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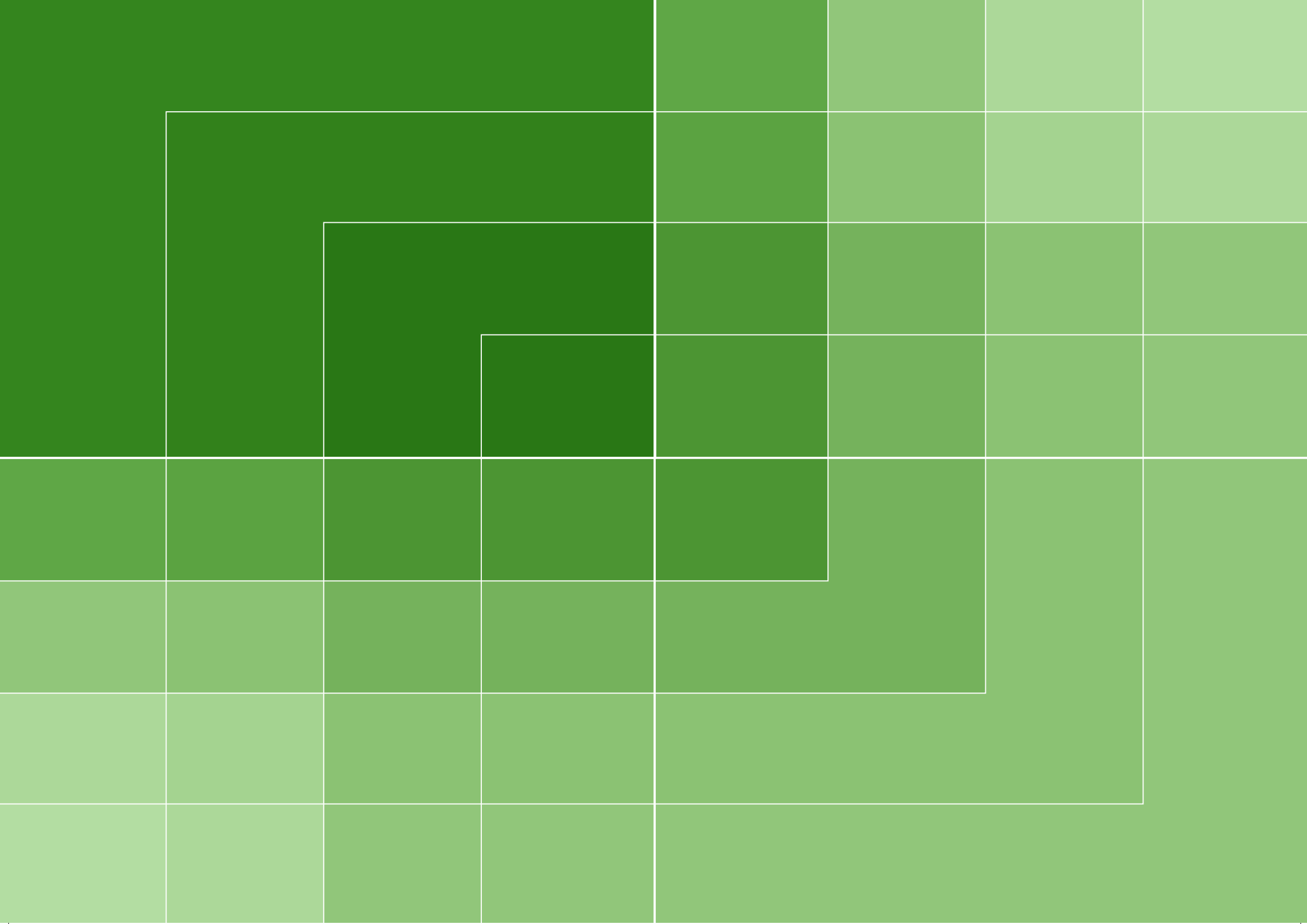

7 Individual Community Submissions

7.1 Communication

7.1.1 Cost of communication

Stakeholder identification number(s):
7

Issue description

In summary, the respondent raised the following issue:

a. TfNSW is missing the mark by publishing a glossy leaflet for distribution to households. It would be far more economical and much more effective if you placed appropriate advertisements in the local newspapers. At least this would have a chance of reaching the residents of the affected area. By using glossy leaflets you are creating an unintended environmental impact and a vast number of them never reach the intended targets anyway, including the 100 which were found dumped in local property vegetation. There are more efficient ways of notifying the community.

Response

a. TfNSW is committed to working closely with stakeholders and local communities throughout the design and delivery of the project. For this reason, a wide range of engagement methods and communication strategies and materials were used to encourage participation and feedback on EIS 2. These included local and metropolitan newspaper advertisments, letterbox drops, community information sessions, email alerts, website updates and online forums, meetings with stakeholders, media releases, an EIS summary booklet, fact sheets, leaflets, invitations to events, industry engagement sessions, deliberative forums and a project information line and email address (for detail, see Chapter 3 of this report). A community information centre at Castle Hill provided information to the community six days a week, including Thursday evenings up to 7pm. Three full time Place Managers were appointed, to work with impacted residents, tenants, community organisations and businesses. During the exhibition period, the EIS was available for public viewing at the NWRL Community Information Centre, public libraries, council offices and on the NWRL website. The aim of adopting a wide variety of community engagement strategies and methods was to ensure as many people as possible had an equal opportunity to learn about the proposed NWRL, and to have their say. TfNSW will continue to engage local communities and stakeholders using a range of tools and communication channels throughout the detailed design and construction process.

7.1.2 Consultation

Stakeholder identification number(s):
3, 22, 29, 30, 53, 64, 65, 76, 77, 78, 88, 94, 99, 109, 110, 121, 122, 151, 159, 162, 168, 184, 191, 197, 202, 206, 227, 230, 231, 234, 265, 271, 276, 288, 289, 296, 306, 311, 312, 322

Issue description

In summary, the respondents raised the following issues:

a. Request for further detail regarding the project.

b. The artist's impression of the proposed single deck trains in consultation material show two double doors per carriage, despite claims that the proposed trains will have three wide double doors.

c. Arundel Way Neighbourhood Association and other residents in the Cherrybrook area wish to be involved in all discussions and proposals regarding the future use of Robert Road in relation to NWRL.

d. Consultation with Kayla Way residents was inadequate during the preparation of the design of the station precinct and access to the station. There has been no consultation held with residents of Kayla Way regarding the placement of a car park and the plan to use Franklin Road and Robert Road as access roads to the station.

e. The people making the decisions do not live in the areas those decisions will affect, and therefore have little concern about the impacts for those who do.

f. Request that the community be listened to.

g. Request for residents near the proposed Showground Station to be advised in the week prior to commencing the tunnel boring machine operations and to be advised of an appropriate project contact should any problems occur, including noise and vibration, property damage, drainage, and air quality issues.

h. Appreciation expressed for the high quality written advice made freely available, the model of the proposed Cherrybrook Station was particularly useful. The staff at the Castle Hill Community Information Centre and at the information sessions were polite and cooperative.

i. NWRL has stated that they wish to conduct a consultation process with those impacted by the construction of NWRL. Concerns that NWRL does not seem to be truly undertaking a 'consultative process' and listening to the opinions and advice from the local community regarding current traffic flows in the Cherrybrook area. Concerns that the objections, issues and alternatives put forward by the community are not being considered or addressed by the NWRL project team. Comments on the importance of community submissions and the consideration of alternative ideas and possible re-evaluation of some current planning concepts. Concerns that the owners of properties on Robert Road may not have received EIS 2 documents and may not have forwarded a submission, and that the elderly have not been consulted. Interest in seeing an outcome that recognises the input made by those most directly affected. Belief that consultation has not been genuine and all the decisions have already been made. Comments that residents have no alternative than to take whatever action is required, including raising community awareness through the media or progressing towards legal action.

j. Belief stakeholders along the Northern Line have not been consulted appropriately considering the impacts on commuters in these areas. Comment that the EIS 2 does not describe any community information or consultation efforts undertaken targeting affected communities along the Epping to Chatswood Line or Northern Line. Since the NWRL will have direct impacts on how commuters along the Epping to Chatswood Line and Northern Line use public transport, there should be a conscious effort to educate residents in these areas about the impacts of the NWRL and to seek their feedback and ideas regarding the NWRL proposal. This has not yet taken place and many people who currently use these railway lines on a daily basis are unaware of the major changes that will take place to their commute as a consequence of the NWRL.

Before the NWRL proposal can proceed any further, commuters who currently use the Epping to Chatswood and Northern Lines (which will be affected by the NWRL) must be actively consulted regarding the proposed operational changes caused by the NWRL.

In the passenger survey carried out at Cheltenham Station in October 2012, there were no questions addressing the impact the NWRL proposal would have on Cheltenham customers' daily commute.

Opinion that EIS 2 has ignored responses from the community and proceeded on a basis that does not take into account the concerns of existing rail customers, and the level of inconvenience that NRWL will create for them.

k. Comment that questions to the project team regarding traffic flow on Castle Hill Road near the proposed Cherrybrook Station have been treated with courtesy but without much detail or reassurance.

l. Request for methodology on the assessment of submissions to ensure full transparency of the process. Request for number of submissions made.

m. NWRL project team members have given residents conflicting views and have been unable to provide accurate or sufficient information regarding projected train and station usage numbers, and barriers at the rear of properties in Oliver Way near the proposed Cherrybrook Station.

n. Misinformation about access and existing traffic conditions near the proposed Cherrybrook Station is given in EIS 2 and the technical papers.

o. Each stage of the Project has been designed to placate the community with a drip feed of information under the guise of "community good" and "solving Sydney's transport".

p. Concerns about lack of community consultation about the Cheltenham Services Facility and comments that planning is delayed on this part of the proposal due to ongoing consideration of options. Suggestion that delay on this part of the proposal is due to efforts to reduce costs and not on community gain and community consultation.

q. Comment that there seems to be lack of consultation on passenger preference for a metro system. The decision to integrate the single deck trains doesn't seem to reflect public opinion. Concerns that the general tone of communication material suggests that a single deck rapid transit type of train is more suited to the rail transport requirements of the north western suburbs than the existing double deck suburban trains.

r. Support for the NWRL project team's consultation with the community regarding the proposal to adjust the Cheltenham Services Facility at Cheltenham Oval. Further request for community involvement in the consultation process in the event of significant changes to the existing Cheltenham Services Facility proposal.

s. Concerns from a Beecroft resident about receiving no information, consultation or advice before getting an information letter that the tunnel depth at Hannah Street has been reduced.

t. Concerns that the information coming from the NWRL project team members at the November community consultation session was not complete. Requests that team responsible for consultation with the community receive more training to be able to pass on a more clear, transparent and informative communication.

u. Comment that the NWRL project was not adequately publicised by the Department of Planning to allow for community input. Disappointment that public presentation forums with planning staff did not occur.

v. Belief that initial submission to EIS 1 was not appropriately responded to.

w. Concern that residents in Cherry Haven Way were incorrectly informed of the plans for their land and told by NWRL project team that there would be no room for an additional egress road off Castle Hill Road to the proposed Cherrybrook Station.

x. Concerns regarding residents with limited English language skills that were not able to get their message across. No offer to supply interpreters or assistance to prepare the EIS 2 submission has been received.

y. Concerns that the group EIS 1 submission prepared by the Robert Road Action Committee was misplaced and was not tabled in time to be included in statistics.

z. Justifications given by NWRL at community information sessions for the need to use John Road and Robert Road to access Cherrybrook Station have been implausible and were based on erroneous information.

aa. Request to NWRL to allow further time to provide comments on Technical Report 7 - Surface Water and Hydrology.

ab. Consultation should be undertaken with residents in Oliver Way around the determination of issues relating to barriers, setbacks and landscaping.

ac. Ideas and suggestions presented to the project team in August 2011 did not generate any discussion with the local community. There is little

evidence that the project team has any understanding of the West Pennant Hills Valley (the technical papers state that Old Northern Road and County Drive are access routes to Cherrybrook Station, when in fact these roads are north of Castle Hill Road while West Pennant Hills Valley is on the south).

ad. Concerns regarding the EIS 1 submissions report. The report is not clear and the information presented by the public has not been seriously considered or adequately addressed.

Belief that although a great deal has been invested in the appearance of community consultation, little discussion has occurred.

Comments on EIS 2 are made with no great expectation that anything will be altered or reinforced by the outcomes of the recent meeting with TfNSW staff.

Response

a. TfNSW is committed to providing local communities and stakeholders with up to date information regarding the project. To learn more about the project, a range of information displays and project brochures are available at the NWRL Community Information Centre, 299 Old Northern Road (corner of Crane Road), Castle Hill. The project website (www.northwestrail.com.au) also contains up to date information and maps, a project material archive, and regular interactive online forums. Regular leaflet drops to letterboxes along the alignment are also used to deliver the latest project information to local communities. Alternatively, members of the community and other stakeholders can speak with a member of the project team by calling the freecall project information line, 1800 019 989.

b. Artist's impressions are indicative only and were provided as indicative visual tools to demonstrate particular aspects of the project. As detailed in Section 6.24.3 of EIS 2, the rapid transit trains would have three doors per side per carriage allowing fast boarding and alighting.

c. TfNSW would continue to proactively engage with the community, including interest and community groups, following determination of EIS 2. Place Managers would continue as the key point of contact between the project and the community. In addition, refer to response (d) below.

d. TfNSW has committed significant resources to maintaining a broad-based community and stakeholder consultation process before and during the public exhibition of EIS 2, and throughout the life of the project. TfNSW recognises the value of the community's active input in the development and delivery of the best possible project.

The project team organised a series of community information and feedback sessions where displays and information about EIS 2 were available, including a session at Cherrybrook Uniting Church on Saturday 10 November, 2012. These sessions were widely promoted, including via advertisements in the local newspapers, brochures and letters of invitation to community stakeholders, and letterbox drops along the NWRL alignment. A meeting was also held with Kayla Way residents prior to the 4 December 2012 specifically to discuss the design of Cherrybrook Station and the precicnt.

In addition to the community information and feedback sessions, briefings were given to community stakeholders, including landowners, community organisations and special interest groups. Tailored deliberative forums were also held along the alignment. These interactive sessions were designed to seek community input into the station precincts and skytrain design. These sessions were also used to conduct additional research into knowledge, perceptions and intended use of the NWRL.

e. One of the six project objectives for the NWRL is to "deliver a transport service that has been informed by engagement with communities and stakeholders and represents value for money". TfNSW has committed significant resources to maintaining a broad based community and stakeholder consultation process during the public exhibition of EIS 2 and throughout this project. Decisions relating to the proposal are guided by a number of statutory requirements, as well as the outcomes of on-going consultation with key stakeholders. The statutory requirements include:

- ❖ The environmental assessment requirements specified in the Concept Plan Approval / Staged Infrastructure Approval, which have been endorsed by the Department of Planning and Infrastructure as the environmental assessment requirements for EIS 2 under Part 5.1 of the *Environmental Planning and Assessment Act 1979*.
- ❖ Supplementary environmental assessment requirements issued by the Director-General of Department of Planning and Infrastructure, including Staged State Significant Infrastructure Modification (MP 06_0157) and State Significant Infrastructure Application – Major Civil Construction Works (SSI-5100).
- ❖ The commitments made in the Statement of Commitments included in *North West Rail Link Supplementary Submissions Report* (TIDC, March 2008).

In addition, to ensure community input included as broad a range of issues as possible while still focusing on local issues, three full time Place Managers were appointed to gather location-specific feedback and engage with local community members. Place Managers were assigned to clearly defined geographical areas along the alignment. In these areas, the Place Managers have been the 'face' of the project, and provided a source of continuity throughout the NWRL's development. The Place Managers have proactively engaged with individuals, businesses and community groups directly impacted by the project by doorknocking, phone calls, emails and one-on-one meetings. Place Managers attended the community information sessions and directly engaged with impacted landowners who attended the sessions. Information gathered by the Place Managers, including specific local community concerns, has been used by the wider project team to inform the decision making process. Place Managers would continue as the key point of contact between the project and the community.

f. TfNSW encourages the community's active input in order to develop and deliver the best possible project. Following community feedback, TfNSW has listened to the community and made a number of changes to the project, including:

- ❖ Increasing the number of stations from six to eight, with additional stations at Bella Vista and Cudgegong Road.
- ❖ Increasing commuter car parking by 1,000 spaces, to a total of 4,000.
- ❖ Securing the future of the Castle Hill Showground.
- ❖ Easing disruption to Norwest Boulevard during construction by slightly moving Norwest Station.
- ❖ Reducing the size of the Cheltenham construction site by more than 2,000 square metres.

TfNSW would continue to proactively engage with the community following determination of EIS 2.

g. This matter was addressed in the Stage 1 Major Civil Construction Works EIS and as part of the Submissions Report (Preferred Infrastructure Report) for EIS 1 – Major Civil Construction Works which was independently assessed by the Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012. Affected residents and businesses would be notified of the tunnel boring machine works.

The project team and its contractors would continue to work in partnership with communities during construction. The priority is to ensure people have an understanding of the proposed works and the points of contact for each of the proposed worksites.

Throughout construction, stakeholders and the community would be kept informed of significant events or changes that might affect individual properties, including:

- ❖ Significant milestones, including the commencement of construction.
- ❖ Changes to traffic conditions and road or property access arrangements.

- ❖ Construction operations that could have a direct impact on residents, including noisy works, interruptions to utility services or work outside of normal hours.

h. Noted. Extensive consultation on the project supports one of the six project objectives to "deliver a transport service that has been informed by engagement with communities and stakeholders and represents value for money".

i. TfNSW recognises the value of the community's input to ensure the best possible outcome for the project can be developed. Community and stakeholder feedback has been considered in the design of the project, including in the Cherrybrook area, and TfNSW would continue to proactively engage with the community following determination of EIS 2.

As a result of community feedback received, changes have been made to the design of the Cherrybrook Station precinct to improve access and reduce potential impacts on local residents. The reconfigured design features improved access and safety for neighbouring residents, with landscaping proposed to screen properties from headlight glare. This new design will produce a better outcome for residents in conjunction with improved access to Cherrybrook Station.

TfNSW has committed significant resources to maintaining a broad based community and stakeholder consultation process during the public exhibition of EIS 2 and throughout this project. This has included direct engagement with residents surrounding Cherrybrook Station and exchange of detailed information.

TfNSW has also appointed Place Managers to clearly defined geographical areas along the alignment. In these areas, the Place Managers are the 'face' of the project and a source of continuity throughout the NWRL's development. The Place Managers have proactively engaged with individuals, businesses and community groups directly impacted by the project via doorknocking, phone calls, emails and one-on-one meetings. Place Managers attended the community information sessions and directly engaged with impacted landowners who attended the sessions. Place Managers would continue as the key point of contact between the project and the community.

All submissions received by the Department of Planning and Infrastructure in response to EIS 2 were referred to TfNSW for review. Each submission has been individually analysed, and issues and suggestions summarised, and responses developed and presented in this report. In response to submisssions TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

TfNSW would continue to proactively engage with the community following determination of EIS 2.

j. NWRL is an integral component of a plan to transform and modernise Sydney's rail system. Called Sydney's Rail Future, the plan is a part of the NSW Long Term Transport Master Plan which provides the strategic context for the NWRL and its relationship to the rest of the Sydney rail system. The NSW Long Term Transport Master Plan was developed following extensive community and stakeholder consultation.

Section 2.5 of EIS 2 describes Sydney's Rail Future: Modernising Sydney's Trains, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future. It has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. Change will not be delivered overnight. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

Sydney's Rail Future: Modernising Sydney's Trains introduces single deck, rapid transit transport trains on the NWRL project.

The NWRL has been identified as a key priority railway transport infrastructure project which would provide a significant expansion to Sydney's rail network in an area of future population and jobs growth.

Rapid transit services, initially 12 trains per hour during peak periods (a train every five minutes in peak periods), will be operated with new generation single deck trains, advanced signalling and dedicated track. Over time, as demand increases, service frequency could increase up to 20 trains an hour – or one every three minutes.

The NWRL will introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. Sydney will also have a second crossing under the Harbour linking to a new CBD line and new stations, which will use rapid transit services that will also eventually operate on the Bankstown line and to Hurstville on the Illawarra line.

This plan will eventually enable Sydney Trains to carry another 90,000 to 100,000 people per hour in the peak.

Therefore, NWRL will deliver the required infrastructure (including tunnels) to support single deck trains and advanced signalling.

The NWRL and future Tier 1 Rapid Transit network will be physically separated from other Suburban and Intercity services (Tier 2 and Tier 3 respectively) that will operate with double deck trains.

Passengers travelling from Beecroft or Cheltenham to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies.

Passengers travelling from Beecroft or Cheltenham to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak. Peak period services on the North Shore will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

The trip from Beecroft to Epping is currently approximately 5 minutes. A trip from Epping to Wynyard, travelling on the NWRL and including interchange, is expected to take no more than 40 minutes, which is equivalent to the current travel time.

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

k. Chapter 9 of EIS 2 provides a thorough assessment of potential traffic impacts during construction and operation using standard and recognised traffic assessment methodologies. Around Cherrybrook Station, the assessment shows that the introduction of NWRL traffic would not have a significant impact on intersection performance along Castle Hill Road during the construction or operational periods.

l. These details can be found in Chapter 4 of this report.

m. TfNSW has taken extensive steps to ensure the clarity and accuracy of all information provided to the community and stakeholders as the project has evolved since its inception.

n. TfNSW has taken extensive steps to ensure the clarity and accuracy of all information provided to the community and stakeholders as the project has evolved since its inception

o. TfNSW has committed significant resources to maintaining a broad-based community and stakeholder consultation process before and during the public exhibition of EIS 2, and throughout the life of the project. TfNSW recognises the value of the community's active input in the development and delivery of the best possible project.

p. Community and stakeholder feedback has been considered in the design of the project, including in the Cheltenham area, and TfNSW would continue to proactively engage with the community following determination of EIS 2. In response to community input received prior to and during the exhibition of EIS 1, TfNSW made a number of changes to

the project, including reducing the size of the Cheltenham construction site by more than 2,000 square metres. This was with the aim of reducing the extent of construction work in the locality to reduce the potential impacts to the community and the surrouding vegetation. TfNSW has undertaken a rigorous options assessment in order to ensure the best outcome is achieved in terms of the local community and the wider project.

q. Section 2.5 of EIS 2 describes Sydney's Rail Future: Modernising Sydney's Trains, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future. It has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. Change will not be delivered overnight. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

Sydney's Rail Future: Modernising Sydney's Trains introduces single deck, rapid transit transport trains on the NWRL project.

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Rapid transit services, initially 12 trains per hour during peak periods (a train every five minutes in peak periods), will be operated with new generation single deck trains, advanced signalling and dedicated track. Over time, as demand increases, service frequency could increase up to 20 trains an hour – or one every three minutes.

The NWRL will introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. Sydney will also have a second crossing under the Harbour linking to a new CBD line and new stations, which will use rapid transit services that will also eventually operate on the Bankstown line and to Hurstville on the Illawarra line.

This plan will eventually enable Sydney Trains to carry another 90,000 to 100,000 people per hour in the peak.

Therefore, NWRL will deliver the required infrastructure (including tunnels) to support single deck trains and advanced signalling.

The NWRL and future Tier 1 Rapid Transit network will be physically separated from other Suburban and Intercity services (Tier 2 and Tier 3 respectively) that will operate with double deck trains.

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD

r. Ongoing feedback from the community and key stakeholders including councils and industry has influenced the design of the Cheltenham Services Facility. Feedback from stakeholders and the community will influence the ongoing planning and design work, including detailed design by a future contractor.

s. A range of community engagement methods and communications materials were used to consult on EIS 1 and EIS 2, and residents living in Beecroft who would be potentially impacted by NWRL were included in these consultation activities. These included local and metropolitan newspaper advertisments, community information sessions, email alerts, website updates and online forums, meetings with stakeholders, media releases, an EIS summary booklet, fact sheets, leaflets, invitations to events, industry engagement sessions, deliberative forums and a project information line and email address (for detail, see Chapter 4 of this report). A community information centre at Castle Hill provided information to the community six days a week, including Thursday evenings up to 7pm. Three full time place managers were appointed, to work with impacted residents, tenants, community organisations and businesses. During the exhibition period, the EIS was available for public viewing at the NWRL Community Information Centre, public libraries, council offices and on the NWRL website. The aim of adopting a wide variety of community engagement methods was to ensure as many people as possible had an equal opportunity to learn about the proposed NWRL,

and to have their say. In addition, NSW Government issued media releases advising of the timing and exhibition of EIS 1 and EIS 2 which were widely reported in electronic and print media. TfNSW will continue to engage local communities and stakeholders using a range of tools and communication channels throughout the detailed design and construction process.

t. TfNSW project team members have at all times endeavoured to provide accurate, clear and concise information to members of the community. The NWRL project is a major transport infrastructure project and is a key component of the NSW Government's broader strategic transport plan for Sydney. Extensive consultation has occurred over the last 14 years, commencing with the publication of *Action for Transport 2010* (NSW Government, November 1998), continuing through to the 2007 public exhibition of the *North West Rail Link Preferred Project Report* (TIDC, 2007), and to October 2012 when EIS 2 was publicly exhibited for 34 days. Due to the scale of the project, a number and variety of consultation activities have been undertaken at any one time through a variety of forums, including community information and feedback sessions, the NWRL Community Information Centre, a project information line, an interactive website, written materials, one to one meetings with affected property owners, and Place Managers acting as a direct point of contact for the community. Five community information sessions were held during the EIS 2 public exhibition process. Project team members from various disciplines were available at the sessions to speak with visitors and respond to questions raised. TfNSW committed significant resources to ensure the consultation process during the public exhibition of EIS 2 was inclusive, extensive and comprehensive. TfNSW will continue to undertake a thorough consultation process during detailed design and construction.

u. Under the *Environmental Planning and Assessment Act 1979*, TfNSW is required to undertake consultation and consider feedback received on its proposal. As the assessor of the proposal, theDepartment of Planning and Infrastructure required TfNSW to make the EIS documentation available for the public to view in a number of locations, including the NWRL Community Information Centre, public libraries, council offices and on the NWRL website. Upon commencement of the public exhibition, TfNSW used a range of community engagement methods and communications materials to encourage participation and feedback on EIS 2 including community information and feedback sessions, the NWRL Community Information Centre, a project information line, an interactive website, written materials, one to one meetings with affected property owners, and Place Managers acting as a direct point of contact for the community. Planning staff from TfNSW were available at all information sessions. The aim of adopting a wide variety of community engagement methods was to ensure as many people as possible had an equal opportunity to learn about the proposal, and to have their say.

v. All submissions to EIS 1 received by the Department of Planning and Infrastructure during the 48 day EIS 1 public exhibition process - 4 April 2012 to 21 May 2012 were collated and analysed by Department of Planning and Infrastructure, and forwarded to TfNSW for response. Submissions were individually analysed by TfNSW, the issues and suggestions identified and summarised, and responses developed and presented in the EIS 1 Submissions Report, which was made publicly available on Department of Planning and Infrastructure's website.

Letters were sent to each submission author (where contact details were provided / legible) to advise of the availability of the report and provide a unique stakeholder identification number, to allow them to identify responses to their issues raised.

Matters raised in the submission to Stage 1 Major Civil Construction Works EIS were addressed as part of the Submissions Report (Preferred Infrastructure Report) for EIS 1 – Major Civil Construction Works which was independently assessed by the Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

w. TfNSW has taken extensive steps to ensure the clarity and accuracy of all information provided to the community and stakeholders as the project has evolved since its inception. The use of this area and demolition of the properties was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012. The acquisition of these properties has been undertaken in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

x. In accordance with NSW Government policy, the Department of Planning and Infrastructure offers a translation service, which was available to any member of the public during the exhibition of both EIS 1 and 2, and at any other time. For detail on using this service, see http://www.planning.nsw.gov.au/default.aspx?tabid=66. During construction, TfNSW would offer translator and interpreter services.

y. y) All submissions received by the Department of Planning and Infrastructure to EIS 1 during the 48 day public exhibition - 4 April 2012 to 21 May 2012 – were collated and analysed by Department of Planning and Infrastructure, and forwarded to TfNSW for response. The EIS 1 submission prepared by the Robert Road Action Committee was received by Department of Planning and Infrastructure as Appendix A to an individual community member's submission only. The list of signatures attached to the submission was not passed on to TfNSW, and the submission was therefore not classified as a petition in the submissions report for EIS 1. Importantly, the issues raised in the individual's submission and the supporting Appendix A (Robert Road Action Committee submission) were responded to in the EIS 1 Submissions Report.

z. Information provided by project team members at the community information sessions is consistent with the information available in EIS 2.

aa. Under section 5.1 of the *NSW Environmental Planning and Assessment Act 1979*, the statutory requirements state that an EIS must be publicly exhibited for a minimum of 30 days (including weekends). EIS 2 was publicly exhibited for a period of 34 days from Wednesday 31 October to Monday 3 December 2012. During this time, the Department of Planning and Infrastructure accepted submissions responding to EIS 2. TfNSW would continue to proactively engage with the community following determination of EIS 2.

ab. Following the determination of EIS 2, TfNSW would continue to proactively engage with the community about the project and its potential impacts.

ac. TfNSW has committed significant resources to maintaining a broad-based community and stakeholder consultation process before and during the public exhibition of EIS 2, and throughout the life of the project. TfNSW also appointed three Place Managers to be the direct point of contact for the community during the consultation for EIS 1 and 2. Place Managers will continue to be the contact points during the detailed design phase and construction. By working closely with the community and stakeholders, TfNSW believes the best outcomes can be achieved for the project.

EIS 2 identifies that the majority of the traffic to and from Cherrybrook Station would be generated from suburbs to the north, with Castle Hill Road, Old Northern Road and County Drive providing the main access route to the station. Residents from West Pennant Hills Valley would be able to access the station via the signalised intersection of Glenhope Road and Castle Hill Road.

ad. The EIS 1 Submissions Report was prepared in accordance with Section 115Z – Environmental assessment and public consultation of the *NSW Environmental Planning and Assessment Act 1979*. In particular, the report was prepared to respond to issues raised in submissions made in response to Environmental Impact Statement (EIS 1) - Major Civil Construction Works.

TfNSW has taken a proactive approach to consulting the community since April 2011, when the NSW Government announced its intention to proceed with the NWRL. Since that time, a range of community engagement methods and communications materials were used to consult on EIS 1, EIS 2 and early construction works (see Chapter 3 and Chapter 4 of this report for further detail).

7.2 Construction

7.2.1 Air quality

Stakeholder identification number(s):
13, 64, 65, 71, 76, 106, 110, 127, 135, 145, 151, 155, 169, 197, 272, 276, 287, 299, 318

Issue description

In summary, respondents raised the following issues:

a. Objection to air pollution caused by tunnelling near the proposed Cherrybrook Station. The issue of dust has not been adequately addressed in EIS 2. The air quality around Cherrybrook Station and the health of surrounding residents will be severely affected if adequate measures are not taken. Proposal for the following measures to be put into place:

- ❖ Dust will accumulate in external air conditioning units causing them to malfunction. Dust from construction will accumulate on the external surfaces of the surrounding houses and affect their appearance. Calls for appropriate filters for external air conditioning units, energy compensation for air conditioning units (to prevent dust from entering homes with windows open).
- ❖ The Department to accept responsibility for the regular cleaning of resident properties internally and externally if dust levels are high.
- ❖ Request for a 50 metre wide vegetation buffer with air quality monitoring information to reduce the amount of dust that reaches surrounding houses.
- ❖ Request for a temporary acoustic shed to be erected over the excavated cut during tunnel construction to suppress dust.
- ❖ Calls for compensation for residents and guarantees that air quality impacts will be kept at a minimum.
- ❖ The site to remain appropriately watered down in accordance with EPA standards during construction.
- ❖ All trucks leaving the site have appropriate on site mud and dust detention and are appropriately covered and the site is appropriately fenced with chain and shade.

b. Comment that dust issue has not been covered in detail in the EIS. What will the ppm (parts per million) level of particulates during construction in the vicinity of Cherrybrook Station be? What are the levels of NOx and other vehicular generated pollutants? There are cases of asthma related illness that can be triggered by dust levels. More details are needed on the gaseous pollutants generated by construction vehicles and during construction. What are the measures to prevent dust contamination during stockpiling? Concerns regarding the impact of dust during construction and its effects on those with breathing issues. Requests for more information about the process that will be implemented to minimise dust impacts, such as dampening materials when materials are being excavated and during loading.

c. Concerns regarding air quality as a result of tunnel construction at Epping.

d. Suggestion for mitigation measures to be implemented at Cheltenham Services Facility to avoid dust impacts on the residents of Castle Howard Road.

Response

a. This matter was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

Measures to mitigate dust emissions resulting from tunnelling activities have been addressed in Section 19.1 of EIS 1 and Chapter 7 of the EIS 1 Submissions Report to a level that is unlikely to impact the health or amenity of residents. It is noted that dust generated during the construction works can largely be controlled through mitigation measures, which are routinely adopted during similar construction projects. It is anticipated that upon adoption of these mitigation measures, the dust impacts on surrounding residents would be minimal.

The NSW ambient air quality criteria applicable to the assessment are specified in *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* (DEC, 2005). These assessment criteria are designed to maintain ambient air quality that provides for the adequate protection of human health and would be complied with throughout construction of the NWRL. Therefore the health of residents in the surrounding area would not be impacted as a result of NWRL construction.

b. Impact assessments associated with construction are dealt with in Section 19.1.7 of EIS 2 which provides information on construction air quality impacts resulting from the project.

Air quality was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

c. The potential impacts to air quality resulting from tunnelling activities have been addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

EIS 1 provided a number of mitigation measures in order to reduce the potential dust impacts associated with tunnelling activities. It is anticipated that upon adoption of these mitigation measures, the dust impacts on surrounding residents and buildings would be minimal.

d. A range of mitigation measures to reduce dust impacts of the construction works, including at Cheltenham Services Facility construction site are provided in Table 19.4 of EIS 2. These are reproduced in Chapter 9 of this report.

7.2.2 Business impacts

Stakeholder identification number(s):
65, 110, 127, 145, 197, 272, 276, 287

Issue description

In summary, the respondents raised the following issue:

a. There will be prolonged construction impacts to local home businesses due to changes in accessibility, noise and traffic as a result of Cherrybrook Station. In particular, businesses operating in Kayla Way will be impacted. Adequate compensation and mitigation for loss of business due to the prolonged impacts eg sound proofing, double glazed windows or other appropriate property treatments is requested.

Response

a. EIS 2 provides a range of mitigation measures which would be implemented during construction to reduce the potential impacts associated with noise and vibration, construction traffic, accessibility and other aspects affecting local businesses. These mitigation measures are reproduced in Chapter 9 of this report.

As residences on Kayla Way are predicted to be "highly noise affected" (ie construction noise modelling predicts exceedances of the relevant noise management level of greater than 20 dB) during construction of the adjacent car park, consideration would be given to applying additional

feasible and reasonable mitigation measures such as respite periods, alternative accommodation or property treatments as per the Construction Noise and Vibration Strategy (CNVS). Mitigation measures in the CNVS would be aimed at pro-active engagement with affected sensitive receivers including those in Kayla Way.

7.2.3 Construction hours

Stakeholder identification number(s):
76

Issue description

In summary, the respondent raised the following issue:

a. Support for the proposed construction hours at the Cheltenham Services Facility during standard work hours only. Residents object to any proposal allowing after hours work at this site.

Response

a. The proposed construction hours for the underground and above ground activities are presented in Section 7.12.4 of EIS 2. Note there would be construction tasks at Cheltenham Services Facility construction site which would need to occur outside of standard construction hours (eg concrete pouring or underground tunnel support works).

Feasible and reasonable noise mitigation measures, as detailed in Table 10.48 of EIS 2, would be applied with the aim to meet the construction noise management levels for construction work outside standard work hours. These mitigation measures are reproduced in Chapter 9 of this report.

7.2.4 Sites / compounds

Stakeholder identification number(s):
13, 127, 145, 159, 192, 272, 287

Issue description

In summary, the respondents raised the following issues:

a. The location of the Cherrybrook Station construction office and facilities adjacent to Kayla Way is an example where the amenity of nearby residences has not been considered in the design of the station precinct. Impacts will include noise from office areas and odour from toilet facilities. Request for these facilities to be moved away from the North East Boundary and any air conditioning units attached to these related units be placed on the Castle Hill Road side of the buildings. Also request for a 50 metre vegetation buffer between the Kayla Way boundary and the nearest construction building to minimise these impacts.

b. If there is limited onsite parking at Cherrybrook Station during construction, where will visitors and workers park? Kayla Way residents demand that NWRL provide restriction measures / signage to prevent site workers parking in surrounding streets.

c. The extension of the proposed Cherrybrook Station construction zone westwards to avoid the power line easement near Franklin Road is not necessary as these power lines currently pass over many properties.

d. Clarification sought whether the concrete slabs to be used in construction of the tunnels at the Cherrybrook Station site will be located directly across from houses in Robert Road and that the site will be accessed 24 hours a day, 7 days a week, as stated in EIS 1.

e. Concerns have been raised regarding the water treatment plant near Kayla Way (Cherrybrook Station) behind the resident's backyard. Request has been made for information on the environmental impacts and how compensation will be made.

Response

a. Construction office facilities are not expected to be a major noise generating activity within the construction site compared to the operation of construction equipment and machinery. The site has been designed to locate less noise intensive activities, such as site offices close to residential receivers. These site offices would also serve as an additional noise shield from construction activities, further mitigating noise impacts.

Wherever feasible, vegetation along the boundary of the construction sites would be maintained to provide visual screening to adjacent receivers. However, it is noted that a vegetative buffer would be expected to provide minimal noise attenuation benefits.

Table 10.48 of EIS 2 provides a range of noise and vibration mitigation measures to be implemented during construction, including provision of a six metre high noise barrier at Cherrybrook Station. These are reproduced in Chapter 9 of this report.

b. Parking for construction workers would be provided within the Cherrybrook Station construction site as shown on Figure 7.6 in EIS 2. Mitigation measure T10 in Table 9.25 of EIS 2 identifies the consideration the need for, and provision of, remote parking location and shuttle bus tranfers for construction sites where sufficient parking cannot be provided within site boundaries.

c. The location of the Cherrybrook Station construction site was addressed as part of part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

d. The location of the Cherrybrook Station construction site was addressed as part of part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

The stage 1 construction activities (assessed as part of EIS 1) would be undertaken at Cherrybrook Station construction site 24 hours per day, seven days per week. Note the heavy vehicle route would be along Castle Hill Road. Heavy vehicles would not use Robert Road.

Figure 7.15 in EIS 1 – Major Civil Construction Works shows the layout of the Cherrybrook Station construction site with explanatory text provided in Section 7.9.4. Pre-cast concrete segment storage would predominantly occur within the acoustic shed that would be established approximately in the centre of the site. The western portion of the site adjacent to Robert Road would likely be used for any additional pre-cast concrete segment storage required as indicated in EIS 1. Construction site layouts would be finalised during the detailed construction planning phase and the placement of any additional stored items at the western side of the site would consider impacts on adjacent houses.

Stage 2 construction hours are detailed in Table 7.19 of EIS 2. Generally, works would be limited to the standard daytime construction hours. However, works required to support the underground tunnel fitout, as well as other discrete activities may be required to be undertaken outside of these hours.

e. The proposed water treatment plant at Cherrybrook Station construction site has been located at the lowest point on the site and adjacent to a waterway to allow effective treatment and disposal of tunnel water and stormwater from the construction site. Pumps and water treatment machinery are not highly noise intensive equipment and potential noise impacts from these items on Kayla Way residents can be effectively mitigated.

7.2.5 Heavy vehicle movements

Stakeholder identification number(s):
33, 35, 115, 127, 135, 145, 272, 287

Issue description

In summary, the respondents raised the following issues:

a. Heavy vehicle movement during construction works is a concern for residents living close to the proposed Cherrybrook Station. In particular, what measures will be taken to ensure heavy vehicle movements around Cherrybrook Station will not impact Kayla Way and Franklin Road?

b. In regards to using the access / egress location on Carrington Road for the proposed Showground Station, suggestion that heavy vehicles be restricted to a left turn in and right turn out to send the vehicles through the industrial area.

c. Concerns regarding traffic impacts during construction due to heavy vehicle movements on major and local roads (including Beecroft Road).

d. The Kirkham Street access to Beecroft Road is heavily congested and completely unsuitable for haulage trucks. The M2 Motorway is the only acceptable way to remove spoil from the site.

Response

a. Table 7.18 of EIS 2 describes the access routes to construction sites. The table indicates that an estimated 150 peak daily heavy vehicle movements and an estimated 60 daily light vehicle movements are proposed at Cherrybrook Station. Section 9.6.4 provides further details about construction vehicle access and egress to and from the site as follows:

- A signalised intersection at Glenhope Road / Castle Hill Road.
- Left in, left out, right out at a signalised intersection at Franklin Road for the duration of the construction period (heavy and light vehicles).
- A dedicated and temporary left turn slip lane and ingress driveway would be provided only for the duration of the construction period off Castle Hill Road to the west of the Franklin Road intersection.
- A light vehicle access and egress point would be provided from Robert Road.

Section 4.3.3 in Technical Paper 1 of EIS 2 states that all heavy vehicle trips for the site would operate along Castle Hill Road, to and from the site.

b. Table 7.18 of EIS 2 describes the access routes to construction sites. The table indicates that an estimated 120 peak daily heavy vehicle movements and an estimated 60 daily light vehicle movements are proposed at Showground Station. Section 9.6.6 provides further details about construction vehicle access and egress to and from the site as follows:

- All movements at a new signalised intersection on Showground Road.
- All movements from Carrington Road (as a secondary access and egress point).

Section 4.5.3 in Technical Paper 1 of EIS 2 states that the main heavy vehicle access would occur through the Showground Road access point. This access would provide for all movements with the principal heavy vehicle movements being right in and left out of the site. Carrington Road and Victoria Avenue would provide a secondary access to the site should the Showground Road access be unavailable.

c. The issue makes reference to Beecroft Road, which is relevant to the Epping Services Facility. Table 7.18 of EIS 2 describes the access routes to construction sites. The table indicates that an estimated 100 peak daily heavy vehicle movements and an estimated 60 daily light vehicle movements are proposed at Epping Services Facility. Section 9.6.2 provides further details about construction vehicle access and egress to and from the site as follows:

- Left in, left out from Beecroft Road.
- Right in, left out from Ray Road.

Section 4.1.2 in Technical Paper 1 of EIS 2 states that the main access for heavy vehicle will be from Beecroft Road. Ray Road will operate as a secondary access for heavy vehicles.

There would be the need to temporarily close roads and lanes across the NWRL project. These proposals would be documented in the Construction Traffic Management Plans and submitted to the Traffic and Transport Liaison Group for consideration and approval. Refer to Chapter 8.2 in Appendix B of EIS 2 for further details on the required Construction Traffic Management Plans.

d. Table 7.18 of EIS 2 describes the access routes to construction sites. The table indicates that an estimated 70 peak daily heavy vehicle movements and an estimated 30 daily light vehicle movements are proposed at Cheltenham Services Facility. Section 9.6.3 provides further details about the construction vehicle access and egress to and from the site which is proposed to be a left in, right out (unsignalised) arrangement from Kirkham Street.

Section 4.2.3 in Technical Paper 1 of EIS 2 states that the Beecroft Road / Kirkham Street intersection is priority controlled making right turns out difficult, particularly during peak periods. Construction traffic would be encouraged to treat this as a left in / left out intersection and therefore most NWRL traffic would approach from the south and depart to the north. Section 9.6.3 of EIS 2 provides an assessment of construction traffic impacts around Cheltenham Services Facility construction site. Stage 2 construction is expected to generate one heavy vehicle movement every 10 minutes, which would have negligible impacts on the Beecroft Road / Kirkham Street intersection operation.

An option exists for access and egress to and from the M2 Motorway as a left in, left out subject to consultation with the motorway operator and RMS.

Light vehicle access and egress to and from the site would be from Castle Howard Road at the existing access point for Cheltenham Oval.

7.2.6 Noise and vibration

Stakeholder identification number(s):
13, 33, 40, 64, 65, 71, 106, 110, 127, 135, 144, 145, 151, 169, 197, 217, 228, 236, 272, 276, 287, 300, 301, 306, 317, 322

Issue description

In summary, the respondents raised the following issues:

a. Objection to noise and vibration caused by construction of the proposed Cherrybrook Station. Due to the close proximity of residential properties to the proposed construction site, measures should be taken to reduce the impacts of construction traffic and general noise in the local environment. Concerns that construction noise will inconvenience local residents and potentially impact on the health and behaviour of children. Request for acoustic treatment and further information about the location of the six metre sound barrier and for a temporary acoustic shed to be erected over the excavated cut during tunnel construction at Cherrybrook Station to limit noise and vibration. The noise from construction will be unbearable and will require a sizable amount in compensation to all the residents including double glazing of windows and alternative parking. Request that double glazing and insulation be installed for nearby homes prior to the commencement of the construction phase to allow noise protection during and post construction. Calls for this to be funded by the project. Noise barriers should also be constructed on the north side of the perimeter along Castle Hill Road.

b. Noise levels have been exceeded by more than 20 dBA at the Cherrybrook Station proposed 60 space car park. Question why is the car park there in the first place? The four-five metre narrow buffer will not be enough to mitigate the noise impacts from the car park. Suggestion to relocate the car park to be adjacent to the proposed multi-level park-and-ride car park and include a 50 metre buffer vegetation buffer between Kayla Way fence and nearest station building.

c. During vibratory roller activities at the Cherrybrook Station car park sites, vibration may be experienced at the nearest residential receivers. On the basis that the nearest residential buildings are approximately 15 metres from the proposed car park areas, EIS 2 states vibration levels are anticipated to remain well below the safe vibration levels associated with minor cosmetic building damage. This 15 metre basis reference is incorrect. The scale on the station precinct diagram seems to suggest a distance of four-five metres from the car park. Suggestion to relocate the car park to be adjacent to the proposed multi-level park and ride car park and include a 50 metre buffer vegetation buffer between Kayla Way fence and nearest station building.

d. Concern that the six metre noise barriers to be installed around Cherrybrook Station will block natural light at surrounding residences. If this is the case, calls for another strategy to allow natural light through with as many trees as possible (preferably a 50 metre vegetation buffer zone on the northern boundary).

e. Pumps and water treatment plants to operate 24 hours a day at Cherrybrook Station are too close to residential properties. How can aiming to keep the 'combined noise from this equipment…to not exceed the rating background level at nearest residential receivers be guaranteed'? Suggestion to move noise generating buildings like the water treatment plant away from residential areas.

f. Request that if the noise exceeds the approved levels or there are any other problems considered unacceptable to residents near the proposed Showground Station, activities causing these problems should cease until rectified to a level acceptable to the residents.

g. Recommendation that a standard should be established for the construction of the whole rail tunnel corridors, in that any lengths of tunnels 30-25.1 metres below residential properties use high attenuation and any lengths of tunnels 25 metres or less should require the installation of very high attenuation connectors. This should be done during construction of these rail lines to avoid subsequent delays and greater expense once the rail line is opened and noise and vibration levels are found to be higher than acceptable for residents in such locations, thereby requiring rectification measures. High attenuation connectors should be used for the length of rail lines in both tunnels underneath all residences in Kenwick Lane, Beecroft.

h. Concerns that noise from heavy vehicle movements servicing Showground Station at night will disturb local residents when sleeping.

i. Concerns regarding the location of the acoustics shed and its proximity to residences near the corner of Middleton Avenue and Carrington Road. Requests more information about the construction material to be used for the acoustics shed and how much noise is expected.

j. Robert Road residents will have work carried out across the road from their homes for the next five-six years (Stage 1) and therefore request that NWRL provide the greatest protection possible to each home.

k. In Stage 2, the Robert Road residents will face an Additional Construction Zone situated across the road from their homes for the construction of the main entrance of Cherrybrook Railway Station. Request for NWRL to provide the greatest form of protection possible.

l. Proposal to create a continuous shield / buffer zone of high density trees to the maximum depth possible, east of the cul-de-sac road, to provide the residents of Robert Road the maximum protection from acoustic disturbance possible (shown in Appendix to submission). Preference for the height and density of the trees to provide the highest level of acoustic protection possible. Planting trees early in the construction phase would allow them to mature and therefore protect the properties as much as possible from acoustic disturbances during construction.

m. Concerns regarding impact on Robert Road residents from noise from construction vehicles servicing Cherrybrook Station. In particular, concerns that elderly people and school children will be adversely affected by construction noise. Construction noise may also affect children regularly using Robert Park. EIS 2 refers to use of computer modelling to simulate noise levels. Request for the model results and analysis. What will be the audible levels and what time of the day?

n. If tunnelling for the NWRL occurs at critical times during exam periods, students will be disadvantaged due to 24 hour noise. Will NWRL and State Government compensate students for loss of marks that could impact future study choices?

o. Concern regarding the vibration impacts on properties from tunnelling. Insufficient details are provided on the impact on properties in the vicinity of Cherrybrook Station. Details sought on how NWRL will manage this issue and how it will handle vibration in particular during construction.

p. Concerns that vibration from tunnelling underneath properties in Bella Vista will affect the health of the residents.

q. Request that at a minimum, a buffer zone be constructed between the Oliver Way properties rear boundary fences, which would include acoustic fencing and rows of trees planted to screen the properties from visual, acoustic and dust impacts. This should be implemented prior to construction commencement. Calls for TfNSW to guarantee that the noise will be kept at a minimal level.

r. Concerns that construction vibration and noise generated by 24 hour tunnelling around the Epping area will severely impact quality of life, particularly in relation to psychological and physical health.

s. Concerns that there is no indication of what noise mitigation measures are proposed to lessen the impact on nearby residences caused by vehicles entering and leaving the Cherrybrook site during the construction period.

t. Concerns regarding the level of noise during construction of the Cherrybrook Station. Request for:

- A sound attenuation wall running along Castle Hill Road adjacent to the Stanley Court properties. Proposed wall should have a maximum height of 10 metres and screening plants between the existing wall and footpath.
- A sound attenuation wall should also be implemented around the construction site at a minimum height equal to or greater than the height of the proposed car park. Preference for attenuation walls to be erected prior to construction.
- No marshalling of trucks on or around Castle Hill Road prior to opening hours of the construction zone. No trucks are allowed to idle prior to opening hours.
- Proposed lights to be properly phased at Franklin Road to reduce the idling of trucks waiting to enter Castle Hill Road.

u. Concerns regarding general noise and vibration impacts during construction.

Response

a. Table 10.48 of EIS 2 identifies a range of mitigation measures to reduce the potential impacts associated with construction noise and vibration. These mitigation measures are reproduced in Chapter 9 of this report.

Where residences and other sensitive receivers are predicted to be 'highly noise affected' (ie greater than 20 dB exceedances of the relevant noise management level) during construction, consideration would be given to applying additional feasible and reasonable mitigation measures such as respite periods, alternative accommodation or property treatments as per the Construction Noise and Vibration Strategy.

The six metre high noise barrier would be located around the perimeter of the Cherrybrook Station construction site, except at vehicular access and egress points. A temporary acoustic shed would be located over the majority of the station box during construction to minimise the impact of night-time works.

b. Table 10.48 of EIS 2 identifies a range of mitigation measures to reduce the potential impacts associated with noise and vibration. These mitigation measures are reproduced in Chapter 9 of this report.

As residences on Kayla Way are predicted to be "highly noise affected" (ie construction noise modeling predicts exceedances of the relevant noise management level of greater than 20 dB) during construction of the adjacent car park, consideration would be given to applying additional

feasible and reasonable mitigation measures such as respite periods, alternative accommodation or property treatments as per the Construction Noise and Vibration Strategy.

Figure 6.11 of EIS 2 shows a landscaped barrier between the Kayla Way residences and the car park, however a 50 metre vegetated buffer is not feasible. It is also noted that a vegetated buffer would be expected to provide minimal noise attenuation benefits.

c. During vibratory roller activities at the Cherrybrook Station car park sites, vibration levels may be perceptible at the nearest residential receivers.

The proposed at-grade car park is partly located approximately 5 metres from the nearest residential buildings. However, safe working distances can still be achieved with the use of smaller equipment, as described in Section 3.3 of the Construction Noise and Vibration Strategy.

Wherever feasible, vegetation along the boundary of the construction sites would be maintained to provide visual screening to adjacent receivers. However, it is noted that a vegetative buffer would be expected to provide minimal noise attenuation benefits.

d. The location of noise barriers to the south west of residences on Kayla Way may result in some blocking of direct natural light. It should be noted, however, that the noise wall is required to reduce the potential impacts associated with construction noise, especially from night time construction works required as part of Stage 1 construction (assessed as part of EIS 1 Major Civil Construction Works).

Wherever feasible, vegetation along the boundary of the construction sites would be maintained to provide visual screening adjacent receivers, however a width of 50 metre wide vegetation buffer zone at Cherrybrook Station would not be feasible.

e. Pumps and water treatment have been located at the lowest point on the site and adjacent to a waterway to allow effective treatment and disposal of tunnel water and stormwater from the construction site. Pumps and water treatment machinery are not highly noise intensive equipment and potential noise impacts from these items on Kayla Way residents can be effectively mitigated.

f. EIS 2 identifies a range of mitigation measures to reduce the potential impacts associated with noise and vibration, construction traffic, accessibility and other aspects on sensitive receivers. These mitigation measures are reproduced in Chapter 9 of this report.

g. Operational ground-borne noise and vibration modelling has been undertaken based on the concept design, with track form attenuation designed to meet the relevant criteria at all receivers above the tunnel alignment. Figure 10.3 of EIS 2 shows the extent of indicative track forms in the NWRL tunnels. For the majority of the tunnel alignment, the standard attenuation track is predicted to achieve compliance with the ground-borne noise and vibration objectives.

h. Traffic noise levels have been predicted for residential receivers located on the proposed access and egress routes to and from the Showground Station site. The assessment demonstrated compliance with the 2 dB allowance for LAeq noise emissions from truck movements. The maximum noise emissions from heavy vehicles on public roads would be similar to existing heavy vehicle noise levels on Showground Road.

i. The final details of mitigation measures in instances where noise criteria are exceeded, such as the location and materials to be used for acoustic sheds, would be developed further during the detailed construction planning phase. The acoustic sheds would be designed to reduce noise impacts as far as feasible and reasonable.

j. This matter was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012. Noise impacts would be managed in accordance with the Conditions of Approval.

k. Some Stage 2 construction activities are predicted to exceed the Noise Management Levels at receivers around Cherrybrook Station, including Robert Road (refer to Table 10.24 in EIS 2). Table 10.48 in Chapter 10 of EIS 2 identifies mitigation measures to manage potential construction noise and vibration impacts. These are reproduced in Chapter 9 of this report.

l. Figure 6.11 of EIS 2 shows an indicative operational layout of Cherrybrook Station. The plan shows significant landscaped areas, including between the station elements and the residences on Robert Road. It is also noted that a vegetated buffer would be expected to provide minimal noise attenuation benefits.

m. The results of the construction noise and vibration assessment of Cherrybrook Station works are provided in Table 10.24 of EIS 2, with further details provided in Technical Paper 3 of EIS 2.

Some Stage 2 construction activities are predicted to exceed the Noise Management Levels at receivers around Cherrybrook Station, including residences on Robert Road. Table 10.48 of EIS 2 identifies mitigation measures to reduce the potential construction noise and vibration impacts. These are reproduced in Chapter 9 of this report.

n. High noise generating events would be planned to avoid unnecessary impacts to sensitive receivers such as noise impacts during exam periods where reasonable and feasible. Stakeholder consultation regarding exam periods and noise impacts would be undertaken where necessary during the construction period, as required by the Construction Nosie and Vibration Strategy.

Condition E23 of the Stage 1 Conditions of Approval requires the Proponent to consult with potentially-affected community, religious, educational institutions and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres), to ensure that noise generating construction works in the vicinity of the receivers are not timetabled during sensitive periods, unless appropriate other arrangements are made.

o. Potential vibration impacts as a result of tunnelling activities was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

p. Potential vibration impacts as a result of tunnelling activities was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on 25 September 2012.

q. Figure 6.11 of EIS 2 includes a small landscaped buffer zone between Oliver Way and Cherrybrook Station during the operation stage. The final landscaping details for the site would be developed in the detailed design stage. With the exception of road traffic noise, the operational noise modelling predicts that the operation of the station would not result in exceedances of the noise criteria at residences on Robert Road.

During construction, vegetation around the perimeter of the site would be retained where possible, however it is noted that vegetation would provide minimal noise attenuation benefits. A six metre high noise barrier is proposed during the construction period to minimise noise impacts from Cherrybrook Station construction site. Table 10.48 of EIS 2 identifies noise mitigation measures during the construction period.

r. Potential vibration impacts as a result of tunnelling activities was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

s. Traffic noise levels have been predicted for residential receivers located on the proposed access and egress routes to and from the Cherrybrook Station site. The assessment demonstrated compliance with the 2 dB allowance for LAeq noise emissions from truck movements. The maximum noise emissions from heavy vehicles on public roads would be similar to existing heavy vehicle noise levels on Castle Hill Road.

t. Table 10.48 of EIS 2 identifies mitigation measures to manage potential construction noise and vibration impacts. These are reproduced in Chapter 9 of this report. This includes a six metre high noise barrier around the perimeter of the Cherrybrook Station construction site.

The proposed construction hours for the underground and above ground activities is presented in Section 7.12.4 of the EIS 2. These hours include trucks arriving at the site. There would be occasions when trucks are queuing at traffic signals adjacent to the site, however, noise from these idling trucks is likely to be consistent with general traffic noise along Castle Hill Road.

u. Section 10.11 of EIS 2 provides a construction noise and vibration assessment for stage 2 construction activities. It is acknowledged that some construction activities are predicted to exceed the relevant Noise Management Levels. Table 10.48 of EIS 2 identifies mitigation measures to manage the potential construction noise and vibration impacts. These are reproduced in Chapter 9 of this report.

7.2.7 Spoil and waste management

Stakeholder identification number(s):
10, 127, 145, 272, 287

Issue description

In summary, the respondents raised the following issues:

a. A low concentration of lead was reported east of Cherrybrook Station. Further delineation and or waste classification may be required if excavation and offsite disposal of soil is to take place in this area, during the construction of Cherrybrook Station. Surrounding soil may become contaminated if this lead travels either in the form of stormwater runoff or lead dust. Calls for TfNSW to outline the measures to deal with the contaminated soil and prevent it from reaching the environment.

b. Suggestion that spoil from the NWRL could be used in other major projects such as the M7 Blacktown to Kariong extension.

