Line will exceed capacity – some customers will not be able to board the trains and there will be major impacts to the reliability of these services.

Sydney Metro, including the preferred project, has a long-term target capacity of about 40,000 customers per hour in each direction, similar to other metro systems worldwide. Sydney's current suburban rail system can reliably carry about 24,000 people an hour per line. Sydney Metro, together with signalling and infrastructure upgrades across the existing Sydney rail network, will increase the capacity of train services entering the Sydney CBD – from about 120 services an hour today, up to 200 services beyond 2024. This is an increase of up to 60 per cent across the network to meet demand.

The Australian and NSW Governments have developed national and city building policies to support the continued growth and development of Sydney's economy and sustainability. Further investment in transport infrastructure, including Sydney Metro, is a key requirement to achieve these policy objectives. Further information is provided in Section 5.2 (Strategic context) of the Environmental Impact Statement.

### **Accessibility and the need for the project**

It is acknowledged that five of the 10 stations along the project area currently have lifts. In response to issues such as this, the exhibited project has been revised and new lifts would be provided at stations where there are currently no lifts. However, the proposed upgrading of stations to meet accessibility requirements is not limited to the provision of lifts. Additional works proposed at stations as part of the preferred project would include:

- upgrading platforms to ensure they slope away from the tracks
- providing mechanical gap fillers to address gaps between platforms and trains
- upgrading stairs to meet accessibility standards
- providing accessible toilets.

Additional works would also be undertaken around stations to provide an accessible interchange between train services and another service (e.g. bus, light rail or accessible parking).

The conversion of the T3 Bankstown Line to Sydney Metro is considered the best option for many of the stations to receive an accessibility upgrade.

### **Capacity and congestion**

#### **Capacity of the network**

A number of factors limit the capacity of the Sydney Trains network in peak periods, including the number of crossings at different locations on the network, the interactions between different lines of the network, the time taken to load/unload passengers from double deck trains, and the limitations of the signalling system. Many of these factors are very expensive and disruptive to fix.

Conversion to Sydney Metro offers the opportunity to address these issues and provide substantial additional capacity and accessibility improvements to the network in a cost effective way.

With respect to the capacity of the Sydney Metro, it is noted that metro trains have capacity for about 1,500 customers, compared to double deck Sydney Trains, which have capacity for about 1,200 customers per train. With level access between the platform and train, single levels, and three double doors per side per carriage, metro trains also provide for faster loading and unloading.

As a result of the existing capacity constraints along the T3 Bankstown Line it is not possible to run trains along the existing line any quicker than about every six to 10 minutes.

When Sydney Metro services start along the line in 2024, there would be at least 15 trains an hour in the peak in each direction, with plenty of space to grow in the future – the project would be designed to enable the future provision of a train every two minutes.

Unlike the Paris Réseau Express Régional (RER), the Sydney Train network has a number of lines converging in the city circle, which limits the ability to increase capacity and frequency.

London's Crossrail is considered to be a suitable comparison as similar rolling stock would be used on Sydney Metro, including single deck carriage with three doors on each side of the train. Like Crossrail, Sydney Metro is a rapid transit high capacity rail system.

### **Frequency and number of people carried**

One of the objectives of Sydney Metro is to increase the capacity of the City Circle. The City Circle is constrained during peak periods and does not provide for the predicted patronage growth into the future. Increasing the capacity of the City Circle would be achieved by removing the current T3 Bankstown Line services from the Sydney Trains network and converting it to Sydney Metro.

Stations along the T3 Bankstown Line currently have between four and 10 trains per hour in the morning peak. Although Sydney Metro has less seats per train, the increased service frequency of Sydney Metro, at least 15 trains per hour (every four minutes) at opening in 2024, means that the overall capacity of the Sydney Metro system will be greater than Sydney Trains. Further, Sydney Metro will be able to significantly increase its capacity by increasing train sets from six to eight cars and reducing headways to every two minutes (30 trains per hour) in the future. This capacity and future expansion opportunities would not be possible with the Sydney Trains network without significant new expenditure and disruption to services.

### **Costs and economic justification**

The cost of the project is considered to be justified based on the need for the project, and the anticipated benefits, as described in Chapter 5 (Project need) of the Environmental Impact Statement and summarised above.

A business case was prepared for Sydney Metro City & Southwest (which includes the project), and endorsed by the NSW Government. This document includes an assessment of economic benefits. The business case was prepared in accordance with the NSW Treasury's *Guidelines for Capital Business Cases*, which defines the process for preparing, reviewing and approving business cases.

A summary of the business case is available via Sydney Metro's website at <https://www.sydneymetro.info/citysouthwest/project-overview>.

The business case concluded that the benefit cost ratio for Sydney Metro City & Southwest is 1.53, which means that the project would deliver \$1.53 worth of benefits for each \$1 invested.

### **The public interest**

The proposal to construct and operate the Sydney Metro City & Southwest Sydenham to Bankstown upgrade project would be assessed in accordance with the requirements of Division 5.2 (formerly Part 5.1) of the EP&A Act. Relevant considerations include:

- the Environmental Impact Statement
- existing strategic plans and policies (including State, regional and local)
- feedback and comments from the relevant local council
- specialist and technical input and advice received from government agencies
- public submissions received during the exhibition
- the public interest.

### 5.3.3 Benefits of the project and the broader metro network

#### *Summary of issues raised*

A number of submissions noted the potential benefits of the project as part of the Sydney Metro network, including:

#### **Benefits of the project**

- having our own new line makes a lot of sense and we do not slow down the remainder of the network
- a metro network can distribute the population in different geographic areas
- it is a great way to temporarily increase transport efficiency of city trains
- metro will give the community a new modern transport option
- metro would remove the current congestion from the train network
- metro would remove the old noisy train line, introduce a new and safer line, reduce congestion across the train network, and is safe for parents travelling with prams
- metro would allow for new modern transport, which is efficient and safe, safely distribute the travelling population through the city loop, and minimise delays and heavy foot traffic in current limited station stops.

A number of submissions expressed concerns about the benefits of the project. Comments included:

#### **Project offers no benefits**

- the proposal will not benefit the people of Sydenham to Bankstown
- the public would not benefit from the project
- what are the benefits to commuters in between Marrickville to Dulwich Hill stations
- the benefit that enhanced customer service on the metro will lead to growth in the use of rail services and less reliance on cars may not eventuate if trains are overcrowded, or residents work east or west of the line and car use would be required
- given the Government's track record on delivering infrastructure, the community is right to be wary about any mooted benefits of this project
- the benefits of the project, especially for the local communities, have not been convincingly demonstrated
- there is no sustainability benefit for ripping up an existing rail line and replacing it with another rail line

#### **Capacity benefits**

- the existing timetable changes have benefited capacity, showing that a metro upgrade is not required
- taking Bankstown Line services out of the City Circle will not free it up for additional services
- the main estimated benefit of the metro line is that it frees up capacity in the City Circle for other train services across the rest of the city at the sacrifice of stations on T3 line
- improvements to signalling would allow for a greater capacity of passengers on double deck trains than single deck metro trains, which disagrees with one of the stated benefits of metro



- the heavy rail has the capacity to stop every three minutes right now and so it begs the question of why the metro system stopping every four minutes (in the peak hour) could be an improvement over the current service

#### **Travel time benefits**

- claims that City & Southwest will provide faster travel times, direct access to major CBD stations, and better connections to jobs and education, are far from accurate for many, if not most Bankstown line customers
- while time increases for direct services to north of the city might be significantly decreased, the time savings for stations in the city have been inflated improperly
- timetable changes will negate the claimed extra movements of metro trains every four minutes

#### **Customer focus**

- the project does not provide a customer focus, or put customers first
- if customers were important, peak hour services to Hurlstone Park would be increasing, not decreasing, disability access could have been installed at all stations years ago, the toilets and waiting rooms opened up, and the heritage buildings maintained

#### **Impacts compared with benefits**

- the environmental impacts of this project far outweigh the benefits
- the social and financial costs of the project are not balanced by the level of benefit which the application indicates will arise from the project
- the multiple negative effects of this project outweigh any possible benefits

#### **Benefits for Hurlstone Park**

- the key operational benefits for Hurlstone Park are stated as the 'provision of an enlarged station forecourt for safer gathering and interaction, and new pedestrian crossings to facilitate access to surrounding areas' - this is not an adequate benefit for the loss of the heritage station building at Hurlstone Park.

Responses to issues raised about the benefits of the project are provided below. Responses to issues raised in relation to the need and justification for the project are provided in Section 5.3.2 of this report.

#### **Response**

##### **Benefits of the project/project offers no benefits**

Sydney Metro (including the preferred project) offers the opportunity to address the issues with the T3 Bankstown Line and provide substantial capacity increases (summarised in Section 5.3.2 of this report and in Chapter 5 (Project need) of the Environmental Impact Statement).

Sydney's current suburban rail system can reliably carry 24,000 people an hour per line. Sydney Metro, including the project, has a long-term target capacity of about 40,000 customers per hour in each direction, and provide the ability to cater for an extra 100,000 customers per hour across the Sydney CBD rail lines.

Over the three-hour morning peak, Sydney Metro will be able to move 51,000 people in each direction on the Bankstown Line - an extra 15,000 people compared with the current situation.



Sydney Metro, together with other signalling and infrastructure upgrades across the Sydney rail network, will greatly increase the capacity of train services entering the Sydney CBD, from about 120 services an hour today, up to 200 services beyond 2024. This is an increase of up to 60 per cent capacity across the network to meet demand.

The preferred project would also have the following benefits:

### **Services and access**

- faster, more frequent and direct access to key employment centres – offering a train every four minutes at opening in peak times, with the capacity to provide future increases to a train every two minutes
- better access to education, with fast, more frequent and direct connections
- no timetable required – customers can just turn up and go
- new and direct access to major CBD and other new stations, including Waterloo, Central, Martin Place, Pitt Street, Barangaroo, and Victoria Cross (North Sydney)
- fast, safe and reliable – a new generation of 21st century metro trains
- opal ticketing – fares set and controlled by the NSW Government, the same as the rest of Sydney

### **Stations**

- all stations accessible, with lifts, accessible toilets and level access between trains and platforms
- refurbishment/repurposing of station buildings on platforms or at station entrances, including control and communication rooms, toilets, staff facilities, storerooms, and offices
- improved interchange with light rail, pedestrian and cycling networks, and provision of taxi, kiss and ride and bike parking facilities at key stations
- customer service assistants at every station and moving through the network during the day and night
- Australian-first platform screen doors (running the full length of all metro platforms and only opening at the same time as the train doors), which keep people and objects away from the edge, improving customer safety and allowing trains to get in and out of stations faster

### **Trains**

- level access between the platform and train, and three double doors per side per carriage, for faster loading and unloading
- continuous mobile phone coverage throughout the metro network
- 98 per cent on time running
- clean platforms and trains
- two multi-purpose areas per train for prams, luggage, and bicycles
- wheelchair spaces, separate priority seating, and emergency intercoms inside trains
- safety benefits, including security cameras on trains, and the ability for customers to see inside the train from one end to the other
- heating and air-conditioning in all metro trains
- on-board real time travel information and live electronic route maps.

With respect to sustainability, further information and clarification in response to issues raised about the potential sustainability and climate change impacts of the project is provided in Section 5.22.

### Capacity benefits

The changes to Sydney Trains timetables implemented in November 2017 have resulted in an increased number of services across the network. However, these changes are not sufficient to address future demands by themselves. The existing capacity constraints along the T3 Bankstown Line, which include the capacity of the City Circle, crowding issues at Town Hall and Wynyard stations, and the time taken to load/unload double deck trains, limit the opportunity for further capacity increases.

Sydney Metro, together with other signalling and infrastructure upgrades across the Sydney rail network, will greatly increase the capacity of train services entering the Sydney CBD, from about 120 services an hour today, up to 200 services beyond 2024. This is an increase of up to 60 per cent capacity across the network to meet demand.

As a result of the existing capacity constraints along the T3 Bankstown Line, it is not possible to run trains along the existing line every three minutes.

Stations along the T3 Bankstown Line currently have between four and 10 trains per hour in the morning peak (i.e. a train every six to 10 minutes). When Sydney Metro services start in 2024, there will be at least 15 trains an hour in the peak in each direction (i.e. a train every four minutes), with plenty of space to grow in the future.

Section 5.1.1 (Key local needs – existing bottleneck and capacity issues with the rail network and the T3 Bankstown Line) and Figure 5.1 (Overview of the project's effect on the City Circle) of the Environmental Impact Statement shows the numbers of movements on the City Circle with and without Sydney Metro operations. Following implementation of Sydney Metro, there will be capacity for up to 20 movements per hour for trains around the City Circle, up from 14 movements under existing conditions.

Responses to other issues raised in relation to capacity and seating on metro trains are provided in Section 5.6.1 of this report.

### Travel time benefits

Table 5.3 (Estimates of indicative travel time savings) in the Environmental Impact Statement compared the travel time savings based on Sydney Trains travel times (prior to the November 2017 timetable update) with Sydney Metro for a limited number of origins/destinations. While it is not feasible to represent all possible passenger trips in this table, it is also not appropriate to compare with past train timetables.

Sydney Trains updates their timetables routinely to provide increased services to meet growing passenger demands, provide better connections between different transport modes, and add upgraded infrastructure to the rail network. In November 2017, a new timetable was introduced in response to the NSW Government's More Trains, More Services initiative. A summary of the timetable changes, and the effects on the estimated travel times by Sydney Trains compared to the new Sydney Metro services, is provided in Section 2.4 of this report. As a result of the changes, the travel time saving offered by Sydney Metro between Bankstown and Central is nine minutes when compared to with the same trip under the current timetable.

## Customer focus

Transport for NSW is committed to meeting the needs of customers across all modes of transport. The needs of customers are the driving force behind the design of the project and Sydney Metro as a whole. The design and delivery of Sydney Metro is centred on the customer and focussed on their needs, at each stage of their journey. Sydney Metro's commitment is to provide a reliable transport solution that will make it easy for all customers to get to where they need to go.

Sydney Metro is being designed to deliver a service that is on time, clean, safe, comfortable, efficient, convenient, accessible and easy for customers to use. It will also be seamlessly integrated with other transport modes, including interchanges with the existing Sydney Trains network, as well as buses and light rail.

During operation, the preferred project would result in an increase in the number of trains which operate along the rail corridor, including a significant increase in the number of services at Hurlstone Park Station.

## Impacts and benefits

The environmental impacts of the exhibited project were extensively assessed as part of the Environmental Impact Statement and further assessment has been undertaken for the preferred project as part of this report.

The environmental impact assessment was undertaken and both the Environmental Impact Statement and this report were prepared in accordance with the relevant provisions of the EP&A Act and the Regulation. The assessment and Environmental Impact Statement complies with the requirements of the Secretary's environmental assessment requirements. The assessment undertaken for the preferred project and this report also comply with the requirements of the Secretary's environmental assessment requirements, where relevant to the preferred project. A review of the Secretary's environmental assessment requirements relevance to the preferred project is provided in Appendix C of this report.

The Environmental Impact Statement and this report recognise that although Sydney Metro City & Southwest (including the project) will benefit the community during operation, there would be impacts during construction. To manage the potential impacts, the Environmental Impact Statement identified a range of management and mitigation measures that would be implemented during construction and operation. These management and mitigation measures have been refined based on the scope of the preferred project, and are provided in Chapter 16 of this report. The preferred project's environmental performance would be managed in accordance with the approach described in Section 16.1 of this report. This includes implementing the Construction Environmental Management Framework, Construction Environmental Management Plan, Construction Noise and Vibration Strategy, Temporary Transport Strategy, Utilities Management Framework, the mitigation measures listed in Table 16.1, and the Operational Environmental Management Plan.

The business case summary document includes a review of the benefits of constructing the project as part of the wider Sydney Metro City & Southwest project. These benefits were also outlined in Section 5.3 (Project benefits) of the Environmental Impact Statement. While the project would result in benefits for wider Sydney, such as increasing rail capacity and access to a range of key destinations, there are also a number of benefits for local communities. These include:

- improved accessibility at stations and the associated interchanges,
- improved travel times along the T3 Bankstown Line corridor into the CBD and beyond, including to Macquarie Park and North Sydney
- improved access due to improved travel times and the increase number of services to support planned urban renewal opportunities.

## Benefits for Hurlstone Park

Transport for NSW acknowledges the community's concerns regarding the loss of heritage buildings. In response, Transport for NSW has developed a design solution that enables the retention of existing heritage buildings, including all heritage buildings at Hurlstone Park.

Additionally, the preferred project would deliver operational benefits to the community of Hurlstone Park. Hurlstone Park Station is currently serviced by about four trains per hour (i.e. a train every 15 minutes). As noted above, the preferred project would result in the provision of frequent and reliable metro services at Hurlstone Park. When the preferred project commences operating, Hurlstone Park would be serviced by about 15 trains per hour during the morning and afternoon peaks (i.e. a train every four minutes), and by at least six trains per hour outside the peaks (i.e. at least every 10 minutes). This represents an increase in the frequency of services per hour for both the peak and off-peak periods at Hurlstone Park.

Hurlstone Park would have direct access via Sydney Metro to key employment and service centres, including areas outside the Sydney CBD, such as Waterloo, North Sydney, Chatswood, and Macquarie Park.

### 5.3.4 Further development concerns and links to project justification

#### *Summary of issues raised*

A large number of submissions expressed concerns with proposals to increase residential densities in the study area, and the links to the project. These included concerns regarding future and current development projects, concerns regarding future planning (including the draft/revised draft *Sydenham to Bankstown Urban Renewal Corridor Strategy* prepared by the Department of Planning and Environment), concerns regarding the servicing of future development, and general concerns with the level and location of development between Sydenham and Bankstown.

Submissions expressed concerns that the project is being delivered solely to meet the needs of the future development, and that if the project is undertaken, future development would be inevitable. Issues raised included:

#### Concerns with development in the study area

- the plans for mass rezoning along the Sydenham to Bankstown Line are opposed
- very concerned with proposals to rezone areas around stations and undertake significant amounts of development, including large numbers of high rise buildings, and the loss of existing facilities, services, employment, and businesses around stations
- concerned about the scale of additional development along the Sydenham to Bankstown Urban Renewal corridor
- concerns with increasing the density of high-rise apartments around stations without improving facilities
- concerns with specific developments, including high-rise housing in Constitution Road and Denison Street in Dulwich Hill, the project in Grove Street at Dulwich Hill, a 35-storey building at Lakemba Station, and development around Marrickville, Campsie and Canterbury stations
- new development will cause traffic congestion and affect the character of the area
- concerned about the impacts of development on heritage

- there are insufficient facilities to cater for the new developments, including roads and footpaths, schools, playgrounds, open space and hospitals – suburbs will not be able to cope with the scale of development
- development will lead to overcrowding on/in the already inadequate roads and public spaces, and appears to be in the favour of property developers and not existing residents
- concerned that the council agreed to increasing density and development without consulting the community
- concerned about a tender that has been awarded for over station development for Sydney Metro City & Southwest, and market sounding that has begun for development opportunities for stations

#### **Justification for the project in relation to further development**

- the project has been coupled with the Government's flawed proposal for mass rezoning along the line, with tens of thousands of extra apartments scheduled to be built a decade before the line is due to open
- concerned that the increase in development around stations is being used as a justification for the project, and to enable the project to be funded
- the metro is being used as a mechanism to force high density living onto low density, heritage rich neighbourhoods
- justifying the project based on growth and the need for increased housing supply is contested, particularly because this corridor is already densely populated
- without the excessive proposed Sydenham to Bankstown Urban Renewal Corridor Strategy upzoning there is no need for the metro
- does not support a project justification based on servicing future development in the area
- the project/improvements to transport will enable increased densities, and is a back-door way of enabling unfettered development in the area
- the financial link between metro and the high-rise corridor is not acceptable
- concerned that the main benefit of the project is that it would help the government gain stamp duty from property overdevelopment
- the proposal will open way to overdevelopment.

#### **Response**

##### **Concerns with development in the study area**

The preferred project consists of the upgrade and conversion of the T3 Bankstown Line between Marrickville and Bankstown to metro standards. Transport for NSW is not proposing to deliver any residential developments, or over-station developments as part of this project. Any future development would be subject to a separate assessment and planning approval process.

The primary objectives of the preferred project (consistent with the exhibited project) are to:

- improve the quality of the transport experience
- provide a system that is able to satisfy long-term demand
- improve the resilience of the transport network.

As described in Section 16.3 (Future land use) of the Environmental Impact Statement, development around the stations between Sydenham and Bankstown has been progressively

occurring since this section of the T3 Bankstown Line was first constructed between 1892 and 1909.

The NSW Government recognises that future development needs to be adequately planned for and serviced. Recognition of this need has driven the development and release of the recent strategic land use, transport and infrastructure plans by the Greater Sydney Commission and the NSW Government

Strategic land use planning for the areas between Sydenham and Bankstown has been, and is being, undertaken by a number of agencies, including the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils.

This strategic planning, which is separate to the planning and approval process for the project, includes the following strategies and documents (some of which have been released/updated since the Environmental Impact Statement was placed on public exhibition):

- *Greater Sydney Region Plan* (Greater Sydney Commission, 2018a)
- *South District Plan* (Greater Sydney Commission, 2018b)
- *Central City District Plan* (Greater Sydney Commission, 2018c)
- *Future Transport Strategy 2056* (Transport for NSW, 2018a)
- *Greater Sydney Services and Infrastructure Plan* (Transport for NSW, 2018b)
- *revised Draft Sydenham to Bankstown Urban Renewal Corridor Strategy* (Department of Planning and Environment, 2017)
- *A Plan for Growing Sydney* (Department of Planning and Environment, 2014).

The Priority Precincts Program was launched by the Department of Planning and Environment in 2014, with a focus on identifying locations across greater Sydney with good access to existing or planned public transport connections, suitable for rejuvenation with new homes and jobs. These areas have now evolved into planned precincts, and are in the next stage of the planning process, with a focus on providing priority infrastructure, including schools, parks, transport, hospitals and road upgrades.

The Canterbury, Campsie, Lakemba, and Belmore precincts have been identified as planned precincts along the Sydenham to Bankstown corridor. Master planning for these precincts is expected to start in 2018. This planning will build on the vision and guiding principles of the final Sydenham to Bankstown Urban Renewal Corridor Strategy, which is being finalised in response to community and stakeholder feedback.

Further information on the Planned Precincts Program is available at <http://www.planning.nsw.gov.au/Plans-for-your-area/Priority-Growth-Areas-and-Precincts>.

Transport for NSW is currently preparing Stage 1 State significant development applications for over station development at Sydney Metro City & Southwest Victoria Cross and Pitt Street stations, including environmental impact statements to support the applications. The Victoria Cross environmental impact statement was placed on public exhibition in May 2018. The Chatswood to Sydenham project, which was approved in January 2017, also identifies potential over station development at Crows Nest and Martin Place stations.

An industry briefing for Sydney Metro City & Southwest was held on 2 November 2017. The briefing update is available on the Sydney Metro website. This identifies that industry engagement and market sounding has been occurring since 2015. Market sounding has occurred during 2017 and 2018 on station construction, line-wide, and integrated station development packages. The integrated station development packages include the Pitt Street, Martin Place, Victoria Cross, and Crows Nest station sites, which form part of the Chatswood to Sydenham project.

#### **Justification in relation to further development**

As described in the Environmental Impact Statement, for Sydney to continue to be one of the most economically productive and liveable areas in Australia, its growth needs to be managed. To maintain the liveability of the city, transport capacity is required to enable the development of affordable housing and to enable people to move around the city to enjoy their daily lives. The need for Sydney Metro, including the preferred project, is driven by the challenges being experienced in responding to this growth, including the existing and future capacity of Sydney's transport infrastructure. The need for the project recognises that, without further investment, Sydney's rail network will reach capacity in the Sydney CBD and on critical suburban rail lines by the mid to late 2020s (Transport for NSW, 2012).

Another key need for the preferred project is that parts of the T3 Bankstown Line are over 120 years old, with existing infrastructure in varying conditions. A key challenge for this line is customer accessibility, with five of the stations not having lifts. A number of the stations between Marrickville and Bankstown also have very large gaps between the platforms and trains, which makes access difficult for some customers, particularly the disabled, elderly, and those travelling with young children and prams.

In addition, the T3 Bankstown Line creates a significant bottleneck for the existing rail network. The line effectively slows down the network because of the way it merges with other railway lines close to the Sydney CBD.

The need for the preferred project, as described in Chapter 5 (Project need) of the Environmental Impact Statement, also recognises that the preferred project would contribute to the regional needs of a growing population and aid in the response to housing and job demands. Sydney Metro, including the preferred project, would promote improved liveability through better public transport opportunities, helping to meet increasing community demand for public transport.

While the nexus between the need to house a growing population and to deliver accessible, modern, secure and integrated public transport is acknowledged, there is no proposal as part of this project to provide any housing or to rezone land to allow higher density development.

To ensure coordination between the project and future strategic planning for the corridor, mitigation measure LU1 commits Transport for NSW to work the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils, in relation to future planning for the Sydenham to Bankstown corridor.

### **5.3.5 Consistency with strategic planning and transport policy**

#### **Summary of issues raised**

Issues raised included:

- requested that the project not proceed until a new city wide properly integrated transportation plan is devised in keeping with social, economic and environmental sustainability principles, and the project is considered in relation to this plan
- the proponent needs to work out first how the project relates to other NSW plans, and then consult the Sydenham to Bankstown community on the environmental impact of the project.



## Response

Section 5.2 (Strategic context) of the Environmental Impact Statement provided a consideration of the exhibited project against strategic planning and transport policy. These strategic planning documents perform the role of integrated planning between land use and transport infrastructure. Both the exhibited project and the preferred project are consistent with the objectives and goals of these documents.

In March 2018, the NSW Government released the *Future Transport Strategy 2056* (Transport for NSW, 2018). This strategy is an update of the *Long Term Transport Master Plan*. It is a suite of strategies and plans for transport developed in conjunction with the Greater Sydney Commission's Sydney Region Plan, Infrastructure NSW's State Infrastructure Strategy, and the Department of Planning and Environment's regional plans, to provide an integrated vision for the state.

The strategy sets the 40 year vision, directions and outcomes framework for customer mobility in NSW, which will guide transport investment over the longer term.

The vision for the future of transport is based on six outcomes:

- a customer focus
- successful places
- a growing economy
- safety and performance
- accessible services
- financial and environmental sustainability.

The strategy recognises that Sydney Metro will be an integral part of Sydney's transport system into the future.

Further information is available at <https://future.transport.nsw.gov.au/about-future-transport/program/>. To ensure coordination between the preferred project and future strategic planning for the corridor, mitigation measure LU1 requires Transport for NSW to work with the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils, in relation to future planning for the Sydenham to Bankstown corridor.

New mitigation measure LV3 commits to the preparation of Station Design and Precinct Plans for each station. The plans would aim to ensure that the stations and facilities are sympathetic and complement local character, and are fully integrated with future plans for development.

## 5.4 Project alternatives and options

This section provides responses to issues raised in relation to the alternatives and options that were considered prior to, and during, development of the exhibited project. These include issues relating to the process of evaluating and selecting the preferred alternatives and options; suggestions and comments regarding alternatives to the project and Sydney Metro as a whole; and options considered for project features.

### 5.4.1 Alternatives and options assessment process

#### Summary of issues raised

Some submissions raised concerns with the process of assessing and selecting options and alternatives. Issues raised included:

- concerned that options and alternatives have not been sufficiently analysed



- alternative solutions to congestion have not been properly considered or open to public consultation
- concerned that economic considerations have taken priority over assessing environmental impacts/benefits
- the Government has not adequately considered alternative infrastructure options.

### **Response**

The strategic alternatives and options assessment described in Chapter 6 (Project alternatives and options) of the Environmental Impact Statement meets the Secretary's environmental assessment requirements. This included consideration of the consequences of not proceeding with the exhibited project (or the do-nothing option), which would be the same for the preferred project. The consequences of not proceeding with the preferred project include:

- insufficient transport capacity would prevent Sydney from reaching its economic potential, leading to worse economic outcomes for the State and nation
- Sydney's transport network will not provide the minimum standard of service expected by rail customers and there will be major impacts on the operational efficiency, reliability and capacity of the suburban rail network in the medium to long term
- the benefits of the preferred project and Sydney Metro as a whole would not be realised.

The exhibited project was also subject to the NSW Treasury's *Guidelines for Capital Business Cases*, which identifies a robust process for the preparation, review, and approval of final business cases. A summary of the business case is available at <https://www.sydneymetro.info/citysouthwest/project-overview>.

Relevant information from the business case was incorporated into the Environmental Impact Statement.

Environmental considerations formed one of a range of considerations and criteria used during assessment of options and alternatives.

## **5.4.2 Alternatives to Sydney Metro**

### **Summary of issues raised**

Some submissions requested consideration of alternatives to undertaking Sydney Metro, including heavy rail and/or transport infrastructure in other areas of Sydney. Issues raised included:

- areas that don't have a rail or light rail line should be considered and a service provided there instead, such as the Northern Beaches, South West Sydney, the southern suburbs or Western Sydney Airport – improving public transport to areas that currently lack it is a much higher priority than converting a functioning rail system
- funds could be better spent in areas of Sydney that are desperate for cheap, public, train travel
- should be investing in other rail lines, or improving existing rail lines instead
- should use heavy rail technology with carriages of 70 per cent seating capacity instead of the metro which has 70 per cent standing capacity
- consider other infrastructure options such as decentralisation, rural investment, a strategy for Parramatta Road, a rapid bus transit system, extending train services from Strathfield, light rail, a tram down Canterbury and New Canterbury Roads, a tram down Parramatta Road, Mascot to Strathfield Express Light Rail service or an underground metro service from Parramatta

- the T1 Western Line is the busiest in Sydney and requires a more urgent upgrade.

### Response

The strategic alternatives and options assessment provided in Chapter 6 (Project alternatives and options) of the Environmental Impact Statement meets the Secretary's environmental assessment requirements. This included consideration of the consequences of not proceeding with the exhibited project (or the do-nothing option), which would be the same for the preferred project.

As described in the Environmental Impact Statement, various alternative transport solutions were considered as part of strategic rail and transport planning. This included the planning undertaken to develop the *NSW Long Term Transport Master Plan*, *Sydney's Rail Future*, and most recently, the *Future Transport Strategy 2056* (Transport for NSW, 2018a). Strategic alternatives to further investing in rail were considered as part of this process. These alternatives included regulatory, governance, and better-use reforms, and investment in road, bus, and light-rail.

This assessment concluded that additional investment in rail is a more efficient and effective solution than the other strategic transport alternatives. While the other alternatives considered (including regulatory, governance, and better-use reforms; and investment in road, bus, and light rail) are also being implemented, they will fall short of achieving the overall strategic goals and objectives over the long term by themselves. As a result, additional investment in rail is required.

*Sydney's Rail Future*, the long term rail strategy for Sydney, investigated a number of strategic alternatives for the future of Sydney's rail system. The strategy identified that building a metro rail system to integrate with the existing rail network would provide more benefits and fewer disadvantages than the other alternatives. Sydney Metro was adopted as the preferred alternative for modernising Sydney's rail network, because it would:

- be more flexible and provide frequent services that would benefit customers
- provide the required capacity and flexibility to respond to growing demand for rail in Sydney
- create a more modern, resilient and faster service
- deliver a seamless and less disruptive way of modernising Sydney's rail
- deliver transport benefits more cost effectively.

The increase in network capacity and ability to make a significant change to how the existing rail network operates would provide the following transport benefits:

- enabling the transport network to better cater for growth
- travel-time savings
- increased network capacity
- decreased train and station crowding, including at key CBD stations during peak periods
- increased reliability of the rail network
- enhanced customer satisfaction on the use of public transport
- improvements in customer safety.

Other transport and infrastructure projects will continue to be planned and delivered in Sydney in line with available funding, and in accordance with strategic transport and land use planning undertaken by relevant agencies, including:

- *Greater Sydney Region Plan* (Greater Sydney Commission, 2018a)
- *Future Transport Strategy 2056* (Transport for NSW, 2018a)
- *Greater Sydney Services and Infrastructure Plan* (Transport for NSW, 2018b)

- *A Plan for Growing Sydney* (Department of Planning and Environment, 2014).

These projects include Sydney Metro West for which planning is currently underway. Sydney Metro West will double the capacity of the existing T1 Western Line and will establish future capacity for Sydney's fast growing west and the planned airport.

### **5.4.3 Alternatives to this project**

#### **Summary of issues raised**

Some submissions suggested that alternatives to the project should be considered instead, including improving existing rail services along the T3 Bankstown Line, or developing Sydney Metro, but providing other metro lines instead of this project. Issues raised included:

#### **Upgrading the existing rail line**

- while it is true that the inner west needs better public transport services, the existing line could be upgraded to meet this need
- much needed improvements to the line, such as upgraded stations, installation of lifts etc could be achieved without the need to make the extensive changes proposed

#### **Upgrading and maintaining existing operations along the T3 Bankstown Line**

- the capacity of the existing trains could be increased by running extra trains
- the existing tracks and trains are capable to service off peak trains every 10 minutes
- services could be improved by alternative means including signalling and timetable upgrades, bringing in modern rolling stock and installing disabled access to stations
- if lifts were added to stations so that they are all accessible, and existing services increased, this will be sufficient for the projected population at a significantly lower cost to the taxpayer
- why was this area, with a strong reliance on public transport, chosen for an inferior service

#### **Provide additional rail tracks west of Bankstown**

- the Bankstown Line should be retained and additional tracks built from Bankstown to Cabramatta to cater for the growth in population

#### **Extensions to Sydney Metro beyond Bankstown, including to Western Sydney Airport**

- Sydney Metro services should be extended beyond Bankstown
- the existing Bankstown Line should be extended to service Western Sydney Airport

#### **Metro line to Western Sydney**

- establishing a metro line to Sydney's west must be a priority to connect the three cities laid out by the Greater Sydney Commission in their most recent draft plans

#### **Metro line to Southern Sydney**

- an alternative route could extend south through Sans Souci, across the Georges River to a terminus at Miranda, where there would be an interchange with the Cronulla Line

#### **Other alternatives**

- metro would work better underground
- if there is to be a conversion to metro, the City Circle would be the best choice in terms of an untimed rail system

- could remove the T3 Bankstown Line services from the City Circle by terminating them at Redfern or Central stations.

## **Response**

### **Upgrading the existing rail line**

Transport for NSW has responded to community and stakeholder feedback during the exhibition period and developed a design solution that enables the retention of existing station entrances, heritage buildings and concourses, but enables upgrades that provide accessible stations.

Importantly, these changes to the exhibited project have enabled the development of a preferred project that not only addresses a number of the issues raised in submissions, but also significantly minimises potential impacts, while delivering a world class metro.

### **Upgrading and maintaining existing operations along the T3 Bankstown Line (stopping Sydney Metro at Sydenham)**

Sections 6.3 (Rail line conversion options) and 6.4 (The 'do nothing' alternative) of the Environmental Impact Statement provided the assessment of alternatives to the exhibited project, which would be the same for the preferred project. This included assessment of the T3 Bankstown Line continuing to operate as part of the Sydney Trains network, and Sydney Metro operating between Rouse Hill and Sydenham, rather than to Bankstown. Section 6.4 (The 'do nothing' alternative) of the Environmental Impact Statement noted that this option would have the following issues:

- local issues:
  - existing accessibility issues would remain
  - over 5,900 interchanges would need to occur at Sydenham Station, and additional infrastructure works would be required at Sydenham Station to allow metro trains to terminate and turn back.
- regional issues:
  - existing rail network issues, constraints, and challenges would remain, including the existing limited network capacity of the Sydney Trains suburban network, crowding on trains and at existing CBD stations
  - the full transport, city-building, and economic benefits of Sydney Metro City & Southwest (including the project) would not be realised
  - it would not adequately respond to the challenges posed by population growth in Sydney, or enable realisation of the urban renewal opportunities
  - there would be about 27,000 fewer trips on Sydney Metro in the one-hour AM peak, which would impact the effectiveness and viability of Sydney Metro between Sydenham and Rouse Hill.

This alternative was not considered viable, mainly based on its failure to deliver solutions to the existing and future needs of the rail network. This option does not address the need for the preferred project, including the capacity and rail network issues summarised in Chapter 5 (Project need) of the Environmental Impact Statement and in Section 5.3 of this report.

As noted in Section 5.3.2, the proposed accessibility upgrade involves more than just the provision of lifts at stations that do not have them.

The conversion of the T3 Bankstown Line to Sydney Metro is considered the best option for the stations to receive an accessibility upgrade.

With regard to the concern that this option is inferior, further information and clarification in response to issues raised about project benefits is provided Section 5.3.3 of this report.

### **Provide additional rail tracks west of Bankstown**

The need for additional Sydney Trains tracks and services is outside the scope of this preferred project. Expansions to the Sydney Trains network are being considered as part of future transport planning being undertaken by the NSW Government, including the *Future Transport Strategy 2056* (Transport for NSW, 2018a).

### **Upgrading the T1 Western Line**

By 2036, demand on a number of lines, including the T2 Inner West & Leppington Line, the T3 Bankstown Line, and the T8 Airport & South Line will exceed capacity – some customers will not be able to board the trains and there will be major impacts to the reliability of these services.

Sydney Metro, together with signalling and infrastructure upgrades across the existing Sydney Trains network, will increase the capacity of train services entering the Sydney CBD – from about 120 services an hour today, up to 200 services beyond 2024. This is an increase of up to 60 per cent across the network to meet demand. Much of this capacity would be released due the conversion of the T3 Bankstown Line, which would provide capacity on the City Circle – a major bottleneck on the Sydney Trains network (refer to Section 5.1.1 (Key local needs – existing bottleneck and capacity issues) of the Environmental Impact Statement).

Transport for NSW is currently investigating the development of Sydney Metro West, an underground metro railway that would link the Parramatta and Sydney CBDs. Sydney Metro West would deliver increased capacity to Western Sydney to help relieve capacity issues on the T1 Western Line.

### **Metro line to western Sydney**

Transport for NSW is currently investigating the development of Sydney Metro West. The Metro West project is Sydney's next big railway infrastructure investment.

As a new railway, Metro West will work together with the existing T1 Western Line, effectively doubling rail capacity from Parramatta to the CBD and supporting the Greater Sydney Commission's vision for better connections between these two major centres.

### **Metro line to Southern Sydney**

A southward link through Sans Souci terminating in Cronulla would not meet the objectives of the project, including meeting the growing demand for services on the T3 Bankstown Line, and relieving existing bottleneck and capacity issues on the T3 Bankstown Line and the overall rail network.

The *Future Transport Strategy 2056* (Transport for NSW, 2018a) has identified a Parramatta to Kogarah mass transit/train link as an initiative for investigation in the next 10 to 20 years. In addition, Sydney Metro West, connecting the Parramatta and Sydney central business districts, will safeguard the ability to extend Sydney Metro to the south-east of Sydney via Zetland, serving the Green Square town centre.

### **Extensions to Sydney Metro beyond Bankstown, including to Western Sydney Airport**

In accordance with the *Future Transport Strategy 2056*, Transport for NSW is developing the strategic concept for transport extensions to the west of Bankstown.

A north-south train link through the Western Sydney Airport – Badgerys Creek Aerotropolis and east-west connections to the Central River city are being investigated as part of a wider study by the Australian and NSW Governments into passenger rail services for the airport.

### **Other options**

The option of providing an underground alignment for Sydney Metro west of Sydenham was discussed in Section 6.3.4 (Underground alignment) of the Environmental Impact Statement. This section noted that an underground metro alignment was considered in preliminary feasibility investigations for Sydney Metro City & Southwest. This option would involve extending the underground alignment from the Sydney CBD generally in a westerly direction with an interface at or in the vicinity of the existing Bankstown Station. Depending on the alignment chosen, other interfaces with the existing Sydney Trains network might also be possible.

Section 6.3.4 of the Environmental Impact Statement noted that this alternative would be significantly more expensive to construct without a corresponding ability to attract substantial additional patronage, given the services that would be provided by other rail lines (including the T3 Bankstown Line). This would make the project economically unviable. In addition, an underground alignment would not facilitate the accessibility improvements proposed for the existing above ground stations on the T3 Bankstown line.

A discussion of the option of moving Bankstown Station underground is provided in Section 7.11.2 of this report.

The City Circle is used by the T2 Inner West & Leppington Line, the T3 Bankstown Line, and the T8 Airport & South Line. The review of alternatives undertaken as part of Sydney's Rail Future determined that removing the T3 Bankstown Line from the City Circle was the best option to free capacity.

### **5.4.4 Design options within the project**

#### ***Summary of issues raised***

Some submissions suggested alternative design options for some project features, and station locations/stopping patterns. These included:

- if metro is needed, then it should commence from Central not Bankstown for those who want to travel to North Sydney
- the project should terminate at Birrong Station which is a better junction than Bankstown
- suggested various alternative routes for the traction supply cabling in Earlwood.

#### ***Response***

#### **Sydney Metro destinations, stops, and upgrade options**

The NSW Government is currently delivering the first two stages of Sydney Metro, which consist of Sydney Metro Northwest (between Rouse Hill and Chatswood) and Sydney Metro City & Southwest (between Chatswood and Bankstown). The option selection process for these projects included a comprehensive review of potential station locations and stopping patterns. For example, as described in the Environmental Impact Statement for the Sydney Metro City & Southwest Chatswood to Sydenham project, all station locations were evaluated against eight project objectives to provide a balanced consideration of the station options. These objectives included a number of transport related objectives, as well as serving and stimulating urban development.



The station design, location and upgrade options considered for this project are described in Section 6.5 (Station design, location and upgrade options) of the Environmental Impact Statement. The assessment concluded that:

- The benefits of potentially moving stations from their current location were considered to be limited and this option was not adopted. All stations along the T3 Bankstown Line would be retained in their current locations.
- The option of only upgrading some of the stations along the corridor was not considered practical, or appropriate for the Sydney Metro brand. It would also have the potential to isolate some customers who currently use train services along the line to access local centres for services, education, and employment.
- Maintaining the existing catchment of train customers along the T3 Bankstown Line is critical to achieving the project objectives, including encouraging mode shift from cars and/or buses onto trains; delivering customers a more comfortable, reliable, and efficient train service; and contributing to the accessibility and connectivity of existing and future communities.

The preferred option for the project therefore involves upgrading all 10 stations along the T3 Bankstown Line from Marrickville Station to Bankstown Station. This preferred option has been maintained through provision of the preferred project. In and close to the CBD, Sydney Metro City & Southwest trains will service Sydenham Station, Central Station (via new platforms) and the following new stations:

- Waterloo Station
- Pitt Street Station
- Martin Place Station
- Barangaroo Station.

North of the harbour, Sydney Metro City & Southwest trains will service Chatswood Station, and new stations at North Sydney (Victoria Cross) and Crows Nest.

As an outcome of the alternative and option assessment process described in Chapter 6 (Project alternatives and options) of the Environmental Impact Statement Bankstown Station was selected as the western termination point for Sydney Metro City & Southwest. As noted above, in accordance with the *Future Transport Strategy 2056*, Transport for NSW is developing the strategic concept for transport extensions to the west of Bankstown.

### **Options for the location of the traction cable route**

Various route options were considered as an input to the design. The preferred route provides the most direct possible route between the proposed Campsie traction substation and Ausgrid's electrical substation in Earlwood, whilst minimising impacts to private property.

Ongoing design development has explored opportunities to minimise the potential impacts of constructing this cable and, as a result, there have been changes to the location of the route as part of the preferred project. The final section of cable route (north of Mooney Avenue) is now proposed to be located along the side of Westfield Street in Earlwood, rather than through Hughes Park. Further information is provided in the preferred project description provided in Appendix B of this report.

## **5.5 Design development and place making**

This section provides responses to issues raised in relation to key design considerations and how these formed part of the design process.

### **5.5.1 Heritage considerations**

#### ***Summary of issues raised***

Some submissions raised concerns about how heritage was considered during the design process. Issues raised included:

#### **Consideration of heritage during the design process**

- heritage principles have not been considered in new station designs, which are not sympathetic to local character
- there is no evidence in the Environmental Impact Statement that the project will protect or promote the heritage of stations
- agrees that new lifts at some stations are required, but noted this could be done and still retain the heritage and character of stations
- conversion of the Bankstown Line to metro will necessitate the destruction of many valuable heritage buildings and platforms

#### **Consideration of heritage at Hurlstone Park Station**

- questioned why the heritage listed building at Hurlstone Park Station needs to be demolished for a straight piece of track
- Hurlstone Park Station could have been designed to avoid impacts to the island platform heritage building noting a solution is being considered for Dulwich Hill
- Hurlstone Park Station is between two heritage conservation areas therefore heritage buildings should be retained
- noted inconsistencies in project approach with regards to the proposed straightening of platforms at Hurlstone Park Station which will result in heritage impacts, and no straightening being undertaken at Dulwich Hill Station.

Issues raised about the potential heritage impacts of the project area considered in Section 5.13 of this report.

#### ***Response***

#### **Consideration of heritage during the design process**

As described in Section 7.2.3 (Design development and place making – heritage) of the Environmental Impact Statement, heritage has been and would continue to be a key consideration for the project design.

Through the design of the project to date, significant work has been undertaken to reduce the heritage impacts of the project. The Sydney Metro Heritage Working Group, which includes representatives from Sydney Trains and the NSW Heritage Division (as delegates of the NSW Heritage Council), reviewed the designs and provided input to the option selection process.

The approach to heritage elements at all stations has been to retain, existing significant items and/or elements, with particular focus given to those items listed on the State Heritage Register. In developing the preferred project scope, Transport for NSW has developed a design solution that enables the retention of existing heritage buildings and platforms.



Heritage would continue to be a key consideration in the detailed design process, which would seek to:

- recognise and demonstrate the heritage significance of each phase of rail transport development along the line
- retain and conserve, wherever possible, elements of heritage significance, so that functional relationships can be understood and interpreted
- remove intrusive station elements that detract from the core heritage values
- adaptively reuse the retained and conserved heritage buildings for station and related functions
- deliver a functionally viable line, stations, and precincts, while enhancing the legibility of key heritage values.

The preferred project would take into consideration the principles outlined in *Around the Tracks – urban design for heavy and light rail*. Heritage and local identity are key considerations in the *Around the Tracks* urban design guideline. For example, the design principle for heritage (Design principle 6 – Protect and enhance heritage features and significant trees) requires the following:

*‘When projects involve heritage buildings or remnants, they should be retained as useful infrastructure wherever possible, rather than becoming isolated, museum-like pieces. Depending on the significance of the element and its state of repair, a different level of protection and restoration will be required.*

The Design Review Panel would continue to be consulted during development of the detailed design, and members of the panel (including a representative of the Heritage Council and a heritage architect) would continue to have the opportunity to contribute on heritage related matters as the design progresses.

### **Consideration of heritage at Hurlstone Park Station**

As noted above, heritage considerations have formed a key part of the design process. The Hurlstone Park Railway Station Group is listed on the Canterbury LEP and RailCorp’s Section 170 heritage register. As a result, work was undertaken to reduce the potential heritage impacts at the station as far as possible, and Transport for NSW has developed a design solution that has allowed all heritage buildings and structures to be retained and repurposed, including those at Hurlstone Park Station. A non-Aboriginal heritage impact assessment has been undertaken to assess the impacts associated with the preferred project and is provided in Appendix F and summarised in Chapters 12 to 15 of this report. The non-Aboriginal heritage impact assessment concluded that the preferred project would result in a moderate direct impact on the Hurlstone Park Railway Station Group. This is a reduction in impacts when compared to the major direct impact the exhibited project would have had on the station.

As the detailed design develops, the Design Review Panel (which includes a heritage architect and representative for the Heritage Council) and the Heritage Working group would review the design, and ensure that it takes into account the heritage commitments in this report, and any conditions of approval.

The following mitigation measures would be implemented to further minimise potential impacts to the Hurlstone Park Railway Station Group as a result of the preferred project, and provide for appropriate interpretation and conservation management:

- NAH1 to NAH3 require the project design to minimise adverse impacts to, maximise retention of, and complement retained heritage items

- NAH4 requires the design to be developed with guidance from an appropriately qualified and experienced conservation heritage architect
- NAH5 requires an adaptive reuse strategy to be developed
- NAH6 requires a Heritage Interpretation Plan to be developed and appropriate heritage interpretation to be incorporated into the design
- NAH7 provides for the management of moveable heritage.
- NAH8 provides for the management of heritage station buildings that would be re-purposed or refreshed
- NAH13 requires photographic archival recording to be carried out in accordance with relevant guidelines
- NAH15 to NAH17 and NAH20 provide for the management and minimisation of impacts to heritage items during construction.

## **5.5.2 Place making and future design considerations**

### ***Summary of issues raised***

Some submissions raised concerns about how the design for the project considered and/or would continue to consider place, local identity, and the characteristics of each local centre and community, including how it would enhance the communities/places in which it was located. Issues raised included:

### **Design development to date**

- there is nothing in the Environmental Impact Statement regarding enhancing and creating liveable communities, apart from faster rail journeys and more frequent trains
- the design has not shown concern for liveability or for what constitutes a liveable, peaceful and environmentally sound lifestyle
- there is little care for outdoor recreational space
- the design has not considered green space and future proofing through sustainable development
- concerned that the Canterbury Town Centre Town Square (Public Domain Plan) from Development Control Plan 2012 has been overlooked

### **Future design considerations**

- questioned how the detailed designs will consider local character
- the modular kit of parts approach for new station buildings is inconsistent with stations reflecting local character
- the design should clearly differentiate new buildings at say Campsie or Bankstown, and branding should not be done at the expense of local character
- heritage interpretations, public art and landscaping should be incorporated into the design of each station, in accordance with the Design Guidelines, and based on consultation with local stakeholders.

## Response

### Design development to date

Section 7.1.2 (Design development and place making) of the Environmental Impact Statement described how the design for the project was developed, and the range of considerations that formed part of the process.

As described in Section 7.1.2 of the Environmental Impact Statement, the project setting provided one of the primary design considerations. In most cases, the stations are located at the centre of their surrounding communities and are the focal point for intensive activity, as well as integrated transport services. Over time, these centres have developed a clear identity, and by virtue of mixed land uses, community facilities, and a good transport service, have developed a strong sense of place. As a result, place making has been a crucial consideration during design development.

Further information on the approach to place making for the exhibited project was provided in Section 7.2 (Understanding place) of the Environmental Impact Statement. The section noted that the project aims to build on and strengthen the existing role of each centre. Two key place making requirements have been adopted to develop the design presented in the exhibited project:

- the stations have important functions as community places, in their own right and as a focal point within, or in close proximity to a town centre, thereby attracting a range of benefits and land uses
- the stations contribute to the surrounding urban environment or 'place' in which they are located.

These place making requirements have been forged together and embedded in the design through a central focus on achieving high levels of safety and accessibility to maximise the attraction of people. Key place making considerations for the design included:

- urban design
- land use
- heritage
- access and connectivity
- crime prevention through environmental design
- environment and sustainability in design
- stakeholder and community feedback.

Further information on the above considerations is provided in Section 7.2 (Understanding Place) of the Environmental Impact Statement.

Another key consideration for the design process was developing opportunities for community enhancement. This is described in Section 7.3.9 (Community enhancement) of the Environmental Impact Statement. This section noted that the project seeks to build on and strengthen the existing role of each centre by delivering new stations and services that represent a generational shift, with significantly improved station design, universal accessibility, faster and more frequent rail services, and integrated bus services. The section also noted that one of the aims of the design development has been to provide the catalyst for creation of healthy and cohesive communities.

The preferred project focuses on the retention of existing infrastructure including station entrances.

Therefore, the delivery of enhancements in the areas surrounding the stations as a result of the focus on place making in the design development process would reflect the retention and upgrade of existing places and no new places would be created. Works would be undertaken in the areas around the stations to better integrate with other modes of transport. The preferred project would not preclude the future delivery of additional station infrastructure to respond to the urban context of the corridor and stations as it develops.

Further, the Design Review Panel would refine design objectives for place making, public realm, and urban and heritage integration as part of its review process and provide advice on the application of the objectives to key design elements in relation to place making, architecture, heritage, urban and landscape design and artistic aspects of the project.

The provision of open space and recreational opportunities to meet the needs of the local communities is the responsibility of the relevant council, in accordance with relevant strategic land use planning. Strategic planning for future open space and recreational needs is considered by the relevant strategic planning documents listed in Section 5.3.4 of this report.

### Future design considerations

As described in Section 7.7 (Detailed Design Guidelines) of the Environmental Impact Statement, Transport for NSW would continue to develop the design to a greater level of detail in conjunction with the appointed design contractor. Transport for NSW would challenge the contractor to develop innovative solutions to detailed design and construction to achieve improved outcomes.

As the preferred project retains existing infrastructure along the rail corridor, the Sydenham to Bankstown Design Guidelines are no longer applicable and instead the preferred project would take into consideration the principles outlined in *Around the Tracks – urban design for heavy and light rail*. The document *Around the Tracks: urban design for heavy and light rail* requires the design to seek either to reinforce the existing identity of station or to create a new identity, repairing and revitalising the precincts around them. Design principle 5 (Maximise the amenity of the public domain) requires the design to:

*'Design public spaces to be activated as much as possible with diverse uses that appeal to a broad range of users including those from different demographic groups, with varying accessibility needs and at different times of the day and night,' and*

*'Use urban design enhancements (e.g. creative engineering solutions, landscape designs and art) to add interest and character to a project. Unique features contribute to creating a memorable sense of place and enhance the sense of community ownership.'*

The detailed design process involves preparing Station Design and Precinct Plans for each station, in accordance with new mitigation measure LV3. These plans would present an integrated urban and place making outcome for each station, and would:

- be prepared in consultation with relevant stakeholders, including the relevant local council
- be reviewed by the Design Review Panel
- identify specific design objectives and principles based on local context and heritage, place making values, the urban design context, and maximising the amenity of public spaces and permeability around station entrances
- identify opportunities for public art
- be informed by a Heritage Interpretation Plan
- provide evidence of consultation with the community, local councils, and agencies in the preparation of the plans, and how feedback has been addressed.

In addition, Transport for NSW would develop an Interchange Access Plan for each station to inform the final design of transport and access facilities and services. The plans would include consideration of footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives around and at each station.

Changes to the exhibited project mean that modular parts would no longer be used to construct station facilities.

## **5.6 Project description – design features**

This section provides responses to issues raised in relation to the features of the project, including the features of metro trains, the design of stations, and other proposed infrastructure.

### **5.6.1 Characteristics of metro trains and facilities**

#### *Summary of issues raised*

A number of submissions raised issues and concerns about the particular characteristics of metro trains, including the confirmation and availability of seating and the number of passengers carried, access to trains, and safety arrangements. Issues raised included:

#### **Seating and passengers carried**

- there would be significantly fewer seats available on trains
- passengers would have to stand all the way into the city
- the number of passengers the new trains will accommodate has been overstated according to some transport officials
- the trains on the T3 Bankstown Line carry considerably more passengers than the proposed metro trains, so it is unlikely that the metro would be able to meet demand even with an increased service frequency
- concerned that the initial use of six carriage trains will create overcrowding and that overcrowding will continue to be a problem as population densities increase along the line

#### **Carriage layout**

- concerned about the sideways placement of seats
- the double deck trains should be maintained as they have more comfort and capacity
- concerned about the height of strap hanging, particularly for shorter commuters
- the lack of space for push bikes and motorised wheelchairs would disadvantage these commuters

#### **Access**

- how would commuters with luggage access the trains during the short time the doors would be open
- how would people travel between carriages when the train is moving
- detailed submission requesting additional information regarding features that would assist visually impaired persons with accessing the metro trains
- questioned how wheelchair customers would be able to board or leave a train without the guidance of on-board staff

## Platform gaps

- concern about the vertical and horizontal gaps between platforms and trains

## Safety

- the proposal to remove staff from existing stations and guards from trains will result in a decrease in service standards and result in a potentially unsafe environment for passengers using the stations and trains
- who can assist commuters in emergency situations
- concerned about increased risks with driverless trains, including the ability to provide assistance to people with mobility issues during evacuations or electricity failures
- questioned how security risks such as fights or fires be mitigated without on board staff.

## Response

### Seating availability

Sydney Metro has fewer seats per train than trains operated by Sydney Trains. However, the increased service frequency of Sydney Metro, with at least 15 trains per hour (every four minutes) at opening in 2024, means that the overall capacity of the Sydney Metro system will be greater than Sydney Trains. The 10 trains per hour Sydney Trains service frequency in the morning peak can accommodate 12,000 passengers an hour. When Sydney Metro services start in 2024, the 15 metro trains an hour in the peak would move 17,000 people. Further, Sydney Metro would be able significantly increase its capacity by increasing train sets from six to eight cars and increasing frequencies to every two minutes (30 trains per hour) in the future.

There are a number of metro systems around the world with a similar or longer travel length. It should also be recognised that not everyone using the service would choose to travel the entire distance from the Bankstown to the CBD. In addition, the travel time savings mean that journeys would be faster than at present.

Further information in response to issues raised about the capacity and frequency of services is provided in Section 5.3.2 of this report.

### Carriage layout

As noted in Section 8.3.5 (Seating) of the Environmental Impact Statement, Sydney Metro trains contain a mix of seating and standing areas, areas for accessible seating, as well as multi-purpose areas for prams and luggage. The seating layout also includes wide aisles to make it easier for customers to get in and out of seats, and in and out of trains, which is further facilitated by the provision of three doors on each side of each carriage.

Other features of Sydney Metro trains, including air conditioning and plenty of grab handles/poles for standing customers, mean that the metro carriages provide a comfortable experience for passengers.

## Access

Modern metro trains do away with internal doors between carriages. This frees up more room for customers. This also facilitates internal movement within trains and between carriages, and provides safety benefits as people can see from one end of the train to another.

Platform screen doors also provide significant safety benefits as they keep objects and people away from the platform edge and tracks. Announcements/warning signals would provide advance warnings of the closure of platform screen doors. The platform screen doors close first to prevent additional people trying to gain access to the train. The train doors then close, unless an obstacle is detected.

The reduction of gaps between the train and platform would make embarking and disembarking of people with luggage, prams and wheelchairs much easier. The provision of three doors on each side of each carriage would also allow for faster boarding and alighting. If customers with special needs require additional time to access or alight trains, they may contact customer service attendants or the operations control centre, which can then extend the time the train is held at the platform. Station staff would also be available to provide assistance.

Information regarding features that would be incorporated into the design to assist visually impaired persons access metro trains is provided in Section 5.6.2 of this report.

### Platform gaps

Many of the existing stations were built on curves which result in large gaps between the trains and platforms. These gaps can create difficulties for people with mobility issues, prams, older people, small children, and people with luggage.

The exhibited project proposed straightening of the platforms to ensure they are the correct height and reduce the gap between platforms and trains to improve access. However, as discussed in Section 1.3 of this report, the exhibited project has been revised such that construction, heritage and vegetation impacts would be reduced. This includes works proposed to upgrade the station platforms, which would now be re-levelled rather than straightened. This would avoid the need to demolish existing platforms to be re-built in straight lines and minimises impacts resulting from demolition of station buildings and other station infrastructure.

The preferred project would involve the installation of fixed or mechanical gap fillers in order to reduce the gap between platforms and trains.

### Safety

Transport for NSW considers the safety of customers to be its number one priority.

The project would provide significant safety benefits. Platform screen doors would be installed, which would keep objects and people away from the platform edge and tracks. The new platforms would also slope away from the tracks. Numerous other safety features are built into trains, platforms and stations, including:

- track intrusion monitoring – trains are prevented from moving if an intrusion onto the track area or obstacle is detected
- door gap monitoring – trains are prevented from moving until all doors are closed correctly
- CCTV surveillance cameras – linked to the operations control centre
- an appropriate level of lighting
- emergency help points
- security fencing.

Numerous fully automated metro train systems operate successfully and safely around the world, including the Vancouver Skytrain, Dubai Metro, and the Copenhagen Metro. Transport for NSW has drawn on this experience to design Sydney Metro and its infrastructure, trains and operational systems.



While trains would not contain any drivers or guards, customer service assistants would be available at every station and would also move across the network night and day to provide assistance and NSW Police Public Transport Command services, as they do currently on the Sydney Trains network.

Sydney Metro services would be monitored from the Sydney Metro Trains Facility at Tallawong Road (constructed as part of the Sydney Metro Northwest project). Each train would be monitored by 38 security cameras on each train. Help points would also be available on trains and at stations to provide contact to the Sydney Metro Trains Facility.

The operator of the metro would develop an operational management plan, which would include procedures to manage any incidents and emergencies.

### **5.6.2 Station features**

#### ***Summary of issues raised***

Some submissions noted issues with the proposed station facilities and infrastructure, and made suggestions regarding design refinements/additions, including:

#### **Further upgrades to recently upgraded stations**

- Marrickville, Campsie, Lakemba and Bankstown stations have all recently been upgraded and further upgrades are a waste of money. This includes upgrades to bike parking and car parking

#### **Dulwich Hill Station**

- concourse connecting the Dulwich Hill Station and light rail should be extended to the bottom of hill, and elevators should be provided on the existing concourse
- underground access to Dulwich Hill Station should be considered or the pedestrian crossing should be moved, and fencing provided, to ease congestion
- the project does not address the dangerous pedestrian crossing at the intersection of Wardell Road and Dudley Street

#### **Hurlstone Park Station**

- the main platform building at Hurlstone Park Station should be retained with mechanical gap fillers or straightening of platforms (away from the building)
- the concourse at the station entrance and overhead building are too large and should be scaled down
- the design of the station buildings should demonstrate design excellence, relating to the desired future character of the respective contexts
- the crossing on Duntroon Street should be in the same location as the existing traffic island as this location provides a direct pedestrian connection between the station and the shops
- the figure does not show the current disabled space in front of the barber shop, which it would be preferable to retain

#### **Canterbury Station**

- requests that the existing station entry off Canterbury Road be retained to provide access to Platform 1 and reduce walking distances
- the new development in Charles Street should be connected to the station instead of requiring passengers to walk around Broughton Street



- the station should be designed to improve connections to the rest of the town centre

#### **Belmore Station**

- a submission raised concerns regarding the construction of new railway entrances in quieter suburban streets, particularly on the southern side of Belmore Station

#### **Punchbowl Station**

- there is a lack of access to the proposed station
- concerned about the changes to the station location, including moving it closer to businesses along The Boulevard
- the station entrances should be moved

#### **Bankstown Station**

- the station should be designed to ensure smooth pedestrian flows between the old and new platforms
- the unpaid concourse is too narrow at approximately 6 metres to accommodate peak pedestrian traffic

#### **Accessibility issues at stations**

- concern regarding the design approaches and accessibility features that would be provided at the new stations to assist visually impaired persons or people with cognitive, sight/vision impairments
- escalators and travellers should be installed as the use of lifts is not adequate
- provision of four lifts at Hurlstone Park Station is excessive compared to Dulwich Hill and Marrickville stations.

#### **Gap fillers**

A submission suggested that gap fillers be provided on platforms in designated locations to allow for prams, wheelchairs and less mobile passengers, and remove the need to realign platforms.

#### **Design of stations not in character with areas surrounding the stations**

- the design of the entrance to Hurlstone Park Station and any new buildings proposed (including the suggested replacement of the overhead booking office) should be in keeping with the adjacent heritage conservation areas
- the extensive use of glass and reflective surfaces, combined with lighting (natural and added) at stations could present a very confusing array of glare or abstract shadowing which can be a problem for users of the station and is not in character with surrounding areas

### Alternative energy provision at stations

- the impression for Hurlstone Park referred to air conditioning in the station design, which is considered unnecessary in view of climate change
- there is no mention of a plan for alternative energy within the design of the stations

### Review of designs

- designs should be reviewed from a heritage perspective
- if it has not occurred already, the designs should be peer reviewed by professionals and representative groups that possess expertise across a broad range of accessibility needs
- a heritage architect should have/should be consulted for Hurlstone Park with regard to the station design.

### Platforms

A couple of submissions noted the need for adequate seating at stations and raised concerns that the design does not allow for seating on platforms, which would impact upon less mobile and older commuters.

Another submission queried the need for the extension of the length of platforms, and queried whether this was required due to an increase in station patronage.

### Response

As described in Section 7.7 (Detailed design guidelines) of the Environmental Impact Statement, Transport for NSW would continue to develop the design to a greater level of detail in conjunction with the appointed design contractor. Transport for NSW would challenge the contractor to develop innovative solutions to detailed design and construction to achieve improved outcomes.

The design of the preferred project would be guided by the document *Around the Tracks: urban design for heavy and light rail* (Transport for NSW, 2016). The ideas and suggestions provided in submissions would continue to be considered during the detailed design process, taking into account accessibility and operational requirements.

The detailed design process involves preparing Station Design and Precinct Plans for each station in accordance with new mitigation measure LV3. These plans would present an integrated urban and place making outcome for each station, and would:

- be prepared in consultation with relevant stakeholders including the relevant local council
- be reviewed by the Design Review Panel
- identify specific design objectives and principles based on the local context and heritage, place making values, the urban design context, and maximising the amenity of public spaces and permeability around station entrances
- identify opportunities for public art
- be informed by a Heritage Interpretation Plan
- provide evidence of consultation with the community, local councils, and agencies in the preparation of the plans, and how feedback has been addressed.

Further information in response to specific issues is provided below.

## Further upgrades to recently upgraded stations

Where stations have been subject to relatively recent upgrade works (such as Marrickville Station), the design of the exhibited project had integrated these works as far as possible. Additionally, the exhibited project has been revised so that many existing station elements, including those that have been subject to recent upgrade works (such as Marrickville Station) would be retained as part of the preferred project. For example, the recently upgraded concourse and associated canopy at Marrickville Station would be retained in the design for the proposed upgrade. The retention of existing upgraded features at these stations (Marrickville, Campsie, Lakemba and Bankstown stations) reduces the construction impacts of the preferred project at these stations.

The preferred project also involves the provision of additional accessibility improvements beyond those currently provided (refer to the preferred project description in Appendix B). This would include the relevelling of platforms and provision of mechanical gap fillers to provide level access to trains, and improving accessibility around the stations. Additionally, some stations such as Marrickville Station would retain their existing bus stops, kerbside facilities (such as kiss and ride and accessible parking facilities) and bike parking.

## Dulwich Hill Station

### Connection between light rail and metro station

The preferred project includes a new elevated station concourse with new stairs and lifts which would connect the station platform to the Dulwich Hill light rail stop. Access from the concourse to the light rail stop would be available via the existing lift to the light rail stop, rather than from the bottom of the hill.

### Access to station and pedestrian crossing

Transport for NSW would work with the Inner West Council and Roads and Maritime Services to investigate the need for any upgrade to the pedestrian crossing at Wardell Road and Dudley Street. This would include consideration of the need for a signalised crossing at this location and/or consideration of safety fencing to ensure people cross at the crossing provided. Considerations regarding this crossing would be considered during the preparation of Station Design and Precinct Plans in accordance with mitigation measure LV3.

The proposed access arrangements would provide adequate access to the upgraded station. Provision of underground access to Dulwich Hill Station is not considered to be a viable option as the majority of the station is positioned within a deep cutting. Due to the difference in elevation between Wardell Road and the station platform, substantial civil works would be required to provide accessible access to the station. Construction of an underground access would also increase impacts on the station platforms, as any access would be required to surface within the platform.

## Hurlstone Park Station

### Retention of curved platforms

Straight platforms were initially proposed at all stations except Dulwich Hill as part of the exhibited project.

However, in response to community feedback, Transport for NSW has developed a design solution that involves re-levelling platforms at all stations rather than straightening them. This would avoid the need to demolish existing platforms to be re-built in straight lines and minimises impacts resulting from demolition of station buildings and other station infrastructure.

The preferred project proposes the installation of fixed or mechanical gap fillers in order to reduce the gap between platforms and trains.

## **Design of structures**

As described in Section 5.5.2 of this report, local character and place are key considerations in the design process. However, the station design has been revised to provide a solution that allows the existing concourse and station entry to be retained to minimise construction impacts on the community.

## **Pedestrian crossing**

The location of the crossing on Duntroon Street would be considered further during detailed design in consultation with the Traffic and Transport Liaison Group for the project, which includes representatives of local councils and Road and Maritime Services. The location of this crossing would be shown in the Station Design and Precinct Plans to be developed in accordance with mitigation measure LV3).

## **Accessible parking spaces**

As described in Section 9.2 of this report, the existing accessible parking spaces on Floss Street and Duntroon Street on the northern side of the rail corridor would be retained and the location of the proposed accessible parking on Duntroon Street has been moved north, closer to the station entrance, compared to the exhibited project.

Transport for NSW would develop an Interchange Access Plan for each station to inform the final design of transport and access facilities and services, including footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives around and at each station.

The location of accessible parking and other kerbside facilities at Hurlstone Park Station would be confirmed during detailed design, as part of the Interchange Access Plan for the station.

## **Canterbury Station**

### **Retention of existing station entrance off Canterbury Road**

In developing the preferred project Transport for NSW has developed a design solution that means existing station entrances would be retained, including the station entrance at Canterbury Station.

A comparison of the key features of the preferred project with the exhibited project is provided in Chapters 9 and 10 of this report. A detailed description of the preferred project is provided in Appendix B.

### **Connection of new development in Charles Street**

The design of Canterbury Station has safeguarded a potential future station entrance at Charles Street. Development of this entrance would be considered in the future in line with future development. Access to Charles Street would be provided west of the station on the southern side of the corridor, or via Canterbury Road. Access to Charles Street would therefore not be required via Broughton Street.

### **Improved connections to the town centre**

As described in Section 7.3.8 (Access, interchange and connectivity) of the Environmental Impact Statement, accessibility and connectivity have formed key considerations in the design process.

While the exhibited project has been revised to minimise impacts, the project design has maintained the existing level of cross-corridor access and safeguarded/future-proofed additional crossings for future consideration. Further, retaining the existing station entrance on the high street of Canterbury Road has resulted in the connection to the town centre remaining in the same location.

Transport for NSW would develop an Interchange Access Plan for each station to inform the final design of transport and access facilities and services. The plans would include consideration of footpaths, bicycle facilities if none are present, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives around and at each station.

### **Belmore Station**

In response to a number of issues raised in the submissions during the public exhibition period. Transport NSW has developed a design solution that retains existing station entrances, heritage buildings and concourses.

As part of these changes, the existing station entrance at Belmore Station would be retained and upgraded. New station entrances on Redman Parade and Tobruk Avenue do not form part of the preferred project.

### **Punchbowl Station**

#### **Access**

The preferred project would improve access by providing three new lifts and two stairs, and an extension of the existing footbridge to accommodate the new lifts and stairs. The proposed upgrades to the station would also include provision of a new pedestrian crossing on Punchbowl Road, an upgrade of the existing pedestrian underpass below Punchbowl Road, and new kerbside facilities on The Boulevard, all of which would improve access to the station.

#### **Impacts to retail properties along The Boulevard**

Changes to the exhibited project have resulted in the station features, including station entrances, being retained in their existing location at Punchbowl Station. As such, retail properties would not be impacted by the preferred project.

A comparison of the key features of the preferred project with the exhibited project is provided in Chapters 9 and 10 of this report. A detailed description of the preferred project is provided in Appendix B.

#### **Relocation of the station north and east**

Relocating the station north and east would increase property impacts, as it would involve relocating the station footprint outside land owned by NSW Government.

### **Bankstown Station**

#### **Station concourse area and cross-corridor link**

The cross-corridor link and associated station entrances have been designed in line with all relevant standards, and have been sized to ensure capacity at the station meets the future demand.

## Accessibility issues at stations

The preferred project would deliver accessible stations and safe and efficient connections.

Accessibility features incorporated into the project design include:

- accessible parking bays near stations where required
- new lifts to access the station and station platforms at stations that do not currently have lift access
- obstacle free pedestrian pathways
- assisted boarding points
- hand rails and grab rails
- improved wayfinding and signage
- accessible toilets
- hearing loops
- priority seating
- help phones.

Specifically with regard to features for the visually impaired, design features include:

- tactile ground surface indicators
- use of colour and luminance contrast for fittings, fixtures and signage
- audible cues and warnings
- signage incorporating raised text
- next train consoles with audible announcements.

## Provision of escalators, travelators

The provision of escalators has been considered at locations along Sydney Metro City & Southwest where there is a large vertical difference between station entries and the below ground platforms. There are no below ground platforms proposed as part of the preferred project.

The preferred project includes the provision of two lifts at Hurlstone Park Station, consistent with other stations along the line.

## Gap fillers

As described in Section 6.5.1 (Accessibility upgrade) of the Environmental Impact Statement, two options were considered to meet relevant accessibility requirements of the *Disability Discrimination Act 1992* and *Disability Standards for Accessible Public Transport 2002*:

- straightening of platforms (demolition and rebuild as required)
- use of mechanical gap fillers (mechanisms that automatically narrow the 'gap' between the platform and the train when the train arrives at the platform).

The assessment of these options against relevant criteria determined that straightening the platforms was the best option to accessibility and Sydney Metro operational requirements.

The exhibited project therefore proposed straightening of the platforms to ensure they are the correct height and to reduce the gap between platforms and trains to improve access.

However, Transport for NSW has since revised the exhibited project to address issues raised by the community and other stakeholders during the exhibition period. This has involved the development of a design solution that enables the retention of existing station entrances, heritage buildings, station platforms and concourses.

The preferred project proposes releveling of platforms to ensure they are the correct height and the installation of fixed or mechanical gap fillers in order to reduce the gap between platforms and trains and avoid the need to straighten the platforms.

### **Design of station not in character with surrounding areas**

The urban and natural fabric surrounding each station has been used to inform design development, and has taken into account the existing urban context and infrastructure (including built form and public domain conditions, landscape elements, and existing and proposed services and initiatives).

Transport for NSW has responded to community and stakeholder feedback during the exhibition period and developed a design solution that enables the retention of existing station entrances, heritage buildings, station platforms and concourses, including at Hurlstone Park. As such, there is no significant change to the local character as a result of the preferred project.

During detailed design, the design of the stations would be informed by the preparation of Station Design and Precinct Plans, as committed to through new mitigation measure LV3. These plans would aim to ensure that the stations and facilities are sympathetic and complement local character, taking into consideration urban design context, sustainable design and maintenance and community safety, amenity and privacy, amongst other drivers. These plans would be prepared and implemented in consultation with the Department of Planning and Environment, local councils, the Chamber of Commerce and the local community.

### **Alternative energy provision at stations**

The sustainability strategy for Sydney Metro City & Southwest was provided in Appendix F of the Environmental Impact Statement. This strategy outlines performance targets, initiatives and outcomes, which would be adopted across key policy areas in the design, construction and operation stages of the project.

The preferred project offers less opportunities for the inclusion of renewable energy sources however, the inclusion of solar photovoltaics would be incorporated in the detailed design of stations, where feasible.

### **Review of designs**

The Sydney Metro City & Southwest Design Review Panel would review the designs to ensure they are consistent with the design objectives.

### **Platforms**

The design of stations would include the provision of seating within stations and on platforms.

In addition to the works proposed at each station, works would also be undertaken in the areas around the stations (i.e. the station area) to better integrate with other modes of transport and the existing area. The document *Around the Tracks: urban design for heavy and light rail* has guided the design of the preferred project and design principle 4, which aims for the project to integrate with the surrounding area, has been a key consideration.

The provision of seating and other furniture within the stations and station areas would be finalised during the preparation of detailed design.

With regards to platform lengths, Transport NSW has developed a design solution that enables the retention of existing station entrances, heritage buildings and concourses in order to ensure the development of a preferred project which minimises potential impacts while still delivering a world class metro.

The preferred project would involve platform relevening rather than platforms being straightened and extended. The retention of the existing platforms would cater for six car metro trains, which would be operating at the metro platforms. The preferred project provides for minor platform modifications, while safeguarding for future extensions to the platforms to cater for an increased length of metro trains in the future.

### **5.6.3 Facilities around stations/station area features**

#### ***Summary of issues raised***

A number of submissions identified issues with proposed facilities in the area around the stations, and made suggestions regarding design refinements/additions. Issues raised included:

- the need for the design of the stations and their surrounds to emphasis connectivity
- provision of appropriate amenity to the street edge, such as awnings to allow for weather protection
- the changed pedestrian traffic flows around stations will impact on the localities
- each station should be designed with a clear sense of user hierarchy.

Examples of location specific issues raised include:

#### **Marrickville Station**

- kerbside facilities such as kiss and ride facilities should also be provided on Illawarra Road
- there should be no car parking in the shared zone area

#### **Dulwich Hill Station**

- the hill proposed over the car park at Dulwich Hill will not provide enough green space and the proposed underground car park will be unpleasant and insecure

#### **Hurlstone Park Station**

- the design does not cater to the needs of pedestrians and buses
- no further disabled parking is needed
- the location of the proposed new pedestrian crossing on Duntroon Street is inappropriate

#### **Canterbury Station**

- concern about the poor planning at Canterbury Station and the impact it will have on neighbouring local roads

#### **Punchbowl Station**

- additional parking should be provided, which could include extension of existing car park or use of land for construction of a new retail space

#### **Bankstown Station**

- the transformation of Bankstown should consider its role as a major interchange and improve north – south connections.



## Response

### General issues

As described in Section 5.6.2 of this report, Transport for NSW would continue to develop the design to a greater level of detail in conjunction with the appointed design contractor. The design would be guided by the urban design principles presented in *Around the Tracks: urban design for heavy and light rail*, and would continue take into account feedback from stakeholders.

As described in Section 5.6.2, the detailed design process involves preparing Station Design and Precinct Plans for each station (in accordance with mitigation measure LV3). An Interchange Access Plan would also be developed for each station to inform the final design of transport and access facilities and services, including footpaths, cyclist and passenger facilities, parking, traffic and road changes, and integration of transport initiatives around and at each station.

Further information in response to specific submissions is provided below.

### Connectivity and pedestrian movements

As described in Section 7.3.8 (Access, interchange and connectivity) of the Environmental Impact Statement, accessibility and connectivity have formed key considerations in the design process.

However, the exhibited project has been refined to minimise potential impacts (particularly those during construction). This includes works in areas surrounding the stations to reflect the retention of the existing station entrances.

The design of the preferred project has been developed giving consideration to the station access hierarchy and, where existing facilities either do not exist or are not appropriately located, station designs have been updated to address this.

As the preferred project retains existing station entrances, the existing level of cross-corridor access is maintained and additional crossings safeguarded/future-proofed for future consideration. The preferred project would deliver fully-accessible stations and safe and efficient connections.

Design principle 3 (Provide connectivity and permeability for pedestrians) from *Around the Tracks: urban design for heavy and light rail* requires the design to:

*‘Allow for movement through the site that is unrestricted and legible. The design should guide users through the building and spaces in a clear, legible manner without causing any confusion or indecision,’* and

*‘Design paths to link to pedestrian crossings and other footpaths for optimal safety. Locate paths with good passive surveillance and incorporate adequate light levels.’*

The Interchange Access Plan for each station would also consider connectivity with surrounding areas. The proposed upgrades to stations and the provision of active transport facilities would increase the liveability and connectivity of local communities.

### Amenity

Design principle 5 (Maximise the amenity of the public domain) from *Around the Tracks: urban design for heavy and light rail* requires the design to:

*‘Create a good microclimate by designing a space that provides summer shade but winter sun, and allows in cooling summer breezes but protects from cold winter winds. Provide protection from unpleasant sensory experiences such as noise, dust, pollution and glare where possible.’*

Where new infrastructure is proposed as part of the preferred project station upgrade works, the inclusion of canopies or roofs within the station designs may be incorporated into the design, to improve the customer experience by providing shade and shelter. Additionally, existing weather protection features would be retained as part of the preferred project.

### **Transport hierarchy**

Section 7.2.4 (Access and connectivity) of the Environmental Impact Statement provides the station access hierarchy, which was used as the basis for the design of the station upgrades and associated facilities.

The station access hierarchy gives the highest priority to walking and cycling, followed by public transport, then taxis, kiss-and-ride, and finally park-and-ride (the lowest priority).

The design of the preferred project has also been developed giving consideration to the station access hierarchy and, where existing facilities either do not exist or are not appropriately located, station designs have been updated to address this.

Consideration of the hierarchy would continue throughout the detailed design process, and it would inform the development of the Interchange Access Plan for each station.

A comparison of the key features of the preferred project with the exhibited project, including the provision of kerbside facilities, is provided in Chapters 9 and 10 of this report. A detailed description of the preferred project is provided in Appendix B.

### **Dulwich Hill Station**

The design for the exhibited and the preferred project does not include the provision of a hill over a carpark or any below ground car parking areas. The exhibited project proposed the upgrade of the existing car parking area located off Ewart Lane. Given the relocation of the services building outside the car park, the preferred project would not affect this parking area. A comparison of the key features of the preferred project with the exhibited project is provided in Chapters 9 and 10 of this report. A detailed description of the preferred project is provided in Appendix B.

### **Hurlstone Park Station**

The existing station entrance location would be retained and upgraded as part of the preferred project. The exhibited project included the upgrading of the existing crossing on the Crinan Street overbridge, and the construction of two new crossings on Crinan Street and Duntroon Street (south). However, the exhibited project has been refined to minimise impacts (particularly those during construction).

The preferred project involves modifications to the existing pedestrian crossing on the Crinan Street overbridge. New pedestrian crossings are no longer proposed on Crinan Street and Duntroon Street. The preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would work with local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utilities to identify the best active transport routes in each suburb - a key consideration of which would be user safety. Initiatives developed through this process would be considered during detailed design.

The preferred project includes retention of existing accessible parking spaces to the north of the rail corridor. One new space is proposed to the south of the corridor to improve accessible access from the south.

Transport for NSW would develop an Interchange Access Plan for each station to inform the final design of transport and access facilities and services. The plans would include consideration of footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives at and around each station, and consider the Walking and Cycling strategy.

### **Canterbury Station**

The exhibited project has been revised in response to the community's concerns.