Response

a. Table 8.3 of EIS 2 commits to further delineation and / or waste classification which may be required for Cherrybrook Station during construction if excavation and offsite disposal of soil is to take place in this area.

Table 8.7 of EIS 2 provides a range of mitigation measures relating to contamination, including appropriate management of known and unknown contaminated soils. These are reproduced in Chapter 9 of this report.

b. It is common practice for spoil to be reused within construction. EIS 1 and 2 include in their targets 100% beneficial reuse of spoil, which could include use within the NWRL project or at other construction sites. Mitigation measure W3 in Table 19.7 of EIS 2 provides that excavated material and spoil would be beneficially reused on the project site or other sites, where feasible and reasonable, in accordance with the spoil use hierarchy. This mitigation measure is reproduced in Chapter 9 of this report.

7.2.8 Traffic and transport

Stakeholder identification number(s):
13, 33, 71, 151, 192, 206

Issue description

In summary, the respondents raised the following issues:

a. Objection to any changes to Robert Road during the construction period. Concerns that construction traffic will impact residents. The carriageway width of Robert Road is inadequate to handle any traffic movements to Cherrybrook Station. This road is already a traffic hazard and introduction of extra construction vehicles will cause additional traffic chaos. Request for TfNSW to specify what type of construction vehicles will travel on the road. Residents seek a guarantee from TfNSW that the disruption to traffic will be minimal.

b. Concerns that traffic volumes on Castle Hill Road will vastly increase during the construction phase of the project.

c. From commencement of construction, the traffic flow through the rat run of the West Pennant Hills Valley will increase significantly. As construction progresses, the volume of traffic diverting off Castle Hill Road will continue to increase in volume, duration and direction. This has not been identified in the technical papers, yet will have a major impact on the residents of the West Pennant Hills Valley.

Response

a. Heavy vehicle routes to Cherrybrook Station construction site during the construction period would be along Castle Hill Road. For the majority of construction, access and egress would be directly on and off Castle Hill Road at a new signalised intersection with Glenhope Road. However, at some point for stage 2 construction works, this access point would be required to be closed. At this stage, access and egress would be gained via the permanent station entry point at the signalised intersection of Castle Hill Road / Robert Road.

The results of the construction traffic assessment undertaken for the project at Cherrybrook Station construction site are presented in Table 9.14 of EIS 2. The modelling predicts that the Castle Hill Road / Robert Road intersection would perform at a good level of service during the construction of the NWRL.

b. The results of the construction traffic assessment undertaken for the project at Cherrybrook Station construction site are presented in Table 9.14 of EIS 2. The modelling predicts there would not be a significant impact on the performance of the key intersections surrounding the Cherrybrook construction site as a result of the construction traffic generated.

c. The results of the construction traffic assessment undertaken for the project at Cherrybrook Station construction site are presented in Table 9.14 of EIS 2. The modelling predicts there would not be a significant impact on the performance of the key intersections surrounding the Cherrybrook construction site as a result of the construction traffic generated. As such, there is not anticipated to be any increase in drivers seeking alternative routes through the West Pennant Hills Valley or diverting off Castle Hill Road.

7.2.9 Access

Stakeholder identification number(s):
127, 145, 234, 251, 272, 287, 296

Issue description

In summary, the respondents raised the following issues:

a. Franklin Road should not be used to access the proposed Cherrybrook Station during construction.

b. Franklin and Robert Road should be closed off to all vehicular traffic (upon construction commencement and permanently), all entry and exit to the station should be via Castle Hill Road.

c. Objection to the use of Robert Road as a feeder road to the proposed Cherrybrook Station during construction.

d. A two lane access route along the M2 fence line is excessive when one lane would be sufficient. The proposal hasn't properly considered revegetating bushland at the end of construction. An alternative route for the access road would be to have a single lane along the existing track to Kirkham Street. Using this route, revegetation is a viable prospect.

Response

a. The main heavy vehicle access and egress point to and from Cherrybrook Station construction site would be Castle Hill Road. Franklin Road would be used to provide a secondary access and egress point. A secondary access and egress point is required in order to ensure the efficient functioning of the construction site, and for construction safety requirements.

b. The main heavy vehicle access and egress point to and from Cherrybrook Station construction site would be Castle Hill Road. However, there would be a requirement to provide access and egress from Franklin Road and Robert Road at some point during construction.

Franklin Road and Robert Road are public roads and would remain operational during the Cherrybrook Station construction stage.

c. Heavy vehicle routes to Cherrybrook Station construction site during the construction period would be along Castle Hill Road. For the majority of the construction period, access and egress would be directly on and off Castle Hill Road at a new signalised intersection with Glenhope Road. However, at some point for stage 2 construction works, this access point would be required to be closed. At this stage, access and egress would be gained via the permanent station entry point at the signalised intersection of Castle Hill Road / Robert Road.

d. The precise location and nature of the access route to Cheltenham Services Facility construction site from Kirkham Street would be determined during the construction planning stage of the project taking into consideration a range of factors including impacts to vegetation, existing topography and detailed construction methodologies. This access road is proposed to be temporary for the duration of construction and would be rehabilitated upon completion of works in consultation with Hornsby Shire Council.

7.2.10 Public safety

Stakeholder identification number(s):
65, 76, 110, 197, 276, 302

Issue description

In summary, the respondents raised the following issues:

a. Request for security at Cherrybrook Station to prevent trespassers of the construction zone and car parking area from entering residential properties.

b. Castle Howard Road is only a narrow road with no pedestrian pathways. The speed should be reduced during construction of the Cheltenham Services Facility for the safety of commuters.

c. Concerns regarding public safety regarding large eucalypts situated between County Drive and Robert Road within 5 to 10 metres of the proposed corridor. There is a risk that with increased pedestrian and vehicle activity, injuries may occur from falling limbs during construction and thereafter.

Response

a. During the construction period, Cherrybrook Station would be surrounded by hoardings, noise walls and / or securely fenced which would prevent access by trespassers. Additionally, during the Stage 1 works, the Cherrybrook Station construction site would be occupied by construction personnel 24 hours per day, 7 days per week providing constant site surveillance.

b. NWRL Construction Contractors would prepare Construction Traffic Management Plans and Traffic Control Plans as per the requirements of the Construction Environmental Management Framework (Appendix B of EIS 2). Traffic safety along access routes would be considered as part of these plans. It is noted that Castle Howard Road would only be used as a light vehicle access road during construction.

c. The maintenance of trees in the area between Country Drive and Robert Road is outside the scope of the NWRL project.

7.2.11 Tunnelling

Stakeholder identification number(s):
10, 78, 155, 212, 318

Issue description

In summary, the respondents raised the following issues:

a. Request that the tunnels be larger than currently proposed in order to accommodate double deck trains.

b. Objection to the construction of tunnels underneath properties in Epping. Request for notification of specific dates when properties will become affected.

c. Concerns regarding bad luck and bad fengshui in relation to the construction of tunnels underneath properties. Calls that the tunnels will severely impact on psychological well-being which may lead to physical illness.

d. Concerns that initial information provided to residents of Hannah Street regarding tunnel depth is different to information now available (tunnel depth now reduced). Concerns that future development at Hannah Street properties will not be possible according to new tunnel depths (eg installation of a pool, home extensions) as there will be insufficient land depth available to do so.

e. Objection to having a railway tunnel at such a shallow depth (20 metres) beneath the properties in Cherrybrook.

Response

a. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the *NSW Long Term Transport Master Plan*. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future. It has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

Sydney's Rail Future: Modernising Sydney's Trains introduces single deck, rapid transit transport trains on the NWRL project.

The NWRL has been identified as a key priority railway transport infrastructure project which would provide a significant expansion to Sydney's rail network in an area of future population and jobs growth.

Rapid transit services, initially 12 trains per hour during peak periods (a train every five minutes in peak periods), would be operated with new generation single deck trains, advanced signalling and dedicated track. Over time, as demand increases, service frequency could increase up to 20 trains an hour – or one every three minutes.

The NWRL will introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. Sydney will also have a second crossing under the Harbour linking to a new CBD line and new stations, which will use rapid transit services that will also eventually operate on the Bankstown line and to Hurstville on the Illawarra line.

This plan will eventually enable Sydney Trains to carry another 90,000 to 100,000 people per hour in the peak.

Therefore, NWRL will deliver the required infrastructure (including tunnels) to support single deck trains and advanced signalling.

The NWRL and future Tier 1 Rapid Transit network will be physically separated from other Suburban and Intercity services (Tier 2 and Tier 3 respectively) that will operate with double deck trains to provide differentiated service levels.

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

b. Sub-stratum land resumption has commenced and affected property owners have been notified.

Throughout construction, TfNSW and the Principal Construction Contractors would regularly inform stakeholders and the local community of construction progress and upcoming works. Requirements for Stakeholder and Community Consultation are included in Section 4 of the Construction Environmental Management Framework (Appendix B of EIS 2).

c. The impacts of tunnelling activities were addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

There are many examples of tunnels throughout Sydney, and in other cities throughout the world, where tunnels can be found underneath properties. For example the Sydney Central Business District has many tunnels beneath properties.

d. The indicative depth of the tunnels beneath Hannah Street residences is approximately 20 metres. The presence of a rail tunnel would not necessarily affect future development, particularly in a residential area. Any future development above the tunnels would be required to obtain appropriate planning approvals and maintain appropriate clearance distances from the NWRL tunnels.

e. Noted. The presence of a rail tunnel would not necessarily affect future development, particularly in a residential area. Any future development above the tunnels would be required to obtain appropriate planning approvals and maintain appropriate clearance distances from the NWRL tunnels.

7.2.12 Community facility impacts

Stakeholder identification number(s):
76, 98, 217, 290

Issue description

In summary, the respondents raised the following issues:

a. Concerns that Cheltenham commuters will be disrupted due to the proposed rebuild of the station and that the aesthetic of the current "village-like" station will be altered.

b. Concerns regarding the demolition of the Hills Centre, and request to avoid demolition if possible. This is an important landmark as well as being the area's largest performing arts centre. If the Hills Centre cannot be maintained, suggestion to build a new performing arts centre with similar facilities and overall aesthetic slightly to the west.

c. Calls for Cheltenham Oval to remain open during the construction period.

d. To minimise impacts at Cheltenham Oval, suggestion to move the children's playground to the opposite side of the oval.

Response

a. The NWRL does not propose to undertake any works at Cheltenham Station.

b. Both the Hills Centre and the Council Chambers have been acquired for the station site to allow for efficient functioning and layout to reduce other potential impacts to the Showground. Due to their layout, it is not viable to retain the Hills Centre in favour of the Council Chambers, as it

would result in fragmentation of the Showground Station site. The provision of a new performing arts centre is outside the scope of the NWRL project and would need to be undertaken by The Hills Shire Council. A range of other cultural and community facilities exist across the Local Government Area.

c. The location of the Cheltenham Services Facility and the proposed construction methodologies have been designed so that Cheltenham Oval is able to remain functional throughout the construction period. However, some ancillary facilities associated with the oval including the netball courts, cricket nets and playground would not be accessible during the construction period.

d. Consultation is currently occurring with Cheltenham Oval sports clubs and Hornsby Shire Council regarding temporary and permanent facilities at Cheltenham Oval. As part of this, consideration would be given to moving the playground to the opposite side of the oval.

7.2.13 Surface water and flooding

Stakeholder identification number(s):
65, 110, 127, 145, 151, 197, 272, 276, 287

Issue description

In summary, the respondents raised the following issues:

a. Without adequate mitigation measures, water run off from the station precinct could affect nearby residences during the construction phase. Adequate measures should be taken to prevent surface run off entering the adjoining backyards and a well maintained vegetation buffer will assist in filtering any contaminants.

b. Request for assurance that drainage from construction activities at the proposed Cherrybrook Station will not affect residential properties.

c. Concerns the EIS is not clear on the adoption of two planning levels (ie PMF and 1 in 100 year for station and other access areas). EIS highlights that all access areas leading to the platforms will be above the PMF but it is not shown what areas are at what planning level. What will be size of detention and other stormwater drainage details? Where are the hydrological and hydraulic modelling results?

Response

a. Table 18.9 of EIS 2 identifies a range of mitigation measures relevant to the management of surface water run off during the construction period. Additionally, Section 15.2 of the Construction Environmental Management Framework (Appendix B of EIS 2) details the process for the development of site specific erosion and sediment control plans. The final detail of construction erosion and sediment controls and water treatment as governed by water quality, topography and predicted treatment volume would be determined as part of detailed construction planning.

Water discharge limits would be applied to all construction sites as required by relevant legislation or as otherwise approved through an Environment Protection Licence or the use of a similar condition of approval to condition C6 from the Stage 1 Approval.

b. Table 18.9 of EIS 2 identifies a range of mitigation measures relevant to the management of surface water run off during the construction period. Additionally, Section 15.2 of the Construction Environmental Management Framework (Appendix B of EIS 2) details the process for the development of site specific erosion and sediment control plans. The final detail of construction sediment controls and water treatment as governed by water quality, topography and predicted treatment volume would be determined as part of detailed design.

Water discharge limits would be applied to all construction sites as required by relevant legislation or as otherwise approved through an Environment Protection Licence or the use of a similar condition of approval to condition C6 from the Stage 1 Approval.

c. A summary of flooding potential at each station precinct in operation, including PMF levels adopted for the stations is provided in Table 18.3 in EIS 2.

Table 18.9 of EIS 2 identifies a range of mitigation measures relevant to the management of surface water run off during the construction period. Additionally, Section 15.2 of the Construction Environmental Management Framework (Appendix B of EIS 2) details the process for the development of site specific erosion and sediment control plans. The final detail of construction sediment controls and water treatment as governed by water quality, topography and predicted treatment volume would be determined as part of detailed design.

Hydrological and hydraulic modelling results are included within Appendix A and B of Technical Paper 7.

7.2.14 Cumulative impacts

Stakeholder identification number(s):
65, 110, 127, 145, 151, 197, 272, 276, 287

Issue description

In summary, the respondents raised the following issues:

a. There will be prolonged (2013-2016) cumulative impacts (noise, air quality, traffic, health / mental) on Kayla Way residents due to the construction of Cherrybrook Station. Kayla Way residents demand adequate compensation for the six years of enduring these cumulative impacts.

b. Concerns regarding the dual impacts on residents of the proposed North West Rail Link and the Epping to Thornleigh Third Track.

c. Belief that impacts from the Third Track Epping to Thornleigh project, occurring concurrently, have not been adequately assessed.

d. Concerns regarding property on Castle Howard Road, Cheltenham that was purchased in 1964, prior to plans for the M2 Motorway and NWRL. The construction of the M2 had a detrimental effect on the property value and concerns that NWRL will result in further negative impacts on the property.

Response

a. Chapter 20 of the EIS 2 acknowledges noise, air quality and traffic impacts from the Cherrybrook construction site would be extended for a longer period of time as a result of Stage 1 and Stage 2 construction. However these impacts would not be experienced continuously all the time. Rather, impacts would be restricted to specific construction activities within the whole construction period.

b. Section 20.4 of EIS 2 identifies cumulative impacts from the interaction of the NWRL project with other projects in the vicinity of the alignment including the Epping to Thornleigh Third Track project. Proponents of other major construction works in the vicinity of the NWRL would be consulted, and reasonable steps would be taken to coordinate works to minimise impacts on, and maximise respite for, affected sensitive receivers including residential receivers.

c. Section 20.4.2 of the EIS 2 identifies potential cumulative impacts from the NWRL and Epping to Thornleigh Third Track project. These impacts would occur during the construction timeline overlap (2013-2015) and are proposed to be managed and mitigated via the NWRL Construction Environmental Management Framework (Appendix B of EIS 2). The proponent of the Epping to Thornleigh Third Track project would be consulted, and reasonable steps would be taken to coordinate works to minimise impacts on, and maximise respite for, affected sensitive receivers.

d. The Cheltenham Services Facility construction site would be located some distance away from Castle Howard Road residences. The Cheltenham Services Facility's construction heavy vehicles route would be via a new access track linking directly to Kirkham Street and would not utilise Castle Howard Road. EIS 2 shows that construction impacts along Castle Howard Road from the Stage 2 construction works would be temporary and minor.

The NWRL passes underground at Cheltenham and EIS 2 predicts there would not be noticeable increase in ground-borne noise and vibration levels along the alignment. Land uses (including the netball training

courts and bushland) would be reinstated around the Cheltenham Services Facility.

The operation of the Cheltenham Services Facility would not generate significant traffic (occasional maintenance vehicles only) or affect the performance of road intersections along Castle Howard Road. Visual impacts of the project from Castle Howard Road would be negligible as illustrated in Figure 16.4 and Figure 16.5 of EIS 2.

Based on the assessment presented in EIS 2, it is considered that the NWRL would have an insignificant impact on Castle Howard Road properties.

7.2.15 Light spill

Stakeholder identification number(s):
106, 127, 145, 272, 287, 306

Issue description

In summary, the respondents raised the following issues:

a. Light spill from construction of the 60 space car park at Cherrybrook Station will impact surrounding residents. The four-five metre narrow buffer will not be enough to mitigate the noise impacts from the car park. Suggestion to relocate the car park to be adjacent to the proposed multi-level park-and-ride car park and include a 50 metre vegetation buffer between Kayla Way fence and nearest station building.

b. Concerns that there is no indication of what light mitigation measures are proposed to lessen the impact on residence caused by vehicles entering and leaving the site during the long construction period proposed.

c. The temporary signalling at the corner of Franklin Road and Castle Hill Road should be limited to construction working hours to minimise the impact of light spillage from traffic lights during the evening.

Response

a. Construction works for the Cherrybrook Station would normally be undertaken during daytime working hours to reduce noise and light spill impacts on nearby residents. Where lighting of the site at night is required (such as for security), mitigation measure V2 in Table 16.8 of EIS 2 would be implemented which states that cut off and directed lighting would be used to ensure glare and light trespass are minimised. This mitigation measure is reproduced in Chapter 9 of this report.

b. Specific measures to minimise the impact of light spill on sensitive receptors, including those caused by vehicles entering and leaving sites would be identified during detailed construction planning.

c. The temporary traffic signals at the intersection of Castle Hill Road / Franklin Road would not result in light spill to adjacent receivers. It is noted that both Castle Hill Road and Franklin Road are both lined with street lights.

7.3 Design

7.3.1 Accessibility

Stakeholder identification number(s):
139

Issue description

In summary, the respondent raised the following issue:

a. The proposed Cherrybrook Station will have a detrimental effect on the immediate vicinity in terms of access and egress.

Response

a. The Cherrybrook Station precinct has been carefully assessed to ensure that minimal adverse impacts are experienced for the surrounding area in all matters of concern including traffic and transport, noise, amenity, land use and general functionality. The proposed indicative layout for Cherrybrook Station (Figure 6.11 of EIS 2) provides for appropriate access and egress into and out of the station precinct, as well as maintaining access to all surrounding properties.

In relation to bus access, TfNSW is committed to identifying the best outcome for Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

7.3.2 Station / stabling location

Stakeholder identification number(s):
30, 75, 76, 108, 139, 213, 231, 289, 290

Issue description

In summary, the respondents raised the following issues:

a. Suggestion to construct the proposed Showground Station further south to avoid demolition of the Hills Centre. The spoil road could also be moved south to utilise Carrington Road.

b. The proposed location of Cherrybrook Station does not answer the needs of residents in the area as it is too far from the centre of the suburb and does not connect to employment centres like Parramatta.

c. Concerns that the location of Cheltenham Services Facility has been chosen over other bushland locations as the planners do not want to assess the environmental impacts of a services facility in a bushland location.

d. Opposition to the proposed location of Cheltenham Services Facility. Preference for it to be situated in a more logical location such as the end of Welham Street at the Beecroft Scout Hall site.

e. Clarification sought whether the concrete slabs and the Cherrybrook Station would be built directly across from the houses on Robert Road and accessed 24 hours a day, 7 days a week as stated in EIS 1.

f. Objection to Cherrybrook Station being opposite resident's property.

g. Showground Station is surrounded by open space and should be moved into the centre of the industrial park on Victoria Road.

h. The Bella Vista Station should be moved into the centre of the existing industrial / business area.

i. Objection to the proposal to incorporate the extension to Cudgegong Station. Is the realignment and inclusion of Cudgegong due to the inability to incorporate a car park at Rouse Hill? The distance between Rouse Hill Station and the planned Cudgegong Station is 1.5 km. The schematic in the EIS showing the distance between Cudgegong Station and Rouse Hill Station and the Richmond rail line misrepresents those distances. The schematic places Cudgegong station halfway between Windsor Road and the Richmond rail line which would be a distance of 2.7 km from Rouse Hill station (not 1.5 km stated). There has been no feasibility study or information supporting how the NWRL option of a train stabling facility at Tallawong Road and a proposed future station at Cudgegong Road was determined.

Response

a. The rationale for the proposed location of the Showground Station is documented in the *North West Rail Link Modification to Showground Station SSI-5100* (TfNSW, October 2012). The acquisition and demolition of the Hills Centre for the Performing Arts is required to make way for the new station and construction site.

The proposed Showground Station location supports the future of the Castle Hill Showground and facilities and has been determined following consultation with The Hills Shire Council, key stakeholders and the local community

Section 9.6.6 of the EIS 2 notes Carrington Road would be utilised as a secondary construction heavy vehicle route. The primary route would be via Showground Road.

b. The Cherrybrook Station precinct would be a neighbourhood centre with facilities available to Cherrybrook residents.

The NWRL would connect Cherrybrook residents with the Norwest employment centre, Epping, Chatswood and Sydney CBD.

The existing train and bus routes from Epping to Parramatta will still be available once the NWRL is operational.

c. The NWRL project team considered various locations for the Cheltenham Services Facility construction site and building. This options analysis was detailed in EIS 1. The location was chosen having regard to the various social, economic and environmental considerations including the findings of the ecological investigations.

d. The NWRL project team considered various locations for the Cheltenham Services Facility construction site and building. This options analysis was detailed in EIS 1. The location was chosen having regard to the various social, economic and environmental considerations including the findings of the ecological investigations.

Welham Street leads to the Beecroft Reserve which contains endangered ecological communities, threatened flora species and potential habitat for threatened flora. In addition, Welham Street is a quiet residential cul-de-sac street located outside the NWRL alignment footprint. For these reasons, the suggested location is considered unsuitable for a NWRL construction site or the Services Facility building.

e. The location of the Cherrybrook Station construction site was addressed as part of part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

The stage 1 construction activities (assessed as part of EIS 1) would be undertaken at Cherrybrook Station construction site 24 hours per day, seven days per week. The heavy vehicle route would be along Castle Hill Road. Heavy vehicles would not use Robert Road.

Stage 2 construction hours are detailed in Table 7.19 of EIS 2. Generally, works would be limited to the standard daytime construction hours. However, works required to support underground tunnel fitout, as well as other discrete activities may be required to be undertake outside of these hours.

f. The location of the Cherrybrook Station construction site was addressed as part of part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

EIS 1 and EIS 2 identify a range of mitigation measures to manage impacts on residential properties located in close proximity to Cherrybrook Station.

g. The relocation of Showground Station to the industrial area would provide little benefit to the existing Castle Hill residential areas, as well as requiring the compulsory acquisition of numerous businesses and significant disruptions to Victoria Avenue business operations in order to facilitate station construction.

The selected location for Showground Station on Carrington Road would serve existing residential and non-residential walk up catchments in Castle Hill and reinforce one of the few remaining functioning showgrounds in Sydney.

h. The location of Bella Vista Station minimises construction impacts on Norwest Business Park businesses whilst being in close proximity to both the future Balmoral Road release area and the Norwest Business Park.

The relocation of Bella Vista Station to the centre of the industrial / business area would provide little benefit to the future residents of the Balmoral Road release area, as well as triggering compulsory business acquisitions and significant disruptions to the Norwest Business Park operations.

i. The location of Cudgegong Road Station construction site was addressed as part of part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

The location of Cudgegong Road Station is presented in Figure 6.39 and Figure 6.40 of EIS 2. Cudgegong Road Station would be located about 1.5 km to Windsor Road and about 3.4 km to Railway Terrace.

Cudgegong Road Station was included as part of the NWRL project to serve existing residents within The Ponds, Area 20 precinct and future neighbourhoods in the North West Growth Centre. The station would provide residents with a safe, fast and reliable transport mode to Rouse Hill Town Centre, the Norwest employment area, Epping, Sydney CBD and other destinations in between.

7.3.3 Ventilation

Stakeholder identification number(s):
121, 304, 322

Issue description

In summary, the respondents raised the following issues:

a. Request for residents near the proposed Showground Station to be informed of the location of ventilation fans, once the detailed design has been completed.

b. EIS 2 notes that there are ventilation shafts however their locations are not marked on the diagrams provided. Request to provide the community with this information.

c. Tunnel ventilation and ventilation failures for the 15 km length of twin tunnel between Epping and Bella Vista should be addressed at the beginning.

d. The steeply graded NWRL tunnel will provide smoke control difficulties outside the expectation expressed in EIS 2 and CFD modelling will be required. This may be particularly the case on the Epping to Chatswood leg of the project, particularly in relation to the full profile tunnel and the smaller single deck train.

Response

a. Service buildings at Showground Station, incorporating ventilation equipment, would be located at both ends of the station box (refer to Figure 6.19 of EIS 2 for indicative locations of service buildings). The final locations of ventilation shafts will be determined in consideration of mitigation measure OpA2 in Table 19.3 of EIS 2 (and reproduced in Chapter 9 of this report).

The design of the final location of ventilation equipment will continue over time and will be undertaken by TfNSW in partnership with the selected contractor(s) and the future operator of the rail infrastructure. As the design evolves, it may be influenced by new or alternative approaches

derived from the greater knowledge of detailed design, safety refinements, innovation, new standards, materials and technologies as well as further input from stakeholders and the community.

TfNSW will continue to guide and oversee future communications involving the selected contractor(s) and the future operator of the rail infrastructure who will be obliged to consult with key stakeholders in delivering the new stations and rail infrastructure.

b. Ventilation of the tunnelled section of the alignment has been incorporated into the design. Ventilation shafts would be provided at all underground stations, incorporated into the service facilities. Additionally, ventilation would be provided at the Epping Services Facility. These facilities would supply fresh air to stations and tunnels and discharge air from the tunnels and station environment. Section 6.7.1 of EIS 2 provides a description of the ventilation system.

c. Ventilation of the tunnelled section of the alignment has been incorporated into the design. Ventilation equipment would be provided at Epping Services Facility and stations along the tunnelled section. As detailed in Section 6.7.1 of EIS 2, the ventilation system would be designed to meet criteria for normal, congested and emergency operating scenarios.

d. As detailed in Section 6.7.1 of EIS 2, the ventilation system would be designed to meet criteria for normal, congested and emergency operating scenarios. The system would also provide ventilation in the event of a fire to ensure suitable conditions in the tunnel for safe egress of passengers and safe access of emergency service personnel.

The Epping to Chatswood component of the line currently provides tunnel ventilation. Any changes required to the Epping to Chatswood section would be subject to further design development and a future planning approval process if required.

7.3.4 Station design

Stakeholder identification number(s):
6, 75, 108, 123, 127, 145, 162, 236, 272, 287, 290, 306, 309, 316

Issue description

In summary, the respondents raised the following issues:

a. Request to consider noise and vibration service solutions to be provided for above ground mitigation of noise in public and private areas of the project.

b. Concerns with the design of the station at Cherrybrook. The Cherrybrook locality is characterised by generally large, low density dwellings predominantly built within the last 30 years, surrounded by established vegetation, green open space and natural corridors across the undulating topography. As a result, Cherrybrook Station should be underground and not an open cut design to minimise noise from trains and station announcements.

Planning for the Cherrybrook Station and traffic flows are not consistent with the overall objective of the design of the station (the station has been designed as a suburban park-and-ride station that integrates with the surrounding natural and built environment. The station precinct has been designed to respond to the area's character). If the design objective of the station is to respond to the area's character, how can TfNSW justify a car park so close to the boundary of Kayla Way?

Calls for TfNSW to demonstrate how the design goal was achieved for Cherrybrook Station and request for an alternative. Suggestion to:

- Relocate the car park to be adjacent to the proposed multi level carpark.
- Incorporate a vegetation 50 metre buffer zone between Kayla Way boundary and the nearest Cherrybrook Station building.

- ❖ Block Franklin Road to vehicular traffic at the Southern boundary of the Cherrybrook Station precinct (suggested Precinct Plan attached to submission).

c. Request for the proposed Castle Hill Station design to match the features of the Castle Towers Shopping Centre, including skylights, arches and metal structures. This would add local character *(image attached to submission, illustrating suggestions).*

d. Suggestion for the internal and external architecture of the proposed Showground Station to resemble one of the pavilions, and reference the Hills Centre and Council buildings to achieve integrated design. Murals for underground stations, portraying the local area, should also be considered.

e. The Cherrybrook Station Precinct will be located directly across the road from these residents' properties. The proposed protection of these homes, which will be most impacted by the Cherrybrook Station Precinct is inadequate and chaotic.

f. The way the planners have incorporated a new canteen, change room facility, amenities and the egress facility into one low level building structure at Cheltenham Oval should be commended. Also the structure design of the services facility will sit low on the ground effectively minimising visual impact.

g. Objection to the design of Cherrybrook Station and the transport planning around it which will now have a huge impact on the local environment rather than the underground station originally envisaged. The plan is now for an open cut station with large chunks of area noted as 'Future Use to be determined by Master Plan', to be a mixed use of commercial and residential which is likely to include multi-storey blocks. Comment that it is unacceptable and contradictory to previous advice about the future of the 'construction zone'.

The justification for having Cherrybrook Station above ground is not clear. Underground stations are warmer in winter and cooler in summer and they protect from the elements.

h. Suggestion that an escalator, lift or stairway to access the train platforms at Cherrybrook Station be available close to the junction of Franklin Road, for people walking from the proposed car park or the eastern side of the station.

i. Stations along NWRL should be given unique, unambiguous names which reflect their locations. Cherrybrook and Kellyville Stations are nowhere near the local centres servicing those communities and will create confusion for travellers. Cudgegong Road is another station with a name which will not be helpful to users of the service. The local Historical Society would be able to supply more appropriate names.

j. Concern about the built design / quality of the stations on the NWRL. The upgrade of the existing Schofields Station was poorly built and poorly designed eg artists impression were inaccurate, awnings stop short on the platform exposing commuters to the elements, the platform runs back to the centre causing rain to funnel to the centre impacting commuter's baggage and public phone, there is no ticket area at the top of the platform stairs, downpipes are poorly designed and will clog overtime, the colour scheme is unpalatable and the footbridge has poor build quality but was still signed off by engineers. The NWRL station designs should avoid the above issues

Response

a. Suggestions on potential mitigation measures to address operational noise are noted. Such measures would be considered during the detailed design and implementation phase in accordance with mitigation measures OpNV1, OpNV2 and OpNV8 (Table 10.47 of EIS 2, and reproduced in Chapter 9 of this report).

b. The indicative layout of Cherrybrook Station as shown in Figure 6.11 of EIS 2 represents the design layout for which the environmental assessment was undertaken and for which an approval is being sought.

The rationale for station design is presented in Section 6.7.1 of EIS 2. Further details regarding Cherrybrook Station are presented in Section 6.9 of EIS 2.

Operational noise and vibration investigations undertaken for Cherrybrook Station are presented in Chapter 10 and Technical Paper 3 of EIS 2. Section 10.7 Ground-borne Operational Noise and Vibration of EIS 2 assessed ground-borne vibration and ground-borne noise. The investigations found that compliance with the ground-borne vibration objectives (and the human comfort vibration criteria from *Assessing Vibration – A Technical Guideline*) is predicted for all residential receivers and the majority of other sensitive receiver locations above or near the proposed NWRL alignment. The investigations found that ground-borne noise levels are predicted to comply with the ground-borne noise design objectives at all locations.

Section 10.9 of EIS 2 provides an assessment of noise from the stations, including PA systems. This section states that PA systems would be designed to comply with the relevant noise criteria.

The potential exceedances of the operational noise criteria at Cherrybrook Station result from the increase in traffic on surrounding roads, and from the operation of the at-grade car park. An open cut versus underground (cut-and-cover) station at Cherrybrook does not result in increased noise impacts.

The car park proposed near the boundary of properties on Kayla Way is a small on grade car park for 60 vehicles. Furthermore a landscape buffer is proposed to be provided between the car park and the Kayla Way dwellings, however a distance of 50 metres is not feasible.

The suggested loss of access along Franklin Road will have a detrimental impact on vehicular accessibility to the station.

c. Design principles for stations and service facilities are presented in Section 6.5.3 of EIS 2. The project aims to support place making by, inter alia, providing urban areas and public spaces that are informed by local character including natural systems and the surrounding built environment.

Section 6.10 of EIS 2 describes Castle Hill Station. To maximise passenger experience in the station and provide a safe night-time environment, the station design includes a large area of skylights, which would be integrated within Arthur Whitling Park and become a feature of the park providing natural light to the concourse and platform level.

d. Design principles for stations and service facilities are presented in Section 6.5.3 of EIS 2. The project aims to support place making by, inter alia, providing urban areas and public spaces that are informed by local character including natural systems and the surrounding built environment.

Section 6.5.4 of EIS 2 describes the principles of public art for NWRL. The stations, interchanges and precincts are social places and the NWRL would incorporate public art as a way to link communities to new public places. Public art would connect the stations with the communities they serve and contribute to the success of the NWRL through promoting station identity, amenity, safety, security, community values and the public domain, as depicted in Figure 6.3, which describes the functional interfaces of public art.

The provision for public art aims to keep stations and interchanges alive and create interesting public spaces. It is envisaged that public art works would evolve over time through ongoing community arts activities during the operational phase to sustain a community sense of ownership of the public domain.

e. EIS 2 has assessed the potential environmental impacts during the construction and operations of Cherrybrook Station Precinct upon surrounding residential properties. Mitigation measures have been developed to manage potential impacts (see Chapter 9 of this report).

f. Noted. TfNSW appreciates the positive feedback received for design elements forming part of the Cheltenham Services Facility.

g. The indicative layout of Cherrybrook Station as shown in Figure 6.11 of EIS 2 represents the design layout for which the environmental assessment was undertaken and for which an approval is being sought.

The rationale for station design is presented in Section 6.7.1 of EIS 2. Further details regarding Cherrybrook Station are presented in Section 6.9 of EIS 2.

Cherrybrook Station is proposed to be an open cut station, not an above ground station. Section 6.9 of EIS 2 notes that Cherrybrook Station has been designed to maximise the use of daylight to provide warmth in winter and natural ventilation for cooling in summer. A canopy would provide shade and protection for passengers.

For the areas shown in EIS 2 as Future Use to be Determined by Master Plan (see Figure 6.11 – Cherrybrook Station – Indicative Layout), the type of land use and scale of proposed development does not form part of the NWRL project presented in EIS 2 for which approval is being sought. Further approvals would be required for the future uses proposed on these sites under the relevant local / State planning processes.

h. The indicative layout of Cherrybrook Station as shown in Figure 6.11 of EIS 2 represents the design layout for which the environmental assessment was undertaken and for which an approval is being sought. The approximate distances from the Cherrybrook Station entry to the elements described above are as follows

- Franklin Road – 200 metres.
- Park-and-ride on-grade 60 cars – 160 metres.
- Park-and-ride two to three level 340 cars – 80 metres.

These distances are relatively close to the station entry and do not warrant additional or alternative station entry requirements.

The two to three level 340 space park-and-ride facility is located above a service facility. For reasons of safety and security, public access to the station through the service facility is not appropriate.

i. The station names presented in EIS 2 are the working names of those stations which have been developed for NWRL and best represent their precise location or, in some cases, reflect an area's historical use. Prior to opening the NWRL, an application would be made to the Geographic Names Board seeking formal approval for each station name (in accordance with the *Geographical Names Act 1966*).

j. Delivery of a high quality design is described in Section 6.5.6 of EIS 2. It states that to ensure a high quality design outcome for the NWRL project, all procurement requirements would encourage the engagement of world class, award winning architects, engineers, urban designers and landscape architects to deliver the optimum outcome.

7.3.5 Station facilities

Stakeholder identification number(s):
65, 110, 197, 276

Issue description

In summary, the respondents raised the following issue:

a. Request for further information regarding the proposed Cherrybrook Station layout and concern the design has already been amended several times.

Response

a. Section 6.5 of EIS 2 provides details regarding the design of the NWRL.

The indicative layout of Cherrybrook Station as shown in Figure 6.11 of EIS 2 represents the design layout for which the environmental assessment was undertaken and for which an approval is being sought.

The rationale for station design is presented in Section 6.7.1 of EIS 2. Further details regarding Cherrybrook Station are presented in Section 6.9 of EIS 2.

The indicative layout for the Cherrybrook Station and other stations have evolved throughout the concept design phase based on stakeholder engagement and numerous specialist studies including geotechnical investigations, traffic and transport, noise and vibration, ecology and heritage, as well as constructability considerations. The indicative plan as presented in EIS 2 is the product of an ongoing process to produce the optimum result for a station at Cherrybrook.

7.3.6 Bicycle facilities

Stakeholder identification number(s):
32

Issue description

In summary, the respondent raised the following issues:

a. Objection that new stations on NWRL are designed to provide undercover parking for only 40 bicycles. Belief 100 undercover bicycle parking spaces should be provided at NWRL stations due to bicycle growth in Sydney.

b. Objection to the lack of facilities for bicycle riders to take their bicycles onto the trains. This is not consistent with international standards and creates difficulty for those whose workplace is not an easy walk from a train station

Response

a. Bicycle parking requirements have been determined by taking into account the forecast NWRL station access mode splits and then adjusted for each station to encourage increased uptake of cycling, especially in areas where terrain and cycling routes provide easy access. The bicycle parking provisions indicated in the EIS 2, Technical Paper 2 - Operational Traffic and Transport Report are facilities that are planned to be provided at the opening of the NWRL. Safeguarding for the provision of additional bicycle parking spaces has been planned for and would be installed as required.

Bicycle parking requirements would comply with the scheduled requirements of AS 2890.3—1993 Parking facilities. Part 3: Bicycle parking facilities.

b. The design of NWRL stations and trains would not preclude bicycles.

7.3.7 Community facilities

Stakeholder identification number(s):
30, 76, 167

Issue description

In summary, the respondents raised the following issues:

a. Request for replacement netball courts instead of the on-grade extended parking for Cheltenham Oval.

b. Request for Cheltenham Services Facility design to be amended to reduce the impacts on Cheltenham Oval.

c. Support for the integration of the sporting facility storage, canteen and toilet block at the Cheltenham Oval Services facility. This will bring less impact on residential houses along Castle Howard Road and avoid graffiti at this location. Residents appreciate that the roadway built between Kirkham Street and the Cheltenham Oval netball courts will be replanted after the completion of the services facility at Cheltenham Oval.

d. Concern regarding the loss of The Hills Centre as a valuable cultural and community resource.

Response

a. The NWRL project proposes to reinstate multi-use courts at Cheltenham Oval as shown in Figure 6.51 and Table 14.2 of EIS 2. Discussions on the details of facilities to be reinstated at Cheltenham oval are currently occurring with the sports clubs and Hornsby Shire Council.

b. Extensive consideration has been given to the design and construction methods for the Cheltenham Services Facility to ensure the minimum impact possible to the community facilities. The current option has been arrived at due to its ability to allow the oval to remain fully functional, to reduce the operational visual impact and for the service facility to be incorporated with community facilities. Further refinements may occur during the detailed design and would include ongoing community and stakeholder consultation.

c. The support for the proposed design of the services facility at Cheltenham is noted.

d. Both the Hills Centre and the Council Chambers have been acquired for the station site to allow for efficient functioning and layout to reduce other potential impacts to the Showground. Due to their layout, it is not viable to retain the Hills Centre in favour of the Council Chambers, as it would result in fragmentation of the Showground Station site. The provision of a new performing arts centre is outside the scope of the NWRL project and would need to be undertaken by The Hills Shire Council. A range of other cultural and community facilities exist across the Local Government Area.

7.3.8 Public safety

Stakeholder identification number(s):
121, 151, 206, 290, 306

Issue description

In summary, the respondents raised the following issues:

a. Suggestion for road markings at the edge of the intersection near the proposed Castle Hill Station in order to improve safety for pedestrians.

b. With regard to fire life safety, this project should consider requirements from Cudgegong all the way to Chatswood. Compliance with Tunnel Fire Safety requirements may impose extensive additional civil works especially with respect to the provision of internal safe places, operational control, emergency services access and ventilation openings. Previously, advice was sought on the Tunnel Fire Life Safety specification to comply with the Specified Planning Requirements Conditions, however no specific advice was received in EIS 2. Request to be provided with the full fire life safety considerations with respect to civil works.
Concerns regarding the availability of a fire engineering design brief, including all infrastructure and rolling stock.

c. Glenhope Road is likely to have commuters parking their cars along the roadside so they can then walk across Castle Hill Road to Cherrybrook Station. It is also likely to attract kiss-and-ride commuters, so that drivers can then return back into the West Pennant Hills Valley without having to cross Castle Hill Road. Glenhope Road is one lane each way, has two childcare centres in close proximity to its intersection with Castle Hill Road, and a footpath for a short distance on one side only. This intersection will have traffic lights to allow all vehicle movements, with a pedestrian phase. The potential for accidents is high, given the mix of vehicle and pedestrians. Concerns raised over lack of pedestrian underpass at the Glenhope Road intersection where the walkway over the station is significantly lower than Castle Hill Road and could be continued under the road. Modern traffic planning requires maximum separation of pedestrians and vehicles to improve traffic flow and to increase pedestrian safety. It will be much easier and cheaper to do it now, to say nothing of the possible deaths and injuries it would save.

d. Request to see the evacuation strategy and evacuation plan for Cherrybrook Station.

Response

a. Road markings would be provided in accordance with RMS road design and safety guidelines. Various signalised and unsignalised pedestrian crossing are proposed in the vicinity of Castle Hill Station.

b. Fire and life safety is considered in Section 6.24.6 of EIS 2. The concept design has been undertaken in full compliance with performance requirements of the International Fire Engineering Guidelines and Australian standards. The detailed design would also fully comply with these performance requirements.

c. Dedicated kiss-and-ride zones have been provided within the station precinct which would allow commuters to be dropped off without the requirements to cross major roadways.

TfNSW aims to encourage pedestrian access to the stations. From the south of Castle Hill Road to Cherrybrook Station, safe pedestrian access

is provided via signalised intersections at Glenhope Road / Castle Hill Road and Robert Road / Castle Hill Road.

It is not proposed to provide a grade separated pedestrian crossing at this location as part of the NWRL project.

d. Provision has been made for emergency access and egress at each station. Evacuation strategies and plans, including for Cherrybrook Station, would be developed by the rail operator in conjunction with TfNSW and other relevant authorities.

7.3.9 Alignment

Stakeholder identification number(s):
66, 76, 121, 297, 299

Issue description

In summary, the respondents raised the following issues:

a. The relocation of the rail tunnel alignment to the middle of Cheltenham Oval is supported by Cheltenham residents as this proposal moves the impacts away from houses on Castle Howard Road.

b. Comment that an earlier request to be provided with simple curve and gradient diagram from Cudgegong to Chatswood appears to be ignored. The basic survey data provided with EIS 1 indicates that the tighter the curves the less efficient and more costly the railway becomes to build and operate. Question whether the curves on this railway go below 800 metres? Request to be provided with simple curve and gradient diagram from Cudgegong to Chatswood.

c. Opposition to the alignment / tunnel running under a property on Barombah Road, Epping. In the event that the tunnel is sabotaged or destroyed for any unforeseen reasons, the houses and the foundation of these houses above the tunnel will be affected. Based on resident's culture and religious beliefs, it is bad luck and bad fengshui to have tunnelling beneath houses. It will impact on resident's psychological well-being leading to physical illness.

d. It makes more sense for NWRL to follow the motorways (M2 and M7) instead. This option allows for further expansion when needed with less impact on residential streets. Other cities have efficient railway lines running down the middle of freeways, such as Perth.

Response

a. Comment of support for the rail tunnel location in the vicinity of Cheltenham is noted.

b. A plan and long section of the alignment between Tallawong Stabling Facility and Epping is provided in Figure 6.5A through to 6.5J of EIS 2. Between Epping and Chatswood the alignment is through the already constructed ECRL tunnels. It is noted that this alignment presented in EIS 2 is based on a concept design which would be subject to refinements throughout the detailed design phase.

c. The impact of tunnelling activities were addressed as part of the EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

Geotechnical investigations have been undertaken and are ongoing to inform the design and ensure the integrity of the rail tunnels.

There are many examples of tunnels throughout Sydney and in other cities throughout the world where tunnels can be found underneath properties. For example the Sydney Central Business District has many tunnels beneath properties.

d. Development of the NWRL and the alignment has a long and diverse history. The current proposed route is the outcome of numerous detailed studies undertaken since 1998.

7.3.10 Alignment

Stakeholder identification number(s):
149, 234, 288, 290, 309

Issue description

In summary, the respondents raised the following issues:

a. Support for the layout of the station precinct and would like to see at least one coffee shop / fast food take away shop and a newsagent within the Cherrybrook Station Precinct. Proposal for the two areas that are marked on page 25 in the EIS 2, as 'Future use to be determined by master plan' at the eastern end areas of Cherrybrook Station, to be landscaped and retained as park / bush areas.

b. Suggestion for the power pylon at the proposed Cherrybrook Station to be screened by bushes, integrating with the station design. Also request for bus shelters at the station to share characteristics of other bus shelters in the area, particularly colouration (image was attached to the submission illustrating the suggestion).

c. Suggestion for the slope near the Castle Hill Services Facility to be used for screening. The top could then be used as a new area of park, behind a reconstructed war memorial area.

d. Request for a covered walkway from the station to Castle Towers. This should be part of the construction of the railway and not an afterthought otherwise it will never be built.

e. The height of barriers from rear fences at Cherrybrook Station is currently unknown – it is considered unsatisfactory as setbacks as requested in EIS 1 must be determined and the construction barrier put on the agreed setback alignment to allow landscaping to immediately occur between rear fences and the barrier, so that mature landscaping will be established by the time the railway is due to open. Resident participation in the location of the barrier and choice of landscaping species is important. Gum trees are requested to NOT be planted in any landscaping setback in the vicinity of swimming pools.

Concerns that construction barriers on rear fences may damage trees and reduce residents' privacy.

f. Belief that the proposal to use Robert Road as a feeder road to Cherrybrook Station was due to the extension of the construction zone westwards because of the power line easement near Franklin Road. Given that these power lines pass over many properties, why is this an issue for the station?

Response

a. The Cherrybrook Station Precinct would be a neighbourhood centre with facilities available to Cherrybrook residents, which may include small retail outlets (such as coffee shops, newsagents, dry cleaners).

Opportunities within the immediate station precinct, such as areas marked "Future Use to be Determined by Master Plan" on the indicative layouts for each station, would be developed over a number of years in response to planning outcomes and strategies developed by local councils and the Department of Planning and Infrastructure, in consultation with the community.

Future development not directly related to the project would require separate planning approvals under relevant local / State planning processes. The NWRL Project would be designed and constructed to accommodate potential future development (by providing a robust street pattern, local access arrangements and an integrated design approach, including structural support, servicing and access).

b. The tower supporting the 132 kV high voltage electrical transmission line located at the eastern end of the precinct would be located within a landscaped area.

The colours, materials and finishes for the bus shelters would respond to the local environment and conditions and would be selected during the detailed design.

c. Arthur Whitling Park would be redesigned and vegetation screening requirements would be identified during the precinct detailed design stage. Consultation is ongoing with the Castle Hill RSL Sub-Branch and

The Hills Shire Council to include appropriate recognition of the current memorial in the Castle Hill Station precinct.

d. Figure 6.16 of EIS 2 shows two pedestrian crossings from the station across Old Castle Hill Road to the Castle Towers Shopping Centre. As currently presented, these crossings are not proposed to be covered. As part of the NWRL design, a future underground connection between the station and Castle Towers Shopping Centre would be safeguarded.

e. Construction site establishment activities including site fencing and noise barriers was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012. Noise barriers at Cherrybrook Station would be located around the boundary of the site for the duration of construction.

A detailed landscape plan for the Cherrybrook Station precinct would be prepared as part of the precinct detailed design stage. The detailed landscape plan would investigate the most suitable plant schedule for areas adjoining residential properties.

f. The extent of the construction site was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

7.3.11 Alternatives

Stakeholder identification number(s):
22, 30, 65, 99, 110, 112, 120, 140, 146, 172, 184, 196, 197,198, 227, 231, 236, 265, 273, 276, 290, 304, 309

Issue description

In summary, the respondents raised the following issues:

a. Request for NWRL to follow the Epping to Thornleigh Freight Line (ETFL), to run along the same alignment from Epping to Pennant Hills Road and past that intersection for the ETFL in the form of a tunnel, swinging right under Pennant Hills Road to meet at Pennant Hills / Thornleigh Station at the proposed tunnel for ETFL at Pennant Hills. The government funding could be disbursed for this purpose, with the rail routes being on a common alignment for about 4 km. The NWRL geotechnical long section depicted in Section 1 of 9 (Figure B2) founded in Hawkesbury Sandstone seems to favour such an arrangement. The grade for the freight line is below the acceptable grade. Also suggestion to provide link just before Chatswood, like the one approved for the Epping to Chatswood Rail Link at Epping, to open up the future possibility of creating a separate underground rail link from Chatswood to the CBD and Central / Redfern with a second Harbour Bridge crossing, as and when required, independently or connected to the Northern Line.

b. A number of design alternatives have been suggested regarding access to Cherrybrook Station. They include: Proposal for County Drive and then Castle Hill Road as an alternative route to the proposed Cherrybrook Station, rather than utilising Robert Road as a feeder road. Robert Road is a much narrower street and is only designed for low traffic volumes. Buses heading south on County Drive could easily continue and turn left into Castle Hill Road and head towards Cherrybrook Station. Lights would be provided at Robert Road, Franklin Road and Castle Hill Road.

Also suggestion to create a ring road of County Drive, Castle Hill Road and Edward Bennett Drive onto New Line Road. The submission

asserted that traffic analysis in EIS 2 has incorrectly stated traffic levels heading south on County Drive turning left into Castle Hill Road at peak traffic times, and traffic heading east on Castle Hill Road in morning peak time. Since traffic congestion is currently not significant in peak traffic times on Castle Hill Road between County Drive and Edward Bennett Drive, vehicular access to Cherrybrook Station from Dural and the North-West should be south along County Drive, then east along Castle Hill Road to a new slip road entrance into the station from Castle Hill Road.

Preference that Robert Road be converted into a cul-de-sac (shown as Appendix to submission) based on the following:

1. There is no requirement to use Robert Road heading south as an access point into the Cherrybrook Station Precinct.
2. The creation of a cul-de-sac would avoid the build-up of traffic and potential accidents in a local street that has not been built to be utilised as a main road. An alternative design, avoiding using narrow side streets that lead into a series of cul-de-sacs or back to the main road, has been submitted. Advantages of this design are:
   - ❖ Reduced cost of upgrading Robert and Franklin roads to take heavy vehicles.
   - ❖ Reduced traffic congestion on John Road.
   - ❖ Allowing easy right turn into the station from Castle Hill Road.
   - ❖ Potential increase in on-site parking and/or future uses which reduces impact on neighbourhood streets.
   - ❖ Increased amenity for Robert Road residents near the station.
   - ❖ Removal of the need for lights at Glenhope Road which is very close to Robert Road. Synchronisation of the lights at the Robert Road end and near Franklin Road allows traffic to flow from Glenhope Road without the worry of crashes.
   - ❖ Closing Robert Road which would comply with the Austroad classification of Robert Road as a cul-de-sac.
   - ❖ The problem of traffic turning in and out of Robert Road would be reduced by removing all bus stops in John Road which would only minimally inconvenience commuters who could walk to County Drive or Cherrybrook Station.

   Request to dedicate the current parking lanes on County Drive between John Road and Castle Hill Road to bus only lanes instead.

   Other recommendations for Cherrybrook Station precinct:

   1. After the construction phase is complete, the Glenhope Road traffic signals should be replaced with a pedestrian overpass into the station entrance.
   2. Commuter bus routes to Cherrybrook Station should use County Drive and Castle Hill Road.
   3. County Drive should be opened to its full width to fully utilise its traffic capacity.
   4. At the station, an ingress lane off Castle Hill Road should be constructed for bus and car entry to the station.
   5. No bus feeder route along Robert Road.
   6. No change to Robert Road north of the station precinct.

c. It would cost more to build bigger tunnels to accommodate double deck trains but it is the most sensible and logical solution. People want a seamless railway network that would encourage them to use it rather than continue to rely on the car.

d. Suggestion for the houses adjacent to Cheltenham Oval to be acquired in order to relocate the proposed Cheltenham Intermediate Services Facility, as well as allowing amenities and parking in this area. Proposal to develop the stub of Murray Road (off Castle Howard Road) for the Cheltenham Services Facility.

e. Request for Cherrybrook Station to revert back to the 'station in the bush' proposal and move away from current high-rise development proposal.

f. Proposal to acquire the vacant block of land on Robert Road, and create a vehicle entry / exit point into / out of the cul-de-sac road as far north

east as possible (diagram shown in Appendix to submission). This would give homes the maximum amount of protection from noise, traffic and lights expected to be generated by the future Cherrybrook Station. It would also allow the driveway on the adjoining property to be shifted from the north side of the frontage to the south side of the frontage to allow it to become part of the cul-de-sac. Also suggest removing the proposed island of trees directly at the front of property in Robert Road.

The purchase of this property would also allow the portion of Robert Road proposed by NWRL as the entry point into the Cherrybrook Station spine road, to be shifted further east at an earlier point than what has been proposed.

Submission considers that the proposal for NWRL to purchase the vacant block on Robert Road provides a satisfactory outcome for residents of Robert Road, providing protection from Cherrybrook Station Precinct but with a negligible variation to the plans proposed in EIS 2. The three dimensional model displayed at the Community Information Sessions on 8th November at Castle Hill and 10th November at Cherrybrook Uniting Church, largely mirrors this proposal.

The acquisition of the vacant block on Robert Road by NWRL will provide the following advantages for residents:

1. Create sufficient continuous shield / buffer from acoustic and visual disturbances for the houses most affected by the Cherrybrook Station.
2. Allow safe exit for houses, as under NWRL's proposal, cars exiting houses will be required to back out of their properties onto the main road, given there is no turning room. Under the proposal (shown in Appendix to submission) cars will be able to back out into the cul-de-sac and approach the entry / exit in a forward facing direction.
3. Allows residents to enter Robert Road from the cul-de-sac road, at a point further away from the intersection between the proposed spine road and Robert Road, thereby reducing the chance of accidents.
4. Allows a nominal amount of on-street parking.

Alternatively, NWRL should extend the barrier on Robert Road.

Also concerns raised that planting bushes along Robert Road for noise mitigation is unacceptable as the bushes will obstruct vision when reversing from driveways.

g. Belief that it is a high risk strategy to base the only possibility of direct train service from the North West to the city on the construction of the proposed new line, particularly while the Government persists with the expensive and impractical deep level option under the harbour. Suggestion for a more cost-effective and 'obvious' solution is to reinstate the rail tracks which were removed from the eastern side of the bridge in the 1950's and bring the proposed NWRL into Wynyard in the first stage, and further south under the city as funds permit, however this is still believed to be an expensive project that may well be deferred further into the future, leaving the NWRL as a 'white elephant' shuttle in the long term.

h. Suggestion to connect the Cudgegong Road and Schofields Stations as this would mean commuters could travel to and from Western Sydney.

i. As part of construction, request for a covered walkway from the Macquarie University Station to the Macquarie Centre.

Response

a. Development of the NWRL and the alignment has a long and diverse history. The current proposed route is the outcome of numerous detailed studies undertaken since 1998. In particular, the Concept Plan Approval in 2008 approved a direct tunnel connection rather than an alignment as suggested in this submission. The suggested link at Chatswood is beyond the scope of the NWRL project.

b. The indicative layout of Cherrybrook Station as shown in Figure 6.11 of EIS 2 represents the design layout for which the environmental assessment was undertaken and for which an approval is being sought. The rationale for station design is presented in Section 6.7.1 of EIS 2. Further details regarding Cherrybrook Station are presented in Section 6.9 of EIS 2. During operations, access and egress points are proposed from both Robert and Franklin Road, however it is noted that the design

of the site provides priority for vehicles accessing the site from Castle Hill Road (as shown on Figure 6.11 and Figure 6.12 of EIS 2). The closing of Franklin Road or Robert Road with all vehicular access from Castle Hill Road would result in greater traffic impacts and potentially traffic safety implications on Castle Hill Road.

In relation to operational bus access, TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

c. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future. It has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

The NWRL will be fully integrated into Sydney's public transport network. Rapid transit services, initially 12 trains per hour during peak periods (a train every five minutes in peak periods) will be operated with new generation single deck trains, advanced signalling and dedicated track. Therefore, NWRL will deliver the required infrastructure (including tunnels) to support single deck trains and advanced signalling.

The NWRL and future Tier 1 Rapid Transit network will be physically separated from other Suburban and Intercity services (Tier 2 and Tier 3 respectively) that will operate with double deck trains.

d. Various alternatives were considered for the location of the Cheltenham Services Facility. The options analysis was detailed within EIS 1. The Cheltenham Services Facility would be located adjacent to Cheltenham Oval between Castle Howard Road and the M2 Motorway as shown in Figure 6.51 and Figure 6.52 of EIS 2. The acquisition of additional property is not required for the construction or operation of this facility.

e. The indicative layout of Cherrybrook Station as shown in Figure 6.11 of EIS 2 represents the design layout for which the environmental assessment was undertaken and for which an approval is being sought. The rationale for station design is presented in Section 6.7.1 of EIS 2. Further details regarding Cherrybrook Station are presented in Section 6.9 of EIS 2.

Opportunities within the immediate station precinct, such as areas marked "Future Use to be Determined by Master Plan" on the indicative layouts for each station, would be developed over a number of years in response to planning outcomes and strategies developed by local Councils and the Department of Planning and Infrastructure, in consultation with the community.

Future development not directly related to the project would require separate planning approvals under relevant local / State planning processes. The NWRL Project would be designed and constructed to accommodate potential future development (by providing a robust street pattern, local access arrangements and an integrated design approach, including structural support, servicing and access).

f. The proposed arrangements presented in EIS 2 provide appropriate access to all properties. Figure 6.11 of EIS 2 shows an indicative operational layout for Cherrybrook Station, including landscaped areas between the station elements and the residences on Robert Road to provide a visual screening. The final details of the landscaped areas would consider sight distance and road safety requirements.