The preferred project retains and upgrades the existing station entrance, and heritage listed platforms would be relevelled rather than straightened. The existing heritage listed footbridge and overhead booking office would be retained.

A comparison of the key features of the preferred project with the exhibited project is provided in Chapters 9 and 10 of this report. A detailed description of the preferred project is provided in Appendix B.

With the retention of the existing station entrance, the bus stops on Broughton Street and Canterbury Road would be retained in their current location and refurbished. The existing accessible and bike parking would also be retained, with some additional bike parking provided on Broughton Street and Canterbury Road.

The proposed changes as part of the preferred project would not result in major impacts on local roads, and with future development in the area still to occur, the arrangement at Canterbury Station is considered appropriate.

### **Punchbowl Station**

Section 7.2.4 (Access and connectivity) of the Environmental Impact Statement provides the station access hierarchy, which was used as the basis for the design of the station upgrades and associated facilities. The station access hierarchy gives the highest priority to walking and cycling, followed by public transport, then taxis, kiss-and-ride, and finally park-and-ride (the lowest priority).

The development of the design for the station upgrades undertaken as part of the preferred project also used the station access hierarchy as a basis.

The preferred project retains the existing station entrance locations and supporting infrastructure and provides additional facilities, where required.

The preferred project does not include provision of commuter parking closer to the station entrances than already exists. Instead the preferred project has focussed on providing facilities closer to stations to be used for active transport, accessible parking, or as part of modal changes (such as kiss and ride facilities). There is no loss of commuter car park spaces at Punchbowl, and no additional spaces are being provided. However, as committed to in mitigation measure TO5, Transport for NSW would monitor the demand for additional commuter car parking spaces and consider opportunities for, and implications of, meeting this demand at the station. Further, Transport for NSW would investigate ways to manage demand subject to consideration of local station and town centre implications, including local traffic conditions.

The preferred project would not result in a loss of retail space within the station area, and would retain the existing retail on the southern side of the station along The Boulevard.

## Bankstown Station

The design for the proposed upgrade of Bankstown Station has and would continue to take into account the station's role as a major regional interchange, providing connections between Sydney Trains services, Sydney Metro services, and the large number of bus routes that terminate at the station.

Bankstown Station also provides access to a range of regional services and facilities located in the Bankstown CBD, including the Bankstown Central Shopping Centre.

The preferred project includes provision of a new at grade cross-corridor link at Bankstown Station. This link would be located between the existing Sydney Trains station and the new metro station to be constructed to the east of the existing station. The new link would provide direct access to the Bankstown CBD, midway between the existing crossing points at Bankstown City Plaza and the road link between North and South terraces. The new link would improve access for pedestrians, particularly to the Bankstown Central Shopping Centre and community facilities on the northern side of the corridor. The new link would provide a more direct link to these key facilities from areas south of the rail corridor.

Master planning for the Bankstown Station precinct is currently underway. Mitigation measure LU2 commits Transport for NSW to working with the Department of Planning and Environment, Inner West and Canterbury-Bankstown councils, and other key stakeholders to plan for the strategic transformation of the Bankstown CBD.

### 5.6.4 Track features

#### *Summary of issues raised*

A submission requested clarification as to how much of the existing T3 Bankstown Line would be used for freight transport. Another submission raised concerns that the bridge works and construction of buffer walls were being undertaken to facilitate increased freight use.

Another submission requested that the existing rail gauge of the tracks should be used to be interoperable with the current Sydney Trains network.

#### *Response*

##### **Freight**

As described in the previous Section 2.4.5 (Transport infrastructure) of the Environmental Impact Statement, a rail line forming part of the Sydney Metropolitan Freight Network (managed by ARTC) runs within the rail corridor in the project area, adjacent to the T3 Bankstown Line, between about 500 metres east of Marrickville Station, and about 700 metres west of Campsie Station.

The T3 Bankstown Line is not used for freight transport and the project would not impact on existing freight operations which operate on a separate rail line which forms part of the Sydney Metropolitan Freight Network.

Any increases in freight services along the corridor are not related to, and are outside the scope of, the project.

##### **Rail gauge**

Neither the exhibited project or the preferred project would result in a change in the gauge of the tracks, with the existing tracks retained for use, although there may be a need to upgrade / replace existing track in some locations due to its condition. Existing Sydney Trains systems, such as communications and signalling, would need to be removed, as the operation of Sydney Metro requires different systems.

### **5.6.5 Substations**

#### ***Summary of issues raised***

A number of submissions identified issues with the location of proposed substations or the design and built characteristics of these substations. In particular, a number of issues were raised about the proposed substation at Dulwich Hill, including the potential visual impacts on surrounding properties.

#### ***Response***

Further information about the location and approach to the design of the proposed traction substations is provided in Section 2.4 of this report. As noted in that section, the design features and appearance of each of the substation are still subject to detailed design, however the following additional information is provided in relation to the design:

- The substations would be a single storey above ground level, with basement facilities included to reduce the size of buildings above ground, and minimise visibility from surrounding properties.
- The length and width of the substations would be determined during detailed design, and would take into account site constraints, such as available space and proximity to the tracks.
- The substations would be constructed using modular components. This approach, which is used to construct substations across the Sydney Trains network, would reduce the construction timeframe and impacts on the surrounding community.
- Electromagnetic fields would be considered further during the detailed design and commissioning of substations, with detailed analysis and monitoring undertaken to determine the potential and actual electromagnetic energy levels within and outside the substation to ensure they meet all relevant standards and guidelines for electromagnetic radiation.

To ensure that the substations are designed to integrate as far as practicable with the surrounding environment at each location, mitigation measure LV9 commits to incorporating appropriate architectural treatments and landscaping into the design of the substations. This measure also commits to consulting with adjacent property owners during the detailed design process.

### **5.6.6 Other ancillary facilities and services**

#### ***Summary of issues raised***

##### ***Power supply***

A number of submissions identified concerns with the proposed power cable along River Street in Earlwood, including concerns regarding the interaction with Ausgrid and Sydney Water assets.

##### ***Fencing***

A couple of submissions raised concerns about the proposed fencing, one of which noted that fencing along both sides of the corridor would have a detrimental effect on the surrounding environment, while another requested further information about the proposed fencing. A third submission requested more substantial fencing along Randall Street in Marrickville.

## **Response**

### **Power supply**

As described in Section 8.1.3 (Works to convert stations and the rail line to Sydney Metro operations – other works) the location of the traction power supply cable would be confirmed during detailed design.

Ausgrid and Sydney Water have been, and would continue to be, consulted in relation to their infrastructure and assets where there is the potential for these to be impacted.

Section 9.10 (Utilities management) of the Environmental Impact Statement describes the proposed approach to the management of utilities in the project area. That section recognises that Ausgrid and Sydney Water have a number of assets in the project area that may require adjustment, protection, and/or relocation as part of the project. As indicated in the preferred project description in Appendix B of this report, the presence of Sydney Water and Ausgrid assets within the project area is still applicable to the preferred project, although the need and extent of utility adjustment, protection and/or relocation is anticipated to be reduced.

A Utilities Management Framework was included with the Environmental Impact Statement to describe the approach to avoiding and/or minimising impacts associated with the relocation and/or adjustment of public utilities affected by the project. An updated Utilities Management Framework for the preferred project is provided as Appendix H to this report.

The framework outlines the process for utilities identification and management during construction and beyond, including steps to ensure that detailed design takes into account the input of utility providers and owners. This includes consultation with utilities owners as part of the utilities working group for the project, and identifying opportunities to integrate works with utility owners and other affected stakeholders.

### **Fencing**

As described in Section 1.1.3 of the preferred project description in Appendix B, security fencing would be installed as part of the preferred project. This would comprise a new security fence along both sides of the rail corridor, and a segregation fence between the metro and freight tracks, between west of Marrickville Station and west of Campsie Station.

Security fencing would be constructed from palisade or close-spaced welded mesh. Controlled access points would be provided at appropriate locations.

The design and type of fencing would be confirmed during detailed design, based on relevant Asset Standards Authority standards. Where practicable, fencing would be integrated with noise barriers where these are required.

## **5.6.7 Active transport corridor**

### **Summary of issues raised**

Some submissions expressed support or objection to the active transport corridor. A number of submissions also included suggestions about the design of the corridor, including requests for additional bike tracks and pedestrian paths, or changes to the location. Comments included:

- there is no mention of the GreenWay, links to the Cooks River, or routes to the CBD in the Environmental Impact Statement
- the active transport corridor should be located on Crinan Street and Duntroon Street North, in Hurlstone Park

- the shared path on Lillian Lane, Campsie should be clearly marked for pedestrian and cyclist use
- the Government must commit to safeguarding a corridor along the rail line for use as an active transport corridor, particularly for separated cycleways
- it is unclear whether the GreenWay South West was captured in the Environmental Impact Statement project footprint or was inside or outside the rail corridor
- requested safe off road bike tracks all the way to the city following the light rail
- request for a new pedestrian and bike path along Wardell Road that links to Dulwich Hill Station to the Cook River parklands to open up more opportunities for access to public transport
- the metro should provide high transit hubs for train to bus, bike, walking and flexible options to get commuters out of cars.

### **Response**

As described in Section 9.4 of this report, an active transport corridor is no longer viable within the rail corridor. The preferred project does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor along the Sydenham to Bankstown corridor, outside of the rail corridor.

The preferred project would include development of a Walking and Cycling Strategy to encourage active transport into the station precincts. Transport for NSW would also work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments and agencies to identify the best active transport routes and supporting pedestrian and cycling facilities, a key consideration of which would be user safety. Active transport routes may include pedestrian footpath upgrades, separated cycleways, shared footpaths and designated pedestrian and cyclist road crossings.

The final design for the transport and access facilities and services at each station would also be informed by the Interchange Access Plans. The plans would consider the station access hierarchy to provide safe, convenient, efficient and sufficient access to stations and transfer between transport modes.

Safety is a fundamental consideration in the design of all elements of Sydney Metro. Safety in Design principles would be adopted (along with other measures) as an integral component of the detailed design of stations and surrounds. Where safety issues are apparent or remain unresolved, safety reviews, including road safety audits to consider the interactions between all road users, would be undertaken.

### **5.6.8 Other design issues**

#### **Summary of issues raised**

Other suggestions made/issues raised included:

- an accessible ramp should be provided near the playground on Cooks River
- there should be additional car parking provided at Canterbury, Marrickville, Hurlstone Park, and Dulwich Hill stations
- questioned why bridges need replacing
- the Albemarle Street bridge should be of a low impact design



- the Environmental Impact Statement notes that widening and maintenance of the rail overbridge is proposed near the North and South terraces at Bankstown Central Shopping Centre, however no detail is provided
- limited landscaping is proposed at Hurlstone Park – missing an opportunity to create a connected, green corridor for wildlife and safeguard green urban space
- further consideration should be given to the Heritage Square concept at Canterbury Station
- an unused public toilet near Punchbowl Station should be removed.

## **Response**

### **General issues**

As described in Section 5.6.2 of this report, the design of the preferred project would be guided by the document *Around the Tracks: urban design for heavy and light rail* (Transport for NSW, 2016).

### **Accessible ramp**

The preferred project allows for works to be undertaken in the areas around the stations, to better integrate with other modes of transport. No works are proposed to the playground on Cooks River.

### **Additional parking**

The preferred project retains the aim of achieving no net loss of dedicated commuter parking spaces located on NSW Government owned land between Marrickville and Bankstown stations.

In addition, as per mitigation measure TO5, Transport for NSW commits to monitoring the demand for commuter car parking spaces between Bankstown and Marrickville stations, and continuing to consider opportunities for, and the implications of, meeting this demand.

### **Bridges**

As described in the preferred project description (Appendix B) bridge works for the preferred project would occur at 16 road overbridges and six underbridges within the project area and would generally consist of providing enhanced protection to existing bridge piers, over-height vehicle crash protection beams adjacent underbridge structures, vehicle collision protection to overbridge parapets, and installation of parapet throw screens. No bridge replacements form part of the preferred project.

### **Landscaping and vegetation**

Landscaping would be provided at stations as part of the preferred project station upgrade works. Some landscaping would also be provided along the rail corridor in areas where disturbance is required, such as at substations. The exact location and nature of landscaping would be determined during detailed design. Landscaping would be considered as part of the preparation of the Station Design and Precinct Plans to be developed for each station in accordance with mitigation measure LV3.

Further information on biodiversity, including opportunities for the rail corridor to function as a biodiversity corridor, is provided in Section 5.20 of this report.

### **Heritage Square at Canterbury Station**

The preferred project focuses on the retention of existing infrastructure and station entrances and places. Therefore, the delivery of new places at new station entrances does not form part of the preferred project.



As described above, works would be undertaken in the areas around the stations to better integrate with other modes of transport. The preferred project would not preclude the future delivery of additional station infrastructure to respond to the urban context of the corridor and stations as it develops.

#### **Removal of existing public toilet at Punchbowl**

The preferred project would not impact on the public toilet. As such, the preferred project would not involve the removal of the existing public toilet at Punchbowl.

### **5.7 Project description – operation**

This section provides responses to issues raised in relation to the operation of the project. Issues raised included the stopping patterns and travel times of the project (as part of Sydney Metro) compared with existing operations along the T3 Bankstown Line, and concerns regarding who would own the project.

#### **5.7.1 Linkages and connections**

##### ***Summary of issues raised***

Some submissions raised concerns about the loss of the direct link to City Circle stations, and about the changes to connections with other stations on the Bankstown Line, including:

##### **Access to stations west of Bankstown Station**

- concerned about the train terminating at Bankstown which would make it difficult for people travelling from Yagoona to St Peters or Erskineville, as they would have to change trains twice to get to their destination

##### **Services to Erskineville and St Peters and Redfern**

- concerned about the loss of access to Redfern (for access to Sydney University), Erskineville and St Peters
- reduction in trains accessing Erskineville and St Peters stations reduces services to areas which are experiencing increases in population
- questioned why stations like Erskineville and St Peters have been penalised

##### **Access to City Circle stations**

- concerned about the loss of a direct rail link to and from the city
- concerned about overcrowding at Sydenham or Central due to changes to access to City Circle stations

##### **Changes to access to stations will increase car usage**

- loss of access to some stations will result in increased car usage

##### **Issues with connections to other lines**

- the project is missing connections with heavy rail lines, other metro lines and bus interchanges
- further information required on the connections
- the project should be extended to Sydenham

- the non-converted part of the Bankstown Line should have service frequencies to match the metro services at Bankstown Station.

## **Response**

### **Access to stations west of Bankstown Station**

Section 11.4.2 (Traffic and transport – changes to station servicing arrangements) of the Environmental Impact Statement acknowledged that the introduction of Sydney Metro would result in some changes to station servicing arrangements and travel patterns along the T3 Bankstown Line.

Customers travelling to the CBD from stations between Bankstown and Sydenham would be able to travel directly to the city on Sydney Metro. For stations west of Bankstown:

- Customers travelling from Yagoona, Birrong, Regents Park, Berala, Sefton, Chester Hill, Leightonfield, Villawood, and Carramar stations could travel to the CBD via Sydney Trains and Sydney Metro, changing trains at Bankstown, or by Sydney Trains only, changing at Lidcombe/ Cabramatta.
- Customers travelling from Cabramatta and Warwick Farm could travel to the CBD via by Sydney Trains only, or by Sydney Trains and Sydney Metro, changing trains at Bankstown.

### **Services to Erskineville and St Peters and Redfern**

As part of the NSW Government's \$1.5 billion More Trains, More Services program, a new train timetable commenced on 26 November 2017. This involves more than 1,500 extra weekly services across the Sydney Trains network, including more than 750 on weekends. As part of the new timetable, St Peters and Erskineville stations receive frequent services to city stations in the morning peak, with eight services an hour at St Peters and six services an hour at Erskineville.

When Sydney Metro opens in 2024, St Peters and Erskineville stations would continue to be served by Sydney Trains and would be realigned to other lines.

Customers at St Peters and Erskineville stations would be able to access Sydney Metro services by catching a train to Central or Sydenham stations and connecting to the metro.

Transport for NSW is committed to providing the best possible services for customers and would continue to monitor patronage and train loading data to see whether further improvements can be made for the comfort of customers across the network.

### **Access to City Circle stations**

As part of Sydney Metro, the project would provide direct access to the Sydney CBD via new stations at Martin Place, Pitt Street and Barangaroo, better connecting customers to Sydney's employment, financial and retail districts. Metro trains would access Central Station via new platforms for Sydney Metro trains at Central.

Upon opening of Sydney Metro City & Southwest, customers on the T3 Bankstown Line could continue to access other Sydney Trains stations in the CBD City Circle (Town Hall, Wynyard, Circular Quay, St James, and Museum stations) by interchanging to Sydney Trains services at Sydenham or Central stations, or by walking from the new metro stations to Sydney Trains stations. For example, the Martin Place and Pitt Street metro stations would be located about 300 metres from the existing St James and Museum Sydney Trains stations.

Pedestrian connections between metro and other rail platforms have been designed to accommodate the projected interchange demand. In addition, Transport for NSW will deliver Central Walk, a new underground concourse connecting the new metro platforms to the existing suburban platforms at Central Station.

Customers travelling from South West Sydney could interchange between Sydney Metro and Sydney Trains services at Bankstown, Sydenham, or Central stations.

### **Changes to access to stations will increase car usage**

The operational benefits of metro and the provision of access to key employment, financial and retail districts services in the global economic corridor would make metro an attractive transport mode to a greater number of users, resulting in an overall reduction in the percentage of commuters who use cars to travel to work.

### **Issues with connections to other lines**

The preferred project is part of Sydney Metro City & Southwest. Sydney Metro City & Southwest, together with Sydney Metro Northwest, would result in one continuous metro line between Bankstown and Rouse Hill in Sydney's north-west, travelling via Sydenham, the Sydney CBD, North Sydney, Chatswood and Macquarie Park.

The preferred project is positioned within the existing rail corridor and therefore connections and interchanges between the various public transport modes would remain as per the existing situation. In many cases, the preferred project and the associated upgrade works at stations would improve the interchange between modes. An example of this is at Dulwich Hill Station, where the light rail entrance and station entrance would be co-located to make for an easy interchange.

As described in Section 7.3.8 (Access, interchange and connectivity) of the Environmental Impact Statement, accessibility and connectivity have formed key considerations in the design process.

Transport for NSW would develop an Interchange Access Plan for each station to inform the final design of transport and access facilities and services. The plans would include consideration of footpaths, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives around each station.

The establishment of a metro system with increased train frequencies would improve connections between other forms of public transport. The increased frequencies of metro trains means connections with other services (with lower frequencies of service) are improved, as less time would be spent standing around waiting for trains in the event that other services are not timetabled to meet the trains.

There would be interface agreements in place between the Sydney Metro operator and Sydney Trains to ensure coordinated operations at key locations such as Bankstown and Sydenham stations.

All of the above improvements around the access, services and connections to other lines and metro services will remain unchanged under the preferred project.

## **5.7.2 Journey characteristics and times**

### ***Summary of issues raised***

Some submissions raised concerns about the changes to journey characteristics, including convenience and travel times. Issues raised included:

#### **Convenience of catching one train to the city**

- the project will take away the convenience of catching one train to the city

#### **Pricing/ticketing**

- information about ticket prices has not been provided, including any increases due to the private operation of the line, or due to usage being below expectations

### Travel times

- travel times would increase as metro services are slower than heavy rail, all travel time savings are based on access to Martin Place, not Central or other City Circle destinations
- travel times would be comparable if not slower than the new express services

### Peak/off-peak capacity

- metro will result in a reduction in peak hour capacity
- a train frequency of every four minutes will not be possible
- the existing trains operate every 15 minutes during off-peak periods, which is more than what is proposed for metro.

### Response

#### Convenience of catching one train to the city

Section 11.4.2 (Traffic and transport – changes to station servicing arrangements) of the Environmental Impact Statement acknowledged that the introduction of Sydney Metro would result in some changes to station servicing arrangements and travel patterns.

Customers travelling to the CBD from stations between Bankstown and Sydenham would be able to travel directly to the city on Sydney Metro.

For stations west of Bankstown:

- Customers travelling from Yagoona, Birrong, Regents Park, Berala, Sefton, Chester Hill, Leightonfield, Villawood, and Carramar stations could travel to the CBD via Sydney Trains and Sydney Metro, changing trains at Bankstown, or by Sydney Trains only, changing at Lidcombe/ Cabramatta.
- Customers travelling from Cabramatta and Warwick Farm could travel to the CBD via by Sydney Trains only, or by Sydney Trains and Sydney Metro, changing trains at Bankstown.

In and close to the CBD, Sydney Metro trains would service Central Station (via new platforms) and the following new stations:

- Waterloo Station
- Pitt Street Station
- Martin Place Station
- Barangaroo Station.

The introduction of Sydney Metro would mean that some customers would need to change services to access the CBD, and may need to change their travel arrangements to use the new Sydney Metro stations, or walk to existing Sydney Trains stations. However, the integration of Sydney Metro services with Sydney Trains services at a number of stations (at Sydenham, Central and Martin Place) would allow for quick transfers between services. In some cases, as a result of the increased speeds of metro services, these trips (including transfers) would be of a similar or shorter duration.

Sydney Metro City & Southwest's CBD stations have been designed and located to minimise the time taken to transfer between services. For example, the construction of Central Walk at Central Station (as part of the Sydney Metro City & Southwest Chatswood to Sydenham project) would provide a link between Sydney Metro services and other public transport services at Central Station (Sydney Trains, light rail and bus services). For existing T3 Bankstown Line customers, Sydney Metro would also improve access to Barangaroo, which is not currently serviced by rail, and provide access to employment areas and key centres, including Redfern/Waterloo, North Sydney, Chatswood and Macquarie Park/North Ryde.

### **Pricing/ticketing**

The project would be integrated with the existing Opal electronic ticketing system. Ticket pricing for all transport is determined by Independent Pricing and Regulatory Tribunal of New South Wales (IPART), and by NSW Government policy. Any Sydney Metro service pricing would be in line with pricing review in the same way as other trains, buses, light rail and ferry services are considered. Prices for using metros would be comparable to the use of trains on other lines.

There would be no surcharge to use Sydney Metro.

Information on the ownership and operation of the project is provided in Section 5.7.3 of this report.

### **Travel times**

Table 5.3 (Estimates of indicative travel time savings) in the Environmental Impact Statement provided a comparison of travel time savings of Sydney Metro services compared to Sydney Trains.

As described in Section 2.4.5 of this report, implementation of the NSW Government's More Trains, More Services program in November 2017 result in changes to train timetables for a number of lines. A summary of the timetable changes as they affect the estimated travel times by Sydney Trains compared to the new Sydney Metro services is provided in Section 2.4.5 of this report. As noted in that section, with the new timetable operating, the travel time savings offered by the project would be less than under the previous timetable under some scenarios. However, the estimates show that the project would still offer savings in travel time, ranging from nine to 16 minutes.

It is acknowledged that some Sydney Trains services under the new timetable would have similar travel times to the proposed metro services. It is however noted that the benefits of the express services are only experienced by customers at Bankstown, Lakemba, Campsie and Marrickville stations. The frequency of this service (i.e. every half hour) also means that metro is considered a more favourable service, as it would provide the same travel times as the express service, but would operate more frequently.

### **Peak/off-peak capacity**

Stations along the T3 Bankstown Line currently have between four and 10 trains per hour in the morning peak (i.e. a train about every six to 15 minutes), and around every 15 minutes off-peak (during hours of operation). When Sydney Metro services start in 2024, there would be at least 15 trains an hour in the peak in each direction, and a train every 10 minutes in off-peak periods (a train every four minutes in the peak and six minutes in the off-peak).

As a result of the existing capacity constraints along the T3 Bankstown Line it is not possible to run trains along the existing line any quicker than about every six to 10 minutes.

The increased service frequency of Sydney Metro means that the overall capacity of the Sydney Metro system would be greater than Sydney Trains.

Sydney's current suburban rail system can reliably carry 24,000 people an hour per line. Sydney Metro, including the project, has a long-term target capacity of about 40,000 customers per hour in each direction, and provide the ability to cater for an extra 100,000 customers per hour across the Sydney CBD rail lines.

Further information regarding the potential of the project to achieve the stated capacity and frequency is provided in Section 5.3.2.

### **5.7.3 Operational characteristics**

#### ***Summary of issues raised***

Some submissions raised concerns about operation of the project, including whether it would be privatised, and how it would integrate with Sydney Trains operations. Issues raised included:

#### **Ownership of the metro line or its operation**

- concerned about the proposed privatisation of the line
- there are numerous examples of the failed privatisation of public transport
- private operation of public transport means the public interest is not considered in decision making
- privatisation of the line would result in increased fares and reduced quality
- ownership of the infrastructure and operation of the line should remain in public ownership
- privatisation has never been publicly canvassed nor subject to any public discussion and consultation, let alone a Parliamentary debate

#### **Integration with operation of the Sydney Trains network**

- the Environmental Impact Statement assumes that metro and the Sydney Trains network will work side by side
- Sydney Metro should be fully integrated with the existing train network including Opal, wayfinding information service information, to make it easier for users

#### **Operating hours**

- seeks clarification about the hours of operation.

#### ***Response***

##### **Ownership**

Sydney Metro infrastructure, including the stations, trains, tracks and wiring, would be owned by the NSW Government. The NSW Government would also set the fares and service standards for operating the project, and would collect the fares (further information on fares is provided in Section 5.7.2 of this report).

The train services would be run by a private operator, who would be required to comply with key performance indicators to ensure the network performs to a very high standard, including 98 per cent on time running and clean trains.

The operator would be required to prepare an operational management plan, which would detail how the services would be provided.

### Integration with operation of the Sydney Trains network

The Sydney Metro network would operate within a fully integrated transport network. The Transport Management Centre would remain central to the coordination of all modes of transport, whether normal daily running or when issues occur.

The Transport Management Centre has multi-modal coverage extending beyond the Sydney Trains rail network, and covers multiple bus operators, light rail, and other road traffic, as well as emergency services.

There would be interface agreements in place between the Sydney Metro operator and Sydney Trains to ensure coordinated operations at key locations such as Bankstown and Sydenham.

In the event of service disruptions on the metro network, segregated operations would allow other heavy rail services to be maintained.

Customers travelling from South West Sydney can interchange between Sydney Metro and Sydney Trains services at Bankstown, Sydenham, or Central stations.

Wayfinding such as signage at stations would be consistent with existing public transport standards.

### Operating hours

As noted in Section 8.3.3 (Hours of operation) of the Environmental Impact Statement, the first metro services would depart from both Tallawong Station (Sydney Metro Northwest) and Bankstown Station (Sydney Metro City & Southwest), with both services arriving at Central Station in the early morning. The last metro service to arrive at Tallawong and Bankstown stations would depart Central Station around midnight, and potentially later on weekends. The operating hours and service levels could be extended to accommodate planned special events, in conjunction with other Sydney public transport services.

The operating hours would be determined as part of the development of service schedules for the project, taking into account customer and maintenance access requirements.

## 5.7.4 Other

### Summary of issues raised

#### General

Some submissions raised concerns about the branding of metro and graffiti, including:

- remove the metro brand from the project as it will only lead to confusion with train passengers
- concerned about damage (including graffiti) on wall for adjacent properties.

### Metro governance and coordination

One submission requested clarification as to the governance arrangements between Sydney Metro and:

- the NSW Department of Planning and Environment, including the urban renewal corridor and Priority Precincts
- the Greater Sydney Commission's proposed Green Grid and District Plans
- local councils.



A representative group of community members should be part of the governance arrangements so that the residents affected by the plans have some say in how they are developed and implemented.

## **Response**

### **General**

The branding of metro services has been undertaken in accordance with the existing branding of other public transport services in Sydney. The differentiation of Sydney Metro from Sydney Trains services would allow commuters to readily identify the different services and operating arrangements.

The design of the preferred project has considered the principles of Crime Prevention through Environmental Design. This ensures that areas remain visible and have passive surveillance which is considered a good deterrent to vandals.

The operational management plan to be developed for the project would include procedures to handle any graffiti within the corridor and in areas adjacent to the corridor.

### **Metro governance and coordination**

Transport for NSW has consulted with the Department of Planning and Environment during development of the design and preparation of the Environmental Impact Statement.

Consultation has also been undertaken with the department in relation to the relationship between the Urban Renewal Corridor Strategy and the project. This consultation is ongoing to ensure the design of the preferred project aligns with the strategy where possible and is discussed in Section 3.5 of this report. This consultation would also include the Greater Sydney Commission to ensure that the project is consistent with broader plans beyond the Urban Renewal Corridor Strategy.

Transport for NSW has consulted with both Inner West and Canterbury-Bankstown councils as part of the exhibited project. Consultation with both councils would continue, and this would include involvement in a number of aspects of the preferred project (for example, developing temporary transport plans (as per mitigation measure TC1), identifying relevant urban design principles and design outcomes on council land (mitigation measure LV2), and developing the tree management strategy (mitigation measure LV4)).

Where required consultation with the community (or a representative group) would be undertaken as part of the detailed design or during construction. The nature of this consultation would be considered on a case-by-case basis and would be tailored to ensure the correct parts of the community are consulted.

## **5.8 Project description – construction**

### **5.8.1 Construction compounds, work sites and access**

#### ***Summary of issues raised***

Some submissions raised concerns about the impacts associated with the establishment and operation of construction compounds and work sites, including:

- questioned how long construction compounds and work sites would be used
- concerned about access to the compound at Marrickville Station via Schwebel Street
- many of the indicative construction compounds and work sites appear to be on council land abutting the rail corridor, and many contain green space and mature trees – it is unclear whether these parcels of land are captured in the project footprint.



## **Response**

Information on the proposed location of construction compounds and work sites for the preferred project is provided in Section 2.8.1 and Section 2.8.2 of the preferred project description in Appendix B of this report. These sections provide information on the potential duration of use being short term (under 18 months) or long term (over 18 months). The duration of use would be confirmed during detailed construction planning. Sites would be used for the minimum duration possible, and for the duration of the works that they support.

With the preferred project, it is anticipated that the timeframes for construction and need for the associated construction compounds and work sites would be reduced compared to the exhibited project. Additionally, the preferred project has resulted in construction compound C2 no longer being required (as shown in Figure 2.1 of the preferred project description in Appendix B).

A review of the positioning, size, and need for each compound and work site would also be undertaken during detailed construction planning.

The project area, as described in Section 2.2.2 (The project area) of the Environmental Impact Statement, identified all areas likely to be required to construct or operate the project. The project area was defined to include all compounds and work sites, both within and outside the rail corridor. A list of all proposed compounds and work sites for the preferred project is provided in Section 2.8 of the preferred project description in Appendix B.

Additional or alternate construction compounds and work sites would potentially be required following ongoing construction planning. Section 2.8.4 of the preferred project description in Appendix B describes the approach to selecting construction compounds or work sites that are not identified in the preferred project description. These areas would be contained to the project area where possible; however in the event they are required outside the project area, additional environmental assessment may be required.

### **5.8.2 Construction program and possessions**

#### **Summary of issues raised**

Some submissions raised concerns about the construction program and proposed closure of the rail line for extended periods of time, including:

#### **Concerned by the duration of the construction period**

- concerned about the long construction period
- not confident that the whole project will be completed by the 2024 deadline
- recent Marrickville Station upgrade is a good example of how projects are regularly completed over an extended period

#### **Closure of the line is unacceptable**

- closing the line for a year is unacceptable for commuters
- it would be good if the proposal could be fast-tracked and consider the shortest rail possession period
- the disruption to customers during construction will be huge and it is unlikely that construction will be completed in six months
- closure of the line during 10 school holiday periods would be extremely disruptive

#### **Number of possession periods**

- the number of possessions required for the construction of the project is uncertain

- would like the statement ‘taking advantage of rail/road closures’ to be clarified.

## **Response**

### **Concerned by the duration of the construction period**

The construction program described in Section 9.7.1 (Program) of the Environmental Impact Statement represented a realistic timeframe to complete construction of the exhibited project. The construction program for the preferred project, described in Section 2.7.1 of the preferred project description in Appendix B of this report, is considered a realistic timeframe to complete construction of the preferred project.

The preferred project has resulted in an anticipated reduction in the duration of the construction periods for certain project features. However, there is an acknowledged risk that individual works may take longer than anticipated due to unforeseen delays such as adverse weather conditions. However, the final completion date is unlikely to change.

The construction program aims to provide a balance between the efficient completion of construction, minimising impacts to adjacent receivers, and minimising impacts to the operation of the T3 Bankstown Line and the freight rail line.

More detailed construction programs would be developed during detailed construction planning.

Consultation with the community regarding the construction program would continue prior to and during construction. Further information about consultation during construction as identified in Section 3.5 of this report.

### **Closure of the line is unacceptable**

Section 2.7.2 of the preferred project description in Appendix B of this report describes the proposed final possession period for the preferred project, which would be required for the final conversion to Sydney Metro operations. The exact length of this final closure is not yet known, however a three to six month period is expected. Transport for NSW would work with the construction contractor to minimise the duration of this possession where possible.

Details about the alternative transport arrangements during possession periods are provided in Section 2.11 of the preferred project description in Appendix B. Further discussion of these arrangements is also provided in Section 5.8.3 of this report.

The use of school holiday possessions, as discussed in Section 2.7.2 of the preferred project description in Appendix B, is required to ensure the project is completed in the shortest time possible

The justification for the use of school holiday periods is provided in Section 2.7.2 of the preferred project description in Appendix B, which notes that:

- there is generally lower patronage on the Sydney Trains network during school holidays
- there is less traffic on the surrounding road network, which would assist the efficient operation of rail replacement bus services
- there is an increased availability of buses and drivers for rail replacement bus services
- there is increased rail capacity available on other lines to accommodate customers who would normally travel on the T3 Bankstown Line.

The preferred project would not require the proposed two week possession period during the July school holidays and has reduced the possession period during the Christmas school holidays from six weeks to up to two weeks.

As noted in Section 2.7.2 of the preferred project description (Appendix B), opportunities to further minimise the number of school holiday possessions would be considered during detailed construction planning.

### Number of possession periods

Overall there would be a reduction in the combined number and duration of the possession periods required to construct the preferred project, when compared to those required for the exhibited project. Possession periods for the preferred project are described in Section 2.7.2 of the preferred project description in Appendix B of this report. In summary, it is anticipated that works would be undertaken during the following possession periods:

- Standard possessions and freight track possessions – Sydney Trains currently schedules routine maintenance possessions on four weekends each calendar year. ARTC also currently has four weekend possessions a year available for maintenance of the corridor, in periods which coincide with the Sydney Trains possessions.
- Additional weekend possessions – Up to an additional eight weekend possessions would be required each year to complete the preferred project works.
- Night-time weekend possessions – required on an occasional basis to prepare the rail corridor prior to weekend or school holiday possessions.
- School holiday possessions – involving a two week possession of the T3 Bankstown Line during the Christmas school holiday period each year.
- Final possession – works that can only be done once Sydney Trains services stop using the T3 Bankstown Line would be undertaken during a final three to six month possession.

The works that would need to be undertaken during possession periods include:

- track works
- installation of communications services routes, bridge works, fencing and station works that need to be undertaken from or interface with the rail track
- activities requiring the temporary possession of roads or to accommodate road network requirements to minimise safety impacts and inconvenience to commuters.

Individual stations may also be closed for up to 2 months to complete the station works. Up to three stations may be closed at any one time. Services would continue to run along the rail line during this time and customers would be moved to the nearest operating station.

The proposed possession program would be reviewed during tendering, detailed design, and construction planning to ensure that possessions reduce the overall impacts on the community as far as possible. Alternative possession options that may deliver additional benefits relative to the environmental assessment would be considered.

The duration of the final possession would be as short as practicable to bring Sydney Metro trains into service. The duration of this possession would be refined in consultation with relevant stakeholders, and the community would be informed of any proposed changes once they are confirmed.

### **5.8.3 Alternative transport arrangements during construction**

#### ***Summary of issues raised***

Some submissions requested further information and made suggestions regarding the proposed alternative transport arrangements during construction. Issues raised included:

#### ***Detail of the strategy***

- not clear how people will be moved during the possession periods
- the temporary transport strategy is insufficient and not detailed enough
- the strategy will cause delays and stress to commuters during construction

#### ***Suggestions/requests regarding alternative public transport services and rail replacement bus routes and arrangements***

- requested additional bus and light rail services to connect to available rail lines
- requested an increase in service frequencies at Tempe Station, as this will assist in servicing Marrickville
- suggested that the indicative rail replacement Bus Route 2 shown on Figure 10.15 of the Environmental Impact Statement be extended from Sydenham Station to Mascot Station
- requested that shuttle buses be provided between Hurlstone Park, Dulwich Hill and Canterbury stations and Ashfield Station, in addition to the proposed alternative transport arrangements, so that express trains to the city can be used, and to ease traffic along suburban streets
- replacement buses should just shuttle people from closed stations to the nearest open station on the T3 Bankstown Line or other lines.

Further information and clarification in response to issues raised about potential impacts during rail possessions and temporary closures of the rail line, and issues raised about the proposed temporary transport arrangements, provided in Section 5.9.5 of this report.

#### ***Response***

#### ***Detail of the strategy***

Section 10.3.4 (Alternative transport arrangements) of the Environmental Impact Statement described the Temporary Transport Strategy (Appendix G of the Environmental Impact Statement) which provides options for alternative public transport arrangements during possessions, and aims to minimise transport disruption to customers currently accessing or travelling through stations between Lidcombe and Sydenham. The Temporary Transport Strategy would be employed for the preferred project, as described in Section 2.11 of the preferred project description in Appendix B of this report.

The Temporary Transport Strategy an overarching strategic document. It would describe the process for planning and delivering the integrated, multi-modal temporary transport response that would operate during possession period shutdowns on the T3 Bankstown Line, and provides guidance for the development of temporary transport plans. For each possession period, a temporary transport plan would be developed to define the initiatives that would be implemented to assist customers affected by closures of the rail line, and the measures to minimise potential impacts associated with proposed alternative arrangements. Each temporary transport plan would include a services plan and management plan. The services plan would define the temporary rail and bus services that would operate, and the management plan would describe how wider impacts on the network would be managed. This would include consideration of customer demand, the number of buses on the road network, associated impacts on road network performance, and parking impacts. The temporary transport plans would be developed in consultation with the community and key stakeholders, and each successive plan developed would take into account previous experience so that continual improvements are offered to customers over the duration of the upgrades to the network as set out in the preferred project.

Possession periods would be well advertised and managed in accordance with strict controls set out in the temporary transport plans, which would be developed in consultation with key stakeholders (including the Sydney Coordination Office, Roads and Maritime Services, Sydney Trains, local councils, emergency services, and bus operators). Mitigation measure TC1 commits to developing the temporary transport plans in consultation with key stakeholders.

#### **Suggestions/requests regarding alternative public transport services and rail replacement bus routes and arrangements**

As part of the development of the temporary transport plans, Transport for NSW would consider the opportunity to alter existing public transport services to offset the loss of trains along the T3 Bankstown Line. This would be undertaken in consultation with Sydney Trains, Sydney Buses, and Transdev Sydney (the operators of Sydney Light Rail).

The rail replacement routes, outlined in Section 10.3.4 (Alternative transport arrangements) of the Environmental Impact Statement, were used as a basis for assessing the potential impacts of implementing alternative transport arrangements. The potential impacts associated with implementing alternative transport arrangements for the preferred project would be reduced compared to the assessment presented in the Environmental Impact Statement for the exhibited project. The reduction in overall impact is discussed in Section 15.2.1 of this report.

The routes used to undertake the assessment in the Environmental Impact Statement and discussed in Section 15.2.1 of this report are indicative, and would be subject to further investigations and refinement to determine their appropriateness during possession periods. All potential routes would be considered, including the movement of commuters to adjacent rail lines.

With regards to the potential extension of the replacement bus routes from Sydenham Station to Mascot Station, this has already been considered as part of detailed construction planning undertaken by Transport for NSW to date. It was determined that this route would not deliver a benefit to customers due to the additional time required to travel between Sydenham and Mascot. Customers who specifically need to travel to Mascot are able to catch local bus route 418, which already connects these stations. However, Transport for NSW would continue to consider all options outlined in submissions as part of the development of the temporary transport plans, in line with Temporary Transport Strategy.

## 5.8.4 Construction hours

### Summary of issues raised

Issues raised in relation to working hours included:

- concerned about the work hours for the traction supply cabling works
- requested that no work be undertaken after 10 pm, before 7 am, or after hours on weekends, including the movement of heavy vehicles
- disagree with 24 hours construction during possession periods, as this will result in unacceptable impacts.

### Response

#### Working hours for traction supply cable

Construction of the traction supply cable as part of the preferred project (described in Section 1.1.3 of the preferred project description in Appendix B) would be undertaken during standard construction hours where possible. However, there may be a requirement for night works in some instances to minimise impacts to key roads and access.

Detailed construction programs would be developed during construction planning.

Consultation with the community regarding the construction program would continue prior to and during construction. Further information regarding consultation during construction is provided in Section 3.5 of this report.

#### Restriction of working hours

Where possible, construction is proposed to be undertaken during the recommended standard construction working hours, as defined by the *Interim Construction Noise Guideline* (DECC, 2009). However, due to the positioning of the project within the operational T3 Bankstown Line, there is a requirement for some works to be undertaken during periods when trains are not running along the corridor, to ensure the safety of workers and customers.

Rail possession periods are pre-planned periods during which maintenance or construction works are undertaken. These periods are currently implemented on the Sydney Trains and freight networks to undertake such works. Construction of the project would generally make use of the planned possession periods. As a result, the timeframe in which some works (near the existing tracks) are required to be undertaken would be limited to a period that is as short as 48 hours.

Due to the time restrictions of some of these possession periods, it is most effective to undertake works 24 hours per day for these periods. If works are restricted to the daytime and/or evening periods, it is likely that the construction would take a lot longer, which would result in the potential impacts to the community over a longer time period.

Technical Paper 2 (Noise and vibration impact assessment) of the Environmental Impact Statement included an assessment of the potential impacts of out of hours works relating to possession periods for the exhibited project.

A noise and vibration assessment has been undertaken for the preferred project, and is provided in Appendix E and summarised in Chapters 12 to 15 of this report. This assessment includes an assessment of the potential impacts of out of hours works relating to possession periods for the preferred project.

Section 16.1 of this report commits to preparing the Out of Hours Work Strategy in consultation with key stakeholders (including the Environmental Protection Authority). This commitment is confirmed by new mitigation measure NVC16, which requires an Out of Hours Work Strategy to be prepared to guide the assessment, management, and approval of works outside recommended standard hours.

In general, the noisiest construction activities would not be undertaken during the night-time period. In accordance with mitigation measure NVC6, highly noise intensive equipment would be limited to the daytime and evening periods (i.e. 7 am to 10 pm), unless:

- the works need to be undertaken during a rail possession, which have a limited duration
- the relevant road authority, emergency services, or the Sydney Coordination Office require the works to be undertaken outside these hours.

### **5.8.5 Other construction issues**

#### ***Summary of issues raised***

One submission questioned where crushed concrete would be sourced from and if sand could be sourced from glass bottles.

#### ***Response***

Details of the source of specific materials would be determined during construction planning and detailed design. Where possible, the project would seek to reuse material from the project or source material from recycling facilities. This is consistent with the targets outlined in the Sustainability Strategy for the project.

## **5.9 Construction traffic, transport and access**

This section provides responses to issues raised in relation to the potential traffic, transport and access impacts of the project during construction.

### **5.9.1 Assessment method**

#### ***Summary of issues raised***

A submission indicated that the traffic modelling presented in Technical Paper 1 (Traffic, transport and access assessment) of the Environmental Impact Statement did not appear to align with the revised draft *Sydenham to Bankstown Urban Renewal Corridor Strategy*. The strategy indicates that there will be an increase in dwellings prior to the completion of the project, which will increase rail patronage and add additional vehicles to the road network in the vicinity of the metro corridor.

#### ***Response***

The assessment of the construction traffic, transport and access impacts of the exhibited project was provided in Technical Paper 1 (Traffic, transport and access assessment), and the results were summarised in Chapter 10 (Construction traffic, transport and access) of the Environmental Impact Statement. The assessment was prepared in accordance with all relevant guidelines, and addressed the Secretary's environmental assessment requirements. The assessment involved modelling of existing and future situations, which included the conditions in 2016, as well as predicted future conditions in 2023.



For both the construction and operational assessments, a growth factor was used to account for forecast land use and traffic changes that are expected to occur between 2016 and 2023. This includes traffic changes as a result of future development in the corridor. The growth factor adopted was sourced from the Public Transport Project Model (PTPM), which has the most up to date land use assumptions for the Sydenham to Bankstown corridor and was therefore considered the most relevant to adopt for the assessment. Further information is provided in Section 4.5.5 (Traffic growth) of Technical Paper 1 (Traffic, transport and access assessment) of the Environmental Impact Statement.

As per Section 3.1 of the traffic, transport and access assessment in Appendix D of this report, the methodology for the traffic assessment for the preferred project was as per that for the exhibited project except where noted otherwise. Therefore, the growth factor applied to the preferred project was the same as that for the exhibited project.

## **5.9.2 Construction traffic and road network performance**

### ***Summary of issues raised***

A number of submissions raised concerns about the impacts of proposed haulage routes, the impacts of construction vehicles and construction generally on traffic, congestion and individual roads, and impacts on the performance of the road network. Issues raised included:

#### **Haulage routes**

- concerned about haulage routes proposed in Dulwich Hill
- Garnet Street (located between Marrickville and Hurlstone Park) will be hugely impacted by the construction, with many trucks using it
- concerned that Warren Road, Marrickville isn't a viable haulage route as two cars can't currently pass each other on the road, and questioned how trucks would be able to pass each other
- the proposal will create havoc considering the number of trucks, machinery, etc that will be moving about i.e. 18 truck movements per hour between 6pm and 7am
- concerned about impacts to local streets and amenity as a result of proposed haulage routes during construction, including impacts to Garnet, Crinan, Kilbride and Melford streets in Hurlstone Park; Wilga, Kays, and Challis avenues in Dulwich Hill; and Albermarle, Beauchamp, and Ewart streets in Marrickville
- concerned about construction of traffic due to haulage routes

#### **Construction traffic impacts**

- concerned that a street which is full of families and young children will be used as a thoroughfare for heavy vehicles and construction vehicle parking day and night
- Close Street in Canterbury (location of the former Canterbury Bowling Club) is a cul-de-sac and is not suitable for the high level of traffic and large scale trucks and machinery proposed
- concerned about impacts on River Street, Earlwood, during construction as it is already constrained, being one-way with restricted parking and traffic structures
- concerned about traffic congestion, traffic delays and diversion during construction and possession periods
- concerned that Dulwich Hill residents would be the worst affected during construction as a result of additional traffic from buses and trucks



- concerned about constriction of traffic with the closure and partial closure of rail bridges in the area and parking for workers

### Road network impacts

#### Traffic congestion and intersection performance

- changes to the road network around the stations, including location of compounds and work sites, and temporary road and lane closures, will impact on already congested roads in Marrickville
- construction haulage vehicles (light and heavy trucks), work vehicles, rail replacement bus services, and additional bus services will increase traffic congestion throughout Marrickville, and impact intersection performance
- construction trucks will impact Illawarra Road and Warren Road (west) in Marrickville
- concerned about the lack of a clear strategy for the already congested Canterbury Road, Canterbury
- the roads along the T3 Bankstown Line are already at capacity and cannot take the buses that would be needed during construction
- concerned about road closures
- the modelling indicates that the addition of construction vehicles would not change the level of service, which is hard to believe
- concerned about the average vehicle delay at the intersection of Wardell Road and Ewart Street in Dulwich Hill during rail possessions

#### Road network – other

- questioned what roads would be closed for the upgrades
- the traffic modelling does not identify existing ‘rat runs’, such as Byrnes and Calvert streets in Marrickville, which are already used as alternative roads to avoid congestion on Illawarra Road in Marrickville
- the substantial costs of essential road maintenance due to increased commuter traffic and heavy construction vehicles over a number of years has not been estimated

### Impact to access during construction

- concerned about whether access to properties would be maintained during construction
- a number of properties on River Street in Earlwood are being renovated, and deliveries to these sites will be difficult if not impossible during construction
- questioned how access to properties would be affected at Hurlstone Park with footpath diversions and the relocation of bike parking facilities.

## Response

### Haulage routes

The preliminary haulage routes identified in Section 9.8.8 (Preliminary haulage routes) of the Environmental Impact Statement and Section 2.8.8 of the preferred project description in Appendix B of this report were based on construction planning projections at the time the assessment was undertaken. The routes were identified based on factors such as the nature of surrounding residential areas and minimising impacts on residential streets, providing the most direct route to the arterial road network, and minimising the overlap of haulage routes between different construction sites.

Review and further refinement of the preliminary construction haulage routes has been undertaken as part of the development of the scope for the preferred project and changes in routes between the preferred project and exhibited project, are described in Chapter 10 of this report. These refinements aim to reduce the impacts of the haulage routes. This has also included further consideration of the suitability of roads for the movement of heavy vehicles. The proposed changes include changes to the use for haulage of Warren, Marrickville and Illawarra roads in Marrickville, Wangee Road in Lakemba, and Charles Street in Canterbury.

The final haulage routes would be confirmed by the construction contractor through the development of construction traffic management plan(s). Confirmation of haulage routes would include consideration of traffic and noise impacts associated with the movement of trucks along the proposed routes. It is reiterated that the preferred project would reduce the number, length, and intensity of these haulage routes and is a response to the issues raised in submissions.

Mitigation measures TC8 and TC13 would be implemented to minimise the potential impacts of the movement of construction vehicles. TC8 commits to preparing a construction traffic management plan and implementing it during construction. TC13 commits to managing construction vehicles (including contractor staff vehicles) to:

- minimise parking or queuing on public roads
- minimise use of residential streets to gain access to work sites or compounds
- minimise vehicle movements near schools, particularly during school start and finish times.

### Construction traffic impacts

An assessment of the potential impact of construction vehicles during construction of the exhibited project, including trucks accessing work sites and using the proposed haulage routes, was provided in the following chapters of the Environmental Impact Statement:

- Chapter 10 (Construction traffic and transport)
- Chapter 12 (Construction noise and vibration)
- Chapter 23 (Air quality)
- Chapter 25 (Hazards, risks and safety).

An assessment of the potential impacts of construction vehicles on intersection capacity has been undertaken for the preferred project and is provided in Appendix D of this report and summarised in Section 15.2. An assessment of road traffic noise associated with the preferred project is provided in Appendix E of this report. Section 15.2 of this report describes the changes in construction impacts due to construction of the preferred project, compared with construction of the exhibited project and the assessments of these impacts undertaken in the Environmental Impact Statement.

As noted above, a review of the suitability of the preliminary haulage routes has also been undertaken as part of the development of the preferred project scope, and the revised haulage routes are considered in the traffic, transport and access assessment presented in Appendix D.

The assessment for the preferred project focussed on where there were differences between features of the preferred and exhibited projects that would change the impact assessment undertaken in the Environmental Impact Statement, namely:

- the construction sequencing (possession periods have been reduced for the preferred project)
- bridge works (works do not require long-term, full bridge closures and the need for associated diversions)
- closures of stations due to upgrade works (for up to a period of two months for each station).

Information concerning construction sites and compounds and parking for workers and plant as part of the preferred project are addressed in Section 2.8 of the preferred project description in Appendix B of this report.

Section 10.4.2 (Station and corridor works – changes to car parking) of the Environmental Impact Statement recognised the potential impacts of worker parking, noting that construction workers could use some of the existing parking spaces near stations and construction work areas, impacting on the availability of parking for business customers.

To manage this potential impact, the Environmental Impact Statement noted that:

- some parking would be provided for workers within compounds and/or work sites where practicable
- opportunities for additional construction worker parking would be investigated during detailed construction planning, particularly for larger sites
- additional strategies would be developed to minimise the potential for parking impacts, including encouraging workers to car pool or use public transport, and provision of off-site parking alternatives with associated shuttle bus arrangements.

This approach is confirmed by mitigation measure TC15, which commits to managing construction sites to minimise construction worker parking on surrounding streets, and to developing a worker car parking strategy in consultation with the relevant local council. The worker car parking strategy would identify measures to reduce the impact on local parking, and potential mitigation options, including alternative parking locations.

Changes to existing on and off-street parking during construction were outlined in Table 10.38 of the Environmental Impact Statement (Indicative on and off-street car parking changes during construction). Some additional changes resulting from rail replacement buses were outlined in Table 10.39 (Indicative car parking changes at other stations) of the Environmental Impact Statement. The assessment of the impacts of these car parking changes was provided in Section 10.4.3 (Summary of assessment results) of the Environmental Impact Statement. These changes would be consistent for the preferred project with the exception of the potential parking impacts that may be associated with the station closures, which are discussed in Section 4.17 of the traffic, transport and access assessment in Appendix D of this report.

The assessments undertaken for the exhibited project and preferred project conclude that, in most cases, losses to car parking would be short term and generally there is capacity to absorb the temporary loss of spaces within 400 metres of each station.

The management of these issues during construction would be undertaken through the Construction Environmental Management Plan and specifically, the construction traffic management plan. Mitigation measures TC4 and TC5 commit to further reviewing the opportunities to reduce the temporary loss of parking during detailed design and construction planning along with, where possible, provision of alternative parking.

TC12 to TC15 outline additional measures to manage the impacts of construction compounds and work sites, construction vehicles and construction parking and the use of signage (TC14) to direct and guide drivers, pedestrians and other road users around work sites and compounds and the surrounding road network safely.

TC20 and TC21 commits to maintaining access to adjacent premises wherever possible, and a process for engagement where temporary changes are required.

## **Road network impacts**

### **Traffic congestion and intersection performance**

The potential road network impacts during construction of the exhibited project were assessed in Technical Paper 1 (Traffic, transport and access assessment), and the results were summarised in Chapter 10 (Construction traffic, transport and access) of the Environmental Impact Statement.

A traffic and transport and access assessment has been completed for construction of the preferred project and is provided in Appendix D and summarised in Section 15.2 of this report.

As described above, the assessment for the preferred project focussed on where there were differences between features of the preferred and exhibited projects that would change the impact assessment undertaken in the Environmental Impact Statement.

The assessment includes details of key intersection performance under future conditions (without construction traffic or rail replacement buses), future conditions (with construction traffic only) and future conditions (with construction traffic and rail replacement buses) during the Christmas possession periods proposed as part of the preferred project. The assessment also replicates the information provided in the Environmental Impact Statement where it is relevant to the preferred project, i.e. for weekday works during the final shutdown (considered to be an worst case scenario) and for construction works that would be undertaken without the need for rail replacement buses. It also provides qualitative assessments of the road network impacts associated with construction during weekend possessions in addition to the traffic impacts from construction of the preferred project due to the proposed bridge works and station closures.

With regards to road network performance, the assessment indicates that several locations exhibited deteriorating levels of service as a result of natural growth in background traffic volumes, prior to construction commencing.

The assessment concludes that a number of intersections across the project area were likely to experience additional delays as a result of increases in construction traffic. In the majority of cases, the levels of service and degree of saturation would remain acceptable, and infrastructure upgrades are not considered to be required. Impacts at other intersections were remodelled using mitigation options to identify whether the impacts could be reduced by changes to the way the intersections operate and were confirmed to reduce the level of congestion predicted.

Details of potential impacts are provided for the Illawarra Road/Warren Road intersection, the Wardell Road/Ewart Street intersection, and Canterbury Road (at the intersections with Crinan Street and New Canterbury Road) are provided in the preferred project description in Appendix B of this report.

For the Illawarra Road/Warren Road and Canterbury Road intersections during the final shutdown period (typical weekday) and Christmas possessions, the assessment concludes that there would be only a slight deterioration in the degree of saturation at these intersections when construction traffic and rail replacement buses are introduced. The assessment also concludes that these intersections would continue to perform satisfactorily during both the weekday peak periods and the Christmas possessions. While the Wardell Road/Ewart Street intersection was predicted to experience high congestion and delays, particularly during the final shutdown period, changes in lane usage and traffic signal phasing would be sufficient to reduce the predicted impacts.

Mitigation measure TC6 commits Transport for NSW considering the need for intersection modifications that could improve intersection performance at locations most affected by construction vehicles. This would be undertaken in consultation with Roads and Maritime Services, the Sydney Coordination Office and the relevant road authority. This measure would integrate with the construction traffic management plan required by mitigation measure TC8.

### **Road network – other**

Table 10.35 (Potential changes to road network for station works) and Table 10.36 (Bridge works – indicative closures and road network changes) of the Environmental Impact Statement outlined the potential changes to roads/lanes during construction, including temporary road and lane closures. These changes were related to the station closures and bridge works proposed as part of the exhibited project.

Transport for NSW has developed a design solution that has reduced the potential for traffic impacts during construction of the preferred project. The preferred project allows for works to be undertaken in the areas around the stations, to better integrate with other modes of transport, however, works can be delivered with less impact on the areas around stations. As such, no road closures or diversions would be required during the station upgrade works.

Additionally, the bridge works proposed as part of the preferred project can occur without bridge closures and road diversions, and would be limited to some lane restrictions at night and on weekends.

A traffic and transport and access assessment has been completed for the preferred project and is provided in Appendix D and summarised in Chapters 12 to 15 of this report. This assessment includes a qualitative assessment of the traffic impacts from construction of the preferred project due to the proposed station closures and bridge works (Chapter 15). The assessment concludes that the potential impact of the station closures on the road network would generally be negligible and there would be a reduction in traffic impacts associated with the bridge works for the preferred project compared with those for the exhibited project.

The construction traffic, transport and access impacts of the exhibited project were assessed in accordance with the requirements of the Secretary's environmental assessment requirements, as outlined in Chapter 10 (Construction traffic, transport and access) of the Environmental Impact Statement. The assessment of impacts of the preferred project were also assessed in accordance with the Secretary's environmental assessment requirements, where relevant to the preferred project. The requirements do not require identification of 'rat runs' or the costs associated with road maintenance. Dilapidation reports would be prepared prior to and following construction for the purposes of road and other asset rectification by the construction contractor.

## Impacts to access during construction

Measures to manage the potential for impacts to access would be included in the construction traffic management plan, which would be prepared and implemented prior to construction in accordance with mitigation measure TC8. Mitigation measure TC20 commits to maintaining access for residents, businesses, and community infrastructure during construction. The measure also requires that where disruption to access cannot be avoided, consultation would be undertaken with the owners and occupants of affected properties, to confirm their access requirements and to discuss alternatives.

### 5.9.3 Active transport impacts

#### *Summary of issues raised*

Issues raised about impacts to public transport during construction included:

- bike commuters would be unfairly disadvantaged by the increased road traffic during construction
- it is important that the pathway beside the railway line up to Canterbury Road remains open as it is used every day
- concerned about impacts on pedestrian access on River Street, Earlwood Oval, and Spark Street – River Street is a shared vehicle pedestrian zone with no footpaths.

#### *Response*

Maintaining appropriate levels of safety for all road users during construction would be the responsibility of the construction contractor. Section 10.4.6 (Road user safety) of the Environmental Impact Statement identified a preliminary list of locations and activities that may give rise to potential safety concerns which is still applicable to the preferred project Mitigation measure TC19 commits to consideration of pedestrian, cyclist and motorist safety during preparation of the construction traffic management plan.

Section 10.3.1 (Active transport) of the Environmental Impact Statement described the indicative changes to pedestrian and cycle routes/facilities that would occur during construction of the exhibited project and Table 10.33 (Potential changes to pedestrian and cycle facilities) of the Environmental Impact Statement described the locations at which changes to pedestrian and cycle facilities were proposed.

With regards to construction of the preferred project, the impacts to pedestrian and cycle routes/facilities would be reduced when compared to the exhibited project. Impacts to pedestrian and cycle facilities during construction of the preferred project would generally involve the following:

- impacts to footpaths adjacent to proposed work areas and associated hoarding or site fences
- impact to footpaths during proposed pavement upgrades
- impacts to footpaths during installation of new kerbside facilities
- existing bike parking facilities may be temporarily unavailable during relocation works
- cyclists and construction vehicles would be sharing the road.

Safe alternative pedestrian and cycle access would be provided at all time during construction of the preferred project.

Section 5.2 of the traffic, transport and access assessment in Appendix D of this report also notes that during the works required on the bridges, some disruptions to pedestrians and cyclists would occur due to the potential need for footpath closures. Where there may be impacts to pedestrians and cyclists due to bridge works, diversions would be put in place, allowing the pedestrian or cycle route in question to continue to be used.

No changes are currently proposed to the pathway beside the railway line along Canterbury Road.

Traffic impacts associated with construction of the proposed traction power supply cable between Campsie Station and the Canterbury Substation, including along River Street and Spark Street, were assessed in Section 10.1.3 (Impacts of traction power supply route) of the Environmental Impact Statement. As noted in that section, any impacts are expected to be short-term, as the trenching works would move progressively along the alignment. Alternative access arrangements would be made where required, such as the use of road plates to cross the construction trench, so that the impacts to users of River Street and Spark Street including pedestrians are minimised.

As noted above, access for residents, businesses, and community infrastructure would be maintained in accordance with mitigation measure TC20. Where disruption to access cannot be avoided, consultation would be undertaken with the owners and occupants of affected properties, to confirm their access requirements and to discuss alternatives.

Mitigation measure TC17 requires community notification in advance of any planned changes to existing road and pedestrian networks.

#### **5.9.4 Public transport impacts**

##### ***Summary of issues raised***

Issues raised about impacts to public transport during construction included:

- the change over from our current railway to the metro will involve massive and unwarranted disruption to rail services and traffic
- the consequent level of transport disruption is unacceptable
- concerned that there will be no train services for one to two years on this line
- questioned how the line closures and the need for replacement buses is going to be managed with the required bridge works and the construction vehicles.

##### ***Response***

Section 6.2 (Rail network alternatives) of the Environmental Impact Statement outlines the strategic alternatives considered prior to selection of the preferred alternative by the NSW Government in *Sydney's Rail Future*. All of the rail line conversion options considered as part of Rail Future C involve options for conversion of an existing rail line and therefore involve a level of impact on existing services and customers. Part of the benefits of the preferred conversion option (refer Section 6.3.3 (Preferred conversion option) of the Environmental Impact Statement) is that it is a less complex conversion requiring less infrastructure, which translates to a lower level of impact on customers and the broader community. Through development of the preferred project Transport for NSW has developed a design solution that enables the retention of existing station entrances, heritage buildings and concourses, resulting in further reductions on the level of impact on customers and the community. During operation, the proposed Sydenham to Bankstown upgrade would also provide major benefits in terms of increased capacity and reliability for the rail network and future population and network growth.

Section 10.4.2 (Station and corridor works – overview of results) of the Environmental Impact Statement provided a summary of the anticipated impacts on public transport services due to construction of the exhibited project. The assessment concluded that overall impacts on bus services would be minimal as a result of construction of the exhibited project and would generally remain unchanged for the majority of the construction period. The potential impacts to public transport during construction of the preferred project would be generally consistent with those identified for the exhibited project, with the exception that the preferred project involves retaining existing bus stops at stations, and diversions as a result of bridge works are no longer required, as shown in Chapter 9 of this report. This would result in a further reduction in potential impacts.

Section 10.4.5 (Implications of the alternative transport arrangements) of the Environmental Impact Statement identified potential changes to rail network operations during possessions. This included adjustments to the timing and stopping patterns of trains on the T8 Airport & South Line, between Revesby and Sydenham stations and the T2 Inner West & Leppington Line, between Homebush and Redfern stations. These changes would also occur during construction of the preferred project. Some of the changes to train services may result in changes to operations in the Sydney CBD, such as trains travelling in a different direction around the City Circle. In some cases, these changes may be beneficial, as the addition of temporary additional train services would increase the frequency of services at some stations.

Impacts on pedestrians and cyclists are discussed in Section 5.9.3 of this report. Potential impacts on road network performance are discussed in Section 5.9.2 of this report.

There will be no train services during possession periods only. Possession periods for the preferred project are described in Section 2.7.2 of the preferred project description in Appendix B of this report. The duration of possession periods will be considerably less than one to two years and has been reduced compared to the exhibited project

Regarding the management of cumulative construction traffic i.e. construction vehicles, rail replacement buses and diversions from bridge works, mitigation measures TC3 require Transport for NSW to undertake further detailed analysis of potential network impacts in consultation with relevant government agencies, councils and bus operators with the intention of minimising impacts to bus customers and operators. Mitigation measure TC22 also requires further consideration and active management of potential cumulative construction traffic impacts with the assistance of the Traffic and Transport Liaison Group.

Mitigation measures TC9 and TC10 commits Transport for NSW to extensive community awareness and information campaigns before any changes to public transport services are implemented. Similar arrangements would be undertaken as part of developing any temporary transport plans as stated in mitigation measure TC1.

### **5.9.5 Impacts during rail possessions including impacts of temporary transport arrangements**

#### ***Summary of issues raised***

A number of submissions raised concerns about the impacts of possessions and temporary transport arrangements. Issues raised included:

#### **Impacts of rail possessions**

##### **Impacts on commuters, including access impacts**

- the construction phase will make access to the city and surrounding suburbs extraordinarily difficult by public transport



- noted that inadequate provision has been made to transport passengers during the proposed shutdowns
- concerned about network changes and impacts on commuters during closures of the line during construction for up to 40 weeks and/or during 10 school holidays
- concerned about the disruption to the line and closure of stations for commuters in Tempe, Sydenham and St Peters
- requested more services to stop at Tempe during possessions to service Marrickville commuters

### **Capacity of the road network**

- roads are already at a standstill during peak periods and will not cope when rail commuters try to find alternative means during rail construction periods
- the logistics of adding to peak hour chaos on main and secondary roads will be very challenging and time consuming for commuters
- concerned about traffic impacts from additional buses and cars on key roads as a result of shuttle buses operating during rail shutdowns

### **Temporary transport arrangements**

#### **Commuter impacts due to use of replacement buses or increased use of other lines**

- there has been no traffic assessment undertaken on the impacts of the temporary transport strategy, including the increase in commuters who will divert to other lines such as the T8 Airport and South lines as a result
- operation of replacement buses during work days would result in significant impacts to travel times
- Bankstown line passengers will be forced to travel on already the crowded East Hills Line
- concerned about the inconvenience of having to take buses to the city on already congested roads for an indefinite period while the rail lines and station buildings are replaced
- questioned how people would travel to work and school in reasonable time with the estimated 101 extra buses per hour required resulting in congestion through Marrickville and Sydenham
- the proposed bus replacement service will be under catered, particularly during peaks, will not provide the degree of timetable reliability which commuters with deadlines require, and will be in no way commensurate to the efficiency and speed of the rail service

#### **Concerns regarding the use of buses**

- concerned that Warren Road, Marrickville is too narrow for any more buses
- concerned that up to 1,500 replacement buses a day would be forced onto local roads around stations, causing traffic gridlock
- questioned how an extra 1,050 buses will fit on the narrow streets of the inner west
- replacement buses would increase congestion, particularly along Canterbury Road
- replacement buses will have to compete with both the construction vehicles and spoil trucks from two major construction projects and much greater street traffic
- concerned about temporary shuttle buses proposed during construction due to the current low performance of shuttle buses

- concerned about where replacement buses would come from, as other buses are required for everyday routes.

## **Response**

### **Impacts of rail possessions**

#### **Impacts on commuters, including access impacts**

As discussed above, Transport for NSW has developed a design solution that has enabled construction traffic impacts to be minimised, when compared to the exhibited project.

However, as indicated in Section 2.7.2 of the preferred project description in Appendix B of this report some construction works would need to be undertaken during rail possession periods when trains are not operating, to ensure that works are carried out as efficiently as possible and that worker safety is maintained. Transport for NSW has, as part of construction planning undertaken to date, been focussed on minimising impacts to rail commuters and specifically, in terms of the need, number and duration of rail possessions required, including the final possession period. The preferred project requires possessions up to 12 weekends and a two week closure during Christmas school holiday periods each year (when patronage is lowest) and a final possession period of three to six months.

The assessment undertaken in the Environmental Impact Statement (Section 10.4.5 (Implications of the alternative transport arrangements) of the Environmental Impact Assessment) for the final possession and for changes to rail network operations would still apply to the preferred project. However, the impacts of the preferred project associated with the weekend and Christmas possessions would be reduced from those of the exhibited project, as discussed in the traffic, transport and access assessment in Appendix D and summarised in Chapter 15 of this report. The impacts on the road network and parking due to the upgrade works that would be undertaken during station closures would also be reduced when compared to the exhibited project.

Transport for NSW is currently in the early stages of engagement with a number of construction contractors with a view to reducing the impacts of station and rail line closures, including the final closure, on rail commuters and other transport users during construction of the preferred project, compared to the relevant levels identified in the traffic, transport and access assessments.

Alternative means of transporting passengers during the planned possession periods are the focus of the Temporary Transport Strategy which is discussed in more detail in Section 5.8.3 of this report. The rail replacement buses proposed by the temporary transport plans would only operate during proposed possession periods.

Mitigation measures TC9 and TC10 commits Transport for NSW to extensive community awareness and information campaigns before any changes to public transport services are implemented.

The impacts on other forms of public transport during rail possession periods are discussed in Section 5.9.4 of this report. At this stage of planning, no impacts to Tempe or St Peters stations are expected.

## **Capacity of the road network**

Modelling of the performance of the road network during construction of the preferred project, including the operation of rail replacement buses, was undertaken and the results are described in detail in Appendix D and summarised in Chapter 15 of this report. The assessment includes details of key intersection performance under future conditions (without construction traffic or rail replacement buses), future conditions (with construction traffic only) and future conditions (with construction traffic and rail replacement buses) during the Christmas possession periods proposed as part of the preferred project. The assessment also replicates the information provided in the Environmental Impact Statement where it is relevant to the preferred project, i.e. for weekday works during the final shutdown (considered to be the worst case scenario) and for construction works that would be undertaken without the need for rail replacement buses.

In the majority of cases, the analysis indicated that intersection performance would remain unchanged or acceptable following the addition of rail replacement buses. At some locations, the assessment identified the likelihood of delays. These locations included several intersections along Canterbury Road. However, the modelling indicates that while some intersections would operate over capacity (a level of service of F during the final shutdown period), the addition of rail replacement buses is not considered to result in a noticeable increase in capacity issues. This is largely due to the existing intersections already operating over capacity.

Transport for NSW is currently investigating options for replacement bus routes without the need to travel via Canterbury Road. This route would be confirmed upon the development of temporary transport plans.

Mitigation measure TC6 commits Transport for NSW to considering the need for intersection modifications that could improve intersection performance at locations most affected by construction vehicles, including rail replacement buses. This would be undertaken in consultation with Roads and Maritime Services, the Sydney Coordination Office and the relevant road authority. This measure would integrate with the construction traffic management plan required by mitigation measure TC8.

## **Temporary transport arrangements**

### **Commuter impacts due to use of buses or increased use of other lines**

As the preferred project would be constructed in stages over a number of years, each of the possession periods would be slightly different. The nature of construction activities would vary for each possession, requiring different temporary transport arrangements in response. Additionally, population growth along the T3 Bankstown Line corridor would result in gradually increasing demand, while the delivery of improvements in the road and transport networks may create changed opportunities for travel.

Acknowledging this, a temporary transport plan would be developed for each possession period, which would include a services plan defining the temporary rail and bus services that would operate, and a management plan describing how wider impacts on the transport network would be managed during the possession. The Temporary Transport Strategy (Appendix G to the Environmental Impact Statement) provides guidance on what each individual temporary transport plan needs to include, and the process by which it would be developed.

Each temporary transport plan would be developed to best meet customer needs and minimise adverse impacts to regular public transport services and the road network. The temporary transport plans would be developed prior to the relevant possession and would be informed by stakeholder and community feedback. Each successive temporary transport plan would improve on the previous plan, based on further understanding of customer needs and ongoing development of alternatives. The development of temporary transport plans, which includes consideration of the number of replacement buses required, would acknowledge that not all customers would choose to catch replacement buses, with a number either driving to stations on alternative lines, or catching local buses instead.

Mitigation measure TC1 confirms the commitment to developing temporary transport plans for each possession period. This measure requires the plans to consider, as a minimum:

- a review of the road network constraints along any proposed rail replacement bus route
- further traffic analysis of key intersections used by rail replacement buses
- potential impacts to local road networks affected by rail passengers diverting to cars to reach their destinations
- the design of temporary facilities at bus stop locations in consultation with the relevant road authority
- ensure adequate bus numbers are provided to meet demand
- expected changes to parking demand at other stations, displacement of existing parking, and any upgrades that may be required.

### **Concerns regarding the use of buses**

The potential impacts of operating rail replacement buses during construction of the preferred project were assessed by Technical Paper 1 (Traffic, transport and access assessment) in the Environmental Impact Statement and continue to apply where conditions are still relevant to the preferred project. The traffic, transport and access assessment provided in Appendix D of this report applies to conditions that have changed due preferred project. The results are summarised in Chapter 10 (Construction traffic, transport and access) of the Environmental Impact Statement (where relevant to the preferred project) and in Section 15.2.1 of this report.

Modelling conducted for the Environmental Impact Statement and this report assumed between 15 and 55 bus trips per hour on the identified routes based on the refined baseline temporary transport plan.

Of relevance to the preferred project the assessment provided in Technical Paper 1 (Traffic, transport and access assessment) and summarised in Section 10.4.5 (Implications of the alternative transport arrangements) of the Environmental Impact Statement included:

- changes to rail network operations – services and timetabling
- changes to parking or existing bus stops – to accommodate the alternative transport arrangements, except during station closures
- other issues.

The assessment provided in Appendix D and summarised in Section 15.2.1 of this report includes:

- road network performance due to construction of the preferred project and the operation of rail replacement buses during possessions
- road network performance due to station closures, particularly diversion of traffic to nearby rail stations and the demand for existing services at those stations

- changes to parking due to the station closures.

As part of developing each temporary transport plan, consideration of these and other factors, including ensuring any existing problematic areas are not further impacted, would be undertaken to minimise potential impacts on customer journeys and on the road network.

Mitigation measures TC1 and TC2 commits Transport for NSW to development of detailed temporary transport plans including review of traffic impacts at key intersections as well as any temporary facilities or changes to bus stop locations required in consultation with relevant agencies and bus operators.

Additionally, Transport for NSW has, as part of construction planning undertaken to date, already focussed on minimising impacts to commuters and the road network. For example, planning aims to reduce the number of buses that would travel on Warren Road, and potentially only have them travel along this road in one direction during peak periods. Transport for NSW would continue to consult with Roads and Maritime Services, the Sydney Coordination Office, and the relevant road authority to reduce traffic impacts due to the addition of replacement buses. Impacts to the road network due to the addition of replacement buses are also considered above, under capacity of the road network.

As noted above, not all customers would choose to catch replacement buses. A number of customers who currently drive to stations along the T3 Bankstown Line and park to catch trains may potentially choose instead to drive to stations along alternative lines, or catch local buses to their destinations. Given this, the temporary transport plans would consider the need for enhanced local bus operations and additional rail services on the T2 Inner West & Leppington Line and the T8 Airport Line as required, to reduce travel time impacts on customers, and reduce road network congestion.

As part of the development of each temporary transport plan, Transport for NSW would consider the number of buses required. This would include ensuring that buses available for use are suitable to move the volumes required. Each temporary transport plan would consider the need for additional infrastructure such as bus stops and shelters. The need to provide staff at stops would also be considered, to ensure that getting on and off buses is managed in an appropriate way, particularly during busy periods. Consultation would also be undertaken with Roads and Maritime Services, and the Inner West and Canterbury-Bankstown councils in regards to the proposed routes.

Possession periods have largely been selected to ensure that train patronage is lower, thus minimising the number of buses required. Scheduling possession periods during school holidays would also assist with bus availability, as buses used for school services would be available for use as rail replacement buses.

### **5.9.6 Parking impacts**

#### ***Summary of issues raised***

Some submissions raised concerns about impacts to parking during construction. Issues raised included:

#### **Impacts on public/street parking during construction**

- concerned about the loss of parking at stations and not all spaces lost planning to be restored following construction
- concerned about impacts to shopping centre users due to loss of parking near stations
- concerned about parking restrictions during construction and possession periods

- the residential parking near the station is insufficient at best and to remove five spaces from Duntroon Street, Hurlstone Park will impact greatly on the houses that do not have off street parking and whom are presently affected by commuters daily
- concerned about impacts to parking on River Street, Earlwood during construction as there are many elderly people who require parking close to properties

#### **Impacts of worker parking**

- requested that council be provided funds to hire additional rangers to monitor construction worker parking and set up residential parking schemes
- concerned about the loss of 27 commuter parking spaces at Dulwich Hill and construction workers using up parking spaces during construction.

#### **Response**

##### **Impacts on public/street parking during construction**

Changes to existing on and off-street parking during construction of the preferred project are outlined in Table 10.38 (Indicative on and off-street car parking changes during construction) of the Environmental Impact Statement. Some additional changes resulting from rail replacement buses are outlined in Table 10.39 (Indicative car parking changes at other stations) of the Environmental Impact Statement. The assessment of the impacts of these changes are provided in Section 10.4.3 (Summary of assessment results) of the Environmental Impact Statement. The potential impacts on parking due to station closures required as part of the preferred project are discussed in Section 4.17 of Appendix D of this report.

In most cases, the assessment concludes that losses to parking would be short term (for those additional spaces unavailable only during construction possessions), and that there is generally sufficient parking capacity within 400 metres of each station to absorb the temporary loss of spaces.

Traffic impacts associated with construction of the proposed traction power supply cable, including along River Street, were assessed in Section 10.1.3 (Impacts of traction power supply route) of the Environmental Impact Statement. As noted in that section, any impacts are expected to be short-term, as the works would move progressively along the alignment. Alternative access arrangements would be made where required, in consultation with property owners/occupants, so that the impacts to adjacent property owners are minimised.

Mitigation measure TC20 commits to consultation with owners and occupants of affected properties, to confirm their access requirements and to discuss alternative arrangements. This would include consideration of parking requirements if necessary.

Transport for NSW would also work with local councils during detailed design and construction planning to reduce the identified impacts on parking and other kerbside use in local streets wherever possible, including consideration of provision of alternative parking spaces wherever feasible and reasonable.

Mitigation measures TC4 and TC5 commit to further reviewing the opportunities to reduce the temporary loss of parking during detailed design and construction planning.

### Impacts of worker parking

Parking for workers and construction plant are addressed in Section 2.8 of the preferred project description in Appendix B of this report. Construction compounds would include facilities for plant and vehicle parking and generally be on land owned by RailCorp or another government body. Section 2.8.6 outlines the opportunity for worker parking at each site which would be reviewed further during detailed construction planning and particularly, opportunities for larger sites to accommodate additional parking for workers.

Mitigation measure TC12 commits to considering the impacts of worker parking at construction compounds and work sites, and mitigation measure TC15 commits to developing a worker parking strategy to encourage workers to use public transport, car share and/ or park in designated areas.

### 5.9.7 Bridge works

#### Summary of issues raised

Some submissions raised concerns about the impact of bridge works during construction. Issues raised included:

#### Traffic impacts during bridge works

- due to the difficult nature of the approaches to both sides of the Albermarle Street overbridge, traffic calming measures may be required
- concerns about impacts associated with the works in the vicinity of Challis Avenue due to the proposed Albermarle Street overbridge
- the bridges proposed to be disrupted are already congested and any lane closures will result in traffic chaos, particularly during the morning and evening peak periods
- concerned about long-term disruption to traffic as railway bridges are rebuilt, and the lack of assessment about the associated traffic impacts
- concerned about traffic impacts in Marrickville as a result of the closures/changes to bridges in this area, including the Illawarra Road railway bridge, and the Charlotte Street underpass
- the proposed bridge upgrades will result in additional traffic impacts at other bridge locations adding to the already congested traffic in these areas.

#### Parking and other impacts due to bridge works

One submission raised a concern regarding the assessment of bridge works not including impacts on parking for residents near stations, and the large numbers of workers that would require parking.

Another submission noted that when the overbridge between South and North Terrace in Bankstown was upgraded around five years ago, it had a significant impact on their business.

### Response

#### Traffic impacts during bridge works

As discussed in Chapter 9 of this report, the bridge works for the preferred project would comprise the provision of enhanced protection to existing bridge piers, installation of anti-throw screens, vertical protection screens, vehicle collision barriers and general maintenance work.



These works can occur without long-term full bridge closures, and would be limited to some lane restrictions at nights and on weekends. A traffic and transport and access assessment has been completed for the preferred project and is provided in Appendix D and summarised in Chapters 12 to 15 of this report. This assessment includes a qualitative assessment of the traffic impacts from construction of the preferred project due to the proposed bridge works. The assessment concludes that due to there not being a need for vehicle diversions there would be a reduction in traffic impacts for the preferred project compared with those of the exhibited project.

Mitigation measure TC3 commits to assessing the impacts on the surrounding road network of lane closures resulting from bridge works, and developing management measures developed, in consultation with Roads and Maritime Services, the Inner West and Canterbury-Bankstown councils, and the Sydney Coordination Office.

Intersection performance would be managed in accordance with mitigation measures TC6.

The need for physical changes to road geometry, including as a result of rail replacement buses would be identified in the construction traffic management plan developed in accordance with mitigation measure TC8. It is noted that the need for and installation of any traffic calming measures, as distinct from measures to facilitate construction, are matters for Road and Maritime Services or the road owner.

### **Parking and other impacts due to bridge works**

Section 18.3.2 (Construction) and Table 18.6 (Potential impacts as a result of bridge works) of the Environmental Impact Statement identify the potential impacts as a result of bridge works and changes to parking in areas near construction works for the exhibited project.

As discussed above the bridge works that are part of the preferred project can occur without long-term full bridge closures. Therefore, the impacts to parking due to bridge works associated with the preferred project are unlikely. Impacts due to loss of parking are discussed in Section 5.9.6 of this report.

With regard to the potential impacts on businesses near construction sites, mitigation measures TC8 and TC13 would be implemented to minimise the potential impacts of the movement of construction vehicles. TC8 commits to preparing a construction traffic management plan and implementing it during construction. TC13 commits to managing construction vehicles (including contractor staff vehicles) to:

- minimise parking or queuing on public roads
- minimise use of residential streets to gain access to work sites or compounds
- minimise vehicle movements near schools, particularly during school start and finish times.

Further information in response to issues raised about impacts to businesses is provided in Section 5.17 of this report.

### **5.9.8 Emergency services**

#### ***Summary of issues raised***

One submission raised an issue concerning ambulance entry at Bankstown Station if parking spaces are lost.



## **Response**

Access for emergency services vehicles to stations and surrounding properties would be provided at all times. Emergency service providers (i.e. police and ambulance) would be consulted throughout construction to ensure they are aware of changes to access, including lane, bridge or road closures, and changes to station or rail corridor access as outlined in mitigation measure TC21.

## **5.10 Operational traffic, transport and access**

This section provides responses to issues raised about potential impacts to traffic, transport and access during operation.

### **5.10.1 Active transport impacts**

#### **Summary of issues raised**

Some submissions raised concerns about impacts on pedestrian and bicycle facilities during operation. Issues raised included:

- encouraging people to walk or ride bikes is ridiculous when distances are unmanageable and hilly, there are minimum safe bike lanes and the environment along main roads are poor for pedestrians
- it is important that the pathway beside the railway line up to Canterbury Road remains open as it is used every day.

## **Response**

The preferred project would include development of a Walking and Cycling strategy to encourage active transport to the station precincts. Transport for NSW would work with local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utilities to identify the best active transport routes in each suburb - a key consideration of which would be user safety. Active transport routes may include pedestrian footpath upgrades, separated cycleways, shared footpaths and designated pedestrian and cyclist road crossings.

No changes to existing pathways, including the path adjacent to the rail line along to Canterbury Road, are proposed as part of the preferred project.

### **5.10.2 Servicing changes and impacts on travel times**

#### **Summary of issues raised**

A number of submissions raised concerns about the impacts of the project on station servicing arrangements, journey characteristics, and travel times during operation. Issues raised included:

#### **Servicing changes**

##### **Changes to stations east of Sydenham**

- concerned with access changes to the City Circle and the inefficiency of changing trains
- loss of direct services to the City Circle has not been adequately assessed
- questioned which train line will incorporate St Peters and Erskineville stations
- concerned that a number of stations will be removed from the existing rail service and be replaced by less stations and that important city stations will be bypassed

- Waterloo will be in the loop without creating any additional stations in the 5 kilometre deviation through some of the most densely populated and busy road networks in Sydney

#### **Impacts due to increased interchanges**

- concerned with having to change two trains to commute from Yagoona to St James Station, and three trains to get to Bondi Junction compared to current situation
- the loss of direct connections to residential/ entertainment/commercial/workplace areas of the inner west such as Newtown, Erskineville, Tempe, Redfern, Eveleigh and St Peters is a constitutes a massive loss of amenity for Sydney's South-West communities
- removing Redfern ensures that students wishing to attend Sydney University from the south-west have a longer commute
- the use of the Bankstown Line as an alternative through route for trains to western Sydney will be no longer available - direct services will not be available which causes inconvenience to passengers

#### **Impacts at other (non-metro) stations on the T3 Bankstown Line**

- changing trains will add to the congestion at city stations
- impacts at nine non-converted stations on the Bankstown Line
- concerned that the Illawarra Line will be jammed at Sydenham Station as the metro lines transition from underground to aboveground services
- the level of service (trains per hour) on the Liverpool and Lidcombe lines must be maintained during operation of the proposal

#### **Impacts to travel times**

- concerned about additional travel time into or from the CBD or other inner city destinations (including Redfern Station for university/TAFE students, Erskineville and St Peters) due to additional interchanges
- concerned about additional travel times for those travelling from the west of Bankstown, including Yagoona, Liverpool, Berala, and Regents Park
- the stated journey time saving of one hour a week, or four minutes a journey from Marrickville, is nothing.

### **Response**

#### **Servicing changes**

##### **Changes to stations east of Sydenham**

The public transport benefits of the exhibited project are outlined in Section 11.4.2 (Traffic and transport, public transport, operational benefits) of the Environmental Impact Statement. These include supporting rail network growth; increased accessibility and trip diversity; reducing network complexity and improving reliability; increasing network capacity; improved service legibility; and travel time savings. These benefits would be retained through operation of the preferred project. This section also outlines the changes to station servicing arrangements that would be required.

Between Sydenham and Chatswood, Sydney Metro trains would service the new Waterloo Station, Central Station (via new platforms) and the following five new stations constructed as part of the Chatswood to Sydenham project:

- Pitt Street
- Martin Place

- Barangaroo
- Victoria Cross (in North Sydney)
- Crows Nest.

To operate the preferred project as part of the Sydney Metro network, operations would be segregated from the existing Sydney Trains network. However, connections between Sydney Trains and Sydney Metro services would be available at key nodes – being Central, Sydenham, Martin Place and Bankstown stations.

Section 11.4.2 (Traffic and transport, public transport, operational benefits) of the Environmental Impact Statement detailed the station servicing arrangements for stations east of Sydenham. As described in the Environmental Impact Statement, St Peters, Erskineville and Redfern stations and stations on the City Circle would continue to be serviced by Sydney Trains.

It is acknowledged that the introduction of Sydney Metro would mean that some customers may need to change services to access their destinations within the CBD, and may need to change their travel arrangements to use the new Sydney Metro stations, or walk to existing Sydney Trains stations. However, the integration of Sydney Metro services with Sydney Trains services at a number of stations (at Sydenham, Central and Martin Place stations) would allow for quick transfers between services. In some cases, as a result of the increased speeds of metro services, these trips (including transfers) would be of a similar or shorter duration. Additionally, as described in Section 5.7.2 of this report, Sydney Metro City & Southwest's CBD stations have been designed and located to minimise the time taken to transfer between services. For example, the construction of Central Walk at Central Station will provide a link between Sydney Metro services and other public transport services at Central Station, including the suburban rail services and light rail on Chalmers Street.

### **Impacts due to increased interchanges**

Once operational, the preferred project would provide more trains per hour in peak periods, reducing the waiting time for customers, and significantly improving the capacity and reliability of the rail network. Sydney Metro would reduce travel times and provide customers better access to job opportunities and housing choices across Sydney, with fast, more frequent, and direct connections.

The other significant benefit of the preferred project is the accessibility improvements that would be provided in the areas surrounding, and within stations, which would provide safe and accessible public transport for all users. The station and train carriage design would also cater for vision and mobility impaired customers.

The preferred project would also benefit bus customers by enhancing connections between bus and rail services, and providing bus stops as close as practicable and with accessible paths to station entries.

Operation of the preferred project, as part of the broader Sydney Metro, would generate significant local and regional benefits and opportunities, as a result of the enhanced capacity and frequency of transport services, and improved access to the Sydney CBD and the wider transport network. During operation, community access and connectivity are expected to improve through the provision of new, efficient, high capacity public transport and accessible station designs.

The preferred project would also deliver wider economic benefits by facilitating access to education and employment opportunities, increased connectivity, land development opportunities, and business logistics improvements, particularly for knowledge-based businesses. Impacts to businesses during operation would largely be positive at the local and regional level, as a result of the enhanced capacity and frequency of transport services.

Transport for NSW is committed to providing the best possible services for customers and would continue to monitor patronage and train loading data to see whether further improvements can be made for the comfort of customers across the network.

### **Impacts at other (non-metro) stations on the T3 Bankstown Line**

There would be no direct operational changes to stations west of Bankstown as a result of Sydney Metro operations, including to the level of service. For stations to the west and north of Bankstown via the T3 Liverpool or T3 Lidcombe lines, passengers headed to the CBD would have a choice of rail transport options. Customers wishing to access Sydney Metro services would be able to change at Bankstown Station. The operation of Sydney Metro would provide increased capacity on the City Circle and the opportunity for more services on the T1 North Shore, Northern & Western Line, the T2 Inner West & Leppington Line, the T4 Eastern Suburbs & Illawarra Line, and the T8 Airport & South Line, which converge at Redfern and Central.

For customers wishing to travel via Sydney Trains to other destinations they could change at Lidcombe Station (for travel via the T1 North Shore, Northern & Western Line or the T2 Inner West & Leppington Line) or at Cabramatta Station (for travel via the T2 Inner West & Leppington Line or the T5 Cumberland Line).

At Sydenham, the rail network arrangement provides for three separate rail routes into the city – via Waterloo, Pitt Street and Martin Place stations using Sydney Metro, or via the existing rail lines to Redfern, Central and the City Circle stations using Sydney Trains (two routes – via the T2 Inner West & Leppington Line or the T4 Eastern Suburbs & Illawarra Line). This would minimise the potential for overcrowding at this station. Potential overcrowding at city stations due to additional interchanges is considered further in Section 5.10.2 of this report.

### **Impacts to travel times**

Section 5.3.5 (Travel time savings) of the Environmental Impact Statement provided estimates of the indicative travel time savings to the CBD and a major educational and medical facilities in Macquarie Park before and after the commencement of Sydney Metro. These examples took into account existing interchange and waiting times for Sydney Trains services as necessary. These examples showed that, even in the absence of other transport changes, the preferred project would make a major difference to travel times across the transport network, although it is acknowledged that the origin and destination of each trip on the network could result in substantial differences to these examples.

Section 2.4 of this report provides updated estimates of travel time savings by using Sydney Metro based on the train services and timetabling changes implemented by the NSW Government in November 2017. The changes to travel time savings are consistent with those presented in the Environmental Impact Statement albeit slightly reduced in some instances.

With services up to every four minutes in peak hours, Sydney Metro services would be faster and more frequent than the existing Sydney Trains services from the CBD and Bankstown.

### **5.10.3 Other public transport impacts**

#### ***Summary of issues raised***

The following issues were raised in relation to other forms of public transport:

- requests an increase in the frequency of bus services for the 428/L28 and 487 bus routes, and an extension of the 428/L28 service to Campsie Station
- it would be good to see a plan assisting with co-ordinated bus/rail/light rail timetables.

#### ***Response***

The preferred project has been designed to provide efficient interchange between each Sydney Metro station and other forms of public transport. Chapter 8 (Project description – operation) of the Environmental Impact Statement provided information regarding the proposed public transport interchange arrangements at each station.

The station access hierarchy, adopted during the development of the preferred project design, prioritises walking, cycling and interchange with other public transport modes to enhance the attractiveness of services.

The preferred project would not involve changes to existing bus service routes or stops.

The preferred project is being planned in conjunction with other transport initiatives as a key component of an integrated public transport network, which includes the bus and light rail network. By providing passengers with improved ability to make mode changes (such as from bus/light rail to rail), the preferred project would facilitate a significant increase to the passenger catchment of the rail line, with benefits to all transport modes. The preferred project would provide benefits to bus/light rail customers by:

- optimising connections between bus and rail services where possible, including provision of upgraded bus stops
- improving the interchange with light rail services.

The proposed changes to bus routes and services at each station due to operation of the preferred project are consistent with those of the exhibited project which were considered in Section 11.4 (Impact assessment) of the Environmental Impact Statement.

### **5.10.4 Parking impacts**

#### ***Summary of issues raised***

Some submissions raised concerns regarding the permanent impacts to parking. Issues raised included:

- there should be no car parking in the shared zone area on Station Street near Marrickville Station – the accessible car spaces can be moved from Schwebel Street
- concerned about loss of car park at the southern end of Belmore Station and the impact of this on commuters and users of the Belmore shopping centre, as well as the permanent loss of car parking near other stations
- objects to parking being taken away from residents in Hurlstone Park, as none of the houses have off street parking
- noted that the loss of parking at Dulwich Hill is unacceptable and that the current car park along the rail line and Ewart Street should be extended towards Ness Street underpass

- car parking policies for places of worship that are in close proximity to public transport should be considered.

### **Response**

The preferred project retains the aim of achieving no net loss of dedicated commuter parking spaces located on NSW Government owned land between Marrickville and Bankstown stations. This commitment applies to parking that is not currently time restricted, and is formally line marked and/or signposted as a dedicated commuter car park zone or area.

An assessment of operational impacts on parking due to the preferred project is provided in Appendix D and summarised in Section 12.2.1 of this report.

The assessment notes that the impacts on parking due to operation of the preferred project would be reduced when compared to the exhibited project.

Transport for NSW would work with local councils to minimise adverse impacts from adjustments to parking and other kerbside uses in local streets. This would include for example, relocation of spaces to other kerbside areas or the consideration of kiss and ride facilities that are only available during specified periods of the day such as the peak periods. In this situation, spaces would potentially be available at other times for short-term parking (e.g. outside of the peak periods). Such an arrangement would minimise the loss of spaces for the majority of the day, but would ensure that kiss and ride facilities are provided during periods when they are most likely to be needed. This commitment is confirmed by mitigation measure TO1, which provides for further consideration of car parking management at stations in consultation with relevant stakeholders. This consultation would be undertaken during detailed design to inform the final station layouts.

In addition, as per mitigation measure TO5, Transport for NSW commits to monitoring the demand for commuter car parking spaces between Bankstown and Marrickville stations, and continuing to consider opportunities for, and the implications of, meeting this demand.

Transport for NSW is unable to make car parking policies which apply to areas outside of rail corridor land. Local car parking issues and policies are matters for councils.

## **5.10.5 Other issues**

### **Summary of issues raised**

Other issues raised about the impacts of the project on traffic and transport during operation included:

- widening a section of Albermarle Road, Marrickville will encourage more traffic through the area - traffic calming needs to be addressed
- concerned that traffic congestion at Wardell Road near Dulwich Hill Station is not addressed - the pedestrian crossing at the station and bus stop compounds traffic congestion during morning and evening peaks
- concerned that a pedestrian crossing and footpath widening at Duntroon Street, Hurlstone Park will add to existing issues for Sydney buses and heavy vehicles, showing that pedestrian movements and vehicle movements were not considered.

## Response

The need for, and installation of, traffic calming measures, as distinct from measures to facilitate construction, are matters for Road and Maritime Services or council as the road owner. However, safety is a fundamental consideration in the design of all elements of the project. Therefore, where changes to roads are part of the project, Safety-in-Design principles would be adopted (along with other measures) as an integral component of the detailed design of stations and surrounding precincts. Where safety issues are identified, or remain unresolved, safety reviews, including road safety audits to consider the interactions between all road users, would be undertaken and necessary corrective actions taken.

Given the retention of existing infrastructure along the rail corridor, the detailed design of the preferred project would be informed by the document *Around the Tracks: urban design for heavy and light rail* (Transport for NSW, 2016). With regards to the interaction between stations and pedestrians such as at Dulwich Hill Station, design principle 3 (Provide connectivity and permeability for pedestrians) from *Around the Tracks: urban design for heavy and light rail* requires the design to:

*'Allow for movement through the site that is unrestricted and legible. The design should guide users through the building and spaces in a clear, legible manner without causing any confusion or indecision,' and*

*'Design paths to link to pedestrian crossings and other footpaths for optimal safety. Locate paths with good passive surveillance and incorporate adequate light levels.'*

Transport for NSW would develop an Interchange Access Plan for each station to inform the final design of transport and access facilities and services. The plans would include consideration of footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives at and around each station.

The preferred project has been designed to provide efficient interchange between each Sydney Metro station and various other forms of transport. Section 1.1.1 of the preferred project description in Appendix B of this report provides information regarding the proposed interchange arrangements at each station. Potential conflicts between different forms and modes of transport would be reviewed during detailed design and necessary mitigation measures implemented as required.

The preferred project includes the upgrade of existing pedestrian pathways surrounding the station, including from Ewart Lane to Wardell Road and from Keith Lane to Bedford Crescent which would improve pedestrian amenity around the station.

The installation of a pedestrian crossing and widening of the footpath on Duntroon Street near Hurlstone Park Station does not form part of the preferred project.

## 5.11 Construction noise and vibration

This section provides responses to issues raised about the potential for noise and vibration impacts during construction.

### 5.11.1 Assessment method

#### Summary of issues raised

A couple of submissions raised issues about the noise and vibration assessment, including:

- what noise modelling was undertaken to predict the impacts of the project within a two kilometres radius



- concerned about property being incorrectly classified as a commercial property, and as a result, the associated noise and vibration impacts were not appropriately considered.

### **Response**

The assessment of the construction noise and vibration impacts of the exhibited project was provided in Technical Paper 2 (Noise and vibration assessment), and the results were summarised in Chapter 12 (Construction noise and vibration) of the Environmental Impact Statement. Section 12.1.2 (Methodology) of the Environmental Impact Statement provided an overview of the modelling undertaken as part of the exhibited project.

A noise and vibration impact assessment has been undertaken for the preferred project and is provided in Appendix E and summarised in Chapters 12 to 15 of this report. This assessment considers all noise and vibration impacts associated with construction of the preferred project, with the exception of impacts associated with the works at Bankstown Station, which are as per those presented in the Environmental Impact Statement.

Noise modelling for the preferred project and exhibited project (in relation to Bankstown Station) was undertaken in accordance with the *Interim Construction Noise Guideline* (DECC, 2009). Sensitive receivers were identified, and potential construction noise and vibration impacts were modelled, for an area of about 300 metres on each side of the rail corridor. This is consistent with contemporary practice and is considered to be sufficient, as beyond 300 metres, impacts generally reduce to a level where predicted noise levels are at or below relevant criteria. SoundPLAN computer modelling software was used to predict the airborne noise levels. Further detail is provided in Section 3.8 (Overview of construction noise modelling) of Technical Paper 2 (Noise and vibration assessment) of the Environmental Impact Statement.

Following exhibition of the Environmental Impact Statement, consultation with landowners in the vicinity of the project area identified that two properties were incorrectly classified in the noise and vibration assessment undertaken for the exhibited project, as discussed in Section 2.4.10 of this report. The classification of sensitive receivers for the Environmental Impact Statement was predominately undertaken based on a desktop review of the study area, which is consistent with the approach undertaken for major linear infrastructure projects as a result of the large number of receivers that need to be modelled. In areas with a diverse mix of land uses and building types, it is possible that some properties can be incorrectly classified as to use type at this initial stage of the assessment process (for example, a shop building that is used as a residence).

The noise and vibration assessment for the preferred project has been undertaken using the correct classification of these receivers.

It is noted that the noise assessment undertaken for the preferred project is only the first stage of the assessment. Additional detailed, location specific assessments would be undertaken as design and construction planning progresses. This process includes reclassification of receivers where required.

## **5.11.2 Construction noise impact management**

### **Summary of issues raised**

A number of submissions raised concerns about noise impacts during construction. Issues raised included:

### **Construction noise impacts and management**

- construction would result in intolerable levels of noise

- concerned that properties (including schools, child care centres, police stations, churches, homes, and businesses) close to the railway line would experience high levels of construction noise
- concerned about noise impacts in Dulwich Hill, including 783 properties that would experience noise from earthworks exceeding the criteria for 30 weeks
- concerned about noise impacts at the child care centre in Garnet Street, Dulwich Hill
- concerned about noise from the construction compound near property
- requested that noise from constructing the substation and track work at Randall Street, Marrickville is limited
- questioned how many houses will be exposed to noise, and noted that this is a particular concern where houses are located adjacent to the railway
- concerned that those living along Warburton Street, Marrickville will be highly noise affected – particularly as a result of station works and bridge demolition and construction works

#### **Health effects of excessive noise levels**

- the hearing of people who live within 200 metres of work sites will be put at risk and their health affected
- south Dulwich Hill is already affected by noise from the airport and the heavy rail system, and night time construction will exacerbate this situation for residents, leading to health concerns
- concerned about noise impacts (and resultant health effects) due to proximity to the works area, with works at all hours of the day and weekends and for prolonged periods.

#### **Response**

##### **Construction noise impacts and management**

A noise and vibration impact assessment has been undertaken for the preferred project and is provided in Appendix E and summarised in Chapters 12 to 15 of this report.

A number of measures of noise are used to describe the potential impacts in this assessment, including prediction of the highest noise levels at the most exposed receiver during different times of the day, and the number of premises which trigger sleep disturbance criteria. The relevant construction noise criteria for the preferred project are as per those for the exhibited project which were provided in Section 12.2 (Construction noise and vibration criteria) of the Environmental Impact Statement. These vary according to the type of receiver and the time period.

The construction noise assessment included identification and modelling at all sensitive receivers within a 600 metre wide area (about 300 metres either side) of the rail corridor. This included residences, businesses, open space and other sensitive receivers, such as schools, child care facilities, hospitals, and churches. Figure 15.1 of this report shows the different types of receivers and their location considered in the assessment.

Section 12.4.1 (Construction activities and use of noise intensive plant) of the Environmental Impact Statement describes the approach to considering noise impacts from different construction activities. This approach is still applicable to the preferred project, however Section 2.1 in Appendix E describes the likely duration of each activity, and the relative duration of noise intensive activities during construction of the preferred project. It also shows that use of a ballast tamper during track works, which typically generates the highest noise levels, would be used for a much shorter period than the overall duration of construction. On this basis, the highest predicted noise levels are unlikely to be experienced for the majority of the construction activity duration.

Section 15.2.2 of this report provides a summary of the predicted noise levels and concludes that exceedances of the noise management levels are likely during the daytime, evening and night-time periods at some residential (and other) receivers. It also concludes that the highest noise levels are predicted to occur at Marrickville, Dulwich Hill, Hurlstone Park and Canterbury, as a result of the close proximity of receivers to the rail corridor in these locations.

Section 2.5 of the noise and vibration assessment in Appendix E of this report provides the assessment results for each noise catchment area along the project area, with the exception of Bankstown (which remains unchanged from the Environmental Impact Statement). Various tables for each station precinct are provided to show the approximate number and location of predicted exceedances of noise management levels. Construction compounds are unlikely to be a source of high noise levels, as they would generally include site offices, worker amenities, workshops, material storage, lay down areas, and vehicle parking areas.

The noise and vibration impact assessment for the preferred project concludes that noise levels during construction would be lower than those identified in the Environmental Impact Statement, and that fewer receivers would be highly noise affected. This is largely due to the number of worksites being reduced and less noise intensive activities required to construct the preferred project, compared to the exhibited project.

The Construction Environmental Management Framework and the Construction Noise and Vibration Strategy would be implemented to manage construction noise and vibration impacts during construction. The Construction Noise and Vibration Strategy defines how construction noise and vibration would be managed for the Sydney Metro City & Southwest project as a whole, and includes lessons learned from other similar infrastructure projects as well as other stages of Sydney Metro. The strategy provides guidance for managing construction noise and vibration impacts in accordance with the *Interim Construction Noise Guideline* (DECC, 2009), to provide a consistent approach to management and mitigation across all Sydney Metro projects.

The strategy identifies the requirements and methodology to develop construction noise impact statements, as required by mitigation measure NVC1. These would be prepared prior to specific construction activities, based on a more detailed understanding of construction methods, including the size and type of construction equipment. This process would provide further detail (based on additional noise modelling) regarding the actual noise levels that would be experienced by individual receivers, to guide the location specific approach to implementing noise mitigation.

The Construction Noise and Vibration Strategy also provides a list of the standard noise mitigation measures that would be implemented when exceedances of the noise management levels are predicted. Implementation of these measures is also required by mitigation measure NVC5.

Mitigation measures NVC2, NVC5 to NVC11 and NVC13 to NVC16 also provide commitments in relation to the processes and procedures that would be implemented during construction to manage noise.

With respect to other sensitive receivers, for construction adjacent to schools, medical facilities and child care centres, mitigation measure NVC7 commits to scheduling particularly noisy activities outside normal working hours, where reasonable and feasible.

### **Health effects of excessive noise levels**

The assessment of noise and vibration assessment undertaken for construction of the preferred project (provided in Appendix E and summarised in Section 15.2.2 of this report) recognises that the preferred project would result in some exceedances of the noise management levels. However, these exceedances would be significantly less for the preferred project than those identified for the exhibited project.

As noted above, the Construction Environmental Management Framework, the Construction Noise and Vibration Strategy, and mitigation measures NVC2, NVC5 to NVC11 and NVC13 to would be implemented to minimise and manage noise impacts during construction.

The strategy acknowledges that due to the highly variable nature of construction activities and the likelihood of work outside standard construction hours, exceedances of the construction noise and vibration management levels are likely to occur. Therefore, a number of additional mitigation measures – primarily aimed at pro-active engagement with affected sensitive receivers – would also be implemented as required.

The Construction Noise and Vibration Strategy acknowledges that the sensitivity of receivers can be greater for works conducted outside recommended standard construction working hours, and it provides a staged approach to mitigation depending on the level of impact predicted. The management of noise impacts outside recommended standard hours would be further strengthened by implementing the proposed out of hours work strategy (described in Section 2.7.4 of the preferred project description in Appendix B of this report), as required by new mitigation measure NVC16. The Out of Hours Work Strategy would be prepared, in consultation with the Environment Protection Authority, to guide the assessment, management, and approval of works outside recommended standard hours.

### **5.11.3 Out-of-hours noise**

#### ***Summary of issues raised***

A number of submissions raised concerns related to the potential for noise impacts during out of hours work. Issues raised included:

#### **Out of hours work**

- concern about out of hours work
- concern about impacts associated with out of hours works on receivers near Hurlstone Park and Dulwich Hill stations
- requests that no works be undertaken after 10pm or before 7am, or after hours on weekends
- noise levels are unacceptable as they would occur at night in a dense residential area
- rock breaking and ballast tamping until 10pm or sometimes all night is not acceptable

#### **Sleep disturbance**

- concerned about impacts to 1,221 properties at Dulwich Hill exposed to noise at a level which exceeds the sleep disturbance criteria
- Dulwich Hill is the worst affected suburb in the corridor for sleep disturbance
- concerned that noisy and intensive 24/7 construction will be carried out while the line is shut down, and that residents are at risk of sleep disturbance
- over 7,000 residents along the corridor will be at risk of sleep disturbance impacts.

## Response

### Out of hours works

Where possible, construction of the project is proposed to be undertaken during the recommended standard hours defined by the *Interim Construction Noise Guideline* (DECC, 2009). However due to the location of the works within an operational rail corridor, and the need for certain station and corridor works to be undertaken, there is a requirement for some works to be undertaken during periods when trains are not operating, including during the evening and night-time, to ensure the safety of workers. An Out of Hours Work Strategy would be prepared, in consultation with the Environment Protection Authority, to guide the assessment, management, and approval of works outside recommended standard hours.

To further reduce impacts on the community as a result of works during the night-time, certain noise intensive plant that has the potential to generate the highest noise levels, including ballast tamping, would not be used. The exceptions to this are:

- during a standard weekend rail possession or shut down
- a requirement of a road authority, emergency services, or Sydney Coordination Office.

Wherever possible, the use of noise intensive equipment would be planned to occur outside of the evening and night-time periods.

Appendix E of this report includes an assessment of the potential impacts of out of hours works relating to possession periods for the preferred project. Section 2.7 of Appendix E of this report and Section 3.16 (Utilities) of Technical Paper 2 (Noise and vibration assessment) of the Environmental Impact Statement also provide an assessment of the out of hours works that may occur outside possession periods (i.e. works to utilities that could affect the road network, and night-time vehicle movements). No assessment of emergency works was provided since, given their nature, these are currently unknown.

As outlined in Section 2.7.4 of the preferred project description in Appendix B of this report, an Out of Hours Work Strategy would be developed prior to construction commencing. The purpose of the strategy would be to ensure that out of hours works are managed effectively and that noise impacts to the community are minimised.

This commitment is confirmed by new mitigation measure NVC16, which requires an Out of Hours Work Strategy to be prepared, in consultation with key stakeholders, to guide the assessment, management, and approval of works outside recommended standard hours.

The Construction Noise and Vibration Strategy also includes a requirement for out of hours work to be included in the construction noise impact statements required under the strategy.

Implementation of these strategies would assist in the management of out of hours works and potential noise impacts.

In addition, the implementation of the other construction noise mitigation measures (NVC1, NVC2, and NVC6 to NVC15) would assist in minimising the potential for noise during construction.

## Sleep disturbance

The potential sleep disturbance impacts described in Section 15.2.2 of this report represent the predicted highest noise level at the most exposed receiver, which would only occur if all equipment was operated simultaneously at the edge of the construction site. This predicted maximum level of impact is considered unlikely to be experienced in all locations, and would not occur continuously, as night-time works would generally be limited to possession periods (typically once every few months). Additionally, as indicated in Table 15.4 of this report, the number of receivers at which the maximum level of sleep disturbance impact would be experienced during construction of the preferred project is greatly reduced when compared to the exhibited project.

The programming of construction activities and the plant and equipment to be used would be confirmed following appointment of the construction contractor.

In accordance with mitigation measure NVC1 and the Sydney Metro City & Southwest Construction Noise and Vibration Strategy, noise impact statements would be prepared prior to construction to confirm the scale and duration of construction noise impacts likely to be experienced, and to define the mitigation and identify management measures that would be implemented to sensitive receivers.

Active community consultation with the affected members of the community would also be undertaken, as described in mitigation measure NVC5.

### 5.11.4 Construction traffic noise

#### *Summary of issues raised*

Some submissions raised concerns related to traffic noise along haulage routes, including noise from vehicles using the proposed haulage routes along Crinan, Garnet, Kilbride, and Melford streets in Hurlstone Park.

#### *Response*

A summary of the results of the assessment of potential noise impacts due to the movement of construction vehicles on haulage routes in Hurlstone Park is provided in Section 12.5.5 (Hurlstone Park (NCA03)) of the Environmental Impact Statement.

The assessment identified that vehicle movements would have the potential to result in noise levels above the threshold criteria at three locations during the night-time:

- Garnet Street (between Canterbury Road and Hampden Street)
- Duntroon Street
- Crinan Street (between Melford Street and Dunstaffenage Street).

The introduction of rail replacement buses as part of the alternative transport arrangements is not expected to result in additional exceedances.

As discussed in the noise and vibration assessment in Appendix E of this report, the assessment of construction traffic noise provided in the Environmental Impact Statement is considered an worst case. The duration and frequency of construction traffic noise impacts associated with the preferred project would be significantly reduced when compared to the exhibited project, as the number and duration of possessions and level of construction activity would be reduced.

Construction traffic volumes and routes (including rail replacement buses as part of the alternative transport arrangements outlined by the Temporary Transport Strategy) would be reviewed and confirmed to determine if additional mitigation is required. Where compliance with the criteria is unable to be achieved, reasonable and feasible noise mitigation would be considered. Mitigation could include alternate traffic routes or reducing the maximum number of movements.

### **5.11.5 Vibration impacts and mitigation**

#### ***Summary of issues raised***

A number of submissions raised concerns about potential vibration impacts during construction. Issues raised included:

- concerned about the potential damage to properties due to vibration in various areas
- concerned about vibration impacts on buildings close to the rail line, particularly old apartment buildings which are more susceptible to damage
- vibrational damage impacts to dwellings are unknown
- concerned about vibration impacts to heritage listed properties
- properties would be put at risk of damage from excessive vibration levels caused by the use of vibration intensive construction equipment
- concerned about the proximity of the property to construction and the potential for the house to be damaged by vibration
- concerned that there is the potential for cosmetic damage, but there is no strategy for dealing with vibration or a plan for pre-dilapidation reports
- requests that dilapidation surveys are provided to the homes potentially affected by vibration, and that funds be set aside to repair homes if monitoring shows damage
- concerned about the costs of preparing dilapidation surveys.

#### ***Response***

The results of the construction vibration assessment for the exhibited project were summarised in Section 12.5 (Potential impacts) of the Environmental Impact Statement and detailed results were provided in Technical Paper 2 (Noise and vibration assessment).

Additionally, Technical Papers 2 (Noise and vibration assessment) and 3 (Non-Aboriginal heritage impact assessment) of the Environmental Impact Statement assessed the potential for vibration impacts at heritage listed items.

The vibration assessments (including that undertaken for heritage items) assumed that the most vibration intensive piece of construction equipment required for the construction of the exhibited project would be a rock breaker. As described in Chapter 10 of this report, the most vibration intensive piece of construction equipment required for the preferred project is a ballast tamper. The vibration levels generated through the use of a ballast tamper are significantly lower than those generated through the use of a rock breaker and use of a ballast tamper would be limited to the minor track works in the rail corridor. Therefore, the preferred project would result in reduced vibration impacts compared to the exhibited project.

Any potential vibration impacts would be managed in accordance with the Construction Noise and Vibration Strategy. This includes a requirement to undertake dilapidation surveys (existing condition surveys) for any structure or assets that have the potential to be damaged by vibration. A register of these surveys would be kept by the contractor.



In accordance with the Construction Noise and Vibration Strategy, and mitigation measures NVC3 and NVC4, where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure would be carried out to determine appropriate vibration limits. The more detailed assessment would include a condition assessment, and consideration of the heritage values of the structure in consultation with a heritage specialist, to ensure that sensitive heritage fabric is adequately monitored and managed.

The costs of completing dilapidation reports would be borne by the appointed construction contractor.

### **5.11.6 Noise impact mitigation**

#### ***Summary of issues raised***

Some submissions requested clarification regarding the mitigation measures that would be implemented during construction and requested additional mitigation. Issues raised included:

- requests that noise attenuation works are offered to properties impacted by noise
- requests that alternative accommodation be provided to any resident who requests it, or that the criteria is reduced from the current 30 decibels above the noise criteria
- property has been identified as 'highly noise affected' and the owner would like to discuss what options are available to mitigate noise impacts
- the mitigation strategies are vague for properties identified as significantly affected by noise
- questioned what measures will be implemented to mitigate noise for residents within the construction noise impact zone
- questioned if residents will be provided with ear plugs like those around WestConnex
- concerned that the only mitigation measure put forward in the noise assessment is restriction of rock sawing at night and does not think that this is enough to mitigate the noise impacts.

#### ***Response***

The Construction Environmental Management Framework and the Construction Noise and Vibration Strategy would be implemented to manage construction noise and vibration impacts during construction.

The Construction Noise and Vibration Strategy defines how construction noise and vibration would be managed for the Sydney Metro City & Southwest project as a whole. The strategy provides guidance for managing construction noise and vibration impacts in accordance with the *Interim Construction Noise Guideline* (DECC, 2009), to provide a consistent approach to management and mitigation across all Sydney Metro projects.

The strategy identifies the requirements and methodology to develop construction noise impact statements. These would be prepared prior to specific construction activities, based on a more detailed understanding of construction methods, including the size and type of construction equipment. This process would provide further detail (based on additional noise modelling) regarding the actual noise levels that would be experienced by individual receivers, to guide the location specific approach to implementing noise mitigation.

The Construction Noise and Vibration Strategy also provides a list of the standard noise mitigation measures that would be implemented when exceedances of the noise management levels are predicted. Implementation of these measures is also required by mitigation measure NVC5.

The strategy acknowledges that the sensitivity of receivers can be greater for works conducted outside recommended standard construction working hours, and it provides a staged approach to mitigation depending on the level of impact predicted. The management of noise impacts outside recommended standard hours would be further strengthened by implementing the proposed Out of Hours Work Strategy (described in Section 2.7 of the preferred project description in Appendix B of this report), as required by new mitigation measure NVC16. The strategy would be developed to guide the assessment, management, and approval of works outside recommended standard hours.

The strategy acknowledges that due to the highly variable nature of construction activities and the likelihood of work outside standard construction hours, exceedances of the construction noise and vibration management levels are likely to occur. Therefore, a number of additional mitigation measures – primarily aimed at pro-active engagement with affected sensitive receivers – would also be implemented as required.

Mitigation measures NVC2 and NVC6 to NVC15 also provide commitments in relation to the processes and procedures that would be implemented during construction to manage noise.

In relation to alternative accommodation, mitigation measure NVC9 provides that alternative accommodation may be offered to residents living in close proximity to construction works, where detailed construction planning identifies unreasonably high noise impacts over a prolonged period. Alternative accommodation arrangements would be offered and discussed with residents on a case-by-case basis.

## **5.12 Operational noise and vibration**

This section provides responses to issues raised about the potential for noise and vibration impacts during operation.

### **5.12.1 Noise from metro trains**

#### ***Summary of issues raised***

Some submissions raised concerns in relation to the potential for noise impacts from the operation of metro trains. Issue raised included:

- concerned that the increased train speeds would result in increased noise levels
- it is unclear if noise would be significantly or noticeably louder
- concerned that the assessment does not accurately reflect the increase in noise as a result of the increase in train numbers per hour
- there is no clear information on how noise from the operation of Sydney Metro trains will impact residents
- concerned that noise comparisons between the current trains and the new metro trains will include readings from freight trains, which are infrequent on this line but substantially noisier than urban trains
- raised concerns about property being incorrectly classified as commercial in noise report, and that associated impacts have not been appropriately considered for noise.

#### ***Response***

The assessment of the operation noise and vibration impacts of the project was provided in Technical Paper 2 (Noise and vibration assessment), and the results were summarised in Chapter 13 (Operational noise and vibration) of the Environmental Impact Statement. The assessment was prepared in accordance with all relevant guidelines, and addresses the Secretary's environmental assessment requirements.

The methodology for the operational rail noise assessment was described in Section 13.1.2 (Methodology) of the Environmental Impact Statement. The assessment was undertaken in accordance with the *Rail Infrastructure Noise Guideline* (EPA, 2013). Computer modelling software (SoundPLAN version 7.1) was used to facilitate the predictions. The noise model was validated against measured baseline operation noise levels prior to undertaking the noise predictions.

Train operation noise was assessed over two time periods – the expected day of opening (2024) and a future scenario based on operations forecasts in 2034. This was based on forecast rail movements provided by Sydney Metro (and ARTC in relation to freight movements in the eastern half of the project area between Marrickville and Belmore). To ensure that the predicted noise levels fully reflect the noise emissions expected from metro style trains, noise testing results from carriages being manufactured for the North West Metro were reviewed, and corrections made to the noise software model as necessary.

Section 13.4.2 (Amenity) of the Environmental Impact Statement provided a summary of the airborne rail noise levels predicted during normal operations. Figure 13.1 (Location of receivers potentially affected by operational noise exceeding RING criteria) in the Environmental Impact Statement showed the location of receivers potentially affected by operational noise exceeding the *Rail Infrastructure Noise Guideline* criteria. Tables 13.11 (Predicted 2024 and 2034 airborne noise levels at most exposed receiver – residential receivers) and 13.12 (Predicted 2024 and 2034 airborne noise levels at most exposed receiver – non-residential receivers) in the Environmental Impact Statement provided the noise level predictions for 2024 and 2034 at the most exposed receiver with and without the project.

In summary, noise levels at 85 and 105 receivers are predicted to exceed the criteria in 2024 and 2034 respectively, in four of the 11 noise catchment areas modelled (Belmore (NCA07), Wiley Park (NCA09), Punchbowl (NCA10), and one of the three catchment areas in Bankstown (NCA11)). The majority of exceedances are located in NCA11 (Bankstown), where there are more multi-storey residential buildings near the rail line.

In most of these locations, the increases in noise levels can be explained by either a combination of increased train speed/movements and/or the need to adjust the track to bring it closer to the edge of the corridor or to provide new infrastructure (such as a crossover).

As described in Section 13.2.1 of this report the following features associated with the preferred project would result in different operational noise impacts to those assessed in the Environmental Impact Statement:

- existing Sydney Trains tracks would be used wherever possible and significant track modification would only be required around Bankstown Station
- the revised track design would not include significant realignment in the vicinity of stations
- the turnback facility at Campsie has been removed from the project scope
- one new crossover on the eastern side of Campsie Station
- the rail junction and turnback to the west of Bankstown Station for Sydney Trains services has been reconfigured.

Given the above changes a qualitative assessment of operational noise and vibration impacts was undertaken for the preferred project and is summarised in Section 13.2.1 and detailed in Appendix E of this report. The assessment found that the design modifications proposed as part of the preferred project are not anticipated to increase the operational noise levels compared to the predictions provided in the Environmental Impact Statement for the exhibited project.

Reasonable and feasible mitigation options were considered by Technical Paper 2 (Noise and vibration assessment), and were summarised in Section 13.5.2 (Reasonable and feasible mitigation options) of the Environmental Impact Statement. For NCA11, these would include noise barriers and at-property treatments. In addition, the project would continue to be designed with the aim of achieving the noise and vibration objectives of the *Rail Infrastructure Noise Guideline*.

Section 13.5.1 (Approach to mitigation and management) of the Environmental Impact Statement noted that a review and iteration of predicted operational noise and vibration levels would be undertaken during detailed design when more information is available and when specific mechanical plant and other project details have been confirmed. This would also include additional noise modelling, and consideration of reasonable and feasible mitigation approaches. The final form of mitigation would be determined during detailed design.

Mitigation measures NVO1 to NVO3 specify the processes and procedures relating to the management of operational noise, including the operational noise and vibration review (NVO1), confirmation of the height and extent of noise barriers (NVO2), and the control of operational noise from substations (NVO3).

Following exhibition of the Environmental Impact Statement, consultation with landowners in the vicinity of the project area has identified that two properties were incorrectly classified in the noise and vibration assessment. As discussed in Section 2.4.10, the noise and vibration assessment undertaken for the preferred project considered the correct classification of these receivers.

## **5.12.2 Noise from stations and ancillary facilities**

### ***Summary of issues raised***

Some submissions raised concerns in relation to the potential for noise impacts in relation to the operation of stations and ancillary facilities. Issues raised included:

- concerned about the long-term hum noise from substation near property
- concerned that the new access to Dulwich Hill Station from Ewart Lane will result in a significant increase in pedestrian noise and station announcements.

### ***Response***

Table 13.14 (Predicted noise levels from substations at the most potentially affected receiver) of the Environmental Impact Statement provided the maximum predicted noise levels from operating substations, without mitigation, during the most sensitive period (night-time) at the most affected receiver. The results showed that, without mitigation, there would be potential for exceedance of the relevant criteria of between one and 13 dB at four of the five locations.

As presented in Chapter 9 of this report, the location and type of substations for the preferred project would be as per those for the exhibited project. Therefore, the noise impacts associated with operating substations as part of the preferred project would be consistent with those for the exhibited project.

To mitigate these impacts, substations would be designed to ensure that noise levels are reduced to acceptable levels. This would include by provision of shielding, enclosure of the noise source, specification of equipment selection, and/or locating the noise source further from the receiver as necessary. The use of acoustic louvres could also be considered where ventilation is required. Mitigation measure NVO3 commits to controlling operational noise from substations to comply with the *Industrial Noise Policy* (EPA, 2000).

Noise from public address systems at stations needs to comply with the relevant noise criteria. At this stage of the design, mechanical plant and public address systems have not been identified, which means it is not possible to assess compliance with the applicable noise criteria. However, given the nature of these sources and mitigation measures successfully applied to other projects, it is expected that potential impacts can be readily mitigated during the detailed phase by selecting equipment that would not generate noise in excess of the design noise levels.

### **5.12.3 Vibration impacts during operation**

#### ***Summary of issues raised***

The following issues were raised regarding vibration impacts during operation of the project:

- how potential vibration and frequencies would be dampened at the source
- what the vibration impacts of the new trains would be.

#### ***Response***

The assessment of the operation vibration impacts of the exhibited project is provided in Technical Paper 2 (Noise and vibration assessment), and the results are summarised in Sections 13.4.2 (Amenity) and 13.4.3 (Structural) of the Environmental Impact Statement.

As noted in Section 13.4.2 (Amenity) of the Environmental Impact Statement, vibration modelling indicates that no locations would experience exceedances of the vibration (human comfort) criteria. As noted in Section 13.4.3 (Structural) of the Environmental Impact Statement, compliance with human comfort criteria would ensure that the potential for structural impacts is minimal. This is because the levels of vibration required to cause damage to buildings tend to be at least an order of magnitude higher (10 times higher) than those at which people may consider the vibration to be intrusive or disturbing.

Section 13.2.1 of this report notes that the design modifications for the preferred project are not anticipated to increase the operational vibration levels compared to the predictions presented in the Environmental Impact Statement for the exhibited project.

No mitigation is therefore required for operational vibration.

### **5.12.4 Impact mitigation**

#### ***Summary of issues raised***

Some submissions raised concerns in relation to the mitigation of noise and vibration impacts during operation, and what mitigation would be provided. Issues raised included:

- where noise barriers would be located along the line
- requested that noise attenuation walls be provided on either side of the station for a distance of at least one hundred metres
- property has been identified as a 'highly noise affected residential receiver' – would like to discuss what options are available to mitigate noise impacts when the new station is operating
- would like mitigation strategies implemented, such as physical noise barriers and funding for glazing on windows
- there is inadequate information about noise attenuation measures for surrounding properties
- concerned that noise assessment does not include the locations of physical noise barriers
- requested reduction in noise levels during operation

- it is unclear if the building that acts as a noise barrier between house and rail line at 3 Warburton Street, Marrickville will be removed. If it is removed, the owner requests that other forms of noise abatement are implemented to contain noise similar to the current levels
- a noise barrier must be installed permanently at Hurlstone Park to reduce noise due to the increase in the number of trains through the station.

### **Response**

Section 13.4.2 (Amenity) of the Environmental Impact Statement noted that noise levels at 85 and 105 receivers are predicted to exceed the *Rail Infrastructure Noise Guideline* trigger levels in 2024 and 2034 respectively. The modelling included the noise shielding effect of any facilities/structures that would be removed from the rail corridor. The majority of exceedances are located in the Bankstown noise catchment area (NCA11), where there are more multi-storey residential buildings near the rail line.

As described above, the preferred project is not anticipated to increase the operational noise levels compared to the predictions provided in the Environmental Impact Statement for the exhibited project.

Reasonable and feasible mitigation options were considered in Technical Paper 2 (Noise and vibration assessment), and are summarised in Section 13.5.2 (Reasonable and feasible mitigation options) of the Environmental Impact Statement. These would include noise barriers and at-property treatments. In addition, the preferred project would continue to be designed with the aim of achieving the noise and vibration objectives of the *Rail Infrastructure Noise Guideline*. Table 13.16 (Preliminary reasonable and feasible noise mitigation options) of the Environmental Impact Statement defined the location and type of mitigation measure being considered.

Section 13.5.1 (Approach to mitigation and management) of the Environmental Impact Statement noted that a review and iteration of predicted operational noise and vibration levels would be undertaken during detailed design, when more information is available, and when specific mechanical plant and other project details have been confirmed. This would also include additional noise modelling, and consideration of reasonable and feasible mitigation approaches. The final form of mitigation would be determined during detailed design.

Mitigation measures NVO1 to NVO3 specify the processes and procedures relating to the management of operational noise, including the operational noise and vibration review (NVO1), confirmation of the height and extent of noise barriers (NVO2), and the control of operational noise from substations (NVO3). This would also include community consultation in accordance with the Sydney Metro Stakeholder and Community Involvement Plan.

## **5.13 Non-Aboriginal heritage**

This section provides responses to issues raised about non-Aboriginal heritage, including the adequacy of the assessment, the overall impacts of the project on heritage, and impacts to particular item. Responses to issues raised about how heritage was considered in the design process are provided in Section 5.5.1 of this report.

### **5.13.1 Assessment method**

#### **Summary of issues raised**

Concerns raised about the adequacy of the heritage assessment included:

- the heritage analysis only looked at current listings, and no in-depth heritage survey was undertaken along the corridor
- potential heritage items were ignored

- a full heritage analysis of the corridor was not conducted
- the Environmental Impact Statement does not refer to an independent heritage analysis of buildings within the rail corridor, or buildings and places of significance that will be affected by the project outside the corridor
- there does not yet appear to be much serious heritage expertise involved
- after describing the 'major' heritage impacts along the line, the assessment concludes that the outcome will be entirely satisfactory.

### Response

The potential heritage impacts of the exhibited project were assessed by an independent specialist heritage consultant in accordance with the Secretary's environmental assessment requirements; the *NSW Heritage Manual 1996* (Heritage Office and Department of Urban Affairs and Planning, 1996); and relevant guidelines under the manual, including *Assessing Heritage Significance* (Heritage Office, 2001), and *Statements of Heritage Impact* (Heritage Office, 2002).

The results of the assessment were provided in Technical Paper 3 (Non-Aboriginal heritage impact assessment), and the results were summarised in Chapter 14 (Non-Aboriginal heritage) of the Environmental Impact Statement. The assessment considered the potential for impacts to all listed items within and in the vicinity of the project area. As the majority of the project area is within a rail corridor, the presence of potential (unlisted) heritage items was considered to be unlikely.

The project area was also assessed for archaeological potential and significance, and the potential impacts of the exhibited project on significant areas were considered.

The assessment also considered the potential for impacts to the currently unlisted items and heritage conservation areas identified in the *Hurlstone Park Heritage Study* (Paul Davies, 2016), and concluded that there are unlikely to be direct impacts to these items and areas. The detailed design for Hurlstone Park Station would consider the context and setting of these items and the proposed heritage conservation areas.

As described in Section 1.3 of this report, Transport for NSW has developed a design solution that enables the retention of existing station entrances, heritage buildings and concourses. A non-Aboriginal heritage impact assessment has been undertaken to assess the impacts associated with the preferred project and is provided in Appendix F and summarised in Chapters 12 to 15 of this report.

This assessment was undertaken by an independent specialist in accordance with the guidelines outlined above. Appendix F of this report provides detail on:

- items and areas of heritage significance that would be materially affected by the preferred project during construction and operation, including buildings, works, relics, views, and places of heritage significance
- potential impacts on the values, settings and integrity of heritage areas and items and archaeological resources located near the project
- proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) in accordance with relevant best practice guidelines.

The non-Aboriginal impact assessment notes that generally there would be a reduction in impacts to heritage items due to the preferred project, when compared to the exhibited project. Further information regarding the results of this assessment is provided in Chapters 12 to 15.



### 5.13.2 Heritage impacts of the project overall

#### *Summary of issues raised*

A number of submissions raised concerns about the overall impacts to heritage, and how these impacts would be managed. Issues raised included:

#### **Overall heritage impacts**

- concerned that the demolition of heritage structures and the replacement with new structures with a reduced life-span and aesthetic is not acceptable, including proposed impacts to heritage items of rare, exceptional and high value
- concerned that the heritage character and values of stations along the line will be diminished
- concerned about that the demolition of heritage structures at stations would reduce the heritage value of each of the stations and noted that the impacts are unnecessary as the existing structures are in good condition
- no loss of historic railway stations is acceptable
- heritage impacts are unacceptable and show disregard of the character and heritage values on the rail line and community values
- the Bankstown Line will lose its heritage values and ability to demonstrate the historical phases of development of the line

#### **Management of impacts**

- there is no evidence to support that heritage will be protected or retained
- mitigation measures are out of touch with community expectations - a photo, a rescued brick, or a mural (heritage interpretation) will not compensate for the destruction of historical buildings
- the Burra Charter of heritage principles should be guiding heritage management
- concerned that heritage of several existing railway stations is not adequately protected in the Environmental Impact Statement
- would like to retain platform buildings, and the proposed overhead ribbon canopies should be more 'heritage' in appearance
- measures are lacking for assessing the heritage significance of affected land not already heritage listed, and for conserving the fabric, appearance and historic significance of railway stations which are heritage listed
- heritage interpretation, public art, and landscaping should be incorporated into the design of each station, in accordance with the Design Guidelines, and based on consultation with local stakeholders

#### **Reuse of heritage structures**

- there is no allowance for the heritage value of that existing infrastructure which could be repurposed rather than destroyed
- heritage platform buildings should be re-opened for use
- whilst it is positive that heritage items are to be retained, it is important that all opportunities for adaptive reuse of station buildings are pursued.

## Response

### Overall heritage impacts

All heritage buildings and structures would be retained and a number repurposed, as part of the preferred project. A non-Aboriginal heritage impact assessment has been undertaken to assess the impacts associated with the preferred project and is provided in Appendix F and summarised in Chapters 12 to 15 of this report. The results of the non-Aboriginal heritage impact assessment indicated that the preferred project would result in:

- moderate direct and visual impacts to three of the items with State heritage significance (Marrickville Railway Station Group, Canterbury Railway Station Group and Belmore Railway Station Group)
- neutral direct impacts and neutral-negligible visual impacts to the two remaining items with State heritage significance (Sewage Pumping Station 271 and Old Sugarmill)
- moderate direct and visual impacts to eight of the items with local heritage significance
- minor direct and visual impacts to one of the items with local heritage significance
- direct and visual impacts ranging from neutral to negligible for the remaining items with local heritage significance and the heritage conservation areas.

The non-Aboriginal heritage impact assessment concluded that all items with State heritage significance would continue to meet the threshold for State significance and all items with local heritage significance would continue to meet the threshold for local significance, therefore no items would require delisting. As the detailed design develops, the Design Review Panel (which includes a heritage architect and representative for the Heritage Council) and the Heritage Working group would review the design, and ensure that it takes into account the heritage commitments in this report, and any conditions of approval.

The following mitigation measures would be implemented to further minimise potential impacts of the preferred project on heritage items, and provide for appropriate interpretation and conservation management:

- NAH1 to NAH3 require the project design to minimise adverse impacts to, maximise retention of, and complement retained heritage items
- NAH4 requires the design to be developed with guidance from an appropriately qualified and experienced conservation heritage architect
- NAH5 requires an adaptive reuse strategy to be developed
- NAH6 requires a Heritage Interpretation Plan to be developed and appropriate heritage interpretation to be incorporated into the design
- NAH7 provides for the management of moveable heritage.
- NAH8 provides for the management of heritage station buildings that would be re-purposed or refreshed
- NAH13 requires photographic archival recording to be carried out in accordance with relevant guidelines
- NAH15 to NAH17 and NAH20 provide for the management and minimisation of impacts to heritage items during construction.

## Management of impacts

The Burra Charter heritage principles were referenced in Section 2.2.1 (Project methodology) of Technical Paper 3 (Non-Aboriginal heritage impact assessment) of the Environmental Impact Statement, and formed the basis of the assessment approach. The assessment was undertaken in accordance with the Secretary's environmental assessment requirements; the *NSW Heritage Manual 1996* (Heritage Office and Department of Urban Affairs and Planning, 1996); and relevant guidelines under the manual, including *Assessing Heritage Significance* (Heritage Office, 2001), and *Statements of Heritage Impact* (Heritage Office, 2002).

Relevant Sydney Trains guidelines and Conservation Management Plans for listed items (where available) also informed the assessment.

As described above, Transport for NSW has developed a design solution that has allowed all heritage buildings and structures to be retained and repurposed, including platform buildings and platforms. An assessment of impacts to heritage items has been undertaken for the preferred project and is provided in Appendix F and summarised in Chapters 12 to 15 of this report.

This assessment also considered the guidelines and requirements detailed above.

Transport for NSW has worked closely with the Heritage Council throughout the project design and Environmental Impact Statement process, taking on board lessons learned from recent projects. The Heritage Council has also been involved as part of the Heritage Working Group. As identified in Section 3.4 of this report, the Heritage Working Group was briefed on the preferred project.

The Heritage Council provides a representative to sit on the Sydney Metro Design Review Panel. The panel would continue to be consulted during detailed design, and members of the panel (including the Heritage Council representative) would continue to have the opportunity to contribute on heritage related matters as the design progresses.

NAH1 to NAH3 require the project design to minimise adverse impacts to, maximise retention of, and complement retained heritage items. NAH4 requires the design to be developed with guidance from an appropriately qualified and experienced conservation heritage architect. The full list of mitigation measures is provided in Table 16.1 of this report.

In addition, the detailed design process involves preparing Station Design and Precinct Plans for each station, in accordance with new mitigation measure LV3. These plans would present an integrated urban and place making outcome for each station, and would:

- be prepared in consultation with relevant stakeholders, including the relevant local council
- be reviewed by the Design Review Panel
- identify specific design objectives and principles based on local context and heritage, place making values, the urban design context, and maximising the amenity of public spaces and permeability around station entrances
- identify opportunities for public art
- be informed by a Heritage Interpretation Plan
- provide evidence of consultation with the community, local councils, and agencies in the preparation of the plans, and how feedback has been addressed.

## Reuse of heritage structures

As described in Section 14.3.14 (Operational impacts) of the Environmental Impact Statement, a key consideration of the design process has been identifying opportunities to retrofit and reuse significant structures in accordance with their heritage values. Accordingly, the preferred project has been developed so that heritage buildings and structures would be retained and repurposed rather than removed.

This would be a positive heritage outcome, as it would enable public engagement with the significant heritage values of relevant stations, conservation of significant elements, and would facilitate maintenance and care of structures in use.

In accordance with the mitigation measures, this would continue to be refined during detailed design. Mitigation measure NAH5 requires that, where heritage significant items or elements are to be retained within the operational area, an adaptive reuse strategy would be prepared by an appropriately qualified and experienced heritage architect.

Mitigation measure NAH7 requires a moveable heritage item strategy to be prepared.

### 5.13.3 Impacts to heritage listed stations

#### *Summary of issues raised*

A number of submissions raised concerns about impacts to heritage listed stations, including:

#### **Impacts to stations overall**

- concerned about impacts to heritage listed stations
- requested that where the design impacts heritage listed stations, it is reviewed by independent heritage consultants
- concerned about loss of heritage at stations to accommodate new platforms
- concerned about the impacts of proposed screen doors which will disfigure the heritage stations
- the modern designs do not respect the heritage flavour of stations on the line

#### **Impacts to individual stations**

##### **Marrickville Station**

- concerned about significant visual impacts on heritage at Marrickville Station
- there will a major impact heritage on Marrickville Station - the old heritage buildings will be replaced by two new buildings on the station
- contrary to statements in the Environmental Impact Statement, heritage items will not be rendered more visible for greater appreciation – at Marrickville, ribbon canopies will obscure the heritage platform buildings
- the demolition of the Illawarra Road overbridge and two thirds of the Marrickville Station platforms are of particular concern
- requested that the brick walls on the Illawarra Rd overbridge and the platforms east of Marrickville Station buildings be retained
- the replacement bridge would lack the heritage appeal of the existing Illawarra bridge

##### **Dulwich Hill Station**

- the heritage value of Dulwich Hill Stations must be retained for community benefit

- concerned about the destruction of the historic wooden railway station ticket office at Dulwich Hill which is State heritage listed

#### **Hurlstone Park Station**

- Hurlstone Park Station is between two heritage conservation areas therefore heritage buildings should be retained
- noted inconsistencies in project approach with regards to the proposed straightening of platforms at Hurlstone Park Station which will result in heritage impacts, and no straightening being undertaken at Dulwich Hill Station - if Dulwich Hill does not require line straightening, then the design for Hurlstone Park can be modified
- the function of many of the heritage buildings will be removed instead of enhanced - the Hurlstone Park Platform buildings have functional toilets, an attractive original waiting room and shading canopies, for instance
- concerned about the demolition of most historical items at Hurlstone Park Station, which was recommended to be listed on the State heritage register in 2016

#### **Canterbury Station.**

- the new concourse at Canterbury Station will impact on heritage (eg demolition of the old turn back) including overshadowing

#### **Belmore Station**

- the train station buildings and shape of the platform station in Belmore are of significant heritage value and must not be destroyed

#### **Lakemba Station**

- concerned about the heritage impacts on Lakemba Station

#### **Wiley Park Station**

- concerned about the full demolition of Wiley Park Station.

### **Response**

#### **Impacts to stations overall**

In response to the community's concerns regarding heritage impacts, Transport for NSW has developed a design solution that would retain all existing heritage buildings and structures.

As part of this process, Transport for NSW has ensured that retained heritage elements have a suitable station or operational purpose, and that their retention does not compromise the integrity of the station design and layout, or safety and customer requirements.

The Heritage Council has also been involved as part of the Heritage Working Group. As identified in Section 3.4 of this report, the Heritage Working Group was briefed on the preferred project.

The designs would be reviewed by the Design Review Panel, which includes a representative of the Heritage Council and an independent heritage architect. Where relevant, the local council would be invited to participate and advise on local issues and outcomes.

The measures that would be implemented to minimise and manage the potential impacts to stations include:

- NAH1 to NAH3 require the project design to minimise adverse impacts to, maximise retention of, and complement retained heritage items

- NAH4 requires the design to be developed with guidance from an appropriately qualified and experienced conservation heritage architect
- NAH5 requires an adaptive reuse strategy to be developed
- NAH6 requires a Heritage Interpretation Plan to be developed and appropriate heritage interpretation to be incorporated into the design and would provide legible connection between stations.
- NAH7 and NAH8 provide for the management of moveable heritage and heritage building repurposing and refreshing
- NAH13 requires photographic archival recording to be carried out in accordance with relevant guidelines
- NAH15 to NAH17 and NAH20 provide for the management of heritage items during construction.

### Impacts to individual stations

At all stations, significant design work was undertaken to reduce the potential heritage impacts, including the number of heritage elements impacted.

Potential impacts of the exhibited project on the stations were assessed by Technical Paper 3 (Non-Aboriginal heritage impact assessment), and the results are summarised in Chapter 14 (Non-Aboriginal heritage) of the Environmental Impact Statement. Potential impacts of the preferred project on the stations' heritage values have been assessed in Appendix F and the results are summarised in Section 12.2.2 of this report. Both assessments were undertaken in accordance with the Secretary's environmental assessment requirements; the *NSW Heritage Manual 1996* (Heritage Office and Department of Urban Affairs and Planning, 1996); and relevant guidelines under the manual, including *Assessing Heritage Significance* (Heritage Office, 2001), and *Statements of Heritage Impact* (Heritage Office, 2002).

The assessments were based on determining levels of impact to the significance of an item and its elements. Impacts were identified as either direct impacts, or potential direct (vibration) impacts. Once the levels of each type of impact were assessed, adverse and positive impacts to aspects of significance were balanced to determine an overall level of impact to the heritage significance of the listed item. Where impacts to heritage significance were assessed as major, discussion was provided on whether the item would continue to meet the threshold of significance necessary for heritage listing. It should be noted that no impacts to heritage significance were assessed as major for the preferred project.

A summary of the key findings of the preferred project heritage assessment for the stations noted in submissions is provided below. Further information is available in Appendix F and Section 12.2.2 of this report.

Mitigation measures that would be implemented to minimise the potential impacts are described above.

### Marrickville Station

Marrickville Railway Station Group is listed on the State Heritage Register, the Marrickville LEP, and RailCorp's Section 170 heritage register.

Direct and visual impacts on individual heritage items due to the preferred project were assessed as between neutral and moderate.

The assessment concluded that, while the impact on the platform buildings would increase from minor to moderate due to the repurposing of these buildings, overall the impacts due to the preferred project would be reduced when compared to the exhibited project. The preferred project would have a moderate direct impact and a moderate visual impact on the Marrickville Railway Station Group.

### **Dulwich Hill Station**

Dulwich Hill Railway Station Group is listed on RailCorp's Section 170 heritage register.

Direct and visual impacts on individual heritage items due to the preferred project were assessed as between neutral and moderate.

The assessment concluded that, while the impact on the platform 1/2 would increase from minor to moderate due to the repurposing of these buildings, overall the impacts due to the preferred project would be reduced when compared to the exhibited project. The preferred project would have a moderate direct impact and a moderate visual impact on the Dulwich Hill Railway Station Group.

### **Hurlstone Park**

Hurlstone Park Railway Station Group is listed on the Canterbury LEP, and RailCorp's Section 170 heritage register.

Direct impacts on individual heritage items due to the preferred project were assessed as between neutral positive and moderate, while visual impacts were assessed as between negligible and moderate.

The assessment concluded that, while the impact on the platform buildings would increase from minor to moderate due to the repurposing of these buildings, overall the impacts due to the preferred project would be reduced when compared to the exhibited project. The preferred project would have a moderate direct impact and a moderate visual impact on the Hurlstone Park Railway Station Group.

### **Canterbury Station**

Canterbury Railway Station Group is listed on the State Heritage Register, the Canterbury LEP, and RailCorp's Section 170 heritage register.

Direct and visual impacts on individual heritage items due to the preferred project were assessed as between neutral and moderate.

The assessment concluded that, while the impact on the platform buildings would increase from minor to moderate due to the repurposing of these buildings, overall the impacts due to the preferred project would be reduced when compared to the exhibited project. The preferred project would have a moderate direct impact and a moderate visual impact on the Canterbury Railway Station Group.

### **Belmore Station**

Belmore Railway Station Group is listed on the State Heritage Register and RailCorp's Section 170 heritage register.

Direct impacts on individual heritage items due to the preferred project were assessed as between neutral and moderate, while visual impacts were assessed as negligible to moderate.



The assessment concluded that, while the impact on the platform building and overhead booking office and concourse would increase from minor to moderate due to the repurposing of these buildings, overall the impacts due to the preferred project would be reduced when compared to the exhibited project. The preferred project would have a moderate direct impact and a moderate visual impact on the Belmore Railway Station Group.

### **Lakemba Station**

Lakemba Railway Station Group is listed on the Canterbury LEP and RailCorp's Section 170 heritage register.

Direct and visual impacts on individual heritage items due to the preferred project were assessed as between neutral and moderate.

The assessment concluded that, while the impact on the platform 1/2 building would increase from minor to moderate due to the repurposing of these buildings, overall the impacts due to the preferred project would be reduced when compared to the exhibited project. The preferred project would have a moderate direct impact and a moderate visual impact on the Lakemba Railway Station Group.

### **Wiley Park Station**

Wiley Park Railway Station Group is listed on the Canterbury LEP and RailCorp's Section 170 heritage register.

Direct impacts on individual heritage items due to the preferred project were assessed as between neutral and moderate, while visual impacts were assessed as between negligible to moderate.

The assessment concluded that, while the impact on the platform buildings would increase from minor to moderate due to the repurposing of these buildings, overall the impacts due to the preferred project would be reduced when compared to the exhibited project. The preferred project would have a moderate direct impact and a moderate visual impact on the Wiley Park Railway Station Group. Given this, Wiley Park Railway Station Group would continue to meet the threshold for local significance and would no longer require delisting.

The mitigation measures described above (and listed in Table 16.1 of this report) would be implemented to provide for appropriate design and construction in relation to the heritage features.

## **5.13.4 Impacts to other heritage items**

Some submissions raised concerns regarding impacts to other heritage listed items. Issues raised included:

### ***Summary of issues raised***

#### **Vibration impacts**

- concerned about vibration impacts on nearby heritage items, including the Sugar House, resulting in cosmetic damage to these items
- questioned if cosmetically damaged heritage buildings would be repaired as part of the project

#### **Other impacts**

- concerned about potential impacts on the locally quarried planter boxes and heritage listed quarry face on River Street as a result of the proposed new power supply line
- Foord Avenue Bridge is also a heritage listed item yet it is unclear in the documentation whether this will be protected

- concerned about the impacts to the war memorial at The Boulevard in Lakemba, and impacts to Tobruk Avenue which has historical significance due to its association with a World War II battle fought by Australian troops in Tobruk, Libya.

## **Response**

### **Vibration impacts**

Technical Papers 2 (Noise and vibration assessment) and 3 (Non-Aboriginal heritage impact assessment) of the Environmental Impact Statement assessed the potential for vibration impacts at heritage listed items, including Sugar House. The assessments concluded that there is the potential for vibration impacts at the closest facades of this item, as it is located within the minimum work distance for cosmetic damage to structures for some equipment that may be used during construction in this location.

Those assessments assumed that the most vibration intensive piece of construction equipment required for the construction of the exhibited project would be a rock breaker. Hydraulic breaking is unlikely to be required during construction for the preferred project therefore the most vibration intensive piece of construction equipment required for the preferred project is a ballast tamper. The vibration levels generated through the use of a ballast tamper are significantly lower than those generated through the use of a rock breaker and use of a ballast tamper would be restricted to the limited track works in the rail corridor. Therefore, the preferred project would result in reduced vibration impacts compared to the exhibited project.

Where vibration impacts are present, the impacts from most construction activities would be intermittent over the duration of construction in any one area, and more refined construction planning would seek to further reduce this impact (i.e. by using smaller equipment wherever possible).

The approach to managing vibration during construction is described in Sections 12.6.1 (Approach to mitigation and management (for construction noise and vibration)) and 14.4.1 (Approach to mitigation and management (for non-Aboriginal heritage)) of the Environmental Impact Statement.

In accordance with the Construction Noise and Vibration Strategy, and mitigation measures NVC3 and NVC4, where vibration levels are predicted to exceed the screening criteria for heritage items, a more detailed assessment of the structure would be carried out to determine appropriate vibration limits. The more detailed assessment would include a condition assessment, and consideration of the heritage values of the structure in consultation with a heritage specialist, to ensure that sensitive heritage fabric is adequately monitored and managed.

The Construction Environmental Management Framework and the Construction Noise and Vibration Strategy include a requirement for ongoing consultation with affected asset owners, including Sydney Water.

### **Other impacts**

The proposed cable route is located within the curtilage of one heritage listed item – the Quarry face (former), which is located on Karool Avenue and River Street. Although the proposed route is within the item's curtilage, due to the change in elevation between the two streets, the cable would be constructed in this location by underboring. As a result, there would be no direct impacts to this item. Further information about the proposed route is provided in Section 9.4.2 of this report.

The preferred project only involves maintenance works at the Foord Avenue underbridge, and no impacts to the heritage significance of this item were predicted by Technical Paper 3 (Non-Aboriginal heritage impact assessment).

The war memorial near Lakemba Station (in The Boulevarde Reserve), located at the corner of The Boulevarde and Haldon Street, would not be directly impacted by the preferred project.

With regards to Tobruk Avenue Belmore, the landscape character assessment in Section 19.3.9 (Belmore Station) of the Environmental Impact Statement identified that the proposed works at Tobruk Avenue would have the potential to impact the legibility, sense of place, and character of this precinct.

A landscape and visual impact assessment was undertaken for the preferred project and is provided in Appendix G and summarised in Chapter 12 and 13 of this report. The assessment notes that the impacts of the preferred project would reduce from a moderate adverse to a minor adverse landscape impact. Additionally, historic landmark buildings would remain to maintain the legacy and contribute to the vibrancy and the built form of the precinct.

In accordance with mitigation measure NAH6, a heritage interpretation plan would be prepared, and appropriate heritage interpretation would be incorporated into the design. This may include consideration of the existing signage on Tobruk Avenue.

### **5.13.5 Impacts to archaeology**

#### ***Summary of issues raised***

One submission noted that there is moderate to high potential for archaeological remains to be impacted by the project, especially around Marrickville and Canterbury stations.

#### ***Response***

The heritage assessment for the exhibited project considered the potential for impacts to archaeology, and the results were summarised in Chapter 14 (Non-Aboriginal heritage) of the Environmental Impact Statement. As noted in Section 14.2.3 (Archaeological sites and potential) of the Environmental Impact Statement, the majority of the project area is considered to have nil to low archaeological potential and/or significance. The locations with the highest potential and/or significance, and the summary of the potential level of impacts at these locations, are as follows:

- Marrickville Station – there is moderate to high potential for significant archaeological remains associated with the station to be impacted during construction.
- Canterbury Station – there is moderate to high potential for significant archaeological remains associated with the Old Sugarmill and the former Canterbury Township to be impacted during construction.
- Lakemba Station – there is low to moderate potential for significant archaeological remains associated with the ‘Lakemba’ heritage item and the 1919 Lakemba island platform to be impacted during construction.
- Belmore Station – there is low to moderate potential for significant archaeological remains associated with the railway station goods shed and goods platform to be impacted during construction.

As noted in Section 15.1 of this report the potential for impacts to archaeology during construction of the preferred project would be consistent with those assessed in the Environmental Impact Statement for the exhibited project.

To minimise the potential for the above impacts, mitigation measure NAH12 commits to implementing the archaeological research design, including mitigation measures identified in the Archaeological Assessment and Research Design report. Further information on the archaeological research design is provided in Section 2.4.9 of this report. A copy of the Archaeological Assessment and Research Design Report is provided in Appendix I of this report. Mitigation measure NAH15 proposes methodologies for the removal of existing structures and construction of new structures that would be developed and implemented during construction to minimise direct and indirect impacts to other elements within the curtilages of the heritage items, or to heritage items located in the vicinity of works.

### **5.13.6 Impacts to heritage conservation areas**

#### ***Summary of issues raised***

Some submissions raised concerns about the potential impacts to heritage conservation areas. Issues raised included:

- Duntroon South (Hurlstone Park) is a proposed heritage conservation area and does not need footpath widening, with resultant impacts
- the project is over development in a heritage conservation area surrounding the Albermarle Street overbridge
- does not want a modern station built in between two heritage conservation areas in Hurlstone Park
- many of the areas surrounding Belmore, Campsie, Lakemba, Canterbury, and Punchbowl stations have been classified by the National Trust as conservation areas
- 101-105 Duntroon Street does not appear in the heritage conservation area in map 2, when in fact it is an integral part of the conservation area.

#### ***Response***

The heritage assessment undertaken as part of the Environmental Impact Statement identified that the project area passes through part of the South Dulwich Hill Heritage Conservation Area, and is located adjacent to the Inter-War Heritage Conservation Area Group in Dulwich Hill. It also noted that two proposed heritage conservation areas are located adjacent to the project area near Hurlstone Park Station:

- proposed Floss Street heritage conservation area – located adjacent to Hurlstone Park Station
- proposed Hampden Street heritage conservation area – located adjacent to the rail corridor, to the north-east of Hurlstone Park Station.

A non-Aboriginal heritage impact assessment has been undertaken to assess the impacts associated with the preferred project and is provided in Appendix G and summarised in Chapters 12 to 15 of this report.

In relation to the potential impacts to these areas, the assessment for the preferred project concluded that direct impacts on the South Dulwich Hill heritage conservation area and on the Inter-War Heritage Conservation Area Group would be negligible. It also concluded that works within the boundaries of the South Dulwich Hill heritage conservation area and in its vicinity would have a negligible visual impact, and works in the vicinity of the Inter-War Heritage Conservation Area Group, would have a neutral visual impact.

As per the response in Section 5.13.4 above, potential direct impacts as a result of vibration would be negligible, provided that the mitigation measures are implemented.

When assessed cumulatively, the level of heritage impact of the project on the South Dulwich Hill heritage conservation area and the Inter-War Heritage Conservation Area Group would be negligible. The heritage conservation area would continue to meet the threshold for local significance.

Detailed design would be carried out in accordance with the relevant specific element principles in the *Around the Tracks: urban design for heavy and light rail* (Transport for NSW, 2016), and would be reviewed by the Design Review Panel. In accordance with mitigation measure NAH4, the design would be developed with guidance from an appropriately qualified and experienced conservation heritage architect.

It can be confirmed that 101-105 Duntroon Street is located within the Floss Street heritage conservation area. Figure 14.1 (Heritage listed items and area – Map 2) of the Environmental Impact Statement does include this property within the potential heritage conservation area, however the northern boundary of this area is obstructed by the project area line.

## **5.14 Aboriginal heritage**

This section provides a response to an issue raised about Aboriginal heritage.

### **5.14.1 Impacts on Aboriginal heritage**

#### *Summary of issues raised*

One submission questioned whether stop work procedures would be implemented if Aboriginal heritage items are found.

#### *Response*

Mitigation measure AH2 commits to implementing the Aboriginal Cultural Heritage Assessment Report. Further information is provided in Section 2.4.9 of this report, and a copy of the report is provided in Appendix J.

Mitigation measure AH5 commits to:

- if potential Aboriginal items are uncovered, works within 10 metres of the item would cease, and the unexpected finds procedure included in the construction heritage management plan would be implemented
- during pre-work briefings, employees would be made aware of the unexpected finds procedures and obligations under the *National Parks and Wildlife Act 1974*.

## **5.15 Land use and property**

This section provides responses to issues raised about impacts to land use and individual properties, including concerns about acquisition.

### **5.15.1 Direct impacts on land use/properties during construction and operation**

#### *Summary of issues raised*

One submission requested that any work undertaken to upgrade the stormwater drain immediately adjacent to their property be done in a way that has minimum impact on their garden.

Two submissions provided detailed comments in relation to the potential for impacts to their properties.

Some submissions also raised concerns about the impacts of the proposed substations on their property, particularly the impacts of the Dulwich Hill substation. These included impacts on views, noise impacts, and impacts on their vegetable garden, as it would be denied morning sunlight.

### ***Response***

Transport for NSW would consider the matters raised in these submissions in consultation with the individual property owners during the detailed design process. Further information on the approach to detailed design is provided in Section 5.5.2 of this report.

Further information on the approach to the design of the substations, including consultation with adjoining property owners, is provided in Sections 2.4.4 and 5.6.5 of this report.

## **5.15.2 Impacts of acquisition**

Some submissions raised concerns and queries regarding the project's acquisition requirements, including:

### ***Summary of issues raised***

#### **Concerns regarding acquisition in general**

- the extent of property acquisition proposed is unclear, and is different from that presented in the State Significant Infrastructure Application Report
- the Environmental Impact Statement states that acquisition of properties in the Marrickville Station Precinct is proposed, however is vague about the acquisition of the heritage station building at Dulwich Hill Station, and any need for acquisition at the Sydenham Station Precinct
- the acquisition of homes will cause significant stress to homeowners and the community
- concerned that people will lose their homes and struggle to find affordable replacements as a result of the project
- there is a lack of detail of the exact nature of lands that will be acquired from councils (either owned or managed by council), particularly existing carparks and open space/recreation

#### **Concerns regarding acquisition of specific properties**

- the compulsory acquisition of the Canterbury Bowling Club is of significant concern to hundreds of residents in and around the Canterbury area
- concerned about acquisition of the property at Hurlstone Park.

### ***Response***

#### **Concerns regarding acquisition in general**

By reusing existing infrastructure (where possible), Transport for NSW has reduced the amount of land required to upgrade the Sydenham to Bankstown line to a metro line and no property acquisition would be required as part of the preferred project.

### Concerns regarding acquisition of specific properties

The Sydenham to Bankstown Urban Design & Place Making Paper, provided as Appendix H of the Environmental Impact Statement, included figures suggesting that a property in Duntroon Street, Hurlstone Park would need to be acquired to undertake the project. However, this property was not listed as one of the properties proposed for acquisition in the Environmental Impact Statement (described in Section 8.2 (Property requirements) of the Environmental Impact Statement), and no property acquisition would be required for the preferred project.

As noted in Section 2.8.2 of the preferred project description in Appendix B of this report, work site 7 is proposed at the former Canterbury Bowling and Community Club while works are undertaken at Canterbury Station. Areas within the club building and the surrounding open space are proposed to be used as a temporary construction compound and site office. An area within the building would remain available for community use. An indicative layout of the proposed work site is shown in Figure 2.4 of the preferred project description in Appendix B. Responses to issues raised about the potential impacts to this facility are provided in Section 5.16.1 of this report.

### 5.15.3 Impacts to property values and compensation requests

#### Summary of issues raised

Some submissions raised concerns about impacts to property values, including requests for compensation as a result of these impacts. Other requests for compensation were made in relation to the potential impacts of the project. Issues raised included:

- concerned about impacts to property values as a result of the proposed substation and requested compensation for these impacts
- requested landscaping around substation to limit impacts on property value
- concerned that the visual impacts of the new bridge (that will replace Illawarra Road overbridge) will affect the value of the house
- residents affected by vibration, noise, light and dust during construction should be appropriately compensated
- what measures will be undertaken to compensate for loss of rental income for residents within the construction noise impact zone
- households directly affected during the construction period should be compensated.

#### Response

Property values are based on a number of complex factors including demand at a certain point in time, general location, accessibility, traffic, noise, and proximity to transport infrastructure and other services. Based on experience around other rail stations within Sydney and elsewhere, the proximity to a station would be anticipated to have a positive impact on property prices over the long term, particularly if density requirements change.

Under the *NSW Land Acquisition (Just Terms Compensation) Act 1991*, Transport for NSW is required to compensate property owners at market value for all properties that would be directly affected by the proposal. This refers to property that is either temporarily or permanently required for the proposal and as per above, no properties would be acquired as part of the preferred project. There is no legal requirement for compensation for indirect impacts (such as amenity impacts) on adjacent property or businesses.



The Environmental Impact Statement and the assessments undertaken for the preferred project recognise that there would be impacts during construction. To manage the potential impacts identified, a comprehensive range of management and mitigation measures would be implemented, including the Construction Environmental Management Framework, Construction Environmental Management Plan, Construction Noise and Vibration Strategy, Temporary Transport Strategy, Utilities Management Framework, and the mitigation measures listed in Table 16.1 of this report. The mitigation measures include measures to minimise the potential traffic, access, noise, visual, and air quality impacts of the preferred project.

## **5.16 Socio-economic impacts**

This section provides responses to issues raised about socio-economic impacts, including impacts to community infrastructure, and amenity impacts during construction and operation.

### **5.16.1 Construction impacts on community infrastructure**

#### ***Summary of issues raised***

Some submissions raised concerns about potential impacts to community infrastructure. Issues raised included:

- concerned about the closure of a significant portion of, and disruption to the rest of, McNeilly Park during construction – it is an important green space for a densely populated area
- concerned about the use of the Canterbury Bowling Club, which is an important community facility, and the impacts this would have on the community
- concerned about compulsory lease acquisition of the Canterbury Bowling Club for storage of materials, car parking and office use, and the impacts on adjacent sensitive receivers such as the Cooks River and the historical Sugar Mill
- concerned about noise impacts on schools and child care centres close to the railway line
- concerned about the removal of the garden plaza on The Boulevard side of Lakemba Station and the War Memorial that will be 100 years old in 2018.

#### ***Response***

The exhibited project as described in the Environmental Impact Statement proposed an underground drainage detention basin in McNeilly Park (under the area of open space currently used as an off-leash dog exercise area).

McNeilly Park would no longer be required for drainage works as part of the preferred project.

The impacts on community facilities were assessed by Technical Paper 5 (Social impact assessment), and the results were summarised in Chapter 17 (Socio-economic impact) of the Environmental Impact Statement.

Table 17.2 (Community facilities potentially affected by the project) of the Environmental Impact Statement noted that the temporary use of the former Canterbury Bowling and Community Club as a construction work site would reduce the amount of space available for community use, and that there is the potential for amenity impacts (mainly noise and visual) to be experienced by users of the facility. The Canterbury Bowling and Community Club is still proposed to be used during construction of the preferred project.