Robert Road provides a key access point to the station from the north, however it is noted that the design has given priority to access off Castle Hill Road in order to reduce "rat-running" via Robert Road.

Table 10.47 of EIS 2 identifies a number of noise mitigation measures to be implemented to reduce impacts of operational noise to adjacent residential receivers (the mitigation measures are reproduced in Chapter 9 of this report). It is also noted that a vegetated buffer would be expected to provide minimal noise attenuation.

g. The suggestions in this submission are beyond the scope of the NWRL project. NWRL is an integral component of a plan to transform and modernise Sydney's rail system. Called Sydney's Rail Future, the plan is a part of the NSW Long Term Transport Master Plan which provides the strategic context for the NWRL and its relationship to the rest of the Sydney rail system. The NSW Long Term Transport Master Plan was developed following extensive community and stakeholder consultation.

h. The design of Cudgegong Road Station includes safeguarding for a future extension of the rail alignment to Schofields.

Any extension of the line beyond Cudgegong Road Station does not form part of the NWRL and would be subject to future planning approval processes.

i. Upgrades to facilities around ECRL stations are outside the scope of the NWRL project.

7.4 Environment (operation and construction)

7.4.1 Flora and fauna

Stakeholder identification number(s):
30, 35, 65, 76, 110, 115, 127, 139, 144, 145, 149, 197, 251, 272, 276, 277, 287, 288

Issue description

In summary, the respondents raised the following issues:

a. Concerns that the increase of traffic on Franklin Road (from Cherrybrook Station) will impact endangered species found in the area.

b. Kayla Way residents are concerned termites will be dislodged from trees during construction. Termite barriers should be installed at the boundary of Kayla Way to prevent termites or any other insect / spider moving from the construction site to local residences. Also request for regular pest inspections at adjoining properties and treatment where necessary.

c. Concerns regarding the access road proposed for the Cheltenham Services Facility in an area with difficult topography. Proposal for the route of the access road to follow the current footpath as it would be better to reinstate the bushland in this location, using preserved top soil and its seed bank to revegetate. Objection to a two lane access road and comment that a one lane road will be sufficient and will compromise less bushland. Request for better and less damaging alternatives to be assessed. Query regarding why the M2 access option to the Cheltenham Services Facility has been discarded as this would prevent further loss of bushland.

d. Kenwick Lane, Beecroft is a no through road, situated in a small gully, and ends at the edge of the Chilworth Conservation Reserve. Kenwick Lane and Chilworth Conservation Reserve represent one of the last remaining examples of Blackbutt Gully Forest in the Sydney Basin. The forest contains many native fauna such as Powerful Owls and Eastern Water Dragons, along with a wide range of other at-risk species. Concerns that the flora and fauna in this area is particularly sensitive to disturbances from noise and vibration. It is recommended that the level at which corrective action must be initiated by the Contractor be lowered from the currently proposed 35 dBA to 25 dBA to take account of the fact that a level of additional noise above 25 dBA from the trains in the tunnels would impact significantly on the fauna and flora of the area.

e. Concerns about the two large trees located near the proposed tunnel near the western end of the intersection of Castle Hill Road and Robert Road. Additional concerns regarding two large gum trees and a large pine tree in the front property on Castle Hill Road, Cherrybrook, being damaged by the tunnel boring machine which will stress the trees or potentially kill them. It is preferred that these trees be removed during the construction stage (picture of trees attached to submission).

f. Opposition to potential removal of Sydney Blue Gums between Cherryhaven Way and Castle Hill Road near the proposed Cherrybrook station.

g. Concerns regarding damage to vegetation caused by the proposed Cherrybrook Station construction barrier near residential properties in Oliver Way.

h. Concerns regarding the permanent access road approved for the EIS 1, which has now been converted to a temporary access road for the EIS 2. This should be regarded as a significant change in the scope of works because the original assessment of the best location for subsequent bush regeneration was not addressed in the EIS 1. Suggestion that the EIS 1 approval process must be revisited in order to satisfy the objectives of the EP&A Act and matters under Sec 79c. Suggestion that the current approval is for a permanent road; however, now that a temporary road is proposed, the final activity that should be assessed is the reinstatement and regeneration for the bushland under Sec 79c of the EP&A Act. This is because the best location for regeneration could be completely different than for a permanent road. Concerns that Hornsby Council will be given back an area of disturbed land which will require long term maintenance (30 years minimum) for it to fully recover and become an integral part of the bushland again, considering the original scope was for a permanent access road but has now been changed to a temporary access road.

i. The degree of disturbance along the existing walking track from Kirkham Street to Cheltenham Oval will be significantly less compared to the proposed temporary access road along the M2 boundary. It will be easier and better environmentally to regenerate in the vicinity of the walking track as the land is flatter with an even grade and has deeper soils. The impact to STIF would be significantly less than the impact of the road along the M2 fence line. Request that even though the walking track option is outside the approval area, it should be considered a more appropriate option than the temporary access road along the M2 fence line.

j. Queries whether RMS is aware that the proposed access road along the M2 will now be temporary (as opposed to permanent) and that bushland has to be reinstated and regenerated. Calls for Hornsby Council to be included in any RMS discussions as Council will end up inheriting the care of this land along the fence line.

k. Concerns regarding the loss of trees should high-rise and commercial development proceed at the end of Robert Road.

l. Concerns that the Cheltenham Services Facility will result in the removal of large established trees and bushland for heavy vehicle access. Suggestion that destruction of trees and vegetation be avoided at this location by providing continued access to the construction vehicles from M2 to the proposed services facility at Cheltenham Oval.

m. Support regarding Murray Road Easement no longer being used as a service road for the Cheltenham Oval services facility, therefore steps required for saving the trees near the easement. Also support for saving the trees behind the houses next to the Cheltenham Oval netball courts and calls to retain the four trees behind the Cheltenham netball courts.

Response

a. The increase in traffic on Franklin Road would not be expected to have a significant impact on any flora and fauna. Whilst Franklin Road and Robert Road are identified as access and egress points to and from the station, the design has given priority to vehicles from Castle Hill Road.

b. Whilst vegetation clearing would be required to facilitate construction of Cherrybrook Station, this would not be anticipated to result in significant impacts to adjacent properties from termites. Additionally, large areas of existing vegetation adjacent to the construction site would be retained, along with vegetation on the perimeter of the site where feasible.

c. The exact location of the access road to the Cheltenham Services Facility would be determined after consideration of all factors including ecological impacts, local topography and construction methodologies. The access road would be revegetated once construction is completed and would not be expected to have a significant impact on any flora and fauna. Access and egress directly on and off the M2 Motorway continues to be explored with RMS and the motorway operator as an alternative.

d. The design of the track attenuation and rail tunnels has been undertaken to comply with relevant criteria provided in the Interim Guideline for the *Assessment of Noise from Rail Infrastructure Projects* (DECC, 2007). Section 15.5.2 identified increased noise from the operation of the rail line as a potential impact to fauna, however it notes that little is known of the impact thresholds of noise disturbance on fauna. Generally, patches of vegetation above the rail tunnels would already be subject to relatively high noise levels from surrounding roadways, including the M2 Motorway. Noise impacts from the operation of the rail tunnels would be unlikely to produce significant additional impacts to threatened fauna.

e. The removal of vegetation within the footprint of the NWRL project was addressed as part of the EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012. Where the proposed works would result in the instability of large trees, options would be considered to ensure safety including removal of the trees.

f. The removal of vegetation within the footprint of the NWRL project was addressed as part of the EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

It is noted that the location of Cherrybrook Station has been planned to avoid the area of Blue Gum High Forest mapped as good quality located to the north of the construction site.

g. The removal of vegetation within the footprint of the NWRL project was addressed as part of the EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

It is noted that the noise barrier is required in this location to reduce the potential noise impacts during the construction period.

h. With regard to Cheltenham Services Facility, operational maintenance access is feasible from Castle Howard Road. As such, the access road from Kirkham Street is only required temporarily for the duration of construction.

The precise location of the access road would be determined during detailed construction planning taking into account all factors including ecological impacts, local topography and construction methodologies. The access road footprint would be revegetated on completion of the construction works.

i. The broad location of the access road and the removal of vegetation within the footprint of the NWRL project was addressed as part of the EIS 1 - Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

An option exists for access and egress to and from the M2 Motorway as a left in, left out subject to consultation with the motorway operator and RMS.

The precise location of the access road would be determined during detailed construction planning taking into account all factors including ecological impacts, local topography and construction methodologies. The access road footprint would be revegetated on completion of the construction works.

j. Discussions regarding all relevant aspects of the NWRL have occurred and are continuing with RMS and Hornsby Shire Council. TfNSW proposes to involve Hornsby Shire Council in discussions and works in relation to revegetation of the Kirkham Street access road to Cheltenham Services Facility.

k. The removal of vegetation within the footprint of the NWRL project was addressed as part of the EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

Future development within the vicinity of the Cherrybrook Station does not form part of the NWRL project. Any future proposals would require assessment and approval under the relevant local / State planning processes.

l. The broad location of the access road and the removal of vegetation within the footprint of the NWRL project was addressed as part of the EIS 1 - Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

An option exists for access and egress to and from the M2 Motorway as a left in, left out subject to consultation with the motorway operator and RMS.

The precise location of the access road would be determined during detailed construction planning taking into account all factors including ecological impacts, local topography and construction methodologies. The access road footprint would be revegetated on completion of the construction works.

m. The support for the removal of the use of the Murray Road easement from the project is noted. Wherever possible, vegetation around the perimeter of the site would be retained. It is noted that the removal of vegetation within the footprint of the NWRL project was addressed as part of the EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

7.4.2 Heritage

Stakeholder identification number(s):
162, 306

Issue description

In summary, the respondents raised the following issues:

a. Concerns about demolition of The Hills Centre for Performing Arts for the construction of the planned Showground Station and the visual impact of Kellyville Station on the heritage values of the Old Windsor Road precinct.

b. Concerns about the removal of vegetation (recognised in the EIS heritage study as being important to the setting of heritage property) along the Castle Hill Road frontage of the station site. There is no consideration given in the EIS to retaining the vegetation on the perimeter of the site. The EIS states consideration will be given during final design / construction to what can be saved. There should be rigorous assessment of any proposals to clear vegetation and all attempts made to minimise tree removal

Response

a. The demolition of the Hills Centre for the Performing Arts has been considered and assessed in the Modification to Showground Station Report. The demolition of this building is required in order to allow the station precinct to move south and minimise impacts on the wider Showground area.

Chapter 11 of EIS 2 provides an assessment of European Heritage. As the proposed Kellyville Station site would be located adjacent to one of the identified historic precincts along Old Windsor Road, there may be some impacts upon this historic roadway precinct. Since there have been numerous physical changes to this part of Old Windsor Road in recent times, heritage impacts are considered to be of a relatively minor nature. In order to manage this potential impact, it is proposed to re-establish planted vegetation along the eastern side of the North-West T-Way following completion of the construction works.

b. Vegetation clearing at the Cherrybrook Station construction site was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

Chapter 11.6 of EIS 2 outlines that where feasible and reasonable, an adequate buffer of vegetation along the northern side of Castle Hill Road opposite the Glenhope property would be retained or reinstated to preserve the character of its setting and to screen the visual impacts of the station construction site in the northern outlook from the Glenhope property. Details regarding vegetation would be determined during the construction planning phase.

7.4.3 Sustainability

Stakeholder identification number(s):
10, 214, 304

Issue description

In summary, the respondents raised the following issues:

a. Concerns that single deck trains will have greater environmental impacts due to more frequent services and power usage.

b. Many thousands of cubic metres of concrete and reinforced steel will be required for the construction of the proposed sky train at Kellyville for a mere five kilometres of track. Sustaining resources for future projects must be used sparsely.

c. Sustainability features for the sections with viaducts and bridges need to be chosen to capture solar and wind power combined with noise abatement and vibration reduction measures.

Response

a. The NWRL would provide frequent rail services with single deck trains able to carry up to 1300 passengers. Detailed rail demand modelling has been undertaken to determine the required frequency and capacity of the train services and as a result frequent services will provide an attractive alternative to private car travel. An assessment of operational greenhouse gas emissions in Section 17.5.1 demonstrates that based on the mode shift predictions and the projected carbon intensities of rail, bus and car travel in 2021, the operation of the NWRL would result in an annual reduction in transport related greenhouse gas emissions of 6,860 tCO2-e per year. It is also noted that Table 4.2 of EIS 2 provides a commitment to explore options to offset 100% of the electricity needs for the operational phase of the project.

b. One of the project's sustainability objectives contained in Table 4.2 of EIS 2 is to "Reduce materials use and minimise waste throughout the project life-cycle…[and to] Identify materials with a lower environmental

footprint". This would apply to the skytrain element of the NWRL project.

c. Energy harvesting is listed as an example of one of the ways in which sustainability would be incorporated into the skytrain design. Section 6.20 of EIS 2 states that "the skytrain must incorporate sustainability initiatives (such as water collection from the viaduct and energy harvesting)".

7.4.4 Waterways

Stakeholder identification number(s):
307

Issue description

In summary, the respondent raised the following issue:

a. Concerns regarding possible impacts on Devlins Creek as the tunnel is proposed to be constructed only five metres beneath the creek.

Response

a. Potential impacts on waterways as a result of tunnelling were addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

EIS 1 identifies a number of mitigation measures to limit the potential impacts relating to tunnelling underneath waterways, including drawdown and bed cracking (EIS 1 Chapter 8), ecology (EIS 1 Chapter 15 and surface water / hydrological changes (EIS 1 Chapter 18).

7.4.5 Visual impact

Stakeholder identification number(s):
64, 65, 75, 76, 103, 106, 110, 127, 145, 197, 236, 261, 272, 276, 287

Issue description

In summary, respondents raised the following issues:

a. The green landscape areas on Figure 6.11 within Cherrybrook Station precinct are shown near Castle Hill Road and not adjacent to the boundary with Kayla Way. Not having wide enough green landscape areas adjacent to the boundary with Kayla Way will lead to substantial visual impacts to adjacent residents. Can TfNSW justify why wide green areas are located adjacent to Castle Hill Road and not near the boundary with nearby residents? Green landscape areas near the Kayla Way boundary will lead to a better outcome for surrounding residents in terms of visual impacts, reduction of heat island effect of the concrete and asphalt areas. A minimum 50 metre of buffer space will reduce these impacts. Request for more detail on the extent of landscaping in the Cherrybrook Station areas adjoining Kayla Way. Calls for extensive landscaping to mitigate the impacts from the station. Suggestion for Future Use Areas at the proposed Cherrybrook Station to be planted with local indigenous trees and shrubs in order to reduce visual impacts. Request for rows of trees to be planted between the boundary fences and acoustic fencing at the proposed Cherrybrook Station in order to mitigate negative visual impacts. Planting early in the construction phase would allow trees to mature and to act as a genuine visual buffer during the construction phase.

b. The visual impacts from construction of the 60 space car park at Cherrybrook Station will affect surrounding residents. The four-five metre narrow buffer will not be enough to mitigate the noise impacts from the car park. Suggestion to relocate the car park to be adjacent to the proposed multi-level park and ride car park and include a 50 metre

buffer vegetation buffer between the Kayla Way fence and the nearest station building.

c. Concerns that using proposed Robert Road as an entry way to Cherrybrook Station will result in permanent loss of amenity of the 'picturesque tree lined' roadway. Objection to the negative visual impacts of pruning or removing trees on Robert Road if this is to be required for buses to pass on the narrow street or if no parking / no stopping restrictions are adopted.

d. Comment that the proposed six metre noise wall at Cherrybrook Station will tower over residences in Oliver Way who will also be impacted by the height of the acoustic shed. Information on the location for the proposed noise wall and the acoustic shed could not be located in EIS 2. Request for clarity.

e. Support for the current design of the Cheltenham Oval as the facility will be hidden behind the netball and soccer facilities with reduced visual impact on surrounding residences.

f. Concerns about the visual 'ugliness' while over-looking the rail station and proposed two to three level car park. Request preservation of more existing trees within the site between Franklin Road and Robert Road and a sound attenuation wall and screening plants (ie conifers to a height of 10 metres) be constructed along the Stanley Court side of Castle Hill Road adjacent to the existing brick wall. A living 'green' wall may be considered.

Response

a. EIS 2 identifies minor adverse visual impacts on Kayla Way properties during NWRL operation due to the reduction on the amenity of views from a location of neighbourhood visual sensitivity. The station elements would be somewhat filtered by buffer vegetation and landscaping at the rear of the Kayla Way properties as shown on Figure 6.11 of EIS 2.

A landscape plan for the Cherrybrook Station precinct including areas adjoining Kayla Way will be prepared as part of the precinct planning stage. The landscape plan will investigate opportunities to further mitigate the minor adverse visual impacts on Kayla Way properties.

b. EIS 2 identifies minor adverse visual impacts on Kayla Way properties during Stage 2 construction due to the reduction in the amenity of views from a location of neighbourhood visual sensitivity. Wherever feasible, vegetation along the site boundary would be retained to provide some visual screening to the construction works, however it is noted that a vegetated buffer would not be expected to provide noise attenuation benefits. Predicted noise exceedances are proposed to be managed during construction through implementation of the mitigation measures detailed in Table 10.48 of EIS 2 (and reproduced in Chapter 9 of this report) and through implementation of the Construction Noise and Vibration Strategy (Appendix J to Technical Paper 3 of EIS 2).

c. A number of trees would require removal within the Cherrybrook Station precinct as shown in Figure 6.11 of EIS 2. However, it is noted that landscaped areas are proposed to be provided between Robert Road and the station elements in order to provide some level of visual screening. Tree removal or pruning for the remainder of Robert Road is not proposed as part of the NWRL project.

d. The six metre high noise wall and location of the acoustic shed were addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012. The six metre high noise wall would be located around the perimeter of the construction site and the acoustic shed across the station box (shown in Figure 7.6 of EIS 2). Both would be in place for the duration of the construction period.

e. Support for the current design of the Cheltenham Service Facility is noted.

f. Figure 6.11 of EIS 2 shows areas of Cherrybrook Station which would be landscaped and which would provide visual screening to the built elements.

A detailed landscape plan for Cherrybrook Station precinct would be prepared as part of the detailed design phase of the project.

7.4.6 Soils and geology

Stakeholder identification number(s):
169, 297, 299, 318

Issue description

In summary, respondents raised the following issues:

a. Concerns about the tunnel underneath the Epping area affecting the quality of the soil.

Response

a. Potential impacts regarding tunnelling were addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

EIS 1 identifies mitigation measures to manage the potential impacts of tunnelling works, including soils and groundwater (see Chapter 8 of EIS 1).

7.5 Operation

7.5.1 Fares

Stakeholder identification number(s):
9, 11, 55, 88, 125, 143, 189, 193, 218, 298, 311, 312

Issue description

In summary, respondents raised the following issues:

a. Objection to the proposal to privatise the Epping-Chatswood Rail Link. Concerns that privatising the line will increase the fares for passengers travelling on the Epping to Chatswood Rail Link which in turn will put a financial burden on families living in surrounding suburbs who have already been forced to move to these outer suburbs due to Sydney's high living costs. Preference is that the line should remain public. Concerns relating to the cost impacts on commuters travelling on the Northern Line to Chatswood and the city via the Epping to Chatswood Rail Link. The EIS 2 does not address any concerns about the cost to commuters of using a privatised Epping to Chatswood line, who should be assured that the proposed North West Rail Link project will not result in increased fares.

b. Request for the proposed North West Rail Link to not be operated by a private entity due to concerns that fares may be increased for this line. Request for the current CityRail fare structure to be maintained on the North West Rail Link once in operation.

c. Concerns regarding cost of the train ticket.

d. Query whether the cost of passenger rail fares will be adjusted down for current city commuters from the Northern Line to compensate them for the additional time, passenger crowd congestion and loss of available seating space when having to change trains three times each way.

Response

a. As detailed in Section 6.3.1 of EIS 2, the fares for the NWRL would be set by the NSW Government in line with the rest of the Sydney rail network. Subject to a value for money analysis, the NWRL would be operated by the private sector.

b. As detailed in Section 6.3.1 of EIS 2, the fares for the NWRL would be set by the NSW Government in line with the rest of the Sydney rail network. Subject to a value for money analysis, the NWRL would be operated by the private sector.

c. As detailed in Section 6.3.1 of EIS 2, the fares for the NWRL would be set by the NSW Government in line with the rest of the Sydney rail network.

d. The fares for the suburban network are determined by TfNSW and approved by the Independent Pricing and Regulatory Tribunal (IPART). The travel time for passengers on the Northern line travelling to the City is anticipated to remain approximately the same as the existing travel time, despite the required train changes.

7.5.2 Noise and vibration

Stakeholder identification number(s):
13, 48, 59, 64, 65, 66, 70, 71, 72, 78, 94, 106, 110, 127, 144, 145, 151, 155, 171, 178, 181, 192, 196, 197, 212, 225, 227, 228, 233, 234, 237, 261, 272, 273, 276, 287, 302, 306, 307, 320, 322

Issue description

In summary, respondents raised the following issues:

a. Query regarding how much noise will be heard from houses surrounding Showground Station and the proposed Doran Drive station access. Request for residents near the proposed Showground Station to be informed of the location of noise walls once the detailed design has been completed.

b. Request from property owners in Hannah Street, Beecroft for further information on:

- ❖ The program and frequency of maintenance works planned to ensure the ongoing abatement of noise and vibration impacts from the NWRL tunnel.
- ❖ Engineering design being adopted to abate noise and vibration under Hannah Street, Beecroft properties.
- ❖ Measures to ensure the ongoing integrity of tunnels and tracks to ensure abatement of noise and vibration over the long term operation of trains in these tunnels.
- ❖ The tender and selection process to be used to contract the specialists undertaking these operational noise assessments.

c. The noise and vibration impacts from the increase of traffic on Franklin Road in addition to the new road linking Franklin Road and Robert Road will result in noise impacts from buses and vehicles, will have detrimental impacts on the quality of life for residents of Kayla Way, and will result in sleep disturbance for nearby residents. Suggestion to reduce these impacts by:

- ❖ Building a new access road through vacant land at the centre of the Cherrybrook Station precinct adjoining the 'Onsite Detention'.
- ❖ Closing off Franklin Road at the Kayla Way boundary and Robert Road to vehicular traffic.
- ❖ Adding an extra lane adjacent to Castle Hill Road (suggested Precinct Plan attached to submission).

d. The noise and vibration from car engines and commuters using the proposed park-and-ride for 60 cars on the north eastern boundary of Cherrybrook Station will result in sleep disturbance to nearby residents. Suggestion to relocate the park and ride to be adjacent to the proposed multi-level park-and-ride and incorporate a 50 metre vegetation buffer between Kayla Way fence and the nearest station building (suggested Precinct Plan attached to submission).

e. Some properties in Kayla Way (adjacent to Franklin Road) will be more exposed to noise impacts from Cherrybrook Station as the top of the boundary fence is below the height of the road meaning this will not provide any noise attenuation unlike other Kayla Way properties set further back. Suggestion to close off Franklin Road to traffic travelling to the station and use Castle Hill Road in its place.

f. Objection to the use of Robert Road being used as a feeder road for buses and / or cars to the proposed Cherrybrook Station as traffic arrangement changes will result in significant noise impacts. Concerns that this proposal will impact the quiet, suburban street and decrease the amenity of the area. The proposed feeder road will affect the overall liveability of Robert Road, affect quality of life and be detrimental to the health of the residents in the area, particularly the elderly. Residents purchased property on Robert Road because of its quiet and peaceful nature. Most houses along Robert Road are located close to the street and residents will be affected by noise from additional traffic. Request for compensation for soundproofing residences near Robert Road should the road be utilised as a feeder road to the proposed Cherrybrook Station. Mature landscaping and noise reduction in the vicinity of the station appear evident and will become an urban marker for the station entrance. Area between County Drive and Robert Road would also benefit from mature plantings and other noise reduction techniques to combat vehicle and pedestrian noise.

g. Concerns about the likely impact of noise and vibration on residences around Kenwick Lane, Beecroft due to the proposed trains travelling directly beneath residences along rail tunnels. The ambient noise level in this area, particularly in the evenings, is lower than most suburban areas in Sydney and nearby parts of Beecroft. Residents and visitors have become accustomed to the peace and quiet of this location. There is currently very rare disturbance at night from heavy road vehicles, trains and aircraft.

Currently the noise inside a house after 9:30pm with no TV or music being played ranges between 30-40 dB. Concerns that by adding a train travelling underneath the properties will add a further 35+ db. This will be sufficient to disturb sleep and be disruptive. It is important to note that the decibel rating system is a logarithmic scale, where an increase of 5 dB is large (twice the power is an increase of only 3 dB). From this, an increase of 6 dB is four times the power of the noise. Therefore it is very important to the potential impact on residences that the approved acceptable noise level be reduced significantly.

Preference that the level at which corrective action must be initiated by the Contractor be lowered from the currently proposed 35 dB to 25 dB to take account of the fact that a level of additional noise above 25 dB from the trains in the tunnels would impact significantly on the area and the quality of life for residences.

h. Overflow of commuter parking from the proposed Castle Hill Station will cause noise issues in local residential streets.

i. Objection to the use of John Road as a feeder route to Cherrybrook Station during operation due to the steep incline which will increase noise impacts.

j. Future Use Areas at the proposed Cherrybrook Station should be landscaped and planted with local indigenous trees and shrubs in order to reduce operational noise.

k. Concerns regarding privacy, noise and vibration due to the proximity of the proposed Cherrybrook Station. Insufficient details are provided about the impacts. Request for a six metre permanent concrete fence, additional screening and soundproofing (eg double glazing) to reduce these impacts and for this to be funded by the project. A simple variation in the shape of the excavation could assist in mitigating the transmission of noise. Request for screening to be included along the Castle Hill Road frontage of the station. Calls to retain the suggested noise attenuation wall post construction, which should be of equal height of the proposed carpark.

l. Concern that noise of running trains in tunnels below properties in Epping (18 metres below) will cause severe noise pollution, health issues and instability to the property structure.

m. Request for a buffer zone to be constructed between the Oliver Way properties near boundary fences, which would include acoustic fencing and rows of trees planted to screen the properties from visual, acoustic and dust impacts.

n. Concerns that both property and quality of life (including health) will be significantly affected by train noise and vibration during the operational phase of the North West Rail Link railway tunnels (reference made to A2042947-193) which run directly underneath properties in Cherrybrook. Opposed to having a railway tunnel at such a shallow depth (20 metres) beneath properties. Preference for state of the art noise control measures to be adopted during this planning stage to minimise the impact of rail operation noise. Query regarding what legal rights and entitlements property owners have in the event of noise and vibration impacts resulting from trains passing through tunnels, and how TfNSW would rectify such a situation. Would Transport for NSW compensate those affected?

o. Overall support for the construction of the NWRL project, however, concerns regarding noise and vibration from the rail tunnels proposed beneath Norwest Boulevard. Noise and vibration from the operating train will reduce the standard of living and most likely adversely affect the property values in the area.

NWRL proposes construction of only standard attenuation track (using resilient base plates) on this radius curve, despite the main cause of noise and vibration being known to be from train movements causing friction between the wheels and the rails themselves, which are referred to by NWRL as dynamic forces.

This residential section of track should be upgraded to a higher level of attenuation before the initial construction, as proposed in several other almost straight sections between Epping and Bella Vista Stations. This curved section of track on this bend is the longest in the whole proposed line. There is a high possibility that in years to come other train types and higher operating speeds will exceed any computer modelling of noise and vibration levels that NWRL have performed. Calls for residential areas to have a higher standard of mitigation than commercial or other non-residential areas.

Response

a. Noise from the operation of Showground Station would be generated from a number of sources including PA systems, ventilation equipment, car parks and access roads. At Showground Station and the proposed Doran Drive access, compliance with the relevant noise criteria is predicted for the majority of sources, with the exception of the three level car park in the south-west corner of the station precinct.

During the night-time period, there is a predicted 4 dBA exceedance of the noise criteria at the nearest two residences on Carrington Street. Options for additional mitigation measures would be investigated during the detailed design, including enclosing the car park at the south-east corner or installing sound absorptive panels on the roof of each car park level near the south end. Affected residents would be kept informed on the final design outcomes.

b. Section 10.7.2 of EIS 2 details the operational ground-borne noise and vibration assessment. The concept design proposes a range of indicative track forms in order to comply with the relevant noise criteria. In the vicinity of Hannah Street, Beecroft high and very high attenuation track would be provided based on the concept design. Maintenance of the rail line, including noise and vibration attenuation measures would be undertaken as required in order to maintain the operational criteria.

The noise and vibration assessment and modelling has been undertaken by recognised and reputable acoustic consultants who have significant experience in similar infrastructure projects.

c. Section 10.9 of EIS 2 provides an assessment of operational road traffic noise. The predicted worst case noise increase at building facades 10 metres from Franklin Road is for an increase from 55dB to 65dB during the morning peak period. This worst case would potentially impact two properties on Kayla Way fronting Franklin Road. Mitigation measure OpNV13 (Table 10.47 of EIS 2) provides for a detailed assessment of road traffic noise impacts, including identification of preferred mitigation measures for the station access roads at Cherrybrook. This mitigation measure is reproduced in Chapter 9 of this report.

A new station access road through the centre of the site adjacent to the onsite detention basin would require the clearing of additional vegetation to the north of the site in order to link to existing roadways. This vegetation has been mapped as good quality Blue Gum High Forest (listed as a critically endangered ecological community under the NSW *Threatened Species Conservation Act 1995* and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*). This station has been carefully planned to avoid clearing of this important area of vegetation.

The closure of Franklin Road at Castle Hill Road or the provision of an extra lane off Castle Hill Road would have a detrimental impact on vehicular accessibility to the station, as well as potentially resulting in traffic congestion and traffic safety implications.

d. Section 10.9 of EIS 2 provides an assessment of operational noise from car parks. The north-east at-grade car park at Cherrybrook Station is predicted to result in exceedances of the relevant criteria of up to 4dB. The EIS identifies possible mitigation measures to reduce the potential for sleep disturbance, including a possible 4 metre high noise barrier along the north-east boundary of the car park or closing the at-grade car park during night-time periods.

Figure 6.11 of EIS 2 shows a landscaped barrier between the Kayla Way residences and the car park, however a 50 metre vegetated buffer is not feasible. It is also noted that a vegetated buffer would be expected to provide minimal noise attenuation benefits.

e. Section 10.9 of EIS 2 provides an assessment of operational road traffic noise. The predicted worst case noise increase at building facades 10 metres from Franklin Road is for an increase from 55dB to 65dB during the morning peak period. This worst case would potentially impact two properties on Kayla Way fronting Franklin Road. Mitigation measure OpNV13 (Table 10.47 of EIS 2) provides for a detailed assessment of road traffic noise impacts, including identification of possible mitigation measures for the station access roads at Cherrybrook. These mitigation measures are reproduced in Chapter 9 of this report.

Access and egress points are proposed from both Robert Road and Franklin Road, however it is noted that the design of the site provides priority for vehicles accessing the site from Castle Hill Road (as shown on Figure 6.11 of EIS 2). The closing of Franklin Road or Robert Road with all vehicular access from Castle Hill Road would result in greater traffic impacts and potentially traffic safety implications on Castle Hill Road.

f. Vehicular access to the station would be provided via Castle Hill Road, Franklin Road and Robert Road. It is noted that the station precinct has been designed to give priority to access via Castle Hill Road over Robert Road.

TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

Section 10.9.5 of EIS 2 provides an assessment of road traffic noise from the increase in traffic around the station precincts. It is acknowledged that traffic noise levels at facades 10 metres from Robert Road are predicted to increase by up to 10 dB. Mitigation measure OpNV13 in Table 10.47 of EIS 2 identified that a detailed assessment of the road traffic noise impacts including identification of preferred mitigation measures at Cherrybrook would be undertaken during detailed design. These mitigation measures are reproduced in Chapter 9 of this report.

The provision of landscaping or mature plantings between County Drive and Robert Road is outside the scope of the NWRL project. Additionally, Section 10.9.5 of EIS 2 (which provides an assess of road traffic noise around station precincts) predicts that there would only be a minor 1 dB increase in road traffic noise along Castle Hill Road.

g. The relevant night-time noise criteria of 35 dBA for residential properties for operational ground-borne noise is derived from the NSW government guidelines – *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* (IGANRIP – DECC, 2007).

The operational ground-borne noise assessment undertaken for the project is presented in Section 10.7.2 of EIS 2. This assessment predicted

compliance with the 35 dBA criteria for all residential receivers above the tunnel alignment.

h. It is not proposed to provide commuter car parking at Castle Hill Station. Park-and-ride facilities would be available for Castle Hill residents at Showground and Cherrybrook Stations. The operational road traffic noise assessment undertaken for the project is presented in section 10.9 of EIS 2.

i. John Road is currently used as a bus route. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

j. Figure 6.11 of EIS 2 provides an indicative layout of the Cherrybrook Station precinct. The station precinct includes significant area proposed to be landscaped throughout and around the perimeter of the site. The mix of plant species in the landscaped areas would be determined during the detailed design phase. It is also noted that a vegetated buffer would be expected to provide minimal noise attenuation benefits.

k. Chapter 10 of EIS 2 provides an assessment of the potential operational noise impacts of the project. At Cherrybrook Station there would be potential exceedances of the relevant noise criteria from:

- The operation of the at-grade car park. Mitigation measure options identified in the EIS include a 4 metre high noise barrier between the car park and the residences on Kayla Way.
- The increase in vehicles on local roads accessing the station precinct. Mitigation measure OpNV13 in Table 10.47 of EIS 2 provides for a detailed assessment of this impact, including the identification of preferred mitigation measures. These mitigation measures are reproduced in Chapter 9.

Additional physical noise mitigation measures are not warranted for the general operation of Cherrybrook Station.

Figure 6.11 in EIS 2 shows the indicative Cherrybrook Station precinct layout which includes landscaped areas between the station and Castle Hill Road.

l. The concept plan includes the provision of a variety of indicative track forms along the underground section of the NWRL. With the provision of this range of standard, high and very high attenuation track form, the NWRL achieves compliance with the relevant ground-borne noise and vibration objectives in the *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* (IGANRIP – DECC, 2007) at all residential properties.

m. The operational noise assessment undertaken for the project is provided in Chapter 10 of EIS 2. This assessment did not predict exceedances (due to station noise emissions) of the relevant noise criteria to residents on Oliver Way. As such, provision of noise mitigation measures is not considered necessary.

Figure 6.11 of EIS 2 shows the indicative Cherrybrook Station precinct layout which includes a landscaped area between the residences on Oliver Way and built elements of the precinct. It is noted that a vegetated buffer would be expected to provide minimal noise attenuation benefits.

n. The concept plan includes the provision of a variety of indicative track forms along the underground section of the NWRL. With the provision of this range of standard, high and very high attenuation track form, the NWRL achieves compliance with the relevant ground-borne noise and vibration objectives in the Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects (IGANRIP – DECC, 2007) at all residential properties.

o. The concept plan includes the provision of a variety of indicative track forms along the underground section of the NWRL. With the provision of this range of standard, high and very high attenuation track form, the NWRL achieves compliance with the relevant ground-borne noise and vibration objectives in the *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* (IGANRIP – DECC, 2007) at all residential

properties. In the Norwest area, standard attenuation track is predicted to comply with the relevant criteria.

It is also noted that the operational noise criteria for residential receivers is lower than those for commercial areas (as shown in Table 10.11 of EIS 2).

7.5.3 Timetables / trip duration

Stakeholder identification number(s):
12, 17, 23, 24, 27, 28, 29, 30, 32, 34, 37, 41, 42, 43, 44, 45, 46, 50, 51, 52, 88, 92, 93, 94, 96, 98, 101, 105, 114, 115, 117, 120, 124, 125, 130, 132, 141, 142, 152, 153, 156, 157, 158, 164, 165, 166, 168, 170, 173, 180, 183, 185, 188, 189, 190, 194, 199, 200, 203, 204, 207, 208, 216, 218, 221, 232, 244, 247, 249, 250, 251, 253, 255, 257, 260, 266, 269, 270, 271, 274, 280, 282, 291, 292, 293, 294, 295, 311, 312

Issue description

In summary, respondents raised the following issues:

a. The NWRL service will involve a lengthy travel time to the CBD and should offer extensive seating, consistent with other areas of outer Sydney eg Campbelltown, Penrith, Waterfall where double deck trains are used effectively for longer journeys.

b. The passenger volume is not large enough to justify as many trips per hour as proposed in EIS 2. Suggestion to instead operate a double deck train at six trains per hour.

c. Query regarding whether trip duration for passengers from the Northern Line will be longer due to multiple train changes.

d. The second Environmental Impact Statement (EIS 2) for the North West Rail Link confirms that the proposal will greatly disrupt passengers boarding the Northern Line at Hornsby, Normanhurst, Thornleigh, Pennant Hills, Beecroft and Cheltenham (who currently enjoy a direct run into the city on one train taking about 40 minutes from Cheltenham) who will be forced to change at Epping for a single deck train. At Chatswood, they will then need to wait and change again, back to a double deck train to get to the CBD. This means having to get three trains into the city rather than one seamless system they enjoy now.

This will create great disruption for existing commuters, particularly those on the Northern Line, who will be forced to change trains at Epping and then change at Chatswood where they will inevitably have to wait for connection to a double deck train to the CBD.

Concerns that the proposed single deck conversion will result in commuters from the Northern Line having to get three trains into the city increasing travel time by 15 minutes rather than the one seamless system they enjoy now. This would result in an additional trip duration of 2.5 hours per person per working week for thousands of current and potential commuters and is unacceptable.

e. Concerns regarding the trip duration of the proposed NWRL from Castle Hill to the city via Chatswood.

f. Concerns that the single deck proposal will not be any quicker than existing trains as it has to eventually link into the existing train timetable. Suggestion that while it may be fast over limited sections, commuters are unlikely to receive any benefit.

g. Concerns that travel times from Cheltenham to the city will take longer than a resident living beyond Cheltenham with a direct link to Epping.

h. Belief that M2 bus services, in light of the expansion of the M2 Motorway, will make for a faster commute for city workers than NWRL, which requires commuters to alight and change trains at Chatswood.

i. Currently the trip between Parramatta and Cheltenham by train requires the commuter to change trains at Epping and this inconvenience would increase as the proposed plan would present the need to change trains when commuting to the city.

j. Concerns regarding increases in trip duration from Epping to the city for commuters from Cheltenham. Suggestion that the needs of those living to the north west of Epping are being prioritised at the expense of those

living between Epping and Hornsby. According to the proposed plan the commuter will now have to travel to Epping from Cheltenham, change train at Epping and then change train again in Chatswood to travel to the city. This will effectively increase the travel time for the commuter.

The direct train service from the northern line between Epping and Hornsby to the city and North Sydney is one of the reasons why many people have chosen to live near the stations on this rail line. Many people have taken up jobs in North Sydney and around due to the existing rail service presenting uninterrupted convenient travel to the city. Belief that what is now a 30 minute trip will potentially change into a 45 minute journey due to the train change interruptions on the service as a result of the new proposal.

k. Changes to the Epping to Chatswood Rail Link will mean many commuters travelling to the city from Beecroft and nearby would be forced to consider alternative travel arrangements due to frequent train change requirement and increase in travel time. Suggestion to consider the negative impact these changes would have on commuters.

l. Concern that NWRL proposal has not addressed the high probability of passenger trains being delayed on their timetables due to the need for the time necessary for additional high numbers of passengers to board and / or alight when changing trains at Epping and Chatswood, especially at peak hours. This will have a major negative, compound impact on the efficiency of arrival and departure of train times on the NWRL, which will then flow-on and delay all other passenger trains operating along other lines within the city's rail network.

m. Comment that commuters who have to transition between Northern Line and NWRL services at Epping will be forced to move from above ground to below ground platforms and are given no assurances in the EIS that Northern Line services will be timetabled to minimise the wait between connecting train services at Epping. This is particularly important during non-peak and weekend periods, when trains will operate less frequently along both the NWRL and the Northern Lines, resulting in potentially very long wait times. In addition to changes in the route of trains running along the Northern Line, the NWRL will potentially result in changes in the frequency of trains stopping at Normanhurst, Thornleigh, Pennant Hills, Beecroft and Cheltenham.

It is vital to users of the Northern Line to maintain the frequency of all-stations train services to once every 15 minutes at both peak and non-peak times on weekdays and weekends following opening of the NWRL. Train services on the Northern Line need to be coordinated to minimise waiting periods for transfers to NWRL services during both peak and non-peak periods on weekends and weekdays.

n. Concerns that commuters using the NWRL line will not have a smooth trip in an appropriate amount of time to their destinations.

o. Concerns regarding changing trains, which adds to inconvenience and takes time, creating potential for delay when a connecting train is not running on time.

p. The change of trains at Epping will increase travel time and cause customers to endure an onerous trip. This extra travel will create difficulties for aged and disabled customers, and will have adverse effects on their physical capabilities and health.

q. Query regarding the frequency and capacity of trains meeting NWRL at Chatswood.

r. Regarding late night operations, suggestion that the last train from the city should be at 1am, not midnight. This is particularly important on Friday and Saturday nights to ensure people can get home safely on public transport.

Response

a. The NWRL would be a key component of the introduction of a rapid transit sector as part of *Sydney's Rail Future – Modernising Sydney's Trains* (NSW Government, June 2012), a customer focused public transport plan to modernise Sydney's rail network and trains. Sydney's Rail Future has identified the need for a three tiered differentiated service, including new single deck rapid transit trains that will operate initially on the NWRL and, following subsequent extensions of the network, will operate to the

CBD and beyond via a new second harbour crossing.

The new, modern single deck rapid transit trains proposed for the NWRL would deliver a fast, safe and reliable journey for customers with high performance standards and good customer amenity features.

Each train would have eight carriages and be capable of transporting up to 1,300 people. The number of seats per train is yet to be determined, but will be based on customer research about their needs.

Indicative travel times are described in Table 6.11 of EIS 2.

b. As part of a broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (every 3 minutes).

As well as addressing the current demand for better transport access, the NWRL would provide a catalyst for the further development of North West Sydney. It provides the opportunity to implement a fully integrated approach to transport and land use planning that connects people and the communities in which they live, work, learn and play.

c. Indicative travel times are described in Table 6.11 of EIS 2.

Passengers travelling from the Northern Line to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies.

Passengers travelling from the Northern Line to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

For example, the trip from Beecroft on the Northern Line to Epping is currently approximately 5 minutes. A trip from Epping to Wynyard, travelling on the NWRL and including interchange, is expected to take no more than 40 minutes, which is equivalent to the current travel time.

d. Indicative travel times are described in Table 6.11 of EIS 2.

Passengers travelling on the Northern Line to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies associated with Stages 1 and 2 of Sydney's Rail Future.

Passengers travelling on the Northern Line to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

e. As shown in Table 6.11 of EIS 2, allowing for dwell time at stations and changing trains at Chatswood, a journey from Castle Hill Station to Wynyard Station is expected to take approximately 44 minutes.

f. The new generation rapid transit trains would deliver a fast, safe and reliable journey for customers. The NWRL will provide a "turn up and go" service, with trains every five minutes. Indicative travel times are described in Table 6.11 of EIS 2.

g. Passengers travelling from Cheltenham to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies associated with Stages 1 and 2 of Sydney's Rail Future.

Passengers travelling from Cheltenham to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

The trip from Cheltenham to Epping is currently under 5 minutes. A trip from Epping to Wynyard, travelling on the NWRL and including interchange, is expected to take no more than 40 minutes, which is equivalent to the current travel time.

h. Section 9.5 of EIS 2 provides details of the anticipated changes to bus services including the replacement of long haul M2 bus services from the western extent of the NWRL corridor with train services whilst preserving some M2 bus services mainly from the eastern part of the corridor.

Section 22.1 of EIS 2 noted that buses are affected by road congestion. Network constraints for buses are most acute on the approach to and within the Sydney CBD, particularly on the Harbour Bridge and around Wynyard Station. TfNSW forecasts that, in the absence of the NWRL, there would be a growth of 144% in M2 buses entering the Sydney CBD by 2021. These constraints mean that growth in bus services cannot accommodate the expected growth in public transport demand. Capacity constraints on the road network demonstrate the need for a mass transit system to facilitate continued growth. The NWRL would have a dramatic impact on travel conditions in the north-west and through to the CBD.

Forecast travel time savings of around 10 to 30 percent between the north-west and the key employment destinations of Macquarie Park, Chatswood and Sydney CBD are anticipated by 2021. This represents a much improved travel time reliability compared with bus and private car.

This is consistent with the project objective to 'Deliver Stage 3 of Sydney's Rail Future to improve transport network reliability by facilitating a shift from road to rail for trips to and from the north west, to reduce bus / road congestion and improve amenity in Sydney CBD'.

Reducing congestion on inner city roads (through a reduction in buses entering Sydney CBD from the north-west) would result in additional benefits to bus services from other areas to the north.

i. There would be no change in travel arrangements for passengers travelling between Parramatta and Cheltenham.

j. Passengers travelling from Cheltenham to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies associated with Stages 1 and 2 of Sydney's Rail Future.

Passengers travelling from Cheltenham to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

The trip from Cheltenham to Epping is currently under 5 minutes. A trip from Epping to Wynyard, travelling on the NWRL and including interchange, is expected to take no more than 40 minutes, which is equivalent to the current travel time

k. Indicative travel times are described in Table 6.11 of EIS 2.

Passengers travelling on the Northern Line from Beecroft to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies associated with Stages 1 and 2 of Sydney's Rail Future.

Passengers travelling from Beecroft on the Northern Line to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

The trip from Beecroft to Epping is currently approximately 5 minutes. A trip from Epping to Wynyard, travelling on the NWRL and including interchange, is expected to take no more than 40 minutes, which is equivalent to the current travel time.

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

l. The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

The proposed single deck trains allow people to get on and off more quickly than double deck trains. Modern operating systems and signalling technology ensure train running times are optimised.

Interchange at Epping would be via lifts or escalator between the existing surface and underground platforms.

m. The NWRL will provide a "turn up and go" service, with trains every five minutes (12 trains per hour) during morning and afternoon peak periods, and every ten minutes (6 trains per hour) during the weekday off peak and evening periods. Therefore, the longest time a passenger would wait at Epping Station for a NWRL service would be 10 minutes on a typical weekday.

Passengers travelling on the Northern Line to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies associated with Stages 1 and 2 of Sydney's Rail Future.

n. The new generation rapid transit trains would deliver a fast, safe and reliable journey for customers. The NWRL will provide a "turn up and go" service, with trains every five minutes. Indicative travel times are described in Table 6.11 of EIS 2.

o. The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

p. The NWRL will provide a "turn up and go" service, with trains every five minutes.

Passengers travelling on the Northern Line to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies associated with Stages 1 and 2 of Sydney's Rail Future.

The proposed single deck trains allow people to get on and off more quickly than double deck trains. Modern operating systems and signalling technology ensure train running times are optimised.

Interchange at Epping would be via lifts or escalator between the existing surface and underground platforms.

q. The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

r. As detailed in Section 6.24.1 of EIS 2, the NWRL would provide frequent rail services seven days a week with operating hours throughout the day from early morning until late at night.

Operating hours would be determined as part of the development of the service schedules for the NWRL. The principles for timing of passenger services would be based on providing opportunities for customers to get to jobs in the Sydney CBD by 6am and with extended operating hours on Friday and Saturday night. The timetable will recognise integration with other public transport services.

7.5.4 Traffic impacts / volume

Stakeholder identification number(s):
12, 13, 15, 18, 22, 26, 27, 28, 29, 30, 33, 38, 39, 40, 48, 49, 59, 64, 65, 66, 67, 68, 70, 71, 72, 74, 76, 77, 88, 94, 99, 100, 103, 107, 109, 110, 111, 112, 113, 114, 119, 127, 131, 138, 139, 140, 143, 145, 149, 150, 151, 159, 161, 162, 164, 168, 171, 172, 174, 175, 177, 180, 181, 182, 184, 186, 188, 191, 192, 193, 196, 197, 198, 208, 209, 215, 220, 225, 227, 228, 230, 231, 233, 234, 236, 237, 252, 256, 257, 259, 261, 263, 265, 269, 272, 273, 274, 275, 276, 278, 279, 281, 287, 288, 289, 292, 298, 302, 306, 308, 313, 320, 321, 322

Issue description

In summary, respondents raised the following issues:

a. Robert Road buses – impacts and alternatives

Calls for TfNSW to consider the residents of Robert Road and the small streets surrounding Robert Road with regard to the proposed major bus interchange feeder route to Cherrybrook Station. Concerns that buses using Robert Road to access the new station will increase traffic volumes on the currently "quiet" streets in the area.

The intersection of Robert Road and John Road is too tight for large vehicles (buses) to negotiate without having to take up the whole intersection, leaving no room for other vehicles. The proposed use of Robert Road would require an upgrade and widening of Robert Road for usage by commuter buses and the safety of motorists and local residents. An upgrade of Robert Road is not included in EIS 2.

Residents have not been given a credible reason why Robert Road is suggested as a bus route instead of these roads. Although the traffic flow along Castle Hill Road would remain unchanged, the traffic change along the local road network would not be equitably balanced if all buses are diverted along Robert and Franklin Roads. John Road, County Drive, Franklin Road, Neale Avenue, Edward Bennett Drive and Castle Hill Road are more suitable for the expected traffic levels, and the argument that County Drive lacks capacity is not valid.

Belief that the intersection of Castle Hill Road and County Drive is categorised as F in EIS 2 because there is a bank-up of cars turning right onto Castle Hill Road. Preference stated for Option 4 as the bus feeder route to the proposed Cherrybrook Station (NWRL-10038-R-TS-00006-v4.0-Operational T&T Report page 59).

Robert Road buses – insufficient studies

Prior objections and concerns raised by the Robert Road Group and residents, before 21 May 2012, have been ignored. There is not sufficient information available for residents about the proposed changes to Robert Road. Query regarding what studies have been done prior to

consideration of Robert Road as a bus feeder route. There is a lack of acknowledgement of traffic control measures already implemented on Robert Road to improve safety at the intersection of Robert Road and Castle Hill Road.

Query regarding what studies were undertaken to determine that County Drive and Castle Hill Road are not suitable for buses from John Road to access the proposed Cherrybrook Station. NWRL representatives have stated that buses must continue to travel up John Road so that residents of John Road are not disadvantaged. What studies have been done to ascertain where passengers that alight buses on John Road live? Suggestion that if buses continued up County Drive, passengers would walk or drive an extra 200 to 300 metres and alight at County Drive.

EIS 2 traffic analysis queries

Belief that there is little traffic between 7:30 am and 7:45 am each morning exiting Arundel Way, turning right onto Robert Road, left onto John Road and then left onto County Drive travelling south to cross Castle Hill Road. Approximately 50% to 60% of traffic at the intersection of Castle Hill Road and County Drive turn right towards Castle Hill, a further 30% to 40% crosses directly over the road and a small minority of traffic turn left onto Castle Hill Road towards Thompsons Corner.

An independent traffic analysis company commissioned by the residents of Robert Road found that bus stops on John Road during morning and evening peak periods are under-utilised. Video footage shows minimal volumes of traffic queuing in the left hand turning lane on County Drive, turning east onto Castle Hill Road at the intersection of County Drive and Castle Hill Road (see www.saverobertroad.com). This independent study shows EIS 2 and supporting documents contain errors and cannot be relied upon.

Traffic modelling of the current configuration for County Drive / Castle Hill Road indicates that the level of service of the intersection exceeds capacity; however the modelling doesn't consider the cause of the delays at the intersection or the possible remedies. This includes the current arrangement which artificially chokes down County Drive to one lane.

Traffic volume impacts surrounding Cherrybrook Station – cars and buses

Concerns that once Cherrybrook Station is operational, traffic volumes will increase significantly and impact residents' quality of life. With an estimated 100 cars and 32 buses per hour to travel along each of these roads, these vehicle movements are not compatible with the design objectives of the station which are to "respond to the area's character".

Cherrybrook Station access impacts via Robert Road and Franklin Road

Both Robert Road and Franklin Road are typical suburban streets servicing the needs of residents. They are unsuitable in their current form to become primary feeder roads to Cherrybrook Station. Residents purchased properties in the area with the understanding that Robert Road would not be impacted by the station.

Robert Road would become a "rat run" and a dysfunctional traffic bottleneck. Franklin Road is already impacted by high traffic volumes. This conflicts with the project's intention to reduce traffic volumes and "rat running" on residential streets in the area. Additionally, Dalkeith Road and the cul-de-sacs that feed into it would become a bottleneck for residents entering and exiting their homes. Robert Road is a narrow tree-lined street which is 7 metres wide, is so narrow in some parts that only one car can pass at a time, and is not built to act as a main road or corridor, even with the addition of No Parking zones.

Cherrybrook Station access – alternatives

Non-local residents occupying areas north of New Line Road and areas west of County Drive have no option but to pass through County Drive in order to access the Cherrybrook Station Precinct, whether travelling by public transport or otherwise. With the exception of buses travelling along John Road to Franklin Road, there is no requirement to put any further strain on the small local roads east of County Drive (shown as Appendix to submission).

Belief that Castle Hill Road and County Drive are more appropriately designed roads for bus routes and station access. County Drive is more

appropriate and has sufficient width to provide a 'bus only' left turn lane at the intersection of Castle Hill Road.

Cherrybrook Station design

EIS 2 does not consider the possibility for Cherrybrook Station to become both a new bus interchange as well as a train station. Local commuters would be able to walk to Cherrybrook Station to catch either buses or trains.

Robert Road commuter parking impacts

Query regarding what plans are in place for streets nearby Robert Road to combat the following:

1. All day parking by commuters.
2. Commuters parking their cars on both sides of the road.
3. Residents having easy access in and out of their driveways.
4. There is no footpath on one side of the street, lawns will be damaged from people walking on it.
5. No curb on part of the street.

Proposed mitigation measures and alternatives to reduce impacts around Cherrybrook Station

Mitigation suggestions include:

1. Using Edward Bennett Drive and County Drive instead of Franklin Road.
2. Redirecting the buses south on County Drive, to take a left turn into Castle Hill Road to gain access to the station. This would eliminate the issue of having buses also caught in traffic. Suggestion that this is more suitable as County Drive and Castle Hill Road are wider, built to handle larger volumes of traffic without hazards / weight restriction issues, and are free flowing in the morning peak with congestion a rare occurrence when travelling east down Castle Hill Road towards Thompsons Corner. County Drive could be changed into two lanes of traffic with restricted or No Parking during peak periods. Using Castle Hill Road for access to the Cherrybrook Station would result in:
    a. Reduced cost of upgrading Robert and Franklin Roads.
    b. Reduced congestion on John Road.
    c. Potential increase in on-site parking and/or future uses which reduces impact on neighbourhood streets.
    d. Increased amenity for Robert Road residents near the station. The drawback to this proposal is that the buses which currently run up Neale Avenue and Edward Bennett Drive are eliminated. This could be mitigated by running the Express buses via their current routes and bringing the standard buses via the station and Castle Hill Road (or vice versa) because it is already common practice for Express buses and standard buses to use different routes.
3. Traffic approaching Cherrybrook Station from County Drive should continue to the intersection of Castle Hill Road and turn left as the left turn lane is the least used, with about 5% of the traffic turning left towards the proposed station.
4. Adding an additional bus shuttle down County Drive and Castle Hill Road.
5. Reverting back to the previously proposed location for Cherrybrook Station.
6. Making Castle Hill Road the only vehicle access to Cherrybrook Station. This would require:
    a. Moving the location of the station back between Robert / Franklin Roads to provide substantial space for the passenger car / bus drop off zones.
    b. Permanent closure the Castle Hill Road ends of Robert / Franklin Roads (only one entry point for both streets).
    c. Maintaining current bus route 642.
    d. Removing the parking lanes and opening County Drive's four existing lanes to traffic between New Line Road and Castle Hill Road.

e. Widening Castle Hill Road heading east from two to four lanes between County Drive and Cherrybrook Station. The two new lanes will be dedicated Station Access Lanes for Buses and Cars including access to Cherrybrook Station Car Park.

f. Cherrybrook Station buses from Cherrybrook will turn left into Castle Hill Road from County Drive and return to Cherrybrook via Edward Bennett Drive.

g. Cherrybrook Station buses from West Pennant Hills "Valley" will turn right into Castle Hill Road from Highs Road and return to West Pennant Hills "Valley" via Coonara Avenue.

7. Closing Franklin Road for vehicular traffic, at the Southern boundary of Kayla Way.
8. Adding extra pedestrian and bike lanes on Franklin Road.
9. Adding an extra lane to Castle Hill Road in the Eastbound direction for the AM peak, and the reverse in the PM peak. There are precedents of this strategy throughout Sydney eg Military Road, Victoria Road, Harbour Bridge. If the access lane within the station is placed adjacent to Castle Hill Road it will ease the traffic flow around the station.
10. Start a new bus route to serve Cherrybrook and Dural. This could be a loop service serving the catchment area of Cherrybrook Station.
11. Consider building a new access road in the centre of the station with a connection to Robert Road. This could be a loop road for the station exit via the new station access road to Castle Hill Road. The station loop bus could access the station in the AM peak via the westbound lanes on Castle Hill Road, and during the PM peak via the eastbound lanes.
12. Widening Franklin Road to at least four lanes with restricted parking on the western side of the road, in order to ease traffic flow.
13. Re-connecting Franklin Road with New Line Road and closing Robert Road.
14. Closing Robert Road at the existing dog leg so that all traffic north of that dog leg will have to exit to Castle Hill Road by driving north along Robert Road and then turning right or left at the intersection of John Road. This will cut down the number of cars exiting Robert Road either into the station precinct or onto Castle Hill Road.
15. Making a new road in front of Cherrybrook Station rather than proceed with the new road behind the station. This road would have an entrance and exit at each end, parallel with Castle Hill Road – similar to the existing bus hub found on Epping Road at Lane Cove.
16. County Drive could easily be re-lined to improve traffic flow. This would be a practical and affordable modification.
17. Adding an eastbound additional slip lane along Castle Hill Road from the County Drive intersection. A bus only or general traffic slip / merge lane should be implemented to improve the function of this troubled intersection and facilitate station access. The young trees located along this section could be easily replanted without difficulty.
18. Completing the intersection of Edward Bennett Drive and New Line Road to allow traffic from New Line Road to access Highs Road via Coonara Avenue through the existing signal controlled intersection, to reduce vehicle numbers accessing the County Drive / Highs Road intersection
19. Reconfiguring the presently closed off southern end of David Road, at its intersection with Castle Hill Road to incorporate a "Left in / Left out" facility similar to the present Robert Road design. Though not likely to produce any significant benefit alone, the small reduction in County Drive usage should allow a possible examination and adjustment of signal phasing sequence and timing to achieve a worthwhile improvement in the efficiency of the Castle Hill Road / County Drive intersection.
20. Considering the installation of traffic signals at the above mentioned David Road / Castle Hill Road intersection to allow right hand turns from David Road west into Castle Hill Rd. If this signal function was synchronised with the operation of the County Drive / Castle Hill Rd

signal system, as is the case in many Sydney local traffic areas, traffic flow would be significantly improved.