Transport for NSW would work closely with Canterbury-Bankstown Council and users of the facility to manage how this facility would be used during construction.

Mitigation measure SO3 commits to maintaining access to community facilities and infrastructure where possible during construction. Where alternative access arrangements need to be made, these would be developed in consultation with relevant service providers, and communicated to users.

With regards to the potential impacts of the temporary use of the Canterbury Bowling and Community Club during construction, the implementation of the mitigation measures provided in Table 16.1 of this report would minimise the potential construction impacts on the surrounding environment. These measures would seek to prevent any such impacts from occurring instead of being reactive to impacts that have been identified. These measures would be outlined in the Construction Environmental Management Plan and any associated sub plans.

Responses to issues raised about potential noise impacts are provided in Sections 5.11 and 5.12 of this report.

The war memorial near Lakemba Station (in The Boulevard Reserve), located at the corner of The Boulevard and Haldon Street, would not be directly impacted by the preferred project.

### **5.16.2 Community and amenity impacts during construction**

#### ***Summary of issues raised***

A number of submissions raised concerns about general socio-economic, community and amenity impacts during construction. Issues raised included:

- concerned about amenity impacts to the community including noise, vibration, dust and traffic
- the five year construction period will be disruptive to residents of Dulwich Hill
- residents would be subject to dust and noise pollution from construction traffic
- the loss of amenity far outweighs net gains of the project
- concerned about the impacts at Hurlstone Park that removal of the commuter car park and demolition of the station will have on quality of life, parking and views
- concerned about the ability to live in Challis Avenue (Hurlstone Park) during construction
- it is unfair to expect a large number of residents to live in a construction zone that is occurring mainly at night over a period of five years
- the anticipated disruption to residents along the corridor have been seriously underestimated
- facilities should be made available for residents affected by vibration, noise, light and dust during the construction period to ensure they can maintain healthy lives
- concerned about the amenity impacts on River Street in Earlwood as a result of the construction of the feeder cable
- the inner western suburbs of Sydney are already suffering from development fatigue from noise and traffic
- objects to the relatively little attention paid to the St Peters and Sydenham neighbourhoods
- deliveries for renovation works will be impacted by the works for the new cable route, which may result in residents incurring additional costs
- the social and economic impact on tenancy rentals of properties within close proximity (300 metres) to station construction hasn't been addressed, specifically financial loss due to reduced rental or lack of ability to rent properties over a prolonged construction period

- concerned about impacts of construction compound on Station Street (Marrickville) on residents.

### **Response**

Potential socio-economic and community impacts during the construction were acknowledged and assessed in Technical Paper 5 (Social impact assessment), and the results were summarised in Chapter 17 (Socio-economic impacts) of the Environmental Impact Statement.

The number and duration of closures of the rail line and/or stations during possession periods would be reduced with the preferred project.

This would reduce the levels of disruption to the community associated with the exhibited project that were assessed in the Environmental Impact Statement. However, it is acknowledged that the preferred project would still have the potential for amenity impacts during construction, for residents, businesses and those community members who work, study, reside, visit, or access businesses/community services within the vicinity of the project area. This includes as a result of increased noise and vibration, air quality impacts and traffic, as well as a reduction in visual amenity.

The extent, duration and magnitude of impacts to local amenity would vary between locations along the project area, and the nature of works at individual locations. However, the potential for environmental and social disturbance as a result of construction has to be balanced against the long term benefits of Sydney Metro overall.

To manage the potential impacts identified, a comprehensive range of management and mitigation measures and strategies would be implemented, including the Construction Environmental Management Framework, Construction Environmental Management Plan, Construction Noise and Vibration Strategy, Temporary Transport Strategy, Small Business Owners Support Program, and the mitigation measures listed in Table 16.1 of this report. Further information on the approach to environmental management during construction is provided in Section 17.4 of this report. As noted in that section, a Construction Environmental Management Plan would be prepared prior to construction, in accordance with the Construction Environmental Management Framework. This plan would outline the construction conditions, individual management plans, and temporary environmental protection measures to be developed and implemented to manage the impact of construction activities on local communities.

During construction, the project team would continually look for opportunities to reduce the impacts of the project on the local community. The community would be kept informed of progress, including details of potential impacts to assist the community to plan around disruptions wherever possible. As noted in Section 3.5 of this report, Place Managers have been appointed to provide a single point of contact. This would assist in the development of locally appropriate mitigation. Place Managers would allow for effective two-way communication by relaying important messages from the project team to the community and eliciting up-to-date information as to social impacts and suggestions for appropriate mitigation measures.

In addition, as described in Section 3.5 of this report, the Sydney Metro Construction Complaints Management System would be used to record, manage, and where required, escalate and mediate complaints during construction.

### **5.16.3 Community and amenity impacts during operation**

#### ***Summary of issues raised***

A number of submissions raised concerns about general socio-economic, community and amenity impacts during operation. Issues raised included:

#### **Amenity and community impacts**

- the project is wasteful, destructive and risks urban amenity and quality of life
- the substantial decrease in resident amenity is not warranted given the negligible increase to the carrying capacity of the existing rail service
- the plans the government have put forward are not good for the long term health and development of the community
- concerned that quality of life would radically deteriorate due to the proposed substation emitting a humming noise 24 hours a day and the visual impacts
- concerned that the proposed substation in Marrickville would destroy the possibility of resuming the community garden which has been neglected by the rail authority
- concerned that Belmore, along with other suburbs along the Sydenham to Bankstown line, would still have divided communities between the north and south

#### **Employment impacts**

- concerned about the loss of jobs from driverless trains and lack of train conductors
- metro comes at the expense of jobs for drivers and other train service staff
- driverless trains will result in the unnecessary unemployment of a lot of train drivers.

#### ***Response***

#### **Amenity and community impacts**

The preferred project focuses on the retention of existing infrastructure including station entrances.

Therefore, the delivery of enhancements in the areas surrounding the stations would reflect the retention of existing station entrances and there would be a negligible change in character of the existing station precincts.

Where works would occur as part of the preferred project improvements to the station areas, including improved lighting, better integration with other modes of transport and landscaped areas at entrances, are expected to encourage greater customer activity, improve the customer experience, and provide spaces for people to meet.

Once operational, the preferred project (in conjunction with other Sydney Metro projects) would benefit future generations. The preferred project would provide long-term benefits by strengthening connections and access across Sydney, through the provision of a more efficient means of public transport.

As described in Section 17.4 of this report, an Operational Environmental Management Plan and a range of mitigation measures would be implemented to manage the potential for community and amenity impacts during operation.

Responses to issues raised about operational noise impacts, including the potential for noise impacts at substations, is provided in Section 5.11 of this report. Further information about substations is provided in Sections 2.4 and 5.6.5 of this report.

Responses to issues raised about capacity and servicing patterns during operation, including capacity increases as a result of the project, travel times, and stopping patterns, are provided in Sections 5.3.2, and 5.6.1 of this report.

### **Employment impacts**

The NSW Government's planned expansion of rail services would result in ongoing opportunities for train drivers across the Sydney Trains network.

## **5.17 Business impacts**

This section provides responses to issues raised about impacts to businesses, which included impacts during construction and operation.

### **5.17.1 Impacts to businesses during construction**

#### ***Summary of issues raised***

Some submissions raised concerns about the impacts to businesses during construction, particularly impacts to access and parking. Issues raised included:

- concerned about access impacts to businesses as a result of station modifications
- after five years of rail disruptions, with buses in gridlock, I doubt whether many people will still be able to access their current jobs rather than more jobs
- concerned about impacts and disruption to business in Redfern as most staff catch the Bankstown line to work
- businesses around Marrickville Station will suffer from reduced customer traffic due to accessibility and parking difficulties
- concerned about the effect of the project on local shopkeepers, particularly those that depend on passing commuter trade
- concerned about the Small Business Owners Support Program mentioned in the Environmental Impact Statement, and the lack of consultation with shopkeepers regarding this
- at many stations, such as Belmore, parking areas for shoppers and commuters are being eliminated both during and after construction, which will impact local shopping strips dying
- business areas are also likely to be adversely affected financially with road closures, diversions, loss of parking, and noise etc discouraging customer traffic over the period of years of this activity
- concerned about the impact on businesses on Illawarra Road in Marrickville.

#### ***Response***

Potential business impacts during the construction were acknowledged and assessed in Technical Paper 6 (Business impact assessment), and the results were summarised in Chapter 18 (Business impacts) of the Environmental Impact Statement.

It is acknowledged that the preferred project would have the potential for impacts to businesses during construction, including access and amenity impacts for customers and employees. However, the preferred project would reduce the level and duration of disruption, and impacts to businesses dependent on passing trade generated by rail customers, when compared to the exhibited project.

As described in Section 18.4 (Approach to mitigation and management) of the Environmental Impact Statement, the main approach to managing impacts to businesses during construction would be the business management plan. In accordance with mitigation measure BI1, the business management plan would be prepared and implemented during construction, to define the location specific measures and strategies to minimise impacts on individual businesses during construction. The business management plan would incorporate a business consultation forum and procedures to deal with any potential complaints.

In conjunction with the business management plan, and in accordance with mitigation measure BI2, a Small Business Owners Support Program has been developed, and would be implemented to provide assistance to small business owners adversely impacted by construction, including those businesses where passing trade may be impacted. The assistance provided would involve working with small business owners to identify ways of minimising the impacts of construction by providing wayfinding signage, maintaining visibility where practicable, and facilitating access and deliveries at critical times. The program would be administered by a retail advisory/support panel established by Transport for NSW, and would involve further consultation with business owners prior to, and during construction.

Section 10.4.2 (Station and corridor works – changes to car parking) of the Environmental Impact Statement recognised the potential impacts of worker parking, noting that construction workers could use some of the existing parking spaces near stations and construction work areas, impacting on the availability of parking for business customers. The potential impacts of worker parking due to construction of the preferred project would be consistent with the assessment in the Environmental Impact Statement for the exhibited project.

To manage this potential impact, the Environmental Impact Statement noted that:

- some parking would be provided for workers within compounds and/or work sites where practicable
- opportunities for additional construction worker parking would be investigated during detailed construction planning, particularly for larger sites
- additional strategies would be developed to minimise the potential for parking impacts, including encouraging workers to car pool or use public transport, and provision of off-site parking alternatives with associated shuttle bus arrangements.

This approach is confirmed by mitigation measure TC15, which commits to managing construction sites to minimise construction worker parking on surrounding streets, and to developing a worker car parking strategy in consultation with the relevant local council. The worker car parking strategy would identify measures to reduce the impact on local parking, and potential mitigation options, including alternative parking locations.

Responses to issues raised about temporary transport arrangements during construction and closure of the T3 Bankstown Line are provided in Section 5.9.5 of this report.

## **5.17.2 Impacts to businesses during operation**

### ***Summary of issues raised***

Some submissions raised concerns about impacts to businesses during operation. Issues raised included:

#### **General impacts**

- concerned about the impact on the commercial businesses on Illawarra Road in Marrickville during operation

- Marrickville is a thriving suburb with creative small industries which should not be lost
- concerned that small businesses will be forced to move or have their rent increased due to some station entrances being expanded
- the loss of local stops will impact the viability of busy entertainment quarters
- the artist's impression for Hurlstone Park refers to a retail area which is unnecessary and would compete with a small commercial strip in Crinan Street

#### **Impacts of loss of parking**

- concerned about the loss of parking and the impact to businesses near stations

#### **Impacts to individual businesses**

- concerned about the impacts on a medical centre at Punchbowl, including:
  - inconvenience to patients and staff and financial impact) due to the permanent loss of parking
  - the proposed new kerbside facilities would impact the street and result in increased noise and other operational impacts
  - impacts to the medical practice's sensitive equipment, specifically the MRI scanner, which can be affected by large moving metal objects such as trains and trucks
  - the design of the proposed new retail space to the east of the medical centre.

### **Response**

#### **General impacts**

The findings of the business impact assessment are summarised in Section 18.3.3 (Impact assessment – operation) of the Environmental Impact Statement. The assessment concluded that overall, operation of the project would result in benefits to businesses at the local and regional level, as a result of the enhanced capacity and frequency of rail services, which would improve access to the global economic corridor of the Sydney CBD, North Sydney, Chatswood, and Macquarie Park. Adverse impacts to local businesses would be more limited, and would include the potential for increased commercial rents and increased levels of competition, and changes to parking. The assessment of impacts associated with operation of the preferred project would be consistent with this.

#### **Impacts of loss of parking**

The assessment recognised the important role that parking availability plays for the viability of local businesses precincts. Ongoing design development to reduce the potential impacts to parking as far as possible has resulted in an update to the potential operational parking impacts, which are described in Section 5.10 of this report.

As a result of proposed station area improvements, reconfiguration of kerbside areas at stations, and better integration of transport modes, there would be some losses to on-street and off-street time restricted parking (the parking most likely to be used by business customers) immediately surrounding stations. These are summarised in the traffic, transport and access assessment in Appendix D of this report, and further information in relation to issues raised about potential impacts to parking during operation, and relevant mitigation measures, is provided in Section 5.10.4 of this report.



## Impacts to individual businesses

Some submissions have made comments about how the design of the station upgrades would affect their businesses.

The extent of works around station areas has been refined for the preferred project, which would have a corresponding reduction in the potential for the station upgrades to affect surrounding businesses.

Transport for NSW would continue to develop the design to a greater level of detail in conjunction with the appointed design contractor, taking into account accessibility and business operational requirements and the *Around the Tracks: urban design for heavy and light rail* guideline. Further information about the approach to detailed design is provided in Section 5.5.2 of this report.

With respect to the potential for vibration impacts to individual businesses, mitigation measure NVO1 provides that an operational noise and vibration review would be undertaken to guide the approach to identifying mitigation measures to incorporate in the detailed design.

Further information on the approach to noise and vibration management during operation is provided in Section 13.5.1 (Approach to mitigation and management) of the Environmental Impact Statement and Section 5.12 of this report.

Owners/operators of businesses with specific information requests or queries are invited to contact the project team via the community contact and information points provided in Table 3.1 of this report.

## 5.18 Visual impacts

This section provides responses to issues raised about visual impacts, including impacts to trees around stations, and impacts on existing local character.

### 5.18.1 Impacts on trees

A number of submissions raised concerns about the loss of trees. These included concerns with tree loss in general, the loss of trees around stations, and the impacts on trees at specific locations. Issues raised included:

- concerned about the loss of trees on local streets
- existing vegetation around stations must be retained where possible and addressed before construction commences
- the loss of trees will be detrimental to the environment in many ways – tree lined streets assist in cooling the city by protecting hard surfaced roads and footpaths from reradiating the sun's heat back into the atmosphere
- objects to the potential loss of 88 trees at Marrickville Station and 19 trees at Dulwich Hill Station
- there must be a commitment to replace trees with similar species and with plants of a substantial size as well as an ongoing arrangement to see them established
- trees should be replaced in the area (eg in the same suburb) where the tree removal occurred, not elsewhere in the city
- concerned about the loss of 43 trees in Hurlstone Park, most of which are mature and very old
- concerned about the removal of Camphor Laurel trees on Randall Street (Marrickville) which are the only mature trees in the immediate area to enable the movement of trucks

- unclear how much tree removal (including Callistemon and a large Grevillea Robusta) would be required on the northern boundary of Albermarle Street (Marrickville)
- the design at Hurlstone Park Station does not consider the fully grown flowering gum on the south side of the current station - the loss of this tree is unnecessary
- concerned about the removal of trees associated with the Albermarle Street overbridge
- requested that the fig trees on the corner of Garnet Street and The Parade (Dulwich Hill) should be retained and protected
- concerned about the removal of two trees located on the footpath near work site 8 (the Canterbury Bowling Club)
- care should be taken to preserve existing trees and vegetation at the former Canterbury bowling club and surrounding parkland.

### **Response**

Section 9.3.2 (Tree removal and management) of the Environmental Impact Statement noted that the exhibited project would involve trimming or removing trees in the vicinity of stations to facilitate upgrading the stations and station areas. An estimate of the number of trees with the potential to be affected due to the exhibited project was provided in the Environmental Impact Statement, based on a preliminary tree survey.

As described in Section 1.3 of this report, Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal. An estimate of the number of trees in the station precincts with the potential to be affected due to the preferred project is provided in Section 2.3.2 of the preferred project description in Appendix B of this report. Construction of the preferred project would result in at least 390 more trees being retained in the station precincts, compared to the exhibited project. There would also be a reduction in the amount of vegetation clearance within the rail corridor, with trees being avoided where possible, and native plant community types being retained.

Minimising impacts to trees would be a key obligation incorporated into the construction contract. Impacts to vegetation along the corridor between stations would be considered further during detailed design and construction planning to ensure that the number of trees to be removed is minimised.

As noted in the Environmental Impact Statement, impacts to trees would be minimised wherever practicable, and a tree management strategy would be prepared in consultation with relevant stakeholders (including local councils).

Mitigation measure LV4 commits to managing trees during detailed design and construction planning guided by the project's tree management strategy. The measure notes that the strategy would be developed in consultation with councils and include consideration of relevant local plans and strategies. Where removal cannot be avoided, trees would be replaced in accordance with the tree management strategy, including replacement of removed trees in a two for one ratio.

Mitigation measure LV4 notes that opportunities to retain and protect existing trees would be defined during detailed design and construction planning strategy. The design would aim to reduce tree removal to the extent practicable, particularly where they contribute to screening vegetation or landscape character.

Further information on the tree management strategy is provided in Section 2.3.2 of the preferred project description in Appendix B of this report.

## 5.18.2 Impacts on character

### Summary of issues raised

Some submissions raised concerns about the impacts of the project on local character, and that the proposed station upgrade designs do not adequately represent local character. Issues raised included:

- the character of the precincts around the stations will be changed forever
- the proposed station designs do not fit in with the local character of each of the station precincts
- requests that local character be preserved by re-designing new elements to ensure they have an appropriate footprint, more natural colours that do not detract from heritage, natural materials, and to avoid pods and other elements which are out of character
- requested that the design of stations be undertaken by heritage architects
- the station designs are neither attractive or appropriate
- the project will change the character of Dulwich Hill – with the new station to be like Chatswood
- the existing planter boxes make River Street in Earlwood one of the most characterful, quaint streets in Earlwood
- the proposal has missed an opportunity to celebrate the corridor's diversity and character.

### Response

Section 7.1.2 (Design development and place making) of the Environmental Impact Statement described how the design for the project was developed, and the range of considerations that formed part of the process.

As described in Section 7.1.2 (Design development and place making) of the Environmental Impact Statement, the project setting provided one of the primary design considerations. In most cases, the stations are located at the centre of their surrounding communities and are the focal point for intensive activity, as well as integrated transport services. Over time, these centres have developed a clear identity, and by virtue of mixed land uses, community facilities, and a good transport service, each has developed a strong sense of place. As a result, place making has been a crucial consideration during design development.

The preferred project would involve the retention of existing infrastructure along the rail corridor, therefore maintaining the existing identity and character at individual stations.

Where upgrade works are proposed the urban and natural fabric surrounding each station has been used to inform design development, and has taken into account the existing urban context and infrastructure (including built form and public domain conditions, landscape elements, and existing and proposed services and initiatives).

The design of each station would be undertaken in accordance with the document *Around the Tracks: urban design for heavy and light rail*, which requires design to either seek to reinforce the existing identity of stations or to create a new identity, repairing and revitalising the precincts around them. Design principle 5 (Maximise the amenity of the public domain) requires the design to:

*'Design public spaces to be activated as much as possible with diverse uses that appeal to a broad range of users including those from different demographic groups, with varying accessibility needs and at different times of the day and night,' and*

*'Use urban design enhancements (e.g. creative engineering solutions, landscape designs and art) to add interest and character to a project. Unique features contribute to creating a memorable sense of place and enhance the sense of community ownership.'*

The detailed design of the stations would be further informed by the preparation of Station Design and Precinct Plans for each station, as committed to through new mitigation measure LV3. These plans would aim to ensure that the stations and facilities are sympathetic to, and complement, local character taking into consideration urban design context, sustainable design and maintenance and community safety, amenity and privacy, amongst other drivers. These plans would be prepared and implemented in consultation with the Department of Planning and Environment, local councils, the Chamber of Commerce and the local community.

Further information is provided in Section 5.5.2 of this report.

### **5.18.3 Other operational visual impacts**

#### **Summary of issues raised**

Submissions also raised concerns about other potential visual impacts of the project, including the visual impacts of substations, and the impacts of project features. Issues raised included:

#### **Substation impacts**

- concerned about the height of the substation and that it will block sunlight to the garden
- concerned that the substation would destroy the functionality of our garden and back of house, including the continued viability of a productive vegetable garden
- concerned that views from new renovation on Albermarle Street in Marrickville will become obstructed by the new substation
- the visual impact of the substation should be reduced by reducing the height and inclusion of native vegetation screening

#### **Visual impacts of other project features**

- concerned about the impacts of the design of the Albermarle Street bridge on the small residential area
- requested that a screen of trees be planted to minimise the visual impact and absorb some noise
- concerned about rehabilitation and lack of established vegetation or maintenance plan and requested a commitment for one
- objects to the proposed walls that are to be built along parts of the line, which will block scenic views for travellers, discourage tourists, and encourage graffiti
- concerned that the replacement Illawarra Road bridge will affect the visual amenity of our property, attract graffiti, and be more imposing on the back yard
- objects to an elevated station forecourt at Hurlstone Park, which would detrimentally affect the amenity to the surrounding homes
- there would be significant negative landscape and visual impacts for the residents surrounding the Hurlstone Park Station
- raised concerns about the visual impacts on their property as a result of the station design at Hurlstone Park, and suggested that the station and signage be scaled down and the concourse reduced, with one lift per platform, which would reduce the visual impacts

- the new concourse at Canterbury Station should be built underground where it can connect to new development south of the station and reduce visual impacts.

## **Response**

### **Substation impacts**

Further information about the location and approach to the design of the proposed traction substations is provided in Section 2.4.4 of this report. As noted in that section, the design features and appearance of the substations are still subject to detailed design, however the following additional information is provided in relation to the form and appearance:

- The substations would be a single storey above ground level, with basement facilities included to reduce the size of buildings above ground, and minimise visibility from surrounding properties.
- The length and width of the substations would be determined during detailed design, and would take into account site constraints, such as available space and proximity to the tracks.
- The substations would be constructed using modular components. This approach, which is used to construct substations across the Sydney Trains network, would reduce the construction timeframe and impacts on the surrounding community.

To ensure that the substations are designed to integrate as far as practicable with the surrounding environment at each location, the substations would have appropriate architectural treatment of the building facades to minimise visual amenity and landscape character impacts.

To minimise the potential for visual impacts, mitigation measure LV9 commits to incorporating appropriate architectural treatments and landscaping into the design of the substations. This measure also commits to consulting with adjacent property owners during the detailed design process.

### **Visual impacts of other project features**

The potential visual impacts of the project were assessed by Technical Paper 7 (Landscape and visual impact), and the results were summarised in Chapter 19 (Landscape character and visual amenity) of the Environmental Impact Statement. The assessment considered the potential impacts of the exhibited project from a range of viewpoints, and considered both day and night-time amenity impacts.

A visual impact assessment has been undertaken for the preferred project using the methodology and viewpoints as per those described in the Environmental Impact Statement for the exhibited project. The landscape and visual impact assessment for the preferred project is provided in Appendix G and summarised in Chapters 12 to 15 of this report.

The assessment for the preferred project concluded that, with the introduction of new infrastructure in the project area, the preferred project has the potential to result in changes to landscape character and visual amenity. The preferred project would result in changes to the appearance (to differing degrees) of stations, and the addition of new infrastructure along the rail corridor, although compared to the exhibited project, the extent of these changes would be reduced.

The visual impact assessment for the preferred project concluded that for the assessed viewpoints, the vast majority of operational impacts would be negligible or minor beneficial. During operation, there would be a minor adverse landscape impact experienced along all sections of the rail corridor, between Marrickville Station and Bankstown Station. This is primarily due to the proposed tree removal along the corridor and the addition of rail corridor infrastructure (including new noise barriers), minor modifications to existing overhead lines and support structures, telecommunication masts, segregation fencing, and other operational infrastructure, reinforcing the corridor as a physical and visual barrier within the landscape. However, this is an improvement on the impacts identified for the exhibited project. To minimise these potential impacts, the detailed design would be developed in accordance with the document *Around the Tracks: urban design for heavy and light rail*, and would take into account relevant requirements:

- use of a high quality landscape buffers (with street trees and planting) where practicable along the corridor, in consultation with relevant stakeholders, to integrate with the new infrastructure and improve the visual experience
- strategic use of materials that blend, enhance and/or complement existing surfaces, and improve the visual coherence of the project and its context
- materials, finishes, colour schemes and maintenance procedures, including graffiti control for new walls, barriers, and fences
- strategic location of signage to maintain sensitive sight lines, avoid unnecessary intrusion into receivers' views, and enhance legibility
- design of barriers (railings, fences or walls) required for safety to complement the existing visual environment
- the heritage significance of stations, heritage conservation areas, and other listed heritage items
- safety and security requirements.

Mitigation measures LV1 to LV9 provide the commitments in terms of activities and design approaches to minimise the potential visual impacts of the project.

The detailed design of the project would include measures to integrate the changes to the stations into the surrounding urban fabric. Further information is provided in Sections 5.5.2 and 5.18.2 of this report.

## **5.19 Hydrology, flooding and water quality**

This section provides responses to issues raised in relation to flooding and water quality during construction and operation.

### **5.19.1 Impacts on flooding during construction**

#### ***Summary of issues raised***

Questioned what measures would be put in place to ensure that the project does not result in flooding from Cooks River.

#### ***Response***

An assessment of existing and potential changes to surface water and flooding conditions was undertaken as part of the Environmental Impact Statement. The results were provided in Technical Paper 8 (Hydrology, flooding and water quality assessment) and were summarised in Chapter 21 (Hydrology, flooding and water quality) of the Environmental Impact Statement.

As summarised in Section 21.3.4 (Construction impacts – hydrology and flooding) of the Environmental Impact Statement, construction would result in a small increase in impervious areas, which would have the potential to increase the volume of water flowing to watercourses such as Cooks River. However, the change in impervious area would be negligible compared to the overall catchment area.

Additionally, some construction activities, work sites, and compounds would be located in areas where there is an existing flood hazard. The layout of construction compounds and work sites would be undertaken with consideration of overland flow paths and to avoid flood liable land where practicable.

As described in Section 15.1 of this report, hydrology and flooding impacts of the preferred project would be generally consistent with those assessed in the Environmental Impact Statement for the exhibited project. However, construction of the preferred project would not involve works in watercourses and the intensity of excavation and civil works would be reduced, therefore the potential for construction of the preferred project to be impacted by flooding from Cooks River would be reduced.

Mitigation measure FHW4 commits to undertaking detailed construction planning that considers flood risk for all compounds and work sites. This would include the identification of measures to not worsen existing flooding characteristics.

## **5.19.2 Impacts on flooding during operation**

### ***Summary of issues raised***

The following issues were raised regarding flooding impacts:

- questioned how flooding would stop in Marrickville Station as a result of the project
- lowered road levels near The Appian Way road reserve in Bankstown will locally increase the flood depth at the underpass – suitable warning measures will be required.

### ***Response***

A detailed analysis of existing and potential changes to surface water and flooding conditions due to the inclusion of drainage infrastructure was undertaken as part of the Environmental Impact Statement for the exhibited project. The results of this assessment were provided in Technical Paper 8 (Hydrology, flooding and water quality assessment) and summarised in Chapter 21 (Hydrology, flooding and water quality) of the Environmental Impact Statement.

The preferred project would involve the retention of existing infrastructure along the rail corridor, where possible, and the maintenance of existing track drainage. The inclusion of additional new drainage infrastructure does not form part of the preferred project.

The preferred project would be operated within the current hydrological environment (described in Technical Paper 8 (Hydrology, flooding and water quality assessment) of the Environmental Impact Statement) so would not change existing flooding or flood hazard, in, or around the rail corridor.

The preferred project does not include lowering road levels near The Appian Way.

## **5.19.3 Water quality**

### ***Summary of issues raised***

One submission stated that without a clear commitment to implementing Water Sensitive Urban Design (WSUD) principles, anything that enables further development in the Cooks River valley will make pollution in the Cooks River worse.



## Response

Mitigation measure FHW2 commits to incorporating water sensitive urban design elements into the design of the preferred project.

## 5.20 Biodiversity

This section provides responses to issues raised about impacts to biodiversity, including the adequacy of the assessment, the impacts of clearing, and how impacts would be managed.

### 5.20.1 Adequacy of the assessment

#### Summary of issues raised

A couple of submissions expressed concerns with the adequacy of the biodiversity assessment.

One submission expressed concern that the assessment missed the majority of native vegetation within the rail corridor; inconsistently noted that the rail corridor includes 'small isolated patches of remnant or regrowth native vegetation' while the project area is 'confidently identified as planted, rather than regrowth or remnant vegetation'; stated that remnant vegetation was not adequately identified; and that planted vegetation and isolated patches are useful habitat that contributes to biodiversity.

#### Response

The biodiversity assessment (Technical Paper 9 (Biodiversity assessment report)) in the Environmental Impact Statement was undertaken in accordance with the Secretary's environmental assessment requirements and all relevant guidelines, including the *Framework for Biodiversity Assessment* (OEH, 2014a).

The statement within the biodiversity assessment report, 'confidently identified as planted, rather than regrowth or remnant vegetation', refers only to areas mapped as planted native vegetation, and does not apply to the whole project area. Remnant or regrowth native vegetation in the project area was discussed in Section 5.5.2 (Impacts requiring biodiversity offsets) of Technical Paper 9 (Biodiversity assessment report). The distinction between remnant or regrowth native vegetation is noted in Section 3.3.2 (Vegetation) and Figure 3.1 (Vegetation) of Technical Paper 9 of the Environmental Impact Statement. The classification of this vegetation considered consistently throughout the report.

Remnant vegetation in the project area was mapped and sampled at a fine scale and to the satisfaction of the Office of Environment and Heritage. The following comments are made with regards the two patches of vegetation outlined in the submission:

- The patch of remnant Kangaroo Grass (*Themeda australis*) at Dulwich Hill Station is mapped as remnant vegetation (Degraded Turpentine - Grey Ironbark open forest on shale (ME041, Moderate/good-poor) (see Figure 3.1a of Technical Paper 9).
- Turpentine (*Syncarpia glomulifera*) and Blackthorn (*Bursaria spinosa*) near Hurlstone Park Station is mapped as remnant vegetation Turpentine - Grey Ironbark open forest on shale (ME041, Moderate/good-medium) (see Figure 3.1b of Technical Paper 9).

The heavily pruned She Oaks (*Casuarina glauca*) at Dulwich Hill Station are not normally associated with this topographic location and are not representative of the vegetation that would have been likely to occur naturally.

The small patch of Coral Fern (*Gleichenia dicarpa*) at Hurlstone Park Station is not remnant native vegetation, as the cliff face is a railway cutting, not a natural feature, and does not contain the original soil profile or any native vegetation that would have been present prior to construction in the rail corridor.

The value of planted vegetation, including isolated patches of vegetation, is acknowledged in Technical Paper 9 (Biodiversity assessment report), notably in Sections 3.5.2 (Fauna and fauna habitats) and 4.1.1 (Summary of direct impacts) of the assessment report.

The conclusions of the biodiversity assessment undertaken as part of the Environmental Impact Statement for the exhibited project would still be relevant to the preferred project given the project footprint remains the same. However, as described below the impact to vegetation due to the construction of the preferred project would be reduced.

### **5.20.2 Clearing along the rail corridor**

#### ***Summary of issues raised***

Some submissions raised concerns regarding the clearance of vegetation within the corridor from a biodiversity perspective, including the impacts on habitat for fauna. Issues raised included:

- project does not justify the extent of vegetation clearing required and does not provide any detail of this removal
- need to clarify how many hectares of vegetation will need to be removed
- retention of vegetation should be a priority prior to construction commencing
- large numbers of hollow bearing trees are to be impacted
- do not agree with the report that the impacts will not be significant given how little native vegetation exists in the area
- fragmentation of habitat leads to inbreeding, loss of connectivity between populations and greater vulnerability to unpredictable environmental events
- the rail corridor provides a biodiversity corridor, which allows fauna to travel between green spaces
- there is a lack of clarity about whether the community is being consulted on the environmental impact of the direct 39 hectare impact of the 69 hectare project footprint or the landscaping of the entire rail corridor.

Responses to issues raised relating to the removal of trees and the proposed tree management strategy are provided in Section 5.18 of this report.

#### ***Response***

In relation to the impact area, Section 2.1.1 (Project area) of the Environmental Impact Statement defined the project area for the purposes of the Environmental Impact Statement. The term 'project area' is used in this Environmental Impact Statement to refer to the area where the project would be undertaken. The project area is the area that would be directly disturbed by construction of the project (for example, as a result of ground disturbance and the construction of foundations for structures). It includes the location of construction activities, compounds and work sites, and the location of operational infrastructure. This term is also used in referring to the area where the preferred project would be undertaken.

Vegetation clearing for the exhibited project was calculated on a conservative basis, assuming that all vegetation within the project area would be cleared. The majority of this vegetation is not native, comprising exotic plants or planted, often non-indigenous, native species on fill material.

Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal. Accordingly, impacts to one hectare of native planted community types in the rail corridor would be avoided during construction of the preferred project.

It is expected that large areas of the planted native vegetation and exotic scrub and forest would not require removal for the corridor works, however this is subject to the detailed design of the proposed works, including fencing and the communications services route.

This vegetation would potentially include trees that provide screening along the corridor for surrounding properties. Minimising impacts to trees would be a key obligation incorporated into the construction contract. The need to clear vegetation would be reviewed by the construction contractor/s and minimised wherever practicable.

Mitigation measure B1 commits to avoiding direct impacts to vegetation mapped as threatened ecological communities and native plant communities. Mitigation measure B3 provides that areas of biodiversity value outside the project area would be marked on plans, and fenced or signposted where practicable, to prevent unnecessary disturbance during construction.

Surveys undertaken for the biodiversity assessment identified limited hollow-bearing trees within the corridor with only two hollow-bearing trees identified in the corridor between Punchbowl and Bankstown stations. While the loss of these hollows would result in some habitat loss, these hollows are not considered large enough for any threatened owl species.

The project area is currently a substantial barrier to the movement of ground-dwelling fauna, due to the presence of a wide area of cleared land, barriers such as bridges and fences, and regular train movements. Vegetation in the project area comprises scattered linear fragments that together with trees in adjacent urban areas provide 'stepping stones' of habitat between larger areas of vegetation for mobile species such as bats and birds.

With the retaining of vegetation and revegetation proposed as part of the preferred project, the use of the rail corridor as a biodiversity corridor is considered to be maintained to a level which is consistent with the existing corridor.

### **5.20.3 Other biodiversity impacts**

#### ***Summary of issues raised***

Other biodiversity issues raised in submissions mainly included how impacts would be managed. Issues raised included:

- issues with the proposed rehabilitation proposed to occur, including the proposed replacement of vegetation, the type of vegetation used in replanting and using the project as an opportunity to remove exotic species and replacement with native species
- questioned if clippings of vegetation within the corridor could be collected and used for replanting at the completion of works
- impact on wildlife and other biosphere elements will definitely be negative
- questioned the locations of the biobanking sites
- purchasing biodiversity credits in the Hills Shire or Little Island does nothing for the environment of the local community in the Sydenham to Bankstown corridor
- it is entirely unclear what you will replace the grass with
- there is no indication that the rail corridor would be left in an equivalent or better state
- concerned with the potential impacts on birds as a result of wind from trains.

## **Response**

As described above, Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal. Accordingly, impacts to native plant community types in the rail corridor would be avoided during construction of the preferred project and no biodiversity offset would be required.

Following clearance of vegetation, any vegetation waste would be considered for its appropriateness for use in revegetation activities (through replanting or cuttings). This would assist in ensuring that existing species are reused in any revegetation activities.

Rehabilitation of the rail corridor would be undertaken progressively once works are complete in any locations, and disturbed areas would be left in an improved state. Rehabilitation would be undertaken in accordance with the landscape design of the project which would be developed part of the detailed design and identified in the Station Design and Precinct Plans (required by mitigation measure LV3).

Rehabilitation would also be undertaken in accordance with the tree management strategy (mitigation measures LV4), which includes replacing two trees for every one removed. Further information on this strategy is provided in Section 2.3.2 of the preferred project description in Appendix B of this report. The disturbance of existing trees and vegetation would, where possible, be replanted as close as possible to where they were originally removed to ensure that any benefits of the existing tree/vegetation (e.g. screening or shade) are maintained.

Mitigation measure LV16 commits to undertaking site restoration following completion of construction in accordance with the visual amenity management plan (required to be prepared under the Construction Environmental Management Framework).

Impacts on birds due to increased wind resulting from the movement of trains along the corridor are considered to be minimal as similar impacts are already experienced due to the operation of the T3 Bankstown Line within the rail corridor. The project would increase the frequency of trains and increase speeds, however these factors are not considered to result in any substantial increase in impacts.

## **5.21 Air quality**

This section provides responses to issues raised about impacts to air quality during construction and operation.

### **5.21.1 Construction impacts**

#### **Summary of issues**

Some submissions raised concerns about air quality during construction, including:

- concern about air quality impacts during construction, particularly around Dulwich Hill and Hurlstone Park stations
- concern about air quality impacts due to the use of residential streets for construction haulage.

#### **Responses**

Section 23.3.2 (Impact assessment - construction) of the Environmental Impact Statement outlined the potential air quality impacts during construction resulting from the generation of dust and exhaust emissions from construction equipment and vehicles (including haulage vehicles). Overall, the assessed impacts were considered to be consistent with those for a large infrastructure project located within an established urban area.

The reduction in the scale of construction required as part of the preferred project would lead to a decrease in the levels of construction dust and emissions from construction equipment of the exhibited project that was identified in the Environmental Impact Statement.

Outstanding impacts would be able to be managed with the implementation of standard mitigation measures.

Section 23.4.1 (Approach to mitigation and management) of the Environmental Impact Statement noted that an air quality management plan would be developed and implemented in accordance with the Construction Environmental Management Framework. The air quality management plan would define the management and monitoring measures that would be implemented to minimise the potential for air quality impacts during construction. This commitment is confirmed by mitigation measure AQ1. All reasonable and feasible measures to control dust emissions would be implemented during construction in accordance with the air quality management plan.

Haulage routes would be confirmed by the contractor as part of construction planning. This would include the consideration of the sensitivity of any haulage routes to air quality impacts associated with vehicle emissions and the generation of dust (i.e. transmission of dust onto adjacent roadways). Standard mitigation measures contained within the air quality management plan would be implemented to ensure any impacts associated with the movement of haulage vehicles would be minimal.

## **5.22 Operation impacts**

### ***Summary of issues***

The potential impacts of wind from faster more frequent trains is not mentioned in the Environmental Impact Statement. Such impacts would include generation of dust as trains travel along the corridor.

### ***Response***

The preferred project would result in an increase in the number of trains and the speed at which trains travel along the rail corridor. It is considered unlikely that the movement of trains along the corridor would result in any noticeable increase in the generation of dust compared to the existing situation.

The rail corridor would be rehabilitated following construction to ensure that any disturbed areas are restored to their previous condition. This would minimise the potential for dust during operations.

Additionally, the operator would be required to prepare an operational management plan. This plan would be in accordance with the rest of the metro system and would include measures to minimise environmental impacts during operation, including potential impacts to air quality.

## **5.23 Sustainability and climate change**

This section provides responses to issues raised about sustainability, resource use, and climate change.

### **5.23.1 Sustainability policy and strategy**

#### ***Summary of issues raised***

Some submissions raised concerns about the sustainability policy and strategy. Issues raised included:

- sustainability during construction is not mentioned in the Environmental Impact Statement

- there is no mention of the use of alternative energy, such as solar panels and battery technology
- it is recommended that sustainable initiatives be reviewed, updated, and implemented, including the use of renewable energy.

### **Response**

An assessment of the exhibited project in terms of sustainability, and how it meets, and would continue to meet, relevant sustainability requirements during construction and operation was provided in Chapter 24 (Sustainability and climate change) of the Environmental Impact Statement. A description of the Sydney Metro City & Southwest Sustainability Strategy was provided in Section 24.2.1 (Sustainability) of the Environmental Impact Statement. A copy of the strategy was provided in Appendix F of the Environmental Impact Statement.

The strategy outlines the performance targets, initiatives, and outcomes that would be adopted during the design, construction and operation stages of the project. The strategy includes a number of targets for ensuring that renewable energy (e.g. solar) would be considered to contribute to the electricity requirements of above ground stations. The preferred project offers less opportunities for the inclusion of renewable energy sources however, the inclusion of solar photovoltaics would be incorporated in the detailed design of stations, where feasible. The majority of the sustainability initiatives and targets proposed in the Environmental Impact Statement for the exhibited project would be retained for the operation of the preferred project. However, some initiatives and targets would no longer be relevant. Those initiatives and targets that would no longer be relevant to the preferred project are identified in Chapters 12 to 15 of this report.

Mitigation measure SCC1 commits to ensuring that sustainability initiatives and targets are reviewed and incorporated into the detailed design to support the achievement of the project's sustainability objectives. The measure also commits to targeting a best practice level of sustainability performance using relevant sustainability rating tools (e.g. an Infrastructure Sustainability Council of Australia (ISCA) as built 'excellent' level rating).

Additionally, mitigation measure SCC2 commits to developing a sustainable procurement strategy to apply to the Principal Contractor, their subcontractors, and suppliers during construction.

## **5.23.2 Resource use**

### **Summary of issues raised**

One submission noted that based on the principles of sustainability, the use of existing infrastructure is important.

### **Response**

In response to feedback received from the community and stakeholders Transport for NSW has developed a design solution which enables existing infrastructure to be retained where possible, while still delivering a world class metro.

## **5.23.3 Climate change**

### **Summary of issues raised**

Some submissions raised concerns about the impacts of the project on climate change, and the potential impacts of climate change on the project. Issues raised included:

### **Greenhouse gases**

- the increase in greenhouse gas emissions is unacceptable

- concerned about the increase in greenhouse gas emissions and the presumption that this would be offset by reduced car use, as the project aims to trigger growth and development
- concerned about emissions from additional heavy machinery and construction works
- the use of trains rather than cars makes a valuable contribution to reducing greenhouse emissions.

### Climate change

- concerned about additional costs due to climate change impacts
- concerned about whether the new metro carriages will stand up to the unknown extent of impacts from climate change as well as the existing heavy rail carriages.

### Response

#### Greenhouse gases

Section 24.3 (Assessment results) of the Environmental Impact Statement noted that construction and operation of the exhibited project would result in the generation of greenhouse gases.

However, as summarised in Section 24.3.3 (Greenhouse gas) of the Environmental Impact Statement, the exhibited project is expected to represent only a small percentage of emissions resulting from the transport sector in NSW (about 0.5 per cent during construction, and 0.7 during operation). Operation impacts are mainly associated with electricity use.

Section 24.3.3 also noted that the project has the potential to reduce greenhouse gas emissions by providing a comfortable and efficient alternative to private car travel and the ability to shift large numbers of people via metro services.

The preferred project would be consistent with this however, greenhouse gas emissions during construction would be reduced.

The detailed design would seek to minimise emissions where possible, with consideration of energy efficiency initiatives and the use of solar panels at stations as outlined in the Sydney Metro City & Southwest Sustainability Strategy (Appendix F of the Environmental Impact Statement). It is also proposed that 100 per cent of greenhouse gas emissions from the generation of electricity used during the operations stage would be offset. The nature of this offset would be determined prior to operation.

Mitigation measure SCC5 commits to undertaking an iterative process of greenhouse gas assessments and design refinements during detailed design and construction, to identify opportunities to minimise greenhouse gas emissions. Mitigation measure SCC8 commits to offsetting 25 per cent of the greenhouse gas emissions associated with consumption of electricity during construction. Mitigation measure SCC12 commits to offsetting 100 per cent of the greenhouse gas emissions associated with consumption of electricity during operation.

### Climate change

As outlined in Section 24.1.2 (Assessment approach – climate change) of the Environmental Impact Statement, a climate change risk assessment was undertaken in accordance with the *TfNSW Climate Risk Assessment Guidelines* (Transport for NSW, 2016b) and based on *AS 5334-2013 Climate change adaptation for settlements and infrastructure – A risk based approach*.

The climate risk assessment identified 15 medium risks including:

- increased rainfall intensity and extreme events affecting stations and surrounds
- changed rainfall patterns affecting overland flows and drainage requirements



- effects of changes in groundwater levels and extreme rainfall events resulting in instability of cuttings and embankments
- damage of roofs and critical equipment associated with hailstorm events.

To effectively manage these and other climate change risks, each stage of the design and delivery of the preferred project would consider the most up to date climate change projections, and would be subject to ongoing review and response by designers and constructors. Mitigation measure SCC4 commits to incorporating climate change risk treatments into the detailed design.

Where relevant, the preferred project has been designed to factor in climate change and aims to minimise any future costs to respond to climate change impacts. Impacts of climate change on the metro trains are not considered to differ from existing trains, as both sets of rolling stock are similar in nature.

## **5.24 Hazards, risks and safety**

This section provides responses to issues raised about risks and safety during construction and operation.

### **5.24.1 Construction impacts**

#### *Summary of issues raised*

One submission questioned how many buildings containing hazardous materials would be affected by vibration.

#### *Response*

The results of the construction vibration assessment were summarised in Section 12.5 (Potential impacts) of the Environmental Impact Statement. Detailed results are provided in Technical Paper 2 (Noise and vibration assessment).

The vibration assessment assumed that the most vibration intensive piece of construction equipment required for the construction of the exhibited project would be a rock breaker. As described in Chapter 10 of this report, hydraulic breaking would not be required during construction for the preferred project therefore the most vibration intensive piece of construction equipment required for the preferred project is a ballast tamper. The vibration levels generated through the use of a ballast tamper are significantly lower than those generated through the use of a rock breaker and use of a ballast tamper would be restricted to the limited track works in the rail corridor. Therefore, the preferred project would result in reduced vibration impacts compared to the exhibited project.

In accordance with the Construction Noise and Vibration Strategy, and mitigation measure NVC3, where vibration screening levels are predicted to be exceeded a more detailed assessment of the structure would be carried out to determine the appropriate vibration limits for that structure. This assessment would include consideration of the type of structure.

## 5.24.2 Operation impacts

### Summary of issues raised

Some submissions raised issues regarding the potential hazards and risks associated with operation of the project. Issues raised included:

### Operation risks and safety impacts

- concerned about the potential risks associated with using more light weight metro trains, especially when running close to goods trains
- issues with proposed station arrangement at Hurlstone Park, and the potential for safety impacts

### Substation health impacts

- concerned with the operation of the new traction substation adjacent to residential properties, and the potential for health impacts

### Active transport and health/safety risks and benefits

- concerns about the provision of active transport corridor paths and the potential safety risks for adjacent properties, including the path proposed between Station Street and Victoria Road/Charlotte Avenue
- concerned about bicycle safety, including conflicts between pedestrians and cyclists and vehicles and cyclists
- concerned about the stated health benefits in the Environmental Impact Statement.

### Response

### Operation risks and safety impacts

Transport for NSW considers the safety of customers to be its number one priority.

The proposed metro rolling stock would not be substantially different to the existing Sydney Trains services operating along the T3 Bankstown Line. The main differences between the rolling stock (trains) used by Sydney Trains and Sydney Metro relate to the arrangement of the carriages and how they are operated. The weight of the trains are not substantially different (both services are still considered to be heavy rail).

The preferred project design at Hurlstone Park Station has considered the potential for safety impacts. Station upgrades undertaken as part of the preferred project would include improved lighting and the provision of new lifts and stairs, which would improve safety and access and provide for better movement through the station.

Transport for NSW would continue to develop the design to a greater level of detail in conjunction with the appointed design contractor. Transport for NSW would challenge the contractor to develop innovative solutions to detailed design and construction to achieve improved outcomes. The design would continue to be guided by the document *Around the Tracks: urban design for heavy and light rail* and feedback from stakeholders.

Safety is a fundamental consideration in the design of all elements of Sydney Metro. Safety in Design principles would be adopted (along with other measures) as an integral component of the detailed design of stations and surrounds. Where safety issues are apparent or remain unresolved, safety reviews, including road safety audits to consider the interactions between all road users, would be undertaken.

Mitigation measure LV3 commits to the preparation of Station Design and Precinct Plans during detailed design that would consider community safety, amenity and privacy, including 'safer by design' principles where relevant.

Additionally, mitigation measure HRS1 commits to undertaking a hazard analysis during the detailed design stage to identify risks to public safety from the project, and how these can be mitigated through safety in design.

### **Substation health impacts**

As described in Section 2.4.4 of this report the final locations and layouts of the substations have not been confirmed. However, electromagnetic fields would be considered further during the detailed design and commissioning of substations, with detailed analysis and monitoring undertaken to determine the potential and actual electromagnetic energy levels within and outside the substation to ensure they meet all relevant standards and guidelines for electromagnetic radiation.

To minimise the potential for electromagnetic energy impacts, mitigation measure HRS2 commits to ensuring that the substations would be designed to meet relevant guidelines. It also commits to monitoring during the commissioning of the substations to determine the potential and actual electromagnetic energy levels within and outside the substations. Should exceedances of the criteria be found, methods to reduce these exceedances would be implemented particularly in relation to adjacent residential areas.

### **Active transport and health/safety risks and benefits**

Due to the revised construction methodology and retention of existing features along the rail corridor, an active transport corridor is no longer viable within the rail corridor as part of the preferred project. However, the preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would work with relevant stakeholders to identify the best active transport routes supporting and pedestrian and cycling facilities, a key consideration of which would be user safety.

Transport for NSW would continue to develop the design to a greater level of detail in conjunction with the appointed design contractor. The exact nature of the works required at each station would be confirmed as an outcome of the detailed design process, which would be informed by the document *Around the Tracks: urban design for heavy and light rail*.

Design principle 3 (Provide connectivity and permeability for pedestrians) from *Around the Tracks: urban design for heavy and light rail* requires the design to:

*'Allow for movement through the site that is unrestricted and legible. The design should guide users through the building and spaces in a clear, legible manner without causing any confusion or indecision,' and*

*'Design paths to link to pedestrian crossings and other footpaths for optimal safety. Locate paths with good passive surveillance and incorporate adequate light levels.'*

Additionally, Transport for NSW would develop an Interchange Access Plan for each station to inform the final design of transport and access facilities and services. The plans would include consideration of footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives at and around each station.

Mitigation measure HRS1 commits to undertaking a hazard analysis during the detailed design stage to identify risks to public safety from the preferred project, and how these can be mitigated through safety in design.

## 5.25 Waste management

This section provides responses to issues raised about waste management during construction.

### 5.25.1 Construction impacts

#### *Summary of issues raised*

Some submissions questioned the waste and resource management measures proposed for the project. Issues raised included:

- who would be responsible for removing hazardous wastes that require removal as a result of the proposal
- questioned the possibility of reusing/recycling 95 per cent or more of redundant materials on either the project or other construction sites
- questioned why all ballast and spoil cannot be reused during construction
- ripping up the rail line will result in resource wastage.

#### *Response*

##### **Removal of hazardous waste**

Mitigation measure WM6 commits to assessing, classifying, managing, and disposing of waste in accordance with the *Waste Classification Guidelines* (EPA, 2014a). Waste that is classified as hazardous waste would be removed from the site by authorised contractors, to an appropriately licenced facility. The disturbance, movement and disposal of hazardous waste that contains asbestos would also be undertaken in accordance with the *Work Health and Safety Regulations 2011* and applicable guidelines.

All waste would be tracked in accordance with the requirements under Part 4 of the Protection of the Environment (Waste) Regulation 2014.

##### **Reuse and recycling of waste**

Mitigation measure WM2 commits to a recycling target of 90 per cent for material which can be recycled (including demolition waste). This is in accordance with the targets outlined in the Sydney Metro City & Southwest Sustainability Strategy for the exhibited project (Appendix F of the Environmental Impact Statement) and would still be relevant to the preferred project.

Recycling and reuse of material would depend on the nature of the material in question, including whether it contains any contaminated material. In the first instance, material such as spoil and ballast would be considered for reuse on site. This would include potentially reconditioning the material prior to its reuse. Where material is suitable for reuse, but is not required by the project, alternate destinations for reuse would be considered if available.

Mitigation measure WM1 commits to minimising excess spoil volumes, which would include optimising the design to minimise spoil volumes, and the reuse of material on-site.

##### **Resource wastage**

While the preferred project involves the upgrade of the T3 Bankstown Line to metro standards, the majority of the existing rail line would not require removal, as the metro services would operate on the same gauge tracks. Some isolated sections of track may need to be replaced because of its condition. Where this is required, reuse of the track would be considered, as would any opportunities for recycling the sections of track and associated materials.

## 5.26 Cumulative impacts

This section provides responses to issues raised about the potential cumulative impacts of the project.

### 5.26.1 Impacts combined with WestConnex

#### *Summary of issues raised*

Some submissions raised concerns about the potential for cumulative impacts associated with construction of the project at the same time as the various WestConnex projects, particularly the New M5 and M4-M5 Link at St Peters.

#### *Response*

Chapter 27 (Cumulative impacts) of the Environmental Impact Statement provided an assessment of the potential cumulative impacts of the project in accordance with the Secretary's environmental assessment requirements, and considered the potential for impacts taking into account other projects in close proximity to the project area.

Section 27.2 (Potential cumulative impacts) of the Environmental Impact Statement, considered the potential for cumulative impacts associated with the exhibited project being undertaken concurrently with the various WestConnex projects. The section noted that surface works associated with WestConnex Stage 2: New M5 (Beverley Hills to St Peters) and Stage 3: M4-M5 Link are located at Erskineville, about 2.3 kilometres to the east of the exhibited project, and that no aspects of the two projects overlap (including haulage routes). The assessment concluded that works associated with WestConnex are unlikely to result in additional project impacts. This assessment would remain relevant to the preferred project.

To minimise the potential for cumulative impacts, mitigation measure CI1 commits Transport for NSW to managing and coordinating (in consultation with relevant stakeholders) the interface between the Sydenham to Bankstown project, and projects under construction at the same time. This would include:

- provision of regular updates to the detailed construction program, construction sites and haulage routes
- identification of key potential conflict points with other construction projects
- developing mitigation strategies to manage any conflicts that could occur, which could involve:
  - adjustments to the project construction program, work activities or haulage routes
  - adjustments to the program, activities or haulage routes of other construction projects
  - coordination of traffic management arrangements between projects.

### 5.26.2 Other cumulative impacts

#### *Summary of issues raised*

Some submissions raised concerns about the potential for cumulative impacts associated with construction of the project at the same time as other projects and developments, including future urban development in the study area. Issues raised included:

### Cumulative impacts due to other developments/projects in the study area

- concerned about cumulative impacts due to existing and future urban development within the study area, including development under the *Sydenham to Bankstown Urban Renewal Corridor Strategy*
- concerned about with the number of developments occurring concurrently, and the associated environmental impacts
- construction (including possessions) should be timed to avoid overlapping with other projects
- future development should only commence once the project is operational
- requested that roadworks in the CBD should be completed before the shutdown period, as trains are being used more due to the difficult traffic conditions
- requested that an embargo is placed on planning changes and medium/high rise development until after completion of the project and the provision of other infrastructure needed to service the increased population
- concerned about impacts associated with other large infrastructure projects such as light rail

### Location specific cumulative impacts

- concerned about the potential cumulative impacts on individual properties as a result of all the potential impacts of the project (such as noise, traffic, visual) occurring together
- concerned about location-specific cumulative impacts, such as the disruption of a quiet street in Earlwood and River Street, due to existing development occurring concurrently with the project

### Other developments not considered

- noted that a number of developments that are planned or in progress were not identified in the Environmental Impact Statement.

### Response

#### Cumulative impacts due to other developments/projects in the study area

The Sydenham to Bankstown corridor is currently undergoing change with development already occurring in some locations (e.g. around Canterbury Station).

As noted in Section 5.3.4 of this report, a large number of submissions expressed concerns with proposals to increase residential densities in the study area, and the links to the project. These included concerns regarding future and current development projects, and concerns regarding future planning (including the revised draft *Sydenham to Bankstown Urban Renewal Corridor Strategy*).

The revised draft *Sydenham to Bankstown Urban Renewal Corridor Strategy* was prepared to identify opportunities for urban renewal around the stations between Sydenham and Bankstown over the next 20 years. As noted in Section 16.3.1 (Strategic planning) of the Environmental Impact Statement, the strategy forecasts that over 35,000 additional dwellings could be built within the corridor by 2036, and 8,000 jobs could be generated.

This increase in the population is acknowledged, and was taken into account where possible by the Environmental Impact Statement (including the traffic and transport, hydrology, and land use assessments) and the assessments undertaken for the preferred project.

The cumulative impact assessment was prepared in accordance with Secretary's environmental assessment requirements, taking into account other projects that have been approved but where construction has not commenced, projects that have commenced construction, and projects that have recently been completed.

In areas where the preferred project would be located in close proximity to existing or soon to commence developments, construction planning for the project would include consideration of impacts on other developments (e.g. impacts on delivering other developments). Where possible, works would seek to avoid any impacts, however if they are required, consultation with the relevant developers would be undertaken to ensure any impacts are minimised.

As noted above, to minimise the potential for cumulative impacts, mitigation measure CI1 commits Transport for NSW to managing and co-ordinating (in consultation with relevant stakeholders) the interface between the preferred project, and projects under construction at the same time. In addition, mitigation measure LU1 commits Transport for NSW to working with the Department of Planning and Environment, the Greater Sydney Commission, Canterbury-Bankstown Council, and Inner West Council in relation to future planning for the Sydenham to Bankstown corridor.

Cumulative impacts associated with the construction of CBD and South East Light Rail were not considered to be an issue due to the distance of this project from the light rail project. The majority of works associated with the light rail project would be completed prior to the commencement of construction for the Sydenham to Bankstown project.

Further information about the relationship between the preferred project and future planning in the study area is provided in the responses in Section 5.3 of this report.

#### **Location specific cumulative impacts**

The cumulative impact assessment was prepared in accordance with Secretary's environmental assessment requirements, taking into account other projects that have been approved but where construction has not commenced, projects that have commenced construction, and projects that have recently been completed. It is beyond the scope of the Environmental Impact Statement and this report to assess the cumulative impacts of the preferred project on each individual receiver. Instead, the potential environmental impacts of the preferred project on receivers (such as noise, traffic etc) have been assessed separately. Transport for NSW would continue to engage closely with stakeholders, affected property, business owners and occupants through all stages of design, planning, through to construction, thereby understanding any potential cumulative impacts.

The Environmental Impact Statement and the assessments undertaken for the preferred project recognise that although Sydney Metro City & Southwest (including the preferred project) would benefit the community during operation, but there would be impacts during construction. To manage the potential impacts identified, the Environmental Impact Statement defines a range of management and mitigation measures that would be implemented during construction and operation phases of the project, including the Construction Environmental Management Framework. Further information is provided in Chapter 17 of this report.

#### **Other developments not considered**

The developments listed in Table 27.2 (Projects with the potential for cumulative impacts) of the Environmental Impact Statement were limited to larger developments located close to the proximity to the project with the highest potential for cumulative impacts. Further investigations would be undertaken during construction planning phases to ensure that all potential development in the vicinity of the project are identified and are considered to ensure impacts are minimised.



## 5.27 Environmental management

This section provides responses to issues raised in relation to how environmental impacts would be managed during construction and operation.

### 5.27.1 Construction environmental management arrangements

#### *Summary of issues raised*

Some submissions raised concerns about environmental management during construction, including:

- a commitment is required to ensure that the environment is appropriately managed throughout construction and operation
- how the requirements outlined in the Environmental Impact Statement will be monitored, regulated, and enforced
- rehabilitation of construction areas should include planting of native species and not simply laying turf.

#### *Response*

The approach to environmental management during construction is described in Section 28.4.1 (Environmental management during construction) of the Environmental Impact Statement and in Section 17.4.1 of this report.

The approach to environmental management during construction involves:

- Project design – measures incorporated in the design and construction planning to avoid and minimise impacts.
- Mitigation measures – a consolidated list of measures is provided in Table 16.1 of this report.
- Environmental performance outcomes – future construction planning would be considered against the environmental performance outcomes provided in Section 17.6 of this report.
- Implementation of the following project specific construction environmental management frameworks/strategies (described below):
  - Construction Environmental Management Framework
  - Construction Noise and Vibration Strategy
  - Temporary Transport Strategy
  - Utilities Management Framework.

The proposed mitigation measures, together with the environmental approach described above, provide Transport for NSW's ongoing environmental management commitments to the preferred project. In the event the project is approved, the conditions of approval, which would include reference to the final mitigation measures, would guide subsequent phases of the preferred project. The preferred project would be undertaken in accordance with any conditions of approval and the final list of mitigation measures.

Compliance with the relevant legislation and any conditions of approval, should the preferred project be approved, would occur through implementation of the Construction Environmental Management Framework. The Construction Environmental Management Framework, provided in Appendix D of the Environmental Impact Statement, details the approach to environmental management and monitoring during the construction life of the project. The framework is a linking document between the planning approval documentation, such as any conditions of approval and final mitigation measures, and the construction environmental management framework and associated documentation (including a Construction Environmental Management Plan), which would be developed by the construction contractors.

The mitigation measures provided in Table 16.1 include requirements for various management plans to be prepared and implemented during construction, in accordance with the Construction Environmental Management Framework.

Contractors would be required to implement and adhere to the requirements of the Construction Environmental Management Framework to a level which is appropriate for their scope of works and the environmental risk of the activities they undertake. The requirements of the Construction Environmental Management Framework would be included as a contract document in all design and construction contracts.

This would be further enforced through compliance with any conditions of approval, should the preferred project be approved. Based on the historical conditions received for the Sydney Metro Chatswood to Sydenham project, any conditions of approval would likely require the engagement of independent environmental representatives who would undertake regular site inspections and review compliance with the approvals. Independent environmental audits undertaken on a regular basis by independent auditors would also likely be required.

In accordance with the Construction Environmental Management Framework, rehabilitation works for each construction area would be defined and included in the Construction Environmental Management Plan. This would include measures to ensure that landscaping proposed as part of the preferred project is implemented as soon as possible after works are finished.

## **5.27.2 Operational environmental management arrangements**

### ***Summary of issues raised***

One submission queried how the requirements of the Environmental Impact Statement would be regulated, monitored and enforced during operation.

### ***Response***

The approach to environmental management during operation is described in Section 28.4.2 (Environmental management during operation) of the Environmental Impact Statement and in Section 17.4.2 of this report.

As with the construction phase, the mitigation measures together with the environmental approach described in Section 17.4.2 of this report define Transport for NSW's commitments in relation to environmental management for the operational phase. Operation of the preferred project would be undertaken in accordance with any relevant conditions of approval and the final list of mitigation measures.

Should the preferred project be approved, any conditions of approval may reference the operational requirements described in the Environmental Impact Statement, including the final relevant mitigation measures. Compliance with any conditions of approval would then be ensured by developing and implementing an Operational Environmental Management Plan. The plan would detail how the mitigation measures and performance outcomes would be implemented and achieved during the operation of the project. This plan also specifies the environmental management practices and procedures to be followed during the projects operation. The plan would include details of how environmental performance would be managed and monitored, while the conditions of approval is likely to also include requirements for ongoing monitoring and compliance checking.

As described in Section 3.2.1 (NSW approval requirements) of the Environmental Impact Statement, operation of the preferred project would also require an environment protection licence, under Chapter 3 of the *Protection of the Environment Operations Act 1997*. This would include additional compliance requirements that would need to be met during the operation of the project. In the majority these compliance requirements are associated with the potential for the operation of the project to manage the pollution on the environment by emissions to air, noise, soil or water in addition to requirements regarding waste management.

## **5.28 Issues beyond the scope of the Environmental Impact Statement**

This section provides responses to issues raised that were outside the scope of this project and/or the Environmental Impact Statement.

### **5.28.1 Issues relating to other Sydney Metro projects**

#### ***Summary of issues raised***

Some submissions raised issues about Sydney Metro projects. Issues raised included:

#### **Chatswood to Sydenham project**

- does not believe that the proposed stations for the city are adequate especially the plan to retain Martin Place Station and have no stop at Circular Quay
- Barangaroo Station is only proposed to make access to the new casino easier
- a station at Alexandria/Erskineville, between Sydenham and Waterloo stations, is needed as there is a five kilometre gap between stations
- there should be a station be at Sydney University not Waterloo
- the new Waterloo Station should be retrofitted to the airport line and a new station built at Sydney University to reduce crowding at Redfern and make lines more direct
- the Environmental Impact Statement does not mention the modifications to Sydenham Station
- concerned about the loss of industrial/employment land around Sydenham Station

#### **Wider Sydney Metro network**

- having Central Station as the centre for the metro network would restrict expansion of metro services to other train lines
- Sydney Metro should be part of the existing train network

- the use of metro would be confusing for occasional users due to the existing metro bus network
- Sydney Metro would result in a drop in Sydney Trains patronage of about 40 per cent which will make the services redundant
- the requirement for escalators, which was part of the Chatswood to Sydenham project, seems to have been removed from later Sydney Metro projects (i.e. this project and the Sydenham Station works).

## **Response**

### **Chatswood to Sydenham project**

This preferred project for the purposes of the Environmental Impact Statement (where relevant to the preferred project) and this Submissions and Preferred Infrastructure Report is limited to the Bankstown to Sydenham upgrade component of the Sydney Metro City & Southwest project. Any issues regarding the Chatswood to Sydenham project, including the justification and location of stations, was addressed as part of the Environmental Impact Statement and Submissions and Preferred Infrastructure Report for that project. Planning approval was received for the Chatswood to Sydenham component in January 2017, and construction has commenced.

The modification to the Chatswood to Sydenham project for works at Sydenham Station and the Sydney Metro Trains Facility South was approved in December 2017. Issues regarding the scope, impacts and benefits of this work was identified in the relevant modification report and submissions report.

### **Wider metro network**

The Sydney Metro network is being progressed as a differentiated service to the Sydney Trains network. The Sydney Metro branding is an important component of this service differentiation. Effective wayfinding and signage is a critical component of Sydney Metro. This would provide clear information to customers.

Sydney Metro is currently investigating the delivery of Sydney Metro West between the CBDs of Parramatta and Sydney. The final number and location of potential stations would be identified following community and industry consultation, and would identify an appropriate location in the Sydney CBD to allow easy access to Sydney Metro City & Southwest.

### **Need for escalators**

The use of escalators was considered at underground stations as part of the Chatswood to Sydenham project due to the differences in depths between the above ground station entries and the below ground platforms. All facilities proposed as part of this project would be above ground, and the use of stairs and lifts would be sufficient.

## **5.28.2 Other issues**

### **Summary of issues raised**

Other issues raised that are considered to be outside of the scope of the Environmental Impact Statement/this project included:

- existing traffic on the road network needs to be fixed prior to the project commencing
- heritage analysis of all streets within the strategy area was promised by Department, however this has not happened
- development of land in the St Peters area

- failure to invest in new industrial parks along the T3 Bankstown Line
- details regarding existing and future public transport service (excluding metro)
- clearing of vegetation within the corridor by RailCorp has resulted in a weed problem in an area previously maintained by the public
- overall government spending and debt
- need for affordable housing
- suggestions about how future development in the study area should occur
- issues with the capacity of WestConnex
- issues with job accessibility not being fixed by current infrastructure spend.

### **Response**

The issues raised are outside the scope of the preferred project and the Environmental Impact Statement (where relevant to the preferred project) and this Submissions and Preferred Infrastructure Report.

## 6. Responses to key stakeholder submissions

*This section provides responses to issues raised in submissions from key stakeholders, which include key interest groups and peak bodies.*

### 6.1 Overview

Submissions were received from the following key stakeholders:

- National Trust of Australia
- Sydney Airport
- Australian Institute of Architects.

The approach to processing and responding to submissions (including key stakeholder submissions) is described in Chapter 4 of this report. The issues raised in the key stakeholder submissions are categorised according to the key issue categories (as described in Section 4.2 of this report) and responses are provided in the following sections.

The issues listed in each section are a summary of the key issues raised in submissions. Full details of the issues raised are provided in the complete submissions, available on the Department of Environment and Planning's major projects' website.

Unless otherwise indicated, the mitigation measures referred to in this section are the revised mitigation measures for the preferred project, provided in Table 16.1 of this report.

### 6.2 National Trust of Australia - NSW

#### 6.2.1 Non-Aboriginal heritage

##### *Adequacy of the assessment with respect to the definition of environmental heritage*

##### Issue

The Trust is concerned that the environmental assessment requirements have not been addressed with regards to 'environmental heritage'.

The *Heritage Act 1977* defines environmental heritage as places, buildings, works, relics, moveable objects, and precincts, of State or local heritage significance.

The Environmental Impact Statement has only addressed 'heritage-listed' items not 'environmental heritage' as defined under the Heritage Act.

##### Response

The potential heritage impacts of the exhibited project were assessed in accordance with the Secretary's environmental assessment requirements; the *NSW Heritage Manual 1996* (Heritage Office and Department of Urban Affairs and Planning, 1996); and relevant guidelines under the manual, including *Assessing Heritage Significance* (Heritage Office, 2001), and *Statements of Heritage Impact* (Heritage Office, 2002).

Relevant Sydney Trains guidelines and Conservation Management Plans for listed items (where available) also informed the assessment.

The assessment undertaken as part of the Environmental Impact Statement considered the potential for impacts to all listed items within and in the immediate vicinity (within 25 metres) of the project area. As the majority of the project area is within a rail corridor, the presence of potential (unlisted) heritage items was considered to be unlikely.

The project area was also assessed for archaeological potential and significance, and the potential impacts of the exhibited project on significant areas were considered.

The assessment also considered the potential for impacts to the currently unlisted items and heritage conservation areas identified in the *Hurlstone Park Heritage Study* (Paul Davies, 2016), and concluded that the exhibited project would not directly impact these items and areas.

A non-Aboriginal heritage assessment has been undertaken for the preferred project, and is provided in Appendix F and summarised in Chapters 12 to 15 of this report. This revised heritage assessment has also been undertaken in accordance with all relevant guidelines and statutory requirements, and considers the impacts of the preferred project on environmental heritage as defined in the *Heritage Act 1977*.

### **Impacts of rezonings on heritage around stations**

#### **Issue**

Deep community concern has been expressed to the Trust on the impacts of proposed rezonings on the heritage in some station precincts. The Trust is also aware that many residents of these areas are unaware of the likely impact of the rezonings on their heritage and their locality's sense of place and of the very limited time to now comment and influence this process.

The Trust notes that, for the Dulwich Hill and Hurlstone Park Station precincts, there appears to have been recognition of the significance of the heritage conservation areas, with a corresponding reduction in the density and height of new development proposed. However, with some other station precincts there appear to be major impacts on a number of Urban Conservation Areas, which had been identified and listed on the National Trust Register in 1998/1999.

The Trust raises its concerns in regard to the impacts of the proposed rezonings in the following station precincts where National Trust Register listed Urban Conservation Areas are located:

- Belmore Station – three National Trust Register listed Urban Conservation Areas
- Bankstown Station – one National Trust Register listed Urban Conservation Area
- Punchbowl Station – two National Trust Register listed Urban Conservation Areas
- Wiley Park Station – one National Trust Register listed Urban Conservation Area
- Lakemba Station – one National Trust Register listed Urban Conservation Area.

There are also individual National Trust Register listed places within the station precincts that may be under threat from redevelopment due to proposed rezonings.

#### **Response**

The submission raises concerns about the potential impacts of rezoning land for development around the stations on National Trust register listed Urban Conservation Areas and listed items.

It is noted that the Department of Planning and Environment's revised draft *Sydenham to Bankstown Urban Renewal Corridor Strategy* has identified opportunities for future development in the vicinity of stations between Sydenham and Bankstown.



Transport for NSW is not proposing any rezonings or residential developments as part of the project. The primary objectives of the project are to:

- improve the quality of the transport experience
- provide a system that is able to satisfy long-term demand
- improve the resilience of the transport network.

Any future development, which is in response to the Sydenham to Bankstown Urban Renewal Corridor Strategy, would be required to consider heritage impacts as part of any future rezoning and planning approval process.

No National Trust Register items are located within the project area. Five items listed on the National Trust Register are located within 25 metres of the project area. These include:

- Hotel Canterbury
- Canterbury Post Office (1909)
- ASC Sugar Mill buildings (former)
- Gladstone Hall
- Marrickville Sewage & Stormwater Pumping Station SPS271.

All these items are also listed on statutory heritage registers. The heritage assessment undertaken as part of the Environmental Impact Statement did not identify any potential for direct impacts on these items. The potential for indirect (visual) impacts to these five items was assessed, and the impacts were considered to be either neutral or negligible.

A non-Aboriginal heritage assessment has been undertaken for the preferred project and is provided in Appendix F and summarised in Chapters 12 to 15 of this report. The heritage assessment undertaken for the preferred project confirmed that direct and indirect impacts on these heritage items would either be the same or reduced when compared to the impacts of the exhibited project.

## **6.3 Sydney Airport**

### **6.3.1 Project options**

#### ***Potential for connection to Sydney Airport***

##### **Issue**

Sydney Airport welcomes the development of the Sydney Metro as a means to improve public transport connectivity throughout large parts of Sydney, including around Sydney Airport.

Sydney Airport notes that, while beyond the scope of this Environmental Impact Statement, consideration is being given to the future extension of the metro network. We strongly urge that a connection to Sydney Airport be considered as an integral part of that project, as a solution to a rapidly increasing residential population in close proximity to Sydney Airport, as well as the growth at the airport and Port Botany.

Currently, around 160,000 people travel to Sydney Airport each day, comprising passengers, staff and people meeting friends and family. With passenger numbers using the airport forecast to grow strongly and as significant residential growth is occurring around the airport, Sydney Airport submits that additional ground transport connectivity will be needed to the airport in the future.

Sydney Airport has recently identified the construction of a metro rail line linking Sydney Airport with Maroubra Junction and the Sydney CBD as a priority, suggesting that it be undertaken as part of stage two of Sydney Metro West. Sydney Airport also submits that development of a metro rail

link to Sydney Airport will help improve ground transport connectivity to Sydney Airport into the future, as well as supporting the growth of nearby residential areas and Port Botany by removing non-airport bound traffic from local roads.

Metro rail has the ability to link the airport with key centres, such as Maroubra Junction, the University of New South Wales and the Sydney CBD, providing vital linkages and serving strategic planning purposes.

### **Response**

Provision of a metro line to Sydney Airport and beyond is outside the scope of this project.

Customers can interchange between Sydney Metro services and T8 Airport Line services at Central Station. This interchange would be supported by Central Walk, which is being constructed at Central Station as part of the Sydney Metro City & Southwest Chatswood to Sydenham project.

## **6.3.2 Hazards and risks**

### ***Impact on prescribed airspace***

#### **Issue**

Sydney Airport submits that it is of vital importance that neither construction activities, nor proposed new developments around the proposed upgraded stations, particularly at Sydenham, Marrickville and Dulwich Hill (and to lesser degrees at Hurlstone Park and Canterbury), compromise aviation safety or reduce the efficiency of Sydney Airport by intruding into its prescribed airspace.

Sydney Airport notes that any future development of land around new stations in general would need to have regard to airspace-related issues, with developments in the areas around Sydenham, Marrickville and Dulwich Hill stations very likely to be affected. It also notes that consideration should be given to both the heights of any proposed buildings, as well as temporary structures that may intrude into prescribed airspace such as cranes and other construction equipment.

Sydney Airport is concerned that at the site around Sydenham Station, the obstacle limitation surface (OLS) and procedures for air navigational services – aircraft operations (PANS-OPS) surfaces are approximately 30 metres above sea level (AHD), while at Marrickville and Dulwich Hill stations, the OLS is at 51 metres AHD and PANS-OPS at approximately 126.4 metres AHD. Buildings constructed as part of the urban redevelopment of this area may penetrate the OLS.

It also notes that this issue would apply to any construction equipment, such as a crane, that could potentially intrude into this prescribed airspace, even if only temporarily. While a structure (including a building or crane) that penetrates the OLS is not automatically prohibited, approval from the Department of Infrastructure and Regional Development is required. However, permanent intrusions of PANS-OPS are prohibited by Commonwealth law.

#### **Response**

The potential risk of construction cranes temporarily penetrating the OLS and/or PANS-OPS surfaces are noted. Equipment that may be located temporarily at these sites (such as cranes) are not likely to extend above the OLS. Should extension into the OLS be required, the necessary approvals would be obtained.

None of the permanent structures proposed to be constructed at stations would extend above the OLS and/or PANS-OPS surfaces.

### **6.3.3 Traffic, transport and access**

#### **Temporary Transport Strategy**

##### **Issue**

The Environmental Impact Statement includes a Temporary Transport Strategy to cover the closure of the existing train line between Sydenham and Bankstown.

As this strategy is implemented, great care must be taken to ensure that the existing capacity between Sydney Airport stations and the city is not adversely impacted. The mode share of the Airport Rail Link for passengers using Sydney Airport has been growing by one percentage point each year, and is currently 21 per cent of all journeys to and from the airport, and this figure is higher during the morning peak period. With crowding already occurring on train services using this line, additional services will be required to adequately serve those proposed additional users of this line.

Therefore, Sydney Airport would like to request that project managers and representatives of the Sydney Metro project team liaise closely with the Ground Transport team at Sydney Airport throughout construction to ensure these impacts are minimised and can be well communicated to stakeholders.

##### **Response**

The Temporary Transport Strategy (provided as Appendix G to the Environmental Impact Statement) is the overarching document that describes the process for planning and delivering the integrated, multi-modal temporary transport response that would operate during possession period shutdowns on the T3 Bankstown Line.

For each possession, a temporary transport management plan would be developed to detail the initiatives that would be implemented to assist customers affected by closures of the line and its stations. The Temporary Transport Strategy provides guidance for developing temporary transport management plans for each possession. The temporary transport management plans would be developed prior to construction, and would be informed by stakeholder and community feedback.

As each temporary transport management plan is developed, its impact on the transport network (including rail services to Sydney Airport) would be considered.

Mitigation measure TC1 commits to developing the temporary transport management plans in consultation with key stakeholders.

### **6.4 Australian Institute of Architects**

#### **6.4.1 Design of stations and guidelines**

##### **Issue**

The success of the project will rely on the design of the stations, which facilitate the movement and gathering of the public in their use of the metro. These important pieces of infrastructure stimulate a pattern of movement and commerce, which need to be supported by good design outcomes.

##### **Response**

As described in the project description for the preferred project (provided in Appendix B) the detailed design of the stations would be informed by the *Around the Tracks: urban design for heavy and light rail* (Transport for NSW, 2016) guideline. This guideline recognises the role of stations as important infrastructure for local communities and the transport system as a whole.

Design objective 2 (Create places for people) recognises that creating precincts that are great places for people is fundamental for every project and that good urban design can improve customer experience by:

- making it easy to get to the station and find your way around it
- making transfer between modes seamless and efficient
- making the journey as enjoyable as possible.

The detailed design of the stations would be further informed by the preparation of Station Design and Precinct Plans for each station, as committed to through new mitigation measure LV3. These plans would aim to ensure that the stations and facilities are sympathetic to, and complement, local character taking into consideration urban design context, sustainable design and maintenance and community safety, amenity and privacy, amongst other drivers. These plans would be prepared and implemented in consultation with the Department of Planning and Environment, local councils, the Chamber of Commerce and the local community.

### Issue

The project should ensure that these places are well designed, and well integrated into their local contexts. The Department should take advantage of the NSW Government's recently released integrated design policy, *Better Placed*, which outlines some very good principles for the successful design of places.

### Response

As described in the above response the detailed design of the stations would be informed by *Around the Tracks: urban design for heavy and light rail*. Design principle 4 (Integrate the project with the surrounding area) requires the design to:

*'Ensure that the character of the proposed buildings, open spaces and landscape is appropriate to the local context in terms of scale, bulk, architectural or landscape treatment.'*

This document would guide the preparation of Station Design and Precinct Plans for each station, which would aim to ensure that the stations and facilities complement and are sympathetic with local character. The Government Architect's *Better Placed* design strategies and principles would also be considered during detailed design.

In addition, the Government Architect is the chair of the Sydney Metro City & Southwest Design Review Panel, and would have a role in the review of the design as it develops.

## 6.4.2 Local character

### Issue

The design of the station buildings themselves should demonstrate design excellence, relating to the desired future character of the respective contexts. This should not result in a uniformity of design approach, but a variety of design expression that is as diverse as the communities that each of the stations along the line represent.

### Response

The urban and natural fabric surrounding each station has been used to inform design development, and has taken into account the existing urban context and infrastructure (including built form and public domain conditions, landscape elements, and existing and proposed services and initiatives).

The design of each station would be undertaken in accordance with *Around the Tracks: urban design for heavy and light rail*, which requires design to either seek to reinforce the existing identity of stations or to create a new identity, repairing and revitalising the precincts around them. Design principle 5 (Maximise the amenity of the public domain) requires the design to:

*'Design public spaces to be activated as much as possible with diverse uses that appeal to a broad range of users including those from different demographic groups, with varying accessibility needs and at different times of the day and night,' and*

*'Use urban design enhancements (e.g. creative engineering solutions, landscape designs and art) to add interest and character to a project. Unique features contribute to creating a memorable sense of place and enhance the sense of community ownership.'*

The detailed design process also involves preparing Station Design and Precinct Plans for each station, in accordance with new mitigation measure LV3. These plans would present an integrated urban and place making outcome for each station, and would:

- be prepared in consultation with relevant stakeholders, including the relevant local council
- be reviewed by the Design Review Panel
- identify specific design objectives and principles based on local context and heritage, place making values, the urban design context, and maximising the amenity of public spaces and permeability around station entrances
- identify opportunities for public art
- be informed by a Heritage Interpretation Plan
- provide evidence of consultation with the community, local councils, and agencies in the preparation of the plans, and how feedback has been addressed.