21. Installing a pedestrian crossing at this slipway to ensure safety of pedestrians.
22. Building a pedestrian bridge crossing Castle Hill Road.
23. Widening Franklin Road between Castle Hill Road and Neale Avenue to facilitate parking and traffic flow during the peak school times.
24. Realigning and widening Robert Road for better sight lines and decreased chance of congestion when cars are parked on the road.
25. Widening the end of John Road that is very steep and narrow in order to accommodate buses in both directions.

b. Question raised why Doran Drive is the access point for Showground Station when Showground Road appears the most logical solution. The Doran Drive access to Showground Station will increase congestion in the area and will force residents to use other longer routes to get to and from their workplace. Suggestion that the access be changed to the industrial side of the Showground, keeping Doran Drive a quiet street therefore reducing impacts on surrounding areas. Suggestion for an overpass to be built over Doran Drive from the New Road for cars to access the station car park from Showground Road.

c. Query regarding who has responsibility for repairing damage to roads caused by heavy buses and additional traffic near Cherrybrook Station. Is this the local council's responsibility? Objection to this as it would impact ratepayers.

d. Concerns regarding commuters from the Northern Line and other locations being inconvenienced by additional train changes and platform overcrowding due to NWRL and the conversion of the Epping-Chatswood Rail Link to single deck trains. This would involve commuters avoiding public transport and choosing to drive, with additional cars being forced onto already crowded and expensive roads, particularly into the city and on the already congested M2. This issue has not been addressed by NWRL.

e. Request for the new road to access the car park at the proposed Showground Station to have a median barrier to ensure cars cannot turn right into the car park when travelling in a westerly direction along Carrington Road. Cars should access the car park through the lights at Doran Drive.

f. Request for the new signalised intersection at Doran Drive and Carrington Road to have a permanent switch so residents can control legal entry and exit from their driveway in all directions.

g. Concerns that privatising the proposed North West Rail Link and the Epping-Chatswood Rail Link will increase fare costs, deterring people from taking the train and instead encouraging more people to drive. This will contribute to Sydney's already congested roads. For example, it is cheaper and more convenient for people to drive to Sydney Airport than pay excessive costs to travel on the privatised Sydney Airport Line.

h. The overspill of commuter parking into neighbouring residential streets near the proposed Castle Hill station will cause problems for resident vehicles accessing properties in addition to obstructing recycling and garbage collection vehicles. The original proposal for access via Showground Road is supported.

i. Request for Hornsby Council to remove the east side breakdown / parking lane in County Drive between John Road and Castle Hill Road and introduce AM clearway parking restrictions and road direction arrows for straight ahead and left hand turning traffic.

j. Suggestion the traffic lights at Franklin Road should be retained in order to allow left and right turns out of Franklin Road into Castle Hill Road with no right turn out of Castle Hill Road into Franklin Road due to current risks for left out traffic.

k. Support for the NWRL reducing the current number of private vehicles and buses heading east and north as well as those travelling on the M2 and within the City of Sydney, in addition to reducing the rate of future growth in the use of private vehicles.

l. Request to complete Castle Howard Road through to Lyne Road in order to allow two-way access to Cheltenham Oval.

m. Concerns that details in the EIS 2 technical papers are incorrect.

EIS 2 Technical Paper Construction Traffic and Transport Management states the Robert Road is a narrow road of approximately 8.5 metres wide and Franklin Road is approximately 7.5 metres wide. The actual road width of Robert Road is seven metres and Franklin Road is close to nine metres (for section between Doulton Drive and Castle Hill Road).

Environmental Assessment No. 2 Technical Paper: Construction Traffic and Transport Management notes that Robert Road is referred to by Hornsby Shire Council as a "local road". AUSROAD (National Association of Roads and Traffic Australia) classifies a "local road" as a two way lane with parking lanes and a carriageway width of nine metres. Franklin Road fits this description but Robert Road does not. Robert Road (based on seven metre carriageway width) is to be classified as a "cul-de-sac" or an "access road" and has been wrongly classified in EIS 2.

Based on these errors, all analysis undertaken based on the wrong carriageway width (including the LINSIG analysis) is void.

n. Concerns about impacts on businesses near Norwest Station due to traffic impacts relating to the proposed North West Rail Link. At present, vehicles park on both sides of Brookhollow Avenue, making it difficult and dangerous for two cars to pass at the same time. With the new station, traffic will increase, as will parking on the street and across driveways. With more traffic now expected on Norwest Boulevard are there any plans to ease traffic congestion as already during peak hour it is difficult to enter and leave this area?

o. Concerns regarding the expansion of Castle Hill Road as an access route to the proposed Cherrybrook Station, with increased numbers of trucks and other traffic. Heavy traffic on Castle Hill Road would cause difficulties for residents and make it more difficult for commuters travelling to work in the morning peak time. Query regarding what strategies have been put in place to ensure traffic flow on this already congested road.

Suggestion that to mitigate these issues, the traffic signals at Glenhope Road should be replaced with a pedestrian underpass or overpass in the station precinct. This would allow pedestrians to cross safely with no delay to motorists.

p. Concerns that Glenhope Road will be negatively affected by increased traffic flow once Cherrybrook Station becomes operational and requests that appropriate measures be put in place to restrict the speed of traffic.

Reconsider the two T-intersections encountered from the south, when approaching Glenhope Road from Highs Road or Coonara Avenue due to increased traffic volume. Roundabouts or some other appropriate means to handle these intersections need to be put in place.

Requests that measures be put in place to discourage traffic from the south from using Glenhope Road as a shortcut for passenger drop off opposite the Castle Hill Road station entrance; instead, traffic should be encouraged to use the Highs Road to Castle Hill Road route to drop off in the designated areas.

q. Concerns about the increased traffic volume on Robert Road from the planned residential block subdivisions. There are currently 265 residential blocks which use Robert Road to access their properties and there are additional subdivisions planned which will increase this number to around 300.

r. Concerns that the proposed bus feeder road on Robert Road will impact how garbage / recycling trucks operate in the street. Robert Road does not have adequate width for safe rubbish collection with buses and cars running in both directions. Rubbish collection will be an issue for the estates running off Robert Road as there is not sufficient road width to allow rubbish trucks to collect from within their estate.

s. Section 8.1.1 of Technical Paper 2 - Operational Traffic and Transport Management Plan (page 45) supports the notion that there is a lack of bus traffic along the current major traffic corridor of Castle Hill Road. This road is already two lanes in both directions and has ample scale for bus traffic, as well as a pre-existing bus bay east from the junction of Castle Hill Road and County Drive. Suggestion that this type of facility could be replicated at the Cherrybrook Station precinct, either as a further bus bay or as a direct inlet from Castle Hill Road.

t. Section 8.1.2 of Technical Paper 2 - Operational Traffic and Transport Management Plan (page 49-50) shows the under-utilisation of existing corridors. Buses can successfully run along Castle Hill Road if required, and there is scope to increase the number of bus services along this corridor and surrounding streets, including Franklin Road. Preference to use Franklin Road instead of Robert Road as a bus feeder road as bus services currently accommodate the Tangara and Inala schools on this road and it was always earmarked as the "home" of Cherrybrook Station. Apart from the issues with this location during the construction phase, there is no reason it should not be used as the long term feeder road to the station.

u. The justification for the use of Robert Road as a bus feeder route to the proposed Cherrybrook Station outlined in Section 8.1.7 Alternative 2 of Technical Paper 2 - Operational Traffic and Transport Management Plan (page 58) is based on the assumption that there is a need to maintain bus stops along John Road. Belief that this justification is not valid because there is no need to maintain bus stops along John Road. Bus stop 1 is within 20 metres of County Drive and bus stop 2 is rarely used and only 250 metres from bus stop 1.

An independent study commissioned by residents shows that the number of buses heading east on John Road at morning peak is 19, with the number of commuters catching these buses totalling only 78 across the two bus stops (an average of approximately 4 per bus). Of that number, approximately 10% drove from another area and left their car on John Road.

v. The justification for the use of Robert Road as a bus feeder route to the proposed Cherrybrook Station outlined in Section 8.1.7 Alternative 2 of Technical Paper 2 - Operational Traffic and Transport Management Plan (page 58) is based on the assumption that the intersection of County Drive and Castle Hill Road is already saturated with traffic so buses cannot use County Drive. Belief that this justification is not valid as traffic at this intersection is not at maximum volumes. An independent study carried out by local residents, using NWRL's own criteria, shows that the left hand lane at the top of County Drive, which would be used by buses travelling to the station, is in the category of A = Good operation, B = Good with acceptable delays and spare capacity, and perhaps C = Satisfactory. This is at odds with the original verbal advice provided by NWRL project team, which stated that the intersection was nominated as F = Over capacity, unstable operation.

w. The justification for the use of Robert Road as a bus feeder route to the proposed Cherrybrook Station outlined in Section 8.1.7 Alternative 2 of Technical Paper 2 - Operational Traffic and Transport Management Plan (page 58) is based on the assumption that Robert Road is well below traffic capacity and can accommodate more traffic. Belief that this justification is not valid as traffic on Robert Road is already at capacity and cannot accommodate more.

x. Objection to Carrington Road being the suggested traffic access point to the proposed Showground Station. Concerns that Carrington Road is close to residential streets, which are presently quiet and free from commuter parking issues. Preference for Showground Road to be used as the traffic access route.

y. All residents occupying the section east of Franklin Road have no option but to pass through Franklin Road or Castle Hill Road in order to access the Cherrybrook Station Precinct, whether travelling by public transport or otherwise. Therefore, access to the station would be via one of these roads. Where access is gained from Castle Hill Road, suggestion that transport would enter the station at the proposed Robert Road traffic lights (shown as Appendix to submission).

z. As per 8.1.3 of the technical paper in EIS 2, the NWRL expects small volumes of traffic to be generated from the West Pennant Hills Valley to the south of Cherrybrook Station. Facing east down Castle Hill Road from Old Northern Road, there are no streets on the left hand side of the road which are able to access Castle Hill Road between County Drive and Old Northern Road. Therefore, it appears that the only potential for an increase in traffic heading east down Castle Hill Road would be generated from Old Northern Road, Castle Hill. The Robert Road Residents believe

that an increase in traffic heading east from Old Northern Road is unlikely to occur given that Castle Hill Station would be significantly closer to this traffic than Cherrybrook Station. Further, any cars heading east on Castle Hill Road which would be dropping passengers to the Cherrybrook Station on their way to the city in six years time would presumably already be part of the current traffic heading east along Castle Hill Road. This current traffic is minimal up to Edward Bennet Drive.

aa. Suggestion that emergency access to the Cheltenham Oval services facility should be via the M2 and not via Castle Howard Road.

ab. Concerns regarding impacts on local roads from overflow parking when parking restrictions are introduced to Franklin Road. Currently parking in the vicinity of Tangara School overflows into nearby streets, particularly when the school holds special events (a number of times each year); cars park on both side of nearby streets including Fernleigh Close, which is only 5 metres wide. Delivery trucks are already unable to make deliveries in Fernleigh Close due to insufficient clearance. The problem of cars parking in other streets off Franklin Road will occur more frequently and parking in the vicinity of Tangara School will get worse.

ac. Concerns that the proposed sequence of traffic lights along Castle Hill Road will contribute to traffic congestion and traffic impacts.

ad. There are existing constraints for large vehicles (buses) at the intersection of County Drive and John Road for which large vehicles are required to occupy both lanes to negotiate the corner. The traffic access proposal for Cherrybrook Station would worsen this situation.

ae. Concerns the kiss and drop area will cause traffic jams down Robert Road, and further traffic congestion will be caused by left turning or right turning vehicles.

af. Residents of Robert Road (Houses 1 to 5) have been offered a buffer zone if the proposed road into the station goes ahead. This will need to be wide enough to allow some privacy as Robert Road will go from a quiet street to a major interchange without any offer of compensation.

ag. Concerns relating to increases in pedestrian traffic and noise along Castle Hill Road at weekends and night going to and from the proposed Cherrybrook Station. With increased pedestrian traffic, particularly school children, the likelihood of annoying behaviour towards pets will increase and cause disturbance for neighbours.

ah. Concerns that upgrades to traffic facilities in Castle Hill Road will impact on property vehicle access, specifically, the continuous traffic island proposed for the centre of Castle Hill Road. Request that the traffic signals proposed for the Franklin Road intersection during construction should be retained and a right out phase included.

ai. Pedestrian crossings and flashing lights with 40 km/h speed limits should be placed along Franklin Road to accommodate the traffic volume experienced at peak times.

aj. Concerns regarding the lack of bus movements and motorist access points for the southern side of Castle Hill Road which comprises of the West Pennant Hill Valley residents and traffic users. Traffic would be compressed into three access roads namely; Highs Road, Glenhope Road and Coonara Avenue with the only entry point to the station from Roberts Road.

ak. Bella Vista Station should have a pedestrian tunnel or overbridge. The traffic lights on Norwest Boulevard will cause traffic chaos during peak hours.

al. Objection to Robert Road being used as a feeder road to the proposed Cherrybrook Station, as if an accident was to occur, access to the streets coming off Robert Road would be blocked, including for emergency vehicles.

Response

a. Robert Road buses – impacts and alternatives

TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

Robert Road buses – insufficient studies

EIS 2 provided an analysis of various bus route options for Cherrybrook Station as detailed in Section 9.5.6 of EIS 2 and 8.1.5 of Technical Paper 2. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

EIS 2 traffic analysis queries

The conclusions of the Robert Road Group traffic study are noted.

There remains a need to retain bus stops along John Road in order to ensure existing and potential future patrons have good accessibility to existing and future bus services along John Road.

In relation to the intersection of County Drive and Castle Hill Road evidence from traffic counts reaffirms that the intersection is at or near capacity on the average weekday peak hours. The volume of traffic turning left from County Drive into Castle Hill Road on the NWRL survey count day in November 2011 was 38 and 25 vehicles in the AM and PM peak hours, respectively. In the AM peak hour this left turn volume represented around 5% of the total southbound flows on County Drive. In the PM peak the percentage was around 15%.

The traffic analysis undertaken for the project is presented in Chapter 9 of EIS 2. This shows that the intersection of Castle Hill Road / Robert Road is currently operating at a level of service A, indicating Robert Road is currently within capacity. Additionally, the assessment shows that this intersection would continue to operate at satisfactory levels throughout construction and operation.

Traffic volume impacts surrounding Cherrybrook Station – cars and buses

It is acknowledged that the introduction of Cherrybrook Station would result in a localised increase in traffic. EIS 2 identified a number of mitigation measures to minimise and manage the potential for impacts to nearby residents. These mitigation measures are reproduced in Chapter 9 of this report.

Cherrybrook Station access impacts via Robert Road and Franklin Road

Robert Road and Franklin Road both provide important access routes to Cherrybrook Station from areas to the north. It is noted that the design has provided priority to vehicular access from Castle Hill Road over Robert Road. This is detailed in Section 9.5.2 of EIS 2.

Cherrybrook Station access – alternatives

Robert Road and Franklin Road both provide important access routes to Cherrybrook Station from areas to the north. It is noted that the design has provided priority to vehicular access from Castle Hill Road over Robert Road. Restricting access to the station from Castle Hill Road only would result in traffic implications over the wider road network.

TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

Cherrybrook Station design

Cherrybrook Station is designed for modal change between bus and rail. Major bus interchanges are located at Castle Hill and Rouse Hill.

Robert Road commuter parking impacts

Notwithstanding the identification and provision of commuter parking at Cherrybrook Station, there may still be a degree of commuter parking on surrounding local streets. In the first instance this parking demand would be managed by the provision of suitable alternatives to driving to the station, ie good pedestrian and cycling links, adequate bike parking at stations, frequent and direct bus services from the surrounding residential areas. These positive measures would be facilitated as part of the NWRL project. However, as occurs elsewhere in Sydney, local councils may choose to implement measures to limit on-street parking by commuters.

Proposed mitigation measures and alternatives to reduce impacts around Cherrybrook Station

The proposed mitigation measures and alternatives raised in submissions are noted.

EIS 2 proposes vehicular access from Robert Road, Franklin Road and Castle Hill Road. Robert Road and Franklin Road both provide important access routes to Cherrybrook Station from areas to the north. It is noted that the design has provided priority to vehicular access from Castle Hill Road over Robert Road. Restricting access to the station from Castle Hill Road only would result in traffic implications over the wider road network. From south of Castle Hill Road, commuters would be able to approach the station from Highs Road, Glenhope Road or Coonara Avenue, then through the signalised intersection at Castle Hill Road / Robert Road. The operational traffic modelling undertaken and presented in Section 9.5.2 of EIS 2 indicates that the introduction of NWRL traffic in these arrangements would not result in any significant impacts to surrounding intersection performance.

Changes suggested such as a slip lane from Castle Hill Road in front of the station, providing extra lanes on Castle Hill Road, or providing bus bays and a kiss-and-ride zone on the southern side of Castle Hill Road would be likely to result in traffic management as well as traffic safety implications.

Other suggestion raised such as changes to the intersection of David Road / Castle Hill Road are outside the scope of the NWRL project and would be unlikely to have significant benefits in terms of wider network traffic performance.

In relation to operational bus access, TfNSW is committed to identifying the best outcome for Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

b. Access to Showground Station is proposed to be provided at Doran Drive and at a new intersection from Showground Road. Doran Drive would become an important station access road, including providing bus zones for the station.

Providing access from the industrial side of the Showground would require a new crossing of Cattai Creek, resulting in additional environmental impacts as well as concentrating vehicles through the industrial precinct.

c. The ongoing maintenance and repair of roads would remain the responsibility of the relevant road authority, eg RMS or the local council.

d. The NWRL project provides an efficient public transport option. It is not anticipated that passengers would be drawn to other transport modes. Passengers travelling from the Northern Line to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies.

e. Figure 9.3 of EIS 2 shows access and egress routes to Showground Station during operations. This shows the road to the car park to the west of Ashford Avenue would be left in / left out only. Right turn movements would be facilitated at the new signalised intersection of Doran Drive / Carrington Road.

f. Access and egress to and from all existing properties would be retained.

g. As detailed in section 6.3.1 of EIS 2, the fares for the NWRL would be set by the NSW Government in line with the rest of the Sydney rail network. Subject to a value for money analysis, the NWRL would be operated by the private sector. The NWRL is expected to result in an overall mode shift from private car to use of the rail line throughout the north-west region reducing traffic congestion.

h. Notwithstanding the identification and provision of commuter parking at selected stations, there may still be a degree of commuter parking on local streets surrounding stations. In the first instance this parking demand would be managed by the provision of suitable alternatives to driving to the station, ie good pedestrian and cycling links, adequate bike parking at

stations, frequent and direct bus services from the surrounding residential areas. These positive measures would be facilitated as part of the NWRL project. However, as occurs elsewhere in Sydney, local councils may choose to implement measures to limit on-street parking by commuters.

i. Any decision to remove the breakdown / parking lane on County Drive would need to be taken by the relevant road authority and is outside the scope of the NWRL project.

j. Providing traffic lights at Franklin Road / Castle Hill Road would result in multiple sets of traffic lights in close succession, potentially causing traffic delays. The signalised intersection at Castle Hill Road / Roberts Road would provide all movements from the station precinct onto Castle Hill Road.

k. The support for the NWRL is noted. The project is forecast to result in a mode shift from use of private vehicles to public transport.

l. The decision to complete Castle Howard Road to Lyne Road would need to be taken by the relevant road authority (in this case Hornsby Shire Council) and is outside the scope of the NWRL project.

m. The traffic analysis undertaken for EIS 2 has been based on actual traffic measurements in accordance with accepted traffic engineering practice. The traffic assessment is based on the intersection arrangements and number of lanes. The slight discrepancy in the road width does not alter the results of the assessment.

Hornsby Council classifies Robert Road as a local road. Austroads (Guide to Traffic Management Part 5: Road Management) states that local roads are generally two lane two way but widths can vary significantly in order to serve a variety of functions including movement (access and service) functions and amenity and social functions associated with the use of the road space. Specifically a local road is not a National Highway, National Arterial or State Arterial (Austroads AP-129 / 98 Responsibilities for local roads, p 10).

n. Parking would be restricted on Brookhollow Avenue from Norwest Boulevard along the extent of the station precinct in order to provide for kiss-and-ride zones.

Notwithstanding the identification and provision of commuter parking at selected stations, there may still be a degree of commuter parking on local streets surrounding stations. In the first instance this parking demand would be managed by the provision of suitable alternatives to driving to the station, ie good pedestrian and cycling links, adequate bike parking at stations, frequent and direct bus services from the surrounding residential areas. These positive measures would be facilitated as part of the NWRL project. However, as occurs elsewhere is Sydney, local councils may choose to implement measures to limit on-street parking by commuters.

The operational traffic modelling undertaken for the area around Norwest Station (presented in Section 9.5.5 of EIS 2) indicates that all intersections in the vicinity would continue to operate at acceptable levels of service.

o. The operational traffic modelling for the area around Cherrybrook Station (presented in Section 9.5.2 of EIS 2) indicates that the introduction of traffic associated with the NWRL would not result in a significant change in the performance of intersections along Castle Hill Road.

The traffic lights proposed at Castle Hill Road / Glenhope Road are required in order to manage vehicular traffic and provide an all movements intersection to and from Glenhope Road and Castle Hill Road. The pedestrian crossing cycles have been incorporated into the traffic modelling for this intersection.

p. The traffic modelling presented in Section 9.5.2 of EIS 2 indicates that Glenhope Road would operate at an acceptable performance level. Changes to the T-intersections on Glenhope Road to the south are outside the scope of the NWRL project, and are unlikely to be negatively impacted by the introduction of the NWRL.

Traffic from the south of Castle Hill Road has the option of using High Road, Glenhope Road or Coonara Avenue to then access the station via the Castle Hill Road / Robert Road signalised intersection.

q. Any changes to the traffic environment from residential block subdivisions along Robert Road are outside the scope of the NWRL project and would need to be considered as part of relevant local / State planning processes for those projects.

r. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report. A decision on bus routes would consider the need for other heavy vehicle access along local roads including refuse trucks.

s. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

t. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

u. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

v. The traffic analysis undertaken for EIS 2 has been based on actual traffic measurements in accordance with accepted traffic engineering practice. It is acknowledged that the volume of traffic turning left from County Drive into Castle Hill Road in the AM and PM peak hours is not high. However the traffic analysis and observations on site show that southbound traffic along County Drive on approach to Castle Hill Drive is often not free flowing due to queuing back along the right turn lanes. The level of service category refers to the operation of the entire intersection. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

w. The operational traffic analysis indicates that Robert Road is not currently functioning at capacity. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

x. The proposed access to Showground Station would be from Carrington Road as well as a new signalised intersection from Showground Road. Notwithstanding the identification and provision of commuter parking at selected stations, there may still be a degree of commuter parking on local streets surrounding stations. In the first instance this parking demand would be managed by the provision of suitable alternatives to driving to the station, ie good pedestrian and cycling links, adequate bike parking at stations, frequent and direct bus services from the surrounding residential areas. These positive measures would be facilitated as part of the NWRL project. However, as occurs elsewhere in Sydney, local councils may choose to implement measures to limit on-street parking by commuters.

y. Robert Road and Franklin Road both provide important access routes to Cherrybrook Station from areas to the north. It is noted that the design has provided priority to vehicular access from Castle Hill Road over Robert Road. Restricting access to the station from Castle Hill Road only would result in traffic implications over the wider road network.

z. The proposed access roads to the station precinct have been designed to allow traffic to be distributed around the road network, whilst still providing priority for vehicles accessing the station from Castle Hill Road. Under these arrangements, the increase in traffic on Castle Hill Road would be such that the road would continue to function at acceptable levels. Restricting access to the station from Castle Hill Road only would result in traffic implications over the wider road network.

aa. Castle Howard Road would provide appropriate operational access to the Cheltenham Services Facility. It is noted that access requirements during construction would be limited to occasional maintenance access or in the case of an emergency. As such, it is not justified to construct a permanent access from the M2 Motorway for these minor access requirements.

ab. Notwithstanding the identification and provision of commuter parking at selected stations, there may still be a degree of commuter parking on local streets surrounding stations. In the first instance this parking demand would be managed by the provision of suitable alternatives to driving to the station, ie good pedestrian and cycling links, adequate bike parking at stations, frequent and direct bus services from the surrounding residential areas. These positive measures would be facilitated as part of the NWRL project. However, as occurs elsewhere in Sydney, local councils may choose to implement measures to limit on-street parking by commuters.

ac. Traffic light phasing alone Castle Hill Road in the vicinity of Cherrybrook Station would be determined in consultation with RMS to ensure this is optimised for efficient traffic flow.

ad. Physical works at the intersection of John Road / County Drive are outside the scope of the NWRL project. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

ae. The number of kiss-and-ride spaces has been determined based on the anticipated demand. Vehicles performing kiss-and-ride at the station would be stopped for a limited period. This is unlikely to result in traffic queuing back along Robert Road.

af. As shown in Figure 6.11 of EIS 2, a landscaped area is proposed to be provided between adjacent residences on Robert Road and the station in order to provide visual amenity and privacy benefits. The detail of this landscaped area would be determined during detailed design.

ag. Section 6.5 of EIS 2 provides the design principles for the new station, including 'safer by design' principles. An increase in pedestrian traffic along a busy arterial road would be unlikely to result in any significant increase in the noise environment.

ah. Access to all existing properties would be maintained as part of the project. Providing traffic lights at Franklin Road / Castle Hill Road would result in multiple sets of traffic lights in close succession, potentially causing traffic delays. The signalised intersection at Castle Hill Road / Roberts Road would provide all movements from the station precinct onto Castle Hill Road

ai. The request for flashing lights and reduced speed limits along Franklin Road are a matter for Hornsby Shire Council.

aj. Access to Cherrybrook Station from the south of Castle Hill Road would be available via Highs Road, Glenhope Road and Coonara Avenue then through the signalised intersection at Castle Hill Road / Robert Road. The operational traffic modelling presented in Section 9.5.2 of EIS 2 indicates that the surrounding intersections maintain appropriate performance levels based on these arrangements.

ak. A pedestrian overpass of Old Windsor Road would be provided to Bella Vista Station. At Norwest Station, provision of a future grade separated underpass of Norwest Boulevard would be safeguarded. The operational traffic modelling presented in Section 9.5.5 shows the Norwest Boulevard / Brookhollow Avenue (west) intersection would operate at acceptable levels of performance. This modelling includes the pedestrian light phasing.

al. Robert Road provides an important access route to Cherrybrook Station from the north, however it is noted that priority has been given to vehicular access from Castle Hill Road. It is noted that Robert Road has two entrances which would provide access options to the streets off Robert Road, including for emergency vehicles.

7.5.5 Type of trains

Stakeholder identification number(s):
3, 34, 41, 50, 51, 52, 146, 194, 202, 243

Issue description

In summary, respondents raised the following issues:

a. EIS 2 does not assess the environment in which the passenger is carried, in this case, a single deck train. This is relevant as this is a major change to what currently exists in Sydney.

b. The claim that the single deck trains will travel faster than a suburban train running slow intentionally to allow for unplanned delays is unsolicited. This claim will only be proven when the design, supply and operate tenders are received and analysed (on the NWRL route) when compared to the 'Waratah' double deck trains.

c. The metro style carriages should be first trialled on inner parts of the Sydney rail network, such as the Eastern Suburbs line or CBD-Bankstown-Strathfield circuit, where distances to the CBD are comparatively shorter and increased standing room and less seating may be warranted. It is inconsistent and fragmentary for a rail system to have smaller capacity carriages to serve outer Sydney when double deck trains provide 40% more capacity – NWRL must be the same.

d. Concerns regarding the proposed single deck trains which are believed to be better suited to short inner city metro-style journeys. Services will run from Rouse Hill, a predominantly dormitory outer suburb, taking commuters on a long distance commute to Macquarie Park and Chatswood while double deck trains, which are supposedly no longer suitable for short distance journeys, will collect passengers off the NWRL and take them for remaining few kilometres all stations to the city. The justification for single deck trains is not clear. Preference for NWRL to use a heavy rail network with adequate seating capacity. Belief that the metro style trains are not appropriate for the proposed NWRL project due to the length of journey. The metro proposal should therefore be abandoned in favour of a full heavy rail alternative with a double deck train service.

e. Suggestion that it is important to manage the gap between the platform and the train so that it is narrow enough to minimise delays to boarding or alighting. Concern that a three doorway per car configuration would have unequal gaps where deployed on Sydney's legacy curved platforms. A 400 metre radius curvature leads to an estimated 100 mm gap differential between the centre and end doorways, with inversely proportional amounts for other radii. An alternative train configuration to achieve equal and smaller platform gaps for all doorways would use two doors per shorter car with articulation to contain the bogie count. For example, a train of 12 articulated 13.5 metre sections would also have 24 doorways and, assuming independent halves; a total of 14 bogies (cf 16 for a train of 8 standard length cars). A 10 x 16 metre configuration with 20 doorways and 12 bogies would also be possible.

Response

a. Section 6.24.3 of EIS 2 provides details of the train environment. Each train operating on the NWRL will have eight carriages and be capable of transporting up to 1,300 people. The number of seats per train is yet to be determined, but will be based on customer research about their needs.

The rapid transit service will be different to all others in Sydney, not least because people will be getting on and off all the way along the line, at major centres like Macquarie Park, the university and Chatswood. In fact, about one third of all customers aren't expected to travel past Chatswood.

The rapid transit trains will feature:

- Three doors per side per carriage – fast to get on and off.
- Air conditioning.
- A mixture of seating arrangements.
- Plenty of grab handles for standing passengers.
- Wheelchair spaces.

- ❖ Priority seating areas for the mobility impaired, the elderly and parents and carers with prams.
- ❖ All trains will have a driver.
- ❖ Level access between platform and train.
- ❖ Modern passenger information systems.
- ❖ Advanced train control and safety systems.

b. Single deck trains allow people to get on and off more quickly than double deck trains. Modern operating systems and signalling technology ensure train running times are optimised.

Rapid transit services would initially provide for 12 trains per hour (a train every five minutes in peak periods). Over time, as demand increases, service frequency could increase up to 20 trains an hour – or one every three minutes.

Over the course of an hour, the passenger capacity is significantly higher than that provided by the current system with room to increase capacity in the future. Additionally, customers would not have to wait nearly as long for a train.

c. Sydney's Rail Future (2012) is a plan to transform and modernise Sydney's rail system. Sydney's Rail Future provides the strategic context for the NWRL and its relationship to the rest of the Sydney rail system.

The NWRL would be the first element of a new Tier 1 Rapid Transit Network for Sydney that will ultimately extend to the Bankstown and Hurstville lines.

Stage 5 of Sydney's Rail Future includes the extension of the new single deck service to Bankstown and Hurstville. The Western and Inner West lines would operate as part of the Suburban Network.

d. The NWRL has been identified as a key priority railway transport infrastructure project which would provide a significant expansion to Sydney's rail network in an area of future population and jobs growth.

Sydney's Rail Future: Modernising Sydney's Trains released in June 2012 is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future. It has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. Change will not be delivered overnight. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

e. The exact design of the NWRL station platform will be determined during the detailed design phase, however the NWRL stations will be designed according to the requirements of the single level, rapid transit style trains proposed.

The use of the existing stations between Epping and Chatswood by the single level, rapid transit trains will be considered during the Epping to Chatswood Rail Link assessment process.

It is noted that the design for the new NWRL stations, and the existing stations between Epping and Chatswood on the Epping to Chatswood Rail Link do not have curved platforms.

7.5.6 Light spill

Stakeholder identification number(s):
306

Issue description

In summary, the respondent raised the following issue:

a. Concerns raised about light pollution which will be generated by the operation of the station. Request for additional screening to be included in final design. Current proposal does not adequately address this issue. A simple variation in the shape of the excavation could assist in mitigating the transmission of light. Request for screening to be included along the Castle Hill Road frontage of the station.

Response

a. Impacts from light spill generated by station operation will be a key consideration during detailed design. Mitigation measure OpV2 in Table 16.7 of EIS 2 states that cut-off and directed lighting would be used to ensure glare and light spill on surrounding existing and future residents are minimised. This mitigation measure is reproduced in Chapter 9 of this report.

7.5.7 Business impacts

Stakeholder identification number(s):
88, 127, 145, 272, 287, 313

Issue description

In summary, respondents raised the following issues:

a. Once NWRL is operational there will be impacts to local businesses due to changes in accessibility, noise and traffic as a result of Cherrybrook Station. In particular, businesses operating in Kayla Way will be impacted. Adequate compensation and mitigation for loss of business due to the impacts eg sound proofing, double glazed windows or other appropriate property treatments is requested.

b. Concern that due to train changes at Epping and Chatswood commuters will potentially be losing a minimum of between thirty and forty minutes per day in the event of the connecting trains not arriving / departing as scheduled per timetable. This result will have a major negative financial impact on productive work time lost by the thousands of workers who daily use, and rely upon, the current system when travelling daily to, and from, the city. The compound effect of that will also flow on to a major financial loss / impact on the State and National economy as well.

c. Concerns about impacts on businesses near Norwest Station due to traffic impacts relating to the proposed NWRL.

Response

a. EIS 2 has provided a thorough assessment of the potential operational impacts to Kayla Way. In relation to operational noise, the assessment has identified exceedances of the relevant criteria from the operation of the at-grade car park and from road traffic noise along Franklin Road. Mitigation measures OpNV12 and OpNV13 in Table 10.47 of EIS 2 identify options to minimise potential impacts. These mitigation measures are reproduced in Chapter 9 of this report. Access to the existing properties on Kayla Way would be maintained during operations.

b. The NWRL will be fully integrated into Sydney's public transport network providing a reliable service for approximately 400,000 residents in the north west.

Rapid transit services, initially 12 trains per hour during peak periods (a train every five minutes in peak periods), will be operated with new generation single deck trains, advanced signalling and dedicated track. Over time, as demand increases, service frequency could increase up to 20 trains an hour – or one every three minutes.

Customers will be able to interchange between the NWRL and the existing rail network at Epping and Chatswood. At Chatswood, customers will walk across the platform to change to an existing service.

Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak.

c. A thorough traffic assessment has been undertaken for the operational phase at Norwest Station. Table 9.7 of EIS 2 indicates that the introduction of the NWRL would not have a significant impact on the performance of surrounding intersections and access to existing businesses will be maintained.

7.5.8 Community facility impacts

Stakeholder identification number(s):
38, 66, 94, 259, 304

Issue description

In summary, respondents raised the following issues:

a. Concerns that the use of Robert Road as a feeder road to the proposed Cherrybrook Station will impact the way the community enjoys the street. This includes walking dogs down the street as well as impacts on Robert Road Park, reducing patronage and making recreational activities more difficult.

b. Concerns that due to the proposed Cherrybrook Train Station, Robert Park will reduce in size as Robert Road becomes a feeder road to the new Cherrybrook train station.

c. Concerns regarding Beecroft / Cheltenham (Epping) community land surrendered for the proposed North West Rail Link.

Response

a. It is acknowledged that traffic on Robert Road is likely to increase during NWRL operation. The design has given priority to vehicles accessing the station from Castle Hill Road over Robert Road. In relation to operational bus access, TfNSW is committed to identifying the best outcome to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

b. The NWRL does not include any plans to reduce the size of Robert Park.

c. Community land at Cheltenham Oval would be required for the construction of the NWRL project. The use of this land was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

It is also noted that the impacted facilities would be reinstated on completion of construction works. There are also opportunities to facilitate improvements to the sporting and recreational facilities at Cheltenham Oval. These options are being progressed in consultation with Hornsby Shire Council and the users of the oval.

7.5.9 Air quality

Stakeholder identification number(s):
22, 64, 68, 70, 72, 107, 121, 127, 145, 171, 181, 192, 202, 213, 225, 234, 237, 272, 287, 297

Issue description

In summary, respondents raised the following issues:

a. The air quality impacts from the increase of traffic on Franklin Road (due to Cherrybrook Station) will have detrimental impacts on the quality of life for residents of Kayla Way. In particular, the pollution from car exhausts at the proposed park-and-ride for 60 cars on the north eastern boundary will impact residents.

b. Increased traffic movements on Franklin Road will result in air pollution (eg car exhausts), impacting the health of residents. Suggestion to reduce these impacts by:

- ❖ Building a new access road through vacant land at the centre of the Cherrybrook Station precinct adjoining the 'Onsite Detention'.
- ❖ Closing off Franklin Road at the Kayla Way boundary and Robert Road to vehicular traffic.
- ❖ Adding an extra lane adjacent to Castle Hill Road (Precinct Plan attached to submission).

c. Any fuel stored near the northern boundary of Cherrybrook Station will cause toxic vapours to permeate the air adjacent to the site. If there is a fire, nearby residences will be severely affected by the smoke. Request for any fuel storage areas to be relocated at least 100 metres away from nearby residences.

d. Concerns that tunnelling activities below properties in Epping will affect air quality in the area.

e. Objection to air pollution caused by vehicles on the steep incline at John Road.

f. Concerns regarding increased pollution levels from Robert Road traffic near the proposed Cherrybrook Station, including loss of amenity. In particular, concerns that children playing in Robert Park will be affected by bus fumes.

g. Belief that the air circulation system in Sydney will not remove the pollution generated by increasing the volume of road based transport arrangements.

h. Concerns regarding air quality impacts from bus and heavy vehicle fumes should Robert Road be used as a feeder road to the proposed Cherrybrook Station. Specific concerns regarding the potential effects on children playing at Robert Park and health impacts on elderly and disabled residents.

i. The Kellyville Station design shows a high capacity rail line in what is currently a low density area. EIS 2 does not show the high rise residential towers needed to fill the trains, where future residents will be exposed to exhaust fumes from thousands of cars both on Old Windsor Road and from the car parks.

j. Request to be provided with required conditions for operational dust in relation to railway operation and tunnel ventilation, and the means of monitoring this at each location. Comment that if there is no dust then the recurrent cost of providing filtration is near zero and so filtration should be seriously considered. The quantity and detailed nature of dust must be provided at each outlet vent and continually reported to the neighbours at these locations.

Response

a. Section 19.1.6 of EIS 2 identifies the potential operational air quality impacts. During operations, it is acknowledged that there would be a redistribution of traffic around Cherrybrook Station. This is not anticipated to have a significant impact on local air quality due to the location of Cherrybrook Station in close proximity to other major roadways. As such, any increase in traffic around the station precinct would have a negligible impact on local air quality. Additionally, there is anticipated to be a general reduction in traffic volumes as mode share shifts from road to rail thereby minimising vehicle emissions in the region.

b. Chapter 19 of EIS 2 provides an assessment of air quality impacts. During operations, it is acknowledged that there would be an increase in traffic movements around the station precinct. This is not anticipated to have a significant impact on local air quality or result in adverse health effects in the context of the existing traffic volumes in the region. Overall a reduction in traffic volumes is anticipated as mode share shifts from road to rail thereby minimising vehicle emissions in the region.

c. Fuel storage would be undertaken in accordance with relevant materials handling procedures and EPA requirements. This would include storage and bunding, adequate signage and regular maintenance as appropriate.

d. Impacts associated with tunneling were addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for

the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

Potential air quality impacts associated with tunneling works were assessed in Chapter 19 of EIS 1. Mitigation measures were identified within EIS 1 in order to reduce and manage these potential impacts. It is anticipated that upon adoption of these mitigation measures, the dust impacts on surrounding residents and buildings would be minimal.

e. Vehicles travelling on the steep incline at John Road would be expected to have a negligible impact on local air quality. Additionally, there is anticipated to be a general reduction in traffic volumes as mode share shifts from road to rail thereby minimising vehicle emissions in the region.

f. Chapter 19 of EIS 2 provides an assessment of air quality impacts. During operations, it is acknowledged that there would be an increase in traffic movements around the station precinct. This is not anticipated to have a significant impact on local air quality or result in adverse health effects in the context of the existing traffic volumes in the region. Overall a reduction in traffic volumes is anticipated as mode share shifts from road to rail thereby minimising vehicle emissions in the region.

g. Chapter 19 of EIS 2 provides an assessment of air quality impacts. Overall a reduction in traffic volumes is anticipated as a result of the NWRL as mode share shifts from road to rail thereby minimising vehicle emissions in the region. Therefore, even on days of low air dispersal, noticeable air quality impacts are not expected.

h. Chapter 19 of EIS 2 provides an assessment of air quality impacts. During operations, it is acknowledged that there would be an increase in traffic movements around the station precincts. This is not anticipated to have a significant impact on local air quality or result in adverse health effects in the context of the existing traffic volumes in the region. Overall a general reduction in traffic volumes is anticipated as mode share shifts from road to rail thereby minimising vehicle emissions.

In relation to bus use of Robert Road, TfNSW is committed to identifying the best outcome for bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

i. Land and urban development in the areas surrounding the station precincts does not form part of the NWRL project. Future development not directly related to the project would require separate planning approvals under relevant local / State planning processes.

j. Section 19.1.6 of EIS 2 provides an assessment of air quality impact during the operational phase. Ventilation shafts are designed to ensure fresh air is circulated through the tunnels and prevent the build-up of heat.

Emissions from ventilation shafts along the tunnel alignment may include small amounts of PM10 created from braking trains and small volumes of exhaust from maintenance activities, although quantities would be negligible. Dust is not anticipated to be generated during operations within the tunnels and, as such, specific dust mitigation measures are not warranted.

EIS 2 will be independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Should the project be approved conditions of approval are expected to be made available on the Department of Planning and Infrastructure's website.

7.5.10 Public safety

Stakeholder identification number(s):
13, 22, 38, 39, 48, 49, 64, 65, 67, 68, 70, 71, 72, 74, 77, 94, 99, 103, 110, 113, 119, 121, 127, 140, 143, 145, 149, 165, 171, 181, 186, 192, 194, 196, 197, 198, 215, 220, 225, 227, 231, 234, 236, 237, 245, 252, 258, 259, 261, 272, 273, 276, 279, 286, 287, 302, 313

Issue description

In summary, respondents raised the following issues:

a. Objection to the proposal to use Robert Road as a bus feeder road as it is narrow and does not have curbing or guttering in some places. The use of Franklin and Robert Roads for access to Cherrybrook Station would pose a major pedestrian safety hazard for children / adults attending the surrounding schools and care facilities, particularly Tangara students and Inala residents. This would also impact safely accessing and playing at the park on the corner of Dalkeith Road. Objection to moving the playground as a mitigation measure.

Pedestrian safety for these residents would be seriously threatened under the proposed use of Franklin Road as part of the primary traffic feed into Cherrybrook Station, and the increased risk of speeding buses and cars. Request for traffic lights at Neale Avenue and Franklin Road. Suggestion to utilise Castle Hill or County Drive roads for vehicle access to Cherrybrook Station.

b. Concerns that the increase in foot traffic from Showground Station, particularly from Doran Drive, will result in theft, vandalism and bad behaviour in the surrounding suburbs, impacting local residents.

c. Increased traffic movements on Franklin Road will result in safety impacts from limited visibility for residents exiting Kayla Way on the incline (driving) and pedestrian activity. Kayla Way residents object to the widening of Franklin Road due to these impacts and suggest these impacts are reduced by:

- ❖ Building a new access road through vacant land at the centre of the Cherrybrook Station precinct adjoining the 'Onsite Detention'.
- ❖ Closing off Franklin Road at the Kayla Way boundary and Robert Road to vehicular traffic.
- ❖ Adding an extra lane adjacent to Castle Hill Road (submission attached Precinct Plan).

d. The creation of a large public area within the Cherrybrook Station precinct adjacent to Kayla Way poses concerns for security of Kayla Way residents. Request for higher boundary fences (climbing deterrent) and security cameras monitored by station security at the northern boundaries of the station precinct.

e. Concerns regarding safety issues on Robert Road if it is utilised as a feeder road into the proposed Cherrybrook Station. Robert Road is a small and narrow road and it will be dangerous and time consuming for residents to reverse out of properties during peak traffic periods. Cars exiting Arundel Way, Oliver Way, Dalkeith Road and other cul-de-sacs off Robert Road would not be able to exit safely as the increased levels of traffic including large vehicles will obstruct vision. This would increase the risk of accidents.

Suggestion to remove access into Robert Street from the western end of Cherrybrook railway station complex or from Castle Hill Road, and to improve safety Robert Road should be converted into a cul-de-sac at Castle Hill Road.

f. Concerns regarding buses turning left from County Drive into John Road, as the corner is very tight and buses frequently mount the corner. This is dangerous to pedestrians whose safety would be further impacted by the additional buses accessing the proposed Cherrybrook Station. Suggestion for buses to access Cherrybrook Station via the existing main arterial road of County Drive for this reason.

g. Concerns that using Robert Road as an access route to Cherrybrook Station will present hazards for traffic and cyclists. Safety issues will arise from pushing buses and commuter traffic onto this narrow suburban

street that was not designed for heavy traffic, even if the road is widened. Changes to the existing usage of the road will result in safety issues and worsen the already hazardous road conditions, including large vehicles obstructing vision. This will be worsened during peak hour periods, with traffic cutting corners at the intersection of Robert Road and John Road. Suggestion to widen this intersection.

Belief the proposed North West Rail Link will be putting the lives of residents living near Robert Road and Cherrybrook Station at risk. Calls for consideration to be given to the number of estates linking to Robert Road, the narrow width of the road, and how many young children and elderly people live in the area.

Preference is to direct major traffic flows through existing major roadways such as David Road, County Drive and Castle Hill Road to minimise public safety concerns.

h. Belief that the garbage and recycling collection vehicles would pose safety and collision risks to buses approaching the proposed Cherrybrook Station.

i. Concerns that it will become extremely dangerous for cars entering Robert Road from John Road, or for residential properties located on the steep section of Robert Road near the John Road intersection to reverse from their driveways onto Robert Road. The hill at this location restricts the visibility for drivers and the introduction of buses will increase the likelihood of head-on collisions.

j. Concerns that passengers who need to travel to Macquarie University, Macquarie Business Park or Chatswood will need to change trains at Epping which will create unnecessary and unsafe crowding at Epping station platforms. The proposed North West Rail Link will also cause dangerous conditions and congestion at Chatswood station.

k. Concerns regarding variable height gaps at stations and specifically at Cheltenham, which are a hazard for commuters boarding and alighting the trains.

l. Increased levels of bus traffic on Robert Road will cause privacy issues for residents near the proposed Cherrybrook Station as anyone on a bus would be able to look into homes over fences. This will cause security for residents to be severely compromised.

Request for Kayla Way property fence heights to be increased to protect resident privacy and safety nearby Cherrybrook Station. Calls for this to be funded by the NWRL project.

m. Section 7.3.6 of Technical Paper 2 - Operational Traffic and Transport Management Plan (page 44) proposes to increase Robert Road traffic by 150%. Concerns that this proposal will create an unsafe environment for residents of Robert Road and adjoining roads such as Dalkeith Avenue, Louise Way, Arundel Way and Oliver Way). The current constraints of Robert Road, including topographic issues and blind spots, means increased traffic flow with buses and other cars will cause serious public safety issues and increase the likelihood of traffic accidents.

n. The intersection of Robert Road and Castle Hill Road was altered to allow only left in and left out movements following a high number of traffic accidents as a result of drivers not being able to see oncoming traffic when approaching Castle Hill Road. Concerns that any more traffic will only increase the risk of accidents on this already hazardous intersection.

o. Concerns regarding safety and amenity deterioration if Dalkeith Road is used by commuters to access the new station in Cherrybrook.

p. It is noted from EIS 2 that there will be only one train in a tunnel ventilation section 'where possible'. These conditions should be unambiguous unless there is an assurance of additional safety controls. These 'rules' are at times bent for operational expedient reasons to the detriment of passenger fire life safety with negative outcomes.

q. Concerns regarding security near the proposed Norwest Station. There is a taxi pick up and drop area planned to be opposite the building. More people will now be converging in the area nearby and there is more chance of loitering and possible vandalism, especially after hours.

r. The increased traffic on roads as a result of inefficient public transport options (such as the proposed NWRL) will lead to more traffic accidents.

Response

a. Robert Road and Franklin Road form important access roads to and from Cherrybrook Station. The option of using Castle Hill Road only as the access to the station would be likely to result in significant traffic implications. It is noted, however, that the design gives priority for vehicles accessing the station off Castle Hill Road.

In relation to operational bus access, TfNSW is committed to identifying the best outcome to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

The NWRL does not include any plans to relocate or alter Robert Park.

The provision of traffic lights at the Franklin Road / Neale Avenue intersection is outside the scope of the NWRL and would need to be progressed by Hornsby Shire Council if warranted.

b. The design principles for the stations are presented in Section 6.5.3 of EIS 2. The design of the station precincts would consider and respond to 'safer by design' principles and aims to create places where people feel safe within the station precincts, urban design measures would be implemented to reduce the potential for this type of behaviour to occur.

c. Franklin Road is currently designed for two way traffic. It would continue to operate as such.

d. Section 6.5 of EIS 2 details the design principles for stations including "the urban design elements of the project must consider and respond to 'safer by design' principles".

Additional, mitigation measure OpV10 in Table 16.7 of EIS 2 (and reproduced in Chapter 9 of this report) provides for the adoption of Crime Prevention through Environment Design principles in the design and maintenance of the NWRL.

e. During operations, access and egress points are proposed from both Robert and Franklin Road, however it is noted that the design of the site provides priority for vehicles accessing the site from Castle Hill Road (as shown on Figure 6.11 of EIS 2). The closing of Franklin Road or Robert Road, resulting in all vehicular access occurring from Castle Hill Road would result in greater traffic impacts and potentially traffic safety implications on Castle Hill Road.

In relation to operational bus access, TfNSW is committed to identifying the best outcome to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

f. Buses turning left from County Drive into John Road form part of existing bus routes. Alterations to the road environment in this location are outside the scope of the NWRL project.

g. Robert Road and Franklin Road form important access roads to and from Cherrybrook Station. The option of using Castle Hill Road only as the access to the station would be likely to result in significant traffic implications. It is noted, however, that the design gives priority for vehicle accessing the station off Castle Hill Road.

In relation to operational bus access, TfNSW is committed to identifying the best outcome to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

Any changes at the intersection of Robert Road / John Road are outside the scope of the NWRL project.

h. Robert Road is currently designed for two way traffic. All road designs would consider waste trucks to ensure their safe and efficient manoeuvrability in relation to other vehicles. In relation to operational bus access, TfNSW is committed to identifying the best outcome to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

i. Robert Road, including the intersection with John Road, is currently designed for two way traffic and will continue to operate as such.

j. Safety is of paramount importance to TfNSW and all NWRL designs have been carried out with this as a major consideration. Alterations to the platforms at Epping Station are not envisaged to be necessary to ensure the safety of interchanging passengers.

At Chatswood customers would be able to cross the platform to change onto the existing rail network. Train services would be organised to ensure passengers only need to wait a few minutes to switch from a NWRL train to another train into the city in peak periods. It is expected there would be a train every three minutes from Chatswood to the city during peak times. Due the regularity of these services, overcrowding on the Chatswood platform is unlikely to be an issue.

k. As detailed in Section 6.24.3 of EIS 2 the new rapid transit trains would provide level access between the platform and the train. Cheltenham Station is outside the scope of the NWRL project.

l. The provision of fencing for this purpose is outside the scope of the NWRL project. TfNSW is committed to identifying the best outcome for bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

m. The EIS acknowledges that traffic would increase in Robert Road as a result of the introduction of Cherrybrook Station. The Operational traffic assessment presented in Section 9.5.2 of EIS 2 indicated that this increase would not have a significant impact on the traffic performance of Robert Road.

n. In order to ensure safe operation of the Robert Road / Castle Hill Road intersection, it is proposed to provide traffic signals including dedicated right hand turn lanes and light phasing. All intersections would be designed in accordance with Australian road standards to ensure they function safely at the commencement of NWRL operation and into the future.

o. It is acknowledged that Dalkeith Road could provide access for pedestrians to and from Cherrybrook Station. These pedestrians would utilise the existing walking environment.

As Dalkeith Road does not provide through access between major roadways, it is unlikely that Dalkeith Road would experience any noticeable increase in traffic volumes as a result of NWRL operations.

p. Although the aim would be to have the best case one train in a tunnel ventilation section, the design and safety measures would allow two trains per section without compromising passenger fire life safety. No negative impacts would be experienced by having two trains per tunnel ventilation section and full compliance would be maintained with Australian Standards, legislation and guidelines.

q. From the outset of the design process, safety has been considered for passengers, neighbouring areas and staff. The stations would be designed in accordance with Crime Prevention Through Environmental Design (CPTED) principles. In particular, access and safety for customers getting off or joining trains and using car parks and interchanges at night has been carefully considered and will continue to be considered during the design process.

A safe environment would be encouraged through well-designed and efficiently controlled lighting systems, visible CCTV surveillance and appropriate staffing during operational hours. Passive means to promote safety, such as enabling clear visibility lines and using natural daylight have also been integrated into station design. Public spaces in the stations would be designed to minimise obstructions, providing clear routes for passengers and eliminating blind spots. Emergency help points would also be provided within the station.

r. New public transport options such as the NWRL will see a decrease in the number of cars on the road, therefore decreasing the chances of traffic accidents. The NWRL aims to shift the mode share of journeys from private vehicle to rail.

7.5.11 Train amenity

Stakeholder identification number(s):
3, 10, 24, 53, 88, 122, 150, 168, 217, 243, 251, 319

Issue description

In summary, respondents raised the following issues:

a. Claims that the interior of the train carriages will provide better customer facilities aren't proven. Apart from the artist's impressions of the carriages and the statement the train will consist of eight cars, there is little factual information to prove / support this. Additionally, the use of overhead grab handles along the full length of a train car for standing passengers cannot be claimed to provide better comfort.

b. Objection to the proposed metro style system. Concerns that the metro system will lead to overcrowding, decrease comfort levels, limit seating and become an inconvenience to passengers. Having half the number of seats of the existing double deck trains will force many passengers to stand for long periods. It will be an "orphan" in the system. Additional seating capacity is essential for this long distance suburban service, which is eventually planned to run from Cudgegong Road to Central, a distance of 47 km. TfNSW are now planning to return to the past and restrict the capacity of the CityRail network. Preference for double deck trains to be operated on the North West Rail Link as single deck trains do not have enough capacity. Passengers in Sydney do not want to stand for 30 minutes on a train. Metro trains are not suitable for long distances. Other cities such as Paris use metros only for short travel distances. A metro operation effectively means providing good customer experience which has now become secondary to the government's desire to pass on the network operation to private operators with focus on profit rather than a customer benefits.

c. Belief that there will only be standing room on the single deck trains by the time NWRL reaches Epping, so all customers from Epping onwards will have to stand to Chatswood and stand again on the existing rail service, causing discomfort and forcing people to forego doing work on laptops and ipads, thus increasing time at work, cumulative impacts on family and lifestyle.

d. Concerns that not allowing the NWRL to be operated by double deck trains after a second harbour crossing is completed means needing to run additional trains to meet seating expectations.

Response

a. Section 6.24.3 of EIS 2 provides details of the train environment. Each train operating on the NWRL will have eight carriages and be capable of transporting up to 1,300 people. The number of seats per train is yet to be determined, but will be based on customer research about their needs. Although the detailed design of the trains is yet to be undertaken, the rapid transit trains would have the following features:

- Three doors per side per carriage, allowing fast boarding and alighting.
- Air conditioning.
- A mixture of seating arrangements.
- Plenty of grb handles for standing passengers.
- Wheelchair spaces provided within carriages.
- Priority seating provided for mobility impaired, the elderly and parents with prams.
- All trains will have a driver.
- Level access between platform and train.
- Modern passenger information system, and train control and safety systems.

b. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future. TfNSW has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through a long term program of service improvements, capital works and network upgrades.

Sydney's Rail Future: Modernising Sydney's Trains introduces three differentiated service levels including the use of single deck, rapid transit trains. The new rapid transit rolling stock is expected to be state of the art heavy rail rolling stock.

The NWRL has been identified as a key priority railway transport infrastructure project which would provide a significant expansion to Sydney's rail network in an area of future population and jobs growth.

TfNSW has identified the NWRL project as being the first sector in Sydney to operate the new rapid transit services. Initially 12 trains per hour during peak periods (a train every five minutes in peak periods), will be operated with new generation single deck trains, advanced signalling, operations systems and dedicated track. Over time, as demand increases, service frequency could increase up to 20 trains an hour – or one every three minutes.

The NWRL will also introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. As part of Sydney's Rail Future the NSW Government has determined that a second crossing under the Harbour will be constructed linking the NWRL to a new CBD line with new CBD stations. These rapid transit services will also eventually operate on the Bankstown/Cabramatta line and to Hurstville on the Illawarra line.

This plan will eventually enable rail to carry another 90,000 to 100,000 people per hour in the peak and represents a 60% increase in passenger rail capacity across Sydney which is the greatest capacity increase in the past 80 years.

c. As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network.

The new generation trains would deliver a fast, safe and reliable journey with high performance standards and good customer amenity features. Single deck trains allow passengers to get on and off more efficiently than double deck trains, and the modern signalling technology optimises train running and maximises rail line capacity utilisation. Due to the high frequency of NWRL services, customers would be able to turn up at any NWRL station and catch the next train, eliminating the need for time tables. Allowing for dwell time at stations and changing trains at Chatswood, a journey from Cudgegong Road Station to Sydney CBD is expected to take less than one hour in the peak as shown in Table 6.11 of EIS 2.

Each train operating on the NWRL will have eight carriages and be capable of transporting up to 1,300 people. The number of seats per train is yet to be determined, but will be based on customer research about their needs.

d. As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The

infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network.

7.5.12 Maintenance

Stakeholder identification number(s):
78

Issue description

In summary, the respondent raised the following issue:

a. There has not been a suitable level of advice and information based on real experience from other rail tunnel projects regarding the:

- ❖ Impact of operations on tunnel integrity.
- ❖ Commitment to an ongoing maintenance plan to ensure the longevity, safety and integrity of the rail tunnels.
- ❖ Component projects within the maintenance plan and the frequency of their completion to ensure the longevity, safety and integrity of the rail tunnels.

Response

a. The tunnels have been designed to ensure their long term life and to accommodate the maximum operating speeds of the trains.

The tunnels have a 100 year design life and would be lined with pre-cast concrete segments to ensure the long term life of the tunnels and to minimise groundwater ingress. A detailed specification for the design, operation and maintenance of the tunnels has been developed by TfNSW and is currently subject to a commercial tender process. The ongoing maintenance of the tunnels will be a requirement for the future operation of the NWRL.

The construction of the tunnels was addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

7.6 Planning

7.6.1 Future growth

Stakeholder identification number(s):
94, 105, 194, 203, 262, 279

Issue description

In summary, respondents raised the following issues:

a. Will the size of the tunnels only accommodate single deck carriages? Comment that transport issues are fluid, and in the future, the NWRL might better serve the travelling public if it was to be integrated with the existing services.

b. Belief that rail integration problems created by the proposed NWRL will be exacerbated with continued population growth in the area.

c. Concerns that the proposal to cut M2 bus services once NWRL is operational does not meet the transport needs of a community and growing region of Sydney.

d. The population of the Beecroft-Hornsby area is growing, therefore even more pressure will be placed on NWRL and the Epping-Chatswood Line. The current NWRL proposal is a further disincentive for people to take up public transport and will not cater for this growth.

e. The North West is the fastest growing region in Sydney. The proposed NWRL is inadequate for current and future transport needs for the region.

f. Request for tunnels to be constructed to accommodate the current double deck trains in order to allow for future growth.

Response

a. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network.

The NWRL will introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. Sydney will also have a second crossing under the Harbour linking to a new CBD line and new stations, which will use rapid transit services that will also eventually operate on the Bankstown line and to Hurstville on the Illawarra line.

This plan will eventually enable Sydney Trains to carry another 90,000 to 100,000 people per hour in the peak.

b. Alternative rail futures for Sydney were assessed in *Sydney's Rail Future: Modernising Sydney's Trains*. The planning process identified Sydney's Rail Future as the preferred option for improving Sydney's passenger trains because it:

- Offers tailored services, which better meet the expectations of the majority of customers.
- Provides the required capacity and flexibility to respond to Sydney's growing demand for rail transport.
- Creates a more modern, resilient and faster service.
- Delivers a seamless and less disruptive way of modernising Sydney's rail.
- Is more cost effective for the results it will deliver.

As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network

c. Section 9.5.1 of EIS 2 states that the NWRL would offer an alternative public transport access mode to M2 buses which presently provide the bulk of public transport access to Macquarie Park, the lower North Shore and the Sydney CBD for residents of the North-West.

Section 22.1 of EIS 2 noted that buses are affected by road congestion. Network constraints for buses are most acute on the approach to and within the Sydney CBD, particularly on the Harbour Bridge and around Wynyard Station. TfNSW forecasts that, in the absence of the NWRL, there would be a growth of 144% in M2 buses entering the Sydney CBD by 2021. These constraints mean that growth in bus services cannot accommodate the expected growth in public transport demand. Capacity constraints on the road network demonstrate the need for a mass transit system to facilitate continued growth. The NWRL would have a dramatic

impact on travel conditions in the north-west and through to the CBD. Forecast travel time savings of around 10 to 30 percent between the north-west and the key employment destinations of Macquarie Park, Chatswood and Sydney CBD are anticipated by 2021. This represents a much improved travel time reliability compared with bus and private car.

This is consistent with the project objective to 'Deliver Stage 3 of Sydney's Rail Future to improve transport network reliability by facilitating a shift from road to rail for trips to and from the north west, to reduce bus / road congestion and improve amenity in Sydney CBD'.

Reducing congestion on inner city roads (through a reduction in buses entering Sydney CBD from the north-west) would result in additional benefits to bus services from other areas to the north.

TfNSW is currently preparing bus modal strategies as part of finalisation of the NSW Long Term Transport Master Plan. Planning of bus network changes associated with the commencement of NWRL operations will be completed in the context of this long term master planning.

d. As part of a broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (every 3 minutes).

e. As part of a broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (every 3 minutes).

f. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network.

The tunnels have been sized for these types of trains.

The NWRL will introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. Sydney will also have a second crossing under the Harbour linking to a new CBD line and new stations, which will use rapid transit services that will also eventually operate on the Bankstown line and to Hurstville on the Illawarra line.

This plan will eventually enable Sydney Trains to carry another 90,000 to 100,000 people per hour in the peak.

7.6.2 Patronage forecast

Stakeholder identification number(s):
94, 115, 124, 180, 213, 263

Issue description

In summary, respondents raised the following issues:

a. Section 8.1.4 of Technical Paper 2 - Operational Traffic and Transport Management Plan (page 53) outlines that alternative bus routes to Cherrybrook Station instead of Robert Road would not serve the identified bus catchment of the area. Belief that residents of the catchment area would not be catching a bus to the proposed Cherrybrook Station as they would either walk or drive. If they did want to catch a bus, they would either walk to County Drive or John Road with the continuation of the current route along John Road / Franklin Road.

b. In the NWRL submission to Infrastructure Australia (Nov 2011), a patronage demand of 12,800 per hour was mentioned for 2006 and a maximum of 19,000 for 2026 (p 26). Calls that this needs to be reviewed.

c. The NWRL Link proposal will discourage patronage by increasing travel times for passengers travelling on the northern line from Beecroft and Cheltenham.

d. The change from heavy rail to metro on the NWRL will disadvantage commuters and would lead to the under-utilisation of the NWRL.

e. It is unlikely that residents west and in the immediate vicinity east of the Richmond Line will use the NWRL. Additional population in the NWRL catchment is around 100,000 (population projections taken from www.id.com.au) or about half what is claimed in EIS 2. Calls for a detailed catchment analysis to be undertaken.

f. NWRL should budget for at least 25-30 trains for the start-up fleet, not 20 as proposed. This will allow for contingencies. Customer confidence at this start-up period will be critical to build patronage usage quickly.

g. The expected number of commuters for Cherrybrook Station does not match the estimate in the EIS 2 of 16 buses per hour for the morning peak along Robert Road. The traffic density at Cherrybrook Station will be higher with approximately 45-90 bus loads. Refer to full submission to see calculations of station patronage numbers in attached appendices.

Response

a. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

b. Infrastructure Australia has a record of independently reviewing information provided to it in respect of proposed projects. More updated population and employment forecast figures have become available since the release of the NWRL submission to Infrastructure Australia (November 2011). As the NWRL is progressively developed, patronage estimates would be refined.

c. Passengers travelling on the Northern Line to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies associated with Stages 1 and 2 of Sydney's Rail Future.

Passengers travelling on the Northern Line to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

d. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network.

e. Long term planning for the Sydney Metropolitan region aims to sustainably manage growth over the next 25 years by providing for a more compact, networked city with improved accessibility, capable of supporting more jobs, homes and lifestyle opportunities within the existing urban footprint.

The NWRL would support metropolitan planning objectives by putting in place a key transport planning project which extends the connectivity of the existing rail network and supports growth centres in the north west.

f. NWRL train service frequency would be 12 trains per hour (train every 5 minutes) during weekday peak periods. The stabling facility will be initially configured to accommodate up to 20 trains. This is adequate to provide the initial level of service.

To ensure that it does not unduly constrain nor inhibit the reliable operation of the broader future rail network, the infrastructure for NWRL must consider future configurations and options. In this regard, the future operational and land requirements for the rapid transit network require validation during further development and implementation of the NSW Long Term Transport Master Plan.

g. Cherrybrook Station commuters would access the station by using various routes and transport modes including kiss-and-ride, pedestrian, bicycle, taxis and park-and-ride.

7.6.3 Approval process

Stakeholder identification number(s):
65, 77, 94, 110, 112, 121, 130, 151, 159, 168, 196, 197, 276, 289, 322

Issue description

In summary, respondents raised the following issues:

a. EIS 1 submission was appended to submissions made in response to EIS 2. Submission authors believe not all issues raised have been covered.

b. Issues from EIS 1 submission have been reiterated in EIS 2 submission as these issues were not addressed in the EIS 1 Submissions Report or in EIS 2.

In particular, request that the NWRL project team should respond to the concerns raised by the Robert Road Action Group about issues associated with the Cherrybrook Station proposed development. The alternatives were submitted as part of the submission to EIS 1 and will be resubmitted in response to EIS 2. Until this happens, Robert Road Action Group will take measures to raise community awareness via different channels and

an unresolved matter regarding Robert Road will impact the delivery of the NWRL project.

c. Query regarding which State government body is responsible to ensure compliance of the approved EISs, and what checks will be undertaken during the construction phase.

d. Query regarding the process if any approved levels outlined in the EISs are exceeded.

e. Belief that EIS 2 is void, as road and LINSIG analysis is based on incorrect road width for Robert Road near the proposed Cherrybrook Station.

f. A requirement for double deck trains and integrated connections to facilitate a single trip for passengers on the northern line from Beecroft and Cheltenham should be imposed as part of the NWRL approval.

g. Query regarding what the planning requirements conditions are to allow for the NWRL's fast tracked project management.

h. Opinion that EIS 1 did not include the full scope of the project, ie it lacked detail about the single deck component. As a result, not only were stakeholders not properly informed at the time that EIS 1 was on exhibition, but that EIS 2 is based on a flawed and incomplete document (EIS 1) that did not take into account the full scope of the proposal.

Response

a. Issues raised by the submissions received for EIS 1 have been considered by TfNSW as documented in the Submissions Report Stage 1 - Major Civil Construction Works Incorporating Preferred Infrastructure Report (TfNSW, July 2012), which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

As described in Section 5.7.1 of EIS 2 some submissions made during the public exhibition of EIS 1 raised issues that related to Stations, Rail Infrastructure and Systems (EIS 2). Table 5.8 of EIS 2 categorises these issues and then refers to the chapter of EIS 2 that addresses them.

b. Issues raised during the public exhibition of EIS 1 including the issues raised in the Robert Road Action Group submission have been considered by TfNSW as documented in the Submissions Report Stage 1 - Major Civil Construction Works Incorporating Preferred Infrastructure Report (TfNSW, July 2012), which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

As described in Section 5.7.1 of EIS 2 some submissions made during the public exhibition of EIS 1 raised issues that related to Stations, Rail Infrastructure and Systems (EIS 2). Table 5.8 of EIS 2 categorises these issues and then refers to the chapter of EIS 2 that addresses them.

c. As the proponent, TfNSW will be responsible to ensure compliance with the EIS approval conditions.

Additionally, the Department of Planning and Infrastructure and the EPA will have a role in ensuring compliance through Conditions of Approval and the Environment Protection Licence/s respectively.

d. As the proponent, TfNSW will be responsible to ensure compliance with the EIS approval conditions.

Additionally, the Department of Planning and Infrastructure and the EPA will have a role in ensuring compliance through Conditions of Approval and the Environment Protection Licence/s respectively.

e. The modelling analysis undertaken for the NWRL focused on the performance of the road intersections based on the number of lanes allocated to each road rather than the actual road width.

f. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new

services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network.

The tunnels have been sized for these types of trains.

The NWRL will introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. Sydney will also have a second crossing under the Harbour linking to a new CBD line and new stations, which will use rapid transit services that will also eventually operate on the Bankstown line and to Hurstville on the Illawarra line. This plan will eventually enable Sydney Trains to carry another 90,000 to 100,000 people per hour in the peak.

g. The NWRL project is subject to the provisions of the *Environmental Planning and Assessment Act 1979*.

h. The environmental impact assessment of the NWRL project has been delivered in two major parts.

The first part (EIS 1) assessed the major civil construction works comprising: excavation of tunnels and underground station boxes, construction of above ground infrastructure, including viaducts and bridges and earthworks. The Stage 1 Major Civil Construction Works were approved on 25 September 2012.

The EIS 1 Submissions Report provided details on the proposed rapid transit network and the use of single deck trains (refer to Chapter 2 of the EIS 1 Submissions Report).

The second part (EIS 2) assessed the operation of the rail line as well as the remaining construction components including station fit-out, platforms, buildings and architectural aspects, skytrain design and architectural aspects, rail infrastructure such as railway tracks, signalling systems, ventilation systems, overhead power supply and substations, transport interchanges, park-and-ride facilities, kiss-and-ride, bus stops, taxi ranks and bicycle facilities, and access roads and landscaping

7.6.4 Long-term transport planning

Stakeholder identification number(s):
3, 20, 32, 53, 104, 114, 115, 120, 122, 129, 153, 160, 168, 202, 213, 215, 243, 265, 270, 293, 294, 304, 311, 312, 315

Issue description

In summary, respondents raised the following issues:

a. Constructing a rapid transit railway from Chatswood under the City via St Leonards and Crows Nest to a suburb beyond the City will become a necessity in the not too distant future to ensure the viability of NWRL.

b. The decision to change from heavy rail to metro is short sighted and would prevent any future integration with the existing rail network.

c. Concerns that the metro style trains for the proposed NWRL will force rail commuters onto other forms of transport, causing long term issues for Sydney's peak hour traffic.

d. Objection to the current NWRL Link proposal as it will cause disruptions to the Northern Line and is therefore a short sighted solution that discourages residents from using the system.

e. Belief a second harbour crossing for trains and buses should be built in conjunction with the NWRL.

f. Belief the existing heavy rail system has evolved since the 1920s to efficiently service Sydney's transport needs and it would be short sighted to replace this system.

g. Objection to the proposed NWRL's lack of integration into the rail network. Belief this is short sighted and will limit transport options in the future. Request for the tunnels to be built to double deck size in order to allow for changes in the future. Building a double deck tunnel will show foresight allowing for the further expansion of Sydney and its commuters.

h. Benefits from using rapid transit single deck trains will not be realised on NWRL due to the deployment of additional trains to build up the number of seats in response to market expectations. A more efficient long term strategy would be to redeploy the single deck trains to inner area services instead, where the majority of passengers would be more willing to stand, and to run double deck trains on NWRL and its future westward extension. It would therefore be imprudent to reduce the tunnel side and station clearances on a fit for purpose basis to accommodate only single deck trains, and EIS 2 has not established to the contrary due to its poor differentiation between the benefits of single deck trains in general and benefits specific to NWRL. Preference for 6.6 metre diameter tunnels and matching station clearances to be retained to enable double deck trains to be accommodated in the longer term.

i. NWRL is a massive new enterprise with a very long service life. Long-term traffic management plans must be implemented in early construction stages to ensure that residents located adjacent to major infrastructure are not disadvantaged.

j. Objection to EIS 2 for the proposed NWRL as a profoundly backwards step, equivalent to the 'red rattler' service of 70 years ago.

k. The use of smaller trains on the proposed NWRL is short-sighted and inconsistent with the rest of Sydney's rail network.

l. Once the NWRL is finished it will unfortunately still not have solved the West's transport problems and is still taking north-west commuters to the North Shore.

m. Suggestion that the usage potential of the Epping / Chatswood tunnel will be limited if it is only constructed for metro trains. Therefore there is a need to develop a long term transport planning option.

n. Designing the second harbour crossing to only cater for single deck metro trains will prevent future expansion of the rail system. In particular, it will prevent the use of this crossing for high speed rail into Sydney for the final few kilometres.

o. Comment that TfNSW needs to adopt a long-term, 100-year, sequential rail plan for Sydney and major regional centres. It is illogical, inefficient and unnecessarily expensive to continue building ad hoc rail projects given that there is still no long-term master plan. Recommendations have been made for a rail master plan. New lines such as the SWRL and NWRL should be a part of a long term plan.

p. Comment that the NWRL proposal is very short sighted and request that plan be made for the long term sustainability of this State.

q. Comment that the Government's primary reason to build a North West Metro Line instead of North West Rail Line seems to be the break-up of the City Rail network. The NWML will be the first privatised line and it will only be a matter of time until further privatisation of services are announced. It seems that the bureaucracy is determined to break CityRail's monopoly on rail services in Sydney and also remove guards and drivers from trains, regardless of the consequences. This will limit the capacity of rail transport in Sydney for the next 50 years and is a narrow vision approach.

Government is urged to reverse its decision to build the tunnels for the NWML to 6.1 metres diameter and to build them to the standard CityRail loading gauge. This would allow the capacity of the line to be increased by the introduction of double deck trains, now or in the future.

r. Comment that it would not be bearable as a commuter to have to stand for long travel between the North West and the city without the benefits of additional seating that the double deck trains provide. If the Government proceeds with a single deck system then at least plan for the future and allow the tunnels to accommodate double deck trains. The

money spent now will provide long term flexibility for little additional outlay. The single deck train concept is the wrong decision for long term travel needs and it is not too late to opt for larger tunnels.

s. Comment that the NWRL is an important infrastructure project that is needed to help Sydney grow. However, it is essential that the NWRL be designed and implemented with the wider Northern Sydney community in mind addressing the broader impacts.

t. Comment that the railway to the North West to alleviate the significant traffic issues people have there is supported but plan for the future is required.

u. The planning context as presented on page 6 of the EIS 2 document is contradictory. "NSW 2012" declares decentralisation as a strategic State objective but then a discussion paper for "Sydney over the next 20 years" is transfixed on perpetual population growth to 5.6 million. The focus of INSW's "First things first" is motorways and higher coal production, cancelling out any effort to develop "sustainable" cities. The 2012/13 budget paper number 4 spends 55% on highways, not railways. The Long term Transport Masterplan accepts the motorway bias of INSW. The proposed rapid transit single deck service proposed in "Sydney Rail Future" has already been given up beyond Chatswood because INSW is not in favour of a new Harbour rail crossing.

v. One of the objectives of the NWRL is to "facilitate a shift from road to rail". EIS 2 claims that 14 million fewer car trips per annum will be made by 2021 without relating this to the present and future total trips and without showing detailed BTS calculations on how many of these trips are from current motorists switching to rail and how many from new residents in flats near the NWRL. This would prove whether there is a real, net reduction in overall car traffic measured in vehicle kms. At the Sydney level, 14 million saved car trips per annum in 2021 for a huge investment of $9 billion are negligible compared to the current eight million driver trips every day.

w. Concerns that there is no current proposal for a second harbour crossing to connect the proposed single deck trains to the city and this makes the NWRL project justification incomplete and incorrect, ie 'high capacity rail link between suburban regions and busy inner city areas using single deck trains' is incorrect as there is no funding allocated, nor any current proposal for a second harbour crossing that would enable this kind of access for at least 20 years.

x. Support for a future provision for the Epping Parramatta Rail Link, recognised by the provision of an Epping Services Facility for a future PERL safeguarding.

y. Concern that NWRL has not been designed to allow for a future connection to the Epping to Parramatta Line. It would seem that the government does not want to build the Epping to Parramatta Line and the introduction of NWRL as a single deck line confirms this. NWRL is now not intended to take people from the North West to the CBD, it is instead a cross-country line from Rouse Hill to Chatswood only. The commuters who do try to access the CBD from the North West will be confronted with boarding already crowded trains from the upper north shore.

Response

a. The Sydney Harbour crossing and a new CBD rapid transit line has been identified in the *Sydney's Rail Future – Modernising Sydney's Trains* (NSW Government, June 2012).

b. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.
The implementation of the strategy will unfold over the next 20 years

through the implementation of a long term program of service improvements, capital works and network upgrades.

c. NWRL would complement public transport in the Sydney North West region and would alleviate the traffic issues experienced during peak hour periods. The project would facilitate a shift from road to rail trips to and from the North West, to reduce bus / road congestion and improve amenity in Sydney CBD.

d. Passengers travelling on the Northern Line to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies associated with Stages 1 and 2 of Sydney's Rail Future.

Passengers travelling on the Northern Line to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

e. The Sydney Harbour crossing and a new CBD rapid transit line has been identified in the *Sydney's Rail Future – Modernising Sydney's Trains* (NSW Government, June 2012)

f. TfNSW acknowledges the important role the existing heavy rail system has played in Sydney. However, Sydney's existing rail system is reaching the limits of its capability and needs to be modernised. The NSW Government plans to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. The NWRL forms part of the investment in new services to the Sydney's North West region.

g. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

h. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

i. EIS 1 and EIS 2 identify the need for Traffic Management Plans which would be implemented prior to the commencement of the construction works as part of the Construction Environmental Management Framework for the project.

TfNSW and RMS will continue to plan for long term traffic and transport needs for the north west.

j. The NWRL single deck rapid transit trains would be modern and would offer fast, frequent and reliable services to their customers.

k. The NWRL proposes to use single deck rapid transit trains which have a capacity of transporting up to 1,300 people per train. Rapid transit trains travel faster than the double deck trains, allow passengers to get on and off more efficiently than double deck trains, and the modern signalling technology optimises train running and maximises rail line capacity utilisation. The use of single deck rapid transit trains addresses the needs of Sydney's population in the long term.

The NWRL would be seamlessly integrated with other transport modes including the existing heavy rail network.

l. The NWRL project is an integral component of Sydney's Rail Future which provides network wide benefits across the Sydney passenger rail network.

m. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

n. The design of the second harbour crossing falls outside the scope of the NWRL project.

o. The NSW Government has undertaken an extensive integrated transport planning process for NSW documented in the NSW *Long Term Transport Master Plan* (NSW Government, December 2012) from which the long-term plan to transform and modernise Sydney's rail network derives.

The NWRL and SWRL are an integral part of the Long Term Transport Master Plan and will provide services to growing outer suburbs, doubling services to the South West and providing rapid transit services which support the growth of new economic centres to the North West.

p. The NWRL forms part of the NSW Long Term Transport Master Plan (NSW Government, December 2012).

q. Section 2.5 of EIS 2 describes Sydney's Rail Future: Modernising Sydney's Trains, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

r. As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network.

s. Comment regarding the importance and need of the NWRL project is noted.

As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network.

t. As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network.

u. The NWRL project is supported by the NSW 2021 – State Plan and is an integral component of the NSW Long Term Transport Master Plan.

v. Predicted reduction in car trips are based on the Strategic Travel Model (STM) operated by the NSW Bureau of Transport Statistics. The STM model determined future (2021) strategic traffic flows in the NWRL corridor with and without NWRL.

The 14 million fewer car trips per annum figure is based on a conversion from the 12,000 fewer car trips peak hour estimate factored up to a 24 hour figure (about 45,000 car trips per day). Separate weekday annual and weekend annual figures were combined to calculate the circa 14 million annual estimate.

w. Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

x. Noted.

y. The NWRL project is supported by the NSW 2021 – State Plan and is an integral component of the NSW Long Term Transport Master Plan.

7.6.5 Land use planning

Stakeholder identification number(s):
64, 68, 75, 94, 111, 107, 123, 127, 145, 162, 168, 188, 192, 202, 226, 234, 263, 265, 272, 287, 288

Issue description

In summary, respondents raised the following issues:

a. Residents of Kayla Way are uncertain about the use of the adjoining land marked 'Future Use to be Determined by Master Plan' which resulted in uninformed submissions. Objection to any buildings built in these areas. TfNSW should submit details about the future of these areas. If this not known, request to widen the vegetation buffer areas to 50 metres and then have a noise barrier.

b. Beecroft has recently been subject to re-zoning in accordance with a State Government initiative. The shopping area and surrounding streets will be redeveloped to accommodate medium density housing. The existence of a good rail service was one of the justifications for this approval.

c. Large portions of land within the Cherrybrook Station precinct and adjacent to the northern boundary have been marked as 'Future Use to be Determined by Master Plan' which does not comply with the objective of making the station fit into the natural habitat. The potential to add large buildings in the area is considered to be detrimental to the local character of the area and by marking 'for future determination' removes involvement by local residents in the decision making process.

d. Request for all future use areas at the proposed Cherrybrook Station to be developed subject to community and Hornsby Council approval after NWRL EIS evaluation.

e. Belief that the proposed Cherrybrook station construction zone may have been moved westwards to enable future high rise developments. Objection to these potential developments, as they would not fit with the existing properties in the area.

f. Belief that the metro proposal may be related to land use changes to deliver development opportunities along the route.

g. Objection to statements by NWRL representatives that the landscaping and setbacks for the proposed Cherrybrook Station will only be determined upon completion of the project and consideration of the Master Plan for the areas.

h. Concerns about the Hills Council's ability to appropriately engage with local residents on rezoning issues surrounding the Pennant Street Target site. Also concerns about the process to be adopted in planning for the 800 metres area around the station. Request for rezoning the area surrounding the Pennant Street Target site. Comment that any area larger than the Pennant Street Target site needs to be zoned for highrise and these areas then need to be buffered by medium density thus protecting single dwelling zoned areas. Also request for transparency in the rezoning process and to allow the local residents to be a part of the process. Also concerns regarding the fairness and probity of any rezoning review.

i. Concerns regarding the possibility that high rise units may be built in the locations on the Cherrybrook Station plan marked as 'Future Use to be determined by Master Plan'. Question raised how high rise units will fit in with the community and the idea of the Cherrybrook Station being referred to as the 'Station in the Forest'?

j. Section 4.3.1 of Technical Paper 2 Operational Traffic and Transport Management Plan (page 29) classifies Robert Road as a local road. According to Ausroad, the National Association of Roads and Traffic Australia, a "local road" is classified as a two way lane with two parking lanes allowed and a carriageway width of nine metres. Robert Road does not fit this category as most of its carriageway width measures at seven metres. Robert Road should be classified as a Cul-de-sac or access road as is it not a local road by any standard. Calls for all analysis undertaken using the definition of a "local road" as the basis of proposals for Robert Road be declared as void.

k. Concern that the proposed changes to Robert Road is due to the potential to build further developments, such as high rise buildings. Opposition to any such developments being considered for Robert Road as they would not fit in with the properties already in the area.

l. Objection to the increasing growth of the Cherrybrook Station footprint and the appearance on the plans of future development sites.

m. Commendations to town planning team for taking all planning factors into account when planning the services facility at Cheltenham Oval.

n. Comment that plan for an open cut station with large chunks of area noted for future use with the notation 'Future Use to be Determined by Master Plan' while not articulated, is widely believed to be mixed use commercial and residential and will probably include multi-storey blocks.

o. Concerns regarding potential changes to local zoning as a result of changes in land use associated with the transport corridor.

p. Identifies potential for private land, north of the proposed Cherrybrook station, to be rezoned and developed for higher density residential or potentially mixed use commercial / residential uses. With the rail link moving forward, requests consideration be given to consider higher zoning, medium or high density residential, in line with Transit oriented development (TOD) principles and Integrated Land Use Transport (Department of Urban Affairs and Planning (DUAP) 2001), to meet sustainability objectives, contribute to housing choice and affordability, promote renewal of the Cherrybrook village and meet the urban design TOD, access and sustainability principles. Comment that the development of this site would align with TOD principles and commitments outlined in EIS 2.

q. Consideration that the NWRL proposal is inconsistent with Part 1 of the DUAP integrating land use and transport guidelines for planning and development. Principle 1 of DUAP's guideline states that best practice is achieved when 'public transport can directly penetrate the core of centres'. The NWRL will impact northern line customers by requiring them to travel on three different trains to 'penetrate the core of the

centre' and as such the proposed NWRL is contrary to the above principle.

Response

a. For the areas shown in EIS 2 as Future Use to be Determined by Master Plan (see Figure 6.11 – Cherrybrook Station – Indicative Layout), the type of land use and scale of proposed development does not form part of the NWRL project presented in EIS 2 for which approval is being sought. Further approvals would be required for the future uses proposed on these sites under the relevant local / State planning processes.

b. Noted.

c. For the areas shown in EIS 2 as Future Use to be Determined by Master Plan (see Figure 6.11 – Cherrybrook Station – Indicative Layout) the type of land use and scale of proposed developed does not form part of the NWRL project presented in EIS 2 for which approval is being sought. Further approvals would be required for the future uses proposed on these sites, under relevant local / State planning processes.

d. For the areas shown in EIS 2 as Future Use to be Determined by Master Plan (see Figure 6.11 – Cherrybrook Station – Indicative Layout) the type of land use and scale of proposed developed does not form part of the NWRL project presented in EIS 2 for which approval is being sought. Further approvals would be required for the future uses proposed on these sites, under relevant local / State planning processes.

e. The indicative layout of Cherrybrook Station as shown in Figure 6.11 of EIS 2 represents the design layout for which the environmental assessment was undertaken and for which an approval is being sought. For the areas shown in EIS 2 as Future Use to be Determined by Master Plan (see Figure 6.11 – Cherrybrook Station – Indicative Layout) the type of land use and scale of proposed development does not form part of the NWRL project presented in EIS 2 for which approval is being sought. Further approvals would be required for the future uses proposed on these sites, under relevant local / State planning processes.

f. Section 6.26 – Station Precinct master planning and development of EIS 2 provides details of the planning approach being adopted for the NWRL.

g. The indicative layout of Cherrybrook Station as shown in Figure 6.11 of EIS 2 represents the design layout for which the environmental assessment was undertaken and for which an approval is being sought.

Section 6.5 of EIS 2 provides details regarding the design of the NWRL. The section describes that the EIS is based on a concept design for the NWRL which has been developed to provide the level of detail necessary to allow:

- Identification of property acquisition necessary to enable the project to be implemented.
- An understanding of the nature and extent of likely impacts and impact mitigation measures.
- A level of flexibility to enable detailed design development while having regard to reasonable and feasible mitigation measures to minimise impact on the receiving environment.
- Feedback from the community and key stakeholders including councils and industry has influenced the design process.

Section 6.5 also provides the following details regarding the design aspects of the NWRL:

- Detailed design phase.
- Design principles for stations and service facilities.
- Public art.
- Design Review Panel.
- Delivery of a high quality design.

h. Noted. The topic of the Pennant Street Target site is beyond the scope of the NWRL project. Section 6.26 – Station Precinct master planning and development of EIS 2 provides details of the planning approach being adopted for the NWRL.

i. For the areas shown in EIS 2 as Future Use to be Determined by Master Plan (see Figure 6.11 – Cherrybrook Station – Indicative Layout) the type of land use and scale of proposed developed does not form part of the NWRL project presented in EIS 2 for which approval is being sought. Further approvals would be required for the future uses proposed on these sites, under relevant local / State planning processes.

j. Hornsby Shire Council classifies Robert Road as a local road. Austroads (Guide to Traffic Management Part 5: Road Management) states that local roads are generally two lane two way but widths can vary significantly in order to serve a variety of functions including movement (access and service) functions and amenity and social functions associated with the use of the road space and the land abutting the road. Local roads are defined by Austroads as roads being National Association of Australian State Road Authorities class 4 and 5 in rural areas and 8 or 9 in urban areas. Specifically a local road is not a National Highway, National Arterial or State Arterial (Austroads AP-129 / 98 Responsibilities for local roads, p 10).

k. Section 6.26 – Station Precinct master planning and development of EIS 2 provides details of the planning approach being adopted for the NWRL and recognises that development around the stations would occur over time, but that measures must be taken now to provide a robust framework within which this development can occur. This is reflected in the immediate station precincts as described in Chapter 6 of EIS 2. A station precinct planning process, parallel and separate to the NWRL planning approval process, is currently underway involving a collaborative approach between TfNSW, local councils and Department of Planning and Infrastructure.

l. For the areas shown in EIS 2 as Future Use to be Determined by Master Plan (see Figure 6.11 – Cherrybrook Station – Indicative Layout) the type of land use and scale of proposed developed does not form part of the NWRL project presented in EIS 2 for which approval is being sought. Further approvals would be required for the future uses proposed on these sites, under relevant local / State planning processes.

m. TfNSW appreciates the positive feedback received for design elements forming part of the Cheltenham Services Facility.

n. For the areas shown in EIS 2 as Future Use to be Determined by Master Plan (see Figure 6.11 – Cherrybrook Station – Indicative Layout) the type of land use and scale of proposed developed does not form part of the NWRL project presented in EIS 2 for which approval is being sought. Further approvals would be required for the future uses proposed on these sites, under relevant local / State planning processes.

o. Section 6.26 – Station Precinct master planning and development of EIS 2 provides details of the planning approach being adopted for the NWRL and recognises that development around the stations would occur over time, but that measures must be taken now to provide a robust framework within which this development can occur. This is reflected in the immediate station precincts as described in Chapter 6 of EIS 2. A station precinct planning process, parallel and separate to the NWRL planning approval process, is currently underway involving a collaborative approach between TfNSW, local councils and Department of Planning and Infrastructure.

p. Section 6.26 – Station Precinct master planning and development of EIS 2 provides details of the planning approach being adopted for the NWRL and recognises that development around the stations would occur over time, but that measures must be taken now to provide a robust framework within which this development can occur. This is reflected in the immediate station precincts as described in Chapter 6 of EIS 2. A station precinct planning process, parallel and separate to the NWRL planning approval process, is currently underway involving a collaborative approach between TfNSW, local councils and Department of Planning and Infrastructure.

q. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network

approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through the implementation of a long term program of service improvements, capital works and network upgrades.

As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. Train frequencies would be increased over time to meet future patronage growth with NWRL being designed for an ultimate capacity of up to 20 trains per hour (a train every three minutes). The infrastructure for NWRL would be developed and configured to ensure it does not unduly constrain the development of a range of timetable options and frequencies, nor inhibit the reliable timetabling and operation of the whole network.

7.7 Project

7.7.1 Funding / cost

Stakeholder identification number(s):
3, 8, 21, 47, 53, 143, 193, 202, 209, 243, 248, 251, 266, 288, 294, 298, 310

Issue description

In summary, respondents raised the following issues:

a. At a time when finances to build the NWRL are difficult, a simple extension to the existing network presents as the most logical and cheapest solution and would be the most appropriate use of taxpayers funds as the distance of the North West to Epping is shorter than the distance of the proposed NWRL to Chatswood. Building the line to Epping should cost less in time and money than extending the line all the way to Chatswood.

b. Belief that the lack of funding for high quality double deck heavy rail has allowed metro interests to present solution opportunities despite adverse efficiency outcomes. Request for a copy of a cost benefit analysis used to justify the metro train proposal. This should be made available under GIPA.

The proposal to integrate single deck trains and change the Epping to Chatswood rail link is a waste of taxpayers money as it will only result in negative commuter impacts. Objection to the amount of taxpayer money being spent on this part of the Project. Request for the proposed NWRL to be a double deck service even if it is more expensive in the short-term, as building a single deck service would be a long-term mistake.

Request for additional funding to cover the cost of building the NWRL as a double deck line.

c. Funds promised from Federal Government for the Parramatta to Epping link should be diverted to the construction of a second harbour crossing as this should be considered as more of a priority than NWRL.

d. Objection to the privatisation of the NWRL and the Epping to Chatswood Rail Link. The proposed NWRL should remain public.

e. Objection to the approval of spending public money on this project.

f. Suggests the work at Cheltenham should be delayed until the total funding is available and approved, otherwise Hornsby Council will end up with a 'white elephant'.

g. Rail can be at a disadvantage due to the lack of revenue sources outside fares. Despite significant benefits from rail to the wider community, there are no mechanisms in place for corresponding off-budget payments from appropriate beneficiaries. Furthermore, using Government payments to support rail operations on behalf of the wider community can lack accountability, with leakages to rent seeking and / or political interest.

h. If there is a need to build extra platforms at Wolli Creek, has this been costed and factored into the overheads caused by the decision to use metro trains for the NWRL?

i. Little objection was received from Cherrybrook residents to the additional footprint for the Cherrybrook Railway site and the decision to construct the station in a cutting rather than 'cut and fill'. This decision has saved the Government tens of millions of dollars in construction costs so it would be fair to spend some of the savings on maintaining the residential amenity of Cherrybrook residents who will be most impacted by the proposal.

j. Concerns over the lack of funding and potential for construction works to be extended.

k. The single deck proposal must surely be costing more than a line consistent with the current network.

Response

a. Section 2.5 of EIS 2 describes S*ydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

As part of the broader Sydney rail strategy, the NWRL has been designed with sufficient capacity to meet the future rail travel needs of the population. The NWRL project comprises 23 km of new rail works which will link seamlessly with the existing 13 km Epping to Chatswood Rail Link.

b. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

Cost estimates have been prepared and are subject to current tender processes.

c. The direction of federal funding to infrastructure projects is beyond the scope of the NWRL project.

d. The NSW Government has announced that it intends to pursue a Public Private Partnership (PPP) for the Operations, Trains and Systems package (OTS), subject to the demonstration of value for money in accordance with NSW Treasury's PPP Guidelines.

e. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. The NSW Government has allocated a budget of $3.3 billion over four years for the construction of the NWRL project. Further funding commitments for the project will be within future Budget forward estimates.

f. The planning and construction of the NWRL has been funded by the NSW government as part of the long term plan to increase the capacity of Sydney's rail network and addresses the needs of Sydney's population in the long term. The NSW Government has allocated a budget of $3.3 billion over four years for the construction of the NWRL project. Further funding commitments for the project will be within future Budget forward estimates.

The major civil construction works at the Cheltenham Service Facility have been approved as part of the Stage 1 works by the NSW Minister for Planning and Infrastructure on 25 September 2012.

g. The value derived from public transport, and in particular rail, should be considered in a broader context than passenger fares. Government expenditure on public transport generates a range of external benefits.

The value of external benefits of rail services has recently been documented by the Independent Pricing and Regulatory Tribunal of

NSW (IPART) in its *Review of Maximum Fares for CityRail services from January 2013* (IPART, November 2012):

In general, the external benefits of a service are indirect benefits that accrue to the wider community as a result of the availability and use of that service (as opposed to the internal benefits, which accrue to the individuals who use the service). For example, the external benefits of public transport services may include reduced road congestion, reduced traffic accidents and reduced air pollution.

IPART considers, in line with the general view in Australia and other jurisdictions, that the external benefits generated by public transport services (including rail services) justify government subsidisation of the fares for these services.

h. Wolli Creek falls outside of the NWRL project.

i. EIS 2 identifies mitigation measures to manage potential impacts on residential areas and residential sensitive receivers during Stage 2 construction and the NWRL operation. These are reproduced in Chapter 9 of this report. The cost of implementing these measures forms part of the overall project cost.

j. The planning and construction of the NWRL has been funded by the NSW government as part of the long term plan to increase the capacity of Sydney's rail network and addresses the needs of Sydney's population in the long term. The NSW Government has allocated a budget of $3.3 billion over four years for the construction of the NWRL project. Further funding commitments for the project will be within future Budget forward estimates.

k. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

7.7.2 Need for project

Stakeholder identification number(s):
3, 12, 14, 64, 77, 108, 109, 115, 120, 139, 154, 192, 234, 314, 316

Issue description

In summary, respondents raised the following issues:

a. NWRL is overdue and essential to the public transport requirements of the region. There is a need for more efficient and effective public transport system such as NWRL. It is a necessary part of the Sydney rail network and the provision of public transport for the North West of Sydney. It will be a valuable piece of infrastructure that will have immediate and future benefits and advantages. The region needs more public transport in the form of a heavy rail line.

b. Conditional support for the wider community needs for public transport and infrastructure if community impacts are minimised.

c. NWRL appears to be a long-term and expensive solution to an immediate transport need. While the project attempts to answer transport needs of the growing North West, it is unclear how travelling to the North Shore will meet population demands and benefit the community. Suggestion that better connections between population centres would serve the North West better than continued reliance on transport to and from the centre of Sydney.

d. Acknowledgement that the proposed Cherrybrook Station will bring far more advantages than disadvantages. Most projects bring about some disruptions in some way or another, however, ultimately the Project will theoretically take a significant number of cars off the road.

e. Up until recently, the NWRL proposal supported a 'simple extension of the existing Suburban System' however the recent publicity now confirms the Government is planning for a 'rapid transit style' second tier railway. There has been no explanation given to justify this change aside from general claims with no supporting facts.

f. Acknowledgement and support for the improvements to public transport and associated infrastructure to serve the needs of the wider community, particularly in the Cherrybrook area. However, belief that this should only be achieved with minimal impact to the community.

g. This project must not be another unrealised proposal (such as the Parramatta to Epping Link)

h. North West communities require a more efficient and effective public transport system to cut down travelling times and provide greater access into the city. NWRL therefore will meet these travel and access requirements of the communities in the North West.

i. Comment that NWRL is absolutely needed but more planning is required. Build the tunnels to allow for double deck trains. It would cost more at this stage but is the right thing to do from the long-term perspective.

j. Comment that the NWRL is a much needed project for Western Sydney but it should not be a metro line.

k. Comment that any step being taken by the State Government to complete the rail link is supported. This is the wish of all North West residents to see the project completed as soon as possible. Request that the completion of this Project be fast-tracked by at least one year ahead of scheduled completion in 2019.

l. Supports the premise and logic covering the build of the NWRL from Epping Station to Rouse Hill Station. There are currently limited travel options from Schofields for people working in the service industry at Macquarie Park; driving with the cost penalty of tolls, fuel and parking and public transport which involves two trains and one bus with a total travel time of one hour and 45 mins.

Response

a. The support for the NWRL project is noted.

b. The support for the NWRL project is noted. EIS 2 identifies mitigation measures to manage community impacts during the construction and operational stages of the project. These are reproduced in Chapter 9 of this report. Additionally, EIS 1 identified mitigation measures to manage the potential impacts of Stage 1 Major Civil Construction Works.

c. Section 2.5 of EIS 2 describes Sydney's Rail Future: Modernising Sydney's Trains, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

Section 22.1 of EIS 2 noted that buses are affected by road congestion. Network constraints for buses are most acute on the approach to and within the Sydney CBD, particularly on the Harbour Bridge and around Wynyard Station. TfNSW forecasts that, in the absence of the NWRL, there would be a growth of 144% in M2 buses entering the Sydney CBD by 2021. These constraints mean that growth in bus services cannot accommodate the expected growth in public transport demand. Capacity constraints on the road network demonstrate the need for a mass transit system to facilitate continued growth. The NWRL would have a dramatic impact on travel conditions in the north-west and through to the CBD. Forecast travel time savings of around 10 to 30 percent between the north-west and the key employment destinations of Macquarie Park, Chatswood and Sydney CBD are anticipated by 2021. This represents a much improved travel time reliability compared with bus and private car.

This is consistent with the project objective to 'Deliver Stage 3 of Sydney's Rail Future to improve transport network reliability by facilitating a shift from road to rail for trips to and from the north west, to reduce bus / road congestion and improve amenity in Sydney CBD'.

d. The comment is noted.

e. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new

services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

f. The support for the NWRL project is noted. EIS 2 identifies a range of mitigation measures to manage impacts on the environment and the community during the construction and operational stages of the project. These are reproduced in Chapter 9 of this report.

Additionally, EIS 1 provided a number of mitigation measures in order to minimise the potential impacts of Stage 1 Major Civil Construction Works.

g. The NSW Government has allocated a budget of $3.3 billion over four years for the construction of the NWRL project. Further funding commitments for the project will be within future Budget forward estimates.

The Stage 1 Major Civil Construction Works were approved by the Minister for Planning and Infrastructure on 25 September 2012.

h. Acknowledgement that the NWRL will meet travel and access requirements of the communities in the North West is noted.

i. Section 2.5 of EIS 2 describes Sydney's Rail Future: Modernising Sydney's Trains, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

The Stage 1 Major Civil Construction Works were approved by the Minister for Planning and Infrastructure on the 25 September 2012.

j. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

k. Support for the NWRL is noted.

l. Support for the NWRL is noted.

7.7.3 Timing

Stakeholder identification number(s):
146, 251

Issue description

In summary, respondents raised the following issues:

a. Concerns that the proposed NWRL will not be opened until the entire route is constructed. Concerns that due to the high expense and long construction time of this large project, this approach will deny rail transport to the Hills District for much longer than necessary. Preference is that the line is opened in stages from Epping, even one or two stations at a time, using temporary turn back arrangement and a temporary maintenance system via a connection at the Chatswood end. This will bring forward the availability of at least a partial rail service to the North West.

b. Suggestion that any work at Cheltenham should be delayed until the train tunnels are created so the service facility will be located in the optimum position.

Response

a. The staged opening of the NWRL would result in the need to undertake significant temporary works along the alignment, eg temporary stabling facilities until the permanent stabling facility is completed. The proposed construction methodology is to undertake the major civil construction works, followed by rail system and station fit out and commissioning. The current proposal is for completion of construction and systems integration by the end of 2019, followed by the opening of the NWRL to the public.

b. The rationale for the construction and timing of the Cheltenham Services Facility has been provided in EIS 1.

The Stage 1 Major Civil Construction Works were approved by the Minister for Planning and Infrastructure on 25 September 2012.

7.7.4 Alternatives

Stakeholder identification number(s):
53, 90, 92, 118, 193, 213, 214, 241, 243, 251

Issue description

In summary, respondents raised the following issues:

a. Belief that stopping the single deck trains at Epping rather than changing the Epping to Chatswood Rail Link would be a more time and cost efficient alternative.

b. Suggestion to alternate NWRL trains and Northern Line trains proceeding to Chatswood to the city as it occurs now, or terminating the NWRL line at Epping so the existing network can continue as is. Additional underground platforms could be constructed at Epping to cater for the terminating NWRL trains.

c. Preference to extend the NWRL from Cudgegong Road to Marsden Park Town Centre and then south west to join the Penrith to Blacktown Rail Line (map attached to submission).

d. Current NWRL plans no longer make provision for a direct Parramatta to Chatswood rail service via Epping, and there is no mention of rail, or any other form of Mass Transit, connections from Hurstville into the Western and South Western parts of the rail network, limiting the attraction of Parramatta (and Liverpool) as an alternative work site for residents.

e. An advantage of going in a direct line is that the NWRL could be linked into other routes eg Central Coast to Sydney, Richmond to Sydney and Wollongong to Sydney. With local councils assisting suburbs, uncertainty in markets eg Qantas and Holden-Ford, there is an opportunity to invest in new industries and infrastructure.

f. Calls for the Project to cut its losses and consider re-investing the money elsewhere to save resources, promote tourism and stimulate local jobs. Suggestion that Western Sydney needs a domestic airport, which could be accommodated in the Castle Hill Showground area.

g. Instead of changing the existing network to metro operation for NWRL, the Government can explore the option of using a private operator to run the Illawarra Line instead to benchmark the system. This will save commuters from inconveniences due to changes introduced on the existing line due to the proposed NWRL.

h. Suggestion that a second harbour crossing should be the first priority for the rail construction in Sydney to better manage Sydney's transport issues. A second harbour crossing catering for double deck trains and integrated into the existing CityRail system will provide immediate benefits and is guaranteed to work. This should be built before NWRL as CityRail is suffering from overcrowding issues. Any future rail system development will be dependent on the second harbour crossing which restricts transport options for Sydney.

i. Recommendation received about the construction of a second harbour crossing to be used by trains from the NWRL, possibly by the trains from the Parramatta to Epping rail link and by a Northern Beaches Railway. A railway to the Northern Beach suburbs was included in Bradfield's plan three quarters of a century ago to relieve the congestion of Military Road, Cremorne and Mosman, and also relieve congestion on

the Sydney Harbour Bridge, and at Town Hall station. Further recommendation that a second harbour crossing should be constructed soon after the NWRL commences service.

j. The Epping to Chatswood and North Sydney is a convenient service for the commuters and the convenience should remain and request for the same convenience for Burwood.

k. Request to find a transport solution that benefits all commuters putting city and its people above all.

l. The NWRL plan does not intend to reduce car traffic as is illustrated by the 'Skytrain' and a bus-way running parallel to a seven lane arterial road. If the modal shift were a serious, material objective then the road width could be halved, creating space for a much more economic rail line in the road corridor itself and that is called light rail. Six light rail lines serving existing residents and some moderate in-fills are proposed.

m. The North West Growth Centre is currently served by the Richmond line which runs through its centre. Concerns that trains to the city have to pass through Granville to Strathfield to the CBD rail sector which is reaching capacity. The solution to this problem would be to build a rail line from Quakers Hill to Epping on the M7 and M2.

Response

a. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

b. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

One of the key components of the long term plan is to complete a new tunnel under Sydney Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

c. An extension of the transport corridor beyond the terminus of the NWRL is subject to a separate study conducted by TfNSW which is beyond the scope of the NWRL project.

The design of the NWRL safeguards the future expansion of the line to the west beyond the Tallawong Stabling Facility.

d. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future. TfNSW has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through a long term program of service improvements, capital works and network upgrades.

Sydney's Rail Future: Modernising Sydney's Trains introduces three differentiated service levels including the use of single deck, rapid transit trains. The new rapid transit rolling stock is expected to be state of the art heavy rail rolling stock.

The NWRL has been identified as a key priority railway transport infrastructure project which would provide a significant expansion to Sydney's rail network in an area of future population and jobs growth.

TfNSW has identified the NWRL project as being the first sector in Sydney to operate the new rapid transit services. Initially 12 trains per

hour during peak periods (a train every five minutes in peak periods), will be operated with new generation single deck trains, advanced signalling, operations systems and dedicated track. Over time, as demand increases, service frequency could increase up to 20 trains an hour – or one every three minutes.

The NWRL will also introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. As part of Sydney's Rail Future the NSW Government has determined that a second crossing under the Harbour will be constructed linking the NWRL to a new CBD line with new CBD stations. These rapid transit services will also eventually operate on the Bankstown/Cabramatta line and to Hurstville on the Illawarra line.

This plan will eventually enable rail to carry another 90,000 to 100,000 people per hour in the peak and represents a 60% increase in passenger rail capacity across Sydney which is the greatest capacity increase in the past 80 years.

e. Comment on the advantage of a direct rail line is noted.

f. *Section 2.5 of EIS 2 describes Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future.

g. The option for the Illawarra Line is outside the scope of the NWRL project.

h. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future. TfNSW has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through a long term program of service improvements, capital works and network upgrades.

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i. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future. TfNSW has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through

a long term program of service improvements, capital works and network upgrades.

Sydney's Rail Future: Modernising Sydney's Trains introduces three differentiated service levels including the use of single deck, rapid transit trains. The new rapid transit rolling stock is expected to be state of the art heavy rail rolling stock.

The NWRL has been identified as a key priority railway transport infrastructure project which would provide a significant expansion to Sydney's rail network in an area of future population and jobs growth.

TfNSW has identified the NWRL project as being the first sector in Sydney to operate the new rapid transit services. Initially 12 trains per hour during peak periods (a train every five minutes in peak periods), will be operated with new generation single deck trains, advanced signalling, operations systems and dedicated track. Over time, as demand increases, service frequency could increase up to 20 trains an hour – or one every three minutes.

The NWRL will also introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. As part of Sydney's Rail Future the NSW Government has determined that a second crossing under the Harbour will be constructed linking the NWRL to a new CBD line with new CBD stations. These rapid transit services will also eventually operate on the Bankstown/Cabramatta line and to Hurstville on the Illawarra line.

j. The comment on service between Epping, Chatswood and North Sydney is noted. Under the NWRL project the frequency of services between Epping and Chatswood would increase from the current four trains per hour in the peak to a minimum of 12 trains per hour in the peak. In addition, the frequency of trains on the North Shore Line would be increased in the peak periods from the current 18 per hour to 20 per hour.

Rail services to Burwood are outside the scope of the NWRL project.

k. Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future. TfNSW has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases. The implementation of the strategy will unfold over the next 20 years through a long term program of service improvements, capital works and network upgrades.

l. The NWRL is part of a whole-of-network approach being taken to the long term planning for Sydney's Rail Future.

The NWRL would not be a traffic generating development in its own right. Rather, the NWRL would reduce traffic in the NWRL corridor that is currently generated by commercial, retail and residential development. The NWRL would provide an alternative to the use of the private car (the north west has the highest levels of car ownership in Sydney). Analysis based on Bureau of Transport Statistics estimates indicates that in 2021 there could be approximately 12,000 fewer car trips per day made as a result of the NWRL project. This could equate to almost 14 million fewer car trips annually. By 2036 the corresponding reduction could result in almost 20 million fewer car trips annually. In addition, the NWRL would offer an alternative public transport access mode to M2 buses which presently provide the bulk of public transport access.

m. An extension of the transport corridor beyond the terminus of the NWRL is subject to a separate study conducted by TfNSW which is beyond the scope of the NWRL project.

The design of the NWRL safeguards the future expansion of the line to the west beyond the Tallawong Stabling Facility.

The NWRL proposal is for a new rail line between Epping and the proposed Tallawong Stabling facility and would link people in the North West Subregion (including existing and future North West Growth

Centre residents) to the employment, educational and commercial opportunities in the global economic corridor, including to key centres such as Chatswood, St Leonards, Macquarie Park, North Sydney and the Sydney CBD.

Section 2.5 of EIS 2 describes *Sydney's Rail Future: Modernising Sydney's Trains*, which was released in June 2012, and is an integral part of the NSW Long Term Transport Master Plan. It sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. A whole-of-network approach has been taken to long term planning for Sydney's Rail Future, which has closely analysed anticipated future demand across the network to identify areas requiring significant capacity increases.

7.8 Property

7.8.1 Property acquisition

Stakeholder identification number(s):
65, 94, 110, 111, 159, 195, 197, 239, 276, 289

Issue description

In summary, respondents raised the following issues:

a. Request from residents for NWRL to purchase their property as they would prefer to live elsewhere once the proposed Cherrybrook Station is operational.

b. Objection to the acquisition of sub-surface land underneath properties in Romford Road, Epping for the proposed NWRL tunnels.

c. Concerns that further homes on Robert Road will be compulsorily acquired as part of NWRL and will remain under threat throughout and after the delivery of the project

d. Concerns that the substrata resumption of a property on Castle Howard Road, Cheltenham, affects the opportunity of developing the site for town houses or unit development in the future. The significant slope of the block means that any construction of a sub ground garage may be impossible due to the substrata resumption. Cross-sections provided by NWRL, do not accurately show the topography of the part of the lot which is subject to resumption. Calls that the notification advising that the substratum will be resumed without compensation is unsatisfactory.

e. Concern that properties acquired by NWRL in Robert Road and Cherryhaven Way were unfairly purchased and should be green zone for the residents to enjoy as proposed initially.

f. Concern that real estate procured by NWRL was unfairly purchased and should be green zone for the residents to enjoy as proposed initially to residents.

g. Concern regarding the potential need to widen Franklin Road and property acquisition requirements.

h. A property on Castle Howard Road, Cheltenham, has been devalued by the construction of the M2 and potentially further by the construction of NWRL. Calls for the State Government to acquire the property at a value that disregards the detrimental effect of the NWRL on the property's value.

Response

a. Property acquisition requirements for the NWRL project have been identified. All property acquisition for the project must be undertaken in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991.*

b. The acquisition of sub-stratum land required for the construction of the NWRL tunnels would be undertaken in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991.*

c. Property acquisition requirements for the NWRL project have been identified. All property acquisition for the project must be undertaken in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991.*

d. The acquisition of sub-stratum surface land in this location is required for the construction of the NWRL tunnels and would be undertaken in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

e. Land acquisition for the NWRL project is in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

f. Land acquisition for the NWRL project is in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

g. The works proposed for Franklin Road are described in Section 9.5.2 of EIS 2.

Land acquisition for the NWRL project is in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

h. Property acquisition requirements for the NWRL project have been identified. All property acquisition for the project must be undertaken in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

7.8.2 Property condition surveys

Stakeholder identification number(s):
78, 149

Issue description

In summary, respondents raised the following issues:

a. It is requested that NWRL fund the following:

- The cost of an independent expert to assess and report on the foundation of the property prior to construction including if the owner reasonably believes that the foundations of the property have been affected as a result of the works carried out.
- The cost of an independent expert to assess and report on the foundation of the property post construction.
- The cost of repairing any damage sustained from the construction.

b. With regard to the 'Building the NWRL Tunnels' November 2012 fact sheet, requests that property condition surveys be undertaken. Request for property owners to be informed of the tender and selection process to be used to contract the specialists undertaking these condition surveys. Further request for information about actual surveys to be conducted including detailed surveyor's report, noise level readings and vibration readings.

Response

a. Section 3.6(a) of the Construction Environmental Management Framework (Appendix B of EIS 2) requires that Principal Construction Contractors offer condition surveys, in writing, to all relevant land and infrastructure owners.

The Stage 1 Major Civil Construction Works approval conditions provide a number of conditions (E26 to E31) relating to potential impacts to third party property.

b. TfNSW would advise relevant property owners of the property condition surveys at the appropriate time. Section 3.6(a) of the Construction Environmental Management Framework (Appendix B of EIS 2) requires that Principal Construction Contractors offer condition surveys, in writing, to all relevant land and infrastructure owners,

Potential impacts regarding tunnelling were addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

The Stage 1 Major Civil Construction Works approval conditions provide a number of conditions (E26 to E31) relating to potential impacts to third party property.

7.8.3 Property damage

Stakeholder identification number(s):
68, 94, 106, 127, 145, 149, 155, 169, 209, 212, 238, 272, 287, 301, 302, 317, 318

Issue description

In summary, respondents raised the following issues:

a. Damage to properties in any form eg vibration damage, impact by vehicles on site during construction is unacceptable. Rectification works should be undertaken as required.

b. Concerns about recent advice that given the vicinity of works that will be carried out by NWRL, the foundations of houses will be affected, noting that the tunnel will be 10 metres below the surface instead of the original 27 metres.

c. In the event that the tunnels are sabotaged or destroyed for any unforeseen reasons, concerns that properties above the tunnels will be affected.

d. Concerns that due to the lack of footpath on Dalkeith Road and nearby streets, property lawns will be damaged from people parking in the street and walking on the lawn.

e. Calls for the homes of Robert Road, some of which are 50 to 60 years old, to be respected as an important heritage link to the past. Concerns regarding the NWRL proposal to impact property boundaries and in some cases impact on the historical nature of the homes.

f. Calls for monetary compensation should properties and or land directly above NWRL tunnels suffer physical damage as a result of construction and operation. Suggestion that this should have been noted in EIS 2.

g. Concern regarding structural damage as a direct result of tunnelling. Aware of many compensation claims after the tunnelling for the Epping to Chatswood Rail Link. How will structural damage be minimised and addressed?

h. Tunnelling under properties at Bella Vista will cause property damage through constant vibration.

i. What are property owner's legal rights and entitlements in the event property damage is sustained during the construction phase of the project? How would Transport for NSW rectify any damage? Would TfNSW compensate those affected?

j. The train station will become a meeting place for youths in the area and could become a trouble spot including graffiti and other damage to property in the immediate area.

k. Concerned that there is a risk of property damage arising from vibration and or ground movement that may have a negative impact on the structural condition of each property.

Suggestion for Transport for NSW to undertake the following:

- A full dilapidation survey.
- Commitment by the Department to rectify any property damage.
- Implementation of a regular monitoring system during operation of railway.