### **6.4.3 Connectivity**

#### **Issue**

The design of the stations and their surrounds should emphasise connectivity, including the construction of additional overpasses and the improvement of existing ones, via the incorporation of accessible and adequately wide footpaths and separate cycleways. This will increase liveability and enhance the dynamics of existing communities along the route.

#### **Response**

As described in Section 7.3.8 (Access, interchange and connectivity) of the Environmental Impact Statement, accessibility and connectivity have formed key considerations in the design process. The preferred project design has maintained the existing level of cross-corridor access and safeguarded/future-proofed additional crossings for future consideration. The preferred project would deliver fully accessible stations, interchanges to other rail services, and safe and efficient connections.

Design principle 3 (Provide connectivity and permeability for pedestrians) from *Around the Tracks: urban design for heavy and light rail* requires the design to:

*'Allow for movement through the site that is unrestricted and legible. The design should guide users through the building and spaces in a clear, legible manner without causing any confusion or indecision,' and*

*'Design paths to link to pedestrian crossings and other footpaths for optimal safety. Locate paths with good passive surveillance and incorporate adequate light levels.'*

Transport for NSW would develop an Interchange Access Plan for each station to inform the final design of transport and access facilities and services. The plans would include consideration of footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives at and around each station. The plans would be informed by the Sydenham to Bankstown Walking and Cycling Strategy.

#### **6.4.4 Amenity**

##### **Issue**

Provision of appropriate amenity to the street edge should also be made, such as awnings to allow for weather protection. They should enhance and build on the existing and future desired fine grain urban fabric of each centre, and make every effort to stitch together the two sides that are left by the railway line.

##### **Response**

Design principle 5 (Maximise the amenity of the public domain) from *Around the Tracks: urban design for heavy and light rail* requires the design to:

*'Create a good microclimate by designing a space that provides summer shade but winter sun, and allows in cooling summer breezes but protects from cold winter winds. Provide protection from unpleasant sensory experiences such as noise, dust, pollution and glare where possible.'*

Where new infrastructure is proposed as part of the preferred project station upgrade works (i.e. lifts and stairs), the inclusion of canopies or roofs within the station designs may be incorporated into the design, to improve the customer experience by providing shade and shelter. Existing weather protection would be retained.

#### **6.4.5 General design comments**

##### **Place**

##### **Issue**

Maximise the place outcomes for each centre and for the corridor as a whole. This includes retaining and enhancing the character of centres and providing opportunities for activity day and night.

##### **Response**

As noted in Section 6.4.2 of this report, of the local context and place considerations have been, and would continue to be, a key part of the design process.

##### **Landscaping and tree loss**

##### **Issue**

Landscape is an essential part of making good places. Landscaping is also highly cost effective, particularly when the design approach seeks to retain existing trees. Concern is raised about the quantum of tree loss that appears likely, based on the current plans. Notwithstanding the obvious advantages that tree canopies provide, the scientific research demonstrating the impact of the urban heat island effect suggests that there should be more trees, not less.

##### **Response**

Section 9.3.2 (Tree removal and management) of the Environmental Impact Statement noted that the project would involve trimming or removing trees in the vicinity of stations to facilitate upgrading stations and station areas. An estimate of the number of trees at the stations with the potential to

be affected was provided in the Environmental Impact Statement, based on a preliminary tree survey.

As noted in Section 1.3 of this report, the exhibited project has been refined to minimise vegetation impacts. As such, the estimated number of trees with the potential to be affected within station areas has been considerably reduced compared to the exhibited project. The preferred project would allow at least 390 more trees to be retained in station precincts when compared to the exhibited project. The revised estimate is provided in Section 2.3.2 of the preferred project description in Appendix B of this report. The final number of trees that may need to be trimmed or removed at each station would be confirmed during detailed design and final construction planning.

Minimising impacts to trees would be a key obligation incorporated into the construction contract.

As noted in the Environmental Impact Statement, impacts to trees would be minimised wherever practicable, and a tree management strategy would be prepared in consultation with relevant stakeholders (including local councils). Where removal of trees is unavoidable, mitigation measure LV4 commits to replacing trees in accordance with the tree management strategy. LV4 also commits to confirming opportunities to retain and protect existing trees during detailed design and construction planning. The design would aim to reduce tree removal to the extent practicable, particularly where trees contribute to screening vegetation or landscape character.

As per mitigation measure LV12, trees to be retained would be protected prior to the commencement of construction in accordance with *AS4970-2009 Protection of trees on development sites* and the tree management strategy. In addition, as per measure LV12, tree pruning (where required) would be undertaken in accordance with the tree management strategy.

Further information on the tree management strategy is provided in Section 2.3.2 of the preferred project description in Appendix B of this report.

### **Transport hierarchy**

#### **Issue**

Each station should be designed with a clear sense of user hierarchy, in the following order with the first being located closest to the station entry and the last furthest from the entry: 1) pedestrians; 2) cyclists; 3) buses; 4) disabled parking spaces; 5) taxis/Uber; 6) delivery vehicles; 7) private vehicles.

#### **Response**

Section 7.2.4 (Access and connectivity) of the Environmental Impact Statement provided the station access hierarchy used as the basis for the design of the station upgrades and associated facilities.

The station access hierarchy gives the highest priority to walking and cycling, followed by public transport, then taxis, kiss-and-ride, and finally park-and-ride (the lowest priority).

The design of the preferred project has also been developed giving consideration to the station access hierarchy and, where existing facilities either not available or are not appropriately located, station designs have been updated to include sufficient, suitably located facilities.

Consideration of the hierarchy would continue throughout the detailed design process, and would inform the development of the Interchange Access Plan for each station.



## **Pedestrian traffic flows**

### **Issue**

The changed (and increased) pedestrian traffic flows around stations will have a natural impact on the nature of their localities. Each instance should be assessed particularly with regard to connectivity and pedestrian amenity. There is an opportunity to re-evaluate on a case by case basis, which might result in more positive urban design outcomes.

### **Response**

The Station Design and Precinct Plans and Interchange Access Plans, which would be developed to inform the detailed designs for each station, would include consideration of pedestrian movements and connectivity in accordance with the *Around the Tracks – urban design for heavy and light rail*. Design principle 3 (Provide connectivity and permeability for pedestrians) requires the design to:

*‘Create direct, defined, continuous and safe pedestrian links through the project and into adjacent areas’, and*

*Ensure the design response to how people move through adjacent areas and supports intuitive way finding, looking at where pedestrians naturally want to enter the site (‘desire lines’) and where they can cross roads safely’.*

The preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts, including walking. The Strategy may include consideration of pedestrian footpath upgrades, shared footpaths and designated pedestrian crossings and other measures to improve connectivity and amenity.

## **Bankstown Station**

### **Issue**

The transformation of Bankstown Station must consider its role as a major interchange and engage with the opportunity to reconnect the split (north–south) centres of the CBD.

### **Response**

The design for the proposed upgrade of Bankstown Station has and would continue to take into account the station’s role as a major regional interchange, providing connections between Sydney Trains services, Sydney Metro services, and the large number of bus routes that terminate at the station.

Bankstown Station also provides access to a range of regional services and facilities located in the Bankstown CBD, including the Bankstown Central Shopping Centre.

The project includes provision of a new at grade cross-corridor link at Bankstown Station. This link would be positioned between the existing Sydney Trains station and the new metro station to be constructed east of the Sydney Trains station. The new link would provide direct access to the Bankstown CBD, midway between the existing crossing points at Bankstown City Plaza and the road link between North and South terraces. The new link would improve access for pedestrians, particularly to the Bankstown Central Shopping Centre and community facilities on the northern side of the corridor. The new link provides a more direct link to this key land use from areas south of the rail corridor.

The proposed design for the station safeguards the potential future undergrounding of Bankstown Station, which would be subject to the outcomes of the master plan. Revised mitigation measure LU3 commits Transport for NSW to work with the Department of Planning and Environment, Greater Sydney Commission, Canterbury-Bankstown Council and other key stakeholders to plan for the strategic transformation of the Bankstown CBD.

## ***Deliver active transport options***

### **Issue**

The Environmental Impact Statement should include a firm commitment to the delivery of the active transport corridor (GreenWay South West) with the metro service.

### **Response**

Due to the revised construction methodology and retention of existing features along the rail corridor, an active transport corridor is no longer viable within the rail corridor as part of the preferred project. The preferred project does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor along the Sydenham to Bankstown corridor, outside of the rail corridor.

The preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utility providers to identify the best active transport routes in each suburb. These active transport routes may include pedestrian footpath upgrades, separated cycleways, shared footpaths and designated pedestrian and cyclist road crossings.

## ***Manage the impacts on the community***

### **Issue**

State government agencies should work with local councils to ensure that the impacts of the construction and operation of the metro are minimised.

### **Response**

Based on community and stakeholder feedback received during the public exhibition period, Transport for NSW has revised the exhibited project to significantly minimise construction, heritage and vegetation impacts while still delivering a world class metro.

While the preferred project would benefit the community during operation, there would still be some impacts during construction. To manage the potential impacts the Environmental Impact Statement identified a range of management and mitigation measures that would be implemented during construction and operation, some of which have been revised or replaced based on the preferred project. A consolidated list of mitigation measures is provided in Table 16.1 of this report.

The project's environmental performance would be managed in accordance with the approach described in Section 17.4 of this report. This includes implementing the Construction Environmental Management Framework, Construction Environmental Management Plan, Construction Noise and Vibration Strategy, Temporary Transport Strategy, Utilities Management Framework, the mitigation measures listed in Table 16.1, and the Operational Environmental Management Plan.

Local councils and other key stakeholders would have multiple opportunities for input to the ongoing development of the project, via the key stakeholder engagement mechanisms described in Chapter 3 of this report, and in accordance with any conditions of approval. This would include involvement in the Design Review Panel, where the relevant council would be invited to participate and advise on local issues and outcomes.

## ***Over station/within corridor development***

### **Issue**

With the level of disruption anticipated, any other likely development within the corridor should be encouraged during the same timeframe.

### **Response**

It is noted that the Department of Planning and Environment's revised draft *Sydenham to Bankstown Urban Renewal Corridor Strategy* has identified opportunities for future development in the vicinity of stations in the project area.

Development associated with the Sydenham to Bankstown Urban Renewal Corridor Strategy is outside the scope of this project. However, Transport for NSW has and would continue to work with relevant agencies to integrate station designs with the urban renewal planning process. Mitigation measure LU2 commits Transport for NSW to work with the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils in relation to future planning for the Sydenham to Bankstown corridor.

## ***Process after approval***

### **Issue**

A Design Review Panel should be established to ensure quality throughout the construction process.

### **Response**

The Sydney Metro City & Southwest Design Review Panel has been established. The panel would continue to be consulted during detailed design, and members of the panel would continue to have the opportunity to contribute to the design process. The panel would review all station designs.

## ***Value capture***

### **Issue**

The development of the new Sydney Metro, and accompanying rezoning around stations, will provide substantial uplift in land value for existing landowners. We strongly urge that the Government utilise some of this uplift as part of the 'value capture' to assist in funding public domain improvement.

### **Response**

Transport for NSW would continue to work with relevant agencies, including local councils, the Greater Sydney Commission, Infrastructure NSW, and the Department of Planning and Environment, to determine funding priorities and sources for public domain works that are outside the scope of this project.

# 7. Response to government agency submissions

*This section provides responses to the issues raised in submissions provided by government agencies, including local councils and NSW State Government departments and agencies.*

## 7.1 Overview

Submissions were received from the following government agencies:

- NSW Government departments/agencies:
  - Department of Primary Industries
  - NSW Environment Protection Authority
  - NSW Office of Environment and Heritage
  - NSW Health
  - Heritage Council of NSW
- Utility providers:
  - Sydney Water
  - Ausgrid
- Councils:
  - Inner West Council
  - Canterbury-Bankstown Council
  - GreenWay Program (consisting of representatives from Inner West and Canterbury-Bankstown councils).

The approach to processing and responding to submissions (including agency submissions) is described in Chapter 4 of this report. The issues raised in the agency submissions are categorised according to the key issue categories (as described in Section 4.2 of this report) and responses are provided in the following sections.

The issues listed in each section are a summary of the key issues raised in submissions. Full details of the issues raised are provided in the complete submissions, available on the Department of Environment and Planning's major projects' website.

Unless otherwise indicated, the mitigation measures referred to in this section are the revised mitigation measures for the preferred project, provided in Table 16.1 of this report.

## 7.2 Department of Primary Industries

### 7.2.1 Project description – construction

#### *Guidelines for controlled activities*

#### **Issue**

The proponent should ensure that all works within and around watercourses are undertaken in accordance with the guidelines for controlled activities.

## Response

Chapter 21 (Hydrology, flooding and water quality) of the Environmental Impact Statement referred to the guidelines for controlled activities (refer to Sections 21.1.1 and 21.3.3 of the Environmental Impact Statement). While the preferred project would involve limited works near waterways due to the reduction in drainage and bridge works, to minimise the potential for impacts to water quality, design and construction of the preferred project would still take into account the NSW Office of Water's guidelines for controlled activities on waterfront land. Mitigation measure FHW10 commits Transport for NSW to consider the guidelines for controlled activities when undertaking work within or near watercourses.

### 7.2.2 Hydrology, flooding and water quality

#### *Groundwater assumptions and management*

##### Issue

The proponent should provide detailed justification for the groundwater assumptions presented in the Environmental Impact Statement, including:

- establishing a monitoring bore network to confirm groundwater depth or evidence to demonstrate groundwater will not be intercepted
- demonstrating the depth of construction, as well as excavation, in comparison with groundwater levels beneath the project.

In the event that groundwater is intercepted, the proponent should consult with the Department of Industry – Crown Lands and Water on licensing requirements.

##### Response

Chapter 21 (Hydrology, flooding and water quality) of the Environmental Impact Statement considered the potential impacts of the project on groundwater. Section 21.2.6 (Groundwater) of the Environmental Impact Statement documented the findings of a desktop assessment, which includes observations of groundwater depths in the rail corridor. The section noted that the groundwater level along most of the project area was recorded at between about 2.3 metres below ground level (to the east of the project area in Marrickville), and about 10.3 metres below ground level (near Bankstown Station).

The Environmental Impact Statement noted that groundwater may be encountered during construction, mainly as a result of excavation and piling activities. The Construction Environmental Management Framework for the project (provided in Appendix D of the Environmental Impact Statement) requires that a groundwater management plan be prepared and implemented during construction. The groundwater management plan would define the groundwater mitigation, management, and monitoring measures to be implemented to manage groundwater in accordance with relevant requirements.

The preferred project involves limited earthworks and excavation, the majority of which would be shallow and associated with site levelling, combined services route installation or existing track drainage maintenance. Therefore, the potential to encounter groundwater during construction is reduced when compared to the exhibited project. However, where groundwater is, or is likely to be, encountered, the contractor would engage with Crown Lands and Water on licencing requirements, and would obtain the necessary licenses/permits. In accordance with the Construction Environmental Management Framework, the requirements of licences/permits and evidence of consultation must be included in the groundwater management plan.

## **Surface water quality monitoring during operation**

### **Issue**

A surface water quality monitoring program should be developed for the operational stage of the project and undertaken over a two year period.

### **Response**

In accordance with mitigation measure FHW6, the project would be designed to ensure that there is minimal potential for water quality impacts during construction, including incorporating water sensitive urban design elements such as landscaping where appropriate.

Mitigation measure FHW14 commits to managing operational water discharges in accordance with the water quality management requirements specified in the environment protection licence for the project.

## **Erosion and sediment control**

### **Issue**

Best practice erosion and sediment control measures should be used during construction to reduce the potential impacts on the aquatic environment.

### **Response**

Chapter 20 (Soils and contamination) and 21 (Hydrology, flooding and water quality) of the Environmental Impact Statement considered the potential for soil and contamination impacts, and documented the assessment of soil erosion potential and impacts on water quality. The assessment concluded that potential impacts from soil erosion on the aquatic environment are expected to be minimal as a result of the relatively limited volume of earthworks required; the overall topography of the project area; and the temporary nature of the exposure. The impacts of the preferred project are also expected to be minimal. The assessment also noted that, regardless of the amount of excavation required, the potential for erosion impacts would be minimised by implementing soil erosion management measures during construction.

Section 20.4.1 (Approach to mitigation and management) of the Environmental Impact Statement and mitigation measure SC1 states that construction erosion and sediment control measures would be developed and implemented in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2A* (Department of Environment and Climate Change, 2008). These guidelines define best practice erosion and sediment control measures.

As noted in Sections 20.4.1 (Approach to mitigation and management – Soils and contamination) and 21.4.1 (Approach to mitigation and management – Hydrology, flooding and water quality) of the Environmental Impact Statement and Section 17.4 of this report, a soil and water management plan would be prepared and implemented during construction, in accordance with the Construction Environmental Management Framework. This plan would define the mitigation, management, and monitoring measures to manage the potential for erosion and water quality impacts in the aquatic environment.

## 7.3 NSW Environment Protection Authority

### 7.3.1 Hydrology, flooding and water quality

#### *Water quality trigger values*

##### **Issue**

Table 21.4 in the main report provides incorrect water quality trigger values for total phosphorus, total nitrogen and chlorophyll-a.

##### **Response**

The inconsistencies in some water quality trigger values presented in Chapter 21 (Hydrology, flooding and water quality) and Technical Paper 8 (Hydrology, flooding and water quality assessment) of the Environmental Impact Statement are noted. The correct water quality trigger values were provided in Technical Paper 8 (Hydrology, flooding and water quality assessment) and are replicated in Table 7.1 of this report.

It is noted that the impact assessment presented in the Environmental Impact Statement is not affected by these changes. The trigger values would provide an input to the construction water quality monitoring program for the preferred project (required by mitigation measures FHW7, FHW8 and FHW9) and operational water quality monitoring required by the environment protection licence (in accordance with mitigation measure FHW10).

**Table 7.1 Water quality trigger values for aquatic ecosystems**

Indicator	Criteria (lowland rivers)
Total phosphorus	25 ug/L
Total nitrogen	350 ug/L
Chlorophyll-a	5 ug/L
Turbidity	6–50 NTU
Salinity (electrical conductivity)	125–2,200 uS/cm
Dissolved oxygen (per cent saturation)	85–110 %
pH	6.5–8.5

#### *Potential pollutants*

##### **Issue**

The Environmental Impact Statement has identified hydrocarbons, heavy metals, and other chemicals as potential pollutants, but these have not been included as indicators for the protection of aquatic ecosystems.

Trigger values were not provided for chemical contaminants or toxicants.

##### **Response**

Section 21.3.3 (Construction impacts – water quality) of the Environmental Impact Statement noted that construction presents a risk to downstream water quality if standard construction management measures are not implemented, monitored, and maintained throughout the construction period. The section also noted the potential sources of water quality impacts, and the potential downstream effects. To mitigate and manage the potential for water quality impacts, mitigation measures FHW7, FHW8 and FHW9 commit to developing and implementing a water quality monitoring program prior to and during construction.



The wording of mitigation measure FHW11 in the Environmental Impact Statement (now FHW3) has been amended to confirm that the water quality monitoring program would commence prior to construction. Pre-construction monitoring would be undertaken in accordance with the program to define the parameters for monitoring during construction. The appropriate trigger values would be confirmed at this time, including values for chemical contaminants and toxicants. The trigger values would be developed in accordance with the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC/ARMCANZ, 2000) (the 'ANZECC 2000 guidelines'), including consideration of the default toxicant values identified in Table 3.4.1 of the guidelines.

### **Water quality impact assessment**

#### **Issue**

An assessment of the potential impacts on the relevant water quality objectives is not provided. The Environmental Impact Statement states that 'the intention is that assessment against ANZECC guidelines would be undertaken during detailed design'.

In exercising its licensing functions, the Environment Protection Authority must take into consideration the environmental values of water affected by an activity or work, and the practical measures that could be taken to restore or maintain those environmental values. It is recommended that further assessment of the potential impacts on the relevant water quality objectives be undertaken.

#### **Response**

Section 21.3.3 (Construction impacts – water quality) of the Environmental Impact Statement noted that construction presents a risk to downstream water quality if standard construction management measures are not implemented, monitored, and maintained throughout the construction period. The section also notes the potential sources of water quality impacts, and the potential downstream effects.

Section 21.3.5 (Operation impacts – water quality) of the Environmental Impact Statement recognised that operation of the project has the potential to result in water quality impacts from changes in hydrology and the mobilisation of pollutants from the rail corridor. The section noted that gross pollutant traps and rain gardens would be implemented at stations to manage water quality outcomes from the project area, in accordance with the project water quality design criteria.

Preliminary MUSIC modelling conducted at a test site (Punchbowl Station) indicated that the proposed water quality treatment measures would be effective in reducing pollutant loads to the project design guideline values but that due to restrictions on space, treatment is not proposed within the railway corridor itself. Also, that the targets may not be met at each discharge location but the average would meet the design guideline values. Table 21.6 (Proposed water quality treatment measures) of the Environmental Impact Statement provides details of the proposed water quality treatment measures by location, including indicative sizing.

Mitigation measure FHW6 commits Transport for NSW to designing the project to ensure that there is minimal potential for water quality impacts. This measure has been amended to include a commitment to undertake modelling against the NSW Water Quality Objectives as part of the design process, to demonstrate the effectiveness of the proposed measures and design elements.

As noted above, mitigation measures FHW7, FHW8 and FHW9 commit to developing and implementing a water quality monitoring program prior to and during construction.

## ***Disturbance of contaminated land***

### **Issue**

If not appropriately managed, disturbance of contaminated soil and groundwater could potentially impact the receiving environment.

Several sections of the project are suspected to have a medium to high risk of contamination with potential contaminants, including hydrocarbons and heavy metals, present in both soil and groundwater. No quantitative information on contamination is provided in the Environmental Impact Statement. It is recommended that a quantitative assessment of contamination be undertaken.

### **Response**

Potential contamination impacts are considered in Chapter 20 (Soils and contamination) of the Environmental Impact Statement. Section 20.2.4 (Potential for contamination) identified areas with a medium to high risk of contamination. Section 20.3.2 (Construction impact assessment) noted that, prior to the disturbance of areas identified to have the potential for contamination, further investigation and testing would be undertaken to determine the likely contamination risk and appropriate management protocols.

Mitigation measure SC5 commits to undertaking a detailed contamination assessment in areas with a medium to high risk of contamination during the detailed design/pre-construction phase. In accordance with this measure, the detailed assessment would confirm the nature and extent of contamination, and the requirements for further investigation, remediation, and/or management where required. However, given the limited excavation works required to construct the preferred project the potential to encounter contamination during construction is reduced when compared to the exhibited project.

## ***Work in waterways***

### **Issue**

The Environmental Impact Statement states that the project would involve works in and around watercourses. No detail is provided on the proposed mitigation measures for in-channel sediment disturbance, including measures for protecting water quality within and adjacent to the Cooks River. Mitigation measures for protecting water quality associated with construction/modification activities within and adjacent to the Cooks River should be provided.

### **Response**

To minimise the potential impacts to water quality during construction, mitigation measure SC1 requires construction erosion and sediment control measures to be implemented in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2A* (Department of Environment and Climate Change, 2008).

The Construction Environmental Management Framework for the project requires that a soil and water management plan be prepared and implemented during construction. This plan would identify the mitigation, management, and monitoring measures to manage the potential for erosion and water quality impacts.

Chapter 21 (Hydrology, flooding and water quality) of the Environmental Impact Statement noted that the design and construction of the project would take into account the NSW Office of Water's guidelines for controlled activities on waterfront land. While the scope of the preferred project would involve limited works near waterways due to the revised drainage and bridge works, mitigation measure FHW10 commits to undertaking works within or near watercourses with consideration given to the guidelines for controlled activities, where relevant. Measure FHW11 requires erosion and sediment mitigation measures to be installed and maintained for the duration of the construction period.

In addition, mitigation measures FHW7, FHW8 and FHW9 commit to developing and implementing a water quality monitoring program prior to and during construction.

### **Construction mitigation measures**

#### **Issue**

No information has been provided about the type or location of the construction water treatment devices or the potential quality or quantity of the discharges. Information about and assessment of the type and location of construction water treatment devices, and the potential quality or quantity of the discharges, should be provided.

#### **Response**

Sections 20.4.1 (Approach to mitigation and management – Soils and contamination) and 21.4.1 (Approach to mitigation and management – Hydrology, flooding and water quality) of the Environmental Impact Statement noted that a soil and water management plan would be developed and implemented in accordance with the Construction Environmental Management Framework. The soil and water management plan would define the management and monitoring measures that would be implemented to manage water quality impacts, erosion, and sediment control in accordance with relevant guidelines.

The exact details of the construction water treatment devices and the water quality monitoring criteria would be determined during detailed design and construction planning, in accordance with mitigation measures SC1 and FHW2.

Mitigation measure SC1 requires construction erosion and sediment control measures to be implemented in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2A* (Department of Environment and Climate Change, 2008). Measures would be designed as a minimum for the 80th percentile, five day rainfall event.

Mitigation measure FHW2 commits to developing and commencing a water quality monitoring program prior to construction, to monitor water quality at identified discharge points. In accordance with this measure, the program would define relevant water quality objectives, parameters, criteria, and monitoring locations in consultation with the Department of Primary Industries (Water) and the Environment Protection Authority.

### **7.3.2 Noise and vibration**

#### **Works outside of standard construction hours**

##### **Issue**

It is unlikely that the Environment Protection Authority will support any additional works being undertaken outside of standard construction hours under the provisions of an environment protection licence, unless there are extenuating or exceptional circumstances that act to justify any such provisions.

## Response

The proposed working hours are described in Section 2.7.4 of the preferred project description in Appendix B of this report.

During non-possession periods, the majority of works would be undertaken during recommended standard hours as defined by the *Interim Construction Noise Guideline* (DECCW, 2009) which are:

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 1pm
- Sundays and public holidays: no work.

However, some works would need to be undertaken outside the recommended standard construction working hours. During possession periods, works may need to be undertaken 24 hours per day, which would involve working during and outside the standard working hours. The anticipated types of out of hours works are listed in Table 7.2.

**Table 7.2 Out of hours works**

Type of out of hours works	Justification
Works during rail possession periods, including corridor and track works, station works, bridge works, and substation works	To ensure that works can be carried out within the rail corridor in a safe manner To minimise impacts to the rail network and associated traffic and transport issues To minimise risks that may affect the operation of the rail network
Works affecting the road network, such as utility works traversing roadways	To minimise impacts to the road network and associated traffic, transport and access issues
Delivery of materials outside standard working hours, as required by the NSW Police or Roads and Maritime Services	To minimise impacts to the road network and associated traffic, transport and access issues
Emergency works	Works to avoid loss of life and property, or to prevent environmental harm

During possession periods (described in Section 2.7.2 of the preferred project description in Appendix B), works may be undertaken 24 hours per day, and involve working both during and outside the recommended standard hours.

During these periods, the use of highly noise intensive equipment, including ballast tamping, would not be used during the night-time period (between 10pm and 7am), unless constraints exist such as:

- works requiring a weekend rail possession and where those works cannot be undertaken during daytime and evening periods, due to the limited duration of the rail possession; or
- works subject to requirements of the relevant road authorities, emergency services, or the Sydney Coordination Office.

Possession periods are described in Section 2.7.2 of the preferred project description in Appendix B. In summary, it is anticipated that works would be undertaken during the following possession periods:

- Standard possessions – works would be undertaken during Sydney Trains' and ARTC's standard four weekend maintenance possessions each year.
- Additional weekend possessions – up to an additional eight weekend possessions would be required each year to complete the project works.

- Night-time weekend possessions – required on an occasional basis to prepare the rail corridor prior to weekend or school holiday possessions.
- School holiday possessions – this would involve up to a two week possession of the T3 Bankstown Line (either in full or part) during the Christmas school holiday periods.
- Final possession – works that can only be done once Sydney Trains services stop using the T3 Bankstown Line would be undertaken during a final three to six month possession.

The noise and vibration assessment in Appendix E includes an assessment of the potential impacts of out of hours works relating to possession periods for the preferred project. Section 2.7 of Appendix E of this report and Section 3.16 (Utilities) of Technical Paper 2 (Noise and vibration assessment) of the Environmental Impact Statement provide an assessment of the out of hours works that may occur outside possession periods (i.e. works to utilities that could affect the road network, and night-time vehicle movements).

The out of hours work framework is provided in Section 2.7.4 of the preferred project description in Appendix B. This section notes that:

- an Out of Hours Work Strategy would be prepared to guide the assessment, management, and approval of works outside recommended standard hours
- the Construction Noise and Vibration Strategy (provided in Appendix E of the Environmental Impact Statement) includes a requirement for out of hours work to be included in the construction noise impact statements required under the strategy.

Implementation of these strategies would assist in the management of out of hours works and potential noise impacts.

Section 12.6.1 (Approach to mitigation and management) of the Environmental Impact Statement committed to preparing the Out of Hours Work Strategy in consultation with key stakeholders, including the Environment Protection Authority. This commitment is confirmed by new mitigation measure NVC16, which requires an Out of Hours Work Strategy to be prepared, in consultation with the Environment Protection Authority, to guide the assessment, management, and approval of works outside recommended standard hours.

In addition, the implementation of the other construction noise mitigation measures (NVC1, NVC2, and NVC5 to NVC15) would assist in minimising the potential for noise during construction. Refer to Table 16.1 of this report for the revised mitigation measures.

### **7.3.3 Recommended conditions of consent**

#### **Issue**

The Environment Protection Authority provided recommended conditions of consent to the Department of Planning and Environment for inclusion as part of any conditions of approval issued for the project.

The recommended conditions of consent relate to the management of surface water and noise during construction, and operational noise management. The recommendations also include a setting up a utilities management agency to oversee development and implementation of a utilities management strategy.

#### **Response**

The recommendation to develop a surface water management plan is consistent with the approach noted in the Environmental Impact Statement and the project's Construction Environmental Management Framework (provided in Appendix D of the Environmental Impact Statement).

As described in Section 17.4 of this report, environmental management during construction would be guided by the Construction Environmental Management Framework. The framework requires preparation of a soil and water management plan as one of the components of the Construction Environmental Management Plan. The soil and water management plan is required to define the management and monitoring measures that would be implemented to manage, in accordance with relevant guidelines:

- surface and groundwater impacts
- contaminated material
- erosion and sediment control.

Mitigation measure SC1 commits to implementing erosion and sediment control measures in accordance with *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) and *Managing Urban Stormwater: Soils and Construction Volume 2A* (DECC, 2008).

The management and monitoring of surface water quality during construction is a commitment outlined in mitigation measures FHW2, FHW3, and FHW7 to FHW8.

The recommendation to prepare and implement a construction noise and vibration plan and a construction noise and vibration strategy is consistent with the approach noted in the Environmental Impact Statement.

As described in Section 12.6.1 (Approach to mitigation and management) of the Environmental Impact Statement, the Construction Noise and Vibration Strategy (provided in Appendix E of the Environmental Impact Statement) has been developed to manage construction noise and vibration for Sydney Metro City & Southwest as a whole. The strategy provides a framework for managing construction noise and vibration impacts to provide a consistent approach to management and mitigation across all Sydney Metro projects.

In addition, the Construction Environmental Management Framework requires preparation of a construction noise and vibration management plan as one of the components of the Construction Environmental Management Plan.

Operational noise would be managed in accordance with the Operational Environmental Management Plan, described in Section 17.4 of this report. This would include an operational noise management plan.

A strategy for the management of utilities potentially affected by the project is outlined in Section 9.10 (Utilities management) of the Environmental Impact Statement. The assessment refers to a Utilities Management Framework. An updated version of this framework is provided in Appendix H of this report. The framework includes co-ordination of night-time utility works by a utilities working group (described in Section 3.4 of the Utilities Management Framework).

In summary, the recommended conditions of consent are already addressed by the proposed mitigation and management measures for the project.

## 7.4 NSW Office of Environment and Heritage

### 7.4.1 Biodiversity assessment

#### *Survey effort for Inner West Long-nosed Bandicoot*

##### Issue

For the Inner West Long-nosed Bandicoot, the Office of Environment and Heritage previously recommended that one camera trap be placed every 300 metres in suitable habitat for two weeks. Surveys undertaken for the Environmental Impact Statement involved placing cameras 700 metres apart for one week. The period of placement may have been restricted by the ability to access a working rail corridor. However, Price and Banks (2016) conducted four months of camera surveys along the Inner West light rail line and failed to find any evidence of Long-nosed Bandicoot use, but plenty of predator use. They concluded that this species is unlikely to be surviving along the light rail line. Given the habitat similarity, the Office of Environment and Heritage concurs with the findings of the biodiversity assessment undertaken for the Environmental Impact Statement, which reaches the same conclusion.

##### Response

It is noted that the Office of Environment and Heritage does not raise any deficiencies in relation to the survey effort used to undertake the biodiversity assessment for the Environmental Impact Statement such that additional surveys or analysis are required. Whilst the survey effort for the Inner West Long-nosed Bandicoot population undertaken for the biodiversity assessment was less than Office of Environment and Heritage's recommended efforts, the Office of Environment and Heritage supports the conclusions of the assessment.

As noted in Section 22.2.2 (Terrestrial fauna) of the Environmental Impact Statement, the biodiversity assessment concluded that the Long-nosed Bandicoot is unlikely to occur in the project area. As a result, no direct impacts of the project on this species are predicted.

Mitigation measure B6 requires a trained ecologist to be present during clearing of native vegetation or removal of potential fauna habitat, to avoid impacts on resident fauna, and to salvage habitat resources as far as is practicable. This would include Long-nosed Bandicoot habitat that would be impacted within the project area.

#### *Impact on *Acacia pubescens**

##### Issue

The biodiversity assessment undertaken for the Environmental Impact Statement notes that 'there are no *A. pubescens* stems in the project area as the occurrences of these plants have been excluded from the project area in order to preserve the population'. The Office of Environment and Heritage also considers that indirect impacts are unlikely to be detectable. These plants are already subject to extensive edge effects, and the impacts of passing rail traffic and maintenance.

##### Response

It is noted that Office of Environment and Heritage agrees with the conclusions of the biodiversity assessment, which state that the project would not result in significant direct or indirect impacts on the population of Downy Wattle (*Acacia pubescens*) in the rail corridor. The project would not directly impact on the populations of Downy Wattle at Punchbowl and Bankstown stations, as these areas are excluded from the project area. This commitment is confirmed by mitigation measure B4, which requires that impacts to Downy Wattle be avoided, and that the locations of Downy Wattle stems be marked on plans, fenced on site, and excluded from the construction area.



## 7.4.2 Floodplain risk assessment

### *Differences in the modelling approach used at Marrickville and between Dulwich Hill and Bankstown, and concerns with deferring modelling*

#### Issue

The Office of Environment and Heritage reviewed Technical Paper 8 (Hydrology, flooding and water quality assessment). The Office of Environment and Heritage's comments are generally confined to the methodology. From the Office of Environment and Heritage's perspective, the assessment appears to follow accepted floodplain risk management practice.

The assessment applied two modelling techniques, for Marrickville Station and for the rest of the project area between Dulwich Hill and Bankstown stations.

The Office of Environment and Heritage acknowledges that the assessment provides a summary of proposed drainage works within the project area between Dulwich Hill and Bankstown stations. However, details of the flood characteristics within the whole vicinity of the project area should be provided, including detailed mapping to demonstrate the model's results.

A detailed discussion should also be provided as to whether there would be remaining impacts after implementation of the proposed drainage works, including impacts on surrounding properties along this section of the corridor.

The report lacks details on design performance in the area between Dulwich Hill and Bankstown stations. Whilst it acknowledges that there is a high hazard area around Canterbury Station, modelling of flooding at this area was not undertaken, and the impacts of the project on existing flood behaviour were not assessed. The report recommends that further analysis be undertaken during detailed design.

The Office of Environment and Heritage does not support deferring modelling to the detailed design stage. It would be prudent to undertake adequate assessment of flooding from the Cooks River and overland flow in this early stage of the proposal.

#### Response

The flood modelling and analysis conducted for the reference design for the exhibited project, as described in the Environmental Impact Statement, adopted a risk-based approach. The analysis identified that the area around Marrickville Station included areas of high flood hazard combined with an expansive flood affectation area. Therefore, more detailed modelling was undertaken for this area to understand existing conditions and to demonstrate the effect of the project relative to a range of flood characteristics.

Between Dulwich Hill and Bankstown stations, the rail corridor is located above the level of mainstream flooding from the Cooks River and Salt Pan Creek, and is only affected by local overland flooding.

In relation to flooding from the Cooks River, an assessment of the potential impact of increased flood levels due to sea level rise was undertaken for the Environmental Impact Statement. This assessment concluded that flood level increases in the Cooks River as a result of sea level rise scenarios would not affect the project, including the proposed drainage measures, because these would be above the predicted flood levels.

However, as discussed in Section 1.3 of this report, the exhibited project has been revised to minimise environmental impacts and address issues raised during exhibition. As a result, the preferred project would be operated within the current hydrological environment and the inclusion of additional drainage infrastructure does not form part of the preferred project.

The preferred project would involve the retention and maintenance of existing drainage infrastructure. In addition, major earthworks including new cuttings and embankments are not required to construct the preferred project. Therefore, the preferred project would not result in a change to existing flooding or flood hazard, in, or around the rail corridor.

As such, the need to undertake further assessment works regarding the potential impacts of the flooding management system is no longer relevant to the preferred project and no further flood modelling or assessment is proposed as part of detailed design.

## **7.5 NSW Health**

### **7.5.1 Noise and vibration**

#### ***Measures to limit construction and operational noise impacts***

##### **Issue**

There is emerging evidence of the health impacts of environmental noise. All reasonable and feasible measures should be implemented to minimise construction noise exposure for local residents. Scheduling of works to avoid or minimise night-time construction noise is important for minimising sleep disturbance.

There are a number of residential premises that may be exposed to excessive noise during the operational phase at Bankstown around the rail line and the corridor, including multi-level residential buildings. All reasonable and feasible measures should be implemented to reduce the impact of operational noise on these residences, particularly night-time noise which would result in sleep disturbance.

##### **Response**

##### **Construction noise management**

A construction noise and vibration assessment has been undertaken for the preferred project. The results of this assessment are summarised in Section 15.2 of this report, and Appendix E provides the detailed results. The assessment concludes that, when compared to the results of the noise impact assessment undertaken for the exhibited project, there would be a reduced number of residential receivers affected by the preferred project and the potential exceedances of the noise criteria would be less.

The Construction Environmental Management Framework and the Construction Noise and Vibration Strategy would be implemented to manage construction noise and vibration impacts during construction.

The Construction Noise and Vibration Strategy defines how construction noise and vibration will be managed for the Sydney Metro City & Southwest project as a whole. The strategy provides guidance for managing construction noise and vibration impacts in accordance with the *Interim Construction Noise Guideline* (DECCW, 2009), to provide a consistent approach to management and mitigation across all Sydney Metro projects.

The strategy identifies the requirements and methodology to develop construction noise and vibration impact statements. These would be prepared prior to specific construction activities, based on a more detailed understanding of construction methods, including the size and type of construction equipment. This process would provide further detail (based on additional noise modelling (if required)) regarding the actual noise levels that would be experienced by individual receivers, to guide the location specific approach to implementing noise mitigation.

The Construction Noise and Vibration Strategy also provides a list of the standard noise mitigation measures that would be implemented when exceedances of the noise management levels are predicted. Implementation of these measures is also required by mitigation measure NVC5.

The strategy acknowledges that the sensitivity of receivers can be greater for works conducted outside recommended standard construction working hours, and it provides a staged approach to mitigation depending on the level of impact predicted. The management of noise impacts outside recommended standard hours would be further strengthened by implementing the proposed out of hours work strategy (described in Section 2.7.4 of the preferred project description in Appendix B), as required by new mitigation measure NVC16. The strategy would be developed to guide the assessment, management, and approval of works outside recommended standard hours.

Mitigation measures NVC2 and NVC6 to NVC15 also provide commitments in relation to the processes and procedures that would be implemented during construction to manage noise.

### **Operational noise management**

Section 13.4.2 (Potential impacts – amenity) of the Environmental Impact Statement noted that noise levels at 85 and 105 receivers are predicted to exceed the *Rail Infrastructure Noise Guideline* trigger levels in 2024 and 2034 respectively. The majority of exceedances are located in the Bankstown noise catchment area (NCA11), where there are multi-level residential buildings near the rail line.

A qualitative assessment of operational noise and vibration impacts was undertaken for the preferred project and is summarised in Chapter 12 to 14 of this report, while Appendix E provides the detailed result. The assessment concluded that the preferred project is not anticipated to increase the operational noise levels compared to the predictions provided in the Environmental Impact Statement for the exhibited project.

Reasonable and feasible mitigation options were considered by Technical Paper 2 (Noise and vibration assessment), and were summarised in Section 13.5.2 (Reasonable and feasible mitigation options) of the Environmental Impact Statement. For NCA11, these would include noise barriers and at-property treatments. The project would be designed with the aim of achieving the noise objectives of the *Rail Infrastructure Noise Guideline*.

Section 13.5.1 (Approach to mitigation and management) of the Environmental Impact Statement noted that a review of predicted operational noise and vibration levels would be undertaken during detailed design, when more information is available and when specific mechanical plant and other project details have been confirmed. This would also include additional noise modelling (if required) and consideration of reasonable and feasible mitigation approaches. The final form of mitigation would be determined during detailed design.

Mitigation measures NVO1 to NVO3 specify the processes and procedures relating to the management of operational noise, including the operational noise and vibration review (NVO1), confirmation of the height and extent of noise barriers (NVO2), and the control of operational noise from substations (NVO3).

## **7.5.2 Air quality**

### **Issue**

Air quality is most at risk during construction owing to dust emissions, however the Environmental Impact Statement demonstrates compliance in terms of predicted air quality impacts with Environment Protection Authority requirements. All reasonable and feasible measures should be implemented to minimise exposure to dust emissions for local residents during construction.

## Response

Section 23.4.1 (Approach to mitigation and management) of the Environmental Impact Statement noted that an air quality management plan would be developed and implemented in accordance with the Construction Environmental Management Framework. The air quality management plan would define the management and monitoring measures that would be implemented to minimise the potential for air quality impacts during construction. This commitment is confirmed by mitigation measure AQ1. All reasonable and feasible measures to control dust emissions would be implemented during construction in accordance with the air quality management plan.

### 7.5.3 Impact of additional public transportation

#### Issue

We support the opportunity for this project to service the growing demand for public transportation in Sydney. According to Litman (2011), high quality public transportation and transit oriented development can affect travel activity in ways that provide large health benefits, including reduced traffic crashes and pollution emissions, increased physical fitness, improved mental health, improved access to medical care and healthy food, and increased affordability which reduces financial stress to low-income households.

The proposed service frequency should result in rising train patronage in the corridor, which will yield broader social benefits from a reduced reliance upon private motor vehicles.

#### Response

Sydney Metro is a transit-oriented project that prioritises clear and legible connections with other public and active transport modes within the wider metropolitan travel network.

The project has been consciously designed to promote healthy and active lifestyles, which has included implementation of the station access hierarchy. The station access hierarchy was used for both the exhibited project and the preferred project, to ensure that the design of stations, and their integration with other transport modes, gives the highest priority to walking and cycling, followed by public transport.

Once operational, the project would provide more than twice as many trains per hour in peak periods, reducing the waiting time for customers, and significantly improving the capacity and reliability of the rail network. The fast and more frequent services provided by Sydney Metro would result in travel time savings, and is one of the factors that would encourage people to use Sydney Metro.

### 7.5.4 Active transport and station design

#### *Active transport corridor*

#### Issue

NSW Health supports development of the active transport corridor along the length of the rail line from Sydenham to Bankstown stations. The early completion of this cycleway/walkway would help promote active transport.

Bicycle access and parking on interchanges will further contribute to cleaner air and an increase in physical activity.

## Response

As discussed in Section 9.4 of this report, an active transport corridor is no longer viable within the rail corridor as part of the preferred project. However, the preferred project does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor along the Sydenham to Bankstown corridor, outside of the rail corridor.

The preferred project would include development of a Walking and Cycling Strategy to encourage active transport into the station precincts. Transport for NSW would also work with key stakeholders to identify the best active transport routes in each suburb. Active transport routes may include pedestrian footpath upgrades, separated cycleways, shared footpaths and designated pedestrian and cyclist road crossings.

The preferred project would still involve upgrades to stations including the provision of sufficient bicycle parking at all stations.

## Bicycle safety

### Issue

The Design Guidelines stipulate that priority is given to bicycle safety at road interfaces. There is concern regarding cyclist safety at the bus interchange and layover area on South Terrace, Bankstown. The cycle path finishes abruptly at the bus layover area and there is no allowance for cyclist access into the station from the west. To avoid conflicts between pedestrians and cyclists and vehicles and cyclists, consideration should be given for off-road cyclist access from all directions, not just the south east along the active transport corridor.

### Response

Given the retention of existing infrastructure along the rail corridor, the detailed design of the preferred project would be informed by the *Around the Tracks: urban design for heavy and light rail* (Transport for NSW, 2016). The detailed design for Bankstown Station would continue to consider user safety and avoid conflicts between pedestrians, cyclists and vehicles.

As part of the preferred project, Transport for NSW would develop a Walking and Cycling Strategy to facilitate customer movements to and from stations and encourage active transport. Transport for NSW would work with relevant stakeholders to identify the best active transport routes and supporting pedestrian and cycling facilities, a key consideration of which would be user safety.

## Water refill stations

### Issue

We recommend that water refill stations be included within the Design Guidelines for all metro stations. This is an important link to NSW Health and Sydney Water's focus on addressing overweight and obesity by promoting water as the drink of choice, and should be seen as an important strategy for waste reduction within all Sydney Metro stations.

### Response

Transport for NSW would investigate opportunities for providing water refill stations at metro stations.

## Multi-modal transport

### Issue

NSW Health recommends consideration of the station precinct design to optimise multi-modal transport, including provision for bicycle storage, bicycle sharing, and affordable and accessible motor vehicle parking to encourage active transport and uptake of metro travel.

## Response

Sydney Metro is a transit-oriented project that prioritises clear and legible connections with other public and active transport modes within the wider metropolitan travel network.

A major focus of station design effort has been the identification and provision of accessible pathways to the stations and the locations of kerbside facilities which maximises their use and the patronage of Sydney Metro.

Section 7.2.4 (Access and connectivity) of the Environmental Impact Statement described how accessibility and connectivity considerations informed design development. This section noted that multiple travel modes are used to access destinations, and that customers need a seamless, well integrated, and safe journey. The station access hierarchy was used as the basis for the design of stations and associated facilities for the exhibited project, to ensure that the design of stations, and their integration with other transport modes, gives the highest priority to walking and cycling, followed by public transport, then taxis, kiss-and-ride, and finally park-and-ride (the lowest priority). The station access hierarchy was also used as the design basis for the preferred project.

The final design for the transport and access facilities and services at each station would be informed by the Interchange Access Plans. The plans would consider the station access hierarchy to provide safe, convenient, efficient and sufficient access to stations and transfer between transport modes.

The design of each station has also included facilities for bike parking at those locations where there are currently insufficient facilities.

### **7.5.5 Traffic, transport and access**

#### *Worker parking impacts on community facilities*

##### **Issue**

NSW Health requests that additional consideration be given to alternative parking close to health care facilities during the construction phase, for example around the Bankstown Community Health Centre. Past experiences have shown that construction workers arrive very early and consume existing parking places, resulting in significant negative impacts on access to health facilities by the public.

##### **Response**

Section 10.4.2 (Station and corridor works – changes to car parking) of the Environmental Impact Statement recognised the potential impacts of worker parking, noting that construction workers could use some of the existing parking spaces near stations and construction work areas.

To manage this potential impact, the Environmental Impact Statement noted that:

- some parking would be provided for workers within compounds and/or work sites where practicable
- opportunities for additional construction worker parking would be investigated during detailed construction planning, particularly for larger sites
- additional strategies would be developed to minimise the potential for parking impacts, including encouraging workers to car pool or use public transport, and provision of off-site parking alternatives with associated shuttle bus arrangements.

This approach is still applicable to the preferred project and is confirmed by mitigation measure TC17, which commits to managing construction sites to minimise construction worker parking on surrounding streets, and to developing a worker car parking strategy in consultation with the relevant local council. The worker car parking strategy would identify measures to reduce the impact on local parking, and potential mitigation options, including alternative parking locations.

## **7.6 Heritage Council of NSW**

### **7.6.1 Non-Aboriginal heritage**

#### *Heritage impacts at Canterbury station*

##### **Issue**

The submission notes that the 'moderate' level of impact identified at Canterbury Station may be under-estimated, given that the heritage listed footbridge and overhead booking office would be removed, and that the brick platforms would be rebuilt and extended. The Canterbury Railway Station Group is listed on the State Heritage Register.

##### **Response**

The potential impacts of the exhibited project on the Canterbury Railway Station Group were assessed by Technical Paper 3 (Non-Aboriginal heritage impact assessment), and the results were summarised in Chapter 14 (Non-Aboriginal heritage) of the Environmental Impact Statement. The potential impacts of the preferred project on the Canterbury Railway Station Group have been assessed in a non-Aboriginal heritage impact assessment in Appendix F and the results are summarised in Chapters 12 to 15 of this report.

This station group comprises a number of elements – Platforms 1 and 2 and associated buildings, the signal box, footbridge, overbridge, overhead booking office and concourse, and the canopies. The scope for the preferred project in relation to heritage (Non-Aboriginal) items is as follows:

- the heritage listed platforms would be retained and re-levelled
- the heritage listed footbridge and overhead booking office would be retained
- the heritage listed buildings on platforms 1 and 2 would be retained
- the existing heritage listed signal box on the south-eastern side of the Canterbury Road overbridge would be retained.

Both assessments were undertaken in accordance with the *NSW Heritage Manual 1996* (Heritage Office and Department of Urban Affairs and Planning, 1996) and relevant guidelines, including *Assessing Heritage Significance* (Heritage Office, 2001) and *Statements of Heritage Impact* (Heritage Office, 2002). In accordance with these guidelines, the assessments were based on determining levels of impact to the significance of the item and its elements. Impacts were identified as either:

- direct impacts, resulting in the demolition or alteration of fabric of heritage significance
- visual impacts, resulting in changes to the setting or curtilage of heritage items or places, historic streetscapes or views
- potential direct impact, resulting in impacts from vibration and demolition of adjoining structures.



Once the levels of each type of impact were assessed, adverse and positive impacts to aspects of significance were balanced to determine an overall level of impact to the heritage significance of the listed item. Where impacts to heritage significance were assessed as major, discussion was provided on whether the item would continue to meet the threshold of significance necessary for heritage listing.

The potential direct impacts of the preferred project on significant elements within the station group listing are provided in Table 8 of the non-Aboriginal heritage impact assessment contained in Appendix F of this report.

The assessment of the preferred project concludes that:

- One element is considered to have an exceptional level of significance – the platform building, platform 1 (type 11) (1895). The preferred project would have a moderate impact due to the building being repurposed.
- Five elements were considered to have a high level of heritage significance. These items, and the predicted level of direct impacts, are as follows:
  - signal box and the platform building, platform 2 (type 11) (proposed to be retained) – neutral/moderate
  - overbridge (proposed to be retained and upgraded) – minor
  - platform 1 and platform 2 (proposed to be retained) – moderate.
- The footbridge was modified in the 1947, and is considered to have moderate significance. The footbridge would be retained as part of the preferred project and would have a neutral impact.
- The overhead booking office/concourse and canopies were rebuilt in the 1980s, and are considered to have little heritage significance. These elements would be retained as part of the preferred project and would have a neutral impact.

The assessment of the preferred project concluded that the project would have an overall moderate impact to the Canterbury Railway Station Group, which is consistent with the level of impact assessed for the exhibited project. This rating is based on the historical significance of the station and the fact that all heritage buildings and structures would be retained rather than removed.

The assessment concluded that the Canterbury Railway Station Group would continue to meet the threshold for State significance.

### ***Heritage mitigation measures***

#### **Issue**

The proposed mitigation measures for non-Aboriginal heritage are appropriate. It is recommended that, if the project is approved, the conditions of approval should ensure the proposed mitigation and management measures outlined in Technical Paper 3 are implemented.

For the proposed works to be acceptable, the degree of direct impacts both physical and visual to these items should be mitigated as much as possible.

It is recommended that the conditions of approval should include:

1. Significant fabric of the platforms and station buildings that are to be demolished must be carefully dismantled and stored safely in accordance with fabric and salvage strategies for future reassembly and potential reuse in interpretation.
2. All works to station groups of heritage significance must be undertaken by skilled tradespeople with experience working on heritage sites, under the supervision of heritage specialists.

3. Appropriately detailed site specific archaeological assessment, methodology and research design should be prepared to guide works at station groups with archaeological potential.
4. Interpretation should be implemented across all areas of construction (during and after works) where heritage has been removed or impacted assist the public in understanding the heritage impacted by this project.
5. Relevant local councils should be invited to comment where local heritage items are affected.

## Response

The mitigation measures provided in Table 14.36 (Mitigation measures – non-Aboriginal heritage) of the Environmental Impact Statement and the final mitigation measures provided in Table 16.1 of this report incorporate the recommendations of Technical Paper 3 (Non-Aboriginal heritage impact assessment) and the non-Aboriginal heritage impact assessment undertaken for the preferred project (provided in Appendix F of this report). The mitigation measures for the exhibited project and preferred project were developed based on the recommendations of each technical specialist, and adjusted where required to provide consistency across the various environmental issues and Sydney Metro projects. They also consider the preferred project, the scope of which involves retaining heritage buildings and structures, compared with the scope of the exhibited project.

The existing mitigation measures address three of the conditions of approval recommended by the submission, as described below.

Recommended Condition of Approval 1 is addressed by mitigation measures NAH7. NAH7 requires a moveable heritage item strategy to be prepared. As noted above no station buildings or platforms would be demolished as part of the preferred project therefore the provisions of this mitigation measure are considered sufficient.

Recommended Condition of Approval 3 is addressed by mitigation measure NAH15, which requires that methodologies for the removal of existing structures and construction of new structures be developed and implemented to minimise direct and visual impacts to other elements within the curtilages of the heritage items, or to heritage items located in the vicinity.

Recommended Condition of Approval 4 is addressed by mitigation measure NAH6, which requires a Heritage Interpretation Plan to be prepared, and appropriate heritage interpretation to be incorporated into the design in accordance with relevant guidelines.

With respect to recommended Condition of Approval 2, a new mitigation measure has been added (NAH20), which requires works to significant heritage fabric to be undertaken by skilled tradespeople with experience working on heritage sites, in consultation with an appropriately qualified conservation heritage architect.

With respect to recommended Condition of Approval 5, local councils and other key stakeholders would have multiple opportunities for input to the ongoing development of the project, via the key stakeholder engagement mechanisms described in Section 3.2 of this report, and in accordance with any conditions of approval, should the project be approved. This would include involvement in the Design Review Panel, where the relevant council would be invited to participate and advise on local issues and outcomes.

The final list of mitigation measures for the project is provided in Table 16.1 of this report.

## ***Adaptive reuse***

### **Issue**

Whilst it is positive that heritage items are to be retained, it is important that all opportunities for adaptive reuse of station buildings are pursued, rather than the creation of further redundant station buildings.

The Canterbury signal box is a particularly significant item for which an adaptive reuse should be found.

### **Response**

As described in Section 14.3.14 (Operational impacts) of the Environmental Impact Statement, a key consideration of the design process has been identifying opportunities to retrofit and reuse significant structures in accordance with their heritage values.

The preferred project proposes to retain all heritage buildings and undertake internal refurbishment/re-purposing of heritage listed station buildings.

Mitigation measure NAH5 requires an adaptive reuse strategy to be developed by an appropriately qualified and experienced heritage architect.

The signal box at Canterbury Station forms one of the elements of the Canterbury Railway Station Group. As noted in the preferred project description (Appendix B) the signal box is proposed to be retained. Opportunities for the reuse of the signal box would be considered in consultation with the Design Review Panel, Sydney Trains, and Canterbury-Bankstown Council.

## **7.6.2 Consultation**

### ***Ongoing consultation with the Heritage Council***

#### **Issue**

The Heritage Council would like to reiterate the importance and value of involving it as the design of the project advances, to understand and ensure that the design options considered will have the least heritage impact. The Heritage Council notes that there is a significant level of work required to mitigate the heritage impacts of the project, and believes that there may still be scope for changes and improvements in the detailed design to achieve this.

#### **Response**

Transport for NSW has worked closely with the Heritage Council throughout the project design and Environmental Impact Statement process, taking on board lessons learned from recent projects. The Heritage Council has also been involved as part of the Heritage Working Group. As identified in Section 3.4 of this report, the Heritage Working Group was briefed on the scope of the preferred project.

The Heritage Council provides a representative on the Sydney Metro Design Review Panel. The panel would continue to be consulted during detailed design, and members of the panel (including the Heritage Council representative) would continue to have the opportunity to contribute on heritage related matters as the design progresses.

NAH1 to NAH3 require the project design to minimise adverse impacts to, maximise retention of, and complement retained heritage items. NAH4 requires the design to be developed with guidance from an appropriately qualified and experienced conservation heritage architect. The full list of mitigation measures is provided in Table 16.1 of this report.

### 7.6.3 Future design and environmental management

#### Design guidelines (heritage)

##### Issue

The initiatives provided in the Sydenham to Bankstown Design Guidelines are supported. The new design should respect and celebrate the heritage and sense of place. Local character should be reflected in the differences between individual stations, with consideration given to form, fabric and materiality.

##### Response

The support expressed for the Design Guidelines is noted. However, as the preferred project retains existing infrastructure along the rail corridor, the Sydenham to Bankstown Design Guidelines are no longer applicable and instead the preferred project would take into consideration the principles outlined in *Around the Tracks – urban design for heavy and light rail*. Heritage and local identity are still key considerations in the *Around the Tracks* urban design guideline. For example, the design principle for heritage (Design principle 6 – Protect and enhance heritage features and significant trees) requires the following:

*‘When projects involve heritage buildings or remnants, they should be retained as useful infrastructure wherever possible, rather than becoming isolated, museum-like pieces. Depending on the significance of the element and its state of repair, a different level of protection and restoration will be required.’*

Design principle 5 (Maximise the amenity of the public domain) requires the design to:

*‘Design public spaces to be activated as much as possible with diverse uses that appeal to a broad range of users including those from different demographic groups, with varying accessibility needs and at different times of the day and night,’ and*

*‘Use urban design enhancements (e.g. creative engineering solutions, landscape designs and art) to add interest and character to a project. Unique features contribute to creating a memorable sense of place and enhance the sense of community ownership.’*

The detailed design process would be undertaken by the design contractor. With respect to heritage listed items, the designs would be reviewed by the Design Review Panel, which includes a representative of the Heritage Council and a heritage architect, and in accordance with any conditions of approval for the project.

In addition, the detailed design process involves preparing Station Design and Precinct Plans for each station, in accordance with new mitigation measure LV3. These plans would present an integrated urban and place making outcome for each station, and would:

- be prepared in consultation with relevant stakeholders, including the relevant local council
- be reviewed by the Design Review Panel
- identify specific design objectives and principles based on local context and heritage, place making values, the urban design context, and maximising the amenity of public spaces and permeability around station entrances
- identify opportunities for public art
- be informed by a Heritage Interpretation Plan
- provide evidence of consultation with the community, local councils, and agencies in the preparation of the plans, and how feedback has been addressed.

## **7.7 Sydney Water**

### **7.7.1 Project description – construction**

#### *Sydney Water infrastructure*

##### **Issue**

The Environmental Impact Statement identifies that numerous Sydney Water culverts and pipes, including several critical assets, cross the rail corridor. Many of these assets will require relocation, adjustment, protection or upsizing to accommodate future growth. Sydney Water will continue to work with the project team to address these impacts.

##### **Response**

Consultation with Sydney Water has been ongoing during the design and development of the project, and Sydney Water would continue to be consulted in relation to its infrastructure and assets where there is the potential for these to be impacted. Sydney Metro has entered into an Interface Agreement with Sydney Water for the project.

Section 9.10 (Utilities management) of the Environmental Impact Statement described the proposed approach to the management of utilities in the project area. This section recognised that Sydney Water has a number of assets in the project area that may require adjustment, protection, and/or relocation as part of the project. As outlined in the preferred project description in Appendix B of this report the presence of Sydney Water assets within the project area is still applicable to the preferred project although the need and extent of utility adjustment, protection and/or relocation is anticipated to be reduced.

A Utilities Management Framework was included with the Environmental Impact Statement to describe the approach to avoiding and/or minimising impacts associated with the relocation and/or adjustment of public utilities affected by the project. The updated Utilities Management Framework is provided as Appendix H to this report.

The framework outlines the process for utilities identification and management during construction and beyond, including steps to ensure that detailed design takes into account the input of utility providers and owners (including Sydney Water). This includes consultation with utilities owners as part of the utilities working group for the project, and identifying opportunities to integrate works with utility owners and other affected stakeholders.

### **7.7.2 Hydrology, flooding and water quality**

#### *Flood management*

##### **Issue**

The project should address in detail the existing flood risk and anticipated flood management system requirements to service future catchment conditions. The flood management system for the project should be designed so that the residual flood risk to people and property is socially acceptable. Flood management should not rely on existing informal flood storages.

The project should address current or potential impacts it may have on the social and economic costs to the community as consequence of flooding.

Designers should use existing catchment flood management plans as design context or develop a strategy for the broader catchment in consultation with Sydney Water and the relevant council.

## **Response**

A detailed analysis of existing and potential changes to surface water and flooding conditions as a result of the exhibited project was undertaken as part of the Environmental Impact Statement. The results of this assessment were provided in Technical Paper 8 (Hydrology, flooding and water quality assessment) and summarised in Chapter 21 (Hydrology, flooding and water quality) of the Environmental Impact Statement.

The preferred project would involve the retention of existing infrastructure along the rail corridor, where possible, and the maintenance of existing track drainage. The inclusion of additional new drainage infrastructure does not form part of the preferred project.

The preferred project would be operated within the current hydrological environment. The preferred project would not result in a change to existing flooding or flood hazard, in, or around the rail corridor.

As such, the need to undertake further assessment works regarding the potential impacts of the flooding management system is no longer relevant to the preferred project and no further modelling or assessment is proposed as part of detailed design.

## ***Flood mitigation services***

### **Issue**

Works that will increase demand for, reduce availability of, or impede provision of, flood mitigation services must be agreed to by Sydney Water and the relevant council.

### **Response**

As per the above response, the preferred project is unlikely to impact existing flooding conditions. No works are proposed as part of the preferred project that would increase demand for, reduce the availability of, or impede the provision of, flood mitigation services.

## ***Flood models***

### **Issue**

Any flood models used should be independently reviewed to verify the suitability of the model assumptions.

### **Response**

The flood modelling undertaken for the Environmental Impact Statement, including the models used, are listed in Table 2-1 (Drainage and flood modelling undertaken) of Technical Paper 8 (Hydrology, flooding and water quality assessment) of the Environmental Impact Statement.

The preferred project would be operated within the current hydrological environment and would not result in a change to existing flooding or flood hazard, in, or around the rail corridor.

As such, no further flood modelling or assessment is proposed as part of detailed design.

## ***Flooding issues near Marrickville Station***

### **Issue**

The following issues should be considered due to the challenging existing conditions at Marrickville station:

- confirmation of ownership for the proposed detention basin
- the review of discharges to the Malakoff tunnel in minor flood events

- the proposal to pipe additional stormwater flows from the southern side of Marrickville Station to the northern side of the railway line will have a negative impact, which will cause flooding to the low-lying properties near the intersection of Byrnes and O'Hara Streets
- the overall flood management plan should investigate a controlled overland flow path along the southern side of the railway line at Station Street
- water quality improvement measures should be incorporated into the design of the basin.

### Response

No flooding works are proposed at Marrickville Station as part of the preferred project. The preferred project would operate within the existing hydrological conditions. Therefore, the above issues are no longer considered relevant to the preferred project.

### Water sensitive urban design

#### Issue

Sydney Water recommends that a condition of approval be imposed requiring that the water quality and reuse targets in Table 4.4 of the Environmental Impact Statement be achieved for both the rail corridor and station areas. Sydney Water has expressed the view that it is not acceptable to only maintain existing conditions, as the proposed changes to the rail corridor will fundamentally change catchment conditions. Any discharges to Sydney Water stormwater systems must meet or exceed Sydney Water's stormwater quality targets.

#### Response

The preferred project would not involve significant changes to the rail corridor, such as major earthworks and embankments and new drainage infrastructure, that would fundamentally change catchment conditions.

However, as per mitigation measure FHW2 the preferred project would be designed to ensure that there is minimal potential for water quality impacts, including incorporating water sensitive urban design elements.

Additionally, Table 1-3 (Water quality and water reuse requirements) and Table 4-4 (Water quality design criteria) of Technical Paper 8 (Hydrology, flooding and water quality assessment) presented the proposed water quality design criteria based on the *Water Sensitive Urban Design Guideline* (Roads and Maritime, 2017). In general, these criteria meet or exceed Sydney Water targets where there is sufficient information to conduct the comparison. Table 1-3 identified the areas where water quality and water reuse requirements are proposed to be met, which does not include the rail corridor.

Section 21.3.5 (Operation impacts – water quality) of the Environmental Impact Statement outlined the results of the assessment of operational impacts on water quality, which would be the same for the preferred project. It concluded that the main potential impacts of the project on water quality would be from increases in erosion and sedimentation, and the mobilisation of pollutants from the rail corridor. With regard to changes in pollutant levels from the rail corridor, the Environmental Impact Statement concluded that the proposed use of the rail corridor for Sydney Metro operations would be very similar to the existing use, and therefore the potential for an increase in contamination is expected to be very small. In accordance with mitigation measure FHW2, the project would be designed to ensure that there is minimal potential for water quality impacts, including incorporating water sensitive urban design elements into station precinct areas.



### 7.7.3 Non-Aboriginal heritage

#### *State Heritage listed Marrickville Sewage Pumping Station*

##### Issue

Sydney Water must be consulted early and throughout the project in relation to any works taking place which may impact the State Heritage listed Marrickville Sewage Pumping Station (SPS271).

##### Response

Sewage Pumping Station 271 is listed under the following heritage registers:

- State Heritage Register – Sewage Pumping Station 271 (listing number 01342)
- Sydney Water Section 170 register – Marrickville Sewage Pumping Station No. 271 (listing number 4571727)
- Marrickville Local Environmental Plan 2011 heritage list – Sewer Vent, pumping station and Edwardian house, including interiors (listing number I67).

Each of the above listings has a different curtilage/listing boundary. Figure 7.1 shows the curtilages of each item listing. None of the items are located within the project area, however the *Marrickville Local Environmental Plan 2011* listing is located within 25 metres of the project area.

Technical Papers 2 (Noise and vibration assessment) and 3 (Non-Aboriginal heritage impact assessment) of the Environmental Impact Statement assessed the potential for vibration impacts at heritage listed items, including this item. The assessments concluded that there is the potential for vibration impacts at the closest facades of this item, as it is located within the minimum work distance for cosmetic damage to structures for some equipment that may be used during construction in this location.

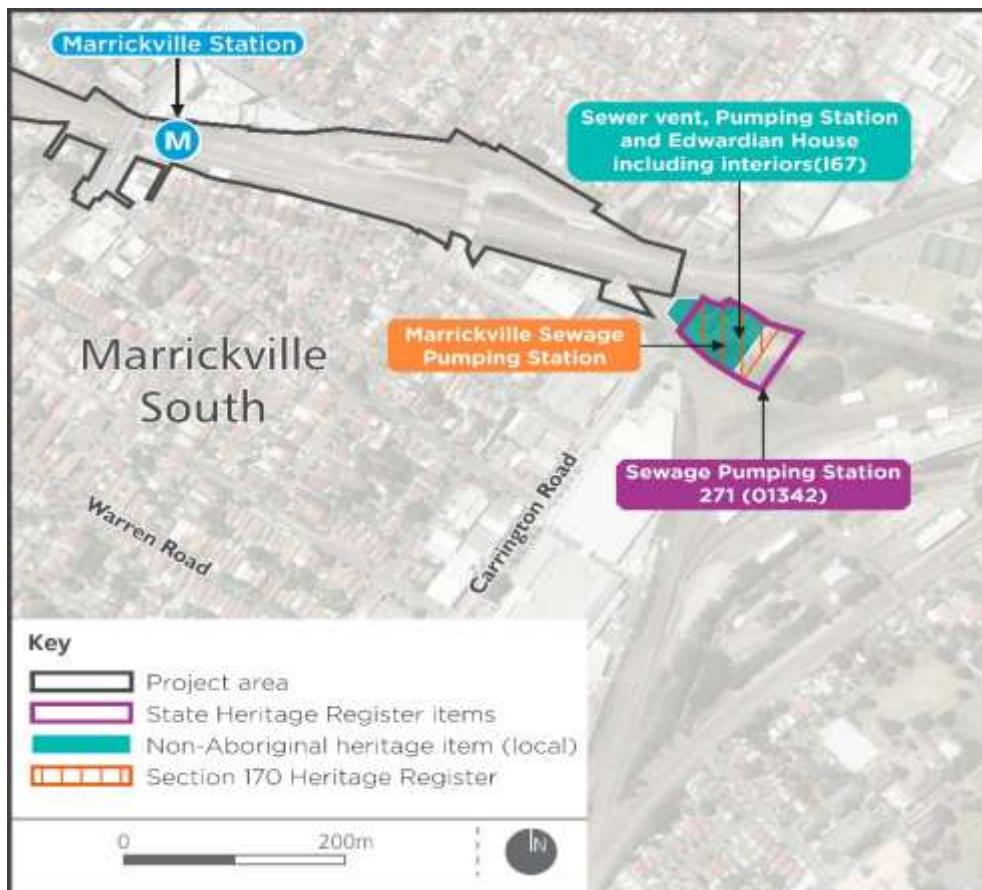
The assessments assumed that the most vibration intensive piece of construction equipment required for the construction of the exhibited project would be a rock breaker. As described in Chapter 10 of this report, hydraulic breaking would not be required during construction for the preferred project therefore the most vibration intensive piece of construction equipment required for the preferred project is a ballast tamper. The vibration levels generated through the use of a ballast tamper are significantly lower than those generated through the use of a rock breaker and use of a ballast tamper would be restricted to the limited track works in the rail corridor. Therefore, the preferred project would result in reduced vibration impacts compared to the exhibited project.

Where vibration impacts are present, the impacts from most construction activities would be intermittent over the duration of construction in any one area, and more refined construction planning would seek to further reduce this impact (i.e. by using smaller equipment wherever possible).

The approach to managing vibration during construction is described in Sections 12.6.1 (Approach to mitigation and management - Construction noise and vibration) and 14.4.1 (Approach to mitigation and management-Non-Aboriginal heritage) of the Environmental Impact Statement.

In accordance with the Construction Noise and Vibration Strategy, and mitigation measures NVC3 and NVC4, where vibration levels are predicted to exceed the screening criteria for heritage items, a more detailed assessment of the structure would be carried out to determine appropriate vibration limits. The more detailed assessment would include a condition assessment, and consideration of the heritage values of the structure in consultation with a heritage specialist, to ensure that sensitive heritage fabric is adequately monitored and managed.

The Construction Environmental Management Framework and the Construction Noise and Vibration Strategy include a requirement for ongoing consultation with affected asset owners, including Sydney Water.



**Figure 7.1 Heritage listings at Sewage Pumping Station 271**

## 7.8 Ausgrid

### 7.8.1 Project description – construction

#### *Ausgrid infrastructure and safety concerns*

##### **Issue**

Ausgrid notes that it has significant assets in the corridor that are affected by the project, and that they are working directly with the project team to address concerns.

Ausgrid is specifically concerned with ensuring the project proponent addresses the safety risks associated with works in close proximity to high voltage cables. The Ausgrid infrastructure in the immediate vicinity of the project must be properly accounted for in the final designs and in the construction process.

##### **Response**

Ausgrid has been, and would continue to be, consulted in relation to its infrastructure and assets where there is the potential for these to be impacted.

Section 9.10 (Utilities management) of the Environmental Impact Statement describes the proposed approach to the management of utilities in the project area. This section recognises that Ausgrid has a number of assets in the project area that may require adjustment, protection, and/or relocation as part of the project. As indicated in the preferred project description (Appendix B) of this report the presence of Ausgrid assets within the project area is still applicable to the preferred project although the need and extent of utility adjustment, protection and/or relocation is anticipated to be reduced.

A Utilities Management Framework was included with the Environmental Impact Statement to describe the approach to avoiding and/or minimising impacts associated with the relocation and/or adjustment of public utilities affected by the project. The updated Utilities Management Framework is provided as Appendix H to this report.

The framework outlines the process for utilities identification and management during construction and beyond, including steps to ensure that detailed design takes into account the input of utility providers and owners (including Ausgrid). This includes consultation with utility owners as part of the utilities working group for the project, and identifying opportunities to integrate works with utility owners and other affected stakeholders.

Section 25.3.2 (Construction impacts – underground utilities and working in the vicinity of utilities) of the Environmental Impact Statement notes the potential risks associated with utility adjustments and working in the vicinity of utilities (including high voltage electricity lines). These risks would be managed by implementing the measures outlined in the Utilities Management Framework, and through construction planning, including procedures for emergency and incident response in accordance with the Construction Environmental Management Framework.

Mitigation measure HRS1 commits to undertaking a hazard analysis during the detailed design stage to identify risks to public safety from the project, and how these can be mitigated through safety in design.

## **7.9 GreenWay Program**

A submission was received from the GreenWay place manager. The GreenWay is a shared asset involving a number of landowners and state agencies, including local councils, Roads and Maritime Services, Transport for NSW, RailCorp, and Sydney Water. The program is being implemented as a partnership between the Inner West and Canterbury-Bankstown councils, relevant NSW Government agencies, and community groups.

### **7.9.1 Support for the development of the active transport corridor**

#### **Issue**

The GreenWay Program strongly supports extension of the existing Cooks River to Iron Cove GreenWay to create a new Sydney Metro active transport corridor/GreenWay South West, linking Dulwich Hill to a new, multi-purpose active travel and urban environmental corridor along the Sydenham to Bankstown rail corridor.

#### **Response**

An indicative alignment for a future active transport corridor was identified in Section 8.1 (Active transport corridor and rail corridor development) of the Environmental Impact Statement. However, due to the revised construction methodology and retention of existing infrastructure along the rail corridor, provision of an active transport corridor is no longer viable within the rail corridor as part of the preferred project. Instead, the preferred project would include development of a walking and cycling strategy to encourage active transport to the station precincts. Transport for NSW would work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utility providers to identify the best active transport routes in each suburb. Active transport routes may include pedestrian footpath upgrades, separated cycleways, shared footpaths and designated pedestrian and cyclist road crossings.

The preferred project does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor between Sydenham and Bankstown outside of the rail corridor.

## **7.9.2 Governance, planning and funding of active transport corridor**

### **Issue**

Development of the active transport corridor is best undertaken with a whole of government approach, involving the Inner West Council, Canterbury-Bankstown Council, and government agencies such as Department of Planning and Environment, Transport for NSW, Sydney Metro, the Government Architect NSW, and the Greater Sydney Commission.

The project should be delivered as a single project with appropriate arrangements to be in place to ensure funding is provided.

### **Response**

As per the above response, provision of an active transport corridor is no longer viable within the rail corridor and is not therefore proposed as part of the preferred project.

Transport for NSW would work with Inner West Council, Canterbury-Bankstown Council, and other key stakeholders including government agencies such as Department of Planning and Environment, the Government Architect NSW, and the Greater Sydney Commission to identify the best active transport routes in each suburb as part of the development of the Walking and Cycling Strategy.

### **Issue**

Only completing part of the corridor as part of the metro project would result in more complex issues as a result of trying to complete the corridor once the metro is in operation. It is much more efficient and cost effective to incorporate the active travel component as part of the rail construction project.

### **Response**

As per the above responses, provision of an active transport corridor is no longer viable within the rail corridor and is not proposed as part of the preferred project.

However, the preferred project does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor outside of the rail corridor.

## **7.9.3 Design of the corridor**

### **Issue**

The active transport corridor needs to be more than a three metre wide concrete bike path.

### **Response**

As per the above responses, provision of an active transport corridor is no longer viable within the rail corridor and is therefore not proposed as part of the preferred project. The preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would work with relevant stakeholders to identify the best active transport routes in each suburb. Consideration of active transport routes as part of the strategy would also include consideration of the appropriate width of these facilities.

### **Issue**

It is recommended that Sydney Metro take into account relevant GreenWay strategies, designs and guidelines when developing master plans for the station precincts in close proximity to the GreenWay (at Dulwich Hill and Hurlstone Park stations).

## Response

Transport for NSW would consider relevant GreenWay plans and strategies, including the *GreenWay Coordination Strategy and Master Plan*, the *Greenway Active Transport Strategy and Action Plan* (AECOM, 2012), and the *GreenWay Missing Links Report*, when developing the Walking and Cycling Strategy.

### 7.9.4 Provision of open space

#### Issue

Investigations should be undertaken to determine if any rail land would be suitable for future open space to provide additional areas to counter a shortage of open space in the areas along the corridor.

#### Response

Following detailed design, Transport for NSW would consider whether land within the rail corridor is considered to be surplus to requirements.

As noted in Section 8.1.4 (Active transport corridor and rail corridor development) of the Environmental Impact Statement, Transport for NSW would review the opportunities for possible future uses of residual land.

## 7.10 Inner West Council

Issues raised regarding strategic context, alternatives considered, and the potential impacts of the project are considered in Sections 7.10.1 to 7.10.19 of this report. Issues raised regarding specific station design features are considered in Sections 7.10.20 and 7.10.21 of this report.

### 7.10.1 Strategic context and alternatives

#### *Sydenham to Bankstown Urban Renewal Corridor Strategy*

#### Issue

Council is concerned about the alignment between the project and the draft *Sydenham to Bankstown Urban Renewal Corridor Strategy*. The Environmental Impact Statement acknowledges the project's role as an enabler to growth along the corridor, but there is insufficient consistency between the project and the strategy given their collective significance on communities along the length of the corridor.

#### Response

The revised draft *Sydenham to Bankstown Urban Renewal Corridor Strategy* is a strategic planning document prepared by the Department of Planning and Environment. The strategy identifies long-term development aspirations along the Sydenham to Bankstown corridor. Development associated with the strategy does not form part of the scope of the project.

Further information in response to issues raised about the strategy and future development along the corridor is provided in Section 5.3 of this report. Transport for NSW would continue to work with the Department of Planning and Environment during the detailed design process on resolving identified inconsistencies, as relevant to the preferred project, to ensure that the station designs are integrated with the urban renewal process. However, in general, the focus of the preferred project would be on meeting customer needs and the operational requirements of Sydney Metro.

Mitigation measure LU1 commits Transport for NSW to work with the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils, in relation to future planning for the Sydenham to Bankstown corridor.

## Public transport connectivity

### Issue

Whilst investment in public transport is welcome, it is disappointing that the project does not concentrate on areas that are currently not served by public transport.

The assessment of strategic alternatives does not adequately explore how other areas that are not currently served by public transport could be served by the project. Any future expansion of the Sydney Metro network should service areas not currently serviced by rail.

### Response

The assessment of alternatives to Sydney Metro and the project was described in Chapter 6 (Project alternatives and options) of the Environmental Impact Statement, and included consideration of various alternative transport solutions as part of strategic rail and transport planning. This included the planning undertaken to develop the *NSW Long Term Transport Master Plan* (Transport for NSW, 2012b), *Sydney's Rail Future* (Transport for NSW, 2012a), and most recently, the *Future Transport Strategy 2056* (NSW Government, 2018a). The strategic alternatives to further investment in rail were considered as part of this process.

*Sydney's Rail Future*, the long-term rail strategy for Sydney, investigated a number of strategic alternatives for the future of Sydney's rail system. The strategy identified that building a metro rail system to integrate with the existing rail network would provide more benefits and fewer disadvantages than the other alternatives. Sydney Metro was adopted as the preferred alternative for modernising Sydney's rail network.

Other transport and infrastructure projects will continue to be planned and delivered in Sydney in line with available funding, and in accordance with strategic transport and land use planning undertaken by relevant agencies, including:

- *Greater Sydney Region Plan* (Greater Sydney Commission, 2018a)
- *Future Transport Strategy 2056* (Transport for NSW, 2018a)
- *Greater Sydney Services and Infrastructure Plan* (Transport for NSW, 2018b)
- *A Plan for Growing Sydney* (Department of Planning and Environment, 2014).

Further information in response to issues raised about project alternatives and options is provided in Section 5.4 of this report.

## Rail network

### Issue

The assessment describes the option of retaining existing suburban services and expansion as not being suitable to meet demand, but this is not expanded on to the degree to which it can be discounted. An additional harbour crossing and CBD route for the Sydney Trains network for example is not discussed. Such an upgrade to the Sydney Trains network would achieve the same outcomes as metro in terms of removing blockages from the City Circle and freeing up capacity.



## Response

The continued growth in rail passenger demand, existing congestion at Town Hall and Wynyard stations, and the capacity limitations of the City Circle mean that these issues would be further exacerbated by an additional harbour crossing and Sydney Trains route through the city. Sydney Metro City & Southwest would improve the resilience of the existing network by removing an existing bottleneck at the merge of the T3 Bankstown Line with the T8 Airport & South Line as they enter the Sydney CBD via the City Circle. The removal of trains on the T3 Bankstown Line would provide spare capacity on the City Circle, which could be used for services along other already near capacity lines.

Further information in response to issues raised about project alternatives and options is provided in Section 5.4 of this report.

## *Rail capacity on other lines*

### Issue

There needs to be a commitment to ensuring that the additional capacity on other lines is delivered by the project.