Response

a. Building condition surveys will be undertaken where required as described in section 3.6(a) of the Construction Environmental Management Framework (Appendix B of EIS 2). The conditions of approval for Stage 1 Major Civil Construction Works include conditions (E26 to E31) relating to third party property including the requirement to rectify any damage caused as a result of the project.

b. Section 3.6(a) of the Construction Environmental Management Framework (Appendix B of EIS 2) requires that Principal Construction Contractors offer condition surveys, in writing, to all relevant land and infrastructure owners.

If accepted, the Principal Construction Contractor must produce a comprehensive written and photographic condition report prior to relevant works commencing. It is noted, however, that vibration

modelling undertaken as part of EIS 1 indicated that the vibration levels from tunnelling works are anticipated to be below the threshold where minor cosmetic damage may occur.

c. Potential impacts regarding tunnelling were addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012.

d. Dalkeith Road and surrounding streets are likely to maintain low levels of pedestrian movements. Any future upgrades to footpaths in this area would be the responsibility of the Hornsby Shire Council.

e. Potential impacts to heritage items have been addressed in Chapter 11 of EIS 2. The existing visual amenity of the Cherrybrook area is intended to be retained by the proposal, with an indicative plan for the Cherrybrook Station site shown in Figure 6.11 of EIS 2. The listing of individual properties as heritage items is outside the scope of the NWRL and would need to be undertaken by the local council and / or the NSW Heritage Office.

f. Building condition surveys will be undertaken where required as described in section 3.6(a) of the Construction Environmental Management Framework (Appendix B of EIS 2). The conditions of approval for Stage 1 Major Civil Construction Works include conditions (E26 to E31) relating to third party property including the requirement to rectify damage caused as a result of the project.

g. Building condition surveys will be undertaken where required as described in section 3.6(a) of the Construction Environmental Management Framework (Appendix B of EIS 2). The conditions of approval for Stage 1 Major Civil Construction Works include conditions (E26 to E31) relating to third party property including the requirement to rectify damage caused as a result of the project.

It is also noted that vibration modelling undertaken as part of EIS 1 indicated that the vibration levels from tunnelling works are anticipated to be below the threshold where minor cosmetic damage may occur.

h. Building condition surveys will be undertaken where required as described in section 3.6(a) of the Construction Environmental Management Framework (Appendix B of EIS 2). The conditions of approval for Stage 1 Major Civil Construction Works include conditions (E26 to E31) relating to third party property including the requirement to rectify damage caused as a result of the project.

Vibration modelling undertaken as part of EIS 1 indicated that the vibration levels from tunnelling works are anticipated to be below the threshold where minor cosmetic damage may occur.

i. Building condition surveys will be undertaken where required as described in section 3.6(a) of the Construction Environmental Management Framework (Appendix B of EIS 2). The conditions of approval for Stage 1 Major Civil Construction Works include conditions (E26 to E31) relating to third party property including the requirement to rectify damage caused as a result of the project.

Vibration modelling undertaken as part of EIS 1 indicated that the vibration levels from tunnelling works are anticipated to be below the threshold where minor cosmetic damage may occur.

j. Chapter 6 of EIS 2 includes description of safety principles in design. From the outset of the design process, safety has been considered for passengers, neighbouring areas and staff. The stations would be designed in accordance with Crime Prevention Through Environmental Design (CPTED) principles.

A safe environment would be encouraged through well-designed and efficiently controlled lighting systems, visible CCTV surveillance and appropriate staffing during operational hours.

k. Building condition surveys will be undertaken where required as described in section 3.6a) of the Construction Environmental Management Framework (Appendix B of EIS 2). The conditions of

approval for Stage 1 Major Civil Construction Works include conditions (E26 to E31) relating to third party property including the requirement to rectify damage caused as a result of the project.

Vibration modelling undertaken as part of EIS 1 indicated that the vibration levels from tunnelling works are anticipated to be below the threshold where minor cosmetic damage may occur.

7.8.4 Property value

Stakeholder identification number(s):
23, 24, 27, 28, 29, 30, 33, 46, 48, 65, 66, 68, 71, 77, 94, 103, 107, 110, 111, 139, 144, 155, 159, 169, 172, 178, 188, 192, 197, 209, 215, 217, 230, 234, 236, 238, 239, 261, 263, 265, 269, 275, 276, 288, 289, 297, 299, 301, 303, 304, 307, 310, 317

Issue description

In summary, respondents raised the following issues:

a. Concerns about the effect NWRL will have on property values, both during construction and operation, particularly in Beecroft, Cheltenham, Epping and other suburbs along the Northern Line due to the multiple train changes and extended travel time to reach the city. Property owners purchased properties in the area for the existing public transport convenience and seek compensation by way of arbitration to recover from NWRL an amount equivalent to the loss in 'real' property values. Evidence suggests residents along the Epping-Chatswood rail tunnel have been financially disadvantaged with their property value decreasing by at least 10%. The State Government and NWRL employees do not appear to understand the serious stigma for owners and the adverse effects of the tunnel on the market value of properties along the NWRL corridor. Once the project appears on property titles, property owners will struggle to sell and incur a substantial loss if they do sell. Compensation needs to allow for any losses, and property owners should not be financially 'out of pocket' if selling homes in the future.

b. The increase of commuters parking vehicles in the local streets and localised congestion around the stations will result in diminished property values as areas such as Castle Hill will no longer be desirable suburbs. Question raised if compensation will be offered to residents as a result of these impacts?

c. Concerns relating to impacts and duration of construction of Showground Station (formerly Hills Centre, recently moved to Council Chambers / Hills Centre location) on renters and rental income of a property in Castle Hill. Property owners are reliant on rental returns to pay mortgages.

d. Tunnelling activities and the tunnel alignment in Epping and Bella Vista will affect property values in the area. If the tunnel is sabotaged or destroyed, the houses and the foundation of the houses above the tunnel will be affected. Request for information on how this will be compensated.

e. Suggestion to direct major traffic flows through existing major roadways such as County Drive and Castle Hill Road and / or make Robert Road a cul-de-sac and maintain its current use to alleviate property devaluation from the proposed Robert Road access to Cherrybrook Station. If this change isn't executed, request for compensation for loss in property value due to traffic impacts on quiet streets near the proposed Cherrybrook Station.

f. Concerns that residents of homes along the whole length of the proposed tunnels for NWRL will be unable to sell their property commencing immediately until the project is completed and operational, without being forced to lose significant value on the sale. Property owners rely on current property value to support their financial future eg retiring, aged care. With construction unlikely to commence before the beginning of 2015 and the rail line not scheduled to be operational until 2019, home owners along the length of the tunnel corridor face a delay of at least seven years before they will be able to sell their properties at market value.

Property owners will closely monitor the progress of NWRL construction and reserve the right to seek financial compensation should the reasonable market value of properties in the Beecroft area be reduced or the capacity to realise the full value of properties be negatively impacted because of delays in completion of the NWRL project.

It is believed that the potential impact of NWRL on local real estate sales and values should be independently monitored by the Real Estate Institute of NSW, through appointment by the NSW Government, to enable fair and reasonable compensation to be assessed and paid to impacted property owners.

Recommendation that the NSW State Department of Infrastructure and Planning commission the Real Estate Institute of NSW to undertake ongoing research and analysis of the impact of the construction of the NWRL from December 2012 until commissioning of the rail line, and this information be made publicly available and used as the basis for determining fair and reasonable compensation for the parties so affected.

g. Question raised how NWRL will combat the decrease in property value on Dalkeith Street, Franklin Road and Robert Road as a result of the streets becoming more noisy, more congested and dangerous? Properties in the area were purchased at a price reflective of a quiet and safe street with low traffic. Residents surrounding Cherrybrook Station will have immediate, substantial impacts on their property value due to Robert Road being converted to a station access road. Property owners would not have purchased in the area if they were aware of the content in EIS 1 and EIS 2. Property owners will seek compensation should NWRL compromise the current situation. The continuation of proposals to utilise Robert Road will meet with strong objection and may result in further action against NWRL to recover amounts equivalent to the devaluation.

h. Property values in Oliver Way are higher than those in other streets, therefore it should be a priority to protect the amenity of Oliver Way and its neighbourhood.

i. Concerns that noise and vibration from operating trains will affect property values along Norwest Boulevard and surrounding areas.

j. The construction of the M2 had a detrimental effect on the value of a property on Castle Howard Road, Cheltenham. Compensation was not offered, despite discussions, because the property was more than a specified distance from the motorway boundary. Concerns that due to tunnels for the NWRL running under the property and the necessity of subsoil resumption, the property value will be further reduced. Recent efforts have been made to sell the property however, the property value has been so affected that it can only be sold for land value. Other properties in Cheltenham, unaffected by both infrastructure projects, sell for well over $1,200,000.

k. Property owners on Robert Road (and the neighbourhood) who have had property compulsorily purchased have now become aware that the market value +10% paid is considerably less than the worth of the properties now that development potential has been identified. This matter will be referred to Independent Commission Against Corruption and the media.

l. If construction of the Cherrybrook Station (including noise impacts) and the final schemes causes inconvenience over a long period and reduces property values, compensation will be sought, particularly if leasing properties becomes problematic.

m. Concerns regarding the depth of the NWRL tunnel under properties (18 metres) and impacts on property value (planning on selling soon) prior to project being operational. Residents have sought legal advice.

n. Concern regarding uncertainty around future plans and impacts to properties as a result of the project.

Response

a. Properties located above the rail tunnels are not anticipated to experience a reduction in value as a result of the project. A decline in property values above the tunnels has not been evident along the Epping to Chatswood Rail Line. Based on experience around other rail stations within Sydney

and elsewhere, the proximity to a rail station would be anticipated to have a positive impact on property prices over the long term.

b. The urban arrangement for Castle Hill Station is focussed on addressing the town centre structure and character and providing priority to pedestrian and bus connectivity. Park-and-ride facilities would be provided at Showground Station and Cherrybrook Station for commuters in the area.

Based on experience around other rail stations within Sydney and elsewhere, the proximity to a rail station would be anticipated to have a positive impact on property values over the long term.

c. EIS 2 provides a thorough assessment of the potential impacts during the construction period and identifies a number of mitigation measures to be implemented to minimise impacts to surrounding residences. These mitigation measures are reproduced in Chapter 9 of this report. Based on experience around other rail stations within Sydney and elsewhere, the proximity to a rail station would be anticipated to have a positive impact on property prices over the long term.

d. Properties above the rail tunnels would not be anticipated to experience a decline in value. It is noted that a decline in property values above tunnels has not been evident along the nearby Epping to Chatswood Rail Line. Significant geotechnical investigations have occurred and are ongoing in order to inform the detailed design and ensure the integrity of the rail tunnels.

e. Whilst the proposed traffic arrangement for Cherrybrook Station includes Robert Road as an access point, the design has provided priority to vehicular access to and from Castle Hill Road. It is also noted that based on experience around other rail stations within Sydney and elsewhere, the proximity to a rail station would be anticipated to have a positive impact on property prices over the long term.

f. EIS 2 identifies mitigation measures to manage impacts to surrounding residences during the construction period. These mitigation measures are reproduced in Chapter 9 of this report. Properties above the rail tunnels would not be anticipated to experience a decline in value. It is noted that a decline in property values above tunnels has not been evident along the nearby Epping to Chatswood Rail Line.

Vibration modelling undertaken as part of EIS 1 indicated that the vibration levels from tunnelling works are anticipated to be below the threshold where minor cosmetic damage may occur. Significant geotechnical investigations have occurred and are ongoing in order to inform the detailed design and ensure the integrity of the rail tunnels.

g. Development of the NWRL and the alignment has a long and diverse history. The current proposed route is the outcome of numerous detailed studies undertaken since 1998 including Concept Plan Approval in 2008. Extensive consultation has occurred over the last 10 years on the provision of a rail link to the north west. The first consultation occurred in 2002 with the community, local business and industry groups in relation to publication of an initial Overview Report.

Property acquisition requirements for the NWRL project have been identified. All property acquisition for the project must be undertaken in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

h. All residences and properties are of equal importance in the assessment of impacts from the project. A number of mitigation measures are identified in EIS 2 to protect the amenity of all residents around the station precincts. These mitigation measures are reproduced in Chapter 9 of this report.

i. The operational noise and vibration assessment contained within Chapter 10 of EIS 2 indicates that the relevant noise criteria would be complied with for all residences above the tunnel, with the implementation of appropriate track attenuation. Properties above the rail tunnels would not be anticipated to experience a decline in value. It is noted that a decline in property values above tunnels has not been evident along the nearby Epping to Chatswood Rail Line.

j. The operation noise and vibration assessment contained within Chapter 10 of EIS 2 indicates that the relevant noise criteria would be complied with for all residences above the tunnel, with the implementation of

appropriate track attenuation. As such, there is not anticipated to be any impact to property values above the tunnel alignment.

Vibration modelling undertaken as part of EIS 1 indicated that the vibration levels from tunnelling works are anticipated to be below the threshold where minor cosmetic damage may occur.

Any acquisition of sub-stratum surface land in this location required for the construction of the NWRL tunnels would be undertaken in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

Properties above the rail tunnels would not be anticipated to experience a decline in value. It is noted that a decline in property values above tunnels has not been evident along the nearby Epping to Chatswood Rail Line.

k. TfNSW has undertaken all property acquisition and negotiations in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

l. EIS 2 identifies mitigation measures to manage impacts to surrounding residences during the construction period. These mitigation measures are reproduced in Chapter 9 of this report. Based on experience around other rail stations within Sydney and elsewhere, the proximity to a rail station would be anticipated to have a positive impact on property prices over the long term.

All property acquisition for the project must be undertaken in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

m. A decline in value as a result of tunnelling has not been evident on similar projects such as the Epping to Chatswood Rail Line. During the operational phase, noise modelling indicates compliance with the relevant noise criteria, with the implementation of appropriate track attenuation.

The impacts of tunnelling during the construction period have been addressed as part of EIS 1 – Major Civil Construction Works which was independently assessed by the NSW Department of Planning and Infrastructure as part of its preparation of the Director General's Report. Conditions of Approval for the Major Civil Construction Works were granted by the Minister for Planning and Infrastructure on the 25 September 2012. EIS 1 provides a number of mitigation measures to reduce the impacts associated with tunnelling works.

Vibration modelling undertaken as part of EIS 1 indicated that the vibration levels from tunnelling works are anticipated to be below the threshold where minor cosmetic damage may occur.

n. Indicative operational layouts for the station sites are included within Chapter 6 of EIS 2. Wider precinct planning is outside the scope of the NWRL project and is subject to an ongoing precinct planning process involving TfNSW, local councils and the Department of Planning and Infrastructure. Future development not directly related to the project would require separate planning approvals under relevant local / State planning processes.

7.9 Transport

7.9.1 Bus integration

Stakeholder identification number(s):
15, 17, 38, 40, 49, 54, 64, 65, 94, 110, 115, 127, 145, 146, 159, 175, 177, 184, 189, 196, 197, 206, 209, 236, 252, 272, 273, 276, 287, 290, 316

Issue description

In summary, respondents raised the following issues:

a. Commuters who travel on existing bus routes into the city will not want to detour through Cherrybrook Station as they are choosing to catch a bus into the city, not a train. Request for existing bus routes to be maintained and a dedicated shuttle bus service provided for the Cherrybrook Station catchment. This would remove the need for the Robert Road bus access route, alleviate traffic concerns for residents in the Robert Road area, provide bus services both for commuters travelling by bus to their end destination and to Cherrybrook Station, and enable

County Drive and Castle Hill Road to cater for additional buses and commuter traffic.

b. Suggestion to close off Franklin Road to traffic heading to Cherrybrook Station and instead, operate a bus loop service for Cherrybrook / Dural residents along Castle Hill Road. This would reduce noise, vibration, air quality and safety impacts on residents in the Cherrybrook Station area.

c. Buses will remain the fastest way to the city for residents of the North West. Bus travel will be a more convenient option when compared to the multi mode bus-train-train journey that the current single deck proposal for NWRL. It is documented that the current bus services from the North West will be reduced or cancelled once NWRL is operational. Given the expected growth in population and the stated objective of removing cars from the road system, this seems counter-productive. The demand for bus services continues to grow as residents of the North West realise the benefits of utilising public transport. By the time NWRL is operational, it is likely that there will be demand for both bus and rail services. Calls for the train stations to be supported by efficient bus services and the existing bus routes to be maintained, as not all destinations can be reached using the NWRL. There needs to be an equally fair and accessible rail and bus service for people living in the North West suburbs.

d. Concerns that bus services down the M2 Motorway will be cancelled in order to force commuters onto the NWRL. EIS 2 does not address the impact the NWRL project will have on existing express bus services on the M2 Motorway. The M2 bus route provides flexibility and an alternative for commuters that may be faster and safer than the train. Calls to keep these bus services running.

e. Concerns that garbage and recycling trucks will cause lengthy delays to buses approaching the proposed Cherrybrook Station.

f. Request for bus routes 632, 642 and 642X to be re-routed along County Drive and Castle Hill Road with entry and exit to the proposed Cherrybrook Station via the traffic light controlled intersection at Robert Road. These buses would also enter or exit the station via Franklin Road to and from Neale Avenue. Bus routes 642 and 642X should be terminated at the proposed Cherrybrook Station returning via Franklin Road, Neale Avenue, Edward Bennett Drive, Castle Hill Road and County Drive in order to reduce the number of buses on the M2 and in Sydney. Alternatively, upon exiting the station onto Franklin Road, these buses could turn right to access Castle Hill Road through a new set of traffic lights (from NWRL construction) at Franklin and Castle Hill Roads. Bus route 631 Castle Hill to the city could enter the station via the Robert Road entrance. Buses from the city to Castle Hill could turn right at the Robert Road intersection, loop through the New Road and exit the station onto Franklin Road, turn right to access Castle Hill Road through a new set of traffic lights at Franklin and Castle Hill Roads.

g. Preference for commuters to catch the bus from the County Drive bus stop to eliminate the need for buses to turn left onto John Road and remove impacts on Robert Road and surrounding streets. The patronage along John Road to access Cherrybrook Station will be too low to warrant the service. Request to consider using County Drive as the main bus route for the 642X bus and providing a bus only lane down Castle Hill Road travelling east from County Drive.

h. The lack of bus stops on Robert Road disadvantages residents wanting to catch a bus to or from the proposed Cherrybrook Station.

i. Suggestion for bus routes to avoid Castle Hill Road and instead use back routes to maximise catchment.

j. Concerns the road modification to combine the two bus stations at the proposed Castle Hill Station will result in previous traffic problems. Suggestion to keep the bus station arrangements similar to the bus stop on Old Castle Hill Road, as this is close to the Castle Towers Shopping Centre and easy to access.

k. Suggestion for well marked bus routes that link the proposed Cudgegong Road Station to the existing Schofields Station.

l. Minimising the diversion of the existing bus routes around Cherrybrook in EIS 2 seems irrelevant as there are only two bus stops that would be affected, and they are within walking distance of the proposed station.

m. The proposal to cease city bus services in the Cherrybrook area as a result of NWRL shows a disregard for community facilities and services. This is an unacceptable outcome for the community. Concerns that once NWRL is operational, residents of Cherrybrook will again be reduced to one public transport option.

n. EIS 2 proposes buses to head south on County Drive, turn left onto John Road, right onto Robert Road and head south to Cherrybrook Station. This proposal means that residents on John Road and Franklin Road will not be able to catch the bus to the city, unless alternative bus routes are established. Commuters currently catching a bus to the city would not choose to have their bus now detour through Cherrybrook Station, given that they have chosen to catch a bus into the city rather than a train. Existing bus routes to the city should remain as is, and a separate shuttle bus / bus routes be established for commuters within the Cherrybrook Station catchment area for the sole purpose of transport to and from Cherrybrook Station. This would be consistent with the opportunity noted in 8.1.5 of the technical paper of EIS 2 for the West Pennant Hills Valley to have a shuttle bus service. This would enable County Drive and Castle Hill Road to accommodate additional buses transporting commuters to Cherrybrook Station.

The proposal to run buses south on County Drive, left onto John Road and right onto Robert Road, is intended to capture commuters to and from the city who are currently using the bus stops on John Road between County Drive and Robert Road (two bus stops in total). These two bus stops (1 heading east to the city and 1 heading west returning from the city) are situated on either side of John Road and approximately 50 metres east of County Drive. The average number of commuters (as recorded in the report prepared by INCO traffic management which can be accessed via the website www.saverobertroad.com) boarding the bus to the city from the east bound bus stop on any one day during morning peak hours is 58. Of these 58 commuters, 6 drive to the bus stop leaving 52 commuters who walk. As a result, the NWRL proposal to convert Robert Road into a main access road and affect the lives / value of properties of some 265 residents weighed against 52 commuters per day walking an additional 50 metres to County Drive to access the County Drive bus stop, would seem inequitable.

o. Suggestion that bus services 632 and 642 could be re-routed to provide improved bus integration from Cherrybrook Station.

p. Preference for buses to continue on the John Road route.

q. The express bus service from Baulkham Hill to the city (M61, 610X) takes around 30 minutes during off peak times. The same journey via feeder bus to Castle Hill and the NWRL is likely to take twice as long due to the bus, train travel, transfer and wait times. Preference for current bus service to be maintained so that the residents from Baulkham Hills are not disadvantaged due to the only public transport option to the city (NWRL) taking twice as long as the current service.

Request for detailed studies to be undertaken to assess the specific transport needs of the Baulkham Hills area, with particular regard to comparative travel times to the Sydney CBD by direct bus services and the combination of feeder buses, NWRL and the North Shore Line.

Suggestion that the following be assessed for the retention of direct bus services:

- ❖ Baulkham Hills junction and adjoining high density residential areas.
- ❖ The Gooden Drive and Cropley Drive bus stations on the M2.
- ❖ Route 614X from Seven Hills Road.

r. Preference for bus services 620X and 621 along New Line Road to the city to be maintained once NWRL is operational as these routes service people remaining in the Cherrybrook area.

s. Once NWRL is operational, route 642 bus services should be diverted from John Road / Franklin Road / Neale Avenue / Edward Bennett Drive onto Castle Hill Road and route 632 bus services to Pennant Hills Station should continue to use the existing route. If commuters are opposed to walking, they can change to the 642 service at an earlier stop.

t. As Castle Hill Road is a major arterial link to Castle Hill Station, provision should be made for bus bays on the south side of Castle Hill Road, with a route for the potential shuttle bus to take advantage of these bays. These facilities form a necessary part of any integrated transport plan for the area, and would ensure less interruption to the flow of traffic along Castle Hill Road.

u. It is concerning that bus and kiss-and-ride facilities are contained within a small section of the station precincts. It would allow for better performance of the New Road at Cherrybrook Station if the majority of buses (servicing areas to the north of the station) were able to drop / pick up passengers on the northern side of Castle Hill Road in bus bays. If this change is not considered, it is likely that all movements will be hindered, as demonstrated during peak periods at the Sydney Airport drop off facility.

Response

a. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to Cherrybrook Station will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

b. Closing of Franklin Road would have a detrimental impact on vehicular accessibility to the station. Additional investigations and options analysis for bus routes and bus access to Cherrybrook Station will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

Wider area bus routes around Cherrybrook and Dural are outside the scope of the NWRL project.

c. Section 9.5 of EIS 2 provides details of the anticipated changes to bus services including the replacement of long haul M2 bus services from the western extent of the NWRL corridor with train services whilst preserving some M2 bus services mainly from the eastern part of the corridor.

Section 22.1 of EIS 2 noted that buses are affected by road congestion. Network constraints for buses are most acute on the approach to and within the Sydney CBD, particularly on the Harbour Bridge and around Wynyard Station. TfNSW forecasts that, in the absence of the NWRL, there would be a growth of 144% in M2 buses entering the Sydney CBD by 2021. These constraints mean that expansion of bus services alone cannot accommodate the expected growth in public transport demand. Capacity constraints on the road network demonstrate the need for a mass transit system to facilitate continued growth. The NWRL would have an impact on travel patterns and choices in the north-west and through to the CBD providing faster and more reliable travel times. Forecast travel time savings of around 10 to 30 percent between the north-west and the key employment destinations of Macquarie Park, Chatswood and Sydney CBD are anticipated by 2021. A NWRL project objective is to 'Deliver Stage 3 of Sydney's Rail Future to improve transport network reliability by facilitating a shift from road to rail for trips to and from the north west, to reduce bus / road congestion and improve amenity in Sydney CBD'.

Furthermore, reducing congestion on inner city roads (through a reduction in buses entering Sydney CBD from the north west) would result in additional benefits to bus services from other areas to the north, including the Northern Beaches.

d. Section 9.5 of EIS 2 provides details of the anticipated changes to bus services including the replacement of long haul M2 bus services from the western extent of the NWRL corridor with train services whilst preserving some M2 bus services mainly from the eastern part of the corridor.

Section 22.1 of EIS 2 noted that buses are affected by road congestion. Network constraints for buses are most acute on the approach to and within the Sydney CBD, particularly on the Harbour Bridge and around Wynyard Station. TfNSW forecasts that, in the absence of the NWRL, there would be a growth of 144% in M2 buses entering the Sydney CBD by 2021. These constraints mean that expansion of bus services cannot

accommodate the expected growth in public transport demand. Capacity constraints on the road network demonstrate the need for a mass transit system to facilitate continued growth. The NWRL would have an impact on travel patterns and choices in the north-west and through to the CBD providing faster and more reliable travel times. Forecast travel time savings of around 10 to 30 percent between the north-west and the key employment destinations of Macquarie Park, Chatswood and Sydney CBD are anticipated by 2021.

A NWRL project objective is to 'Deliver Stage 3 of Sydney's Rail Future to improve transport network reliability by facilitating a shift from road to rail for trips to and from the north west, to reduce bus / road congestion and improve amenity in Sydney CBD'.

Furthermore, reducing congestion on roads nearer to the Sydney CBD (through a reduction in buses entering Sydney CBD from the north west) would result in additional benefits to bus services from other areas to the north, including the Northern Beaches.

e. The removal of on-street parking on Robert and Franklin Roads would assist in heavy vehicle access including garbage truck access.

In relation to operational bus access, TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to Cherrybrook Station will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

f. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to Cherrybrook Station will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

g. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to Cherrybrook Station will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

h. The majority of Robert Road would be considered to be within the walk-up catchment to Cherrybrook Station. As such, bus routes are unlikely to be specifically planned to provide bus stops within this zone.

TfNSW will undertake additional investigations and options analysis for bus routes and bus access to Cherrybrook Station. Further details are provided in Chapter 2 – Clarifications of this report.

i. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to stations will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

j. There is currently provision for northbound buses at the stands located in Old Castle Hill Road and southbound buses at the stands in Old Northern Road. The eastern kerbline of Old Castle Hill Road, north of the intersection with Castle Street / Crane Road, accommodates bus layover.

With the opening of the Castle Hill Station, it is proposed to relocate all bus stands to Old Northern Road between Crane Road and Terminus Street as part of the new interchange facility. The proposed interchange would provide for both north and south bound buses, providing four stands in each direction. This would provide separation of buses and kiss-and-ride zones at the station, consolidate all bus stands together in the interchange and place the bus stands close to the station entrance. In order to access Castle Towers Shopping Centre from the bus stops, passengers would walk through the pedestrian-friendly station plaza zone and cross Old Castle Hill Road at dedicated pedestrian crossing points.

k. The proposed bus routes to Cudgegong Road Station are detailed in Section 9.5.9 of EIS 2. Some North West Growth Centre bus routes would pass by the proposed Cudgegong Road Station on their way to and from Rouse Hill, operating via the northern east-west station access street and making use of on-street bus stops. Some regional bus routes would operate on Schofields Road. It is not intended that these routes would be

diverted to the station, as this could weaken their regional transport function.

l. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to Cherrybrook Station will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

m. Section 9.5 of EIS 2 provides details of the anticipated changes to bus services including the replacement of long haul M2 bus services from the western extent of the NWRL corridor with train services whilst preserving some M2 bus services mainly from the eastern part of the corridor.

NWRL train services from Cherrybrook Station will have many benefits over a city bus service including reliability, speed, and capacity.

n. Section 9.5 of EIS 2 provides details of the anticipated changes to bus services including the replacement of long haul M2 bus services from the western extent of the NWRL corridor with train services whilst preserving some M2 bus services mainly from the eastern part of the corridor.

NWRL train services from Cherrybrook Station will have many benefits over a city bus service including reliability, speed, and capacity.

In relation to operational bus access, TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to Cherrybrook Station will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

o. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to Cherrybrook Station will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

p. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to Cherrybrook Station will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

q. Section 9.5 of EIS 2 provides details of the anticipated changes to bus services including the replacement of long haul M2 bus services from the western extent of the NWRL corridor with train services, whilst preserving some M2 bus services mainly from the eastern part of the corridor..

Section 22.1 of EIS 2 noted that buses are affected by road congestion. Network constraints for buses are most acute on the approach to and within the Sydney CBD, particularly on the Harbour Bridge and around Wynyard Station. TfNSW forecasts that, in the absence of the NWRL, there would be a growth of 144% in M2 buses entering the Sydney CBD by 2021. These constraints mean that expansion of bus services alone cannot accommodate the expected growth in public transport demand. Capacity constraints on the road network demonstrate the need for a mass transit system to facilitate continued growth. The NWRL would have an impact on travel patterns and choices in the north-west and through to the CBD providing faster and more reliable travel times. Forecast travel time savings of around 10 to 30 percent between the north-west and the key employment destinations of Macquarie Park, Chatswood and Sydney CBD are anticipated by 2021.

The project is consistent with the objective to 'Deliver Stage 3 of Sydney's Rail Future to improve transport network reliability by facilitating a shift from road to rail for trips to and from the north west, to reduce bus / road congestion and improve amenity in Sydney CBD'.

Reducing congestion on inner city roads (through a reduction in buses entering Sydney CBD from the north west) would result in additional benefits to bus services from other areas to the north.

r. Section 9.5 of EIS 2 provides details of the anticipated changes to bus services including the replacement of long haul M2 bus services from the western extent of the NWRL corridor with train services whilst preserving some M2 bus services mainly from the eastern part of the corridor. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access in and around Cherrybrook will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

Section 22.1 of EIS 2 noted that buses are affected by road congestion. Network constraints for buses are most acute on the approach to and within the Sydney CBD, particularly on the Harbour Bridge and around Wynyard Station. TfNSW forecasts that, in the absence of the NWRL, there would be a growth of 144% in M2 buses entering the Sydney CBD by 2021. These constraints mean that expansion of bus services alone cannot accommodate the expected growth in public transport demand. Capacity constraints on the road network demonstrate the need for a mass transit system to facilitate continued growth. The NWRL would have an impact on travel patterns and choices in the north-west and through to the CBD. Forecast travel time savings of around 10 to 30 percent between the north-west and the key employment destinations of Macquarie Park, Chatswood and Sydney CBD are anticipated by 2021.

This is consistent with the project objective to 'Deliver Stage 3 of Sydney's Rail Future to improve transport network reliability by facilitating a shift from road to rail for trips to and from the north west, to reduce bus / road congestion and improve amenity in Sydney CBD'.

Reducing congestion on inner city roads (through a reduction in buses entering Sydney CBD from the north west) would result in additional benefits to bus services from other areas to the north.

s. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to Cherrybrook Stations will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

Existing bus services to and from Pennant Hills Station are outside the scope of the NWRL project.

t. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to stations will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.The station access hierarchy presented in Figure 6.6 of EIS 2 shows that kiss-and-ride and bus stops should be located in close proximity to the station entry. Bus bays located in Castle Hill Road would be less accessible than the location proposed in EIS 2, especially for westbound bus services, requiring passengers to cross Castle Hill Road. TfNSW is committed to identifying the best outcome in relation to bus access to and from Cherrybrook Station. As such, additional investigations and options analysis for bus routes and bus access to stations will be undertaken. Further details are provided in Chapter 2 – Clarifications of this report.

u. The operational traffic analysis, presented in Chapter 9 of EIS 2, indicated that the intersections around the Cherrybrook Station precinct would operate at acceptable levels.

7.9.2 Network capacity

Stakeholder identification number(s):
3, 12, 29, 30, 88, 115, 124, 142, 146, 147, 154, 206

Issue description

In summary, respondents raised the following issues:

a. Concerns that fully loaded double deck trains already travel through the city at three minute intervals (20 per hour) yet there are plans to increase this frequency when the train lines are already at capacity. Limited on line capacity across the Harbour Bridge occurs at the height of the peak, for a

period of approximately 60 minutes. Outside of that time there is ample capacity for trains from the proposed NWRL to run through to the city. The decision to build a single deck service will result in passengers travelling during the off-peak, at night and on weekends being forced to change from one train to another for no benefit whatsoever.

b. The decision to construct NWRL prior to the second Harbour Bridge crossing on the grounds that the North Shore line is at capacity has been contradicted by the statement made by Minister for Transport Hon Gladys Berejiklian, "We will be increasing the number of services from the North Shore to the city to 24 an hour; currently we are getting about 17 or 18 across, so that will increase substantially by the time the (NWRL) line is open." (SMH 2/10/2012).

Therefore this proves that there is already capacity to run six new trains per hour from the NWRL direct to the city, ie a train every 10 minutes, which would be adequate capacity until the second Harbour Bridge crossing was built (additional trains could terminate at Chatswood to provide a 5 minute peak service from the North West).

c. Objection to the additional pressure on the rail network as a result of NWRL, failure to provide an expanded Harbour Bridge crossing, and complete the Parramatta to Epping link. The NWRL proposal as a stand alone system fails to address the need to upgrade the Sydney rail network. The choke point of the number of trains across the Harbour Bridge needs to be addressed to integrate the NWRL into the rail network.

d. Concerns regarding commuters from the Northern Line having to change onto trains at Epping and Chatswood that are already crowded. Chatswood and Epping Station platforms are too small to cope with the countless commuters being forced to change trains. How will the platforms function with a massive influx of extra commuters, and will there be enough carriages to service them?

Concern that EIS 2 does not assess the additional passenger congestion that will occur at Epping when the Government's planned additional 4,000 unit high-rise residential apartments will be built there in the coming years, along with those planned for Beecroft and Pennant Hills. This will result in additional passenger congestion at Epping and Chatswood Stations.

e. Concerns regarding further pressures on the rail network as existing services from Cheltenham to Parramatta are already at capacity and many passengers have to remain standing for the journey. This has led to commuters driving rather than using the public transport network.

Response

a. The NWRL will be fully integrated into Sydney's public transport network providing a reliable service for approximately 400,000 residents in the north west. At Chatswood customers would be able to cross the platform to change onto the existing rail network. Train services would be organised to ensure that customer interchange waiting time is minimised. It is expected there would be a train every three minutes from Chatswood to the city during peak times. Regular services to / from the city in the off peak would be provided. The North Shore service would be increased, from the current 18 trains per hour up to at least 20 trains per hour during the peak.

b. The planning for the second harbour crossing is in its early stages. The planning for the crossing is within NSW government priorities.

The NWRL would add to the existing public transport options available and would be fully and seamlessly integrated with other transport modes, including the existing rail network. Rapid transit services, initially 12 trains per hour during peak periods (a train every five minutes in peak periods), will be operated with single deck rapid transit trains, advanced signalling and dedicated track.

At Chatswood customers would be able to interchange (cross the platform) with the existing rail network. Train services would be organised to ensure customer interchange waiting time is minimised. It is expected there would be a train every three minutes from Chatswood to the city during peak times. Regular services to / from the city in the off peak would be provided. The North Shore service would be increased, up to at least 20 trains per hour during the peak.

c. The NSW Government plans to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. The NWRL forms part of the investment in new services to the Sydney's North West region.

The second Sydney Harbour crossing and additional CBD rapid transit line have been identified in *Sydney Rail Future Modernising Sydney Trains* (NSW Government, June 2012). Planning for the crossing and rapid transit line are NSW Government priorities.

d. Customers travelling from stations between Hornsby and Epping to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies.

Passengers travelling from stations between Hornsby and Epping to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes. At Chatswood, customers will walk across the platform to change to an existing service. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods. Peak period services on the North Shore will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing).

The trip from Beecroft to Epping is currently approximately 5 minutes. A trip from Epping to Wynyard, travelling on the NWRL and including interchange, is expected to take no more than 40 minutes, which is equivalent to the current travel time.

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

The actual travel time for a trip from Beecroft or Cheltenham to Wynyard via Strathfield on the future Main North suburban network (on one train) cannot be estimated at this stage until final timetables and service stopping patterns are confirmed. However, Stage 1 of Sydney's Rail Future will see a timetable overhaul to introduce standardised and regular 'clockface' stopping patterns and more express services.

The requirement to interchange within an integrated public transport system is not uncommon and completely compatible with modern customer expectations.

The NWRL is proposed to meet the current and future demand for public transport in the north west and for existing rail stations. The NWRL and the broader integrated transport system can accommodate a significant increase in rail patronage which is assumed to occur as a result of population growth in the north west, and an increased modal shift to more efficient transport options such as rail.

e. A rail journey from Cheltenham to Parramatta currently takes 42 minutes, with interchanges at Epping and Strathfield. Alternatively, the train from Cheltenham to Epping, followed by interchange onto the M54 bus at Epping (to Parramatta) takes approximately 52 minutes. These options will still be available once the NWRL is operational.

The NWRL alignment and design accommodates a connection with any future Parramatta to Epping Rail Link north of Epping.

The NWRL would accommodate current and future demand for public transport in the north west sector. The NWRL and the broader integrated transport system can accommodate increased rail patronage which will occur as a result of population growth in the north west sector.

The NSW Government plans to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. The NWRL forms part of the investment in new services to the Sydney's North West region.

7.9.3 Parking availability

Stakeholder identification number(s):
5, 15, 22, 24, 30, 32, 39, 40, 48, 49, 64, 65, 66, 67, 68, 77, 94, 103, 109, 110, 112, 131, 135, 138, 139, 151, 167, 175, 184, 186, 192, 196, 197, 215, 228, 233, 234, 236, 237, 252, 256, 258, 261, 268, 273, 276, 278, 281, 290, 302, 304, 313, 320, 321

Issue description

In summary, respondents raised the following issues:

a. Objection to conversion of Robert Road from quiet, suburban street with adequate on-street parking for residents and visitors to a busy bus and car route with no on-street resident or visitor parking allowed. This will encourage commuters to park in the quiet and narrow surrounding streets such as Barkley Close, Dalkeith Road, Glenhope Road, Oliver Way, Camelot (private road), Louise Way and Arundel Way. Both Robert Road and these nearby streets have limited off street residential, visitor and service vehicle parking. Concerns that the roads are not designed to take a high volume of traffic or parked cars and commuters will block resident driveways, disrupt residents' lifestyles, congest surrounding streets, create safety issues and disrupt garbage collection. This is undesirable and unacceptable, particularly as 400 car spaces at Cherrybrook will be insufficient and operate at capacity from early morning given the volume of traffic accessing the station from Castle Hill Road. EIS 1 referenced 900 car spaces for Cherrybrook and EIS 2 contradicts this referencing 400 car spaces.

Limiting kerbside parking on Robert Road would have a large impact on local residents when friends and family visit, or when trade persons are required. Oliver Way residents have reported that their development was approved on the basis that visitor parking be located "on-street", as there was no room to locate visitor parking onsite. To deprive the community of these facilities would be in breach of the rights of the community. EIS 2 suggests rezoning Robert Road as No Parking / No Standing on the justification that residents rarely used street parking and have sufficient off street parking. Calls that this statement is inaccurate, as parking on Robert Road is imperative for residents and their visitors. At a meeting with NWRL, it was admitted that this statistic was taken in the middle of a weekday (when people are at work). Preference to:

- Reinstate County Drive to its original two lane, two-way operation. This would be a much better alternative to Robert Road and a less costly option.
- Increase the car park capacity to 600 car parks by utilising the three spare open spaces marked as 'Future Use to be Determined by Master Plan' on the project maps.
- Restrict parking on Robert Road with residential parking permits in order to encourage commuters to use the designated parking facility at the proposed Cherrybrook Station.
- Incorporate general parking restrictions (eg max three hour parking, no parking signs) to prevent commuters from all-day parking in local, quiet streets.
- Include parking free of charge at Cherrybrook Station to encourage commuters to use the designated parking area.

If these extra spaces and permits were applied, the problem of overflow of cars into local streets would be resolved. Additional parking options for residents should be integrated now during the planning / design stage.

b. Concern that the Showground Station will have negative impacts on nearby streets as commuters who can't find a park at the station will overflow into the quiet and leafy suburbs, disturbing residents. How will wider vehicles (eg trailers, caravans, garbage trucks, buses) pass if cars are parked both sides of the narrow streets? Calls for this issue to be resolved or alternatively, parking signs be erected for one to two hours to deter commuters from parking in local streets.

c. EIS 2 shows an increased size of the Cherrybrook Station precinct when compared with the original design for Cherrybrook Station (Indicative

Plan Drg No: 2152055-AR-SK101 Rev 02 dated April 07). Why is this larger when there are 560 less commuter car parking spaces?

d. Concerns regarding commuters at the proposed Bella Vista Station parking in residential streets, impacting residents in the area.

e. Concerns that multi-level car parks will be constructed at the new stations but there is no such proposal for the existing stations (Epping to Chatswood) which are major interchanges. Absence of parking provision for NWRL at Epping will cause congestion in Epping and surrounds and clog up the approach to the planned Epping Town Centre development as well as the road system including M2 approaches.

f. Request for confirmation that designated parking opposite houses 1-7 on Robert Road will be maintained only for surface parking.

g. Concerns that the proposed Cheltenham Services Facility will impact already limited parking at the Cheltenham Oval. Suggestion to develop the stub of Murray Road (off Castle Howard Road) for additional car parking for Cheltenham Oval.

h. Concern regarding the pressures on the Castle Towers Shopping Centre car park. Suggestion to purchase some of this car park for NWRL commuters, provide a new parking space as part of the Castle Towers expansion for both railway users and shoppers, and keep parking fees low.

i. Concerns regarding commuters from Showground Station parking in residential streets specifically Middleton Avenue, Ashford Avenue, Partridge Avenue, Dawes Avenue, Fishburn Crescent, Carrington Road and Sexton Avenue, during construction and operation. This is likely to cause disruption, noise issues and create problems for residents, buses and garbage collectors accessing streets. This proposal will severely affect the way of life and well-being of residents.

Concerns that construction staff will not use designated parking area, during the construction phase, and will use residential streets instead. What is the incentive for construction staff to park in the designated parking area as opposed to residential streets?

Concerns regarding the use of the new park-and-ride facility at Showground Station and will commuters find it more time efficient and cost-effective to park in the residential areas rather than trying to enter and exit the car park and paying for it. Request for information regarding how this situation will be eliminated in order to retain parking on residential streets.

j. As restricted parking is proposed outside homes during the construction phase, calls for the southern end of Robert Road to be closed off prior to the commencement of construction to maintain a nominal amount of on street parking during construction.

k. Suggestion that there should be either no parking or parking only one side of Brookhollow Avenue near the proposed Norwest Station.

l. Are there enough car parks provided overall compared to the projected passenger numbers?

m. The southern side of Castle Hill Road, which comprises of the West Pennant Hill Valley residents and traffic users, is almost totally neglected in the NWRL proposal. Why haven't set-down points for motorists and buses been allowed on the south side of Castle Hill Road? Vehicles joining Castle Hill Road from Coonara Avenue should be able to travel west and set-down passengers in front of the station before turning left at either Glenhope or Highs Roads.

Response

a. The requirement to remove on-street parking along Robert Road relates to providing sufficient width for safe vehicular operations. The need to remove this car parking would be considered as part of the Cherrybrook Station bus access options investigations (refer to Chapter 2 – Clarifications of this report for further details).

The number of commuter car parking spaces at Cherrybrook Station has been determined based on considerations of anticipated demand, land uses and road network constraints. Notwithstanding, there may still be a degree of commuter parking on local streets surrounding the stations. A travel demand management approach to station precinct design aims to

reduce car based trips to and from the station through the provision of attractive alternatives to driving to the station, ie good pedestrian and cycling links, adequate bike parking at stations, and frequent and direct bus services from the surrounding residential areas. These positive measures would be facilitated as part of the NWRL project. However, as occurs elsewhere in Sydney, local councils would need to implement any measures considered necessary to limit on-street parking by commuters. Car parking (for 400 cars) would be provided within the station precinct free of charge.

b. A 600 space park-and-ride car park is proposed to be provided at Showground Station. The number of commuter car parking spaces has been determined based on considerations of anticipated demand, land uses and road network constraints. Notwithstanding, there may still be a degree of commuter parking on local streets surrounding the stations. A travel demand management approach to station precinct design aims to reduce car based trips to and from the station through the provision of attractive alternatives to driving to the station, ie good pedestrian and cycling links, adequate bike parking at stations, frequent and direct bus services from the surrounding residential areas. These positive measures would be facilitated as part of the NWRL project. However, local councils would need to implement any measures considered necessary to limit on-street parking by commuters.

c. In Section 7.4.2 of the NWRL Preferred Project Report dated May 2007, the indicative Cherrybrook station precinct plans showed that approximately 960 car parking spaces could be accommodated at grade on the precinct site. The agreed quantum of commuter parking was to be subject to detailed traffic investigations and future precinct planning stages (commitment 12).

The indicative plan for Cherrybrook Station is given in Figure 6.11 of EIS 2. The number of commuter car parking spaces at Cherrybrook Station has been determined based on demand forecasts, land use considerations and road network constraints.

A two to three storey park-and-ride facility would be located to the east of the station entry plaza and provide approximately 340 car parking spaces. An on grade park-and-ride facility for approximately another 60 cars would be located north of the proposed station access road and adjacent to and beneath the existing power lines.

d. Bella Vista Station would provide 800 park-and-ride spaces. This number has been determined based on considerations of anticipated demand, land uses and road network constraints. Notwithstanding, there may still be a degree of commuter parking on local streets surrounding the stations. A travel demand management approach to station precinct design aims to reduce car based trips to and from the station through the provision of attractive alternatives to driving to the station, ie good pedestrian and cycling links, adequate bike parking at stations, and frequent and direct bus services from the surrounding residential areas. These positive measures would be facilitated as part of the NWRL project. However, as occurs elsewhere in Sydney, local councils would need to implement any measures considered necessary to limit on-street parking by commuters.

e. While Chatswood station's interchange function would be enhanced, the majority of patronage growth across the network would be generated from the new stations associated with the NWRL, not from existing ECRL stations.

No changes to mode-of-access arrangements at Epping are required to accommodate the NWRL. Multi modal improvements have been completed at Epping as part of the completed Epping Station Upgrade.

f. It would be necessary to remove on-street parking on Robert Road from Castle Hill Road to John Road.

g. The construction of the Cheltenham Services Facility would necessitate the removal of some existing off-street car parking facilities. TfNSW would undertake ongoing consultation with relevant stakeholders to determine options for the temporary replacement of impacted facilities. Following construction, it is proposed to reinstate car parking at the Cheltenham Oval site.

h. Consistent with its role as a major centre, Castle Hill Station has not been designed as a park-and-ride station. Park-and-ride facilities for commuters in the area would be available at the nearby Showground Station or Cherrybrook Station. Allocation and management of parking within the Castle Towers Shopping Centre is a matter for the shopping centre management.

i. Parking for construction workers at Showground Station would be provided within the construction site boundary.

Showground Station has been designed as a park-and-ride station, with the provision of 600 free of charge car parking spaces. This number has been determined based on considerations of anticipated demand, land uses and road network constraints. Notwithstanding, there may still be a degree of commuter parking on local streets surrounding the station. A travel demand management approach to station precinct design aims to reduce car based trips to and from the station through the provision of attractive alternatives to driving to the station, ie good pedestrian and cycling links, adequate bike parking at stations, and frequent and direct bus services from the surrounding residential areas. These positive measures would be facilitated as part of the NWRL project. However, as occurs elsewhere in Sydney, local councils would need to implement any measures considered necessary to limit on-street parking by commuters.

j. During construction, it would be necessary to remove on-street car parking on Robert Road from Castle Hill Road to the northern extent of the site.

k. During construction, it would be necessary to displace some kerbside parking spaces along Brookhollow Avenue to manage vehicular access and movement in the vicinity of the construction site. Taxi, kiss-and-ride and short term parking would be reinstated along Brookhollow Avenue in the end state. Parking restrictions and on-street management in the vicinity of the station would be a responsibility of the local council.

l. Parking provisions at each of stations have been determined having regard to anticipated demand, land uses and road network constraints. Notwithstanding the provision of commuter parking at selected stations, there may still be a degree of commuter parking on local streets surrounding a station. A travel demand management approach to station precinct design aims to reduce car based trips to and from the station through the provision of attractive alternatives to driving to the station, ie. good pedestrian and cycling links, adequate bike parking at stations, and frequent and direct bus services from the surrounding residential areas. These positive measures would be facilitated as part of the NWRL project. However, as occurs elsewhere in Sydney, local councils would need to implement any measures considered necessary to limit on-street parking by commuters.

m. The provision of kiss-and-ride and bus bays along the southern side of Castle Hill Road opposite Cherrybrook Station would require property acquisition, be inaccessible from the station entry, result in pedestrian management issues and potentially adversely impact traffic flow efficiency along Castle Hill Road. The station access hierarchy shown in Figure 6.6 of EIS 2 shows that bus and kiss-and-ride facilities should be located close to the station entry point. The provision of these facilities on the southern side of Castle Hill Road would not facilitate this 'priority of access'.

7.9.4 Pedestrian and bicycle access

Stakeholder identification number(s):
32, 112, 175, 206, 290, 309

Issue description

In summary, respondents raised the following issues:

a. Suggestion for an area currently used as toilets in Castle Towers Shopping Centre to be converted into a tunnel for pedestrian access directly from the centre into the proposed Castle Hill Station (image illustrating this suggestion attached to submission).

b. Suggestion for well marked cycle routes that link the proposed Cudgegong Road Station to Schofields Station.

c. Concerns regarding the lack of cycle path development around existing stations between Epping and Chatswood.

d. Calls for more consideration to be given to how pedestrians will access stations. There should be cover between the stations and the bus interchanges. One of the major problems with the ECRL is that there isn't enough cover over the station exits. When it's raining, the escalators and lifts deposit people under an awning that is only about a metre wide.

e. Concerns regarding proposed pedestrian crossing traffic light at Glenhope Road. Introducing traffic lights for this purpose will impact on the flow of traffic. Preference for a pedestrian footbridge in this location to avoid traffic impacts.

f. Little consideration has been given to how residents of West Pennant Hills Valley would cross Castle Hill Road to access Cherrybrook Station. Nominating Highs Road as the access route for the 'potential' shuttle bus plainly demonstrates poor understanding of this intersection. Castle Hill Road is a major arterial link. Provision should be made for grade separated pedestrian access across Castle Hill Road. These facilities form a necessary part of any integrated transport plan for the area, and would ensure less interruption to the flow of traffic along Castle Hill Road.

g. The southern side of Castle Hill Road which comprises of the West Pennant Hill Valley residents and traffic users is almost totally neglected by the NWRL proposal. Why has a planned over/underpass across Castle Hill Road been excluded? This was seen as extremely important for pedestrian safety and an integral part of talks with the Department and the local MP, Mr Dominic Perrottet.

Response

a. EIS 2 proposes an at-grade pedestrian access between Castle Hill Station and Castle Towers shopping centre via the proposed plaza and dedicated pedestrian crossing (zebra) at Old Castle Hill Road. The design of the station would safeguard for a future below ground pedestrian access between the station and Castle Towers shopping centre.

b. Cycle routes links between stations are outside the scope of the NWRL. TfNSW in collaboration with local councils and the Department of Planning and Infrastructure would plan for the provision of cycling access routes to the NWRL stations as part of the detailed station design. The NWRL project would provide bicycle facilities at each of the proposed stations.

c. Cycle routes between Epping and Chatswood are outside the scope of the NWRL and would need to be developed and implemented by the relevant local councils and / or RMS.

d. The comment regarding cover between the stations and the bus interchanges is noted. This will be considered as part of the precinct planning stage. The NWRL design would aim to provide attractive, pedestrian friendly spaces including appropriate protection from the weather.

e. Traffic modelling for the proposed Castle Hill Road / Glenhope Road signalised intersection are presented in Section 9.5.2 of EIS 2. The model predicts the intersection would perform satisfactorily during construction. The traffic signals will accommodate pedestrian movement across Castle Hill Road.

f. Pedestrian access from the West Pennant Hill Valley area to Cherrybrook Station would be facilitated by signalised pedestrian crossings at the intersections of Castle Hill Road / Glenhope Road and Castle Hill Road / Robert Road during NWRL operation. The proposed shuttle bus route provides an acceptable route for bus access from West Pennant Hills Valley into the station precinct, allowing bus patrons to be dropped close to the station entry point.

g. Pedestrian access from the West Pennant Hill Valley area to Cherrybrook Station would be improved by the provision of signalised pedestrian crossings at the intersections of Castle Hill Road / Glenhope Road and Castle Hill Road / Robert Road.

7.9.5 Rail integration

Stakeholder identification number(s):
3, 10, 11, 12, 16, 17, 18, 19, 20, 21, 23, 25, 27-31, 34, 35, 37, 41, 42, 43, 44, 45, 46, 47, 53, 55, 76, 88, 89, 92, 93, 96, 98, 105, 114, 115, 117, 118, 120, 122, 124, 125, 129, 130, 132, 134, 137, 141, 142, 143, 146, 147, 150, 152, 153, 154, 156, 157, 158, 160, 163, 164, 165, 166, 167, 168, 170, 173, 176, 179, 183, 185, 188, 190, 193, 194, 199, 200, 201, 202, 203, 204, 207, 208, 210, 211, 216, 217, 218, 221, 232, 240, 241, 244, 245, 247, 248, 249, 250, 251, 253, 254, 255, 257, 260, 264, 266, 269, 270, 271, 274, 275, 279, 280, 282, 291, 292, 293, 294, 295, 298, 304, 310, 311, 312, 315, 319

Issue description

In summary, respondents raised the following issues:

a. Concern that NWRL has not been designed to allow for a future connection to the Epping to Parramatta Line. It would seem that the government does not want to build the Epping to Parramatta Line with the introduction of NWRL as a single deck line. NWRL is now not intended to take people from the North West to the CBD, it is instead a cross-country line from Rouse Hill to Chatswood only. The commuters who do try to access the CBD from the North West will be confronted with boarding already crowded trains from the upper north shore.

b. There has been no explanation of how the rapid transit proposal will integrate with Chatswood Station. How will the trains be managed? Will the existing single terminal be adequate to reverse them? Will a suburban type train be capable of using the same tracks in an emergency? What changes will have to be made to start the second stage of an extension to the city? How will the existing Northern Line work once NWRL is operational and what will be the frequency of the service?

c. Passengers travelling from varying destinations on the Northern Line (including the Epping to Chatswood Rail Link), who currently enjoy a direct commute into the city on one train, will be forced to change to a single deck train at Epping. At Chatswood, commuters will then need to change again back to a double deck train to get to the CBD. It would be incredibly counter-productive for commuters to have to ride three trains to get to the CBD via the suburban services (six trains on a return journey). The introduction of this incompatible single deck (metro) system is unacceptable. It is outrageous that the government could consider destroying an existing functional rail line to implement a new, incompatible one. The increase in the number of train changes will mean unacceptable travel times and driving or catching a bus on the M2 would be preferable for many commuters. The chance of missing interconnecting trains will be increased, commuters will be delayed and confused, travel will become unsafe, journeys will become more difficult for elderly, disabled and young commuters and parents with prams and platforms will become overcrowded. Residents have purchased properties in the areas surrounding the stations to enable direct public transport to the city. EIS 2 fails to assess these impacts.

This is a much needed project for Western Sydney however the distance is far too long for single deck (metro style) transport and such a system is considered a sub optimal solution. It effectively devalues the huge NSW investment in the NWRL and the current rail services, and is a waste of voters' time and money. The current proposal is not customer friendly and instead of providing better train transfers, it creates thousands more a day. New infrastructure should make life easier for commuters, not more difficult. The single deck (metro style) proposal has only been adopted because ministerial planning powers have been usurped. The claim that the proposed single-deck trains, will carry more passengers (though with fewer seats) than double deck trains is not properly justified in the EIS.

The tunnels should be built large enough for current double deck trains to allow integration into the current rail system across Sydney. A double deck solution, consistent with the Northern Line (including the Epping to Chatswood Rail Link) must be constructed for operational consistency, future traffic needs and future system extension and integration.

d. Request for the change from single deck to double deck to be at Epping instead of Chatswood.

e. Objection to the removal of a direct weekday 1/4 hourly train service from Hornsby to the city via Epping as proposed due to NWRL. Preference for the 1/4 hourly service from Beecroft to the city via Strathfield to remain without the need to change trains at Epping. Concerns that this will counteract the existing network flexibility provided by the diversion of most of the Northern Line via Chatswood.

f. Concern that the proposed NWRL single deck proposal will result in potential changes on the Illawarra line, eg commuters travelling from the city to Rockdale, Kogarah and Hurstville not being able to find information about departing trains and platforms easily. Single deck trains do not mix well with coal trains and there could be a chaos on the Illawarra line if there is an attempt to cross coal trains to the main line.

g. Concern that the NWRL single deck proposal will mean commuters will face difficulties when commuting from Lidcombe to Cabramatta, Bankstown and destinations beyond.

h. Query regarding what studies have been undertaken to show the benefits of a single deck line that does not integrate with the rest of the network.

i. EIS 2 is inadequate to justify the current proposed project, rather it justifies the argument that the earlier proposal for a similar extension to the existing Suburban System is the appropriate solution. The basic structures should be a priority (double deck) which conforms to the remainder of the Sydney network.

Response

a. The NWRL proposes to use single deck rapid transit trains which have a high passenger capacity. Rapid transit trains travel faster overall than the double deck trains, and allow passengers to get on and off more efficiently than double deck trains, while the modern signalling technology optimises train running and maximises rail line capacity utilisation. The use of single deck rapid transit trains addresses the needs of Sydney's population in the long term.

The NWRL would interface with Sydney's existing public transport network, including trains (direct interchange at existing stations at Epping and Chatswood), buses at all stations, and T-Way services at Rouse Hill, Kellyville and Bella Vista stations.

At Chatswood customers would be able to interchange (cross the platform) with the existing rail network. Train services would be organised to ensure customer interchange waiting time is minimised. It is expected there would be a train every three minutes from Chatswood to the city during peak times. Regular services to / from the city in the off peak would be provided. The North Shore service would be increased, up to at least 20 trains per hour during the peak.

The NWRL alignment and design accommodates a connection with any future Parramatta to Epping Rail Link north of Epping.

b. Rapid transit trains would operate on the NWRL from Cudgegong Road through to Chatswood. At Chatswood customers would be able to interchange (cross the platform) with the existing rail network. Train services would be organised to ensure customer interchange waiting time is minimised. It is expected there would be a train every three minutes from Chatswood to the city during peak times. Regular services to / from the city in the off peak would be provided. The North Shore service would be increased, up to at least 20 trains per hour during the peak.

Emergency management procedures would be in place for all stations and for the rail network, with alternative transport options to be made available in the event of emergencies. The use of existing heavy rail on new rapid transit rail sections in the event of emergencies or breakdowns would have no clear benefit and would not be possible.

Planning for an extension to the city and a second harbour crossing is in the early stages and would be subject to future planning approval processes.

Customer interchanging at Epping will need to use the lifts / escalators to change between NWRL and Northern Line services. Northern Line services via Strathfield to the city would continue to operate with simplified timetables and improved frequencies.

c. Passengers travelling from stations between Hornsby and Epping to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies.

Passengers travelling from stations between Hornsby and Epping to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes in peak periods. At Chatswood customers would be able to interchange (cross the platform) with the existing rail network. Train services would be organised to ensure customer interchange waiting time is minimised. It is expected there would be a train every three minutes from Chatswood to the city during peak times. Regular services to / from the city in the off peak would be provided. The North Shore service would be increased, up to at least 20 trains per hour during the peak.

The trip from Beecroft to Epping is currently approximately 5 minutes. A trip from Epping to Wynyard, travelling on the NWRL and including interchange, is expected to take no more than 40 minutes, which is equivalent to the current travel time.

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

A trip from Beecroft or Cheltenham to Wynyard via Strathfield on the future Main North suburban network (on one train) can not be estimated at this stage. However, Stage 1 of Sydney's Rail Future will see a timetable overhaul to introduce standardised and regular 'clockface' stopping patterns, more express services.

The requirement to interchange within an integrated public transport system is not uncommon and completely compatible with modern customer expectations.

Single deck rapid transit trains travel faster than the double deck trains, allow passengers to get on and off more efficiently than double deck trains, and the modern signalling technology optimises train running and maximises rail line capacity utilisation. The use of single deck rapid transit trains addresses the needs of Sydney's population in the long term.

d. Rapid transit trains would operate on the NWRL from Cudgegong Road through to Chatswood. Options for the interchange location between NWRL and existing Sydney rail services were explored. At Chatswood customers would be able to interchange (cross the platform) with the existing rail network. During peak periods a train would arrive every three minutes from Chatswood to the city.

As the Epping to Chatswood Rail Link and platforms at Epping are located underground, the interchange between NWRL and existing Sydney rail services would involve customers using lifts / escalators to change between services. This is a more complex interchange and would increase journey times.

e. Passengers travelling from Beecroft or Cheltenham to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simplified timetables and improved frequencies.

Passengers travelling from Beecroft or Cheltenham to destinations such as Chatswood, Macquarie Park and North Sydney would have the option of using the NWRL from Epping (interchanging from the Northern Line). The NWRL will provide a "turn up and go" service, with trains every five minutes. Peak period services on the North Shore Line will increase from the current 18 trains per hour to at least 20 trains per hour (prior to a new Harbour Crossing) with the ability to interchange at Chatswood for a trip to Epping. At Chatswood customers would be able to interchange (cross the platform) with the existing rail network. Trains will be organised to ensure passengers only wait a few minutes to switch from a NWRL train to another train towards the city in peak periods.

The trip from Beecroft to Epping is currently approximately 5 minutes. A trip from Epping to Wynyard, travelling on the NWRL and including interchange, is expected to take no more than 40 minutes, which is equivalent to the current travel time.

Stage 4 of Sydney's Rail Future will see completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.

The actual travel time for a trip from Beecroft or Cheltenham to Wynyard via Strathfield on the future Main North suburban network (on one train) cannot be estimated at this stage until final timetables and service stopping patterns are confirmed. However, Stage 1 of Sydney's Rail Future will see a timetable overhaul to introduce standardised and regular 'clockface' stopping patterns, more express services.

The requirement to interchange within an integrated public transport system is not uncommon and completely compatible with modern customer expectations.

f. The NSW Government considered up to 15 different options for the future of Sydney's rail system and an independent single deck rapid transit option was overall the best option. The strategic decision framework applied by the NSW Government is documented in the *Sydney Rail Future Modernising Sydney Trains* (NSW Government, June 2012).

The NWRL would add to the existing public transport options available and it would be fully and seamlessly integrated with other transport modes including the existing rail network. Changes to the existing Illawarra line and freight trains do not form part of the NWRL project. Any future changes on this line would be subject to a separate assessment and planning approval process.

g. The NSW Government considered up to 15 different options for the future of Sydney's rail system and an independent single deck rapid transit option was overall the best option. The strategic decision framework applied by the NSW Government is documented in the *Sydney Rail Future Modernising Sydney Trains* (NSW Government, June 2012).

The NWRL would add to the existing public transport options available and it would be fully and seamlessly integrated with other transport modes including the existing rail network. Changes to the existing facilities and rail lines at Lidcombe, Cabramatta or Bankstown do not form part of the NWRL project. Any future changes in these locations would be subject to a separate assessment and planning approval process.

h. Single deck rapid transit trains travel faster overall than the double deck trains, and allow passengers to get on and off more efficiently than double deck trains,while the modern signalling technology optimises train running and maximises rail line capacity utilisation. The use of single deck rapid transit trains addresses the needs of Sydney's population in the long term.

The NWRL will be fully integrated into Sydney's public transport network providing a reliable service for approximately 400,000 residents in the north west.

Sydney's Rail Future is a plan to transform and modernise Sydney's rail system. Sydney's Rail Future provides the strategic context for the NWRL and its relationship to the rest of the Sydney rail system.

Sydney's rail system needs to be modernised. The challenge posed by the complex ageing system means that the current network cannot grow sufficiently to meet forecast demand. The current network does not deliver what customers want – shorter journey times and services that are more regular, more reliable and tailored to different customer needs.

In line with the approach of focusing specifically on the different needs of customers, Sydney's Rail Future will deliver a three-tiered system to respond to changing customer needs.

TIER 1: Rapid Transit:

- Frequent 'turn up and go' services without the need for consulting a timetable.
- Fast single deck trains with plenty of seats and more doors, designed for easy boarding and alighting.
- TIER 2: Suburban:
- Timetabled services.
- Double deck trains with more seats per train.
- TIER 3: Intercity:

- ❖ Timetabled services.
- ❖ Double deck trains for Central Coast, Newcastle, Wollongong and Blue Mountains services.
- ❖ Comfortable services for long distance commuting and leisure travel with on-board facilities for improved customer convenience.

Rapid transit services, initially 12 trains per hour during peak periods (a train every five minutes in peak periods), will be operated with new generation single deck trains, advanced signalling and dedicated track. Over time, as demand increases, service frequency could increase up to 20 trains an hour – or one every three minutes.

The NWRL will introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. Sydney will also have a second crossing under the Harbour linking to a new CBD line and new stations, which will use rapid transit services that will also eventually operate on the Bankstown line and to Hurstville on the Illawarra line.

This plan will eventually enable Sydney Trains to carry another 90,000 to 100,000 people per hour in the peak.

The NWRL will deliver the required infrastructure (including tunnels) to support single deck trains and advanced signalling.

The NWRL and future Tier 1 Rapid Transit network will be physically separated from other Suburban and Intercity services (Tier 2 and Tier 3 respectively) that will operate with double deck trains.

i. The NWRL will be fully integrated into Sydney's public transport network providing a reliable service for approximately 400,000 residents in the north west.

Sydney's Rail Future is a plan to transform and modernise Sydney's rail system. Sydney's Rail Future provides the strategic context for the NWRL and its relationship to the rest of the Sydney rail system.

Sydney's rail system needs to be modernised. The challenge posed by the complex ageing system means that the current network cannot grow sufficiently to meet forecast demand. The current network does not deliver what customers want – shorter journey times and services that are more regular, more reliable and tailored to different customer needs.

In line with the approach of focusing specifically on the different needs of customers, Sydney's Rail Future will deliver a three-tiered system to respond to changing customer needs.

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- ❖ Timetabled services.
- ❖ Double deck trains for Central Coast, Newcastle, Wollongong and Blue Mountains services.
- ❖ Comfortable services for long distance commuting and leisure travel with on-board facilities for improved customer convenience.

Rapid transit services, initially 12 trains per hour during peak periods (a train every five minutes in peak periods), will be operated with new generation single deck trains, advanced signalling and dedicated track. Over time, as demand increases, service frequency could increase up to 20 trains an hour – or one every three minutes.

The NWRL will introduce single deck, rapid transit trains on the Epping to Chatswood Rail Link. Sydney will also have a second crossing under the Harbour linking to a new CBD line and new stations, which will use rapid transit services that will also eventually operate on the Bankstown line and to Hurstville on the Illawarra line.

This plan will eventually enable Sydney Trains to carry another 90,000 to 100,000 people per hour in the peak.

The NWRL will deliver the required infrastructure (including tunnels) to support single deck trains and advanced signalling.

The NWRL and future Tier 1 Rapid Transit network will be physically separated from other Suburban and Intercity services (Tier 2 and Tier 3 respectively) that will operate with double deck trains.

7.9.6 Taxi access

Stakeholder identification number(s):
180

Issue description

In summary, the respondent raised the following issue:

a. Castle Hill Road is a major arterial link. Provision should be made for kiss-and-ride bays on the south side of Castle Hill Road to service Cherrybrook Station. These facilities form a necessary part of any integrated transport plan for the area, and would ensure less interruption to the flow of traffic along Castle Hill Road.

Response

a. The provision of kiss-and-ride bays along the southern side of Castle Hill Road opposite Cherrybrook Station would require property acquisition, be inaccessible from the station entry, result in pedestrian management issues and potentially adversely impact traffic flow efficiency along Castle Hill Road.

The station access hierarchy presented in Figure 6.6 of EIS 2 shows that kiss-and-ride should be located in relatively close proximity to the station entry.

7.9.7 Kiss-and-ride

Stakeholder identification number(s):
206

Issue description

In summary, the respondent raised the following issue:

a. Castle Hill Road is a major arterial link. Provision should be made for kiss-and-ride bays on the south side of Castle Hill Road to service Cherrybrook Station. These facilities form a necessary part of any integrated transport plan for the area, and would ensure less interruption to the flow of traffic along Castle Hill Road.

Response

a. The provision of kiss-and-ride bays along the southern side of Castle Hill Road opposite Cherrybrook Station would require property acquisition, be inaccessible from the station entry, result in pedestrian management issues and potentially adversely impact traffic flow efficiency along Castle Hill Road.

The station access hierarchy presented in Figure 6.6 of EIS 2 shows that kiss-and-ride should be located in relatively close proximity to the station entry.

7.9.8 Epping-Chatswood Rail Link

Stakeholder identification number(s):
3, 8, 101, 146, 279, 319

Issue description

In summary, respondents raised the following issues:

a. The operation of the proposed NWRL as a single deck line to Chatswood will significantly reduce the attractiveness of the service and the existing line it replaces through Macquarie and North Ryde.

b. EIS 2 provides no information on any changes to the station platforms or elsewhere at the stations from Epping to Chatswood.

c. Concerns that the increase of available trains between Epping and Chatswood will not reduce travel time as passengers must still wait at both Epping and Chatswood Stations for a changeover train.

d. The current Epping to Chatswood line is an already sufficient system and was a welcome network improvement. Why now degenerate this progress for the NWRL project? It should not be impacted by NWRL, particularly as it was commissioned only a few years ago. Concerns that changing the existing route to the proposed option will have adverse impacts.

e. Concerns that the Epping to Chatswood Rail Link will no longer be available as an alternative route to Hornsby in the event of major delays on the North Shore Line.

Response

a. As part of the rapid transit train network, the existing Epping to Chatswood Rail Link would be converted to operate the rapid transit trains. This would provide customers with an efficient and modern train service. The NWRL will provide a "turn up and go" service, with trains every five minutes in peak periods. At Chatswood customers would be able to interchange (cross the platform) with the existing rail network. Train services would be organised to ensure customer interchange waiting time is minimised. It is expected there would be a train every three minutes from Chatswood to the city during peak times. Regular services to / from the city in the off peak would be provided. The North Shore service would be increased, up to at least 20 trains per hour during the peak.

It is also noted that passengers travelling from stations between Hornsby and Epping to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies.

b. No changes to stations or platforms between Epping and Chatswood are proposed as part of the NWRL project.

Any changes, if required, at the stations on the existing ECRL would be subject to a separate assessment and planning approval process.

c. As part of the rapid transit train network the existing ECRL would be converted to operate the rapid transit trains. This would provide customers with an efficient and modern train service. The NWRL will provide a "turn up and go" service, with trains every five minutes in peak periods. At Chatswood customers would be able to interchange (cross the platform) with the existing rail network. Train services would be organised to ensure customer interchange waiting time is minimised. It is expected there would be a train every three minutes from Chatswood to the city during peak times. Regular services to / from the city in the off peak would be provided. The North Shore service would be increased, up to at least 20 trains per hour during the peak.

It is also noted that passengers travelling from stations between Hornsby and Epping to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies.

d. As part of the rapid transit train network the existing ECRL would be converted to operate the rapid transit trains. This would provide customers with an efficient and modern train service. The NWRL will provide a "turn up and go" service, with trains every five minutes in peak periods. At Chatswood customers would be able to interchange (cross the platform) with the existing rail network. Train services would be

organised to ensure customer interchange waiting time is minimised. It is expected there would be a train every three minutes from Chatswood to the city during peak times. Regular services to / from the city in the off peak would be provided. The North Shore service would be increased, up to at least 20 trains per hour during the peak.

It is also noted that passengers travelling from stations between Hornsby and Epping to the CBD will have the option of a direct trip via Strathfield on the suburban network operating with simpler timetables and improved frequencies.

e. The Epping to Chatswood Rail Link will continue to be an important component of the existing rail network and will operate as a rapid transit route. Travel on the Epping to Chatswood Rail Line will continue to be an alternative route to reach the North Shore Line. It is noted, however, that changes would be required between train services at Chatswood and Epping.

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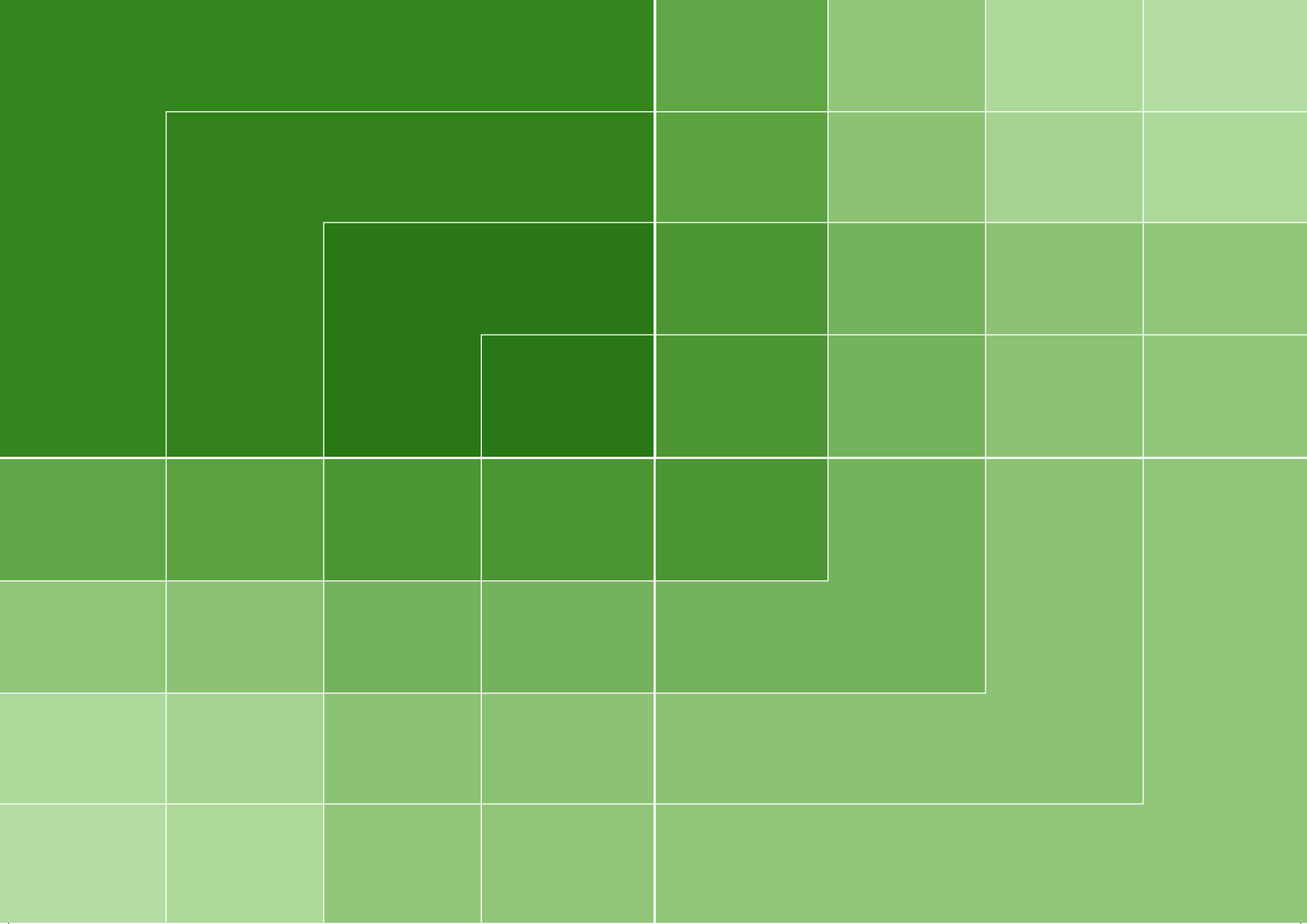


8 Preferred Infrastructure Report

8.1 Overview

Section 115Z(6) of the *Environmental Planning and Assessment Act 1979* enables the preparation of a preferred infrastructure report that outlines any proposed changes to the State significant infrastructure (SSI) to minimise its environmental impact or to deal with any other issue raised during the assessment of the application concerned.

One change is proposed to the project described in EIS 2 to minimise environmental impacts and respond to submissions from stakeholders. This change is for a modified layout and alignment of Bella Vista Station within the footprint described in EIS 2.

This proposed change is described and assessed in detail in Section 8.2.

8.2 Bella Vista preferred design

8.2.1 Description of changes

The change in the design parameters to single deck, high frequency rapid transit trains has created an opportunity to optimise the proposed station and future precinct design. Planning for the future Bella Vista Station has progressed with a view to enhancing station design and precinct layout, thus improving customer and other public benefits.

The preferred design includes the station box relocated parallel to Old Windsor Road, adjacent to a traffic controlled extension of Lexington Drive north of Celebration Drive. Development can be created on the eastern side of the station with the western portion of the precinct dedicated to car-based uses (commuter car park and McDonald's and BP outlets).

In particular the preferred design, as shown on Figure 81 and Figure 82, includes:

- Relocating the rail line and station closer to the Lexington Drive extension.
- Extending the transit activated precinct surrounding the station from the east to include the western side of the proposed station.
- Creating transit oriented development lots with improved activation (safety / surveillance) potential, between Old Windsor Road and the station.
- Facilitating the addition of a second entry to the station thereby improving customer and pedestrian access to the station.
- Facilitating improved pedestrian access on the western side of the station.
- Maintaining a definitive and safe pedestrian activation zone.
- Maintaining similar bus access arrangements and functionality.
- Relocating the car park northwards but still providing station access for park-and-ride customers (half of the car park spaces are located within 200 metres of the northern station entrance).
- Improving access to the evolving transit oriented northern part of the station precinct.
- Providing an additional road bridge over the rail alignment, subject to final car park design, to the north west of the car parks, linking the car parks to the extended Lexington Drive.
- Realigning the access road on the western side of the station, parallel to Old Windsor Road, linking the New Link Road C and the McDonald's and BP sites.

8.2.2 Construction timeframe

Construction activities and timing associated with the station, rail infrastructure and systems would remain generally the same as that described in Chapter 7 of EIS 2. The indicative construction program is repeated in **Table 8.1**.

Table 8.1 Bella Vista Station indicative construction program

Construction activity	Indicative construction timeframe															
	2015				2016				2017				2018			
Station structural works							●	●	●							
Internal walls and architectural finishes							●	●	●	●	●					
Mechanical and electrical fit-out								●	●	●	●					
Precinct works									●	●	●	●	●	●		
Testing and commissioning											●	●				

Figure 8.1 Preferred alignment at Bella Vista Station (station box parallel to Old Windsor Road)

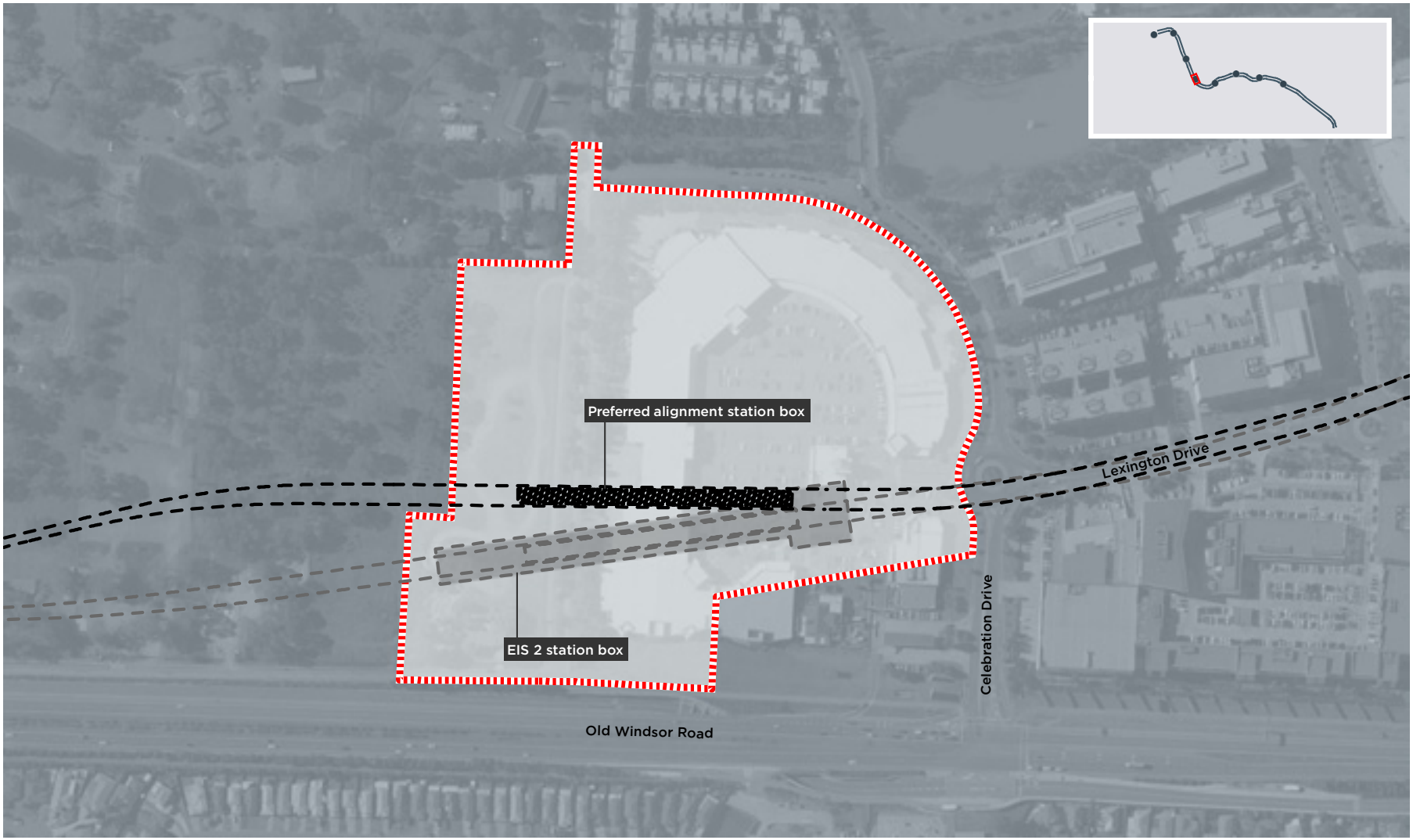
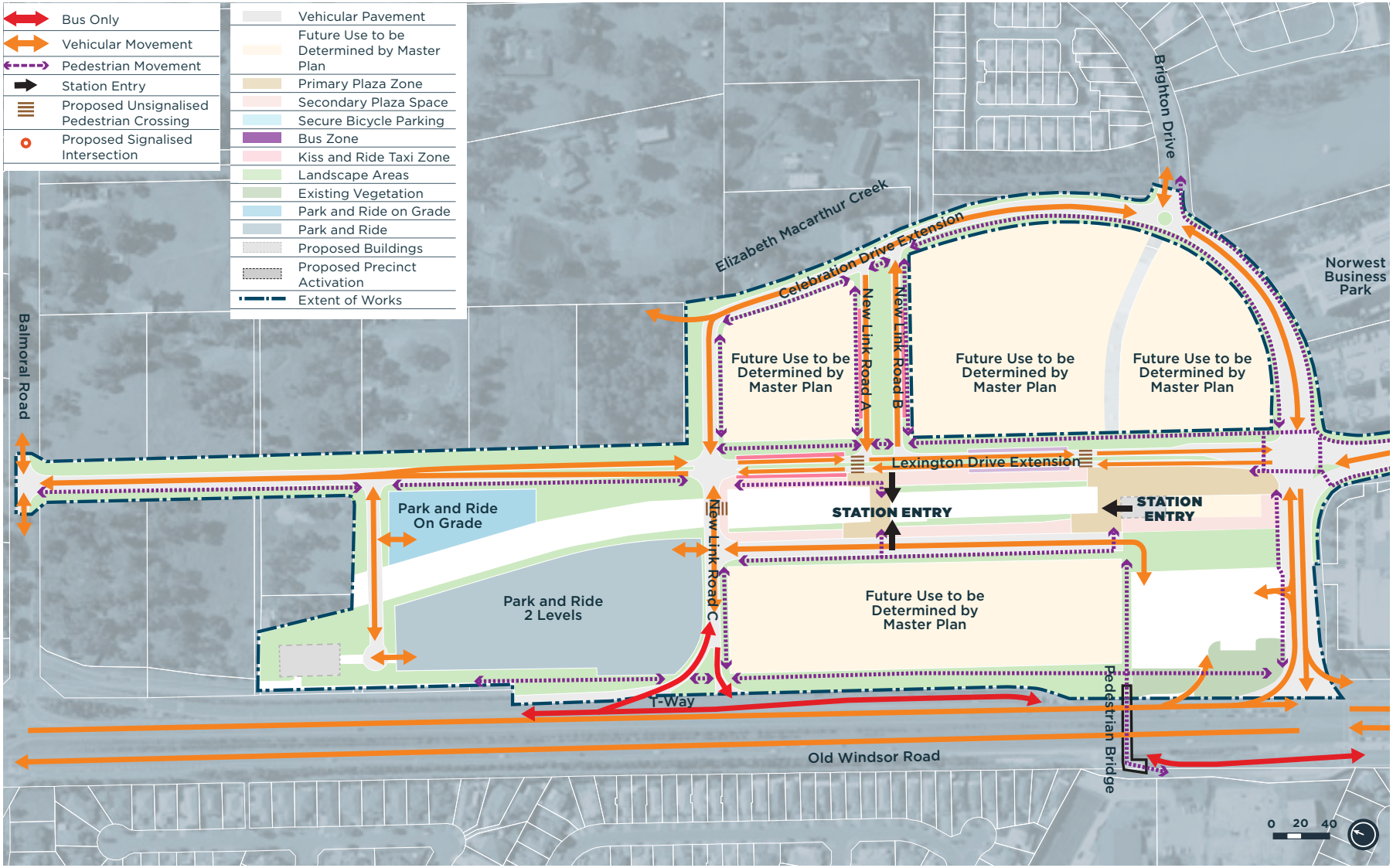


Figure 8.2 Preferred site layout at Bella Vista (indicative)



8.3 Environmental overview of preferred design

In order to assess the potential impacts of the preferred Bella Vista Station design on the environment compared to those as exhibited in EIS 2, an overview of the potential changes was conducted (**Table 8.2**). This assessment considers potential environmental aspects that may require further impact assessment in order to understand likely environmental impacts, and identify any relevant mitigation measures that may be required.

Table 8.2 Bella Vista Station environmental overview of changes

Aspect	Potential change in impacts?	Description
Statutory Planning	✗	No changes.
Soils and Groundwater	✗	There are no consequential changes in the impacts presented in Chapter 8 of EIS 2. A revised assessment is not considered necessary.
Traffic and Transport – Construction	✗	There are no consequential changes in the construction traffic related impacts presented in Chapter 9 of EIS 2 as there would be no change in construction access points or construction vehicle numbers. A revised assessment is not considered necessary.
Traffic and Transport – Operation	✓	There are potential changes in the impacts presented in Chapter 9 of EIS 2, related to operational traffic and transport issues. Accordingly a revised assessment is included in Section 8.4.
Noise and Vibration – Construction	✓	There are potential changes in the impacts presented in Chapter 10 of EIS 2, related to construction noise and vibration issues. Accordingly a revised assessment is included in Section 8.5.
Noise and Vibration – Operation	✓	There are potential changes in the impacts presented in Chapter 10 of EIS 2, related to operational noise and vibration issues. Accordingly a revised assessment is included in Section 8.5.
European Heritage	✗	There are no consequential changes in the impacts presented in Chapter 11 of EIS 2 as there would be no change to the overall project footprint. A revised assessment is not considered necessary.
Indigenous Heritage	✗	There are no consequential changes in the impacts presented in Chapter 12 of EIS 2 as there would be no change to the overall project footprint. A revised assessment is not considered necessary.
Local Business Impacts	✓	There are potential changes in the impacts presented in Chapter 13 of EIS 2. These changes relate to potential beneficial impacts to McDonald's and the BP service station. Accordingly a revised assessment is included in Section 8.6.

Aspect	Potential change in impacts?	Description
Land Use and Community Facilities	✓	There are potential changes in the impacts presented in Chapter 14 of EIS 2, related to the increased future development opportunities between the station alignment and Old Windsor Road. Accordingly a revised assessment is included in Section 8.7.
Ecology	✗	There are no consequential changes in the impacts presented in Chapter 15 of EIS 2 as there would be no change to the overall project footprint. A revised assessment is not considered necessary.
Visual Amenity	✗	The relocation of the station box further north east, increases the distance between the station and local businesses and residents to the west of the alignment, thereby reducing any potential visual impacts. As this change is minor and would be beneficial to those presented in Chapter 16 of EIS 2, it was determined that further assessment is not required.
Climate Change and Greenhouse Gas Emissions	✗	There are no consequential changes in the impacts presented in Chapter 17 of EIS 2. The proposed change would not result in any changes to the scope of construction or operational activities. A revised assessment is not considered necessary.
Surface Water and Hydrology	✗	There are no consequential changes in the impacts presented in Chapter 18 of EIS 2 as the general construction and operational site activities are unchanged. A revised assessment is not considered necessary.
Other Issues (Waste Management and Air Quality)	✗	There are no consequential changes in the impacts presented in Chapter 19 of EIS 2 as the general construction and operational site activities are unchanged. A revised assessment is not considered necessary.
Cumulative Impacts	✗	There are no consequential changes in the cumulative impacts, including those arising from operational traffic and construction and operational noise presented in the Chapter 20 of EIS 2 as the general construction and operational site activities are unchanged. Potential is created for broader improvements on the local traffic network. A revised assessment is not considered necessary.

An assessment of changes for those environmental aspects determined to have a consequential change in impact is provided below.

8.4 Operational traffic and transport impacts

The revised operational traffic and transport impacts are based on the realignment of Balmoral Road / Miami Street as described in Chapter 2.

The following sections provide a detailed assessment of the EIS 2 impacts and the revised impacts.

8.4.1 Summary of EIS 2 impacts

Intersection Performance

The existing intersection performances without the NWRL and the anticipated intersection performances with the NWRL as analysed in EIS 2 are shown in **Table 8.3**.

Table 8.3 AM Peak Hour Intersection Performance (EIS 2)

Location	Without NWRL		With NWRL	
	LoS*	DoS**	LoS*	DoS**
Old Windsor Road / Celebration Drive	F	1.32	F	1.70
Celebration Drive / Lexington Drive / Lexington Drive extension	C	0.61	C	0.68

LOS – Level of Service
DOS – Degree of Saturation
* Overall intersection performance
** Worst performing lane

The key findings are as follows:

- The Old Windsor Road / Celebration Drive intersection operates above existing capacity with or without the NWRL. The congestion is primarily a result of general traffic growth.
- The Celebration Drive / Lexington Drive extension intersection is predicted to operate well within capacity and to a satisfactory Level of Service.

Buses

Existing bus routes in the area surrounding the site are largely confined to the T-Way which runs adjacent to Old Windsor Road. Two services connect from Norwest Boulevard to Lexington Drive and Brighton Drive adjacent to the construction site. None of these services would need to be re-routed during the construction period.

The Celebration T-Way station on the western side of Old Windsor Road, directly opposite Celebration Drive, would continue to operate as normal during the station construction.

Pedestrians and cyclists

The major pedestrian movements are anticipated to be south of the station towards the commercial area and west of the station to residential areas. In order to facilitate these movements the following pedestrian facilities would be provided:

- Pedestrian crossing on all legs of the Celebration Drive / Lexington Drive intersection as part of the signalisation works (subject to RMS approval).
- Retention of the pedestrian crossings at the southern and eastern legs of the Celebration Drive / Old Windsor Road intersection.
- Retention of pedestrian paths along Celebration Drive, Lexington Drive and Old Windsor Road.
- Pedestrian bridge across Old Windsor Road.

Parking, Taxis and kiss-and-ride

Bella Vista Station would include 800 park-and-ride spaces with access via the Lexington Drive extension. On-street parking would also be available on the Lexington Drive extension north of the station and 16 short term (kiss-and-ride) parking spaces would be provided on both sides of Lexington Drive extension close to the station entry.

Parking in the vicinity of the construction site is in the form of unrestricted, on-street parking in the residential areas to the west and east of the construction site and private parking in commercial buildings to the south of the site.

Most on-street parking would not be affected by construction activities.

8.4.2 Summary of revised impacts

Intersection Performance

The changes to the capacity and layout of the Celebration Drive / Lexington Drive intersection allow the following:

- 30 metre long right turn bay in Celebration Drive (east) to accommodate right turn movement into the Lexington Drive extension (station access road).
- 40 metre long right turn bay in the Lexington Drive extension to accommodate movement into Celebration Drive (west).
- Dual right turn bays in Celebration Drive (west) to accommodate existing heavy AM peak movements into Lexington Drive (south).
- A short left turn lane in Celebration Drive to accommodate movements into the Lexington Drive extension north (station access road).
- Dual left turn lanes in Lexington Drive to accommodate the heavy PM peak movements into Celebration Drive (west).
- A short through lane and a 40 metre long right turn bay in Lexington Drive (south) to accommodate northbound access to the Lexington Drive extension (station access road) and Celebration Drive (east).
- Pedestrian crossing on all legs of the intersection.

The traffic and transport assessment has been undertaken on the assumption that the intersections of Balmoral Road and Miami Street with Old Windsor Road are realigned to accommodate an all movements four -way intersection. Details regarding the realignment of Miami Street and Balmoral

Road are in Chapter 2 Clarification. It should be noted that a comparison between the operation of two T-intersections (Balmoral Road / Old Windsor Road and Miami Street / Old Windsor Road) and an all movements 4-way intersection (Balmoral Road / Old Windsor Road / Miami Street) is not feasible as the functionality of these different intersection types cannot accurately be compared.

The results of the traffic assessment are presented in **Table 8.4**.

Table 8.4 AM Peak Hour Intersection Performance (Revised)

	Exhibited EIS 2 Outputs		Revised Outputs	
Location	**Without NWRL 2021**		**NWRL Revised Forecasts 2021**	
	LOS*	**DoS****	**LoS***	**DoS****
Old Windsor Road / Celebration Drive	F	1.32	B	0.8
Celebration Drive / Lexington Drive / Lexington Drive extension	C	0.61	E	0.9

LOS – Level of Service
DOS – Degree of Saturation
* Overall intersection performance
** Worst performing lane

The key findings of the analysis are as follows:

- Forecast intersection performance is impacted by the forecast background traffic volumes through the key intersections, particularly along the Old Windsor Road corridor.
- In 2021, modelling results indicate that the station precinct intersection of Old Windsor Road / Celebration Drive operates significantly better in the AM peak than existing, improving from Level of Service F to Level of Service B.
- In 2021 forecast AM peak hour volumes southbound along the Lexington Drive extension to the north of New Link Road C (near the commuter car park) are forecast to be about 600 vehicles per hour two way, and, in the PM, the peak hour total forecast flows are about 650 vehicles per hour two way.
- The analysis reaffirms that the introduction of the Lexington Drive extension to link Celebration Drive and Balmoral Road relieves peak period congestion at the intersections of Celebration Drive / Lexington Drive and at Old Windsor Road / Celebration Drive. The changes also provide the capacity required to accommodate forecast traffic activity in the vicinity of the proposed station in 2021.

The intersection of Lexington and Celebration Drives will deteriorate in Level of Service in the AM peak from C to E.

The analysis along Old Windsor Road / Windsor Road shows that deterioration in intersection performance along this route is a result of forecast significant increases in background traffic growth, stemming from planned residential and industrial land releases across the north west sector in the 2013-2021 period.

Additionally, the Bureau of Transport Statistics analysis shows that in 2021 the introduction of the NWRL could reduce car trip generation by about 12,000 (2hr AM peak) or about 14 million fewer car trips annually. These trip reductions will occur regionally but will also have benefits for the local network in the vicinity of Bella Vista. By 2036 the corresponding reduction could be about 18,000 fewer car trips (2hr AM peak) resulting in almost 20 million fewer car trips annually.

Buses

The revised traffic arrangements accommodate efficient and safe bus access between the T-Way carriageway and the station precinct via New Link Road C. Peak period traffic volumes in New Link Road C are anticipated to be about 350 vehicles per hour of which about 10% or 35 vehicles would be buses entering or leaving the T-Way. Through traffic volumes along the Lexington Drive extension would be about 600 vehicles per hour. These volumes do not warrant the signalisation of the intersection of New Link Road C and Lexington Drive extension which, at opening, will be a priority controlled intersection with Give Way signs in New Link Road C. Signalisation of this intersection may be required in the future.

Regarding southbound bus access, buses would turn left off the T-Way carriageway, head east along New Link Road C, turn right into the Lexington Drive extension, head south along this road and stop in the kerbside bus bay (eastern side) to pick up and set down patrons. The bus would depart the bus bay, continue south along the Lexington Drive extension and either continue south along Lexington Drive towards Norwest or turn left into Celebration Drive to continue towards Bella Vista Waters. Northbound bus movements would be the reverse of the above.

In addition, bus access from Glenwood via Miami Street and Balmoral Road onto the Lexington Drive extension would be provided.

Pedestrians and Cyclists

The orientation of the station box parallel to the adjacent Lexington Drive extension improves pedestrian and cyclist accessibility between the station entry and the multi modal kerbside pick up and set down zones (kiss-and-ride and taxi areas). The confirmed second station entry improves overall accessibility of the Bella Vista Station from surrounding employment and residential areas. Conversely, the location of the commuter car parking to the northern side of New Link Road C would slightly increase the distance commuter car parking patrons will need to walk to access the station. This impact would be mitigated by:

- Providing two station entries, one located at the northern end of the station and one at the southern end. The distance between the car park and the northern station entry would be approximately 150 metres and approximately 250 metres to the southern station entry, depending on the location of the car space within the car park.
- At the priority controlled intersection of New Link Road C and Lexington Drive extension a marked foot (zebra) crossing will be provided (western side) to accommodate the pedestrian movements between the commuter car park and the station precinct.

East-west pedestrian and cyclist access across the Lexington Drive extension is proposed to be controlled by two raised threshold marked foot crossings that can be converted to signalised pedestrian crossings should traffic or pedestrian volumes increase above those currently predicted.

Parking

The consolidation of all 800 commuter car spaces to the northern side of New Link Road C has the following benefits:

- Reduces traffic volumes along that section of the Lexington Drive extension (station access road) south of New Link Road C. Traffic will still be able to enter the car park from the south via the Lexington Drive extension and New Link Road C. The creation of the all movements intersection at Old
  Windsor Road / Balmoral Road / Miami Street and the extension of Lexington Drive to Balmoral Road will facilitate easier access to / from the main station catchments to the north, west and north east.
- Reduces traffic volumes in the section of the station access road immediately adjacent to the station. This facilitates safer and less congested multi modal access for pedestrians, buses, kiss-and-ride and taxis.
- Removes the need for the provision of a dedicated car park left turn lane access road off Old Windsor Road with consequent traffic flow efficiency and safety benefits for through traffic along the arterial road. Traffic will access the car parks from Old Windsor Road via New Link Road C.
- Facilitates better and more economic use of higher value land located adjacent to the station.
- Improves way finding.

The revised arrangements at Bella Vista Station also provides for a new east-west link road and bridge crossing of the NWRL in the northern section of the precinct, providing access to and from the relocated commuter car parking the benefits of which include:

- Provision of another point of ingress and egress to the commuter car park thereby enhancing peak period access to / from the car park.
- Minimising traffic volumes along the eastern section of New Link Road C which facilitates safer and less congested bus access to and from the T-Way.

Realigned north-south link road on western side of station

The realignment of the north-south link road along the western side of the realigned station box would maintain access to the McDonald's / BP site from the New Link Road C and would:

- Provide both BP and McDonald's patrons with the option of egressing to the north via New Link Road C and the Lexington Drive extension without the need to access Celebration Drive and its intersection with Lexington Drive.
- Provide both BP and McDonald's patrons with the option of accessing these sites from the north via Old Windsor Road without the need to travel along the station access road south of New Link Road C or having to use Celebration Drive and the intersection with Lexington Drive.
- Facilitate access to and from land uses on the development area bounded by New Link Road C, Old Windsor Road, McDonald's and the proposed new north-south road.

8.4.3 Conclusion

The proposed modifications to the alignment and layout at Bella Vista Station would result in an improved station precinct. Existing and forecast delays at key intersections would be mitigated by increasing capacity at and in the vicinity of the Celebration Drive / Lexington Drive intersection and by realignment of the Old Windsor Road / Miami Street / Balmoral Road intersection to create an all movements four way intersection (refer Chapter 2).

The relocation of the commuter car park to the northern side of New Link Road C would slightly increase the distance commuter car parking patrons would need to walk to access the station platform. This would be mitigated by providing two station entries and by accommodating pedestrian access at the priority controlled intersection of the New Link Road C and Lexington Drive extension via a marked foot crossing (western side).

A summary of the potential traffic and transport impacts from EIS 2, the revised impacts and the potential change in impacts is provided in **Table 8.5**.

Table 8.5 Change in operational traffic and transport impacts at Bella Vista Station

Element	EIS 2 impact	Revised impact	Change in impact
Intersection performance	❖ The NWRL would not have a significant adverse impact on intersections. ❖ The Old Windsor Road / Celebration Drive intersection would operate above capacity primarily from general traffic growth.	❖ The NWRL would not have a significant adverse impact on intersections. ❖ Improved Level of Service at the Old Windsor Road / Celebration Drive intersection. ❖ Slight deterioration in Level of Service at the Celebration Drive / Lexington Drive intersection.	❖ Improvement of Level of Service at the intersection of Old Windsor Road / Celebration Drive during the AM peak. ❖ Deterioration in Level of Service at the Celebration Drive / Lexington Drive intersection in the AM peak.
Buses	❖ None of the bus routes along the T-Way would need to be re-routed during the construction period. ❖ The Celebration T-Way station on the western side of Old Windsor Road, directly opposite Celebration Drive, would continue to operate as normal.	❖ None of the bus routes along the T-Way would need to be re-routed during the construction period. ❖ The Celebration T-Way station on the western side of Old Windsor Road, directly opposite Celebration Drive, would continue to operate as normal. ❖ The revised traffic arrangements accommodate efficient and safe bus access between the T-Way carriageway and the station precinct via New Link Road C. ❖ Improved bus access from Glenwood to Bella Vista Station.	❖ Improved bus access between the T-Way carriageway and the station precinct via New Link Road C. ❖ Improved bus access from Glenwood to Bella Vista Station.

Element	EIS 2 impact	Revised impact	Change in impact
Pedestrians and cyclists	❖ The major pedestrian movements are anticipated to be south of the station towards the commercial area and west of the station to residential areas. ❖ 40 metre average walk between the commuter car parking and station entry (to potential second station entrance). ❖ Potential second station entrance identified.	❖ Good pedestrian and cyclist accessibility between the station entry and the multi modal kerbside pick up and set down zones. ❖ 200 metre average walk between the commuter car parking and northernmost station entry. ❖ Second station entrance confirmed. ❖ East-west pedestrian and cyclist access across the Lexington Drive extension is proposed to be controlled by two raised threshold marked foot crossings. ❖ North-south pedestrian crossing across the New Link Road C, west of the intersection with Lexington Drive.	❖ Improved pedestrian and cyclist accessibility between station and pick up / set down zones. ❖ Slightly increased distance between the station and the commuter car park. ❖ Improved pedestrian accessibility due to confirmed second station entrance. ❖ Improved east-west pedestrian and cyclist access across the Lexington Drive extension. ❖ Improved north-south pedestrian access across the New Link Road C.
Parking, Taxis and kiss-and-ride	❖ 800 park-and-ride spaces with access via the Lexington Drive extension or directly off Old Windsor Road (southbound). ❖ On-street parking would also be available on the Lexington Drive extension north of the station and 16 short term (kiss-and-ride) parking spaces would be provided on both sides of Lexington Drive extension close to the station entry.	❖ 800 park-and-ride spaces with access via the Lexington Drive extension. All commuter car spaces would be consolidated to the northern side of New Link Road C. ❖ On-street parking would also be available on the Lexington Drive extension north of the station and 16 short term (kiss-and-ride) parking spaces would be provided on both sides of Lexington Drive extension close to the northernmost station entry. ❖ Provision for a new east-west link road and bridge crossing of the NWRL in the northern section of the precinct providing access to and from the relocated commuter car parking.	❖ Reduced traffic volumes along the Lexington Drive extension. ❖ No need for the provision of a dedicated car park left turn lane access road off Old Windsor Road thus improving traffic flows on Old Windsor Road. ❖ Better and more economic use of higher value land located adjacent to the station. ❖ Provision of second ingress and egress to the commuter car park and to kiss-and-ride spaces. ❖ Improved access from Glenwood to the commuter car park and to kiss-and-ride spaces. ❖ Minimised traffic volumes along the eastern section of New Link Road C.
New north-south road on western side of station	❖ N/A	❖ The introduction of a new north-south running link road along the western side of the realigned station box linking the northern boundary of the McDonald's / BP outlets to the New Link Road C.	❖ Improves access and egress for both BP and McDonald's patrons. ❖ Reduced traffic activity on Celebration Drive and the station access road.

8.5 Noise and vibration impacts

The following sections provide a detailed assessment of the EIS 2 noise and vibration impacts and the revised impacts.

8.5.1 Summary of EIS 2 impacts

Airborne Noise – Operation

Following the opening of the NWRL, noise levels with the baseline mitigation measures are predicted to be below the *Interim Guideline for Assessment of Noise from Rail Infrastructure Projects* (IGANRIP) noise trigger levels at the majority of existing receivers.

Ground-borne Vibration – Operation

Compliance with the ground-borne vibration objectives is predicted for all residential receivers and the majority of other sensitive receiver locations above or near the proposed NWRL alignment.

For receivers with highly vibration sensitive equipment, one potential minor exceedances of the design objective has been predicted near Bella Vista Station (Sydney Animal Hospital, 3 Celebration Drive, Bella Vista). However, this establishment would already be subject to relatively high levels of ambient vibration due to its location adjacent to major roads.

Ground-borne Noise – Operation

On the basis of the proposed vertical alignment, ground-borne noise levels are predicted to comply with the ground-borne noise design objectives at all locations.

Airborne Noise – Construction

The predicted noise levels for construction of the station platform, supporting structures and station building construction as well as for the installation of rail systems equipment would comply (by 1 dB) with the Noise Management Levels at the nearest residential and commercial receivers.

The noise level from daytime traffic movements to the site has been predicted to comply with the local road criterion of 55 dBA at residences on Celebration Drive.

Vibration – Construction

For the works proposed for EIS 2, no vibration impacts are predicted for the Bella Vista Station site.

8.5.2 Summary of revised impacts

Airborne Noise – Operation

Both the base case and the proposed modified alignment result in trains being predominantly located in a cutting to the north of Bella Vista Station. As the cutting offers significant screening of airborne noise, compliance with the noise trigger levels was predicted at the nearest sensitive receivers.

The elevation of the modified Bella Vista Station vertical alignment would be only marginally higher than the current base case (up to 0.2 metres). This is considered to be of minor acoustic significance. The proposed modified alignment is likely to result in negligible change to the noise impacts at surrounding receivers.

Ground-borne Vibration – Operation

The proposed modified alignment is likely to result in negligible change to the ground borne vibration impacts at surrounding receivers.

Ground-borne Noise – Operation

The proposed modified alignment is likely to result in negligible change to the ground borne noise impacts at surrounding receivers.

Airborne Noise – Construction

The noise and vibration assessment contained in EIS 2 Technical Paper 3 predicted worst case noise and vibration impacts for works at the Bella Vista Station site and included the station platform, support structure and building

construction, as well as the station roof structure. Rail systems works include installation of track work, overhead wiring and station and tunnel ventilation equipment. The proposed modifications at Bella Vista Station would not introduce new construction scenarios to those already assessed in EIS 2.

The revised location of the station box is predicted to result in a marginal increase in predicted construction noise levels in the region of 2 dB at receivers to the east. This increase is considered minor considering that the EIS 2 construction noise assessment showed compliance with the nominated construction Noise Management Levels by 1 dB. This small increase in noise level may therefore result in a marginal exceedance (1dB) of the Noise Management Levels at closest receivers located to the east of the site.

Vibration – Construction

The modified Bella Vista Station site is predicted to result in negligible changes to the construction vibration impacts. No vibration impacts are predicted as a consequence of the revised Bella Vista Station construction.

8.5.3 Conclusion

The proposed modifications to the alignment and layout at Bella Vista Station would result in only minor changes to the predicted noise levels.

Construction noise levels to the east of the site may exceed the Noise Management Levels by1 dB as a result of the station being located closer to receivers. This increase is considered to be marginal and is not likely to be noticeable to the nearest residences. Consistent with the recommendations in EIS 2, any exceedances of the construction Noise Management Levels would need to be managed by contractors in accordance with the Construction Noise and Vibration Strategy developed by the NWRL project team.

No additional operational noise or vibration impacts are predicted as a result of the proposed modifications to alignment and layout at Bella Vista Station. Whilst there would be changes in impacts to those presented in EIS 2 these are anticipated to be negligible, therefore no additional mitigation measures to those identifies in EIS 2 are required.

A summary of the potential noise and vibration impacts from EIS 2, the revised impacts and the potential change in impacts is provided in **Table 8.6**.

Table 8.6 Change in noise and vibration impacts at Bella Vista Station

Element	EIS 2 impact	Revised impact	Change in impact
Airborne Noise – Operation	Noise levels with the baseline mitigation measures are predicted to be below the IGANRIP noise trigger levels at the majority of existing receivers.	Noise levels with the baseline mitigation measures are predicted to be below the IGANRIP noise trigger levels at the majority of existing receivers.	Negligible change
Ground-borne Vibration – Operation	Compliance is predicted for all residential receivers and the majority of other sensitive receiver locations.	Compliance is predicted for all residential receivers and the majority of other sensitive receiver locations.	Negligible change
Ground-borne Noise – Operation	Compliance with the ground-borne noise design objectives at all locations.	Compliance with the ground-borne noise design objectives at all locations.	Negligible change
Airborne Noise – Construction	The predicted noise levels for construction of the station platform, supporting structures and station building construction, and installation of rail systems equipment would comply (by 1 dB) with the Noise Management Levels at the nearest residential and commercial receivers.	The predicted noise levels for construction of the station platform, supporting structures and station building construction, and installation of rail systems equipment would exceed the Noise Management Levels by 1 dB at the nearest receiver to the east.	Minor increase (2dB) at receivers to the east, resulting in a 1dB exceedance
Vibration – Construction	No vibration impacts are predicted for the Bella Vista Station site.	No vibration impacts are predicted for the Bella Vista Station construction.	Negligible change

8.6 Local business impacts

The following sections provide a detailed assessment of the EIS 2 local business impacts and the revised impacts.

8.6.1 Summary of EIS 2 impacts

Business survey

A sample count of local businesses in the vicinity of Bella Vista Station was undertaken to identify which businesses may be impacted by the works. Two local businesses along Old Windsor Road were identified as being likely to be impacted during the construction and operation of Bella Vista Station. These businesses are:

- McDonald's.
- BP service station.

There are also low rise commercial businesses along Celebration Drive.

Potential impacts during operation

The potential impacts described and assessed in EIS 2 which may arise around Bella Vista Station during operation include:

- Establishment of new commercial businesses in surrounding areas due to the increased connectivity and accessibility, which may result in enhanced competition for incumbents if similar businesses were established.
- The potential for the Norwest Business Park to extend further north would add further incentive for new businesses to relocate to Bella Vista to complement the surrounding services. This demand for property spaces may increase for new and incumbent commercial businesses operators at Bella Vista.
- The McDonald's and BP service station may experience increased passing traffic due to the proximity to the station and hence increased demand for goods and services.
- Improved network connectivity that would enable the enhanced movement of people, greater geographical concentration and clustering of businesses and employees, which would complement the development of the Norwest Business Park.

Potential impacts during construction

The potential impacts described and assessed in EIS 2 which may arise around Bella Vista Station during construction include:

- Requirement of a workforce of approximately 20 full time employees. Further jobs such as suppliers of materials for the construction workforce would also be indirectly created by the project.
- Alterations to the McDonald's and BP service station access during construction works.
- The McDonald's and BP service station may experience increased passing traffic resulting from the construction workforce and hence increased demand for goods and services.

8.6.2 Summary of revised impacts

A revised assessment of local business impacts has been undertaken and is presented below.

Potential impacts during operation

The impacts associated with the modified Bella Vista Station layout and alignment during operation would be largely consistent with those described in EIS 2 and would include:

- Benefits associated with the potential for new commercial businesses to establish themselves in surrounding areas.
- Increased demand for goods and services at the McDonald's and BP service station.

In addition, as the existing principal access from Celebration Drive to the McDonald's and BP service station would be maintained and the existing McDonald's car park would not be reduced or altered, access and parking for these businesses would be improved from the proposed EIS 2 outcomes.

Potential impacts during construction

The impacts associated with the modified Bella Vista Station layout and alignment during construction would be largely consistent with those described in EIS 2 and would include:

- The creation of direct and indirect jobs during construction.
- Increased passing traffic resulting from the construction workforce and hence increased demand for goods and services at the McDonald's and BP service station.

In addition, as the existing access and parking for the McDonald's and BP service station would be maintained during construction, this would result in benefits over those impacts described in EIS 2.

8.6.3 Conclusion

The modifications to the layout and alignment at Bella Vista Station would result in benefits over the impacts described in EIS 2 on the surrounding local businesses, in particular the McDonald's and BP service station. These benefits are primarily a result of the maintenance of the existing access and car park facilities for these two businesses.

A summary of the potential impacts to local businesses from EIS 2, the revised impacts and the potential change in impacts is provided in **Table 8.7**.

Table 8.7 Change in local business impacts at Bella Vista Station

Element	EIS 2 impact	Revised impact	Change in impact
Number of businesses impacted	Two existing businesses along Old Windsor Road.	Two existing businesses along Old Windsor Road.	No additional businesses would be impacted.
Operational impacts	Benefits associated with the potential for new commercial businesses to establish in surrounding areas and for increased demand for goods and services at the McDonald's and BP service station.	Benefits associated with the potential for new commercial businesses to establish in surrounding areas and for increased demand for goods and services at the McDonald's and BP service station. Retention of access and parking for McDonald's and the BP service station.	Beneficial impacts associated with improved access to McDonalds and the BP service station compared to EIS 2 outcomes.
Construction impacts	Creation of jobs during construction. Access to McDonald's and the BP service station would be altered during construction. Potential positive impacts associated with workforce utilising local businesses in proximity to the construction site.	Creation of jobs during construction. Reduced impact to access and parking for McDonald's and the BP service station during construction (compared to EIS 2). Potential positive impacts associated with workforce utilising local businesses in proximity to the construction site.	Beneficial change to impacts for McDonald's and the BP service station compared to EIS 2 outcomes.

8.7 Land Use and Community Facilities

The following sections provide a detailed assessment of the EIS 2 land use and community facility impacts and the revised impacts.

8.7.1 Summary of EIS 2 impacts

Potential impacts during operation

The potential impacts described and assessed in EIS 2 which may arise around Bella Vista Station during its operation include:

- Implications for Existing Land Use:
  - No adverse land use impacts to the residential area west of the station are anticipated during operation due to the physical barriers of the T-Way and Old Windsor Road.
  - Pedestrian access would be via a pedestrian bridge link over Old Windsor Road.
- Implications for Future Land Use:
  - Urban development to the north has the potential to benefit from the proposed station through transit oriented development.
  - The station would support development in the surrounding area including both business and residential development.
  - The station could create a focus within the area around which an active precinct could develop to provide essential services.
  - Bella Vista Station provides opportunities for new jobs and diverse housing options to meet the region's needs into the future.

Potential impacts during construction

The potential impacts described and assessed in EIS 2 which may arise around Bella Vista Station during construction include:

- Land use and property:
  - It is anticipated that McDonald's would have a portion of its car park temporarily unavailable during construction works.
- Community:
  - No direct impacts on community facilities are anticipated.
  - Community facilities may experience reduced amenity during the construction works.

8.7.2 Summary of revised impacts

A revised assessment of land use impacts has been undertaken and is presented below.

Potential impacts during operation

The impacts associated with the modified Bella Vista Station layout and alignment during operation would be largely consistent with those described in EIS 2 and would include:

- Implications for Existing and Future Land Use:
  - No adverse land use impacts to the residential area west of the station are anticipated during operation due to the physical barriers of the T-Way and Old Windsor Road.
  - Pedestrian access to Glenwood would be via a pedestrian bridge link over Old Windsor Road.
  - The proposed station would support transit oriented development to the north and west.
  - The station would support development in the surrounding area including both business and residential development.
  - The station could create a focus around which an active precinct could develop to provide essential services.