### Response

One of the purposes of the project is to reduce the bottleneck created by the way the T3 Bankstown Line merges with other railway lines in the Sydney CBD.

The increase in capacity on other lines is created by separating the T3 Bankstown Line from the Sydney Trains network. This separation would mean that once the Sydney Metro City & Southwest (including the project) is operational, increased capacity would become available immediately. The use of this increased capacity would be determined by Sydney Trains as part of the development of future timetables. Sydney Trains would seek to use this increased capacity to meet the demand at that time.

## **7.10.2 Project description and design development**

### *Design development*

#### Issue

Council recommends establishment of an independent design panel chaired by the NSW Government Architect to review the design at appropriate stages, and for the panel to include representatives from relevant councils.

#### Response

A design panel has already been established for Sydney Metro (the Sydney Metro City & Southwest Design Review Panel), the purpose of which is to review the design at appropriate stages. The panel includes a representative of the Heritage Council and an independent heritage architect. Where relevant, the local council would be invited to participate and advise on local issues and outcomes.

### *Local character in station design*

#### Issue

The Design Guidelines include reference to ensuring local character is included in the station design, yet there is concern that the desire for a consistent line-wide identity will make this incompatible. Further discussion is required as to how these potential inconsistencies will be approached in the design stages.



## Response

As the preferred project retains existing infrastructure along the rail corridor, the Sydenham to Bankstown Design Guidelines are no longer applicable and instead the preferred project would take into consideration the principles outlined in *Around the Tracks – urban design for heavy and light rail* (Transport for NSW, 2016). This guideline requires the design to either seek to reinforce the existing identity of station or to create a new identity, repairing and revitalising the precincts around them. Design principle 5 (Maximise the amenity of the public domain) requires the design to:

*‘Use urban design enhancements (e.g. creative engineering solutions, landscape designs and art) to add interest and character to a project. Unique features contribute to creating a memorable sense of place and enhance the sense of community ownership.’*

The detailed design of the stations would be further informed by the preparation of Station Design and Precinct Plans for each station, as committed to through new mitigation measure LV3. These plans would aim to ensure that the stations and facilities complement, and are sympathetic to, local character, taking into consideration urban design context, sustainable design and maintenance and community safety, amenity and privacy, amongst other drivers. These plans would be prepared and implemented in consultation with the Department of Planning and Environment, local councils, the Chamber of Commerce and the local community.

Further information in response to issues raised about design development and local character is provided in Section 5.5 of this report.

## Provision of bicycle racks

### Issue

The provision of bicycle racks should match both current demand and future demand.

### Response

Section 11.4.2 (Traffic and transport) of the Environmental Impact Statement noted that designated cycle facilities are proposed as part of the station upgrades. The preferred project would include the provision of additional bike parking facilities and bike parking has been designed to cater for existing demand and, where possible, to cater for potential future demand.

In addition, mitigation measure TO3 commits Transport for NSW to work with the Inner West Council and other relevant stakeholders to identify the best active transport routes in each suburb as part of the development of the Walking and Cycling Strategy. The aim of this strategy would be to identify facilities to encourage active transport to the station precincts. The implementation of further walking and cycling facilities, as informed by the Walking and Cycling Strategy, would be considered as part of the detailed design.

## Footpath widths

### Issue

The proposed parapets and throw screens would reduce the widths of footpaths. Any works should maintain existing path widths or provide widened paths.

### Response

Some bridge upgrade and maintenance works are proposed as part of the project, and would include (in some instances) provision of parapets or safety screens. The detailed design of these works would consider footpath widths and ensure that, as far as possible, existing path widths would be maintained or widened.

## **Appearance and design of noise barriers**

### **Issue**

Security fencing and noise barriers should be designed to fit with the surrounds and be aesthetically pleasing.

### **Response**

As per mitigation measure LV8 fencing would be designed to be of a high quality urban finish near stations. Corridor fencing would be similar to the existing fencing located along the rail corridor.

Mitigation measure LV6 commits to selecting materials and colours for noise barriers and hoardings to minimise their visual prominence. Mitigation measure LV7 commits to considering the use of transparent panels in noise barriers where views to local landscape features and district views would be obstructed.

## **Restrictions placed by Sydney Trains**

### **Issue**

The project is clear in its role as an enabler and supporter of growth along the corridor. A recurrent issue that occurs with regard to new developments facing rail corridors is the significant restrictions that are placed by Sydney Trains on openings facing rail corridors, which reduces building amenity and the overall quality of design. Such heavy restrictions can have significant impact on the ability to create desirable neighbourhoods and is thus unaligned with the enabling objectives of the project. It is recommended that the project work with Sydney Trains to address this issue and remove such obstruction to the delivery of desirable neighbourhoods.

### **Response**

The design of development along the rail corridor is outside the scope of the project. In accordance with *State Environmental Planning Policy (Infrastructure) 2007* (the 'Infrastructure SEPP') the Department of Planning and Environment's guidelines *Development Near Rail Corridors and Busy Roads – Interim Guidelines* (NSW Planning, 2008) must be taken into account where development is proposed in, or adjacent to, specific roads and railway corridors. Concerns regarding these guidelines should be directed to the Department of Planning and Environment.

## **7.10.3 Active transport corridor**

### **Active transport corridor along the alignment**

#### **Issue**

It is incongruent that the project makes only 'provision for an active transport corridor at stations', rather than its development across the project alignment.

The corridor should be funded and delivered by the project as a single entity with timely delivery in conjunction with the other elements of the project. The project must therefore be conditioned to provide an active transport corridor along its length during construction.

#### **Response**

Provision of an active transport corridor is no longer viable within the rail corridor as part of the preferred project. Instead, the preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utility providers to identify the best active transport routes in each suburb.

This does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor along the Sydenham to Bankstown corridor, outside of the rail corridor.

#### **7.10.4 Open space**

##### ***Impact on Fraser Park and McNeilly Park***

###### **Issue**

The significant impact on Fraser Park and McNeilly Park cannot be dismissed due to the scarcity of open space and recreational facilities in the Inner West.

The impact on the relatively the dog off-leash area at McNeilly Park (noting that walking the dog is the second most popular recreation activity) is likely to be significant.

McNeilly Park will be significantly affected during the construction period. A significant upgrade of the park should be undertaken as part of the project in accordance with relevant Council plans.

###### **Response**

The exhibited project included construction of a detention basin within the western end of McNeilly Park. This is no longer proposed as part of the preferred project therefore, there would be no significant impacts on McNeilly Park due to construction of the preferred project.

The project would not directly impact Fraser Park as the park is located about 160 metres east of the project area. However, there is a need for some construction vehicles to access the Meeks Road rail overbridge area via the Fraser Park access road. These impacts would be limited to a very short period of time (about 48 hours during a rail freight possession).

Mitigation measure LU3 states that temporary use areas, including public open space, would be restored to their pre-existing condition (as a minimum) as soon as practicable following completion of construction. This would be undertaken in consultation with the relevant council and/or the landowner.

##### ***Park enhancement***

###### **Issue**

There is an opportunity for the project to enhance specific parks and places as sites for future community infrastructure, amenity and community activation, and contribute community infrastructure where there will be loss of open space or amenity during or beyond construction.

###### **Response**

With respect to site restoration, mitigation measure LV16 commits to undertaking site restoration in accordance with the visual amenity management plan, and to rehabilitating impacts to public open space in consultation with the relevant council and/or landowner. Mitigation measure LU3 states that temporary use areas, including public open space, would be restored to their pre-existing condition (as a minimum) as soon as practicable following completion of construction. This would be undertaken in consultation with the relevant council and/or the landowner.

Additionally, in accordance with mitigation measure LV2, Transport for NSW would work with council to identify urban design principles and deliver agreed urban design outcomes on council land used for construction of the project.

## ***Reinstatement of parks***

### **Issue**

Any proposed works in open space areas must have pre-condition reports prior to the commencement of such works, to ensure they are reinstated to a satisfactory standard.

### **Response**

Mitigation measure LU3 commits to restoring temporary use areas, including public open space, to their pre-existing condition (as a minimum) as soon as practicable following completion of construction. This would be undertaken in consultation with the relevant council and/or the landowner.

Mitigation measure LV16 commits to undertaking site restoration in accordance with the visual amenity management plan, and to rehabilitating impacts to public open space in consultation with the relevant local council and/or landowner.

## **7.10.5 Traffic, transport and access**

### ***Closures at weekends and the Victoria Road underbridge***

#### **Issue**

Full and partial bridge closures should only occur on weekends or at night where possible. Night or weekend works are preferable if a full road closure is proposed, with works undertaken outside of peak hour during partial closures.

The Charlotte Avenue underbridge should be renamed to Victoria Road underbridge, and it is noted that height restrictions apply to this bridge.

#### **Response**

The bridge works for the preferred project can occur without long-term full bridge closures. Works would be limited to some lane restrictions at nights and/or on weekends.

In accordance with mitigation measure TC3, potential impacts on the surrounding road network of lane closures resulting from bridge works would be assessed in detail, and management measures developed, in consultation with Roads and Maritime Services, the Inner West and Canterbury-Bankstown councils, and the Sydney Coordination Office.

Due to the constraints associated with working on bridges over an operational rail corridor, some of the proposed bridge works would need to be undertaken during rail possessions, and during possessions, works may need to be undertaken during all time periods to maximise use of the possession period.

The potential traffic impacts also need to be balanced with the potential for noise impacts during off-peak periods, and the requirements of the out of hours work strategy (required by new mitigation measure NVC16).

The name of the Charlotte Avenue underbridge has been changed to the Victoria Road underbridge in project documentation as requested by Council. This clarification is noted in Section 2.4.2 of this report.

Transport for NSW (and the construction contractor) would take into consideration the height restrictions of the Victoria Road underbridge as part of construction planning, in particular as part of confirmation of haulage routes.

## ***Bus diversions***

### **Issue**

Diversion of any buses (noting that STA buses do not serve this part of Victoria Road) should be via Livingstone Road. Closure of Albermarle Street bridge should divert traffic to use Wardell Road or Livingstone Road overbridges.

### **Response**

As discussed above the bridge works that are part of the preferred project can occur without long-term full bridge closures. Works would be limited to some lane restrictions at nights and on weekends. Therefore, diversion of buses around Albermarle Street bridge would not be required.

Mitigation measure TC3 commits to assessing the impacts on the surrounding road network of lane closures resulting from bridge works, and developing management measures developed, in consultation with Roads and Maritime Services, the Inner West and Canterbury-Bankstown councils, and the Sydney Coordination Office.

## ***Construction deliveries***

### **Issue**

Deliveries are to be made out of peak times.

### **Response**

In accordance with mitigation measure TC8 a construction traffic management plan would be prepared and implemented prior to construction. The plan would define the activities proposed as part of the construction phase, and how impacts on the road network and road users would be managed. This would include scheduling deliveries to limit potential impacts.

## ***Wardell Road overbridge***

### **Issue**

The potential impact to the Wardell Road overbridge (if any) needs to be discussed further. Where the predicted level of service is F, strategies to advise motorists of potential lengthy delays should be devised and implemented during construction.

### **Response**

As discussed in Chapter 9 of this report, the bridge works for the preferred project would be limited to the provision of enhanced protection to existing bridge piers, installation of anti-throw screens, vertical protection screens, vehicle collision barriers and general maintenance work.

These works can occur without long-term full bridge closures, and would be limited to some lane restrictions at nights and on weekends. A traffic and transport and access assessment has been completed for the preferred project and is provided in Appendix D and summarised in Chapters 12 to 15 of this report. This assessment includes a qualitative assessment of the traffic impacts from construction of the preferred project due to the proposed bridge works. The assessment concludes that due to there not being a need for vehicle diversions there would be a reduction in traffic impacts for the preferred project compared with those for the exhibited project.

As noted above, mitigation measure TC3 commits to assessing the impacts on the surrounding road network of lane closures resulting from bridge works, and developing management measures in consultation with relevant stakeholders (including councils).

The construction traffic management plan would identify measures to minimise impacts to traffic flows during the works. This would include notifying motorists by community notifications and variable message signs (as per mitigation measures TC10 and TC14). It is also noted that automated route guidance apps (e.g. Google maps) now automatically avoid congested areas, so real time route information would be provided to motorists.

### ***Information the Temporary Transport Strategy and plans***

#### **Issue**

Additional detail is required on the Temporary Transport Strategy and plans for each planned closure of the line, including the proposed use of any temporary bus stops prior to commencement, the loss of parking around stations as a result of the use of additional buses during rail closure periods, and the stakeholder engagement strategy.

#### **Response**

Mitigation measure TC1 commits to developing a temporary transport plan for each possession period. These plans would be developed prior to the relevant possession period.

The temporary transport plans would identify the proposed temporary bus stops, and describe how the potential impacts on the transport network, including loss of parking, would be managed. Each temporary transport plan would be implemented prior to any works required to support each rail possession period.

Stakeholder and community engagement would form part of the development and delivery of each temporary transport plan. The plan for the first possession period would be released for feedback and input prior to its finalisation and implementation in 2019 (associated with planned possession periods).

Further information in response to issues raised about the Temporary Transport Strategy and the management of impacts during possession periods is provided in Sections 5.8.3 and 5.9.5 of this report.

### ***Impact of the Temporary Transport Strategy on local roads***

#### **Issue**

Council is concerned about the significant impact that the Temporary Transport Strategy will have on local roads, rail passengers forced to change modes, existing bus passengers, and pedestrians and cyclists.

The impact on local streets from construction traffic and rail replacement services must be modelled, given the significant impact these will have on local streets.

#### **Response**

As noted above, the temporary transport plans would consider and identify measures to manage these potential impacts. Transport for NSW would work with key stakeholders to minimise the impacts on the transport network.

Modelling of the performance of the road network during construction, including the operation of rail replacement buses, was undertaken for the Environmental Impact Statement, and the results were summarised in Section 10.4.3 (Summary of assessment results) of the Environmental Impact Statement and described in detail in Technical Paper 1 (Traffic, transport and access assessment).

Modelling for the preferred project included construction traffic movements associated with a refined baseline temporary transport plan during the proposed two week Christmas shutdown period, to reflect the revised possession regime. This modelling is summarised in Section 15.2.1 of this report and detailed in the traffic, transport and access assessment provided in Appendix D. The modelling for the preferred project indicates that construction and temporary transport traffic impacts would be reduced when compared to the exhibited project.

The temporary transport plans would continue to be refined to minimise impacts on the transport network.

The temporary transport plans would consider road network performance during the possession periods and would include consideration of concurrent construction traffic.

Further information in response to issues raised about the management of impacts during possession periods is provided in Section 5.9.5 of this report.

### ***Affected bus stops***

#### **Issue**

Details are required on affected bus stops including any that may need to be relocated, and the estimated duration. If relocation affects Council's bus shelters, then alternative arrangements will need to be made with Council and the bus shelter provider to relocate the shelter.

#### **Response**

Mitigation measure TC2 commits to consulting with key stakeholders (including Roads and Maritime Services, the State Transit Authority, and the Inner West Council), to identify opportunities to minimise impacts to bus layovers and existing bus stops during operation of rail replacement buses.

Mitigation measure TC9 commits to modifying existing bus stops, or implementing new stops and alterations to service patterns, in consultation with relevant stakeholders (including Inner West Council).

### ***More information on parking***

#### **Issue**

Council has introduced Resident Parking Schemes for the Dulwich Hill and Marrickville station precincts. Any loss in unrestricted parking as a result of the project would place further pressure on remaining spaces in local streets. More information is required on exactly where parking is proposed to be removed, and the duration.

A plan outlining and quantifying temporary and permanent parking losses for Marrickville and Dulwich Hill stations is required. The project must undertake stakeholder engagement to inform residents, businesses, emergency services and others as to the changes in parking, providing clear plans indicating where parking changes are to occur prior to implementing the changes.

It is recommended that the project, in conjunction with Council, deliver a parking management plan for the corridor and that it funds any subsequent implementation from such management plan.



## Response

### Construction impacts

Changes to existing on and off-street parking during construction are outlined in Table 10.38 (Indicative on and off-street car parking changes during construction) of the Environmental Impact Statement. The assessment of the impact of these changes is provided for each station in Section 10.4.3 (Summary of assessment results) of the Environmental Impact Statement. The potential impacts on parking due to station closures required as part of the preferred project are discussed in Section 4.17 of the traffic, transport and access assessment in Appendix D of this report.

For Marrickville and Dulwich Hill stations, the assessments concluded that losses to parking would be short term (for those additional spaces unavailable only during construction possessions), and that there is some capacity within 400 metres of each station to absorb the temporary loss of spaces. It is recognised that alternative parking may be located further from the customer's preferred destination.

Detailed design and ongoing construction planning would seek to minimise the impacts on parking where possible (in accordance with mitigation measure TC4). In addition, where parking spaces are lost or access is impeded during construction, particularly for extended periods, mitigation measure TC5 commits to providing alternative parking where feasible and reasonable. This would include consideration of other privately owned (or vacant) land within close proximity to affected stations. As required by the Construction Environmental Management Framework, a parking management plan would be developed to identify:

- parking requirements and on and off site parking arrangements and associated impacts
- remote parking arrangements and associated access between sites and public transport nodes
- communication of parking changes and parking management measures.

### Operational impacts

The preferred project retains the aim of achieving no net loss of dedicated commuter parking spaces located on NSW Government owned land between Marrickville and Bankstown stations. This commitment applies to parking that is not currently time restricted, and is formally line marked and/or signposted as a dedicated commuter car park zone or area.

An assessment of operational impacts on parking due to the preferred project is provided in Appendix D and summarised in Chapter 12 of this report. The assessment indicates that there would be no loss of on street parking places due to kerbside facilities, or dedicated commuter spaces in the vicinity of Marrickville Station. At Dulwich Hill Station, the preferred project would avoid impacts to dedicated commuter parking. Impacts to on street parking at Dulwich Hill due to kerbside facilities as part of the preferred project would be as per those for the exhibited project.

In accordance with mitigation measure TO1, further consideration of car parking management at stations would be undertaken in consultation with relevant stakeholders (including Council), to minimise the adverse impacts of operation on parking and other kerbside use in local streets.

## ***Car parking for project workers***

### **Issue**

Car parking for project workers must be provided within site compounds or within rail land to minimise impacts on on-street unrestricted parking spaces.

### **Response**

Construction planning would aim to minimise the potential impacts of worker parking. Mitigation measure TC15 commits to managing construction sites to minimise construction worker parking on surrounding streets. It also commits to developing a worker car parking strategy in consultation with the relevant local council to minimise potential impacts on both on and off street parking. The strategy would identify potential mitigation measures, including alternative parking locations, and would encourage contractor staff to:

- use public transport
- car share
- park in a designated off site area and access construction sites via a shuttle bus.

## ***Planning for special events***

### **Issue**

Council has a number of special events throughout the year, including the Marrickville festival along Illawarra Road/Marrickville Road and Easter celebrations affecting Livingstone Road. These need to be considered in the planning stages and potential impacts taken into account.

### **Response**

Mitigation measure TC11 commits to considering special events as part of construction work programming. For special events that require specific traffic and pedestrian management, measures would be developed and implemented in consultation with Roads and Maritime Services, Inner West Council, and the organisers of the event.

## ***Future growth along corridor***

### **Issue**

Given the likelihood of significant development along the corridor as a result of the *Sydenham to Bankstown Urban Renewal Corridor Strategy*, baseline conditions cannot discount this, and must consider potential development.

### **Response**

Section 4.5.5 (Traffic, transport and access - traffic growth) of Technical Paper 1 (Traffic, transport and access assessment) of the Environmental Impact Statement described the growth factor that was used to model the 'future' scenario for the exhibited project. This included consideration of growth under the revised draft *Sydenham to Bankstown Urban Renewal Corridor Strategy*. The modelling scenarios included consideration of future conditions, which adopted the predicted traffic growth factor. As described in Section 2 of the traffic, transport and access assessment in Appendix D of this report, the methodology for the traffic assessment for the preferred project was as per that for the exhibited project except where noted otherwise. Therefore, the growth factor applied to the preferred project was the same as that for the exhibited project.

## **7.10.6 Noise and vibration**

### ***Sleep disturbance***

#### **Issue**

Council is concerned about the significant number of sleep disturbances, with almost 1,000 exceedances in Marrickville alone. Alternative accommodation or noise insulation should be provided for people affected by night-time works. The criteria for alternative accommodation of 30 decibels above the relevant noise criteria should be reassessed.

#### **Response**

The sleep disturbance impacts described in Section 12.5 (Potential construction noise impacts) of the Environmental Impact Statement represented the impacts based on worst case scenarios, which would only occur if all equipment was operated at once at the closest point to any one receiver. This scenario is considered unlikely to occur, and would not occur in all locations along the corridor. Overall, these impacts would not be experienced all the time or in all locations, depending on the nature of the works occurring in one location.

A noise and vibration impact assessment has been undertaken for the preferred project and is provided in Appendix E and summarised in Chapters 12 to 15 of this report. The noise and vibration impact assessment for the preferred project concludes that noise levels during construction are likely to be lower than those identified in the Environmental Impact Statement, and that fewer receivers would be highly noise affected.

Construction noise impacts would be managed by implementing the Construction Noise and Vibration Strategy (Appendix E to the Environmental Impact Statement). The Construction Noise and Vibration Strategy outlines the standard mitigation measures that would be implemented to minimise noise impacts. Where the standard mitigation measures do not reduce impacts to below the construction noise management levels, additional mitigation measures would be implemented, based on the level of the impacts and the time periods in which the works are being undertaken. These measures have been used by Transport for NSW across a number of large infrastructure projects.

In accordance with mitigation measure NVC9, alternative accommodation may be offered to residents living in close proximity to construction works where detailed construction planning identifies unreasonably high noise impacts over a prolonged period. Alternative accommodation arrangements would be offered and discussed with residents on a case-by-case basis.

Further information in response to issues raised about noise impacts during construction is provided in Section 5.11 of this report, while further information regarding potential noise impacts due to construction of the preferred project is provided in Section 15.2 of this report.

### ***Residents affected by noise and vibration - compensation***

#### **Issue**

Residents continually affected by vibration and/or noise should also be appropriately compensated.

#### **Response**

The mitigation of noise and vibration would occur in accordance with the Construction Noise and Vibration Strategy. This would include implementing additional mitigation measures where the standard measures do not reduce the potential impacts to below the construction noise management levels.

Further information in response to issues raised about the management of noise impacts during construction is provided in Section 5.11 of this report while further information regarding potential noise impacts due to construction of the preferred project is provided in Section 15.2 of this report.

### **Impacts of night works**

#### **Issue**

It is noted that 24-hour works would be undertaken at times, including the use of noise-intensive machinery. Council is keen to ensure that night works are minimised, and that the conditions of approval and environment protection licenses are appropriately stringent. It is recommended that no works be undertaken after 10 pm or before 7 am.

A more detailed framework for the out of hours strategy should be developed.

#### **Response**

Where possible, construction is proposed to be undertaken during the standard construction hours defined by the *Interim Construction Noise Guideline* (DECCW, 2009) (as described in Section 2.7.4 of the preferred project description in Appendix B of this report). However, due to the location of the preferred project within the operational T3 Bankstown Line, there is a requirement for some works to be undertaken during periods when trains are not running along the corridor to ensure the safety of workers and commuters (i.e. during rail possession periods).

Due to the time restrictions of possession periods, works during these periods would need to be undertaken 24 hours per day. Should works be restricted to the daytime and/or evening periods, the construction program may need to be extended, which would result in impacts on the community over a longer period.

While 24 hours works are proposed to occur during certain periods, mitigation measure NVC6 commits to not using noise intensive plant, including ballast tampers during the night-time period (10pm to 7am), except in the following situations:

- during a standard rail possession or shut down
- a requirement of a road authority, emergency services or Sydney Coordination Office requires works to be undertaken during this period.

New mitigation measure NVC16 provides for the development of an Out of Hours Work Strategy. The strategy would be prepared in consultation with the Environment Protection Authority, to guide the assessment, management, and approval of works outside recommended standard hours.

### **Pre-condition reports**

#### **Issue**

Council recommends that pre-condition reports be developed for all properties in the vicinity of the rail corridor that may be at risk of vibration, and/or potential structural damage as a result of vibration, during construction.

#### **Response**

Potential vibration impacts would be managed in accordance with the Construction Noise and Vibration Strategy. This includes a requirement to undertake dilapidation surveys (existing condition surveys) for any structure or assets that have the potential to be damaged by vibration. A register of these surveys would be kept by the contractor.

Where vibration levels are predicted to exceed the vibration screening level at a structure, mitigation measure NVC3 commits to a more detailed assessment of the structure to determine the appropriate vibration limits for that structure. In accordance with mitigation measure NVC4, for heritage items where vibration screening vibration levels are predicted to be exceeded, the more detailed assessment would include condition assessment and specifically consider the heritage values of the structure in consultation with a heritage specialist.

### ***Corridor-specific construction noise and vibration strategy***

#### **Issue**

A corridor-specific construction noise and vibration strategy should be prepared.

#### **Response**

The Construction Noise and Vibration Strategy (provided in Appendix E of the Environmental Impact Statement) defines how construction noise and vibration would be managed for the Sydney Metro City & Southwest project as a whole. The strategy provides guidance for managing construction noise and vibration impacts in accordance with the *Interim Construction Noise Guideline*, to provide a consistent approach to management and mitigation across all Sydney Metro projects.

The strategy identifies the requirements and methodology to develop construction noise impact statements. These would be prepared prior to specific construction activities, based on a more detailed understanding of construction methods, including the size and type of construction equipment to be used.

### ***Noise from utility works***

#### **Issue**

The noise and vibration impacts of utility works must be considered. Council seeks improved co-ordination of project-related utilities works to reduce cumulative construction impacts.

#### **Response**

Utility works form part of the project. At the time of preparation of the Environmental Impact Statement, the exact location and equipment required to undertake the works were unknown.

A strategy for the management of utilities potentially affected by the project was outlined in Section 9.10 (Utilities management) of the Environmental Impact Statement. The assessment refers to a Utilities Management Framework which is still applicable to the preferred project. An updated version of this framework is provided in Appendix H of this report and would be implemented in accordance with mitigation measure HRS3. This framework outlines how environmental impacts associated with utility works would be addressed during future stages of the preferred project. The framework also includes co-ordination of night-time utility works by a utilities working group (described in Section 3.4 of the Utilities Management Framework).

All utilities adjustments would be undertaken in accordance with the Utilities Management Framework and the Construction Noise and Vibration Strategy. However, the need and extent of utility adjustment, protection and/or relocation for the preferred project is anticipated to be reduced.

## ***Lessons learned from earlier stages of Sydney Metro***

### **Issue**

Council is keen to ensure that lessons learned from earlier stages of Sydney Metro in relation to management of construction impacts result in significant improvements for the Sydenham to Bankstown stage.

### **Response**

Transport for NSW is committed to ensuring that learnings from other stages of Sydney Metro and other major projects inform the design and construction of this project. The approach to environmental management described in Section 17.4 of this report has taken into account Transport for NSW's experience on other metro projects. This includes the various management strategies and frameworks (such as the Construction Environmental Management Framework, the Construction Noise and Vibration Strategy, and the Utilities Management Framework) which have been developed/updated to take into account previous experience.

The mitigation measures for the project are based on other stages of Sydney Metro, and have been updated to be project-specific and to accommodate the lessons learned.

## ***Health effects of construction impacts***

### **Issue**

It is recommended that a study of the health effects of construction on residents from earlier stages of Sydney Metro be carried out to inform the Sydenham to Bankstown project.

### **Response**

The potential for health impacts on residents during construction could be associated with:

- amenity impacts as a result of construction works, particularly those associated with reduced air quality, and impacts to traffic, transport and access, and noise and vibration
- changes to access arrangements and connectivity
- impacts to community infrastructure and facilities.

These potential impacts were assessed, and the results are provided in the Environmental Impact Statement. Where the impacts associated with the preferred project differ from those associated with the exhibited project further impact assessment has been undertaken and is provided in Chapters 12 to 15 of this report.

Relevant mitigation and management measures have been developed in order to minimise these potential impacts. These would be implemented during construction.

Transport for NSW is committed to ensuring that learnings from other stages of Sydney Metro inform the design and construction of this project.

## ***Improved co-ordination between State agencies***

### **Issue**

Council recommends that the project be required to ensure improved co-ordination between State agencies, and improved complaints procedures in relation to construction activities.

## **Response**

The Construction Environmental Management Framework requires the construction contractor/s to develop a Community Communications Strategy for construction, and sets out the main elements required to be included and implemented as part of the plan. This includes a complaints handling procedure. The Sydney Metro Construction Complaints Management System would be used to record, manage, and where required, escalate and mediate complaints. Further information is provided in Section 3.4 of this report.

Throughout the Environmental Impact Statement process, Transport for NSW's government agency consultation has focussed on inter-agency integration and communication. Regular meetings were held with a variety of government stakeholders to keep stakeholders informed and to ensure key issues were appropriately addressed. This process would continue during detailed design and throughout construction.

## ***Increased resources for compliance monitoring***

### **Issue**

Council requests that the project be required to increase resources for compliance monitoring.

### **Response**

The Construction Environmental Management Framework (Appendix D of the Environmental Impact Statement) identifies the requirements for compliance monitoring, inspections, and audits. Sydney Metro has established a compliance tracking program, which would also be used for this project, and regular reports would be provided to the Department of Planning and Environment.

Adequate resources for compliance monitoring would be available for the project.

The Department of Planning and Environment would also provide resources for monitoring compliance of the project in accordance with any conditions of approval.

## ***Cumulative noise impacts***

### **Issue**

Council requests that the cumulative impacts from overlapping noise envelopes be assessed.

There is a need to improve noise monitoring and account for the nature of noise impacts levels.

### **Response**

There is the potential for a number of construction activities to occur simultaneously which means that a receiver may potentially experience noise from more than one work area and/or activity at the same time. There is also the potential for a receiver to experience noise from more than one work area during consecutive time periods. Some areas at the eastern end of the project area would also potentially be subject to some cumulative impacts due to noise associated with the Chatswood to Sydenham project.



The preparation of construction noise and vibration impact statements (as per mitigation measure NVC1) would include consideration of the potential for construction impacts to overlap. These statements would also consider any noise impacts resulting from the Chatswood to Sydenham project.

The Construction Noise and Vibration Strategy includes a requirement to implement a noise monitoring program for the duration of construction, in accordance with the construction noise and vibration management plan and relevant approval/licence conditions. Appendix A of the strategy outlines the minimum requirements for construction noise monitoring.

Mitigation measure NVC11 commits to undertaking ongoing noise monitoring during construction at sensitive receivers during critical periods to identify and assist in managing high risk noise events.

### ***Cumulative vibration impacts***

#### **Issue**

There is a need to include vibration in the assessment of cumulative construction impacts.

#### **Response**

Cumulative vibration impacts from multiple construction scenarios would be considered as part of the preparation of the construction noise and vibration impact statements.

## **7.10.7 Non-Aboriginal heritage**

### ***Detail in Environmental Impact Statement***

#### **Issue**

No details on how heritage components and objects have been evaluated are provided, how junctions will be resolved between old and new, or how retained fabric will be modified.

There is too little documentation on the impacts of the project to make informed comments about the potential scale of the heritage impacts, and opportunities for mitigation.

Detailed drawings of demolition and construction works (where there is a heritage interface) should be provided. There is no drawing showing the location/dimension/interface of any old or new structures. There are no details of the proposed works other than footprints of platforms and retained/proposed buildings, with no information on the detail, scale or location of awnings, ticket booths and other structures/furniture.

#### **Response**

The potential heritage impacts of the exhibited project were assessed by an independent specialist heritage consultant in accordance with the Secretary's environmental assessment requirements, the *NSW Heritage Manual 1996* (Heritage Office and Department of Urban Affairs and Planning, 1996), and relevant guidelines under the manual, including *Assessing Heritage Significance* (Heritage Office, 2001), and *Statements of Heritage Impact* (Heritage Office, 2002).

The results of the assessment for the exhibited project were provided in Technical Paper 3 (Non-Aboriginal heritage impact assessment), and the results are summarised in Chapter 14 (Non-Aboriginal heritage) of the Environmental Impact Statement).

As described in Section 1.3 of this report, Transport for NSW has developed a design solution that enables the retention of existing station entrances, heritage buildings and concourses. A non-Aboriginal heritage impact assessment has been undertaken to assess the impacts associated with the preferred project and is provided in Appendix F and summarised in Chapters 12 to 15 of this report. This assessment was also undertaken in accordance with the guidelines outlined above. Appendix F of this report provides detail on:

- items and areas of heritage significance that would be materially affected by the preferred project during construction and operation, including buildings, works, relics, views, and places of heritage significance
- potential impacts on the values, settings and integrity of heritage areas and items and archaeological resources located near the exhibited and project
- proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) in accordance with relevant best practice guidelines.

During the reference design development phase, the Heritage Working Group was consulted on the station designs, including options and design drivers influencing heritage, potential impacts on heritage items, and management strategies. Additionally, further information was provided to Council during briefing sessions.

The drawings presented in the Environmental Impact Statement are based on a reference design, developed to enable the community to understand the design and its interface with the surrounding area. Drawings have been prepared for the preferred project and are provided in Chapter 9 of this report. Detailed drawings were not provided, as the design is at reference design stage only, and the final detailed design and drawings would be the responsibility of the successful contractor subject to project approval.

As the detailed design develops, the Design Review Panel (which includes a heritage architect and representative for the Heritage Council) and the Heritage Working group would review the design, and ensure that it takes into account the heritage commitments in this report, and any conditions of approval. Councils and other key stakeholders would have multiple opportunities for input to the ongoing development of the project, via the key stakeholder engagement mechanisms described in Chapter 3 of this report, and in accordance with the mitigation measures and any conditions of approval. This would include involvement in the Design Review Panel, where a representative of the relevant council would be invited to participate and advise on local issues and outcomes.

The measures that would be implemented to minimise and manage the potential heritage impacts to stations include:

- NAH1 to NAH3 require the project design to minimise adverse impacts to, maximise retention of, and complement retained heritage items
- NAH4 requires the design to be developed with guidance from an appropriately qualified and experienced conservation heritage architect
- NAH5 requires an adaptive reuse strategy to be developed
- NAH6 requires a Heritage Interpretation Plan to be developed and appropriate heritage interpretation to be incorporated into the design
- NAH7 provides for the management of moveable heritage
- NAH8 provides for the management of heritage station buildings that would be re-purposed or refreshed

- NAH13 requires photographic archival recording to be carried out in accordance with relevant guidelines
- NAH15 to NAH17 and NAH20 provide for the management of heritage items during construction.

A full list of mitigation measures is provided in Table 16.1 of this report.

### Description of works

#### Issue

The written description of works is typically vague and general across all sites. A written description alone is an imprecise and ambiguous method of communicating the proposed scope of works e.g., *'major impact on the original platform including the loss of about half of its fabric and brick face from the demolition eastward of the central platform building'*. Figure 8.2 contradicts this indicating that a section of the platform east of the central platform building is to be retained.

#### Response

As noted above, station plans have been revised for the preferred project. Revised station plans are provided in Chapter 9 of this report and a detailed project description for the preferred project is provided in Appendix B.

The description of works and impacts refers to the reference design. Given that all heritage buildings would be retained for the preferred project the level of information provided on the station plans is considered sufficient at this point in the design. Further information specific to heritage impacts associated with the preferred project is provided in Appendix F and summarised in Chapters 12 to 15 of this report.

As noted above, the detailed design would be prepared in accordance with the mitigation measures, the *Around the Tracks: urban design for heavy and light rail* guideline, and any conditions of approval for the project.

#### Issue

Visual impacts are considered by the Environmental Impact Statement to be 'major' due to the visual clutter and scale of intervention, however this is difficult to interrogate because there are no drawings of the precise location, interface, materials, or size of canopies or other structures.

#### Response

A non-Aboriginal impact assessment has been undertaken for the preferred project and is provided in Appendix F and summarised in Chapters 12 to 15 of this report. The assessment concludes that visual impacts for the preferred project are moderate, compared to visual impacts of between moderate and major for the exhibited project. Accordingly, there is an overall reduction in visual impacts on heritage items for the preferred project compared with the exhibited project.

The drawings presented in the Environmental Impact Statement and the revised drawings in this report have been developed to enable the community to understand the design and its interface with the surrounding area. Detailed designs are not provided, as the design is at reference design stage only, and the final design and drawings would be the responsibility of the contractor subject to project approval.

## ***Additional mitigation measures***

### **Issue**

The mitigation measures (Table 14.36 and 15.3) are supported with the addition of the following two measures:

- NAH8 does not go far enough. Salvage of all materials removed from demolished and modified heritage items should be required by a condition of consent; not only fabric of high and exceptional significance should be salvaged.
- A Heritage Salvage, Reuse and Distribution Strategy should be required by a condition of consent (refer New M5 Strategy Heritage Salvage and Reuse Strategy for recent example).

### **Response**

The revised mitigation measures (provided in Table 16.1 of this report) provide for the management of moveable heritage and heritage fabric, including salvage, as considered relevant to the preferred project. In particular, mitigation measure NAH7 commits to preparing a moveable heritage item strategy, which would include a comprehensive record of significant railway elements to be impacted. This would include items contained within station and platform buildings, as well as of any other significant equipment within the curtilage of the heritage railway stations.

The moveable heritage item strategy would form part of the broader interpretation strategy.

Mitigation measure NAH8 outlines the management requirements for station buildings that are to be re-purposed or refreshed. Mitigation measure NAH17 outlines the need to create a detailed inventory of all buildings and structures which are to be retained or removed.

Mitigation measure NAH5 commits to preparation of an adaptive reuse strategy for heritage items and elements to be retained within the operational station area.

## ***Integrate the Interpretation Plan with the Heritage Salvage Strategy***

### **Issue**

The Heritage Interpretation Plan should be integrated with the Heritage Salvage Strategy to promote the use of salvaged fabric as a condition of consent and include reuse of salvaged materials.

### **Response**

A heritage salvage strategy is no longer proposed for the preferred project because all heritage buildings and structures would be retained. As such, mitigation measure NAH8 from the Environmental Impact Statement relating to the exhibited project has been deleted.

## ***Demolition of Dulwich Hill platform 1/2***

### **Issue**

Clarification is sought with regard to the rationale to demolish Dulwich Hill platform 1/2. It is recommended that an alternative solution to preserve and modify the platform be considered to reduce the major heritage impact that would be caused by the proposed demolition.

### **Response**

As per the preferred project description provided in Appendix B and summarised in Chapter 9 of this report, heritage platforms at all stations would be retained and re-levelled. This includes platform 1/2 at Dulwich Hill Station.

## *Visual impacts on heritage items*

### **Issue**

Visual impacts appear to be referenced but not addressed (e.g. Marrickville Station stated as having a major impact). It is recommended that visual analysis based on 3D models from several viewpoints be prepared and provided to Council to enable the proper assessment of the visual impacts of the platform canopies and building on the character and setting of the Marrickville Railway Group and the Dulwich Hill Railway Group.

### **Response**

Technical Paper 3 (Non-Aboriginal heritage impact assessment) of the Environmental Impact Statement considered the potential for visual impacts on heritage items with reference to changes to the setting or curtilage of heritage items, places, historic streetscapes, and views. When carrying out this assessment, the heritage specialist (Artefact) had access to a range of plans forming the reference design, supported by site visits.

Section 6.1 (Marrickville Station Catchment) in Technical Paper 3 (Non-Aboriginal heritage impact assessment) concluded that the proposed platform canopies and platform building would have a moderate visual impact on the character and setting of the Marrickville Railway Station Group. The assessment noted that some views to the Platform 1 building of exceptional significance, and the Platform 2 building of high significance, would be retained for continued appreciation by the public and users, although the canopies on the stairs and platforms would obscure views from most areas, apart from the section of the concourse and Station Street.

The assessment balanced the impacts of new high quality design structures, which would remain distinguishable from the original elements, and the positive impacts of removing intrusive elements, and the refresh of the station. When considering cumulative impacts, the assessment concluded that the project would have a moderate visual impact on the Marrickville Railway Station Group.

Section 6.2 (Dulwich Hill Station Catchment) in Technical Paper 3 (Non-Aboriginal heritage impact assessment) concluded that the proposed canopies, covered concourse, and station infrastructure would have a major impact on the character and setting of the Dulwich Hill Railway Station Group. When considering cumulative impacts, the assessment concluded that the project would have a major visual impact on the Dulwich Hill Railway Station Group.

The non-Aboriginal heritage impact assessment undertaken for the preferred project has also considered the potential for visual impacts on heritage items. This assessment is provided in Appendix F and summarised in Chapters 12 to 15 of this report. With regards to the Marrickville Railway Station Group the non-Aboriginal heritage impact assessment identifies that the preferred project would have a moderate visual impact, which is consistent with the exhibited project assessed in the Environmental Impact Statement. With regards to Dulwich Hill Railway Station Group the assessment concludes the preferred project would have a moderate visual impact, which is a reduction in impact compared to the visual impacts of the exhibited project.

Mitigation measures NAH1 to NAH3 require the project design to minimise adverse impacts to, maximise retention of, and complement vistas that are individually significant and those that contribute to the overall heritage significance of the Bankstown Line.

### **7.10.8 Aboriginal heritage**

#### *Consultation*

##### **Issue**

The Inner West Council Community Development Workers and Strategic Reference Group (or alternative) should be consulted.

## Response

Section 15.1.3 (Aboriginal consultation) of the Environmental Impact Statement acknowledged that Transport for NSW had commenced preparation of an Aboriginal Cultural Heritage Assessment Report, which includes additional consultation with registered Aboriginal parties.

Local councils along the corridor were notified during the Aboriginal stakeholder registration process for Sydney Metro City & Southwest, which was undertaken prior to the commencement of the Chatswood to Sydenham Environmental Impact Statement in early 2016. All councils along the corridor between Chatswood and Bankstown were included in the registration process. Consultation with the participants identified during this registration process was undertaken for the project.

A revised Aboriginal Cultural Heritage Assessment Report has been completed, and a copy is provided in Appendix J.

As described in Section 3.4 of this report, consultation with relevant stakeholders would continue as the project progresses.

## *Further detail on archaeological assessment*

### Issue

Further details should be provided with regard to the archaeological assessment that determined the significance of sites, as stated in Table 15.2 of the Environmental Impact Statement.

### Response

Table 15.2 (Aboriginal heritage assessment findings) of the Environmental Impact Statement summarised the detailed assessment provided in Technical Paper 4 (Aboriginal heritage assessment). Chapter 6 (Heritage Impact Assessment) of Technical Paper 4 addressed the archaeological potential and significance of specific survey units along the rail corridor and around stations. It provided an impact assessment ranking the potential impacts of construction and operation.

Archaeological significance was determined in accordance with the methodology provided in Section 2.2.4 (Significance assessment) of Technical Paper 4 (Aboriginal heritage assessment). Registered Aboriginal parties reviewed the report, and no issues with the assessment of significance were raised.

An Aboriginal Cultural Heritage Assessment Report has been prepared (provided in Appendix J), which assesses cultural significance in accordance with relevant Office of Environment and Heritage guidelines. Input relating to archaeological and cultural significance was provided by registered Aboriginal parties during review and the Aboriginal focus group meeting.

The preferred project would be undertaken within the same footprint as the exhibited project, with some minor exceptions (the removal of work sites and construction compounds). However, the potential to encounter archaeological impacts would be reduced given the limited excavation works required to construct the preferred project.

## *Mitigation of impacts to Aboriginal heritage*

### Issue

Council requests further details regarding construction, accidental identification of potentially significant/significant sites, and the excavation procedures.

## Response

The approach to mitigation of impacts to Aboriginal heritage is outlined below.

### Guiding principles

The overall guiding principle for cultural heritage management is that, where possible, Aboriginal sites would be conserved. If conservation is not practicable, measures would be taken to mitigate impacts to sites. The measures are based on the assessment of archaeological significance. The recommendations are also informed by cultural significance, as discussed with registered Aboriginal stakeholders.

### Aboriginal Cultural Heritage Assessment Report

An Aboriginal Cultural Heritage Assessment Report has been prepared in accordance with the Office of Environment and Heritage Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (provided in Appendix J). The report includes:

- details of Aboriginal stakeholder consultation
- an assessment of cultural significance for the project area and identification of specific areas of cultural significance based on consultation with Aboriginal stakeholders
- a methodology for archaeological management including test excavation and salvage, where required.

### Test/salvage excavation of S2B PAD01 and S2B PAD02

Archaeological management would only be required within identified areas of the potential archaeological deposits (PADs) where subsurface impacts are proposed. If impacts can be avoided, no further archaeological investigation would be required.

S2B PAD01 is outside the project area boundary and would not be impacted.

A flexible test/salvage methodology would be implemented for S2B PAD02. The methodology is outlined in the Aboriginal Cultural Heritage Assessment Report.

### Unexpected finds

The Aboriginal Cultural Heritage Assessment Report provides a methodology to manage potential heritage constraints and unexpected finds during construction. The report provides information on requirements during construction for:

- protecting identified Aboriginal heritage sites in the immediate area during construction
- a procedure to manage reporting and investigation when unexpected finds are encountered.

The report also incorporates mitigation measures to be applied during construction, including, but not limited to, contractor training in general Aboriginal cultural heritage awareness, and on-going opportunities for Aboriginal community engagement.

Mitigation measure AH2 commits to implementing the Aboriginal Cultural Heritage Assessment Report. Mitigation measure NAH14 commits to preparing an unexpected finds procedure, to be included in the construction heritage management plan, and mitigation measure AH5 commits to implementing the unexpected finds procedure if potential Aboriginal items are uncovered during works.

### Discovery of human remains

In accordance with mitigation measure NAH19, if a potential burial site or potential human skeletal material is exposed during construction, the Sydney Metro Exhumation Management Plan would be implemented.



### ***Further details of the interpretation project***

#### **Issue**

Council requests further details for the interpretation project advised in Table 15.3 in Section 15.4 of the Environmental Impact Statement.

#### **Response**

Mitigation measure AH4 commits to incorporating appropriate Aboriginal heritage interpretation into the design in consultation with Aboriginal stakeholders.

Aboriginal heritage interpretive themes and media would be determined in consultation with the registered Aboriginal stakeholders for the project. Media may include design elements, landscape elements, panels, public art/installation or electronic media. Themes may include landscape, Aboriginal occupation and lifeways, Aboriginal archaeological finds, and Aboriginal social history. Once ideas for themes and media are drafted, Aboriginal stakeholders would comment and provide input on the most appropriate media and themes, as well as the design and text.

### **7.10.9 Land use and property**

#### ***Strategies for the delivery of open space and community facilities***

#### **Issue**

Construction of approximately 8,000 additional dwellings and arrival of 830 new employees surrounding Marrickville and Dulwich Hill stations by 2036 is forecast as a direct result of the project in conjunction with land use changes proposed in the *Sydenham to Bankstown Urban Renewal Corridor Strategy*. As a result, there is a need to prioritise clear and achievable strategies for the delivery of sufficient open space, other community facilities, and infrastructure to support the significant increase in population.

#### **Response**

The NSW Government recognises that future development needs to be adequately planned for and serviced. Recognition of this need has driven the development and release of the recent strategic land use, transport and infrastructure plans by the Greater Sydney Commission and the NSW Government.

Strategic land use planning for the areas between Sydenham and Bankstown has been, and is being, undertaken by a number of agencies, including the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils.

The preferred project presents opportunities for positive change within the vicinity of the stations, supporting urban renewal, and creating attractive, vibrant, and highly accessible places. However, the provision of open space, community facilities, and infrastructure to meet the needs of the existing and future community is the responsibility of relevant service providers, including the relevant council, and is beyond the scope of this project. Strategic planning for future community needs is considered in the relevant strategic planning documents listed in Section 5.3 of this report.

Further information in response to issues raised about future development, and consistency with strategic planning, are provided in Section 5.3 of this report.

### ***Land dedicated to council***

#### **Issue**

Should any project approval include conditions to offer land for dedication purposes to Council, Council will require the land to be remediated in line with the standards of the intended use. Council recommends the land parcels offered for dedication be useable (suitable) and accessible from a usability, operational and maintenance perspective.

#### **Response**

The preferred project does not currently include provision for the dedication of surplus lands to Council or adjoining landowners.

### ***Minimise the potential need to acquire or lease public land***

#### **Issue**

The project should minimise the potential need to acquire or lease public land.

#### **Response**

The preferred project has sought to ensure that the majority of areas to be impacted are located on NSW Government owned land, in particular the existing rail corridor. Additionally, Transport for NSW has developed the scope of the preferred project so that permanent property acquisition is no longer required.

As noted in Section 1.2 of the preferred project description in Appendix B, some areas of land would need to be temporarily leased or occupied for construction compounds and other work sites during construction of the project. The majority of these sites would be located within the rail corridor, which would minimise the potential for direct impacts on land use and property. There would also be some compounds and work sites located outside the rail corridor. These would generally be located within road reserves or other government owned land.

Following further design development, consultation would be undertaken with the relevant landowner to arrange leasing of the required land. All construction work sites, compounds, and access routes would be returned to the same or better condition upon completion of the works.

### ***Council requirements for leasing land***

#### **Issue**

If lease of Council's land is required, Council should be provided with a minimum notice period of 28 days prior to temporary site establishment/commencement. Council will require an appropriate bond or bank guarantee to be paid in advance of the commencement of a lease/access. Rent in line with market rental values will be payable to Council for any proposed land to be leased. In addition, Council will require copies of relevant insurances, site plans, safe work method statements, pre-condition reports, etc. during the notice period.

#### **Response**

Transport for NSW would work with Council regarding relevant lease arrangements and associated requirements.

## **7.10.10 Socio-economic impacts**

### ***Future residential development***

#### **Issue**

The project makes regular reference to the opportunities that local communities would have as a result of improved public transport access. Resultantly, it is critical that if new housing is to be built and clustered around these new stations with full accessibility, such housing needs to be built to at least a Liveable (silver) level standard.

#### **Response**

Transport for NSW is not proposing to deliver any residential developments as part of the project. The primary objectives of the project are to:

- improve the quality of the transport experience
- provide a system that is able to satisfy long-term demand
- improve the resilience of the transport network.

As described in Section 7.3.8 (Access, interchange and connectivity) of the Environmental Impact Statement for the exhibited project, accessibility and connectivity have formed key considerations in the design process for the project and during development of the preferred project. Issues with the accessibility of any future residential developments are a matter for consideration by the relevant council and/or the Department of Planning and Environment as part of the development application process.

Further information in response to issues raised about future development is provided in Section 5.3 of this report.

### ***Active transport corridor along length of rail corridor***

#### **Issue**

The project commitment to an active transport corridor must involve its delivery along the entirety of the corridor, not just adjacent to the stations.

#### **Response**

Provision of an active transport corridor is no longer viable within the rail corridor as part of the preferred project. Instead Transport for NSW would develop a Walking and Cycling Strategy to encourage active transport to the station precincts.

This does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor along the Sydenham to Bankstown corridor, outside of the rail corridor.

### ***Temporary Transport Strategy and accessibility***

#### **Issue**

The Temporary Transport Strategy is supported, and it should be prepared in consultation with Council staff and with reference to the Inner West Council Inclusion Action Plan to minimise disruption from construction activities. The temporary transport arrangements with buses replacing trains would create access difficulties.

## Response

Mitigation measure TC1 commits to preparing temporary transport plans guided by the Temporary Transport Strategy. This measure includes a commitment to develop the plans in consultation with key stakeholders (including the Sydney Coordination Office, Roads and Maritime Services, Sydney Trains, local councils, emergency services, and bus operators).

The Temporary Transport Strategy includes the objectives for the temporary transport plans, including the need to 'be accessible by all customers'. In addition, the temporary transport plans would include provision of specialised services for customers with impaired mobility who may not be able to use the temporary bus service.

## *Role of stations as community places*

### Issue

The role of stations as community places with future social, cultural and economic opportunities is significant. The project should act on this opportunity to collaborate with local communities and councils to create hubs for community activities, recreation, urban food growing, and cultural programs that connect residential areas, open space, and businesses together to create vibrant and attractive destinations.

### Response

Design responses unique to each station and local centre have been, and would continue to be developed, taking into account the distinctive character, setting, and context of each station.

The detailed design process for the preferred project also involves preparing Station Design and Precinct Plans for each station, in accordance with new mitigation measure LV3. These plans would present an integrated urban and place making outcome for each station, and would:

- be prepared in consultation with relevant stakeholders, including the relevant local council
- be reviewed by the Design Review Panel
- identify specific design objectives and principles based on local context and heritage, place making values, the urban design context, and maximising the amenity of public spaces and permeability around station entrances
- identify opportunities for public art
- be informed by a Heritage Interpretation Plan
- provide evidence of consultation with the community, local councils, and agencies in the preparation of the plans, and how feedback has been addressed.

Further information in response to issues raised about place making and future design considerations is provided in Section 5.5 of this report.

## *Public art*

### Issue

The inclusion of a network of walking and cycle paths could be enhanced by public art and way finding features that identify and explore the distinctive environments and cultures of each precinct, which the project should take into account.

Council's Living Arts group should be consulted in the development of a creative arts strategy for the corridor, which should include consideration of legal street art walls.

## Response

Provision of a network of walking and cycling paths as part of an active transport corridor is no longer viable within the rail corridor as part of the preferred project. Instead, the preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utility providers to identify the best active transport routes in each suburb.

This does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor, and supporting public art and wayfinding, along the Sydenham to Bankstown corridor, outside of the rail corridor.

## *Displaced cultural organisations and creative practitioners*

### Issue

The project should work with the community to identify a clear plan to find new spaces for displaced cultural organisations and creative practitioners resulting from potential changes under the *Sydenham to Bankstown Urban Renewal Corridor Strategy*.

### Response

Transport for NSW is not proposing to deliver any residential developments or rezonings as part of the project.

Strategic land use planning for the areas between Sydenham and Bankstown has been, and is being, undertaken by a number of agencies, including the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils.

The provision of facilities to meet the needs of the local communities is the responsibility of the relevant council, in accordance with relevant strategic land use planning.

## *Access issues for people with cognitive, sight/vision impairment*

### Issue

It is not clear how well access issues for people with cognitive, sight/vision impairment will be addressed. If it has not occurred already, the current designs should be peer reviewed by professionals and representative groups that possess expertise across a broad range of accessibility needs.

### Response

Through provision of the preferred project, Transport for NSW has developed a design solution that enables upgrades that provide accessible stations.

The design of each station would be undertaken in accordance with the *Around the Tracks: urban design for heavy and light rail*, which recognises that good urban design can have a significant effect on the ease of access to and from stations for all people, including people with disabilities. Design principle 5 (Maximise the amenity of the public domain) requires the design to:

*'Design public spaces to be activated as much as possible with diverse uses that appeal to a broad range of users including those from different demographic groups, with varying accessibility needs and at different times of the day and night,' and*

While design principle 3 (Provide connectivity and permeability for pedestrians) requires the design to:

*‘Allow for movement through the site that is unrestricted and legible. The design should guide users through the buildings and spaces in a clear, legible manner without causing any confusion or indecision.’*

The detailed design would be supported by report prepared by an accessibility professional to document compliance of the preferred project with the *Disability Discrimination Act 1992* and other relevant accessibility standards.

Further information in response to issues raised about accessibility, and the features that form part of the design, are provided in Section 5.6 of this report.

### **Compatibility with bikes**

#### **Issue**

It is important to ensure there is compatibility of travel needs where bikes are allowed on the new trains, and that bikes do not obstruct people with less mobility.

#### **Response**

The metro trains would include a specific and dedicated bike storage area to ensure that bikes do not conflict with accessible areas within the trains.

### **Fair and safe access**

#### **Issue**

Public education and reinforcement of key travel and behaviour requirements to enable everyone to have fair and safe access and journeys should form part of the operational processes.

#### **Response**

Transport for NSW agrees that the behaviour of customers would have an important bearing on passenger experience and enjoyment. Similar to other campaigns on the Sydney Trains network (e.g. quiet carriages), the operators of Sydney Metro would be expected to implement community education campaigns to would encourage customer enjoyment.

### **Lift out of service procedures**

#### **Issue**

Clarity is sought on service standards and procedures should lifts become out of service.

#### **Response**

In the event that a lift is out of service then an operational solution would be implemented by the Metro Operations Team. The details of these solutions would be dependent upon which station the lift is out of service.

### **Ticket prices**

#### **Issue**

The issue of ticketing that is both affordable and priced to encourage commuters to use trains rather than cars is significant.

## Response

Fares for Sydney Metro would be set by the NSW Government. The project would be integrated with the existing Opal electronic ticketing system. Ticket pricing for all transport is determined by Independent Pricing and Regulatory Tribunal of New South Wales (IPART), and by NSW Government policy. The NSW Government reviews pricing annually and may consider a change to the Opal policy at any time. Any Sydney Metro service pricing would be in line with the pricing review in the same way as other trains, buses, light rail and ferry services are considered. Prices for using Sydney Metro would be comparable to the use of trains on other lines.

There would be no surcharge to use Sydney Metro.

## Additional fare revenue and operating costs

### Issue

The Environmental Impact Statement states that the annual incremental public transport fare revenue would cover nearly 61 per cent of the incremental operating cost in 2026, and more than the operating cost in 2036, and that the additional fare revenue on Sydney Metro services would more than cover the incremental operating costs of these services (net profit of \$(redacted) in 2026 and \$(redacted) in 2036).

The ticketing information relating to the *Sydney Metro City & Southwest Final Business Case Summary* has been redacted from the report so it is not clear if the ticketing policy will conform with existing ticketing determination, which entails some reference to social impacts, or whether it will be geared to ensuring an operating profit.

### Response

The statement regarding annual incremental public transport fare revenue was made in the *Sydney Metro City & Southwest Final Business Case Summary* (Transport for NSW, 2016c), not the Environmental Impact Statement.

Fares for Sydney Metro would be set by the NSW Government as described above.

## Privatisation of the Bankstown Line

### Issue

Council states its opposition to the privatisation of the Bankstown Line as part of the Sydney Metro project.

### Response

Sydney Metro infrastructure, including the stations, trains, tracks and wiring, would be owned by the NSW Government. The NSW Government and IPART would also set the fares and service standards for operating the project, and would collect the fares (as discussed above).

The train services would be run by a private operator, who would be required to comply with key performance indicators to ensure the network performs to a very high standard, including 98 per cent on time running and clean trains.

## 7.10.11 Business impacts

### Access to shops

#### Issue

Concerned about the impact of construction on access to shops, especially for the elderly and people with disabilities.



## Response

Chapter 10 (Construction traffic, transport and access) of the Environmental Impact Statement noted that construction would result in temporary impacts to traffic and access within the study area. The chapter acknowledged that this could result in inconvenience and disruption to existing access for residents, visitors, customers, businesses, and service providers along and around the project area.

The impacts to traffic and access associated with the preferred project would be generally consistent with the exhibited project with the exception of impacts associated with:

- the construction sequencing (possession periods have been reduced for the preferred project)
- bridge works (works do not require long-term, full bridge closures and the need for associated diversions)
- closures of stations due to upgrade works (for up to a period of two months for each station).

Further information regarding the construction impacts from the preferred project due to the above is provided in Appendix D and summarised in Chapter 15 of this report.

Section 3.3.3 (Pedestrian and cyclist connection alterations) of Technical Paper 6 (Business impact assessment) of the Environmental Impact Statement addressed pedestrian or cyclist detours or alterations proposed to occur as a result of construction. The preferred project would be consistent with this. In the majority of cases, the pedestrian alterations are proposed to be to a footpath on the opposite side of the road or alternatively managed through active transport management. Slight detours away from the original pedestrian path for construction purposes are unlikely to impact businesses, if access to the businesses are retained.

Mitigation measure TC20 commits to maintaining access for businesses, residents and community infrastructure. Where disruption to access cannot be avoided, consultation would be undertaken with the owners and occupants of affected business and properties, to confirm their access requirements and to discuss alternatives. This would include consideration of the needs of mobility impaired pedestrians, such as the elderly, vision impaired, disabled people and people with prams and trolleys.

Additionally, to minimise the potential impacts on businesses during construction, mitigation measure BI1 commits to preparing and implementing a business management plan, to define location specific measures (including signage) and strategies.

Communication with potentially affected users and information provision would assist in reducing uncertainty and the impacts of changes to access and movement patterns. A comprehensive community and stakeholder awareness program would be implemented during construction (as described in Chapter 4 (Stakeholder and Community Consultation) of the Environmental Impact Statement), which would assist in managing these impacts and communicating changes to relevant stakeholders.

## *Closure of the Illawarra Road overbridge*

### Issue

The closure of the Illawarra Road bridge will be a major concern, with traffic diverted through residential areas, and increased travel times.

The closure would also result in the Marrickville CBD being bisected, with the main supermarket (Woolworths) being cut off for shoppers coming from the north. Impacts on local business have not been adequately assessed.

## Response

The bridge works for the preferred project can occur without long-term full bridge closures. Works would be limited to some lane restrictions on some night and/or at weekends. A traffic and transport and access assessment has been completed for the preferred project and is provided in Appendix D and summarised in Chapters 12 to 15 of this report. This assessment includes a qualitative assessment of the traffic impacts from construction of the preferred project due to the proposed bridge works. The assessment concludes that due to there not being a need for vehicle diversions there would be a reduction in traffic impacts for the preferred project compared with those for the exhibited project.

To minimise the potential impacts on businesses, including those associated with the bridge works proposed as part of the preferred project, mitigation measure BI1 commits to preparing and implementing a business management plan, to define location specific measures (including signage) and strategies. In addition, as per mitigation measure BI2, the Sydney Metro City & Southwest Small Business Owners Support Program would be implemented to provide assistance to small business owners adversely impacted by construction.

## *Impacts on trading levels*

### Issue

Benefits to businesses will be offset by the impact on traffic and parking that will see regular customers choose to shop elsewhere. It is thus more likely that there will be an overall negative impact on trading levels, which has not been assessed.

### Response

As noted in the Environmental Impact Statement, temporary changes to traffic and parking arrangements in the local business precincts near the stations have the potential to impact on some businesses. These would include those where parking is already in short supply, those located close to stations, and/or retail or service-oriented businesses that require quick and efficient access for customers. The impacts associated with the preferred project would be consistent with this.

Removal or increased competition for on-street parking could potentially affect parking convenience for customers, clients, and workers. This could lead to a decision by customers/clients to use an alternative service or business in another area, resulting in a decline in business revenue. This particular impact was considered by the Environmental Impact Statement.

Detailed design and ongoing construction planning would seek to minimise the impacts on parking where possible (in accordance with mitigation measure TC4). In addition, where parking spaces are lost or access is impeded during construction, particularly for extended periods, mitigation measure TC5 commits to providing alternative parking where feasible and reasonable.

Further information in response to issues raised about impacts to parking during construction is provided in Section 5.9 of this report.

The Environmental Impact Statement notes that traffic congestion and traffic delays due to road configuration alterations or increased construction traffic may have both a direct and indirect impact on businesses. Businesses may be directly affected as a result of delayed or hindered access to workplaces or servicing areas, or a business may be indirectly affected by increased traffic, and therefore employee travel times, delivery delays and cost, or reduced amenity.

Technical Paper 6 (Business impact assessment) considered the impact of traffic delays arising from road network modifications, and concluded that these would have a slight negative impact. The implementation of relevant mitigation measures (including the business management plan (BI1), the Sydney Metro City & Southwest Small Business Owners Support Program (BI2), and the construction traffic management plan (TC10)), would assist in minimising potential impacts. Additionally, the preferred project would result in a reduced potential for traffic congestion and traffic delays due to road network modifications.

### ***Impact on businesses as a result of the temporary transport strategy***

#### **Issue**

The impact on businesses as a result of the temporary transport strategy (e.g. customers no longer passing through the station locality) has also not been assessed.

#### **Response**

Construction would involve periodic temporary closures of the T3 Bankstown Line as well as stations during the construction period. The temporary transport plans would identify the frequency and routing of replacement buses, the effect on transport infrastructure (such as bus stops, road closures, and diversions), and the modifications required.

Closures of stations and changes to rail services would temporarily alter commuter travel patterns, which could affect the amount of passing trade for businesses. It is expected that a small proportion of commuters would choose not to use rail replacement buses and instead drive to work. Additionally, changes to bus stops may reduce trade at particular locations, while at other locations (such as temporary bus stops) there may be an increase in trade during the possession period.

Changes to rail service arrangements and the use of rail replacement buses would increase the amount of traffic on key roads, which has the potential to affect employee travel times and access patterns. It is noted that only a third of the business survey respondents believed that staff travel times would be affected.

As noted in Section 18.3.2 (Construction) of the Environmental Impact Statement, it is predicted that station and track closures would have the potential to affect mainly those businesses located close to the stations that have a higher reliance on passing trade, including food services and some retail stores, particularly during the longer duration possessions. Overall, the potential impacts would range from slightly negative to moderately negative.

The business impact assessment concluded that there would be a neutral to slight negative residual impact to business.

### ***Detail on nature and extent of support under the Small Business Owners Support Program***

#### **Issue**

More detail is required about the nature and extent of support referred to under the Small Business Owners Support Program.

## Response

Mitigation measure BI2 commits to implementing the Sydney Metro City & Southwest Small Business Owners Support Program to provide assistance to small business owners adversely impacted by construction. The program would be administered by a retail advisory/support panel established by Transport for NSW. A copy of the program is available on the Sydney Metro website ([www.sydneymetro.info](http://www.sydneymetro.info)).

## *Workforce Development and Industry Participation Strategy*

### Issue

The Workforce Development and Industry Participation Strategy would be of minimal benefit for the local workforce. The objectives of the proposed strategy, whilst well meaning, have little or no application to the workforce profile in the Inner West LGA.

### Response

Sydney Metro's Workforce Development & Industry Participation Strategy seeks to deliver a number of related objectives, including:

- increase industry participation
- develop workforce skills
- encourage future talent into the infrastructure industry
- increase workforce diversity and inclusion.

The strategy provides opportunities for new entrants and the existing workforce, within the program delivery office, and across its contractor partners and supply chains. A diverse range of disciplines exist, including construction, engineering, design, commercial, procurement, IT, legal, sustainability and environment, and community and stakeholder liaison roles.

The strategy also seeks to increase the involvement of under-represented groups in the workforce, including Aboriginal people and women. A careers program is currently being established, linking to local schools, to increase young people's awareness of the wide range of careers opportunities within the infrastructure industry, and to provide work experience opportunities through the program.

Residents of the LGA would have the opportunity to participate.

## **7.10.12 Landscape character and visual amenity (including trees)**

### *Rating of visual impacts*

#### Issue

It is concerning that Marrickville and Dulwich Hill town centres are described as 'local' or 'neighbourhood' in regards to sensitivity and the associated minor/moderate adverse impacts from construction and operation. The matrix evaluation reduces the importance of these local situations despite the major impact it is likely to have on local users and residents.

Further, the matrix dismisses the regularity that views are observed by users, and dismisses the value that they contribute to 'place'.

## Response

Tables 2.1 (Landscape sensitivity levels) and 2.3 (Visual sensitivity levels) in Technical Paper 7 (Landscape and Visual Assessment) of the Environmental Impact Statement provide a ranking for landscape and visual sensitivity. These rankings align with both international and Roads and Maritime Services guidance for the assessment of landscape and visual impact. This guidance requires judgements to be made regarding the sensitivity of a landscape or view, which considers factors such as the number of potential viewers, the ability of the landscape and view to absorb change (i.e. natural areas are typically more sensitive to infrastructure projects than urban areas), and the desired future character of an area.

The sensitivity of each landscape and viewpoint was considered in the broadest context of possible views, from those of 'national' importance (examples include views from the Sydney Opera House World Heritage Listed landscape) to those considered to have a 'local' or 'neighbourhood' importance. In these locations, the number of users, planning protections, and catchment of the community who value these places are reflected in the level of sensitivity, which has been assigned.

Considering this context, it is reasonable that the landscapes and views of and surrounding the stations are considered to be of 'local' and 'neighbourhood' sensitivity. This does not detract from their importance, but reflects the catchment of those experiencing these landscapes and views, the developed nature of the station setting, and the future desired character of these landscapes and views.

The term 'major impact' refers to concerns about the 'level of modification' to the landscape or view. Landscape and visual modification describes the extent of change resulting from the project and the compatibility of these new elements with the existing landscape and views. A high degree of visual modification would result if development contrasts strongly with the existing setting. A low degree of visual modification occurs if there is minimal visual contrast, and a high level of integration of form, line, shape, pattern, colour or texture between the project and the environment in which it is located.

As there are existing stations in both locations, and the project involves an upgrade of existing stations, the magnitude of change reflects the incremental change in scale, and low level of contrast expected between the project and the existing urban landscapes and views at Marrickville and Dulwich Hill stations.

Landscape and visual impact is described in both international and Roads and Maritime Services guidance as a combined effect of sensitivity and modification. Section 2.8 (Assigning impact levels) of Technical Paper 7 (Landscape and visual impact assessment) provides a table of rankings of landscape and visual impact, which combine the sensitivity with the degree to which a landscape has been modified. Accordingly, these landscapes and views have been assigned a range of impacts from moderate to minor adverse impact during construction of the exhibited project, and minor adverse to minor beneficial impact during operation of the exhibited project.

Sections 2 and 3 of the landscape and visual impact assessment in Appendix G (Marrickville Station and Dulwich Hill Station, respectively) of this report provide the updated sensitivity rankings for landscape and visual impacts associated with the preferred project. The assessment identifies that landscapes and views have been assigned a range of impacts from negligible to minor adverse during construction of the preferred project and negligible to minor beneficial during operation of the preferred project. Accordingly, there is an overall reduction in impacts for the preferred project compared with the exhibited project.

## **Noise wall visual impacts**

### **Issue**

Noise wall impacts are not clearly articulated.

### **Response**

Section 4.3 (Corridor elements) of Technical Paper 7 (Landscape and visual impact assessment) of the Environmental Impact Statement stated that elements within the corridor would be designed to integrate with the surrounding environment, and minimise visual impact. This includes noise barriers, which would comprise a consistent palette of materials, colour and texture. The intent is to treat the noise barriers as a landscape element, with simple and resolved detailing that integrates and provides a gradual transition to the adjacent landscape. Screen planting would assist in mitigating the visual impact of noise barriers where possible.

Chapter 15 (Corridor and ancillary development) of Technical Paper 7 (Landscape and visual impact assessment) acknowledged there would be an intensification of rail corridor elements, including noise barriers, new overhead wiring and support structures, new signalling equipment, segregation fencing, and other elements ancillary to the project. All sections of the rail line were assessed for landscape sensitivity to the north and south of the corridor, and an assessment of the landscape impact is provided in Table 15.1 (Landscape Impact) of Technical Paper 7. Views were selected as representative of a range of views to the corridor and ancillary works including noise barriers, and visual impacts were assessed.

Chapter 11 of Appendix G to this report provides an assessment of the visual impacts associated with ancillary works for the preferred project and compares this with the impacts identified for the exhibited project. However, the assessment notes that where the impacts are derived from noise barriers these would be as per the impacts provided in the Environmental Impact Statement as the proposed location of noise barriers has not changed for the preferred project. The final location of barriers would be confirmed during detailed design.

Mitigation measure LV6 commits to selecting materials and colours for noise barriers and hoardings to minimise their visual prominence. Mitigation measure LV7 commits to considering the use of transparent panels in noise barriers where views to local landscape features and district views would be obstructed.

## **Visual impact of ancillary infrastructure**

### **Issue**

With regard to parapet throw screens and vehicle crash barriers proposed for overbridges, the project provides insufficient detail and there is concern that implementation would be incongruent with the project's public realm objectives. It is essential that such works do not conflict with the aesthetic nature of Marrickville and Dulwich Hill.

### **Response**

Various references in Chapters 8 (Project description – operation) and 9 (Project description – construction) of the Environmental Impact Statement indicate the requirement to install throw screens as part of proposed bridge works.

All sections of the rail line were assessed for landscape sensitivity to the north and south of the corridor, and an assessment of the landscape impact is provided in Table 15.1 (Landscape impact) of Technical Paper 7 (Landscape and visual impact assessment) for the exhibited project, and in Table 12.1 of Appendix G of this report for the preferred project.

Views for the assessments undertaken as part of the exhibited project and preferred project were selected as representative of a range of views to the corridor and ancillary works including anti-throw barrier fencing/throw protection screens, and their visual impacts were assessed.

Overall, it is anticipated that there would be a noticeable reduction in the landscape quality of the corridor between Marrickville and Dulwich Hill Station, due particularly to impacts on trees and works to upgrade services. This section of the rail corridor is of local sensitivity, resulting in a minor adverse landscape impact during construction.

### **Tree removal and management**

#### **Issue**

Council is concerned about the amount of trees that would be removed. The Environmental Impact Statement suggests that tree removal will be avoided if possible, which is an empty statement. Greater importance needs to be placed on existing trees in the landscape. Significant/established trees should be retained and considered as constraints in the design process, not just retained 'if possible'.

The Tree Management Strategy referred to in the Environmental Impact Statement should be prepared in consultation with Council.

#### **Response**

Section 9.3.2 (Tree removal and management) of the Environmental Impact Statement notes that the exhibited project would involve trimming or removing trees in the vicinity of stations to facilitate upgrading the stations and station areas. An estimate of the number of trees with the potential to be affected due to the exhibited project was provided in the Environmental Impact Statement, based on a preliminary tree survey.

As described in Section 1.3 of this report Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal. An estimate of the number of trees in the station precincts with the potential to be affected due to the preferred project is provided in Section 2.3.2 of the preferred project description in Appendix B. Construction of the preferred project would result in at least 390 more trees being retained in the station precincts, compared to the exhibited project. There would also be a reduction in the amount of vegetation clearance within the rail corridor, with trees being avoided where possible, and native plant community types being retained.

Minimising impacts to trees would be a key obligation incorporated into the construction contract. Impacts to vegetation along the corridor between stations would be considered further during detailed design and construction planning to ensure that the number of trees to be removed is minimised.

As noted in the Environmental Impact Statement, impacts to trees would be minimised wherever practicable, and a tree management strategy would be prepared in consultation with relevant stakeholders (including local councils).

Mitigation measure LV4 commits to managing trees during detailed design and construction planning guided by the project's tree management strategy. The measure notes that the strategy would be developed in consultation with councils and include consideration of relevant local plans and strategies. Where removal cannot be avoided, trees would be replaced in accordance with the tree management strategy, including replacement of removed trees in a two for one ratio.

Mitigation measure LV4 notes that opportunities to retain and protect existing trees would be defined during detailed design and construction planning strategy. The design would aim to reduce tree removal to the extent practicable, particularly where they contribute to screening vegetation or landscape character.



Further information on the tree management strategy is provided in Section 2.3.2 of the preferred project description in Appendix B of this report.

### ***Tree replacement and planting***

#### **Issue**

The 2:1 replacement ratio is supported, however close attention should be given to how and where these replacements are installed. They should be replaced in the same or as close to the same location as where they were removed. Planting detail and specification will need to consider technologies such as structural soil and vault systems.

#### **Response**

Council's support for the proposed tree replacement ratio is noted. The tree management strategy would be prepared in consultation with local councils, and would provide guidance on how and where vegetation is to be replaced. This would, where possible, seek to ensure that tree replacement occurs in a similar location to existing trees to ensure that benefits of the existing tree (e.g. screening or shade) are maintained where possible. Trees would be replaced on the basis of two trees for every one removed.

### ***Consultation on the detailed design of the tree planting documentation***

#### **Issue**

Council should be consulted during the detailed design of the tree planting documentation.

#### **Response**

Council would be consulted during the preparation of the tree management strategy and landscaping designs to be undertaken as part of the detailed design.

### ***Tree reports and protection***

#### **Issue**

Tree impact assessment reports and tree protection plans should be prepared for all trees impacted by the project. If the trees impacted are council owned assets, these reports should be provided to council in a 90 per cent draft form for approval prior to finalising.

#### **Response**

The tree management strategy would outline the requirement to prepare comprehensive tree reports (by a qualified arborist) for trees requiring protection, pruning or removal. Tree protection plans would be undertaken in accordance with the measures identified in the tree reports and *AS4970-2009 Protection of trees on development sites*.

### ***Tree removal at Dulwich Hill***

#### **Issue**

Specific concern is raised with regard to the proposed reconfiguration of the Dulwich Hill Station commuter car parking area as this appears to cover an existing area of significant trees, which is unsupported and must be amended.

#### **Response**

The preferred project would not affect any commuter parking spaces at Dulwich Hill Station. As such, there is no need to reconfigure the commuter car park at Ewart Lane and the trees located at the western end of the existing car park would not be affected.

### *Loss of vegetation within corridor*

#### **Issue**

Council is concerned with the significant loss of vegetation along the corridor.

#### **Response**

Vegetation clearing for the exhibited project was calculated on a conservative basis, assuming that all vegetation within the project area would be cleared. The majority of this vegetation is not native, comprising exotic plants or planted, often non-indigenous, native species on fill material.

Transport for NSW has developed a design solution that retains existing infrastructure where possible, thereby reducing the amount of vegetation requiring removal.

Accordingly, impacts to native plant community types in the rail corridor would be avoided during construction of the preferred project and trees would be avoided where possible.

Minimising impacts to trees would be a key obligation incorporated into the construction contract. The potential to further reduce the extent of vegetation clearing required during construction would be considered as the detailed design of the fencing and combined services routes aspects of the preferred project progress.

Mitigation measure B1 has been revised to commit to avoiding direct impacts to vegetation mapped as threatened ecological communities and native plant community types. Mitigation measure B10 provides that Transport for NSW would take necessary steps to locate and protect threatened species and habitats where they occur inside the Sydenham to Bankstown rail corridor. Suitable protection measures would include fencing, signage and other measures where this would not impede the safe maintenance and operation of trains and related infrastructure.

Given that no native plant community types would be removed as part of the preferred project a Biodiversity Offset Strategy is no longer required.

### **7.10.13 Hydrology, flooding and water quality**

#### *Flooding study detail and design*

#### **Issue**

The information provided in the Environmental Impact Statement in relation to flooding is scant and lacks specific detail as to the measures proposed to address flood mitigation in the Inner West LGA. This detail will need to be submitted to council at the reference design stage for council's review and comment before designs are finalised.

Outside the Marrickville Valley, i.e. around Dulwich Hill Station, there is no flood modelling results shown in the Environmental Impact Statement. This would suggest that any modelling undertaken was 1D modelling, if at all. For a project of this magnitude and importance, this is unacceptable, as it cannot adequately characterise flood risks. Council requests that suitable flood modelling results be presented, which clearly identify the nature and extent of flooding within this area.

#### **Response**

A detailed analysis of existing and potential changes to surface water and flooding conditions due to the inclusion of drainage infrastructure was undertaken as part of the Environmental Impact Statement for the exhibited project. The results of this assessment were provided in Technical Paper 8 (Hydrology, flooding and water quality assessment) and summarised in Chapter 21 (Hydrology, flooding and water quality) of the Environmental Impact Statement.

However, the preferred project would involve the retention of existing infrastructure along the rail corridor, where possible, and the maintenance of existing track drainage. The inclusion of additional new drainage infrastructure does not form part of the preferred project.

The preferred project would be operated within the current hydrological environment and would not result in a change to existing flooding or flood hazard, in, or around the rail corridor.

As such, the need to undertake further assessment works regarding the potential impacts of the flooding management system is no longer relevant to the preferred project and no further modelling or assessment is proposed as part of detailed design.

Further information in response to issues raised about drainage is provided in Section 5.19 of this report, while further information regarding potential hydrology, flooding and surface water impacts due to the preferred project is provided in Chapters 12 to 15 of this report.

### ***Dulwich Hill underground storage***

#### **Issue**

Council is concerned about the proposed underground storage in Dulwich Hill, which it is assumed is adjacent to School Parade. Council believes that it would be more beneficial to provide a new pipe from this location to the Cooks River, which would provide more widespread benefits for the catchment.

Council has undertaken a drainage study of this catchment, which showed that a pipe option could significantly reduce flooding issues in the area. Council requests that the pipe option be seriously considered in place of the underground storage and that discussions be held with Council to explore this further.

#### **Response**

The preferred project would be operated within the current hydrological environment and the inclusion of new drainage infrastructure does not form part of the preferred project. Further information regarding potential hydrology, flooding and surface water impacts due to the preferred project is provided in Chapters 12 to 15 of this report.

### ***Temporary stormwater drainage system changes***

#### **Issue**

The Environmental Impact Statement identifies that during construction there may be the need for temporary changes to the stormwater drainage system that would be subject to further design and analysis. As the details of these changes are not provided in the Environmental Impact Statement, council requests that, with regard to any temporary changes being considered, council be informed during the early stages of the analysis so that council can assess and provide comment before the proposed temporary changes are developed.

#### **Response**

Section 9.10 (Utilities management) of the Environmental Impact Statement described the proposed approach to the management of utilities in the project area.

A Utilities Management Framework was included with the Environmental Impact Statement for the exhibited project to describe the approach to avoiding and/or minimising impacts associated with the relocation and/or adjustment of public utilities affected by the project. An updated Utilities Management Framework is provided as Appendix H to this report and forms part of the preferred project.

The updated framework outlines the process for utilities identification and management during construction and beyond, including steps to ensure that detailed design takes into account the input of utility providers and owners (including Sydney Water). This includes consultation with utilities owners as part of the utilities working group for the project, and identifying opportunities to integrate works with utility owners and other affected stakeholders.

Additionally, in accordance with mitigation measure FHW4 detailed construction planning would consider flood risk for all compounds and work sites. This would include identification of measures to not worsen existing flooding characteristics.

### **Sea level rise**

#### **Issue**

The flood modelling in the Environmental Impact Statement included a 10 per cent projected increase in rainfall intensity for climate change. It is not clear if sea level rise was also considered and the 10 per cent could be supplemented with other climate change scenarios of higher projected increases in rainfall intensity.

#### **Response**

Sea level rise was not included in the results presented. A separate assessment of the potential impact of increased flood levels due to sea level rise was undertaken. It was found that flood level increases in the Cooks River due to 0.4 metre or 0.9 metre sea level rise scenarios would not affect the project or the proposed drainage measures because the project is above predicted flood levels.

However, the preferred project would be operated within the current hydrological environment and therefore modelling undertaken as part of the Environmental Impact Statement is no longer relevant.

### **Marrickville Station rain garden**

#### **Issue**

Redevelopment of Marrickville Station represents an opportunity to improve environmental conditions. A rain garden is recommended in this area.

#### **Response**

There are limited opportunities for the installation of additional water quality treatment measures at stations as part of the project, largely due to space constraints.

Opportunities for additional improvements to water quality would be considered as the detailed design progresses. Mitigation measure FHW2 requires the design to be undertaken to ensure that there is minimal potential for water quality impacts. This would include incorporating water sensitive urban design elements such as landscaping where possible.

### **References to local planning documents**

#### **Issue**

Section 21.2.3 (Existing flooding and drainage conditions) of the Environmental Impact Statement identifies relevant plans including the *Marrickville Valley Flood Study*; however, this and other relevant documents are not referred to in Section 21.3.2 (although it is noted that flood storage areas at McNeilly Park will be modified). The project should refer to relevant local planning documents.

## Response

Section 21.2.3 (Existing flooding and drainage conditions) of the Environmental Impact Statement specifically addresses existing flooding and drainage conditions. It is noted that the various documents referenced relate primarily to water quality.

No new drainage infrastructure is proposed as part of the preferred project and a detention basin would no longer be constructed at McNeilly Park.

Opportunities for additional improvements to water quality would be considered as the detailed design progresses. Mitigation measure FHW2 requires the design to be undertaken to ensure that there is minimal potential for water quality impacts. This would include incorporating water sensitive urban design elements such as landscaping where possible, and modelling to demonstrate the effectiveness of the proposed water quality treatment measures and design elements.

### *Water quality objectives and swimming in Cooks River*

## Issue

The objectives and criteria presented in Section 21.2.5 (Water quality) of the Environmental Impact Statement are based on the NSW Water Quality and River Flow Objectives and ANZECC 2000 guidelines.

It must be noted that the Cooks River councils are working to make the Cooks River swimmable with the backing of the Commonwealth and State governments, with a swimming location at Kendrick Park identified by Marrickville Council in 2013.

All levels of government and catchment councils have invested significant resources and funding into improving the Cooks River, working to achieve the desire to 'swim in the river.' The project must ensure consistency with this objective throughout construction and maintenance.

## Response

Opportunities for additional improvements to water quality would be considered as the detailed design progresses. Mitigation measure FHW2 requires the design to be undertaken to ensure that there is minimal potential for water quality impacts. This would include incorporating water sensitive urban design elements such as landscaping where possible, and modelling to demonstrate the effectiveness of the proposed water quality treatment measures and design elements.

The comments in the Environmental Impact Statement regarding the quality of the Cooks River is provided in relation to a description of the existing environment and based on monitoring results and reports, which are publically available.

This description does not affect the water quality objectives set for the project, the Secretary's environmental assessment requirements, or the recommended mitigation measures, which are considered to reflect best industry practice.

### *Sufficiency of NSW Water Quality and River Flow Objectives and ANZECC 2000 guidelines*

## Issue

NSW Water Quality and River Flow Objectives and ANZECC 2000 guidelines are not sufficient for avoiding impacts on the Cooks River catchment. Council and the Cooks River Alliance councils currently apply the targets set by the Botany Bay Water Quality Improvement Program (BBWQIP) recommended by the NSW Government as they set the appropriate targets designed to improve water quality and reflect pollutant loads associated with the land uses in the catchment area, including for phosphorous and nitrogen.

All water including runoff leaving the construction sites, rail corridor and associated infrastructure must be managed and treated to achieve the BBWQIP targets.

### **Response**

Opportunities for additional improvements to water quality would be considered as the detailed design progresses. Mitigation measure FHW2 requires the design to be undertaken to ensure that there is minimal potential for water quality impacts. This would include incorporating water sensitive urban design elements such as landscaping where possible, and modelling to demonstrate the effectiveness of the proposed water quality treatment measures and design elements.

### ***Drainage and flooding design***

#### **Issue**

With regard to drainage and flooding, it is necessary for council to see the details so that the proposals can be assessed in order to provide further comment to ensure flooding impacts and hazard risks are addressed and not increased.

The project should be aiming to reduce flooding impacts and hazard risks so as to benefit the community (rather than not worsen).

During the design stages of this project, opportunities to improve flooding issues along the rail corridor should be prioritised and implemented to reduce flooding impacts and the risks that come with flooding.

#### **Response**

The preferred project would not involve significant changes to the rail corridor, such as major earthworks and embankments and new drainage infrastructure that would fundamentally change catchment conditions. Instead, the preferred project would involve the retention of existing rail infrastructure along the rail corridor, where possible, and the maintenance of existing track drainage.

As the preferred project would be operated within the current hydrological environment it would not result in a change to existing flooding or flood hazard, in, or around the rail corridor. Given this, the need to undertake further assessment works regarding flooding issues is no longer relevant to the preferred project.

### ***Surface water quality outcomes***

#### **Issue**

It is recommended that the project maintain or improve water quality treatment in the construction area and the immediate vicinity. The project must work with Sydney Water and councils to plan for best practice outcomes.

#### **Response**

A construction soil and water management plan would be prepared to manage water quality impacts during construction and include the recommended mitigation measures which are employed broadly across the Sydney Metro project and are considered to reflect best industry practice. Consultation with councils and other relevant stakeholders would be undertaken during detailed design.

### *Potential for spills/leaks*

#### **Issue**

All persons involved in construction of the project must be inducted to understand and apply the objectives and actions in the soil and water management plan (7.1.3) including emergency response procedures and authorities.

#### **Response**

Section 21.4.1 (Approach to mitigation and management) of the Environmental Impact Statement noted that a soil and water management plan would be prepared in accordance with the Construction Environmental Management Framework (Appendix D of the Environmental Impact Statement).

Section 3.3 of the Construction Environmental Management Framework requires inductions and briefings to be conducted for construction personnel. A contingency plan would also be prepared as part of a soil and water management plan, as outlined in Section 15.2 of the Construction Environmental Management Framework.

### *Cumulative impacts*

#### **Issue**

The estuary located downstream of the project has complex interactions resulting from tidal ebbs and flows, and currents causing channelisation that redirects sediment and associated contaminants. Mixing of contaminants would be likely in these conditions and add to contamination present in the sediment from years of accumulation. This contamination would add to the bioaccumulation in local birds and other fauna, as well as vegetation.

#### **Response**

In accordance with Section 15 of the Construction Environmental Management Framework (Appendix D of the Environmental Impact Statement) and mitigation measure SC1, a construction soil and water management plan would be prepared to manage water quality impacts during construction. The aim of the plan would be to avoid sediment (and other contaminants) entering the stormwater drainage system, thereby limiting downstream impacts.

## **7.10.14 Biodiversity**

### *Vegetation at Dulwich Hill Station*

#### **Issue**

The native vegetation surrounding Dulwich Hill Station is significant to the local community and must be protected. This includes sections of degraded Turpentine – Grey Ironbark open forest on shale, which has significance even if it is not considered to be an ecologically endangered community.

Council would continue to collect seed to propagate plants for ongoing local biodiversity projects as habitat and connection for locally significant and declining small bird species.

#### **Response**

Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal. Accordingly, impacts to native plant community types in the rail corridor would be avoided during construction of the preferred project as per mitigation measure B1.



Mitigation measure B1 has been revised to commit to avoiding direct impacts to vegetation mapped as threatened ecological communities and native plant community types. In addition, mitigation measure B3 provides that areas of biodiversity value outside the project area would be marked on plans, and fenced or signposted where practicable, to prevent unnecessary disturbance during construction.

### ***Threatened fauna species and populations - Microbat species***

#### **Issue**

The Environmental Impact Statement stated that fauna surveys did not record any microbats and that there is limited habitat for such species.

This is not consistent with Council sightings and known roosting sites of at least one threatened species of microbat - Eastern Bentwing bat (*Miniopterus schreibersii oceanensis*). Council has recorded this species regularly on cooler month surveys since 2012 along the nearby Cooks River corridor (Marrickville Golf Course) and there is a winter roost site at Cadigal Reserve, Ashfield to the north of the study site. It is very likely that these bats are also utilising the corridor vegetation and habitat areas in the study area.

#### **Response**

Bent-wing bats may roost under many road bridges, rail bridges, culverts and disused buildings in the area. No bats were recorded at the bridges that would be upgraded by the preferred project. Roosting habitat would be retained for microbats. No breeding habitat for these species was identified in the project area.

### ***Removal of habitat resources***

#### **Issue**

Council disagrees with the assessment of habitat resources in the study area. Native vegetation in the local area is already very limited. Therefore, the loss of habitat resources from the proposed clearing would be locally significant.

#### **Response**

The biodiversity assessment (Technical Paper 9 (Biodiversity assessment report) of the Environmental Impact Statement) was undertaken in accordance with the Secretary's environmental assessment requirements and all relevant guidelines, including the *Framework for Biodiversity Assessment* (Office of Environment and Heritage, 2014a).

Vegetation clearing was calculated on a conservative basis, assuming that all vegetation within the project area would be cleared. The majority of this vegetation is not native, comprising exotic plants or planted, often non-indigenous, native species on fill material.

Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal. Accordingly, impacts to native plant community types in the rail corridor would be avoided during construction of the preferred project.

Mitigation measure B1 has been revised to commit to avoiding direct impacts to vegetation mapped as threatened ecological communities and native plant community types. Mitigation measure B4 provides that areas of biodiversity value outside the project area would be marked on plans, and fenced or signposted where practicable, to prevent unnecessary disturbance during construction.

## Issue

The assessment indicates the possible removal of two hollow bearing trees. This would be a major loss given that hollow bearing trees in urban areas are so rare. Given their habitat significance within the urban environment, the hollow bearing trees must be retained. If this is not possible, the project must offset this loss through a habitat box program and/or relocating the hollow trees to a local donor site in consultation with the relevant council.

## Response

Surveys undertaken for the biodiversity assessment identified limited hollow-bearing trees within the corridor with only two hollow-bearing trees identified in the corridor between Punchbowl and Bankstown stations. While the loss of these hollows would result in some habitat loss, these hollows are not considered large enough for any threatened owl species.

Provision of nest boxes or hollow relocation would be considered as part of the construction environmental management plan.

## Cumulative impacts

### Issue

Council considers the cumulative impacts of projects and developments on biodiversity as significant. There is already very limited habitat available for local native fauna species and the ongoing clearing of remaining vegetation is a threat to the viability of fauna and flora species and communities.

All damage and removal of vegetation and native habitat should be replaced on-site or, at a minimum, offset locally. Funding and resources should be provided to councils and others charged with the responsibility to do this, and to manage the sites on an ongoing basis.

### Response

Mitigation measure B1 has been revised to commit to avoiding direct impacts to vegetation mapped as threatened ecological communities and native plant community types. Further to this, no native plant community types requiring offset would be removed as part of the preferred project.

Mitigation measure B4 provides that areas of biodiversity value outside the project area would be marked on plans, and fenced or signposted where practicable, to prevent unnecessary disturbance during construction.

Measures to manage weeds would be provided in the construction environmental management plan. Mitigation measure B8 commits to managing priority weeds in accordance with the *Biosecurity Act 2015*.

Where removal of trees is unavoidable, trees would be replaced in accordance with the tree management strategy for the preferred project. Further information is provided in Section 2.3.2 of the preferred project description in Appendix B.

## Incomplete recent records of threatened biota

### Issue

Council has additional recent records for the following species:

- Powerful Owl – This species has been sighted at Dulwich Hill and Wolli Creek
- Long-nosed Bandicoot – a confirmed dead Bandicoot was recorded in Dulwich Hill 2014

- Eastern Bentwing Bat – council has recorded this species each year on cooler month surveys since 2012 along the nearby Cooks River corridor (Marrickville Golf Course) and there is a winter roost site at Cadigal Reserve, Ashfield to the north of the study site.

## Response

As noted in Section 2.2.1 (Database interrogation) of Technical Paper 9 (Biodiversity assessment report), the assessment undertaken for the project included the review of all available database records. The results of this assessment are provided in Technical Paper 9 (Biodiversity assessment report) of the Environmental Impact Statement (Appendix A - Desktop assessment of threatened biota). All three species were identified as being recorded within 10 kilometres of the project area and were considered to be potentially present within the project area.

The potential impacts on these species were assessed, including consideration of the potential impacts on the Long-nosed Bandicoot (described in Section 5.5.1 (Impacts on biodiversity that require further consideration) of Technical Paper 9).

## 7.10.15 Air quality

### Monitoring and mitigation of dust

#### Issue

Continued monitoring of localised air pollution is important to enable response to any issues and continued minimisation of impacts on the surrounding residential area.

#### Response

In accordance with mitigation measure AQ1, an air quality management plan would be developed to manage air quality impacts, particularly in relation to the management of dust. The management of dust would potentially include monitoring of dust during construction to ensure impacts to adjacent properties are minimised.

## 7.10.16 Sustainability and climate change

### Sustainability objectives

#### Issue

The *Sydenham to Bankstown Urban Renewal Corridor Strategy* lacks relevant background studies, objectives, targets and measures in relation to sustainable development and how the objectives in the Sustainability Strategy might be realised is unclear.

To maximise sustainability benefits of the project, the project must ensure that the *Sydenham to Bankstown Urban Renewal Corridor Strategy* develops an equally robust comprehensive sustainability framework with objectives, strategies, targets and measures that complement the sustainability objectives and targets of the project.

#### Response

Whilst planning for the study area has and is being undertaken by a number of agencies, including the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils, this strategic planning is separate to the planning and approval process for the project. The project has nonetheless been informed by the broader strategic planning context by these identified agencies.

Transport for NSW is committed to achieving the sustainability objectives identified in the Sydney Metro City & Southwest Sustainability Strategy. A copy of the strategy is provided in Appendix F of the Environmental Impact Statement.

Sustainability initiatives and targets that were to be integrated into the design, construction and operation of the exhibited project are summarised in Table 24.1 (Sustainability initiatives and targets) of the Environmental Impact Statement. Changes to these initiatives and targets for the preferred project are discussed in Chapters 12 to 15 of this report.

### ***Infrastructure Sustainability Council of Australia Infrastructure Sustainability (IS) rating***

#### **Issue**

The project is targeting a minimum rating - 65 'excellent'. Council seeks comment on how a higher ISCA rating of 'leading' could be reached.

#### **Response**

The ISCA Design and As Built Rating of 65 ('Excellent') is currently industry best practice in Australia, and Sydney Metro Northwest was the first project to mandate a minimum ISCA 'excellent' rating of 65 in a construction contract.

As such, the same ISCA rating of 65 has been set as a minimum contractual requirement for Sydney Metro City & Southwest, and incentives have been offered for contractors to encourage them to exceed this rating. This approach has been demonstrated as successful on Sydney Metro Northwest, where all work packages that have undergone a certification with ISCA so far have been awarded a 'leading' rating. The Northwest tunnelling contract has successfully achieved the highest ISCA As Built Rating to date with a 'leading' score of 92.5.

### ***Reference to relevant Council climate change documents***

#### **Issue**

The project's sustainability targets could be strengthened through:

- commitment to reducing the urban heat island effect through green infrastructure, including, Water Sensitive Urban Design (WSUD) and urban tree canopy
- prioritisation of existing trees and any other vegetation through retention.

In addition, relevant local council planning documents should be referred to with regard to climate change.

#### **Response**

The assessment summarised in Chapter 24 (Sustainability and Climate Change) of the Environmental Impact Statement considered the application of sustainability principles to the project, and the opportunities to achieve sustainability targets and outcomes aligned with best practice infrastructure projects. It was undertaken in accordance with Transport for NSW's Sustainability Strategy for Sydney Metro City & Southwest (provided in Appendix F of the Environmental Impact Statement), which was recently updated for this component of the Sydney Metro City & Southwest project.

The implementation of the proposed sustainability strategies and initiatives would enable the project to address the identified urban heat island effect. Mitigation measure FHW2 commits to designing the project to ensure there is minimal potential for water quality impacts, including incorporating water sensitive urban design elements such as landscaping where possible.

The development of the preferred project has enabled a reduction in environmental impacts including those associated with vegetation removal. The replacement of trees would be managed in accordance with the tree management strategy (mitigation measure LV4), which includes replacing two trees for every one removed. This would contribute to council's Urban Forest Strategy. Council would also be consulted about the positioning of these trees as part of the development of the tree management strategy.

#### **7.10.17 Hazards, risks and safety**

##### ***Publicity of compliance monitoring and reporting***

###### **Issue**

It is recommended that monitoring and reporting on compliance should be made public as is outlined in the Construction Environmental Management Framework.

###### **Response**

The Construction Environmental Management Framework, provided in Appendix D of the Environmental Impact Statement, describes the approach to environmental management and monitoring during construction. The framework is a linking document between the planning approval documentation and the construction environmental management documentation (including the Construction Environmental Management Plan), which would be developed by the construction contractors.

The framework describes the environmental, stakeholder, and community management systems and processes that would be applied during construction. Specifically, it identifies the requirements in relation to the Construction Environmental Management Plan, sub-plans, and other supporting documentation for each specific environmental aspect.

In addition, an Environment Protection Licence would be required for construction and operation of the project and reporting would occur as required in the license.

Sydney Metro has established a website to publicly provide information relevant to the project. Monitoring and compliance reports would be made available on the website.

#### **7.10.18 Waste management**

##### ***Visual identification of contaminants***

###### **Issue**

Spoil should be tested before being reused for 'environmental work' and 'land restoration' as a visual inspection cannot identify most contaminants.

###### **Response**

Table 26.3 (Spoil management hierarchy) of the Environmental Impact Statement outlined the spoil management hierarchy for uncontaminated spoil only. The management of waste would be undertaken in accordance with the Construction Environmental Management Framework (Appendix D of the Environmental Impact Statement); this would include the assessment, classification, management and disposal of spoil in accordance with the Waste Classification Guidelines (EPA, 2014).

### ***Identification of testing areas***

#### **Issue**

Clarification is sought with regard to how areas would be identified for in-situ testing of potentially contaminated spoil.

#### **Response**

As part of the project, a Phase 1 Contaminated Assessment was undertaken which identified a number of areas at risk of contamination due to existing or past uses. Further contamination investigations have been and would continue to be undertaken during detailed design. The results of these investigations would assist with identifying areas where in-situ testing would be required in order to classify the spoil.

In areas that are not identified as being contaminated, worker inductions would make workers aware of potential signs of contamination. Should potentially contaminated material be identified, works in the vicinity of the contamination would stop and testing would be undertaken.

### ***Recycling terminology clarifications***

#### **Issue**

Mitigation measure WM2 adopts a recycling target of at least 90 per cent in design and pre construction. Clarification is sought on what this 'recycling target' includes and how 'recycling' is defined, i.e. recycling/reusing/processing.

#### **Response**

The 90 per cent target relates to both the recycling and reuse of construction and demolition waste generated by the project. It is noted that spoil is not included in this target as a separate target of 100 per cent reuse of spoil for the project has been identified. The target also excludes office waste, as there is a separate target of recycling and reuse of 65 per cent of this waste.

### ***Waste management plan detail***

#### **Issue**

It is noted construction waste quantities would be confirmed during detailed design, as would classifications and reuse/recycling/disposal locations. The project should provide a more detailed waste management plan at this time.

#### **Response**

A waste management and recycling plan would be developed for the project in accordance with the Construction Environment Management Framework (Appendix D of the Environmental Impact Statement) once further details of the waste to be managed is confirmed.

### ***Tracking of waste***

#### **Issue**

There is no mention of tracking of waste that is being transported – further details on this are sought. Material within the categories advised by the Environment Protection Authority must be tracked when transported within NSW or interstate.

## Response

The project has the potential to result in waste which would be required to be tracked as outlined in Schedule 1 of the Protection of the Environment (Waste) Regulation 2014. All waste and particularly material which falls within the categories advised by the Environment Protection Authority, would be tracked in accordance with the requirements under Part 4 of the Protection of the Environment (Waste) Regulation 2014.

### 7.10.19 Cumulative impacts

#### *Extent and scope of cumulative impact assessment*

#### Issue

The Environmental Impact Statement is deficient in providing a realistic interpretation of the cumulative impact over the complete construction period for the project, particularly noting the absence of consideration of the *Sydenham to Bankstown Urban Renewal Corridor Strategy*. It is essential that a mechanism be developed to coordinate the construction activities of these projects, with each other, nearby development and utility works.

#### Response

The revised draft *Sydenham to Bankstown Urban Renewal Corridor Strategy* is a strategic masterplan of proposed future development along the railway corridor and as such, does not contain many of the details required to undertake a cumulative impact assessment. Notwithstanding this limitation, several environmental issues and aspects were identified as areas of potential cumulative impact including:

- increases in vehicle use (traffic growth) over time
- increased construction vehicles on the road network
- increased noise due to construction works along the corridor, particularly in close proximity to stations
- increased loss of heritage character due to redevelopment of areas adjacent to stations
- social impacts due to increases in population and changes in the make-up of communities
- visual impact associated with changes in character of neighbourhoods along the corridor.

Council's suggestion that coordination of all future corridor works is noted. Future development proposals lodged beyond the approval date of the project will be required to address the cumulative impact of these projects with the metro in all future environmental assessments. The Environmental Impact Statement and this report would provide a baseline of environmental information that would enable consent authorities for future development to more fully consider the cumulative impacts of those future projects. As the implementation of the strategy becomes better known, Transport for NSW would consider any future development in consultation with all relevant stakeholders (refer to mitigation measure LU2 and CI1). Consultation with relevant stakeholders of other developments would ensure a balanced development approach and help to minimise cumulative impacts, where possible.

A Utilities Management Framework was included with the Environmental Impact Statement to describe the approach to avoiding and/or minimising impacts associated with the relocation and/or adjustment of public utilities affected by the project. The updated Utilities Management Framework is provided as Appendix H to this report.



The framework outlines the process for utilities identification and management during construction and beyond, including steps to ensure that detailed design takes into account the input of utility providers and owners. This includes consultation with utilities owners as part of the utilities working group for the project, and identifying opportunities to integrate works with utility owners and other affected stakeholders.

## **7.10.20 Marrickville Station**

### **Plaza at station**

#### **Issue**

Whilst the minimal area of land to be acquired in Station Street, Marrickville will bring about an improved transport interchange, it will not create a plaza of any significance, as identified in the draft *Sydenham to Bankstown Urban Renewal Corridor Strategy*. The project should provide such a plaza to ensure the project is consistent with the strategy.

#### **Response**

Marrickville Station was recently upgraded as part of Transport for NSW's Transport Access Program. The design for Marrickville Station as part of the preferred project is limited to re-levelling the station platforms, retaining and repurposing the existing heritage station buildings on platforms 1 and 2 and retaining existing kerbside facilities and bike parking. Development of a station plaza is no longer proposed.

However, the Sydney Metro station renewals and the start of services in 2024 could be the catalyst for wider urban renewal including station plazas in consultation with the community, local councils and NSW Government departments.

### **Second entrance to Marrickville Station**

#### **Issue**

An earlier proposal included provision of an additional entrance to Marrickville Station on Victoria Road east of the existing station. This additional entrance was outlined in the draft *Sydenham to Bankstown Urban Renewal Corridor*. This entrance would support the proposed land use changes in the vicinity of the station and assist in encouraging a shift toward greater use of public transport.

#### **Response**

At present, station entrances are located on Illawarra Road and in Station Street. These entrances would be retained as part of the preferred project. Provision for an additional entrance to Marrickville Station near Victoria Road has been safeguarded by the design. Customer demand from this area would be monitored to determine the appropriate timing for an additional entrance.

### **Retention of the existing signalised crossing and new pedestrian crossing on Illawarra Road**

#### **Issue**

The retention of the existing signalised crossing on the crest of the bridge at Marrickville Station is recommended in addition to installation of new signals at the Warburton Street/Illawarra Road intersection.

The proposed new pedestrian crossing on Illawarra Road at Arthur Street is likely to be too close to the crest of the bridge and may not meet relevant standards with regard to sight lines. The project must be required to model these proposed changes to ensure that network efficiency is maintained, whilst ensuring that pedestrian safety is enhanced.

## Response

No works are proposed to the existing signalised crossing on Illawarra Road. Transport for NSW would develop a Walking and Cycling Strategy with local councils to encourage active transport to the station precincts and this could address the above issue. Upgrades to other intersections and crossings, as informed by the Walking and Cycling Strategy, would be considered as part of the detailed design.

## Extension to speed limit

### Issue

The project should extend the 40 kilometre per hour speed limit (currently operating on Marrickville Road and Illawarra Road to the north of Marrickville Station) around this high pedestrian activity area.

### Response

Changes to speed limits are the responsibility of the relevant roads authority. The proposed works and associated traffic measures would be discussed with the Traffic and Transport Liaison Group, and as necessary, changes to speed limits may be undertaken by the relevant authority.

## Tree removal

### Issue

The area around Marrickville Station has limited trees and any tree removal will have a significant impact on the existing sense of place. Existing trees must be retained and protected. Any tree removal must be replaced with advanced specimens of the same size.

### Response

As described in Section 1.3 of this report, Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal. An estimate of the number of trees with the potential to be affected due to the preferred project is provided in Section 10.2 of this report. This section indicates that the number of trees around Marrickville Station with the potential to be impacted has reduced from 88 for the exhibited project to 65 for the preferred project.

Further consideration would be given to minimising the need to remove existing trees around all stations as part of the detailed design.

The need for tree removal, trimming, and protection would be undertaken in accordance with the tree management strategy to be developed for the project, and mitigation measure LV4. As outlined in Section 2.3.2 of the preferred project description in Appendix B, the strategy would provide for the following:

- consideration of all options to minimise the need for tree removal and to retain as many trees as possible
- preparation of comprehensive tree reports (by a qualified arborist) for trees requiring protection, pruning, or removal, to guide the approach to managing trees
- measures to minimise damage to, and ensure the health and stability of, trees to be retained, in accordance with *AS4970-2009 Protection of trees on development sites*

- replacement of trees where removal cannot be avoided, in accordance with the following general principles:
  - replacement of removed trees on a two for one ratio
  - provision of replacement trees to achieve similar outcomes as those removed where possible, such as screening, amenity, etc
  - tree species, and minimum tree size and height, as agreed with the relevant council
  - trees to be planted within or in close proximity to the project area, or in another location determined in consultation with the relevant council
  - trees planted in the vicinity of stations would be in accordance with the Station Design and Precinct Plans for the project.

### ***Width of new Illawarra Road overbridge***

#### **Issue**

The bridge will need to be widened to provide a safer cycle route and access to bicycle parking at Marrickville Station. It is recommended that the new Illawarra Road overbridge be sufficiently wide to facilitate north–south separated bicycle connections along Illawarra Road.

#### **Response**

To minimise traffic impacts the bridge works would be limited to the provision of enhanced protection to existing bridge piers, installation of anti-throw vertical protection screens, vehicle collision barriers and general maintenance work. Therefore, as no replacement of the bridge is being proposed, the bridge would not be widened as part of the preferred project.

### ***Closure of the Illawarra Road overbridge during construction***

#### **Issue**

Closure of the Illawarra Road overbridge during construction would have major impacts on the local street network. It is recommended that further assessment of these impacts is undertaken, and that pedestrian movement across the bridge be permitted during construction wherever possible.

#### **Response**

Bridge works for the preferred project can occur without the need for long-term, full closure of the Illawarra Road overbridge. Instead, works would be limited to some lane restrictions at nights and on weekends.

A traffic and transport and access assessment has been completed for the preferred project and is provided in Appendix D and summarised in Chapters 12 to 15 of this report. This assessment includes a qualitative assessment of the traffic impacts from construction of the preferred project due to the proposed bridge works. The assessment concludes that since no vehicle diversions are required, there would be a reduction in traffic impacts for the preferred project compared with those for the exhibited project.

As noted above, mitigation measure TC3 commits to assessing the impacts on the surrounding road network of lane closures resulting from bridge works, and developing management measures in consultation with relevant stakeholders (including councils).

The bridge would remain open to pedestrians at all times during construction. This would ensure cross corridor access is maintained between Illawarra Road (north of bridge) and Station Street.

## ***Albermarle Street overbridge replacement***

### **Issue**

The Albermarle Street overbridge should be widened. The new bridge should include a two metre wide footpath on either side of the bridge. Traffic lanes should also be widened to a minimum of 3.5 metres in each direction.

### **Response**

To minimise traffic impacts the scope of bridge works for the preferred project would be limited to the provision of enhanced protection to existing bridge piers, installation of anti-throw vertical protection screens, vehicle collision barriers and general maintenance work. Therefore, as no replacement of Albermarle Street overbridge is being proposed, the bridge would not be widened as part of the preferred project.

## ***Impact of construction traffic into McNeilly Park***

### **Issue**

Measures should be introduced to minimise the impact of construction traffic accessing McNeilly Park from Jersey Street (construction site access), particularly given that this is a busy pedestrian route for those accessing the park, including young children, and an active cycle route.

The intersection of Jersey Street and Livingstone Road should be further examined for the safety of heavy vehicle turning movements.

### **Response**

The preferred project no longer includes an underground detention basin and associated works in McNeilly Park. The associated haulage route along Jersey Street to the Livingstone Road intersection is also no longer required minimising construction traffic impacts.

## ***Active transport corridor to extend further west***

### **Issue**

The active transport corridor must be delivered by the project further to the east and west than indicated at present, to Dulwich Hill and Sydenham stations.

### **Response**

Provision of an active transport corridor is no longer viable within the rail corridor as part of the preferred project. Instead, Transport for NSW would develop a Walking and Cycling Strategy to encourage active transport to the station precincts and would work with Inner West Council and other relevant stakeholders to identify the best active transport routes to each suburb.

The preferred project does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor along the Sydenham to Bankstown corridor, outside of the rail corridor.

## ***Rerouting/widening cycle route***

### **Issue**

The existing cycle route along the rail corridor between Station Street and Victoria Road/Myrtle Street at Marrickville forms part of Council's regional bicycle route. Rerouting this cycle route would provide a less direct route and reduce connectivity. The path along the southern side of the corridor should be designed to be a shared path.

There may be an opportunity to widen the existing shared path by minimising the landscaped area between Platform 2 and the path, or use of vertical landscape elements as part of fence elements for space efficiency, while maintaining visual surveillance for safety.

### **Response**

The preferred project no longer involves the upgrading of the existing footpath along this alignment.

Mitigation measure TO3 commits Transport for NSW to work with the Inner West Council and other relevant stakeholders as part of the development of the Walking and Cycling Strategy, the aim of which would be to identify facilities to encourage active transport to the station precincts.

### ***Alternative cycle routes***

#### **Issue**

The active transport corridor on-road alternative via Meeks Road to the east of Charlotte Street/Victoria Road is not supported. It is recommended that a pedestrian/cycle connection be provided across Victoria Road (given the difficulties with achieving safe access across Meeks Road at grade) to connect to the active transport route through Fraser Park to Sydenham Station.

The design must be amended to include a superior active transport corridor route via Fraser Park and land to the south of Fraser Park (via new proposed tunnel under the railway line), which will provide an optimal level of connectivity.

#### **Response**

The active transport corridor is not proposed to be delivered as part of the preferred project. Instead, the preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utility providers to identify the best active transport routes in each suburb.

This does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor along the Sydenham to Bankstown corridor, outside of the rail corridor.

### ***Main east–west cycle route***

#### **Issue**

Whilst the proposed active transport connection under the Illawarra Road overbridge is acknowledged, it should be noted that the main east–west cycle route would not travel via Warburton Road (as shown in the Marrickville Station layout).

#### **Response**

As per above, the active transport corridor is not proposed to be delivered as part of the preferred project.

Additionally, as the Illawarra Road overbridge would not be replaced as part of the preferred project the ability to provide a connection beneath the bridge is no longer available.

Instead, the preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utility providers to identify the best active transport routes in each suburb.

## **7.10.21 Dulwich Hill Station**

### ***Retention of overhead booking office***

#### **Issue**

Council is concerned about the heritage impacts on Dulwich Hill Station and the surrounding village as a whole. The proposed removal of the Dulwich Hill overhead booking office is inconsistent with the statement in the Environmental Impact Statement (Section 7.9) that the 'primary quality of the corridor is the heritage fabric of the rail line itself'. The building is a key part of the journey along Wardell Road and adds significantly to the Dulwich Hill Station sense of place.

Removal of this building would not result in a 'minor beneficial visual impact' as the Environmental Impact Statement suggests. The State Heritage Inventory database provides the following statement of significance: 'the overhead booking office is of high significance and rare as it retains its original configuration and much of its original fabric'. Demolition of the Dulwich Hill overhead booking office is not supported and it must be retained.

#### **Response**

Transport for NSW acknowledges Council's concerns and has developed a design solution that has enabled the retention of existing station entrances, heritage buildings and concourses, but still enables upgrades that provide accessible stations. As part of the station works at Dulwich Hill, the existing heritage listed platforms would be re-levelled and the existing heritage listed station building on the platform would be retained and repurposed. The heritage listed overhead booking office at Dulwich Hill Station would also be retained.

### ***Consistency and integration with Council's draft public domain master plan***

#### **Issue**

The project must ensure consistency and integration with Council's draft public domain master plan for the Dulwich Hill Station Centre.

#### **Response**

The area considered as part of the draft master plan is the public land around Dulwich Hill Station and the adjacent light rail stop, including streets, lanes, car parking areas, and footpaths. The main streets include Wardell Road, Dudley Street, Ewart Street, and Bedford Crescent.

The preferred project includes the upgrade of existing pedestrian pathways surrounding the station, including from Ewart Lane to Wardell Road and from Keith Lane to Bedford Crescent. At the time of exhibition of the Environmental Impact Statement, the draft master plan was being prepared and had not been placed on exhibition.

A review of the master plan subsequent to exhibition has identified that the preferred project is consistent with that plan, and once delivered, the Sydney Metro station renewals and the start of services in 2024 could be the catalyst for wider urban renewal such as is proposed in the master plan. The master plan would also continue to be considered during detailed design. New mitigation measure LV2 commits Transport for NSW to work with the Inner West and Canterbury-Bankstown councils to identify relevant urban design principles, and to deliver agreed urban design outcomes on council land, where reasonable and feasible.

New mitigation measure LV3 commits to the preparation of Station Design and Precinct Plans for each station. The plans would aim to ensure that the stations and facilities are sympathetic and complement local character, and are fully integrated with future plans for development. This would include the Dulwich Hill Station Centre master plan.

In addition, the Sydney Metro Design Review Panel would review the detailed design for the project. Councils would be invited to participate in Design Review Panel meetings to advise on local issues and outcomes as they relate to the local context of each station.

### ***Signalisation of the Wardell Road/Dudley Street intersection***

#### **Issue**

The project should include signalisation of the Wardell Road/Dudley Street intersection to facilitate improved pedestrian crossing, including direct pedestrian crossing routes from both the north and south sides of Dudley Street to the new station entrance plaza and across the entrance of Dudley Street.

#### **Response**

A signalised intersection across at Wardell/Dudley Street is not proposed as part of the preferred project. However, Transport for NSW would develop a Walking and Cycling Strategy with local councils and other relevant stakeholders to encourage active transport to the station precincts, and this could consider the recommended intersection signalisation. Upgrades to other intersections and crossings, as informed by the Walking and Cycling Strategy, would be considered as part of the detailed design.

### ***Pedestrian movement at Bedford Crescent/Wardell Road intersection***

#### **Issue**

Consideration should be given to the intersection of Bedford Crescent/Wardell Road from the perspective of improving north–south pedestrian movement.

#### **Response**

As per above, the implementation of further walking and cycling facilities, as informed by the Walking and Cycling Strategy, would be considered as part of the detailed design.

### ***Integration of the upper and lower plaza areas to the south***

#### **Issue**

Integration of the upper and lower plaza areas on the south side of the station must be achieved with regard to the following:

- dropping levels to Ewart Lane and stair connections in a constricted area
- creation of the best design solution to meet the identified activity levels
- allowing for easy movement of all users
- maximising safety, cognisant that the new station entrance no longer directly fronts Wardell Road
- accommodating pedestrian and cycle movements around the plaza and concourse areas.

#### **Response**

The preferred project would involve retaining existing station entrances and buildings. Additionally, while inclusion of a plaza/shared zone is no longer proposed a part of the preferred project, the preferred project would include upgrade of existing pathways and provision of new bike parking facilities



Transport for NSW would continue to develop the design to a greater level of detail in conjunction with the appointed design contractor. The exact nature of the works required at each station would be confirmed as an outcome of the detailed design process, which would be informed by the *Around the Tracks: urban design for heavy and light rail*. In addition, Interchange Access Plans and Station Design and Precinct Plans would be prepared for each station.

Safety is a fundamental consideration in the design of all elements of Sydney Metro. Safety in design principles would be adopted (along with other measures) as an integral component of the detailed design of stations and surrounds. Where safety issues are apparent or remain unresolved, safety reviews, including road safety audits to consider the interactions between all road users, would be undertaken.

### **Location of retail**

#### **Issue**

The design of the western stairs at Dulwich Hill Station, and interaction with retail activity under the concourse, may cause congested circulation. Circulation could be enhanced by pushing back the retail front from the concourse overhang to create more circulation space.

#### **Response**

As noted above, Transport for NSW would continue to develop the design to a greater level of detail in conjunction with the appointed design contractor, guided by the *Around the Tracks urban design for heavy and light rail*. Design principle 3 (Provide connectivity and permeability for pedestrians) requires the design to:

*‘Create direct, defined, continuous and safe pedestrian links through the project and into adjacent areas.’*

The preferred project would include provision of a new elevated station concourse with new stairs and lifts, which would connect the station platform to the Dulwich Hill light rail stop. The concourse would be accessed from a new station entrance at Bedford Crescent (northern side). The layout of the concourse and stairs would be designed to provide adequate space for customer circulation. Retail activity under the concourse is not proposed as part of the preferred project.

### **Footpaths and tree planting on Ewart Lane**

#### **Issue**

Footpaths must be provided on both sides of Ewart Lane (as per Council’s draft public domain master plan for the Dulwich Hill Station Centre), given the anticipated numbers of pedestrians exiting the station and the substantial development that could occur in the adjacent block between Ewart Street and Ewart Lane.

Visual and pedestrian amenity qualities along Ewart Lane should be improved by introducing tree planting and shade with improved pedestrian pavements, alongside the installation of a new-shared zone in Ewart Lane.

## Response

The conversion of Ewart Lane does not form part of the preferred project. However, the preferred project does include provision for an upgraded pedestrian pathway between Ewart Lane and Wardell Road.

Transport for NSW would consult with Council (and other stakeholders) about how to best integrate the proposed station area upgrade with the surrounding landscape.

### ***Widen footpath on the western side of Wardell Road across the railway bridge***

## Issue

The footpath on the western side of Wardell Road across the railway bridge should be widened, given the existing narrow width and the anticipated additional numbers of pedestrians in the vicinity of the new station entrance.

## Response

The scope of works at the Wardell Road overbridge for the preferred project does not include a significant upgrade of the bridge and therefore there are no plans to widen the footpath. However, as part of ongoing design development and consistent with the principles in *Around the Tracks: urban design for heavy and light rail* design reviews would consider the safety of pedestrians, circulation, and movements around the station, and ensure adequate provision is made.

### ***Reconfigured commuter car park***

## Issue

The reconfigured commuter car parking area appears to impact an existing area of significant trees, which is not supported and must be redesigned.

## Response

The exhibited project proposed the upgrade of the existing car parking area located off Ewart Lane. Given the relocation of the services building outside the car park, the preferred project would not affect this parking area or the adjacent trees.

A comparison of the key features of the preferred project with the exhibited project is provided in Chapters 9 and 10 of this report. A detailed description of the preferred project is provided in Appendix B.

### ***Tree retention around Dulwich Hill Station***

## Issue

The area around Dulwich Hill Station is lacking in trees; any removals will have a significant impact on the sense of place and pedestrian amenity. Extensive community engagement recently completed for Council's Dulwich Hill Station Precinct public domain master plan identified the greening of the precinct with trees and vegetation as a key request by the community. Existing trees must be retained and protected; any tree removal must be replaced with advanced specimens of the same size.

## Response

As described in Section 1.3 of this report Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal. An estimate of the number of trees with the potential to be affected due to the preferred project is provided in Section 10.2 of this report.

This section indicates that the number of trees around Dulwich Hill Station with the potential to be impacted has reduced from 19 for the exhibited project to 13 for the preferred project.

Further consideration would be given to minimising the need to remove existing trees around all stations as part of the detailed design. The need for tree removal, trimming, and protection would be undertaken in line with the tree management strategy to be developed for the project, and in accordance with mitigation measure LV4. Further information is provided in in Section 2.3.2 of the preferred project description in Appendix B of this report.

The need for additional trees within the precinct would be considered during detailed design as part of preparation of the Station Design and Precinct Plan for the station.

### ***Remnant Sydney Turpentine Ironbark grassland***

#### **Issue**

Expansion of the rail corridor to the south must not impact remnant Sydney Turpentine Ironbark grassland on the existing embankment parallel to Dudley Street.

#### **Response**

Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal. Accordingly, impacts to native plant community types in the rail corridor would be avoided construction as per mitigation measure B1, including remnant Sydney Turpentine Ironbark grassland.

Mitigation measure B1 states that detailed design and construction planning would avoid direct impacts to vegetation mapped as threatened ecological communities and native plant community types and would have regard to the habitat management measures provided in the biodiversity assessment report.

### ***Excavation works for flood attenuation and impact on trees***

#### **Issue**

The excavation works for underground/covered flood attenuation basins (between School Parade and Dudley Street and Ewart Street) are not explained thoroughly with regard to the impacts on existing trees and streetscape. Temporary works must not negatively impact the street environment, and an alternative solution must be found if negative impacts are anticipated.

#### **Response**

Table 8.13 (Location and sizing of proposed detention basins) of the Environmental Impact Statement outlined the location of the proposed detention basins as part of the exhibited project. However, the detention basins adjacent to School Parade and Ewart Street would no longer be provided as part of the preferred project.

### ***Impacts to car parking***

#### **Issue**

In relation to car parking, the figures are misleading. Table 8.3 states that there would be a loss of 10 car parking spaces, and Table 11.6 states that there would be a loss of five car parking spaces. The project must present a proposal for Dulwich Hill Station where there is no net parking loss.

## Response

The preferred project aims to achieve a no net loss of dedicated commuter parking spaces located on NSW Government owned land between Marrickville and Bankstown stations. This commitment applies to parking that is not currently time restricted, and is formally line marked and/or signposted as a dedicated commuter car park zone or area.

An assessment of operational impacts on parking due to the preferred project is provided in Appendix D and summarised in Chapters 12 to 14 of this report. The assessment indicates that there would be no commuter parking spaces lost at Dulwich Hill Station due to the preferred project. This is a reduction in impacts when compared to the exhibited project. Impacts to on-street parking at Dulwich Hill due to kerbside facilities would also be reduced compared to the exhibited project, with only three on-street parking spaces being impacted as part of the preferred project.

In accordance with mitigation measure TO1, further consideration of car parking management at stations would be undertaken in consultation with relevant stakeholders (including Council), to minimise the adverse impacts of operation on parking and other kerbside use in local streets.

### ***Bus stop (outside of the new plaza) on Wardell Road***

#### Issue

The bus stop proposed to be retained (outside of the new plaza) on Wardell Road is unnecessary and should be removed. Bus stops are to remain in Dudley Street in both directions.

#### Response

The project proposes to maintain the existing bus stop locations at Dulwich Hill (on Dudley Street and Wardell Road) as they are considered to best serve the upgraded station.

The need for the bus stop on Wardell Road would be confirmed as part of the detailed design process, informed by the Interchange Access Plan for Dulwich Hill Station, which would be developed in consultation with relevant stakeholders.

### ***Extension of active transport corridor***

#### Issue

The active transport corridor must be delivered by the project further east and west than indicated at present, through to Hurlstone Park and Marrickville stations.

#### Response

Provision of an active transport corridor is no longer viable within the rail corridor as part of the preferred project. Instead, Transport for NSW would develop a Walking and Cycling Strategy to encourage active transport to the station precincts.

This does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor along the Sydenham to Bankstown corridor, outside of the rail corridor.

### ***Width of the active transport corridor***

#### Issue

The active transport corridor should be sufficiently wide to serve both pedestrian and cycles, particularly in light of the large numbers of pedestrians expected to exit the station and to avoid conflict between different users. The design needs to resolve how to best overcome these challenges and ensure that the public domain objectives of the project and Council are integrated.

## Response

Due to the revised construction methodology and retention of existing features along the rail corridor, an active transport corridor is no longer viable within the rail corridor. Instead, mitigation measure TO3 commits Transport for NSW to work with the Inner West Council and other relevant stakeholders as part of the development of a Walking and Cycling Strategy, the aim of which would be to identify facilities to encourage active transport to the station precincts as per mitigation measures LV2 and LV3. The implementation of further walking and cycling facilities, as informed by the Walking and Cycling Strategy, would be considered as part of the detailed design.

## 7.11 Canterbury-Bankstown Council

Issues raised regarding strategic context, alternatives considered, and the potential impacts of the project are considered in Sections 7.11.1 to 7.11.16 of this report. Issues raised regarding specific station design features are considered in Sections 7.11.18 to 7.11.25 of this report.

### 7.11.1 Strategic context

#### *Inequity in metro delivery and planning*

##### Issue

Significantly greater investment has occurred to create better places in other metro locations (e.g. the Northwest Metro) despite significantly more housing being proposed in the shorter Sydenham to Bankstown corridor.

##### Response

A simple monetary comparison between the capital expenditure on Sydney Metro Northwest and Sydney Metro City & Southwest does not provide a full understanding of the projects and gives an incorrect impression. Sydney Metro Northwest is largely a 'greenfield' project, requiring significant land acquisition and establishment of basic rail and supporting ancillary infrastructure. Sydney Metro City & Southwest (including the Sydenham to Bankstown upgrade) is a 'brownfield' project, involving upgrading and converting an existing rail line and corridor, where the basic rail and supporting infrastructure is already established and constrained by the existing urban fabric.

As with Sydney Metro Northwest, City & Southwest is being proposed to improve the rail transport network, providing more frequent services, and improving accessibility and amenity at stations. Sydney Metro City & Southwest does not include residential or other urban renewal developments or rezonings, nor does it include urban development in areas adjoining the rail corridor or at stations.

The preferred project would provide better access for customers along the Sydenham to Bankstown corridor to education and job opportunities, improving the links between communities, schools, hospitals, employment areas, and shopping centres across Sydney, as well as along the length of the corridor. It would also address existing issues by improving accessibility at stations.

#### *Urban renewal*

##### Issue

The current plan ignores significant opportunities for renewal and city shaping.

A compelling, visionary whole-of corridor urban renewal strategy should be provided.

## Response

Strategic planning for the study area is undertaken by a number of agencies, including the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils, this strategic planning is separate to the planning and approval process for the project. The project has nonetheless been informed by the broader strategic planning context.

The project presents opportunities for positive change within the vicinity of stations in the Canterbury-Bankstown LGA, supporting urban renewal, and creating accessible stations. By converting the T3 Bankstown Line to metro and delivering greater efficiency and reliability along the line, and an increase in the number of services, the project could be the catalyst for urban renewal around stations between Sydenham and Bankstown.

Further information in response to issues raised about the consistency of the project with urban development and strategic planning in the study area is provided in Section 5.3 of this report.

## *Corridor planning and vision*

### Issue

From Council's perspective, it is critical that:

- the metro plan provide a vision for the corridor and for each centre that will inform any master planning process
- there is more robust integration of transport infrastructure with corridor planning.

### Response

#### Vision

A foundation element and core value in the development of the design for the exhibited project was that the metro stations would provide equity of access for all potential customers. Over time, the centres along the line have developed an individual clear identity, and by virtue of mixed land uses, community facilities, and a good transport service, each has developed a strong sense of place. As a result, place making was a crucial consideration during design development.

To help meet the transformational vision and world class aspirations of the project, five design objectives for the project were identified to guide decision making and the design process for Sydney Metro City & Southwest (including the exhibited project):

- Objective 1: Ensuring an easy customer experience
- Objective 2: Being part of a fully integrated transport system
- Objective 3: Being a catalyst for positive change
- Objective 4: Being responsive to distinct contexts and communities
- Objective 5: Delivering an enduring and sustainable legacy for Sydney.

The urban design strategies for the exhibited project, illustrated in Figure 7.2 (Urban design strategies) in the Environmental Impact Statement, expressed the design intent for station areas and the overall corridor. These strategies were developed in response to the general Sydney Metro design objectives, and informed and guided the design of the exhibited project.

To address a number of issues raised in submissions during the public exhibition period, Transport for NSW has developed a design solution that enables the retention of existing station entrances, heritage buildings and concourses, but still enables upgrades that provide accessible stations.

The design process for the preferred project has included consideration of the local urban context of each station; the design and functionality of the existing stations and the local street network, pedestrian connections and interchange opportunities. Additionally, the preferred project would not preclude the future delivery of additional station infrastructure to respond to the urban context of the stations as it develops.

The detailed design process for each station would include preparing Station Design and Precinct Plans for each station. These plans would be specific for each station, depending on the existing facilities provided at the station and the requirements for renewal and upgrade.

### **Integration of transport infrastructure with corridor planning**

As noted above, the exhibited project has been informed by the broader strategic planning context being undertaken for the corridor. The preferred project still presents opportunities for positive change within the vicinity of the stations, supporting urban renewal, and creating accessible stations. By converting the T3 Bankstown Line to metro and delivering greater efficiency and reliability along the line, the preferred project could be a catalyst for urban renewal and transit oriented urban development around stations between Sydenham and Bankstown, and does not preclude further master planning at these centres.

Transport for NSW's government agency consultation focusses on cross-agency integration and communication. Regular meetings have been, and would continue to be held with a variety of government stakeholders to keep stakeholders informed and to ensure key issues are appropriately addressed. Transport for NSW has established the Sydney Metro City & Southwest Design Review Panel, comprising representatives from key stakeholders to provide independent review periodically throughout the detailed design process. Council would be invited to be involved in this panel to advise on local issues.

Mitigation measure LU2 commits Transport for NSW to work with the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils in relation to future planning for the Sydenham to Bankstown corridor.

## **7.11.2 Alternatives to the project**

### ***Undergrounding the alignment and Bankstown Station***

#### **Issue**

The economic opportunities associated with undergrounding the line should be considered, including the value of the urban renewal that undergrounding would unlock for future development.

#### **Response**

A number of project alternatives (including undergrounding) were considered and are discussed in Chapter 6 (Project alternatives and options) of the Environmental Impact Statement. Using a range of option comparison tools, including multi-criteria analysis, these alternatives were evaluated until a single option was identified as the preferred option, which then became the proposed project. Despite not being explicitly considered as an alternative in *Sydney's Rail Future* (Transport for NSW, 2012), an underground metro alignment was considered as part of the preliminary feasibility investigations.

Section 6.3.4 (Underground alignment) of the Environmental Impact Statement notes that this alternative would be significantly more expensive to construct without a corresponding ability to attract substantial additional patronage, which would make the project economically unviable. It also notes that an underground alignment would not facilitate the accessibility improvements proposed for the existing above ground stations on the T3 Bankstown line.



However, long term transport opportunities (including the potential for future undergrounding of the station) are being explored through the Bankstown master planning process. While the preferred project does not propose an underground station for Bankstown, this opportunity has been safeguarded for the future (including potential underground platforms). The Bankstown master planning process is also considering future transport connections identified in the *Future Transport Strategy* (Transport for NSW, 2018a).

#### **Issue**

The imperative to remove trains from the Sydney Trains network may have reduced the assessment of the long-term opportunities that undergrounding the metro could unlock.

#### **Response**

Removing trains from the Sydney Trains network was not the only factor considered in the evaluation of alternatives. As noted above, although building the metro underground between Sydenham and Bankstown was not one of the alternatives considered in *Sydney's Rail Future*, it was one of the options considered and evaluated in Chapter 6 (Project alternatives and options) of the Environmental Impact Statement.

#### **Issue**

Considering Bankstown's strategic importance and the inherent connectivity issues, the undergrounding of Bankstown Station should be of critical importance.

Council is extremely dissatisfied that undergrounding was not proposed for Bankstown Station, as it will be the key interchange station between metro and heavy rail.

Undergrounding Bankstown Station would deliver seven additional logical connections across the centre.

#### **Response**

While the preferred project does not propose an underground station for Bankstown, an alternative station design has been safeguarded for the future (including potential underground platforms). Transport for NSW, together with Department of Planning and Environment, Canterbury-Bankstown Council and Greater Sydney Commission, have made a joint undertaking to develop a master plan for the Bankstown town centre. This exercise would identify how Bankstown Station, including the opportunity to underground the station, would fit within the town centre and in the longer term context.

Mitigation measure LU3 has been amended to state that Transport for NSW would work with the Greater Sydney Commission, Canterbury-Bankstown Council and other key stakeholders to plan for the strategic transformation of the Bankstown CBD, including an investigation into the long-term development and viability of an underground station configuration.

### ***Undergrounding Punchbowl Station***

#### **Issue**

The connectivity advantages of undergrounding Punchbowl Station should be analysed.

#### **Response**

As noted above, the underground option for the project was not carried forward in the evaluation for a range of reasons (including operational and economic).

### **7.11.3 Design development**

#### ***Station design details***

##### **Issue**

The current designs are schematic and omit details such as levels, heights, landscape, footpaths, and lighting.

Council requests further involvement in the detailed design, particularly in terms of upgrades to adjoining streets and public spaces.

##### **Response**

The drawings presented in the Environmental Impact Statement for the exhibited project and the revised drawings in this report which describe the preferred project have been developed to enable the community to understand the concept design and its interface with the surrounding area. Detailed designs would be the responsibility of the contractor subject to project approval.

As required by new mitigation measure LV3, Station Design and Precinct Plans would be prepared in consultation with relevant stakeholders including Council and reviewed by the Design Review Panel. The plans would aim to ensure that the new stations and facilities to be provided are sympathetic and complementary to existing local character and are integrated with future plans for development.

The plans would include items such as access and permeability around stations; landscaping and opportunities to mitigate the visual impacts of rail infrastructure; and incorporation of local environmental, heritage and place making values into the station designs.

#### ***Master planning and integration***

##### **Issue**

Each station precinct needs a credible, well-coordinated master plan to describe the extent, configuration and connectivity of proposed new development and public space, including the articulation of a compelling vision for each local centre, to describe the integration of station infrastructure within the immediate urban context.

A significant project such as this stays with a community for at least 100 years. The costs and issues associated with rectifying issues after completion are immense, and would likely never be achieved.

More effort in the master planning process now will provide an economic return to government, efficiency of transport and productivity across the region, as well as immeasurable social and sustainability benefits.

Station designs, and proposed locations, do not integrate with the town centre.

##### **Response**

Transport for NSW would develop an Interchange Access Plan for each station to inform the final design of transport and access facilities and services. The plans would include consideration of footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives around and at each station.

The Design Review Panel would refine design objectives for place making, public realm, and urban and heritage integration as part of their review process and provide advice on the application of the objectives to key design elements in relation to place making, architecture, heritage, urban and landscape design and artistic aspects of the project.

Councils would be invited to participate in Design Review Panel meetings to advise on local issues and the applicability of design review outcomes as they relate to the local context of each station within their area.

As required by new mitigation measure LV3, Station Design and Precinct Plans would be prepared for each station, in consultation with relevant stakeholders including Canterbury-Bankstown Council. The plans would aim to present an integrated urban and place making outcome for each station, identify specific design objectives and principles based on the local context, and maximise the amenity of public spaces and permeability around station entrances.

### **Place making**

#### **Issue**

More detail is required on place making strategies.

#### **Response**

The preferred project focuses on the retention of existing infrastructure and station entrances.

Therefore, the delivery of enhancements in the areas surrounding the stations as a result of the focus on place making in the design development process would reflect the retention and upgrade of existing places and no new places would be created.

The detailed design of the stations would be informed by the *Around the Tracks: urban design for heavy and light rail* (Transport for NSW, 2016). This guideline recognises the role of stations as important infrastructure for local communities and the transport system as a whole.

Design objective 2 (Create places for people) recognises that creating precincts that are great places for people is fundamental for every project and that good urban design can improve customer experience by:

- making it easy to get to the station and find your way around it
- making transfer between modes seamless and efficient
- making the journey as enjoyable as possible.

### **World-class design**

#### **Issue**

All upgraded stations and centres should be a showcase of world-class design.

#### **Response**

Design concepts for the preferred project would meet this objective by providing a modern design where new infrastructure is proposed, while also celebrating and re-purposing valuable heritage buildings and improving immediate station areas.

### **Inconsistency with Government policy on design**

#### **Issue**

Transport for NSW's Sustainable Design Guidelines requires 'all projects to address the urban design principles in the Transport for NSW Interim Urban Design Best Practice Guidelines'. These principles do not inform the current plans.

The guideline also states that an assessment against the principles should be delivered in the early design phase. The Environmental Impact Statement suggests throughout that further design work will be undertaken for some key elements. Council asserts that as much information as possible is required upfront to in accordance with the Transport for NSW guidelines.

A review of the project scope and concept against the new government policy 'Better Placed' found that the project does not meet the standards set for development in NSW.

## Response

As identified in Section 1.4 of the Transport for NSW's Sustainable Design Guidelines, these guidelines are applicable to projects delivered by Infrastructure and Services Division of Transport for NSW. The preferred project is being delivered by Sydney Metro and therefore, the Sustainable Design Guidelines do not apply. Sydney Metro is seeking a Infrastructure Sustainability Council of Australia (ISCA) rating for the preferred project.

The ISCA Infrastructure Sustainability framework applies a score across 15 sustainability themes which are consistent with those identified in the Sydney Metro City & Southwest Sustainability Strategy, and include urban and landscape design credits which promote best practice design. The sustainability initiatives and targets for the project are provided in Chapter 24 (Sustainability and climate change) of the Environmental Impact Statement.

Better Placed, developed by the NSW Government Architect, provides the policy framework for better design in the built environment now and into the future. This policy establishes a baseline of what is expected to achieve good design across projects in NSW. This includes solutions that are efficient, practicable, and embody good design outcomes.

The Government Architect defines 'good design' as follows:

*'Good design creates useable, user-friendly, enjoyable and attractive places and spaces, which continue to provide value and benefits to people, the place and the natural environment over extended periods. Good design brings benefits socially, environmentally and economically, and builds on these benefits over time – continually adding value.'*

The final Better Placed policy was released in August 2017, subsequent to the preparation of the reference design described by the Environmental Impact Statement. However, the reference design for the preferred project has been developed considering the principles in the Better Placed policy, with similar priority placed on achieving good design, and high quality outcomes for people, places, and the natural environment.

As described in the project description for the preferred project (provided in Appendix B) the detailed design of the stations would be informed by the document *Around the Tracks: urban design for heavy and light rail* (Transport for NSW, 2016). This guideline recognises the role of stations as important infrastructure for local communities and the transport system as a whole.

The Sydney Metro Design Review Panel would continue to be consulted during development of the detailed design for the project. The Design Review Panel would also refine the design objectives for place making and public realm and provide advice on the application of the objectives to key design elements. The Design Review Panel is chaired by the NSW Government Architect and it is expected that the refined design objectives would be consistent with the Better Placed policy.

## Movement patterns

### Issue

It is critical that a better understanding of current movement patterns is obtained, to protect existing high streets, and minimise the impact on existing social and economic structures.

### Response

Transport for NSW has developed a design solution that enables all existing station entrances, heritage buildings and concourses to be retained while still providing accessible access and lifts at every station.

Therefore, there would be no change to current movement patterns and existing high streets would be protected.

## **Connectivity**

### **Issue**

The Environmental Impact Statement does not propose an adequate investment to improve the region's connectivity both from a rail perspective and other transport modes.

Connectivity and permeability need to be optimised to deliver a high level of serviceability for the community, considering the population density and projected increases.

### **Response**

By upgrading stations along the corridor between Marrickville and Bankstown, the preferred project would enable better and safer access for more people, and facilitate accessible interchange with other forms of transport.

Accessibility improvements and provision of bicycle facilities would encourage active transport use and deliver health benefits, by encouraging customers to walk and cycle to and from train stations.

Additionally, the preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utility providers to identify the best active transport routes in each suburb.

## **North–south movement and cross-corridor connectivity**

### **Issue**

The existing rail corridor is a significant barrier to north–south movement for all transport modes. Further opportunities to increase connectivity should be explored.

Additional pedestrian overbridges should be constructed to provide better connection and permeability, and all existing cross-corridor connections should be upgraded to a minimum standard that includes safe access for pedestrians, cyclists and buses.

Upgrades to underpasses and overpasses do not address additional requirements for increased cycling or pedestrian activity.

In addition to not providing a cohesive active transport plan, north–south connections to the active transport corridor have not been addressed.

### **Response**

As described in Section 7.3.8 (Access, interchange and connectivity) of the Environmental Impact Statement, accessibility and connectivity have formed key considerations in the design process. The preferred project has retained existing infrastructure and station entrances, maintaining existing cross-corridor access. The preferred project safeguards additional corridor crossings for future consideration when future master planning of the areas around the rail corridor are completed and associated development is being realised. The preferred project would deliver fully-accessible stations, interchanges to other rail services, and safe and efficient connections.

Transport for NSW would develop a Walking and Cycling Strategy to encourage active transport to the station precincts and the associated connectivity within the station catchment areas. Transport for NSW would work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utility providers to identify the best active transport routes in each suburb. Active transport routes may include pedestrian footpath upgrades, separated cycleways, shared footpaths and designated pedestrian and cyclist road crossings.

The implementation of further walking and cycling facilities, as informed by the Walking and Cycling Strategy, would be considered as part of the detailed design.

#### ***Additional cross-corridor connections***

##### **Issue**

Value, such as more cross-corridor connections, should be added to the project through other associated projects.

There is a significant lack of permeability between the north and the south of the rail line, particularly between Punchbowl and Bankstown where it is approximately 1.5 kilometres between crossings of the corridor.

##### **Response**

The preferred project has retained existing infrastructure and station entrances, maintaining existing cross-corridor access. The preferred project safeguards additional corridor crossings for future consideration when future master planning of the areas around the rail corridor are completed and associated development is being realised.

New mitigation measure TO2 commits to investigating additional cross corridor connections across the rail corridor, including consideration of a crossing between Punchbowl and Bankstown stations. If deemed to be feasible, Transport for NSW would work with Council and the Department of Planning and Environment to safeguard its future delivery.

#### **7.11.4 Project features**

##### ***Adequate consideration of station precinct elements***

##### **Issue**

The station precincts contain various elements that work together to contribute to their character and are highly valued by the community. These include station heritage buildings, commercial and residential heritage streetscapes, mature trees, spaces for gathering and honouring the achievements of the community, and special views and vistas.

The Environmental Impact Statement does not adequately consider the importance of these elements and in many cases, removes, or significantly impacts them without appropriate justification. Heritage significance is impacted or removed with no consideration of alternatives that might allow heritage buildings and elements to be retained.

Significant tree loss would occur with little consideration for its impact on the streetscape and urban heat island effects.

Impacts on highly valued public spaces within the station precincts, including public art and monuments, are not considered.

## **Response**

In response to feedback raised by the community and key stakeholders during exhibition of the Environmental Impact Statement, Transport for NSW has developed a design solution for the preferred project that enables the retention of existing station entrances, heritage buildings and concourses but also significantly minimises potential impacts – especially in respect of construction, heritage and vegetation impacts.

The changes between the exhibited project and the preferred project are highlighted in Chapter 9 and Chapter 10 of this report while Chapters 12 to 15 highlight the reduction in impacts associated with the preferred project.

The preferred project would not significantly impact the character of, or highly valued public spaces within, the station precincts. The preferred project would retain station heritage buildings, existing streetscapes, and more vegetation.

## ***Community meeting spaces***

### **Issue**

Adequate space should be provided for community meeting spaces/pop up opportunities etc.

### **Response**

Transport for NSW has developed a design solution that would enable the retention of existing station entrances, heritage buildings and concourses. As such, the delivery of additional public plazas that could be used for community meeting spaces etc, is not proposed as part of the preferred project.

Where existing spaces are currently being utilised for these opportunities, the preferred project would not impact on their use.

## ***Utility upgrades***

### **Issue**

All undersized utility infrastructure constrained by the rail corridor should be upgraded to future proof it.

Upgrades to utilities should allow for future installation of energy drawing equipment, such as electric vehicle recharge stations, back-up emergency battery storage, or similar systems that may require a larger than usual current/maximum kVA at stations.

Upgrades to utilities should allow for future connection to on-site renewable energy upgrades, such as solar PV or small-scale wind generation.

### **Response**

As noted in Section 2.10 of the preferred project description in Appendix B of this report, the preferred project would involve adjusting, protecting, and/or relocating utilities (where required) within and/or crossing the project area. However, the extent of utility works required for the preferred project would be reduced.

A strategy for the management of utilities potentially affected by the project was outlined in Section 9.10 (Utilities management) of the Environmental Impact Statement. The assessment refers to a Utilities Management Framework. An updated version of this framework is provided in Appendix H of this report.

It is not within the scope of the preferred project to upgrade all undersized utilities. However, where utility relocations are proposed, the design would consider the input of relevant utility providers and owners regarding their appropriate sizing.



With respect to the use of renewable energy, sustainability initiatives and targets would be integrated into the design, construction, and operation of the preferred project, following confirmation during detailed design.

An assessment of the exhibited project in terms of sustainability, and how it does, and would continue to, meet relevant sustainability requirements during construction and operation, is provided in Chapter 24 (Sustainability and climate change) of the Environmental Impact Statement. Consideration of the applicability of this assessment when referring to the preferred project is provided in Chapters 12 to 15 of this report.

A description of the *Sydney Metro City & Southwest Sustainability Strategy* is provided in Chapter 24 (Sustainability and climate change) of the Environmental Impact Statement. The strategy outlines the performance targets, initiatives, and outcomes that would be adopted during the design, construction, and operation stages of the project.

The preferred project offers less opportunities for the inclusion of renewable energy sources however, a key objective of the strategy is to support innovative and cost effective approaches to energy efficiency, low-carbon/renewable energy sources and energy procurement. .

Mitigation measure SCC1 commits to ensuring that sustainability initiatives and targets are reviewed and incorporated into the detailed design to support the achievement of the project's sustainability objectives. The measure also commits to targeting a best practice level of sustainability performance using relevant sustainability rating tools.

### **Public art**

#### **Issue**

A public art strategy should be developed.

Public art should form part of the station designs.

#### **Response**

New mitigation measure LV3 commits to the preparation of Station Design and Precinct Plans for each station, which would consider opportunities for public art.

### **Unpaid concourses**

#### **Issue**

The proposed concourses, which could serve as convenient links across the corridor for non-patrons, are often configured as paid access. An unpaid concourse should be provided at each station.

All concourse overbridges should provide free access across the corridor (with the Opal readers positioned at the tops of stairs/lifts rather than at each side of the bridge).

#### **Response**

The preferred project retains existing station entrances and concourses, with the exception of Dulwich Hill Station where a new concourse from the station platform to the light rail stop would be provided. Therefore, there would be no change to existing cross-corridor connectivity as part of the preferred project.

### **Relocating station entrances**

#### **Issue**

Justification should be provided for relocating pedestrian/station entrances. A more comprehensive impact assessment should be provided of the patronage reduction impacts of longer walk links.

## **Response**

In developing the preferred project Transport for NSW has developed a design solution that enables the retention of existing entrances at all stations, while still providing accessible stations. As such additional assessment of the impacts associated with longer walks due to entrance relocation is not required.

## ***Weather protection***

### **Issue**

Continuous weather protection is expected to deliver customers from the edge of the station precinct to the station entry in hot or wet weather. It needs to be safe, comfortable and efficient.

### **Response**

Transport for NSW has developed a design solution that enables the retention of all existing station entrances, and infrastructure. No additional weather protection is proposed outside of the station entry.

Where new infrastructure is proposed as part of the preferred project station upgrade works, the inclusion of canopies or roofs within the station designs may be incorporated into the design, to improve the customer experience by providing shade and shelter. Additionally, existing weather protection features would be retained as part of the preferred project.

## ***Services buildings***

### **Issue**

Reconsider the position of the services buildings to make them less visually intrusive.

### **Response**

Service buildings need to be located in close proximity to the stations and station platforms that are to be supported by this infrastructure.

In accordance with mitigation measure LV3, the Station Design and Precinct Plans for each station would consider landscaping and design opportunities to mitigate visual impacts of rail infrastructure and operational facilities at the stations. This would include the potential impacts of services buildings.

## ***Crime prevention through environmental design***

### **Issue**

Crime prevention through environmental design does not appear to have been resolved in many instances. For example, the proposed new station entry and western concourse at Canterbury Station are relatively isolated from the existing town centre and well-used high streets. Entries include little infrastructure and are potentially inactive out of business hours. This creates safety concerns for customers.

### **Response**

Transport for NSW has developed a design solution that enables the retention of all existing station entrances. Therefore the location of these entrances within existing town centres and well-used high streets, including at Canterbury Station, would be maintained. Safety is a fundamental consideration for the design of all elements. To ensure that this has been addressed, Safety in Design workshops and safety reviews of design options were embedded into the design process.

Mitigation measure LV3 requires safety considerations to form part of the Station Design and Precinct Plans for each station.

## **Bridge widening**

### **Issue**

Bridges across the corridor should be widened to provide separate cycling lanes or sufficient shared paths.

### **Response**

To minimise traffic impacts, bridge works for the preferred project would be limited to the provision of enhanced protection to existing bridge piers, installation of anti-throw vertical protection screens, vehicle collision barriers and general maintenance work. Therefore, as no replacement of bridges is being proposed, bridges would not be widened as part of the preferred project.

## **Transport hierarchy**

### **Issue**

There are a number of instances of non-conformances with the stated transport hierarchy, including:

- the parking strategy often gives precedence to commuter parking compared with modal change or active transport
- disconnect of 'kiss and ride' at multiple stations
- cycling facilities located at a significant distance to station entries, often with car parking given precedence
- disabled parking spaces at considerable distance from station entries.

### **Response**

Section 7.2.4 (Access and connectivity) of the Environmental Impact Statement provides the station access hierarchy, which was used as the basis for the design of the station upgrades and associated facilities. The development of the design for the station upgrades undertaken as part of the preferred project also used the station access hierarchy as a basis.

The preferred project involves the upgrade of existing stations, including modifying stations for use as part of a metro system. In most cases, existing infrastructure is proposed to be retained where possible, with changes in infrastructure only proposed where the preferred project may impact on it or where such infrastructure is not currently available or is considered to be limited.

The preferred project does not include provision of commuter parking any closer to the station entrances than already exists. Instead the preferred project has focussed on providing facilities closer to stations to be used for active transport, accessible parking, or as part of modal changes (such as kiss and ride facilities).

The positioning of any new or relocated infrastructure, while considering the transport hierarchy where possible, also needs to consider the availability of space within an existing established station area.

Another influence on the positioning of infrastructure relates to the ability to provide an accessible path between the station entrance and such interchange infrastructure. An example of this is at Wiley Park Station, where kerbside facilities (such as kiss and ride and accessible parking) are located on the northern side of The Boulevard, east of King Georges Road. This is because the grade on the western side of King Georges Road would not allow provision of an accessible path of travel between the facilities and the station entrance.

The transport hierarchy would continue to be considered throughout the detailed design process, and it would inform the development of Station Design and Precinct Plans and associated Interchange Access Plans for each station.

### **7.11.5 Active transport corridor**

#### ***Delivery of the active transport corridor***

##### **Issue**

In combination with the improved transport system, active transport will be critical to ensure the corridor can manage significantly increased development.

The full active transport corridor (Greenway South West) should be delivered, not just segments near stations within the rail corridor.

Council also seeks clarity on the ownership and maintenance of the active transport corridor infrastructure.

This proposal should be funded and implemented with the construction of the metro.

##### **Response**

The preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utility providers to identify the best active transport routes in each suburb. Active transport routes may include pedestrian footpath upgrades, separated cycleways, shared footpaths and designated pedestrian and cyclist road crossings.

An active transport corridor is no longer viable within the rail corridor as part of the preferred project, due to the revised construction methodology and retention of existing features along the rail corridor.

The preferred project does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor along the Sydenham to Bankstown corridor, outside of the rail corridor.

#### ***GreenWay and open space design***

##### **Issue**

Water sensitive urban design and the urban heat island affect should be considered in designs for the GreenWay.

##### **Response**

In accordance with mitigation measure FHW2 water sensitive urban design elements such as landscaping would be incorporated in the preferred project design in the vicinity of stations. An active transport corridor inside the rail corridor is no longer proposed as part of the preferred project.

### **7.11.6 Post approval design and management**

#### ***Design Review Panel***

##### **Issue**

A Design Review Panel should be set up to ensure quality throughout the design and construction process and alignment with future development plans.

Representatives of Australian Institute of Landscape Architects, Australian Institute of Architects, and councils should vote on the panel.

The panel should have an agreed governance model so that it has decision-making power.

## Response

The Sydney Metro City & Southwest Design Review Panel has been established. The panel would continue to be consulted during detailed design, and members of the panel would continue to have the opportunity to contribute to the design process. The panel would review all station designs prior to works commencing.

The Design Review Panel comprises the NSW Government Architect as Chair, and relevant design experts, including a heritage architect.

The Design Review Panel would refine design objectives for place making, public realm, and urban and heritage integration, and provide advice on the application of the objectives to key design elements in relation to place making, architecture, heritage, urban and landscape design, and artistic aspects of the project.

The relevant local council would be invited to participate in Design Review Panel meetings to advise on local issues, and the applicability of design review outcomes as they relate to the local context of each station within their council area.

Each design stage would include preparation of a design report, which would identify and address all design inputs from the stakeholder and community involvement process, and the Design Review Panel. The Design Review Panel is required to endorse each design stage.

The Station Design and Precinct Plans would be prepared in consultation with relevant stakeholders including council, and would be reviewed by the Design Review Panel.

## Interface agreement

### Issue

Council needs a strong and constructive interface agreement with Transport for NSW.

Council and Transport for NSW will need to work in a coordinated and cohesive manner to ensure that community impacts are identified well in advance, and that mitigation measures are implemented wherever possible.

### Response

Transport for NSW is in the process of establishing interface agreements with key stakeholders.

As described in Section 3.4 of this report and in the following section, Transport for NSW would continue to work with stakeholders and the community to ensure they are informed about the project and have opportunities to provide feedback to the project team.

## 7.11.7 Community engagement

### Community engagement and communication strategy

#### Issue

The Canterbury-Bankstown community has a strong diversity of culture, language and, in some cases, significant socio-economic barriers. It is vital that a best practice communications and engagement strategy is developed for the project.

Council has been disappointed by some consultation activities during preparation of the Environmental Impact Statement.

Council recommends a community consultative committee to ensure community concerns are addressed pre and post approval.

Effective place management will be critical to enable the community to manage the impacts of the construction.

Any communication strategy should:

- require a place management approach, outline the number of place managers and the specifications (language and diversity)
- include liaison with Council
- specify the number of community information sessions required.

Without these measures, Council is concerned that it will become the community's go-to point of contact.

## Response

Chapter 4 (Stakeholder and community consultation) of the Environmental Impact Statement outlines the approach to community engagement implemented for the project, including prior to, and during, exhibition of the Environmental Impact Statement.

Consultation undertaken during exhibition is described in Section 3.2 of this report. As described in that section, a comprehensive range of consultation activities was undertaken, and a range of materials made available, including materials in the main non-English language groups around the project area.

Transport for NSW would continue to work with stakeholders and the community to ensure they are informed about the project and have opportunities to provide feedback.

Future consultation and engagement activities are described in Section 3.5 of this report. The number and timing of some of the activities is 'as required' because those activities are currently being planned. Details of these activities would be provided in advance of the events being undertaken.

Transport for NSW would plan and develop the details of the consultation approach to be adopted during construction in conjunction with the appointed construction contractor.

Translated materials and content would continue to be provided on the Sydney Metro website. All publications provide information on translation services available through the Translating and Interpreting Service (TIS National), and where appropriate, Sydney Metro would take translators to face-to-face meetings with stakeholders.

The Sydney Metro Place Managers would continue to play a vital role in maintaining close and ongoing contact with local communities and stakeholders during design and delivery of the project. The Place Managers would be a direct point of contact between members of the community and the project team.

Councils and other key stakeholders would have multiple opportunities for input to the ongoing development of the preferred project, via the key stakeholder engagement mechanisms described in Section 3.5 in this report, and in accordance with the conditions of any approval. This would include involvement in the ongoing detailed design process, including the Station Design and Precinct Planning process, and the Design Review Panel, where the relevant council would be invited to participate and advise on local issues.

The Construction Environmental Management Framework requires the construction contractor to develop a Community Communications Strategy. As a result, there is not considered to be need for a community consultative committee.

Further information in response to issues raised about consultation for the project is provided in Section 5.2 of this report.

## Issue

The consultation section in the Environmental Impact Statement does not acknowledge:

- the vulnerability of some members of the community and their relationship with higher levels of train use compared to the rest of Sydney
- the diversity of language and cultural backgrounds that will need to be effectively dealt with
- construction will significantly impact Culturally and Linguistically Diverse and socio-economically vulnerable communities
- the impact on centres on the line, particularly those that are destination as well as origin stations (e.g. Lakemba), where well-established social functions and social cohesion of centres could be significantly impacted
- that this is a renewal project, and will, therefore, have major impacts on the movement patterns within each of the locations and, consequently, the businesses that rely on these.

The Environmental Impact Statement needs to provide sound protocols for the level of engagement required during each stage of the project, and how culturally and linguistically diverse and other vulnerable groups will be targeted.

## Response

Consultation with potentially affected users, and the provision of information to these users, would assist in reducing uncertainty around the preferred project. Consultation with affected users, and the provision of information, would reduce the potential impacts of changes to access and movement patterns.

As described above, a comprehensive community and stakeholder awareness program would be implemented during construction, which would assist in managing these impacts and communicating changes to relevant stakeholders. This would include tools to consult with culturally and linguistically diverse and other vulnerable groups.

### *Engagement of key stakeholders and employers*

## Issue

Ensure key stakeholder and employers along the corridor are engaged in consultation for the project, including Federation Centres, Bankstown Sports, Canterbury Leagues Club, Centrelink, TAFE, and Department of Education (schools).

## Response

As noted above, Transport for NSW would continue to work with stakeholders and the community to ensure they are informed about the project and have opportunities to provide feedback.

Future consultation and engagement activities are described in Section 3.5 of this report.

## **7.11.8 Traffic, transport and access**

### *Temporary Transport Strategy approach*

## Issue

The proposed Temporary Transport Strategy is of major concern. Key issues include:

- the temporary transport options will be in place for more than five years
- it does not take the opportunity to transition to a better transport hierarchy eg the potential to create a more distributed replacement bus system in the vicinity of the rail corridor



- Council seeks clarity on the ownership and maintenance of temporary infrastructure.

### Response

As described in Section 2.7.2 of the preferred project description in Appendix B of this report, temporary transport arrangements would be put in place during the rail possession periods that would occur throughout the construction period. Additionally, temporary rail replacement buses would also be put in place during the closure of individual stations to complete the station works. However, construction of the preferred project would be completed during a reduced duration of possessions periods, compared to the exhibited project. This would significantly reduce impacts during each year of construction period, although the final close down period would still be required.

The Temporary Transport Strategy (provided as Appendix G to the Environmental Impact Statement) is the overarching document that describes the process for planning and delivering the integrated, multi-modal temporary transport response during possession periods. It provides guidance for the development of temporary transport plans, which would include details of the proposed bus servicing frequency, travel routes, provision of temporary infrastructure, and other necessary adjustments to the transport network. Each temporary transport plan would be developed and implemented prior to each rail possession period. Following completion of each rail possession, the temporary changes to transport services would be returned to their pre-existing state.

The servicing strategy proposed as part of each temporary transport plan would include, as necessary, changes to bus and train services in the vicinity of stations. To minimise the potential for impacts, interaction with existing local bus services and potential transport (and other) impacts would be considered, and relevant stakeholders would be consulted.

Each temporary transport plan would be developed to best meet customer needs and minimise adverse impacts to regular public transport services and the road network. The temporary transport plans would be informed by stakeholder and community feedback (including consultation with the Sydney Coordination Office, Roads and Maritime Services, Sydney Trains, local councils, emergency services, and bus operators). Each successive plan would improve on the previous plan, based on further understanding of customer needs and ongoing development of alternatives.

Possession periods would be well advertised, and would be managed in accordance with strict controls set out in temporary transport plans.

### *Omissions from the Temporary Transport Strategy*

#### Issue

The following issues were noted:

- footpath storage for usual-train passengers waiting for replacement buses needs to be evaluated
- there is likely to be queues waiting for buses, and bus volumes should be confirmed such that the scale of secondary impacts can be identified
- bus only clearways should be identified upfront
- there should be a plan for the design and future of temporary bus stops
- there would be a need to offset the additional travel time impacts in using replacement buses, which could partially be achieved by offering 'free' replacement buses.

## Response

These issues are noted and would be considered as part of development the temporary transport plans. Each temporary transport plan would include a temporary transport services plan and a temporary transport management plan. These plans would investigate these issues, identify the need for and location for any additional infrastructure, and the mitigation and management measures required. The location and design of any necessary infrastructure would be subject to consultation with the relevant authorities and stakeholders.

## *Transport network capacity and modelling*

### Issue

The following issues were noted:

- the convergence of 101 buses per hour on Sydenham Station in the AM peak – it is unclear how the volume of buses can be accommodated
- it is highly unlikely that the existing stop space would be able to cater for the additional buses required
- modelling for a minimum travel time analysis should be undertaken, showing the 'before' versus 'after' possession travel times for the most common trips, such as from Bankstown beyond Sydenham in the AM peak, with such an analysis to show if the strategy is reasonable.

### Response

For the purposes of the Environmental Impact Statement, a baseline and refined baseline temporary transport plan were developed and modelled. The baseline temporary transport plan closely emulates the rail replacement bus services provided during the weekend rail maintenance possession periods that occur several times each year. This plan indicated a requirement for up to 101 buses at Sydenham Station to replicate the service provided by the T3 Bankstown Line during a typical weekday. This plan was shown to be unfeasible, and was therefore discounted.

The refined baseline temporary transport plan considered a reduced number of buses (and changes to potential service patterns) resulting in a maximum of 55 buses per hour at Sydenham Station. The assessment of the refined temporary transport plan found that the combination of construction haulage and temporary transport plan bus services led to oversaturation of some intersections. While the lower bus numbers associated with the refined baseline temporary transport plan helped to reduce the impacts, it was generally insufficient to significantly improve intersection performance at some locations. Mitigation measure TC6 commits to further consideration of the need for intersection modifications to improve intersection performance at locations most affected by the addition of construction heavy vehicles and rail replacement buses.

Modelling of travel times would be one consideration when developing the temporary transport services plan, where multiple servicing options are available. Issues such as footpath storage and queueing space would also be investigated. Any necessary adjustment of additional infrastructure would be identified as part of the temporary transport management plans.

## *Impact assessment*

### Issue

The following issues were noted:

- there is a lack of resolution about the capacity of centres to manage significantly increased bus services as predicted, including the additional 33 buses per hour that would need to access Bankstown Station during possession periods

- need to identify sensitive pinch points across the corridor that are likely to become issues during the construction period, and consider temporary clearway arrangements
- the Environmental Impact Statement does not discuss in sufficient detail how additional buses would be catered for at station bus stops, in terms of stop capacity and temporary stop access arrangements
- the impact of additional buses on traffic capacity at key intersections has been modelled, but there are limitations as to how this has been reported
- there are a number of roads and intersections near stations that are well over capacity in peak periods, such as Punchbowl Road and King Georges Road
- the cumulative effects of additional cars and buses, and potentially some lane closures, will exacerbate existing issues
- whilst some intersection analyses have been undertaken, the impacts are not clear given how the outputs are reported.

## Response

The Temporary Transport Strategy outlines the process for further investigating and comparing potential options for the transport of passengers during possession periods. This includes consideration of journey origin and destinations, estimated travel times, passenger convenience, modes/routes to be used, and the potential effects of these servicing strategies (including parking loss, capacity of road routes, and any additional infrastructure required). Once the preferred servicing strategy has been determined, detailed investigation of aspects such as the queuing space available for buses at existing stops at stations, and any adjustments or new infrastructure required, would be determined.

Construction of the preferred project differs from the exhibited project as the revised possession regime would reduce the need to provide temporary transport arrangements for customers during peak periods, and the works can be carried out without long-term full bridge closures. This would result in reduced impacts to road traffic and intersection performance and less disruption to customers.

Modelling for the preferred project included construction traffic movements and the refined baseline temporary transport plan during the proposed two week Christmas shutdown period. This modelling is summarised in Section 15.2.1 of this report and detailed in Appendix D. The modelling for the preferred project indicates that construction traffic impacts would be reduced when compared to the exhibited project.

As each temporary transport plan is developed (in accordance with mitigation measure TC1), its impact on the road and other networks would be investigated, and learnings from previous transport plans would be applied to achieve continuous improvement, by:

- better estimating the service levels required and patronage expectations
- applying a greater understanding of mode shift and alternate routes and travel times
- improving the accuracy of temporary transport services to be more closely matched to demand, avoiding over provision of temporary transport vehicles
- monitoring intersection performance and any route pinch points to allow alternate routes to avoid specific locations
- finessing of signalled intersection timings to match the additional temporary transport vehicles
- improving the communication and notification of the temporary transport plans to pedestrians, cyclists, Sydney Trains and other public transport customers and road users.

For bus stops, mitigation measure TC2 commits to consulting with Roads and Maritime Services, the State Transit Authority, the Inner West and Canterbury-Bankstown councils, and bus operators, to identify opportunities to minimise impacts to bus layovers and existing bus stops during operation of rail replacement buses. This would also consider the space available for customers to wait for replacement buses.

Details of any adjustments or new infrastructure, if required, are yet to be determined and would be identified as part of the temporary transport plan for each possession period. As described above, each temporary transport plan, the servicing modes and patterns to be implemented, and the potential effects and mitigation required, would be determined prior to each possession period. This would include lessons learned from past temporary transport plans.

Each temporary transport plan would address impacts to general traffic and the operation of temporary bus services. This would involve analysis of key intersections and the development of options to improve their performance, such as modifying how the intersection operates, or by changing the routes that temporary bus services take between stations to avoid congested intersections.

### *Impacts on travel between centres along the line*

#### **Issue**

The Environmental Impact Statement tends to focus on the impacts on inbound commuters towards the CBD. The closures of stations will also affect commuters inbound to each centre for employment or activities. Additional congestion due to lane closures, bridge closures and more buses will also affect non-commuting trips.

The Temporary Transport Strategy generally focuses on commuters to the CBD only. It should be noted that 114,039 jobs were located in the City of Canterbury-Bankstown in the year ending June 2016.

#### **Response**

Construction of the preferred project differs from the exhibited project as the revised possession regime would reduce the need to provide temporary transport arrangements for customers during peak periods, and the works can be carried out without long-term full bridge closures. This would result in reduced impacts to road traffic and intersection performance and less disruption to customers.

The traffic, transport and access assessment undertaken for the Environmental Impact Statement assessed the effects during peak periods, which include both commuting and non-commuting trips, and when the effects on all networks are likely to be greatest. The traffic, transport and access assessment undertaken for the preferred project (provided in Appendix D of this report) has assessed the impacts associated with construction traffic and a refined baseline temporary transport plan proposed during Christmas periods. The Temporary Transport Strategy (TTS) which outlines the approach for the use of replacement bus services for periods when trains were not able to run. Further, the temporary transport plans, in line with the refined Temporary Transport Strategy, would seek to identify measures to minimise delays during construction works and possession periods. The temporary transport plans would reflect the trip patterns that exist, and those that would be most impacted by possessions. The plans would present specific assessment and mitigation measures for these impacts. The works and the mitigation required would retain connections to provide accessibility for all movements and journey purposes throughout the works, with the capacity for the frequency of bus services reflecting the demand for the movements being replaced.

This is due to a combination of the number of buses that would be required to provide temporary bus services, and the decision some customers would make to drive to their destination or to drive to a different train station to access the rail network.

### ***Temporary transport management measures***

#### **Issue**

All temporary transport changes should be reinstated at the completion of project and included in budgets.

State which temporary measures to mitigate traffic congestion will be removed once construction is complete.

#### **Response**

Temporary transport measures implemented during operation of temporary transport plans would be removed once construction works are complete.

Other temporary transport measures, such as those required to divert traffic/pedestrians around work sites, would be removed at the end of the relevant work period.

### ***Car share opportunities***

#### **Issue**

Include some discussion on car share, ride share and electric vehicles, and what provisions could be made in the detailed design.

#### **Response**

Interchange Access Plans would be developed to inform the final design of transport and access facilities and services, including footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives around and at each station.

The opportunity to provide for car share, ride share, and electric vehicles would be considered during the preparation of the Interchange Access Plans.

### ***Bridge and underpass closures***

#### **Issue**

There are some major increases in the saturation of intersections due to bridge closures. The ramifications of these issues should be explained better with average delays and queue length outputs for each intersection.

The Burwood Road bridge and the Haldon Street bridge closures appear to generate the largest impacts, and alternative options should be contemplated in the Environmental Impact Statement.

#### **Response**

Bridge works proposed as part of the preferred project can be constructed without long-term full bridge closures, and impacts would be limited to some lane restrictions at nights and on weekends. A traffic and transport and access assessment has been completed for the preferred project and is provided in Appendix D and summarised in Chapters 12 to 15 of this report. This assessment includes a qualitative assessment of the traffic impacts from construction of the preferred project due to the proposed bridge works. The assessment concludes that due to there not being a need for vehicle diversions there would be a reduction in traffic impacts for the preferred project compared with those for the exhibited project.

Mitigation measure TC3 commits to assessing the impacts on the surrounding road network of road diversions and lane closures resulting from bridge works, and developing management measures in consultation with relevant stakeholders (including councils).

### **Potential for 'on-demand' services**

#### **Issue**

There is an opportunity to introduce an 'on demand' transport trial during construction for non-commuter demands and to optimally cater for off peak demands.

#### **Response**

In late 2017, the NSW Government launched trials of on-demand public transport services, under the NSW Future Transport Technology Initiative. A trial is operating in the Bankstown area. The temporary transport plans could consider the feasibility of additional on-demand trials as part of the proposed temporary transport arrangements during possession periods. An additional on demand service would have the potential to support local trips to centres in off-peak periods, although this would be complementary to the peak period commuter service outlined in the Temporary Transport Strategy. The outcomes of the current trials would be considered as part of the development of the temporary transport plans, to identify opportunities to use on-demand services as part of the proposed measures.

### **Construction compound access**

#### **Issue**

Restrictions should be placed on the use of local streets or turn limitations imposed at access locations where congestion or safety issues exist.

#### **Response**

Section 10.3.3 (Road network – station and bridge work) of the Environmental Impact Statement noted that preliminary haulage routes were identified for each construction compound and other project area access points. A preliminary swept-path analysis of the routes was undertaken to identify potential obstacles to the movement of heavy vehicles associated with the project. Potential road modifications identified to address these issues were listed in Table 10.37 (Potential road modifications required for construction vehicles) of the Environmental Impact Statement. The preliminary haulage routes identified for the preferred project are as per those identified for the exhibited project.

These indicative routes have sought to minimise the use of local roads, and this approach would continue as the site access points are confirmed. Consideration of potential cumulative road network effects would form part of these investigations, which may result in the preliminary haulage routes being modified in consultation with relevant stakeholders.

Mitigation measure TC8 commits to developing and implementing a construction traffic management plan. The plan would be prepared in accordance with the Construction Environmental Management Framework, and would detail, as a minimum:

- how traffic would be managed when construction works are being carried out
- the activities proposed and their impact on the road network and on road users
- how these impacts would be addressed.

The plan would be prepared in consultation with the Traffic and Transport Liaison Group, and would be approved by the relevant authority before construction commences.

## ***Construction parking impacts***

### **Issue**

Construction at stations is likely to have construction worker parking demands coinciding with commuter parking and local centre parking demands.

Consideration should also be given for construction workers to park in a designated area off street.

The cumulative assessment of construction period parking impacts stated that sufficient alternative parking is available within 400 metres of the station. Whilst 400 metres is a typical station catchment for walk-up commuters, it is too large a radius for park and ride commuters.

### **Response**

Detailed design and ongoing construction planning would seek to minimise the impacts on parking where possible (in accordance with mitigation measure TC4). In addition, where parking spaces are lost or access is impeded during construction, particularly for extended periods, mitigation measure TC5 commits to providing alternative parking where feasible and reasonable. This would include consideration of other privately owned (or vacant) land within close proximity to affected stations.

As required by the Construction Environmental Management Framework, a parking management plan would be developed to identify:

- parking requirements and on and off site parking arrangements and associated impacts
- remote parking arrangements and associated access between sites and public transport nodes
- communication of parking changes and parking management measures.

Construction planning would also aim to minimise the potential impacts of worker parking.

Mitigation measure TC15 commits to managing construction sites to minimise construction worker parking on surrounding streets. It also commits to developing a worker car parking strategy in consultation with the relevant local council to minimise potential impacts on both on and off street parking. The strategy would identify potential mitigation measures, including alternative parking locations, and would encourage contractor staff to:

- use public transport
- car share
- park in a designated off site area and access construction sites via a shuttle bus.

## ***Operational parking impacts***

### **Issue**

A corridor park and ride strategy should be developed, considering potential locations where park and ride could be encouraged and where it should be discouraged, and parking infrastructure plans should be developed accordingly.

The increase in car parking demands as a result of the higher usage of metro compared to the existing train service should be identified, and strategies recommended for the provision of additional car parking.

Parking push from station precincts is likely to create conflict in residential areas.



## Response

Operation of the preferred project involves the retention of the existing station entrances and existing supporting infrastructure where possible, including kerbside facilities, accessible parking and bike parking. As such, the preferred project has reduced impacts on parking compared to the exhibited project and Transport for NSW remains committed to no-net-loss of parking across the study area.

The potential impacts to car parking associated with the preferred project are discussed in Sections 6.11 and 6.12 of Appendix D and summarised in Section 15.2.1 of this report.

In accordance with mitigation measure TO1, further consideration of car parking management at stations would be undertaken in consultation with relevant stakeholders (including Council), to minimise the adverse impacts of operation on parking and other kerbside use in local streets.

In accordance with mitigation measure TO5, Transport for NSW would monitor the demand for additional commuter car parking spaces, and consider opportunities for, and implications of, meeting this demand between Bankstown and Marrickville stations. Transport for NSW would investigate ways to manage demand, subject to consideration of local station and town centre implications, including local traffic conditions.

## *Impacts of changes to traffic patterns*

### Issue

Consider the shifts in traffic demands around the stations and their impacts on place making, particularly in the vicinity of the street corners near stations.

### Response

The preferred project has the potential to result in changes to the traffic demands around stations due to some minor changes in the positioning of infrastructure, such as kiss and ride facilities, and the introduction of new infrastructure at some stations. However, overall the proposed changes to the station areas are not considered to result in any substantial changes in traffic demand.

The traffic demand within the station areas would continue to be considered throughout the detailed design process, and it would inform the development of the Station Design and Precinct Plans and associated Interchange Access Plans for each station.

## **7.11.9 Noise and vibration**

### *Noise mitigation and management*

#### Issue

The noise impact assessment demonstrates that there will be a significant number of exceedances of the criteria for a significant number of residents. Noise mitigation measures should be provided to reduce the amount of noise exposure.

#### Response

A noise and vibration impact assessment has been undertaken for the preferred project and is provided in Appendix E and summarised in Chapters 12 to 15 of this report. The noise and vibration impact assessment for the preferred project concludes that noise levels during construction are likely to be lower than those identified in the Environmental Impact Statement for the exhibited project, and that fewer receivers would be highly noise affected.

The Sydney Metro City & Southwest Construction Noise and Vibration Strategy (provided in Appendix E of the Environmental Impact Statement) defines how construction noise and vibration would be managed for the Sydney Metro City & Southwest project as a whole. The strategy provides guidance for managing construction noise and vibration impacts in accordance with the *Interim Construction Noise Guideline* (DECCW, 2009), to provide a consistent approach to management and mitigation across all Sydney Metro projects.

The strategy identifies the requirements and methodology to develop construction noise and vibration impact statements. These would be prepared prior to specific construction activities, based on a more detailed understanding of construction methods, including the size and type of construction equipment.

Mitigation measure NVC1 provides the commitment that, in accordance with the Construction Noise and Vibration Strategy, construction noise impact statements would be prepared prior to the commencement of construction, to consider the scale and duration of construction noise impacts, and identify measures to minimise impacts to sensitive receivers. This would include noise modelling to confirm the results of modelling previously undertaken. Where increases changes in noise levels and exceedances are identified, reasonable and feasible mitigation measures would be reviewed.

The Construction Noise and Vibration Strategy also provides a list of the standard noise mitigation measures that would be implemented when exceedances of the noise management levels are predicted. Implementation of these measures is also required by mitigation measure NVC5.

### **Noise during night works**

#### **Issue**

A clear strategy as to how noise impacts during the night time would be managed needs to be provided. No real strategy has been developed, other than generic noise and vibration mitigation measures.

The exact nature of the strategy to conduct night time works is not clear. Need to provide information to the community as to when disruptive works will be programmed.

#### **Response**

Where possible, construction is proposed to be undertaken during the standard construction hours defined by the *Interim Construction Noise Guideline* (DECCW, 2009) (as described in Section 2.7.4 of the preferred project description in Appendix B). However, due to the location of the project within an operational rail line, there is a requirement for some works to be undertaken during periods when trains are not running along the corridor, to ensure the safety of workers and commuters (i.e. during rail possession periods).

Due to the time restrictions of possession periods, works during these periods would need to be undertaken 24 hours per day. Should works be restricted to the daytime and/or evening periods, the construction program may need to be extended, which would result in impacts on the community over a longer period.

While 24 hours works are proposed to occur during certain periods, mitigation measure NVC6 commits to not using noise intensive plant, including ballast tampers, during the night-time period (10pm to 7am), except in the following situations:

- during a standard weekend rail possession or shut down
- a requirement of a road authority, emergency services or Sydney Coordination Office requires works to be undertaken during this period.

New mitigation measure NVC16 provides for the development of an Out of Hours Work Strategy. The strategy would be prepared in consultation with the Environment Protection Authority, to guide the assessment, management, and approval of works outside recommended standard hours.

Construction works would typically be undertaken during the recommended standard daytime construction hours defined in the NSW *Interim Construction Noise Guideline* (DECCW, 2009), as:

- 7.00 am and 6.00 pm Monday to Friday
- 8.00 am and 1.00 pm on Saturdays.

Activities requiring the use of highly noise intensive equipment or which result in impulsive or tonal noise emissions, such as concrete saws and ballast tampers, would be limited to these hours, except as permitted by an environment protection licence which would be obtained once the preferred project is approved. It is anticipated that any out of hours work permitted by an environment protection licence would implement the following order of priority:

1. Day (Saturday 1 pm to 6 pm)
2. Day (Sunday 8 am to 6 pm)
3. Evening (6 pm to 10 pm)
4. Night (10 pm to midnight)
5. Night (midnight to 7 am / 8 am).

### **Noise barriers**

#### **Issue**

Need to improve the efficiency and height of the proposed barriers to decrease the noise levels from freight trains.

#### **Response**

Reasonable and feasible mitigation options were considered by Technical Paper 2 (Noise and vibration assessment), and were summarised in Section 13.5.2 (Reasonable and feasible mitigation options) of the Environmental Impact Statement. These included provision of noise barriers and property treatments in some locations, which would be provided as part of the preferred project. The consideration of mitigation options factored in the noise from metro trains, and the operation of freight trains between Marrickville Station and west of Campsie Station.

The project does not propose to mitigate any existing noise exceedances as a direct result of the operation of freight trains along the corridor. Mitigation would only be considered where the operation of both metro and freight trains result in exceedances of the criteria.

Section 13.5.1 (Approach to mitigation and management) of the Environmental Impact Statement noted that a review and iteration of predicted operational noise and vibration levels would be undertaken during detailed design, when more information is available, and when specific mechanical plant and other project details have been confirmed. This is committed to through mitigation measure NV01 and would also include additional noise modelling, and consideration of reasonable and feasible mitigation approaches (including noise barriers and property treatments). Any modelling undertaken during detailed design would also include any updated freight train data to ensure that the correct freight numbers are used in the model. The final form of mitigation would be determined during detailed design.

## *Noise and vibration monitoring*

### **Issue**

Noise and vibration monitoring during construction activities should be undertaken to manage the impacts of large-scale and long-term construction activities.

### **Response**

The Construction Noise and Vibration Strategy included a requirement to implement a noise and vibration monitoring program for the duration of construction, in accordance with the construction noise and vibration management plan, and relevant approval/licence conditions. Mitigation measures NVC1, NVC2 and Appendix E of this report sets out a strategy which outlines the minimum requirements for monitoring.

Mitigation measure NVC11 commits to undertaking ongoing noise monitoring during construction at sensitive receivers during critical periods to identify and assist in managing high risk noise events.

Mitigation measure NVC12 states that where vibration levels are predicted to exceed the vibration screening level, attended vibration monitoring would be carried out to ensure vibration levels remain below appropriate limits for that structure.

The construction noise impact statements prepared in accordance with the Construction Noise and Vibration Strategy would define the site specific monitoring requirements.

## *Dilapidation reports*

### **Issue**

Council requests detailed dilapidation reports around stations, routes, and compounds.

### **Response**

Potential vibration impacts would be managed in accordance with the Construction Noise and Vibration Strategy. This includes a requirement to undertake dilapidation surveys (existing condition surveys) for any structure or assets that have the potential to be damaged by vibration. A register of these surveys would be kept by the contractor.

In accordance with the Construction Noise and Vibration Strategy, and mitigation measures NVC3 and NVC4, where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure would be carried out to determine appropriate vibration limits. The more detailed assessment would include a condition assessment, and consideration of the heritage values of the structure in consultation with a heritage specialist, to ensure that sensitive heritage fabric is adequately monitored and managed.

The costs of completing dilapidation reports would be borne by the appointed construction contractor.

### **7.11.10 Non-Aboriginal heritage**

Refer to Sections 7.11.18 and 7.11.25 of this report for responses relating to specific heritage and heritage related design issues raised in relation to individual station precincts.

## *Reuse of heritage buildings*

### **Issue**

Re-imagine the use of heritage buildings.

## Response

Retrofitting and reuse of significant structures to be retained in accordance with their heritage values, has been a key consideration during the design process and would continue to be developed during detailed design. Additionally, the preferred project has been developed so that heritage buildings and structures would be retained and repurposed rather than removed.

This would be a positive heritage outcome, as it would enable conservation of significant elements, and would facilitate maintenance and care of structures in use.

Mitigation measure NAH5 requires an adaptive reuse strategy to be developed by an appropriately qualified and experienced heritage architect.

### **7.11.11 Aboriginal heritage**

#### *Issue*

The Environmental Impact Statement team should undertake a review of the Aboriginal heritage plan prior to project commencement.

#### *Response*

Section 15.1.3 (Aboriginal consultation) of the Environmental Impact Statement acknowledged that Transport for NSW commenced preparation of an Aboriginal Cultural Heritage Assessment Report, which included additional consultation with registered Aboriginal parties.

The Aboriginal Cultural Heritage Assessment Report has been updated, and a copy is provided in Appendix J. Mitigation measure AH2 commits to implementing the Aboriginal Cultural Heritage Assessment Report.

### **7.11.12 Socio-economic impacts**

#### *Impacts to Bankstown Arts Centre*

#### *Issue*

Council is concerned that potential impacts to the Bankstown Arts Centre and the open space to the rear of this facility cannot be assessed as there is no information in the Environmental Impact Statement about the nature of adjacent works in the corridor.

Council requests that any works to this part of the corridor be clarified.

#### *Response*

Section 9.8.2 (Work sites) of the Environmental Impact Statement identified that the section of the corridor located north of the Bankstown Arts Centre is not proposed to be used for a work site. This is consistent with the preferred project description provided in Appendix B of this report.

The project area in the vicinity of the Bankstown Arts Centre is not proposed to be a major construction area, with the majority of the corridor works located east of Bankstown Station. However, some works would be undertaken in this section of the rail corridor, including reconfiguration of the existing Sydney Trains tracks to include facilities (i.e. a turnback) to accommodate the ongoing operation of Sydney Trains services on the line west of Bankstown Station.

Potential impacts in this section of the rail corridor are considered to be minimal, and would be limited to short periods as a result of the need for such works to occur during rail possessions periods.

It should be noted that the rail corridor boundary extends into the Bankstown Arts Centre car park, which is reflected by the extent of the project area in this location. However, it is not proposed to access the corridor at this location.

### ***Impacts to the former Canterbury Bowling Club***

#### **Issue**

Council understands that the former Canterbury Bowling Club (15 Close Street, Canterbury) and part of 15A Close Street, Canterbury will be the subject of a compulsory acquisition for a fixed period as a works site.

As a result, current users of this community facility will have to relocate, residents in proximity to the site to the east may be subject to unreasonable noise, vibration and dust, and there may be limited access to the valued Close Street reserve during the construction period.

The Environmental Impact Statement does not provide sufficient mitigation measures for these impacts.

#### **Response**

As noted in Section 2.8.2 of the preferred project description in Appendix B of this report, work site 7 (formerly work site 8) is proposed at the former Canterbury Bowling and Community Club while works are undertaken at Canterbury Station.

The former Canterbury Bowling and Community Club site would be temporarily leased from Council for the duration of construction in this section of the rail corridor. Areas within the club building and the surrounding open space are proposed to be used as a temporary construction compound and site office. Transport for NSW would consult with Council in relation to the temporary lease of this facility. Following construction, the land would be returned to Council in an agreed condition. Mitigation measure LU3 commits to restoring temporary use areas, including public open space, to their pre-existing condition (as a minimum) as soon as practicable following completion of construction. This would be undertaken in consultation with the relevant council and/or the landowner.

As noted in the Environmental Impact Statement, an area within the building would remain available for community use. An indicative layout of the proposed work site is shown in Figure 1.1 of the preferred project description in Appendix B of this report. Responses to issues raised about the potential impacts to this facility are provided in Section 5.16 of this report.

### ***Impacts to the Close Street reserve***

#### **Issue**

Use of the Close Street Reserve is a concern. Need to ensure that access to the dog park and Cooks River is maintained. This area services a high-density development pocket.

#### **Response**

As noted in Chapter 17 (Socio-economic impacts) of the Environmental Impact Statement, construction has the potential to affect community infrastructure and facilities located near the project area, as a result of changes in amenity, local access, or requirements for acquisition or temporary use. Table 17.2 (Community facilities potentially affected by the project) of the Environmental Impact Statement acknowledges that the Close Street reserve is a passive recreation area and that the off leash dog park located in close proximity to the project. This reserve is not located within the preferred project area, and would not be directly impacted by the preferred project.

Table 17.2 (Community facilities potentially affected by the project) of the Environmental Impact Statement noted the potential for amenity impacts (noise and visual impacts) to affect the outdoor enjoyment of the park while work site 7 (noted above, known as work site 8 in the Environmental Impact Statement) is in use.

The implementation of the mitigation measures provided in Section 16.1 of this report would minimise the potential construction impacts (i.e. noise and visual impacts) on the surrounding environment, including the Close Street Reserve. These measures would seek to prevent such impacts from occurring rather than being reactive to any impacts identified. The management measures would be defined by the Construction Environmental Management Plan.

### **Open space**

#### **Issue**

Open space used for work sites during the construction should be returned to public with greater social and recreation opportunities.

#### **Response**

The project area has been developed to utilise existing NSW Government land where possible, with the majority of the project area contained within the rail corridor or land in the ownership of the NSW Government (i.e. RailCorp). Additionally, the scope of the preferred project has been further developed to remove the need to acquire land. However, due to the constraints associated with the use of an operational rail corridor, there is a need for some additional land to be leased to allow construction. Transport for NSW has considered the opportunity to temporarily lease limited areas of council owned land to minimise impacts on private land. Transport for NSW would seek to minimise the impacts of construction on non NSW Government land as far as practicable. This would be achieved by maximising use of the existing rail corridor.

Mitigation measure LU3 commits to restoring temporary use areas, including public open space, to their pre-existing condition (as a minimum) as soon as practicable following completion of construction. This would be undertaken in consultation with the relevant council and/or the landowner. Pre-condition reports would be prepared prior to the commencement of works to ensure that rehabilitation would be to a satisfactory standard.

Following detailed design, Transport for NSW would consider whether any land within the rail corridor is considered to be surplus to requirements.

### **Social impacts**

#### **Issue**

The social impacts and the actions to address these need higher priority in the planning process so that they influence the design.

Opportunities to improve community outcomes through enhanced open space and social infrastructure should be considered, such as improved design opportunities at Warren Reserve.

#### **Response**

Potential socio-economic and community impacts during the construction phase were acknowledged and assessed in Technical Paper 5 (Social impact assessment), and the results were summarised in Chapter 17 (Socio-economic impacts) of the Environmental Impact Statement. Consideration of the applicability of this assessment when referring to the preferred project is provided in Chapters 12 to 15 of this report.

The preferred project involves upgrading of existing stations to improve accessibility for customers.



It is acknowledged that the preferred project, with the proposed station upgrades, has the potential to change the character of the existing station precincts. However, the extent of impacts associated with this change would be greatly reduced when compared to the exhibited project.

Additionally, improvements to the station areas, including improved lighting, landscaped areas at entrances and upgraded station entrances at some locations, are expected to encourage greater customer activity, improve the customer experience, and provide spaces for people to meet.

Once operational, the project (in conjunction with other Sydney Metro projects) would benefit future generations. The project would provide long-term benefits by strengthening connections and access across Sydney, through the provision of a more efficient means of public transport.

Issues relating to housing growth or demand for parks and recreational spaces are outside the scope of the project.

No new station entrances are proposed at Punchbowl Station as part of the preferred project. However, where relevant to the preferred project and in accordance with mitigation measure LV2, Transport for NSW would work with Canterbury-Bankstown Council to deliver agreed urban design outcomes within Warren Reserve, where reasonable and feasible.

### ***Impacts to memorials, murals and public art***

#### **Issue**

Community murals and memorials must be retained and access ensured throughout the year (consider Friday afternoon prayers and local events).

#### **Response**

Chapter 14 (Non-Aboriginal heritage) of the Environmental Impact Statement provided an assessment of potential impacts to listed heritage items within the study area, including both direct and indirect impacts on numerous heritage listed memorials. The Environmental Impact Statement identified the memorials that would be retained and protected (where required) during the works. The preferred project would not impact any community murals or memorials.

As outlined in Chapter 17 (Socio-economic impacts) of the Environmental Impact Statement, design development has included a focus on avoiding and/or minimising the potential for impacts to community facilities. Potential impacts have been avoided or minimised by positioning of construction compounds and careful consideration of working periods, and ongoing consultation with the local community and key stakeholders, as described in Chapter 4 (Stakeholder and community consultation).

As described in Chapter 10 (Construction traffic, transport and access) of the Environmental Impact Statement, construction has the potential to result in temporary impacts to traffic and access within the study area. Traffic and access impacts associated with construction of the preferred project would be reduced compared to the exhibited project. Potential impacts associated with construction of the preferred project would be temporary and would be minimised through the implementation of relevant mitigation measures. These measures include the development and implementation of a construction traffic management plan (as per mitigation measure TC18), which would aim to limit access restrictions, and where required, provide alternatives to maintain access for the local community.

Communication with potentially affected users and information provision would assist in reducing uncertainty and the impacts of changes to access and movement patterns. A comprehensive community and stakeholder awareness program would be implemented during construction (as described in Section 3.5 of this report).

The war memorial near Lakemba Station (in The Boulevarde Reserve), located at the corner of The Boulevarde and Haldon Street, would not be directly impacted by the preferred project.

## *Impacts on the community*

### **Issue**

Construction impacts will be significant to Canterbury-Bankstown's diverse and vulnerable community members. More robust mitigation strategies are required in the Environmental Impact Statement.

### **Response**

Section 17.2.3 (Community values) of the Environmental Impact Statement identified the community values held by communities in the study area. This was undertaken by analysing community feedback and reviewing relevant State and local government strategic and community planning documents.

The results noted that members of the local community value attractive streetscapes and balanced development, and would like streets to be clean and tidy, with minimal graffiti and rubbish, and well maintained gardens and trees. The community noted that development should maintain a balance of historic and modern streetscapes. People considered that the natural environment could be enhanced by reducing road congestion, while improving both air quality and noise amenity. The community also valued vibrant town centres with a variety of uses.

The Environmental Impact Statement recognised that although Sydney Metro City & Southwest (including the project) would benefit the community during operation, there would be impacts during construction, including impacts on community values such as amenity, lifestyle, connectivity, and community cohesion. Impacts on these values may result from changing noise levels, reduced visual amenity, traffic conditions and access, movement across the community, and the use and enjoyment of community spaces. These potential impacts are considered in Chapter 17 (Socio-economic impacts) of the Environmental Impact Statement. Consideration of the applicability of this assessment when referring to the preferred project is provided in Chapters 12 to 15 of this report.

To manage the potential impacts identified, Table 16.1 of this report defines a range of management and mitigation measures that would be implemented during construction and operation. The project's environmental performance would be managed in accordance with the approach described in Section 17.4 of this report. This includes implementing the Construction Environmental Management Framework, Construction Environmental Management Plan, Construction Noise and Vibration Strategy, Temporary Transport Strategy, Utilities Management Framework, the mitigation measures listed in Table 16.1 of this report, and the Operational Environmental Management Plan.

Transport for NSW would continue to work with stakeholders and the community to ensure they are informed about the project and have opportunities to provide feedback to the project team. Translated materials and content would continue to be provided on the Sydney Metro website. All publications provide information on translation services available through Translating and Interpreting Service (TIS National) and where appropriate, Sydney Metro would take translators to face-to-face meetings with stakeholders.

The Construction Environmental Management Framework sets out the environmental, stakeholder and community management requirements for construction. It provides a linking document between the planning approval documentation and the construction environmental management plan to be developed by the construction contractor/s. The Construction Environmental Management Framework requires the construction contractor to develop a Community Communications Strategy for construction.

As noted in Section 3.5 of this report, a comprehensive community and stakeholder awareness program would be implemented during construction, which would assist in managing these impacts and communicating changes to relevant stakeholders.

### **7.11.13 Land use and property**

#### ***Residual land***

##### **Issue**

All corridor land should be used for its highest value use, subject to the centre's context and proposed growth under the Corridor Strategy.

##### **Response**

Following detailed design, Transport for NSW would consider whether any land within the rail corridor is surplus to requirements.

The type or form of development of any residual land would be subject to a separate assessment and approval process.

#### ***Temporary leases and impacts***

##### **Issue**

There is significant concern that the properties being temporarily acquired for the project, particularly the land used for construction compounds, may not have suitable safeguards to mitigate any impacts on surrounding properties.

##### **Response**

The project area maximises the use of NSW Government owned land, with the majority of the project area contained within the rail corridor or on land in the ownership of RailCorp outside the rail corridor. However, due to the constraints which can be present within an operational rail corridor, there is a need for some additional land to be leased to allow construction to occur. In order to find additional space, Transport for NSW has been required to consider some council owned land to minimise impacts on private land.

As noted in Chapter 17 (Socio-economic impacts) of the Environmental Impact Statement, design development has included a focus on avoiding and/or minimising the potential for impacts during key phases of the project. Potential impacts have been avoided or managed by minimising impacts on the community through the positioning of construction compounds and careful consideration of working periods, and ongoing consultation with the local community and key stakeholders, as described in Chapter 4 (Stakeholder and community consultation) of the Environmental Impact Statement. Additionally, based on community and stakeholder feedback received during the public exhibition period for the Environmental Impact Statement, Transport for NSW has revised the exhibited project to address issues raised.

The Environmental Impact Statement recognised that there would be impacts during construction, however the preferred project demonstrates a reduction in potential in impacts compared to the exhibited project. To manage the potential impacts identified, a comprehensive range of management and mitigation measures would be implemented, including the Construction Environmental Management Framework, Construction Environmental Management Plan, Construction Noise and Vibration Strategy, Temporary Transport Strategy, Utilities Management Framework, and the mitigation measures listed in Table 16.1 of this report. The mitigation measures include measures to minimise the potential traffic, access, noise, visual, and air quality impacts of the project. For example, mitigation measure TC12 commits to managing vehicle access to and from construction sites to ensure pedestrian, cyclist, and motorist safety.

Further information in response to issues raised about acquisition is provided in Section 5.15 of this report.

## **7.11.14 Business impacts**

### ***Economic impacts on businesses during construction***

#### **Issue**

The economic impacts on small businesses must be mitigated, and a comprehensive communication and action plan be developed well in advance of construction. The plan should reduce the impact of line closures on employers and employees.

A more proactive and carefully programmed approach to mitigation of business impacts needs to be undertaken, and should be specified as part of contractor responsibilities.

A detailed strategy to understand, avoid and mitigate impacts is required.

#### **Response**

Potential business impacts during the construction phase were acknowledged and assessed in Technical Paper 6 (Business impact assessment), and the results were summarised in Chapter 18 (Business impacts) of the Environmental Impact Statement. Consideration of the applicability of this assessment when referring to the preferred project is provided in Chapters 12 to 15 of this report.

It is acknowledged that the preferred project would have the potential for impacts to businesses during construction, including access and amenity impacts for customers and employees.

As described in Section 18.4 (Approach to mitigation and management), of the Environmental Impact Statement the main approach to managing impacts to businesses during construction would be the business management plan. In accordance with mitigation measure BI1, the business management plan would be prepared and implemented during construction, to define the location specific measures and strategies to minimise impacts on individual businesses during construction. The business management plan would incorporate a business consultation forum and procedures to deal with any potential complaints.

It would include a focus on proactive consultation with affected businesses by the Place Managers for the project.

In conjunction with the business management plan, and in accordance with mitigation measure BI2, a Small Business Owners Support Program has been developed, and would be implemented to provide assistance to small business owners adversely impacted by construction, including those businesses where passing trade may be impacted. The assistance provided would involve working with small business owners to identify ways of minimising the impacts of construction by providing wayfinding signage, maintaining visibility where practicable, and facilitating access and deliveries at critical times. The program would be administered by a retail advisory/support panel established by Transport for NSW, and would involve further consultation with business owners prior to, and during construction.

Transport for NSW would continue to work with stakeholders and the community to ensure they are informed about the project and have opportunities to provide feedback to the project team.

The Construction Environmental Management Framework sets out the environmental, stakeholder and community management requirements for construction. It provides a linking document between the planning approval documentation and the construction environmental management plan to be developed by the construction contractor/s. The Construction Environmental Management Framework requires the construction contractor to develop a Community Communications Strategy for construction.

A comprehensive community and stakeholder awareness program would be implemented during construction (as described in Chapter 4 (Stakeholder and community consultation) of the Environmental Impact Statement) which would assist in managing these impacts and communicating changes to relevant stakeholders.

Further information in response to issues raised about impacts to businesses is provided in Section 5.17 of this report.

### ***Impacts of the Temporary Transport Strategy***

#### **Issue**

The impacts on businesses during operation of the Temporary Transport Strategy need to be acknowledged.

#### **Response**

The potential impacts to businesses associated with closures of the T3 Bankstown Line and implementation of the Temporary Transport Strategy were assessed in Technical Paper 6 (Business impact assessment), and the results were summarised in Chapter 18 (Business impacts) of the Environmental Impact Statement.

The assessment noted that closures of stations and changes to rail services would temporarily alter commuter travel patterns, which could affect the amount of passing trade for businesses. It is expected that a small proportion of commuters would choose not to use rail replacement buses and instead drive to work. Additionally, changes to bus stops may reduce trade at particular locations, while at other locations (such as temporary bus stops) there may be an increase in trade during the possession period.

Changes to rail service arrangements and the use of rail replacement buses would increase the amount of traffic on key roads, which has the potential to affect employee travel times and access patterns.

It is noted that only a third of the business survey respondents believed that staff travel times would be affected.

It is predicted that station and track closures would have the potential to affect mainly those businesses located close to the stations that have a higher reliance on passing trade, including food services and some retail stores, particularly during the longer duration possessions. Overall, the potential impacts assessed as part of the exhibited project would range from slightly negative to moderately negative.

However, as described in Chapter 15 of this report, as the duration of closures of the rail line and/or stations during possession periods for the preferred project would be decreased from those of the exhibited project, the levels and duration of disruption and impacts to businesses would also be reduced.

The development of each temporary transport plan would identify location-specific requirements, such as the establishment of temporary bus stops near stations that consider the specific needs of adjacent businesses. If possible, options would be considered that benefit local businesses, if diverting customers or waiting for buses may generate positive exposure for those businesses.

### ***Construction traffic impacts on businesses***

#### **Issue**

Need to minimise the impact of construction-related vehicles on the business operators along the corridor, including impacts to loading zones and laneway restrictions.

## Response

The Environmental Impact Statement recognised that construction traffic and temporary changes to transport arrangements during construction have the potential to affect customer travel patterns, and access to, and servicing of, businesses. The preferred project would result in a reduction in these impacts, when compared to the exhibited project.

Potential impacts would be addressed by the implementation of location specific management measures included in the construction traffic management plan (in accordance with mitigation measure TC8) and the business management plan (in accordance with mitigation measure BI1).

Mitigation measure TC20 commits to maintaining access for residents, businesses, and community infrastructure during construction. The measure also requires that where disruption to access cannot be avoided, consultation would be undertaken with the owners and occupants of affected properties, to confirm their access requirements and to discuss alternatives.

## Compensation for businesses

### Issue

Council seeks an analysis of compensation measures to assist our business community.

Compensation to business owners may go some way to ensuring their continued operation through the construction period.

### Response

Under the *NSW Land Acquisition (Just Terms Compensation) Act 1991*, Transport for NSW is required to compensate property owners at market value for properties that would need to be temporarily or permanently acquired. The design of the preferred project has avoided the need to permanently acquire land and properties and there is no legal requirement for compensation for indirect impacts (such as amenity impacts) on adjacent property or businesses. Transport for NSW are also not required to compensate businesses where leases with RailCorp are to be ceased (e.g. at stations).

As described in Section 18.4 (Approach to mitigation and management) of the Environmental Impact Statement, the main approach to managing impacts to businesses during construction would be the business management plan. In accordance with mitigation measure BI1, the business management plan would be prepared and implemented during construction, to define the location specific measures and strategies to minimise impacts on individual businesses during construction. The business management plan would incorporate a business consultation forum and procedures to deal with any potential complaints.

In conjunction with the business management plan, and in accordance with mitigation measure BI2, a Small Business Owners Support Program has been developed, and would be implemented to provide assistance to small business owners adversely impacted by construction, including those businesses where passing trade may be impacted. The assistance provided would involve working with small business owners to identify ways of minimising the impacts of construction by providing wayfinding signage, maintaining visibility where practicable, and facilitating access and deliveries at critical times. The program would be administered by a retail advisory/support panel established by Transport for NSW, and would involve further consultation with business owners prior to, and during construction.



## ***Impacts of station entry closures***

### **Issue**

Need to provide a more comprehensive impact assessment of the reduction of pass by trade from main streets and the pressures to extend centres outwards down side streets.

Strategies need to be put in place to keep operators aware of all matters that may impact upon their business.

### **Response**

Technical Paper 6 (Business impact assessment) of the Environmental Impact Statement assessed the potential impacts of changes to station entrances (refer to Table 39 (Assessment of changes to pedestrian and cyclist environment)) and the resulting change in passing trade. A detailed analysis of accessibility and connectivity of the station designs within the station areas was undertaken as part of the development of the reference design for the exhibited project. The Urban Design and Place Making Paper (Appendix H of the Environmental Impact Statement) documents this analysis.

The design of the preferred project retains existing station entrances. Therefore any reduction of pass by trade associated with the preferred project would be limited to the construction period.

Chapter 18 (Business impacts) of the Environmental Impact Statement also identified that improvements in active transport connections to the stations could result in improvements across local business precincts in terms of passing trade, business exposure, connectivity, and business revenue. Works would be undertaken in the areas around the stations to better integrate with other modes of transport. The increase in patronage due to transport connection improvements would potentially benefit the majority of businesses, however, those types of business that benefit from passing trade (such as convenience stores, cafes, pharmacies) are likely to experience the greatest potential revenue growth.

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

Further information on consultation during construction, including the proposed activities and the approach to complaints handling, is provided in Section 3.5 of this report.

## ***Impacts on events due to closures of rail line***

### **Issue**

Events are important for marketing and promoting the City to first-time visitors while fueling the local economy. While it is understood that at times, construction will require the closure of the rail line service, Council would not support closures of the service on weekends when events/special events are scheduled to be hosted.

### **Response**

Transport for NSW acknowledges the importance of events to the local economy and the importance of public transport for such events.

Mitigation measure TC11 commits to considering the timing and needs associated with special events as part of construction work programming. For special events that require specific traffic and pedestrian management, measures would be developed and implemented in consultation with Roads and Maritime Services, the Inner West and Canterbury-Bankstown councils, and the organisers of the event. Consultation would be undertaken to ensure that events are appropriately serviced by both public transport and appropriate pedestrian management.



## **7.11.15 Landscape character and visual amenity (including trees)**

### ***Landscaping and tree loss***

#### **Issue**

The Environmental Impact Statement presents very little detail about the nature or configuration of proposed landscaping or potential tree loss. It is difficult to interpret the proposed landscaping as anything other than potentially disconnected patches of turf.

Need to identify landscape planning objectives to ensure open spaces are integrated, well planned, and safe for the broader community, and not entirely focused on active transport outcomes.

Maximising landscaping and tree retention to reduce the urban heat island effect and produce 'social' spaces would be critical. Further landscaping of the corridor or surrounds should be examined to deliver urban cooling and enhance urban qualities.

#### **Response**

Opportunities for additional landscaping are constrained for the preferred project as the existing station entrances are being retained. The proposed landscaping would be determined during detailed design and identified in the Station Design and Precinct Plans (required by mitigation measure LV3).

Section 9.3.2 (Tree removal and management) of the Environmental Impact Statement notes that the project would involve trimming or removing trees in the vicinity of stations to facilitate upgrading the stations and station areas. An estimate of the number of trees with the potential to be affected was provided in the Environmental Impact Statement, based on a preliminary tree survey.

As described in Section 1.3 of this report Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal. An estimate of the number of trees with the potential to be affected due to the preferred project is provided in Section 2.3.2 of the preferred project description in Appendix B of this report. The development of the preferred project scope has resulted in a significant reduction in the potential tree loss. These figures are likely to reduce further as the detailed design progresses.

Minimising impacts to trees would be a key obligation incorporated into the construction contract. As noted in Section 2.3.2 of the preferred project description in Appendix B, impacts to trees would be minimised wherever practicable, and a tree management strategy would be prepared in consultation with relevant stakeholders (including the relevant council). Where removal of trees is unavoidable, mitigation measure LV4 commits to replacing trees in accordance with the tree management strategy, which includes replacement of removed trees in a two for one ratio. LV4 also commits to confirming opportunities to retain and protect existing trees during detailed design and construction planning. The design would aim to reduce tree removal to the extent practicable, particularly where they contribute to screening vegetation or landscape character. This would include consideration of where trees contribute to urban and social amenity.

Trees would be planted within or in close proximity to the project area, where possible, or in another location determined in consultation with the relevant council. Tree species used would be consistent with the local context.

Further information on the tree management strategy is provided in Section 2.3.2 of the preferred project description in Appendix B.

## *Tree planting*

### **Issue**

Where removal of trees is unavoidable, trees should be replaced with appropriate mature trees at a ratio of 3:1.

The tree management strategy and street tree planting plan needs to be developed in consultation with Council.

### **Response**

Where removal of trees is unavoidable, mitigation measure LV4 commits to replacing trees at a two for one ratio in accordance with the tree management strategy.

The tree management strategy would be developed in consultation with the Inner West and Canterbury-Bankstown councils.

### **Other issues**

Refer to Section 5.18 of this report for responses to landscape character and visual amenity issues raised in relation to each individual station precinct.

## **7.11.16 Hydrology, flooding and water quality**

### *Drainage and flooding impacts*

#### **Issue**

Where there would be changes to existing flood levels, the impacts on flooding needs to be modelled and assessed. The creation of areas of new flooding and exacerbation of existing flood impacts is to be avoided. Care also needs to be taken in flood storage areas so that these impacts are not unacceptably transferred to private properties.

Flood impact assessments should be undertaken for all stations, regardless of perceived impacts, and 2D modelling should be undertaken for the whole corridor. Modelling should be undertaken at Hurlstone Park at a minimum if modelling for the entire corridor is not possible.

#### **Response**

A detailed analysis of existing and potential changes to surface water and flooding conditions as a result of the exhibited project was undertaken as part of the Environmental Impact Statement. The results of this assessment were provided in Technical Paper 8 (Hydrology, flooding and water quality assessment) and summarised in Chapter 21 (Hydrology, flooding and water quality) of the Environmental Impact Statement.

The preferred project would involve the retention of existing infrastructure along the rail corridor, where possible, and the maintenance of existing track drainage.

The preferred project would be operated within the current hydrological environment so would not change existing flooding or flood hazard, in, or around the rail corridor.

As such, the need to undertake further assessment works regarding the potential impacts of the flooding management system is no longer relevant to the preferred project and no further modelling or assessment is proposed as part of detailed design.

## ***Use of surplus areas of land for retention basins***

### **Issue**

Transport for NSW should investigate the use of surplus areas of land for retention basins, or transferring land suitable for the construction of retention basins over to council to construct as part of floodplain risk management plans. This would be invaluable in reducing the impacts of flooding in urbanised areas where there is little available land unlocked for flood mitigation measures.

### **Response**

As per above, the preferred project would be operated within the current hydrological environment and the inclusion of additional drainage infrastructure does not form part of the preferred project. The installation of retention basins does not form part of the preferred project.

Any land identified for drainage infrastructure in Council's plans would need to be discussed with the relevant land owner. The use of any surplus land controlled by Transport for NSW and no longer required for transport or other purposes at the end of the project, would be considered for use as part of the project's residual land hierarchy.

## ***Water treatment***

### **Issue**

Opportunities to treat surface water draining from the metro should be considered in line with modern standards. Water sensitive urban design measures should be included wherever possible, particularly at stations that have large increases in impervious areas. Stations that have large green spaces including Punchbowl, Wiley Park, and Belmore should be investigated for the feasibility of including these measures.

Any natural creeks, drainage lines, overland flow paths, catch drains and detention basins within the rail corridor should be improved by use of natural type treatments, including rock lining and use of native vegetation wherever possible.

Water discharged from water quality treatment devices should meet the requirements of the Botany Bay Water Quality Improvement Plan.

### **Response**

In accordance with mitigation measure FHW2, the preferred project would be designed to ensure that there is minimal potential for water quality impacts, including incorporating water sensitive urban design elements such as landscaping. This would include modelling to demonstrate the effectiveness of the proposed water quality treatment measures and design elements. Mitigation measure FHW3 commits to developing and implementing a water quality monitoring program during construction, to monitor water quality at identified discharge points. The program would include relevant water quality objectives, parameters, criteria, and specific monitoring locations identified in consultation with DPI (Water) and the Environment Protection Authority.

## ***Regional/upstream flooding***

### **Issue**

There are a number of major north–south drainage flow paths crossing the rail corridor. Need to assess the opportunity to increase capacities of existing pipes which cross the rail corridor to improve upstream flooding.

All undersized stormwater drainage lines should be upgraded to improve regional flooding across the LGA. The impacts and associated mitigating measures should be identified.

## Response

Based on community and stakeholder feedback received during the public exhibition period for the Environmental Impact Statement, Transport for NSW has revised the exhibited project to address issues raised.

The preferred project would involve the retention of existing infrastructure along the rail corridor and the maintenance of existing track drainage. The inclusion of additional new drainage infrastructure does not form part of the preferred project.

The preferred project would be operated within the current hydrological environment so would not change existing flooding or flood hazard, in, or around the rail corridor.

### 7.11.17 Biodiversity

#### *Biodiversity offsets*

##### Issue

Any proposed offsets should be purchased and retained within the Canterbury-Bankstown LGA.

##### Response

Transport for NSW has developed a design solution that has reduced the amount of vegetation requiring removal.

The preferred project would not result in the removal of native plant community types requiring biodiversity offsets. This is a reduction in impact to that of the exhibited project as described in the Environmental Impact Statement. Suitable protection measures would include fencing, signage and other measures where this would not impede the safe maintenance and operation of trains and related infrastructure (see mitigation measure B10 in Table 16.1 of this report).

### 7.11.18 Hurlstone Park Station

#### *Design features*

##### Issue

Deliver a shared way arrangement for Floss Street to more effectively link with retail on Crinan Street. Modest retail could reinforce the function of the centre on the northern side of the line.

##### Response

The revised draft *Sydenham to Bankstown Urban Renewal Corridor Strategy* identified a number of infrastructure projects to support growth in the Hurlstone Park Station precinct. This included delivery of a new urban plaza on Floss Street by Canterbury-Bankstown Council.

Facilitating retail on the northern side of the line is outside the scope of the preferred project. The preferred project does not preclude the delivery of a shared way arrangement or retail by others.

##### Issue

Widen Foord Avenue underpass to accommodate pedestrians and cyclists. Deliver a pedestrian priority environment at Crinan Street outside the station.

## **Response**

Transport for NSW is developing a Walking and Cycling Strategy to facilitate customer movement to and from stations and to identify the best active transport routes in each suburb. These active transport routes may include pedestrian footpath upgrades, separated cycleways, shared footpaths and designated pedestrian and cyclist road crossings. As part of the development of this strategy consideration could be given to the provision of a pedestrian priority environment at Crinan Street outside the station. Mitigation measure TO3 commits Transport for NSW to work with the Canterbury-Bankstown Council and other relevant stakeholders as part of the development of this strategy.

Widening the Foord Avenue underpass is outside the scope of the preferred project.

## ***Heritage impacts***

### **Issue**

Retain the pair of heritage listed station buildings at Hurlstone Park Station.

### **Response**

The design of the preferred project has avoided the need to remove heritage buildings and structures. Therefore, the heritage listed station buildings at Hurlstone Park would be retained.

## ***Transport hierarchy***

### **Issue**

Reassess the transport hierarchy at the station and improve active transport modes.

### **Response**

The preferred project involves retaining the existing accessible parking spaces on Floss Street and Duntroon Street on the northern side of the rail corridor. In addition, new accessible parking would be provided on Duntroon Street on the southern side of the rail corridor. This new accessible parking space would be closer to the station entrance than proposed for the exhibited project.

Similarly, new bike parking would be provided on Floss Street on the northern side of the rail corridor in addition to retention of the existing bike parking on Crinan Street outside the station entrance.

The arrangement of infrastructure would continue to be developed as part of the preparation of the Interchange Access Plan and Station Design and Precinct Plan for the station (as per mitigation measure LV3).

Further information in response to this issue is provided in Section 7.11.4 of this report.

## ***Bus stops***

### **Issue**

The cumulative impacts of the removal and relocation of stops on the Crinan Street bridge, together with the need to accommodate replacement buses, has not been assessed in the Environmental Impact Statement. This is important considering the limited kerbside space near the station.

### **Response**

Section 10.3 (Basis for the construction phase assessment) of the Environmental Impact Statement stated that the Crinan Street overbridge would require a 48 hour full closure during a weekend, which would result in the need to redirect bus routes for this period and the need to temporarily relocate two bus stops (one in each direction).

Bridge works proposed as part of the preferred project can occur without long-term full bridge closures, and would be limited to some lane restrictions at nights and on weekends. The assessment concludes that due to there not being a need for vehicle diversions there would be a reduction in traffic impacts for the preferred project compared with those for the exhibited project.

If required, mitigation measure TC2 commits to Transport for NSW consulting with the Council and other relevant stakeholders, including bus operators, to identify opportunities to minimise impacts to bus layovers and existing bus stops during operation of rail replacement buses.

Any modifications to bus stops or alterations to bus servicing patterns would be undertaken in consultation with the relevant authorities, including councils.

### ***Urban renewal***

#### **Issue**

There are some quality development opportunities near Hurlstone Park Station that should be identified and planned for to ensure good integration with the station.

#### **Response**

The identification of future redevelopment opportunities near stations does not form part of the preferred project. The preferred project does not preclude the identification and planning for these opportunities by others.

## **7.11.19 Canterbury Station**

### ***Station entrances***

#### **Issue**

Retain the existing entry to Canterbury Station in addition to the new concourse.

Deliver the Charles Street entry concurrently with the project.

#### **Response**

Transport for NSW has developed a design solution that enables the retention of existing station entrances, heritage buildings and concourses, but still enables upgrades that provide accessible stations. The preferred project retains the existing to Canterbury Station.

A future Charles Street entrance is currently safeguarded in the design. The development of this entrance would be considered in the future.

### ***Concourse***

#### **Issue**

Improve the alignment of the new concourse to align with Robert Street and deliver unpaid access.

#### **Response**

A new concourse at Canterbury Station is not part of the preferred project. This is consistent with the approach for the preferred project to retain existing station entrances.

## **7.11.20 Campsie Station**

### ***Lilian Lane***

#### **Issue**

At Lilian Lane, a relatively narrow laneway lacking in passive surveillance will be used by cars, trucks, the active transport network, and by customers. The potential for unresolvable conflict is significant.

Examine ways to improve the safety and serviceability of Lilian Lane, considering pedestrian, cycling and current use by commercial buildings. Expand Lilian Lane used rail corridor land.

#### **Response**

The preferred project does not include works to Lillian Lane.

However, as committed to through mitigation measure TO3, Transport for NSW would develop a Walking and Cycling Strategy to encourage active transport to the station precincts. Transport for NSW would also work with the Department of Planning and Environment, local councils, local community groups, bicycle user groups, relevant NSW government departments, agencies and utility providers to identify the best active transport routes in each suburb. These active transport routes may include pedestrian footpath upgrades, separated cycleways, shared footpaths and designated pedestrian and cyclist road crossings.

### ***Beamish Street***

#### **Issue**

Examine traffic calming and pedestrian priority on Beamish Street outside the retained station entry.

#### **Response**

Technical Paper 1 (Traffic, transport and access assessment) of the Environmental Impact Statement noted that while the pedestrian volumes to and from the station are set to rise by about 2,000 people per day footpaths adjacent to Campsie Station, including those along Beamish Street, could accommodate this capacity.

Traffic calming on Beamish Street does not form part of the scope of the preferred project.

However, as described above Transport for NSW would develop a Walking and Cycling Strategy in consultation with relevant stakeholders. This would take into consideration whether additional safety measures are required to ensure active transport is prioritised.

### ***Connectivity***

#### **Issue**

Provide an additional overpass at the alignment of Asset Street and Dewar Street to deliver increased connectivity throughout the centre.

An additional overpass will provide an ideal opportunity to deliver a highly integrated redevelopment of Campsie RSL to maximise commercial activation near the station, and residential transit-oriented development. It would also better support development further east as the current car park locations and much of the high-density development is further south.

Improve connectivity across the centre, particularly with Anzac Square and Mall.

#### **Response**

No new overpasses at Campsie Station are proposed as part of the preferred project.



However, the design does not preclude the future delivery of an additional concourse along the alignment of Dewar Street to connect to Anzac Square. The delivery of this concourse could be considered during any future planning for the development of adjacent sites, such as the Campsie RSL.

### ***Development on North Parade***

#### **Issue**

Improve the serviceability for patrons with modest development on the southern side of North Parade.

#### **Response**

The preferred project no longer includes the provision of new retail spaces on Beamish Street and North Parade. Instead additional bike parking would be provided on North Parade, and the existing bike parking would be retained on Beamish Street.

### ***Transport interchange***

#### **Issue**

Consider an improved bus interchange system at Campsie Station.

#### **Response**

No changes to bus arrangements are proposed at Campsie Station. The station would continue to be serviced by bus routes on Beamish Street, Ninth Avenue, Fifth Avenue, Brighton Avenue, South Parade, and Duke Street. Bus stops would remain in their current position to service these routes. There is no proposal to include a bus interchange as part of the preferred project.

### ***Traffic and transport planning***

#### **Issue**

The cumulative impacts of removing and relocating the South Parade stop to North Parade, plus the need to accommodate replacement buses, has not been assessed, considering the limited kerbside space and shop-based parking demands.

There is no right turns from Beamish Street into North Parade whereas buses turn right from Beamish Street to South Parade. This route diversion cannot be achieved.

The Beamish Street/North Parade intersection is well over capacity. Additional traffic management measures would be required to allow buses to exit North Parade.

#### **Response**

#### **Parking impacts**

Existing bus stops would be retained as part of the preferred project.

Where replacement buses have the potential to temporarily impact existing bus stops mitigation measure TC1 commits to developing a temporary transport plan for each possession period. These plans would be developed prior to the relevant possession period.

The temporary transport plans would identify the proposed temporary bus stops, and describe how the potential impacts on the transport network, including loss of parking, would be managed. Each temporary transport plan would be implemented prior to any works required to support each rail possession period.

Stakeholder and community engagement would form part of the development and delivery of each temporary transport plan. The plan for the first possession period would be released for feedback

and input prior to its finalisation and implementation in 2019 (associated with planned possession periods).

Further information in response to issues raised about the Temporary Transport Strategy and the management of impacts during possession periods is provided in Sections 5.8.3 and 5.9.5 of this report.

Transport for NSW would also work with Council during detailed design and construction planning to reduce the identified impacts on parking and other kerbside uses wherever possible, including consideration of provision of alternative parking spaces wherever feasible and reasonable.

Mitigation measures TC4 and TC5 commit to further reviewing the opportunities to reduce the temporary loss of parking during detailed design and construction planning.

### **Diversions and traffic management measures**

Beamish Street into North Parade is not nominated as a diversion route.

The need for additional traffic management measures during construction would be considered as part of the preparation of temporary transport plans (in accordance with mitigation measure TC1) and the construction traffic management plan (in accordance with mitigation measure TC8).

## **7.11.21 Belmore Station**

### **Station design**

#### **Issue**

Key issues raised include:

- retain existing station entrance in addition to new entry
- re-examine the concourse location
- heritage items are isolated.

#### **Response**

The preferred project would enable the existing station entry to be retained. No new concourse is proposed as part of the preferred project.

Additionally, the design of the preferred project has avoided the need to remove any heritage buildings or structures. Instead heritage buildings would be retained and repurposed.

### **Transport hierarchy**

#### **Issue**

Resolve the transport hierarchy in the station precinct.

#### **Response**

The development of the design for the station upgrades undertaken as part of the preferred project used the station access hierarchy as a basis.

As part of the preferred project the existing bike parking on Burwood Road to the north of the station entrance would be retained and new bike parking would be provided within the Tobruk Avenue car park.

New kerbside facilities would be provided on Tobruk Avenue, which would consist of kiss and ride and taxi facilities. The existing accessible parking along Redman Parade would be retained and a new accessible parking space would be provided in the Tobruk Avenue car park.

Additionally, no commuter parking spaces would be affected by the preferred project.

The arrangement of infrastructure would continue to be developed as part of the preparation of the Station Design and Precinct Plan for the station (as per mitigation measure LV3).

Further information in response to this issue is provided in Section 7.11.4 of this report.

### ***Traffic and transport planning***

#### **Issue**

There is no indication of where the Burwood Road bus stops will be relocated to and how the routes will service these stops if buses are not allowed to use the bridge. It is noted that the next closest stops are in the shopping precincts, and the temporary transport plan bus queuing requirements may have significant impacts on prime street parking, as well as nearby park and ride demands at these stops

#### **Response**

The bridge works for the preferred project can occur without long-term, full bridge closures, and would be limited to some lane restrictions at nights and on weekends. Therefore, buses would continue to access the bridge and no diversions are required.

### ***Car parking***

#### **Issue**

All day (commuter) parking will spread into the adjacent residential areas and a specific resident parking management plan may be needed in this area, given the limited nearby available on-street parking. Park and ride is a major part of the access demand for this station, with potentially 800-900 vehicles arriving per day to park and ride.

#### **Response**

Detailed design and ongoing construction planning would seek to minimise the impacts on parking where possible (in accordance with mitigation measure TC4). In addition, where parking spaces are lost or access is impeded during construction, particularly for extended periods, mitigation measure TC5 commits to providing alternative parking where feasible and reasonable. This would include consideration of other privately owned (or vacant) land within close proximity to affected stations.

Mitigation measure TC13 commits to considering the impacts of worker parking at construction compounds and work sites, and mitigation measure TC15 commits to developing a worker parking strategy to encourage workers to use public transport, car share and/ or park in designated areas.

As required by the Construction Environmental Management Framework, a parking management plan would be developed to identify:

- parking requirements and on and off site parking arrangements and associated impacts
- remote parking arrangements and associated access between sites and public transport nodes
- communication of parking changes and parking management measures.

Mitigation measure TO1 commits to further consideration of operational car parking management at stations in consultation with relevant stakeholders (including Council), to minimise the adverse impacts of operation on parking and other kerbside use in local streets.

The preferred project would not permanently remove the Toburk Avenue car park or affect parking spaces within the Redman car park.

## **7.11.22 Lakemba Station**

### ***Corridor development***

#### **Issue**

The delivery of a cohesive over metro line town square as per the Corridor Strategy should be investigated, along with a change the concourse arrangement to ensure access across the line.

#### **Response**

The location of the station buildings and station entrance/concourse would be unchanged from the existing arrangement at Lakemba Station as part of the preferred project.

Delivery of a town square, which is identified in the corridor strategy, is outside the scope of the preferred project.

### ***Impacts on community infrastructure and facilities***

#### **Issue**

As a minimum, provide further details on the exact nature of the impact on the park and war memorial and minimise impact if an effective town square is not developed.

#### **Response**

The park and war memorial near Lakemba Station (in The Boulevarde Reserve), located at the corner of The Boulevarde and Haldon Street, would not be directly impacted by the preferred project.

### ***Cross corridor connectivity***

#### **Issue**

A paid concourse is proposed, which will decrease permeability across the rail line at the current concourse location. This should be avoided.

#### **Response**

No new paid concourse would be provided as part of the preferred project. The existing permeability across the rail line would be retained.

#### **Issue**

Investigate widening the Haldon Street overpass and the Railway Parade underpass to better accommodate active transport modes (at a minimum without the new town square).

#### **Response**

The widening of Haldon Street overpass and Railway Parade underpass is outside the scope of the preferred project. However, the preferred project would include development of a Walking and Cycling Strategy to encourage active transport to the station precincts.

### ***Traffic and transport***

#### **Issue**

In relation to the Haldon Street closure, if the bus replacement strategy is in place at the same time that the stops are relocated to near the Moreton Street bridge, there are likely to be significant negative park and ride impacts in this residential area.

The Boulevarde/Haldon Street signals are over capacity now. Consider the need to relocate the taxi rank in The Boulevarde on approach to Haldon Street, to ensure that the impacts of construction traffic (which may occupy both approach lanes to turn) are minimised.

This is a popular park and ride location and parking area for the surrounding streets. Over 1,200 station entries (passengers) are park and riders, potentially equating to nearly 1,000 cars.

## **Response**

### **Impacts of bridge works on parking**

Bridge works can occur without long-term, full bridge closures. Therefore, traffic and parking impacts associated with the bridge works would be reduced. In accordance with mitigation measure TC3, the impacts on the surrounding road network of lane closures resulting from bridge works would be assessed in detail, in consultation with Roads and Maritime Services, the Sydney Coordination Office, Canterbury-Bankstown councils, emergency services and relevant bus operators.

### **The Boulevard/Haldon Street traffic signals**

The issues identified regarding the existing capacity of the traffic signals at The Boulevard/Haldon Street are acknowledged. As per the station layout provided in Figure 9.7 of this report, taxi stands are proposed to remain in their existing location.

The positioning of the taxi stands on The Boulevard would be further considered as part of the development of the Interchange Access Plan for Lakemba Station. Regardless of the long-term positioning of taxi stands, temporary relocation of these stands during construction would be considered by the construction traffic management plan. Relocation would only be needed if it is found that the taxi stand would impact the surrounding road network due to queuing of construction vehicles (particular heavy vehicles) waiting to turn left onto Haldon Street.

### **Impacts on parking around station**

Detailed design and ongoing construction planning would seek to minimise the impacts on parking where possible (in accordance with mitigation measure TC4). In addition, where parking spaces are lost or access is impeded during construction, particularly for extended periods, mitigation measure TC5 commits to providing alternative parking where feasible and reasonable. This would include consideration of other privately owned (or vacant) land within close proximity to affected stations.

Mitigation measure TC13 commits to considering the impacts of worker parking at construction compounds and work sites, and mitigation measure TC15 commits to developing a worker parking strategy to encourage workers to use public transport, car share and/ or park in designated areas.

As required by the Construction Environmental Management Framework, a parking management plan would be developed to identify:

- parking requirements and on and off site parking arrangements and associated impacts
- remote parking arrangements and associated access between sites and public transport nodes
- communication of parking changes and parking management measures.

## **7.11.23 Wiley Park Station**

### **Improvements to connectivity**

#### **Issue**

Deliver a quality, well-integrated shared way at Stanlea Parade to improve connectivity to the metro and support the town centre.

Deliver an additional corridor crossing at the alignment of Shadforth Street. Without the above action, the transport hierarchy needs to be re-assessed.

### **Response**

The preferred project would include upgrading existing the laneway between King Georges Road and Stanlea Parade/Shadforth Street. Works would also include upgrades to lighting, paving and the provision of landscaping. The centre is only served by bus routes on King Georges Road and The Boulevard. To enable ease of transfer between modes of travel, the existing station location is to be retained. In addition, accessible parking and kerbside facilities are provided to the east of King Georges Road on The Boulevard via an accessible path to the station. Due to the distance to these facilities, an additional crossing at the alignment of Shadforth Street and The Boulevard would not meet the accessibility requirements or change the transport hierarchy requirements for the preferred project. The station design does not preclude future provision of additional station entries from Shadforth Street and The Boulevard.

## **7.11.24 Punchbowl Station**

### ***Station and concourse design***

#### **Issue**

Key issues raised include:

- the design of the new concourse should align Matthews Street to Punchbowl Road
- the existing station entry should be retained
- move the new concourse entry to minimise conflict between the active transport corridor and the commuter movement
- the concourse should offer unpaid access.

#### **Response**

The existing station entrance and concourse area (unpaid) at Punchbowl Station would be retained and upgraded. Additionally, three new lifts and two new stairs would be provided to enhance accessibility and the existing concourse footbridge would be extended to accommodate these new features. No new station entrances are proposed as part of the preferred project and there would be no change to the existing unpaid access.

An active transport corridor would not be delivered as part of the preferred project.

### ***Public safety***

#### **Issue**

Resolve the activation and passive surveillance of the active transport corridor and unsafe underpasses at Punchbowl.

#### **Response**

The existing pedestrian underpass below Punchbowl Road would be retained and upgraded as part of the preferred project. This would include lighting upgrades to improve safety.

Due to the revised construction methodology and retention of existing infrastructure along the rail corridor, provision of an active transport corridor is no longer viable within the rail corridor.

However, the existing concourse footbridge would be extended and the existing station entrance would be retained and upgraded to improve the legibility and passive surveillance of the station entrance.

## Issue

Low-scale retail should be provided to activate and provide surveillance to public park.

## Response

The project does not include provision for any low scale retail at the northern station entrance. However, due to the available space in this location, there is an opportunity for such development to be considered by Council. The design of this entrance would be undertaken in accordance with CPTED principles to ensure passive surveillance requirements are met.

## *Integration with urban renewal opportunities*

## Issue

Provide an integrated approach between urban renewal opportunities (e.g. car parks) and the station design. Punchbowl is particularly unresolved and should be a very high priority.

## Response

Whilst strategic planning for the study area has and is being undertaken by a number of agencies, including the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown Councils, this strategic planning is separate to the planning and approval process for the project. The project has nonetheless been informed by the broader strategic planning context.

The preferred project would retain the existing station entrance. However, integration of urban renewal opportunities (eg car parks) with the station could be considered as part of further urban renewal development and is not precluded by the preferred project.

As outlined in new mitigation measure LV3, Station Design and Precinct Plans would be prepared in consultation with relevant stakeholders including council and reviewed by the Design Review Panel. The plans would present an integrated urban and place making outcome for each station, identify specific design objectives and principles based on the local context and maximise the amenity of public spaces and permeability around station entrances.

Further information in response to the issue of providing for future urban renewal opportunities around stations is provided in Section 7.11.1 of this report.

## *Traffic, transport and access*

## Issue

There is only enough space for one bus on The Boulevard during possessions. A second bus will queue back close to the intersection of Punchbowl Road. This stop may need to be relocated eastwards to cater for the 40+ additional buses per hour likely to be added to this stop during possession periods.

Given the limitation of free, available parking at Bankstown, Punchbowl has an important park and ride role and would be estimated to generate in the order of 800 cars per day. Loss of the nearest and most accessible bays will have flow-on effects through the centre.

## Response

Mitigation measure TC2 commits to consulting with Roads and Maritime Services, the State Transit Authority, bus operators, and councils to identify opportunities to minimise impacts to bus layovers and existing bus stops during operation of rail replacement buses. The management of this issue would form part of the temporary transport plans (in accordance with mitigation measure TC1).

Detailed design and ongoing construction planning would seek to minimise the impacts on parking where possible (in accordance with mitigation measure TC4). In addition, where parking spaces



are lost or access is impeded during construction, particularly for extended periods, mitigation measure TC5 commits to providing alternative parking where feasible and reasonable. This would include consideration of other privately owned (or vacant) land within close proximity to affected stations.

As required by the Construction Environmental Management Framework, a parking management plan would be developed to identify:

- parking requirements and on and off site parking arrangements and associated impacts
- remote parking arrangements and associated access between sites and public transport nodes
- communication of parking changes and parking management measures.

### **7.11.25 Bankstown Station**

#### ***Undergrounding Bankstown Station***

Issues raised in the submission relevant to the undergrounding of Bankstown Station are addressed in Section 7.11.1 of this report.

#### ***Planning for Bankstown Station's role as a strategic centre***

##### **Issue**

The design for Bankstown Station should respond to the station's role as a strategic centre and a major transport interchange. The station should be integrated with new development over and adjacent to the station rather than isolated from the centre. It should include civic spaces that connect the interchange between train lines, buses and active transport; and display design excellence, prominence and scale that reinforces the hierarchy of the centre.

Need to provide effective master planning to co-ordinate opportunities for Council-owned land with the proposal, to act as a catalyst for renewal in Bankstown.

##### **Response**

The design for the proposed upgrade of Bankstown Station has and would continue to take into account the station's role as a major regional interchange, providing connections between Sydney Trains services, Sydney Metro services, and the large number of bus routes that terminate at the station.

Transport for NSW would continue to work with the Department of Planning and Environment and Council during the detailed design process to ensure that the design for Bankstown Station is integrated with the urban renewal process and the role of the centre.

Mitigation measure LU1 commits Transport for NSW to work the Department of Planning and Environment, the Greater Sydney Commission, and the Inner West and Canterbury-Bankstown councils, in relation to future planning for the Sydenham to Bankstown corridor.

Mitigation measure LU2 commits Transport for NSW to work with the Department of Planning and Environment, Greater Sydney Commission, Canterbury-Bankstown Council, and other key stakeholders to plan for the strategic transformation of the Bankstown CBD, including an investigation into the long-term development and viability of an underground station configuration.

The Station Design and Precinct Plan for Bankstown Station, as required by new mitigation measure LV3, would be prepared in consultation with Council. The plan would aim to present an integrated urban and place making outcome for the station, identify specific design objectives and principles based on the local context, and maximise the amenity of the station.

Further information about the role of the project in the urban renewal and master planning process is provided in Section 7.11.3.

## **Connectivity**

### **Issue**

At Bankstown Station, the design would result in a double platform almost 400 metres in length and the need to cross the corridor via an unpaid concourse.

The design exacerbates the division within the centre and delivers a poor hierarchy of transport.

Need to increase connectivity by aligning the concourse between The Appian Way and Restwell Street and upgrading the underpass east of the station to include cycling and pedestrian facilities.

### **Response**

The preferred project includes provision of a new at grade cross-corridor link at Bankstown Station. This link would be positioned between the existing Sydney Trains station and the new metro station to be constructed east of the Sydney Trains station. The new link would provide direct access to the Bankstown CBD, midway between the existing crossing points at Bankstown City Plaza and the road link between North Terrace and South Terrace. The new link would improve access for pedestrians, particularly to the Bankstown Central Shopping Centre and community facilities on the northern side of the corridor. The new link would provide a more direct link to this key land use from areas south of the rail corridor.

The metro station would be constructed to the east and adjoining the existing Sydney Trains station. All track works would be within the existing rail corridor, which historically has split the Bankstown town centre. Table 8.11 (Bankstown Station key design elements) of the Environmental Impact Statement noted that the project would integrate with the bus layover and bus interchange areas on South Terrace, and the bus stops and kerb side facilities on North Terrace.

The proposed unpaid at grade crossing of the corridor and associated station entrances have been designed in line with all relevant standards, and have been sized to ensure that the capacity at the station meets the future demand, and provides ease of access to other transport modes. Overall, the project would consolidate public transport options within the existing rail corridor and in the vicinity of the station, in an area easily accessible from neighbouring retail and commercial areas.

Transport for NSW would work with key stakeholders planning the strategic transformation of the Bankstown CBD and would ensure the Interchange Access Plan for the station is informed by the outcomes of this process.

In the proposed design, the location of the concourse is determined by the location of the Sydney Trains station.

The provision of any additional cycling and pedestrian facilities in the vicinity of the station would be considered as part of the master plan, and the Interchange Access Plan for the station.

## ***The design of the station should consider future extensions***

### **Issue**

The planning of Bankstown Station should align with future connections to Parramatta and Liverpool as outlined in the *Draft Future Transport Strategy 2056*.

Bankstown has an opportunity to be a major economic anchor connecting the economic golden arc to future extensions planned from Bankstown to Liverpool, Parramatta, and Kogarah, as well as future links to Western Sydney Airport precinct.

### Response

Undertaking the preferred project would support the opportunity for other extensions to the metro network in the future. Further demonstrating the key role metro would have in providing increased accessibility and linkages to strategic nodes in Sydney, the *South District Plan* (Greater Sydney Commission, 2018b) recognises Bankstown as a health and education precinct served by future Sydney Metro City & Southwest stations. The plan notes the benefits of Sydney Metro to these centres in terms of increased accessibility, and that Sydney Metro City & Southwest would improve connections to other parts of Sydney.

Transport for NSW, in the context of the *Future Transport Strategy 2056*, is developing the strategic concept for transport extensions to the west of Bankstown. This includes consideration of connections to Liverpool and Parramatta. The strategic concepts for transport extensions would be a key consideration in the joint master planning process for Bankstown Station.

### Flooding and hydrology

#### Issue

Flooding is a major concern, with the area of the northern entrance currently subject to flooding. Changes here could impact on the flooding regime within the Bankstown CBD.

Flooding and hydrology at Bankstown Station should be further investigated. Need to incorporate flood impacts in the economic assessment of undergrounding Bankstown Station. At a minimum, re-evaluate the northern station entrance in terms of localised flooding.

#### Response

Mapping undertaken for the *Salt Pan Creek Stormwater Catchment Study* (Bankstown City Council, 2011) indicates the potential for flooding and surface ponding from the local drainage network near the rail corridor during the one per cent annual exceedance probability event for short sections of North Terrace and South Terrace in Bankstown. The *Salt Pan Creek Catchments Floodplain Risk Management Study and Plan* (Bankstown City Council, 2013) identifies drainage issues and mitigation for the Bankstown CBD, including the need for works to improve the overland flow path near the rail corridor underpass adjacent to North Terrace.

Technical Paper 8 (Hydrology, flooding and water quality assessment) of the Environmental Impact Statement noted that the rail corridor at Bankstown was mostly in fill, with limited potential for flooding of the rail corridor.

Where works are proposed at Bankstown Station as part of the preferred project, the design would be developed taking into account the existing flooding behaviour and to not worsen existing conditions.

### Intermodal change

#### Issue

The existing bus layover to be retained adjacent to the station would not facilitate seamless intermodal change, and better solutions to support intermodal change must be sought.

## **Response**

The key elements of the preferred project at Bankstown Station comprise a new Sydney Metro platform (east of the Sydney Trains platform), station and precinct works, and additional transport interchange facilities along North and South terraces. No changes to either the existing bus interchange or bus layover facilities on South Terrace are proposed.

The retention of the existing bus layover is not considered to result in any major impact on intermodal change, as an accessible path between the train station and the bus interchange to the west would be provided.

The interchange between trains and adjacent transport modes would be further considered as part of the development of Interchange Access Plans, which would inform the final design of transport and access facilities and services.

## ***Improved legibility***

### **Issue**

Improved legibility must be achieved if an above ground station configuration is developed.

### **Response**

The approach to the design of the stations and other elements of the metro system has been to provide a consistent Sydney Metro identity, experience and journey across the network. Improved legibility would be achieved by providing consistency for branding, wayfinding and station identity.

## ***Traffic and transport***

### **Issue**

The active transport corridor / linear park must be resolved. The Environmental Impact Statement does not consider what would occur with the active transport corridor west of the station. Similarly, the location of cycling facilities does not support the recommended transport hierarchy, nor is the typology of facilities clear.

### **Response**

An active transport corridor within the rail corridor would not be delivered as part of the preferred project. However, the preferred project does not preclude the Department of Planning and Environment and local councils delivering an active transport corridor outside of the rail corridor, including to the west of Bankstown Station.

Works to be undertaken in the areas around the stations (i.e. the station area) would integrate with other modes of transport, improve travel paths, and meet statutory accessibility requirements. New or relocated bicycle parking would be provided in secure and sheltered bicycle parking areas, which would be clearly signposted and legible in the station context.

## ***Impacts of temporary transport arrangements***

### **Issue**

This station caters for over 18,000 passenger entry/exits per day, which, during possessions, would wait on footpaths for buses and use crossing points. These volumes are worthy of pedestrian capacity analyses to determine if any associated issues are generated for footpaths.

Bus storage capacity will see buses frequently queueing out of stops and block traffic lanes.

Large construction vehicles are proposed to share access with the bus layover on South Terrace. This will exacerbate traffic and pedestrian safety issues for shared access.

Whilst it is recognised that Bankstown should aim to actively reduce its park and ride provision over time, well over 2,000 cars per day would be expected to be associated with park and ride at this station, quite possibly making use of pay-to-park off-street areas as well. There may be shifts in the location of parking should the replacement buses during possession periods be allocated specific stands on either side of the rail line and splitting 'inbound' and 'outbound' stops may be preferable from a park and ride management perspective.

### **Response**

A temporary transport plan would be developed to provide replacement transport services for rail passengers during each possession period. Each temporary transport plan would include a temporary transport services plan and a temporary transport management plan. These issues would be considered as part of the development of these plans and would identify the need for and location for any additional infrastructure or adjustment of existing infrastructure, and the mitigation and management measures required. The location and design of any additional infrastructure or adjustments would be subject to consultation with the relevant authorities and stakeholders.

Detailed design and ongoing construction planning would seek to minimise the impacts on parking where possible (in accordance with mitigation measure TC4). In addition, where parking spaces are lost or access is impeded during construction, particularly for extended periods, mitigation measure TC5 commits to providing alternative parking where feasible and reasonable.