- Bella Vista Station provides opportunities for new jobs and diverse housing options to meet the region's needs into the future.

Potential impacts during construction

The impacts associated with the modified Bella Vista Station layout and alignment during construction would include:

❖ Land use and property:

- The McDonald's car park and existing access would be maintained during the construction works.

❖ Community:

- No direct impacts on community facilities are anticipated.
- Community facilities may experience reduced amenity during the construction works.

8.7.3 Conclusion

The modifications to the layout and alignment at Bella Vista Station would have beneficial impacts on the surrounding land use and community facilities, in particular the McDonald's and BP service station. The station could act as a catalyst for future development between the station alignment and Old Windsor Road on the western side of the alignment.

A summary of the potential impacts to land use and community facilities from EIS 2, the revised impacts and the potential change in impacts is provided in **Table 8.8**.

Table 8.8 Change in land use impacts at Bella Vista Station

Element	EIS 2 impact	Revised impact	Change in impact
Operational impacts	Support residential and business development in the surrounding areas. Provision of new jobs. Precinct activation on the eastern side of the alignment.	Support residential and business development in the surrounding areas. Provision of new jobs. Precinct activation of the western side of the alignment, providing improved surveillance and land use outcomes in addition to activation of the eastern side.	Increase in beneficial impacts through precinct activation on the western side of the alignment.
Construction impacts	McDonald's would have a portion of its car park temporarily unavailable during construction works. No direct impacts on community facilities.	The McDonald's car park and existing access would be maintained during the construction works. No direct impacts on community facilities.	Improved access and parking for the McDonald's and BP service station compared to EIS 2 outcomes.

8.8 Summary and Justification

The modifications to the layout and alignment at Bella Vista Station would result in a number of benefits including:

- An improved station precinct with better circulation and access to station facilities, commuter car parks and residual land.
- Mitigation of existing and forecast delays at key intersections by increasing capacity at and in the vicinity of the Celebration Drive / Lexington Drive intersection.
- Improved access arrangements for surrounding local businesses, in particular the McDonald's and BP service station, resulting from the maintenance of the existing access and car park facilities for these two businesses.
- Potential for early station precinct activation and future development opportunities between the station alignment and Old Windsor Road.

Whilst there would be changes in impacts to those presented in EIS 2, these are anticipated to be minor and as a result no additional mitigation measures to those identified in EIS 2 are required.

The changes would minimise the environmental impact of the SSI and respond to submissions received during the assessment of the application.

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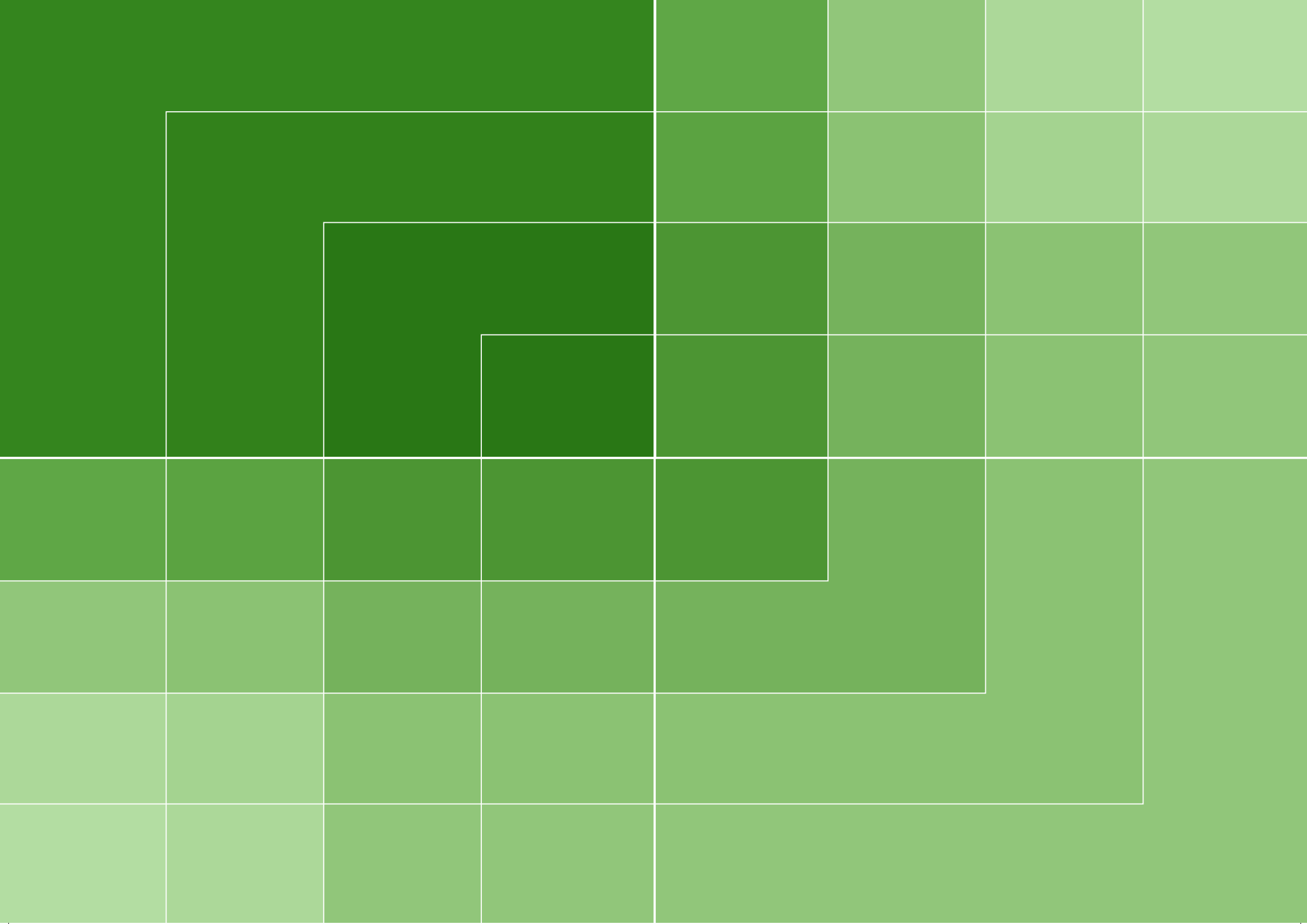

9 Revised Environmental Mitigation Measures

The list of mitigation measures presented in EIS 2 has been revised on the basis of submissions received. In some cases new measures have been added, while in others, the wording of existing measures has been adjusted. One mitigation measure relating to traffic and transport (number T32) has been removed.

The following tables supersede the mitigation measures presented in EIS 2.

New mitigation measures or additions to existing mitigation measures are shown in **bold** text, with deletions shown with a ~~strikethrough~~.

9.1 Soils and Groundwater

Operation

No.	Mitigation Measures	Applicable Sites
Ground Movement		
OpSG1	A post construction monitoring program for ground movement and groundwater levels would be established for the land slip area near Cherrybrook Station.	Cherrybrook Station
Contamination		
OpSG2	Procedures to quickly address any contaminant spill or accident would be developed and implemented during operation of the station sites.	All
Groundwater Management		
OpSG3	Groundwater quality would be subject to testing. Where it does not meet license requirements it would be treated prior to discharge.	All
Groundwater Treatment		
OpSG4	Water treatment of captured groundwater from NWRL is to be treated at the existing water treatment plant located at Lady Game Drive, Lindfield. The incremental increase in volume from the NWRL would be accommodated within the existing capacity of the ECRL facility as long as water quality criteria can be met.	Tunnels
OpSG5	All feasible and reasonable opportunities would be identified for the reuse of captured groundwater.	Tunnels

Construction

No.	Mitigation Measures	Applicable Sites*
Contamination		
SG11	Any contaminated areas directly affected by the project would be investigated and remediated prior to the commencement of construction works. All remediation works would be undertaken in accordance with the requirements of the *Contaminated Land Management Act 1997 and Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (EPA, 1997b).	All
SG12	Prior to the commencement of site preparation or construction in potentially contaminated areas, a summary of soil contamination would be prepared detailing the outcomes of the Stage 2 contamination site investigations. The summary would detail, where relevant, whether or not the soil is suitable for the intended land use or can be made suitable for reuse through the application of a Remediation Action Plan (or similar).	All
SG13	An accredited Site Auditor would endorse the documentation of site contamination and any Remediation Action Plan or similar.	All

No.	Mitigation Measures	Applicable Sites*
SG14	In the event of discovery of previously unidentified area(s) of potentially contaminated material, all work would cease in the vicinity of the discovery and not recommence until the extent of contamination has been assessed and if necessary, a Remediation Action Plan or similar has been prepared and endorsed by an accredited Site Auditor.	All
SG15	A Site Auditor would be required to certify that any contaminated areas have been remediated to a standard consistent with the intended land use prior to operation of the remediated site(s).	All
SG16	Bunds around fuel depots and stockpile areas would be installed to minimise the risk of contaminants reaching the water table.	All
Groundwater Management		
SG17	A groundwater monitoring plan would be prepared for the duration of the construction period. Parameters to be monitored would include groundwater levels and groundwater quality with field parameters, laboratory parameters and sample frequency to be developed prior to construction.	All
SG18	A groundwater monitoring network to monitor groundwater levels and groundwater quality would be established throughout the construction phase. The groundwater monitoring network would contain monitoring wells along the whole NWRL route intersecting groundwater in both Ashfield Shale and Hawkesbury Sandstone.	All
SG19	Water sampling and testing of groundwater would be undertaken during construction to determine the most suitable treatment processes to meet the required water quality standards.	All
SG20	Groundwater quality would be subject to testing. Where it does not meet license requirements it would be treated prior to discharge.	All
SG22	All feasible and reasonable measures would be implemented during construction, to limit operational groundwater inflows to stations and crossovers. Any inflows would be collected and treated prior to discharge.	All
SG24	A groundwater water supply from the Hawkesbury Sandstone for construction purposes would be used where feasible and reasonable. Negotiation with the NOW would be undertaken regarding impacts and applicable licenses.	All

No.	Mitigation Measures	Applicable Sites*
SG25	If ASS are encountered, they would be managed in accordance with the Acid Sulfate Soil Manual (*Acid Sulfate Soil Management Advisory Committee, 1998*)	All
Groundwater Treatment		
SG26	All feasible and reasonable opportunities for groundwater reuse for construction purposes or recycling nearby would be utilised in the first instance. Should groundwater inflows and required treatment volumes outstrip potential for water reuse for construction purposes, options for discharge would be investigated.	All
SG27	Where water salinity is found to be too high for discharge to creeks, brackish water reverse osmosis would be undertaken.	All
SG28	Dissolved iron would typically be removed from discharge water by oxidising the Ferric ion (Fe3+) to Ferrous (Fe2+) which enables precipitation and physical removal.	All
SG29	Water turbidity would typically be treated by settling / filters.	All
SG30	Iron reducing bacteria in discharge water would be typically treated by biocide dosing.	All
SG31	A typical discharge into a natural waterway (where approved) would require a groundwater treatment process that includes the following steps: ❖ Inlet buffer tank, with aeration ❖ Coagulation / flocculation ❖ Dissolved air floatation (solids removal) ❖ Multimedia filtration (25 micrograms) ❖ Cartridge filtration (2 micrograms) ❖ Brackish water reverse osmosis ❖ Disposal of water brine concentrate to sewer (dependent on future environmental policies) ❖ Discharge of adequately treated water (into aquifer of origin, stormwater (creek catchments), sewer under a trade waste agreement, onsite reuse or recycling or a combination of these options).	Sites 1 – 8
SG32	Groundwater discharge quality would comply with the relevant Environment Protection Licence	Sites 1 – 8
SG33	Specific processes regarding groundwater discharge and treatment methods would be identified during detailed design.	Sites 1 - 8

No.	Mitigation Measures	Applicable Sites*
Soil Salinity		
SG34	Appropriate site specific soil salinity mitigation measures would be adopted in accordance with Draft Salinity Code of Practice (Western Sydney Regional Organisation of Councils, 2004) and the *Guidelines to Accompany Map of Salinity Potential in Western Sydney* (DIPNR 2002). These mitigation measures would be included within Sub-Plans to the CEMP at all sites within areas of known risk of soil salinity.	All
SG35	A soil salinity assessment would be undertaken for each high risk site in accordance with the Site Investigations for Urban Salinity (DLWC 2002), including Phase 2 and Phase 3 investigation. This assessment would enable site specific mitigation measures to be developed to ensure saline soils are appropriately managed and damage to the environment and infrastructure is minimised. These investigations would be informed by the completed groundwater monitoring program.	Sites 8, 9, 13 -15
Soil contamination		
SG36	A low concentration of lead was reported east of the proposed station. Further delineation and / or waste classification may be required, if excavation and offsite disposal of soil is to take place in this area, during the construction of Cherrybrook Station.	Site 4
SG37	Showground Station. Further delineation and / or waste classification may be required if excavation and offsite disposal of soil is to take place in this area, during the construction of the Showground Station due to nickel and Polycyclic aromatic hydrocarbons (PAH) impacts and the presence of asbestos fibres.	Site 5
SG38	Further waste classification in the area of Bella Vista Station may be required if excavation and offsite disposal of fill is to take place, during the construction of the Station due to concentrations of nickel in the fill material.	Site 8
SG39	Bella Vista to Rouse Hill (Open Cutting for Bella Vista Dive and skytrain). If excavation for offsite disposal is to take place, additional assessments for waste classification may be required as low TPH and heavy metals impacts were reported in fill samples. Further assessment in this area may be required if disturbance is to take place in this area.	Sites 8-14

No.	Mitigation Measures	Applicable Sites*
SG40	Rouse Hill to Cudgegong Road (Earthworks and Bridges). Should excavation for offsite disposal take place, additional assessments for waste classification may be required as low TPH and phenol impacts were reported in fill samples. Not all of the Areas of Environmental Concern in this area have been specifically targeted, ie individual above-ground storage tanks, farm dams and asbestos in buildings. Additional assessment and waste classification may be required.	Sites 14 -17
SG41	Rouse Hill to Tallawong Stabling (On grade works). Not all of the Areas of Environmental Concern in this area were specifically targeted, ie individual above-ground storage tanks, farm dams and asbestos in buildings. Additional assessment and waste classification may be required.	Sites 14 -17
Groundwater contamination		
SG42	Castle Hill Station. Concentrations of CoPC were generally typical of background concentrations with the exception of trace levels of TPH found in a sample well. Due to this anomaly, further monitoring of the wells within the former service station site would be undertaken during the detailed construction planning stage of the project.	Site 5
SG43	Showground Station. TPH, PAH and phenol impacts were identified. As groundwater in the vicinity of the Hills Shire Depot is likely to be disturbed during construction of the Showground Station, impacts on the construction workers (via dermal contact and inhalation) as well as options for disposal management would be further assessed during the detailed construction planning stage of the project and further delineation, remediation or management would be required.	Site 6
SG44	Norwest Station. TPH impact has been identified. Given that groundwater in the vicinity of the Shell service station is likely to be disturbed during construction of the Norwest Station, impacts on the construction workers (via dermal contact and inhalation) as well as options for disposal management would need to be further assessed during the detailed construction planning stage of the project and further delineation, remediation or management would be required.	Site 7
SG45	Bella Vista Station. Should shallow seepage water be disturbed during construction of Bella Vista Station, further assessment of groundwater in the vicinity of the BP service station would be required owing to TPH and PAH impacts reported at the BP service station.	Site 8

No.	Mitigation Measures	Applicable Sites*
SG46	Bella Vista to Rouse Hill (Open Cutting for Bella Vista Dive and skytrain). If groundwater is to be disturbed, groundwater management may be required due to low concentrations of TPH and PAH reported in this area.	Site 8 - 14
Soil erosion and land surface		
SG47	Soil and land remediation is to occur as soon as practicable following construction. This is to include remediation in stages as the construction process allows.	All

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9.2 Traffic and Transport

Operation

No.	Mitigation Measures	Applicable Sites
OpT1	Advisory and way finding signage would be used to provide multi modal guidance to, from and within the station precincts.	Stations
OpT2	Maximising pedestrian accessibility to the stations with a view to reducing car based travel to and from the stations.	Stations
OpT3	Provision of cycle storage facilities at stations to increase the opportunity and catchment for non-motorised forms of transport to and from the stations.	Stations
OpT4	Provision of commuter car parking at selected stations to reduce total car based trip lengths and encourage the use of rail.	Stations
OpT5	Permanent Variable Message Signs, where feasible and reasonable, would be provided to advise drivers of any potential delays, traffic diversions, speed restrictions, or alternative routes.	Wider road network

Construction

No.	Mitigation Measures	Applicable Sites*
T1	Directional signage and line-marking would be used to direct and guide drivers, cyclists and pedestrians past construction sites and on the surrounding network. This would be supplemented by permanent and portable Variable Message Signs, where reasonable and feasible, to advise drivers of any potential delays, traffic diversions, speed restrictions, or alternative routes.	1 – 17

No.	Mitigation Measures	Applicable Sites*
T2	The public would be notified of proposed traffic changes by newspaper, radio, project web site and other forms of community liaison.	1 – 17
T3	Co-ordination would occur with TfNSW and RMS via the Transport Management Centre's Traffic Operations Manager in the event of incidents or undue congestion.	1 – 17
T4	Management of pedestrian, cyclist and vehicular access to and past construction sites would occur to ensure safe entry and exit procedures. Depending on the location, this may require manual supervision, physical barriers, temporary traffic signals and modification to existing signals or, on occasions, police presence.	1 – 17
T5	Access to existing properties and buildings would be maintained.	1 – 17
T6	Traffic controllers would manage heavy vehicle movements at worksites, and monitor the need for pedestrian control.	1 – 17
T7	All trucks would enter and exit the worksites in a forward direction, where feasible and reasonable.	1 – 17
T8	The management of buses at key transport interchanges such as Castle Hill and Rouse Hill would be reviewed during detailed construction planning to minimise impacts on existing services.	5 and 14
T9	The T-way operations including car parking would be maintained at all times during the construction of the NWRL. This includes maintained existing sight lines to T-way bus stops and within T-way car parks, where possible. Where this is not possible, suitable alternative measures would be implemented (eg CCTV with active surveillance) where reasonable and feasible.	9 – 14
T10	The need for, and provision of, alternative remote parking locations and shuttle bus transfers for daytime and night time construction staff would be considered for all construction sites during detailed construction planning.	1 – 17
T11	Special event bus services for Sydney Olympic Park (Royal Easter Show, and Major Sporting and Entertainment Events) would be managed, in particular, in Carrington Road at the Showground Station site, to ensure minimal disruption.	6
T12	The Traffic and Transport Liaison Group established for the NWRL would consider individual events and any other special event needs, and make reasonable and feasible short-term adjustment to the construction phase activities and / or review and update detailed Construction Traffic Management Plans.	1 – 17

No.	Mitigation Measures	Applicable Sites*
T13	Site traffic would be managed, where reasonable and feasible, to avoid significant movements in the AM peak in the critical southbound direction and in the PM peak in the critical northbound direction on Beecroft Road at Epping.	1
T15	Access would be maintained to sections of the pedestrian bush track at Cheltenham which would not be affected by construction works. Additionally, the provision of an alternative track would be considered during construction planning.	3
T16	Access to the Bella Vista Station site during the daytime would be at a location off Celebration Drive to the east of the Lexington Avenue intersection, to minimise traffic impacts at the Celebration Drive / Lexington Avenue intersection.	8
T17	If construction of NWRL occurs before the Schofields Road upgrade, interim upgrading of the road would be undertaken (unless otherwise agreed with RMS) with improved pavement quality and wider sealed shoulders to accommodate heavy vehicle usage.	15 – 17
T18	A dilapidation report would be prepared prior to construction for all affected local roads from the construction access / egress point to the arterial road.	1 – 17
T19	An alternative pedestrian route via Ray Road and Kandy Avenue would be appropriately signposted for pedestrian movements between Epping Town Centre and the Beecroft Road M2 Motorway overbridge.	1
T20	Truck movements on Ray Road would be restricted during the AM and PM peak periods. During these times, truck access and egress to and from the site would be via Beecroft Road only.	1
T21	Staff working at the Epping Services Facility would be discouraged from parking on local roads and encouraged to: ❖ Use public transport. ❖ Car share. ❖ Park in a designated off-site area and access the site via shuttle bus.	1
T22	Where schools occur in the immediate vicinity of the construction sites, heavy vehicle movements would be minimised (where reasonable and feasible), between 8:00-9:30 am and 2:30-4:00 pm Monday to Friday (on school days).	1 – 17
T23	Access and egress via Norwest Boulevard would be intermittent and only outside peak periods.	7
T24	Signage would be established at Epping to direct pedestrians via the alternative pedestrian route along Ray Road and Kandy Avenue.	1

No.	Mitigation Measures	Applicable Sites*
T25	Construction traffic to and from the Cheltenham Services Facility would be directed to treat Beecroft Road / Kirkham Street intersection as left in / left out only.	3
T26	Alternative access to the Showground would be developed and detailed in the relevant Construction Traffic Management Plan.	6
T27	Alternative car parking would be provided, in consultation with The Hills Shire Council and the Castle Hill and Hills District Agricultural Society, for car spaces lost within the Showground precinct.	6
T28	Provision for buses to safely pull up to the indented bus bay located on Norwest Boulevard east of Century Circuit would be investigated as part of the relevant Construction Traffic Management Plan.	7
T29	Alternative car parking would be provided for car spaces lost at the Burns T-way bus stop. The alternative parking may be accommodated at the Balmoral Road T-way bus stop.	10
T30	Alternative car parking would be provided for car spaces lost at the Riley T-way bus stop. The alternative parking is likely to be provided to the north of Samantha Riley Drive.	11
T31	An alternative location for the cycle lockers at Rouse Hill would be identified during detailed construction planning.	14
~~T32~~[1]	~~Alternative car parking would be provided for car spaces lost at the Rouse Hill Station Construction site.~~	~~14~~
T33	Either Cudgegong Road or Tallawong Road would remain open to traffic and bus services to maintain a route from Guntawong Road to Schofields Road.	17

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1 Mitigation measure T32 has been removed as no permanent car parking spaces at Rouse Hill would be lost as a result of the project. There would be some loss of car parking spaces that are identified as "temporary" in the Rouse Hill Town Centre development consent granted by The Hills Shire Council.

9.3 Noise and Vibration

Operation

No.	Mitigation Measure	Applicable Sites
OpNV1	The implementation of feasible and reasonable noise and vibration mitigation measures such as: ❖ One metre high noise barriers with absorptive facing provided between Bella Vista Station and Cudgegong Road Station, except where the track is in cutting. ❖ For the viaduct section, noise barriers located on the outer edge of both sides of the structure. ❖ For the surface track, noise barriers positioned as close as possible to the train taking into account access and safety requirements.	Bella Vista Station to Cudgegong Road Station
OpNV2	The implementation of feasible and reasonable noise and vibration mitigation measures such as: ❖ A two metre high noise barrier with absorptive facing provided on the side adjacent to the OK Caravan Park. Noise barriers positioned as close as possible to the train taking into account access and safety requirements. ❖ A two metre high noise barrier provided opposite OK Caravan Park in the vicinity of the crossovers.	Rouse Hill Station to Cudgegong Road Station
OpNV3	The implementation of feasible and reasonable noise and vibration mitigation measures such as: ❖ Rail dampers provided between Kellyville Station and Cudgegong Road Station, except in the immediate vicinity of stations where train speeds are lower.	Kellyville Station to Cudgegong Road Station
OpNV4	The implementation of feasible and reasonable noise and vibration mitigation measures such as: ❖ Resilient rail fasteners provided on the viaduct and rail bridges.	Viaduct and bridges
OpNV5	During detailed design, options would be investigated to reduce airborne noise along the viaduct and surface track sections where exceedances have been predicted.	Bella Vista Station to Cudgegong Road Station
OpNV6	The implementation of feasible and reasonable noise and vibration mitigation measures such as: ❖ Investigate the option of managing train speeds between Kellyville Station and Rouse Hill Station. The investigation would consider factors such as the impact to journey times and the receivers existing noise exposure from road traffic.	Kellyville Station to Rouse Hill Station
OpNV7	The implementation of feasible and reasonable noise and vibration mitigation measures such as: Standard, high and very high track attenuation provided through the tunnel section as shown indicatively in Figure 10.3 **of EIS 2**.	Tunnels

No.	Mitigation Measure	Applicable Sites
OpNV8	The implementation of feasible and reasonable noise and vibration mitigation measures such as: ❖ The design of the sheds and equipment for the train wash and wheel lathe facilities would include noise mitigation as required in order to comply with the applicable noise criteria at the nearest noise sensitive receivers.	Tallawong Stabling Facility
OpNV9	The implementation of feasible and reasonable noise and vibration mitigation measures such as: ❖ Investigate the option to incorporate silencers in the compressed air lines of the rolling stock to reduce noise associated with brake air release events.	Tallawong Stabling Facility
OpNV10	The implementation of feasible and reasonable noise and vibration mitigation measures such as: ❖ Investigate methods to minimise rolling stock auxiliary noise levels during procurement.	Tallawong Stabling Facility
OpNV11	The implementation of feasible and reasonable noise and vibration mitigation measures such as: ❖ Noise sources at stations such as PA systems, air conditioners, substations and mechanical plant would be designed to meet the INP noise criteria.	Stations
OpNV12	The implementation of feasible and reasonable noise and vibration mitigation measures such as: ❖ Options would be investigated as part of the detailed design to reduce noise impacts from the operational car parks at Cherrybrook and Showground.	Cherrybrook and Showground Stations
OpNV13	A detailed assessment of the road traffic noise impacts, including identification of preferred mitigation measures for the station access roads at Cherrybrook and Kellyville would be undertaken during detailed design.	Cherrybrook and Kellyville Stations

Construction

No.	Mitigation Measure	Applicable Sites*
Construction		
NV1	Noise and vibration mitigation measures described in the Construction Noise and Vibration Strategy would be implemented (refer Appendix J of Technical Paper 3 **of EIS 2**).	All
NV5	Three metre high noise barriers (site hoardings) would be constructed around the perimeter of construction sites.	1 – 3, 5 – 7 and 14
NV6	Six metre high barriers would be constructed at Cherrybrook to manage night-time spoil truck movements.	4

No.	Mitigation Measure	Applicable Sites*
NV7	Three metre high noise barriers (site hoardings) would be constructed at Bella Vista Station site on the north and eastern side of the main construction site and to the west of the station box.	8
NV8	Attended vibration monitoring would be undertaken at the nearest commercial building during high vibration activities to ensure vibration levels remain below safe limits.	1 and 5 – 7
NV9	Attended vibration monitoring would be undertaken at the nearest residential buildings during high vibration activities to ensure vibration levels remain below safe limits.	1, 3 and 4
NV10	Noise measurements in the Gold Class cinema complex at Castle Hill during high vibration activities would be undertaken to determine ground-borne noise levels. Depending on the results of this monitoring, discussions would be held with the cinema managers to identify additional feasible and reasonable mitigation measures such as respite period and use of alternative equipment.	5
NV13	Night-time truck access at Bella Vista Station site would be via the Celebration Drive roundabout to the south of the site.	8
NV16	Noise attenuation measures would be implemented where reasonable and feasible on tunnel ventilation equipment and other items of fixed plant (eg pumps, water treatment plant, diesel generators) that would be required to operate on a 24 hour per day, seven day per week basis in support of the underground works (eg ventilation fan enclosures and silencers, and additional enclosures and silencers for diesel generating equipment). At each site, the combined L_{Aeq} noise from the operation of this equipment would aim to not exceed the rating background level at nearest residential receivers.	1-10
NV18	A site management and / or physical mitigation solution would be implemented at the Epping Services Facility to ensure noise levels from onsite heavy vehicle movements during the night-time period comply with the sleep disturbance NML. This may include restricting night-time heavy vehicle access from Beecroft Road directly into the acoustic sheds and the establishment of a dedicated unloading bay directly adjacent to Beecroft Road for night-time deliveries.	1

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9.4 European Heritage

Operation

No.	Mitigation Measures	Applicable Sites
OpEH1	Maintain the vegetation retained, reinstated and planted during the construction phase.	~~3, 4, 5, 6, 11, 13~~ All

Construction

No.	Mitigation Measures	Applicable Sites*
Heritage Items		
EH3	Where feasible and reasonable, retain or reinstate an adequate buffer of vegetation along the northern side of Castle Hill Road opposite the Glenhope property to preserve the character of its setting and to screen the visual impacts of the station construction site in the northern outlook from the Glenhope property.	4
EH4	Where feasible and reasonable, retain or reinstate a buffer of vegetation along the western side of Franklin Road opposite Inala School.	4
EH5	If feasible, the existing mature plantings along the Old Northern Road edge of Arthur Whitling Park would be retained and protected during construction.	5
EH6	Reinstate key elements of Arthur Whitling Park in consultation with The Hills Shire Council, the Hills District Historical Society and the Castle Hill sub-branch of the RSL, where feasible and reasonable.	5
EH7	Reinstate the landscaped public parkland (Arthur Whitling Park) following completion of construction.	5
EH8	Reinstate or rejuvenate any areas of the Showground disturbed for construction works following completion of the works.	6
EH9	Re-establish planted vegetation along the eastern side of the North-West T-way following completion of the construction works.	11 and 13
EH10	**The viaduct would be designed and constructed to be as visually light and stream-lined as possible. At Mungerie, the viaduct piers would be spaced widely and, where feasible and reasonable, symmetrically on either side of the carriage loop from Old Windsor Road[1].**	13
EH11	A buffer of trees between Mungerie and the rail corridor would be maintained. Any trees removed to facilitate construction would be reinstated on completion of works.	13

No.	Mitigation Measures	Applicable Sites*
EH12	**The area of the Mungerie carriage drive that would be removed during construction works would be reinstated[1].**	13
EH13a	~~Replacement planting of trees of the same species as those removed as part of the site landscaping works.~~ **Replacement planting of any heritage listed trees removed at Cheltenham would occur where feasible and reasonable in consultation with Council[2]**	3
Archaeological Sites		
EH17	The two identified brick cisterns / wells at the Kellyville Station site would be retained in situ if feasible and reasonable.	11
EH20	Results and recommendations of the further research undertaken as per the EIS1 mitigation measures regarding areas of archaeological potential would be followed.	4, 5, 6, 11, 13, 16 and 17

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1 Note that these measures were included in EIS 1 and not in EIS 2. They have been reinstated here.
2 This mitigation measure has been reworded from EIS 2 to improve clarity. It has also been renumbered from EH13 to EH13a to avoid ambiguity with a different measure having the same number that is included in the NWRL Stage 1 approval.

9.5 Indigenous Heritage

Operation

No.	Mitigation Measures	Applicable Sites
OpIH1	Maintenance **would be undertaken,** of any permanent public interpretation within new railway stations.	~~All~~Stations

Construction

No.	Mitigation Measures	Applicable Sites*
IH3	The boundary of the construction sites would be fenced to prevent construction personnel entering a PAD or known sites outside the construction footprint.	3, 4, 6, 11-16
IH4	The Indigenous Heritage component of the site induction would include information on: ❖ Aboriginal heritage conservation areas and/or no-go zones for each construction site. ❖ The legislation and penalties for impacting Aboriginal heritage objects would be conveyed to all construction managers and personnel.	1-17

No.	Mitigation Measures	Applicable Sites*
IH5	TfNSW would consider permanent public interpretation within at least one of the new railway stations following development if an extensive and high value archaeological deposit were to be uncovered during the excavation of a site.	3, 4, 6, 9-17
IH6	Results and recommendations of the Phase 1 and 2 archaeological excavations undertaken as per the EIS1 mitigation measures (IH1 and IH2) would be followed.	3, 4, 6, 9 - 17

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9.6 Local Business

Construction

No.	Mitigation Measures	Applicable Sites*
LB1	A business consultation group would be formed to monitor, consider and provide business specific advice to manage the impacts during construction. Members of the consultation group may include representatives from local councils, and the NSW chamber of commerce and industry.	1, 3-17
LB2	The project has employed specialist Place Managers to act as a single, identifiable and direct point of contact for local residents, business people and community groups with the project during construction. Place Managers would work closely with all affected local businesses to help ensure timely responses to queries.	1, 3-17
LB3	A business impact risk register would be developed to identify, rate and manage the specific impacts associated with construction related works for individual businesses.	1, 3-17
LB4	A toll free number and website would be in place for the duration of the construction works to enable business owners and/or operators to receive prompt responses to their concerns, access information and view assistance measures in place during construction related works.	1, 3-17

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9.7 Land use and community facilities

Operation

No.	Mitigation Measure	Applicable Sites
OpLC1	Consultation would continue between NWRL and DP&I to ensure the DP&I precinct planning process is integrated with NWRL station precinct planning so as to better integrate land use and transport connectivity.	Station precincts
OpLC2	It has been agreed with stakeholders that once operational, the completed precinct would incorporate appropriate recognition of the current war memorial.	Castle Hill Station

Construction

No.	Mitigation Measure	Applicable Sites*
LC1	Liaison would continue with statutory organisations, DP&I and local Councils to ensure the Project is integrated with local and regional land use planning, and that environmental planning instruments reflect the planning, construction and operation of the Project, and include integrated planning provisions to enhance potential future development.	All
LC2	Consultation would continue with the community throughout the project planning and construction phases to ensure that community members have adequate information about the project, the timing and scope of activities in their local area and impacts on their local facilities and recreational areas. Area specific Place Managers have been allocated to undertake this ongoing consultation.	All
LC3	Further consultation regarding the implications of the Project in relation to the *Epping Town Centre Study* would be undertaken with Hornsby Shire Council, Parramatta City Council and DP&I.	1
LC4	Consultation with Cheltenham Oval user groups would be undertaken as part of identifying appropriate post-construction configuration and facilities for sporting activities.	3
LC5	Consultation with stakeholders of Beecroft Reserve would be undertaken as part of identifying appropriate adjustments to walking trails both during construction (temporary adjustments) and operational phases (permanent adjustments). Enhancements or modifications to the trail network would also be considered as part of this process.	3
LC6	Consultation with schools near the Cherrybrook site would be undertaken to develop specific mitigation measures to reduce impacts on their operation and amenity.	4

No.	Mitigation Measure	Applicable Sites*
LC7	Consultation would be undertaken with the Castle Hill RSL Sub-Branch and The Hills Shire Council regarding appropriate management of the war memorial in Arthur Whitling Park. This would include consideration of possible temporary relocation and an appropriate long term solution.	5
LC8	Activities occurring in Showground buildings and pavilions to be acquired as part of the construction footprint would be re-accommodated within the Showground precinct or as otherwise agreed with the Showground Trust.	6
LC9	Consultation with Hillsong Church would be undertaken prior to construction to identify specific mitigation measures to reduce operational and amenity impacts.	7
LC10	Consultation with Emmanuel Baptist Church and Anglican Technical College Western Sydney would be undertaken prior to construction to identify specific mitigation measures to reduce operational and amenity impacts.	8
LC11	Consultation regarding the implications of the Project in relation to the Balmoral Road Release Area would be undertaken with The Hills Shire Council.	9 – 11
LC12	Consultation would be undertaken with relevant stakeholders regarding the implications of the project on the Rouse Hill Town Centre Northern Frame works.	14
LC13	Consultation regarding the implications of the project on the proposed land use plan for Area 20 would be undertaken with DP&I, Blacktown City Council and relevant stakeholders.	15 – 17
LC14	Opportunities to minimise temporary loss of land should be investigated through detailed construction planning and site layout, particularly in areas such as the Cheltenham Services Facility and Showground Station.	All
LC15	Consider staging construction, particularly at busy locations, to complement traffic management measures and assist in minimising disruption to key land uses and vehicle and pedestrian movements.	All

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9.8 Ecology

Operation

No.	Mitigation Measure	Applicable Sites
OpE2	Noxious and environmental weeds would be controlled within the operational site boundary.	Within the operational site boundary.
OpE4	*The Best Practice Guidelines – Green and Golden Bell Frog Habitat* (DECC, 2008) would be followed during operation to protect and maintain any ephemeral breeding habitat for Green and Golden Bell Frog established as a result of the project.	Ephemeral breeding habitat for Green and Golden Bell Frog established as a result of the project.
OpE5	Regular visual inspections would be undertaken of creeks above tunnel sections and underground NWRL infrastructure, during operation, for a time period to be agreed with the NOW. Inspections would target permanent pools and be compared to pre-bore data collected and non-impacted reference sites. In the event that substantial drops in the water level of permanent pools are detected, further investigations would be undertaken to determine the cause. If changes are determined to be caused by, or suspected to be caused by, tunnels, mitigation measures would be discussed with the NOW and implemented as appropriate.	Creeks above tunnels/ NWRL infrastructure
OpE6	To reduce disturbance to bats and nocturnal birds where reasonable and feasible, a range of measures would be undertaken, such as: ❖ Artificial lighting would be directed to where it is needed and in a downwards orientation to avoid light spillage, Artificial light would be positioned to face away from areas of native vegetation. ❖ Low-pressure sodium lamps would be used instead of high-pressure sodium or mercury lights. Where mercury lights are used, UV filters would be fitted. ❖ The brightness of lights would be reduced to as low as legally possible, and in conformance with workplace health and safety standards. Amplified speakers would be directed downwards and away from areas of native vegetation	Surface track Stations Stabling facility Service facilities
OpE7	Maintenance of waterway crossings and structures would be undertaken in accordance with relevant guidelines such as *Fish and Fauna Friendly Waterway Crossings (Fairfull & Witheridge, 2003) and Fish Passage Requirements of Waterway Crossings* (2003).	Waterway crossings and structures
OpE9	The areas identified as 'likely' or 'potential' Groundwater Dependent Ecosystems (GDEs) would be monitored during operations in accordance with the groundwater monitoring plan (refer to Chapter 8 Soils and Groundwater for further details).	'likely' or 'potential' GDEs

Construction

No.	Mitigation Measure	Applicable Sites*
E1	The ecological component of the site induction would include information on: ❖ Sensitivity of surrounding vegetation (particularly threatened vegetation). ❖ Sensitivity of threatened fauna species (birds and bats). ❖ Site environmental procedures (vegetation management, sediment and erosion control, protective fencing, weed control). ❖ Emergency and incident response/ spill management (chemical spills, fire, injured fauna).	All
E2	Pre-clearing surveys would be undertaken to identify the presence of: ❖ Hollow bearing trees and other habitat features ❖ Threatened flora and fauna.	All
E6	Trees containing hollows would be felled using "Slow drop" technique (or similar as agreed with OEH). The slow-drop technique involves nudging and shaking the tree, followed by a controlled lowering of the tree to the ground.	All
E7	Where feasible and reasonable, topsoil and habitat elements (eg logs and felled trees) from sites that have few weed species would be stored and reused onsite.	All
E8	Site offices, stockpiles, machinery wash down areas, and plant storage areas would be located outside of any ecologically sensitive areas being retained onsite.	All
E9	Fuel (or other chemical) storage would be located outside all riparian zones, and at least 10m from any retained ecologically sensitive areas onsite.	All
E10	Construction sites would be revegetated using endemic native plant species where appropriate.	All
E12	To prevent establishment or spread of weeds: ❖ Machinery would be cleaned before entering work sites. ❖ Weeds would be removed from within the mapped native vegetation areas at least 10m from the edge of the construction footprint (where access allows). ❖ Cleared weed material would be disposed of at a site licensed to receive green waste.	All

No.	Mitigation Measure	Applicable Sites*
E15	To reduce disturbance to bats and nocturnal birds where reasonable and feasible, a range of measures would be undertaken, such as: ❖ Artificial lighting would be directed to where it is needed and in a downwards orientation to avoid light spillage, Artificial light would be positioned to face away from areas of native vegetation. ❖ Low-pressure sodium lamps would be used instead of high-pressure sodium or mercury lights. Where mercury lights are used, UV filters would be fitted. ❖ The brightness of lights would be reduced to as low as legally possible, and in conformance with workplace health and safety standards. ❖ Amplified speakers would be directed downwards and away from areas of native vegetation.	All
E21	*Maintenance* of waterway crossings and structures would be undertaken in accordance with relevant guidelines such as Fish and Fauna Friendly Waterway Crossings (Fairfull & Witheridge, 2003) and Fish Passage Requirements of Waterway Crossings (2003).	All
E22	Where native vegetation is to be retained adjacent to or within construction sites, protective fencing and signage (installed as part of EIS1) would be *maintained* in accordance with Australian Standard 4970 – 2009 Protection of Trees.	All

No.	Mitigation Measure	Applicable Sites*

*Site 1 - Epping Services Facility, Site 2 – NOT USED, Site 3 - Cheltenham Services Facility, Site 4 - Cherrybrook Station, Site 5 - Castle Hill Station, Site 6 - Showground Station, Site 7 - Norwest Station, Site 8 - Bella Vista Station, Site 9 - Balmoral Road, Site 10 - Memorial Avenue, Site 11 - Kellyville Station, Site 12 - Samantha Riley Drive to Windsor Road, Site 13 - Old Windsor Road to White Hart Drive, Site 14 - Rouse Hill Station, Site 15 - Windsor Road Viaduct, Site 16 - Windsor Road Viaduct to Cudgegong Road, Site 17 - Cudgegong Road Station and Tallawong Stabling Facility

9.9 Visual amenity

Operation

No.	Mitigation Measures	Applicable sites
OpV1	High quality landscape and urban treatments would be used in and around stations.	Stations
OpV2	Cut–off and directed lighting would be used to ensure glare and light spill on surrounding existing and future residents are minimised.	All
OpV3	The colour and materials of service facility buildings would be selected to blend into adjacent bushland setting.	Service facilities
OpV4	Landform would be used to conceal buildings where reasonable and feasible	Stations and service facilities
OpV5	Street tree planting would be used to visually soften roads and car parking areas.	All
OpV6	Large specimen trees would be incorporated into the plaza at Castle Hill to create an immediate softening effect.	Castle Hill Station

No.	Mitigation Measures	Applicable sites
OpV7	The viaduct between Rouse Hill and Cudgegong Station would be treated to maximise visual integration with surrounding landscape in views from Rouse Hill House. This may include the use of dark colours, landform mounding and buffer planting.	Viaduct
OpV8	Where noise walls are proposed, potential visual impacts would be reduced through high quality urban design treatments developed in consultation with adjacent property owners.	All
OpV9	Earth mounding would be used as appropriate to improve the effectiveness of buffer planting areas where space permits and as appropriate, particularly where significant vegetation would be lost.	All
OpV10	The design and ongoing maintenance of the project would adopt CPTED principles, including the maintenance of unobstructed views into and outside of underpasses, effective drainage and ventilation, wide corridors and appropriate lighting.	All

Construction

No.	Mitigation measure	Applicable sites*
V1	Existing vegetation around the perimeter of the construction sites would be retained where feasible and reasonable to act as a visual screen.	1 – 17
V2	Cut-off and directed lighting would be used to ensure glare and light trespass are minimised.	1 – 17
V3	Where feasible and reasonable the elements within construction sites would be located to minimise visual impact, eg setting particular equipment/ structures back from the site boundaries to minimise their visual impact.	1 – 17
V4	Regular maintenance of site hoarding and perimeter site areas would be undertaken, including the prompt removal of graffiti.	1 – 17
V5	Visual mitigation would be implemented as soon as feasible and reasonable, and remain for the duration of the construction period.	1 – 17
V6	Monitoring of the effectiveness of mitigation measures would be undertaken by the relevant construction contractor. This would primarily include regular visual inspection of the condition of the various measures.	1 – 17
V7	The colour and materials of acoustic sheds at selected sites would be selected to blend into adjacent bushland or rural setting.	1 – 4 and 8
V8	The design of acoustic sheds as visual features would be considered where there is limited opportunity to make them recede.	5 and 8

No.	Mitigation measure	Applicable sites*
V9	Designing hoarding as a feature would be considered at appropriate locations. This may include artworks or project information. These would be installed as early as feasible and reasonable in the construction process.	1, 4, 6 – 8 and 14
V10	Hoardings w4ould be designed to visually recede in more rural or bushland settings.	3 – 5, 9 – 13 and 15 – 17

Site 1 - Epping Services Facility, Site 3 - Cheltenham Services Facility, Site 4 - Cherrybrook \Station, Site 5 - Castle Hill Station, Site 6 – Showground Station, Site 7 - Norwest Station, Site 8 - Bella Vista Station, Site 9 - Balmoral Road, Site 10 - Memorial Avenue, Site 11 - Kellyville Station, Site 12 - Samantha Riley Drive to Windsor Road, Site 13 - Old Windsor Road to White Hart Drive, Site 14 - Rouse Hill Station, Site 15 - Windsor Road Viaduct, Site 16 - Windsor Road Viaduct to Cudgegong Road, Site 17 - Cudgegong Road Station and Tallawong Stabling Facility, and Tunnels

9.10 Climate change and greenhouse gas emissions

Note that climate change and mitigation measures were not presented in tabular form in EIS 1. The operational measures described in Sections 17.5.2-17.5.4 of EIS 2 have been adapted in this section to be consistent in format with other sections. Relevant construction mitigation measures incorporated into the NWRL Stage 1 approval have also been added.

Operational greenhouse gas

No.	Mitigation Measure	Applicable Sites
OpGHG1	The NWRL would minimise GHG emissions through energy reduction and avoidance, energy efficiency and onsite and offsite renewable or low carbon energy in accordance with the NWRL Environment and Sustainability Policy.	All
OpGHG2	Options would be explored for offsetting 100% of carbon emissions associated with the use of electricity during operation of the project.	All
OpGHG3	Options would be explored for offsetting a portion of carbon emissions associated with the annual operational energy demand at precincts (including car parks) from onsite renewable or low carbon sources.	Station precincts
OpGHG4	The NWRL would source at least 5% of the annual operational energy demand at the station buildings from onsite renewable or low carbon sources.	Stations
OpGHG5	The NWRL would source at least 10% of the annual operational energy demand at the Tallawong Stabling Facility (not including that required for traction) from onsite renewable or low carbon sources.	Tallawong Stabling Facility

No.	Mitigation Measure	Applicable Sites
OpGHG6	GHG emissions arising from use of refrigerants, electricity and materials would be minimised though design initiatives incorporated into the NWRL stations, rail infrastructure and systems. Example initiatives include, but are not limited to, maximising regenerative braking, natural ventilation, daylighting, energy efficient Heating, Ventilation and Air Conditioning (HVAC) and selection of material with low embodied materials.	All

Operational climate change adaptation

No.	Mitigation Measure	Applicable Sites*
OpCC1	The project Climate Change Risk Assessment would be updated during detailed design to identify adaptation responses for the years 2030 and 2070.	All

Construction greenhouse gas

No.	Mitigation Measure	Applicable Sites*
GHG1	Spoil management would be undertaken in accordance with the spoil reuse hierarchy.	All
GHG2	Where feasible and reasonable local materials would be preferentially used.	All
GHG3	If feasible and reasonable low GHG intensive alternative fuels (for example biofuels) would be used in construction equipment and vehicles.	All
GHG4	Vehicles with low fuel consumption ratings would be preferentially used where feasible and reasonable.	All
GHG5	Construction equipment and vehicle operators would be trained in driving practices which reduce fuel consumption.	All
GHG6	Construction equipment and vehicles would be regularly maintained to maximise fuel efficiency.	All
GHG9	A minimum of 20% of electricity needs associated with construction works would be offset.	All
GHG11	If feasible and reasonable materials with lower embodied emissions would be preferentially specified for use.	All
GHG12	An updated GHG assessment would be prepared during the detailed design stage of the project.	All

*Site 1 - Epping Services Facility, Site 3 - Cheltenham Services Facility, Site 4 - Cherrybrook Station, Site 5 - Castle Hill Station, Site 6 - Hills Centre, Station, Site 7 - Norwest Station, Site 8 - Bella Vista Station, Site 9 - Balmoral Road, Site 10 - Memorial Avenue, Site 11 - Kellyville Station, Site 12 - Samantha Riley Drive to Windsor Road, Site 13 - Old Windsor Road to White Hart Drive, Site 14 - Rouse Hill Station, Site 15 - Windsor Road Viaduct, Site 16 - Windsor Road Viaduct to Cudgegong Road, Site 17 - Cudgegong Road Station and Tallawong Stabling Facility and Tunnels

9.11 Surface Water and flooding

Operation

No.	Mitigation Measures	Applicable Sites
OpSW1	Procedures to quickly address any contaminant spill or accident would be developed and implemented during operation of the station sites.	All
OpSW2	All feasible and reasonable opportunities for captured surface water reuse would be utilised in the first instance.	Tunnel
OpSW3	Surface water discharge quality would be required to comply with the relevant Environment Protection Licence	All
OpSW4	Treatment measures would be applied to water collected in on site detention basins, including settling of coarse sediments, the use of flocculation for finer sediments and pH correction.	All
OpSW5	Entries to below ground stations would be located above the PMF level for mainstream flooding and local measures provided to manage the ingress of runoff from local overland flooding up to the PMF.	Stations
OpSW6	The stabling facility would be located above the 100 year ARI flood level.	Stabling
OpSW7	Tunnel entries would be located above the PMF level for mainstream flooding and local measures provided to manage the ingress of runoff from local overland flooding up to the PMF.	Tunnels
OpSW8	The rail line would be located above the 100 year ARI flood level to provide an appropriate level of flood immunity.	At Grade Tracks
OpSW9	Entries to below ground services facilities would be located above the PMF level for mainstream flooding and local measures provided to manage the ingress of runoff from local overland flooding up to the PMP.	Services Facilities
OpSW10	Critical rail system infrastructure such as substations and sectioning huts would be located at a suitable level above the 100 year ARI peak flood level to protect against mainstream and local overland flooding.	Services Facilities
OpSW11	Development within the floodplain would be designed to minimise adverse impacts on adjacent development for flooding up to the 100 year ARI event. And would be designed to maintain the operation of key evacuation routes, minimise impacts on critical infrastructure and flood hazard for flooding up to the PMF.	All
OpSW12	OSD would be provided where required to mitigate impacts associated with increased impervious areas.	Stations
OpSW13	Local drainage systems and overland flowpaths at all precincts would be designed to provide appropriate flood immunity to the precincts and minimise the risk of ingress of floodwaters to the underground stations.	Stations and Stabling

No.	Mitigation Measures	Applicable Sites
OpSW14	Water quality treatment measures (including a combination of swales, bioretention systems, water quality basins, gross pollutant traps) would be integrated into the drainage system to mitigate impacts to waterways.	All
OpSW15	A holistic approach to water quality and stormwater management would be adopted that incorporates Water Sensitive Urban Design principles to minimise impacts on the existing hydrologic regime. Such measures would include: ❖ Managing total runoff volumes through the use of rainwater tanks and measures that promote stormwater infiltration. ❖ Minimising increases in peak flows through the use of detention and retention measures as appropriate. ❖ Preserving and enhancing the amenity of waterways by maintaining or providing natural vegetated measures. ❖ Treating stormwater through a range of at source and end point measures that are integrated with the urban landscape.	All
OpSW16	A surface water quality monitoring program would be developed post construction for the station precincts, services facilities and the stabling depot to monitor water quality upstream and downstream of the works. Monitoring procedures and performance criteria would be established in consultation with local councils and relevant government agencies.	All

Construction

No.	Mitigation Measure	Applicable Sites*
Flooding		
SW3	Construction equipment (or excess material) would be removed from waterway or flood prone areas if wet weather is approaching and at the completion of each day's work activity. The extent of the flood prone area would be defined during detailed construction planning.	1 – 17
SW4	Temporary levees or bunds would be strategically placed to contain potential flooding impacts resulting from any temporary works on the floodplain and minimise the risk to surrounding properties which might otherwise be affected.	1 – 17
SW5	Entries to tunnel excavations would be protected against flooding by locating openings outside flood prone areas, local bunding and / or appropriate drainage.	1 – 9 and tunnels
SW6	The flood standard adopted at each tunnel entry during Stage 2 construction would need to be developed taking into consideration the duration of construction, the magnitude of inflows and the potential risks to the project works and personal safety.	1 – 9 and tunnels

No.	Mitigation Measure	Applicable Sites*
SW12	Stockpile sites would be generally located outside the 20 year ARI flood. The exact level of flood immunity provided to stockpile sites would depend on the duration of stockpiling operations, the type of material stored and the nature of the downstream waterway or any other specified requirements. This would be defined during detailed construction planning.	1 – 17
SW14	Water quality mitigation measures would be implemented in accordance with relevant requirements of: ❖ Landcom Managing Urban Stormwater - Soils and Construction Volumes 1 and 2 (often referred to as the Blue Book, 2004 and 2006). ❖ NOW Guidelines for Controlled Activities. ❖ ANZECC Guidelines for Fresh and Marine Water Quality. ❖ ANZECC Guidelines for Water Quality Monitoring and Reporting. ❖ *Water Management Act 2000.* ❖ Applicable Environment Protection Licences.	All
SW15	Treatment measures would be applied to water collected in sediment basins, including settling of coarse sediments, the use of flocculation for finer sediments and pH correction.	9 – 17
SW16	As a first preference, treated surface water collected in sediment basins would be reused onsite, eg for dust suppression. Additional opportunities for re-using water on site or for construction would be investigated and implemented where feasible and reasonable.	9 – 17 and tunnels
Erosion and Sediment Control		
SW17	Exclusion zones would be designated on construction sites to limit disturbance.	1 – 17
SW18	Re-vegetating or stabilising disturbed areas would occur as soon as feasible.	1 – 17
SW20	Appropriate erosion control measures would be installed such as sediment fencing, check dams, temporary ground stabilisation, diversion berms or site regrading.	1 – 17
SW21	Clean water runoff would be diverted away from the works or disturbed areas wherever possible.	1 – 17
SW22	Temporary sediment basins would be installed as appropriate. The exact size and layout of sediment basins would be determined as part of the CEMP in accordance with the requirements of the relevant Environment Protection Licence.	1 – 17
SW26	Surface controls to promote ground stability, limit run-off lengths and reduce run-off velocities within the work sites would be implemented.	1 – 17

No.	Mitigation Measure	Applicable Sites*
SW27	Ground stability would be re-established as soon as practicable following the completion of construction.	1 – 17
SW28	Installation of any permanent scour protection measures required for the operational phase would occur as soon as practical.	1 – 17
Riparian Areas		
SW32	Where water is released into local creeks, outlet scour protection and energy dissipation would be implemented. The discharge point would be at the upstream end of a large pool where feasible and reasonable, to allow for slowing of water.	1 – 4, 6 and 8 – 17
SW37	Temporary stockpile locations for both site establishment and earthworks operations would be specified prior to the commencement of construction activities. Diversion drains and erosion and sediment control measures would be in place prior to the commencement of any stockpiling activities. Material would only be stockpiled in designated stockpiling areas.	1 – 17
Contamination and Spills		
SW38	Site specific controls would be developed to reduce the potential for environmental releases of potentially harmful chemicals and to reduce the risk of any such releases entering local waterways. Storage of hazardous materials such as oils, chemicals and refuelling activities would occur in bunded areas.	All

No.	Mitigation Measure	Applicable Sites*
Monitoring and Implementation		
SW40	A qualified environmental officer would be employed to advise on appropriate controls and to monitor the implementation and maintenance of mitigation measures.	All
SW41	All site staff would be engaged through toolbox talks or similar with appropriate training on soil and water management practices.	All
SW42	A surface water quality monitoring program for the construction period would be implemented to monitor water quality upstream and downstream of the construction areas. The monitoring programme would commence prior to commencement of any construction works and would build on available water quality data.	1 – 17
SW43	Surface water and water quality monitoring would be carried out periodically and after rainfall events. Monitoring would examine a range of appropriate indicators in accordance with standard guidelines.	1 – 17
SW44	Inspection of water quality mitigation controls (eg sediment fences, sediment basins) would be carried out regularly and following significant rainfall to detect any breach in performance.	All

No.	Mitigation Measure	Applicable Sites*
SW45	A stormwater management plan that identifies the appropriate design standard for flood mitigation based on the duration of construction, proposed activities and flood risks would be developed for each construction site. The plan would develop procedures to ensure that threats to human safety and damage to infrastructure are not exacerbated during the construction period.	All

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9.12 Air Quality

Operation

No.	Mitigation Measure	Applicable Sites
OpA1	Develop an OEMP including an Air Quality section	All
OpA2	Location and design of air ventilation, car parks and kiss and ride facilities to consider avoidance of air quality impacts on sensitive receivers.	Stations Service facilities

Construction

No.	Mitigation Measure	Applicable Sites*
General		
A1	Working face and areas of open excavation would be kept to a minimum, where feasible and reasonable.	All
A2	Water suppression would be used for active earthwork areas, stockpiles, gravel roads and loads of soil being transported to reduce wind-blown dust emissions.	All
A3	Waste or any other material would not be burnt on construction sites.	All
A4	The amount of excavated material held on site would be minimised.	All
A5	Areas of exposed earth would be minimised by staging construction activities and progressively landscaping and vegetating completed areas as the construction activities proceed, where feasible and reasonable.	All
A6	Enclosed rubble chutes and conveyors would be used where feasible and reasonable. Drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment would be minimised and/or water used to suppress dust emissions from such equipment.	All
A7	Cutting, grinding or sawing equipment would only be used in conjunction with suitable dust suppression techniques such as water sprays or local extraction.	All
A8	Wind breaks, which may include site hoardings, would be constructed, where construction works are in close proximity to sensitive receptors and where feasible and reasonable.	All

No.	Mitigation Measure	Applicable Sites*
A9	Dust generating activities would be assessed during periods of strong winds and rescheduled, where required.	All
A10	All vehicles carrying loose or potentially dusty material to and/or from the site would be covered.	All
Spoil Stockpiles		
A11	Stockpiles would be located away from sensitive receivers, where feasible and reasonable, and protected from the elements through barriers, covering or establishing a cover crop.	All
Haul Roads		
A12	Longer term and/or heavily used haul roads would generally be sealed. The criteria for sealing haul roads would be defined during detailed construction planning. Sealed haul roads would be regularly cleaned.	All
A13	Unsealed haul roads would be regularly damped down with fixed or mobile sprinkler systems.	All
A14	Vehicular and foot traffic would be restricted to designated areas.	All
A15	Appropriate site speed limits would be imposed and signed on haul routes.	All
A16	Wheel-wash facilities or rumble grids would be provided and used near site exit points, and a street-cleaning regime would be implemented to remove any dirt tracked onto roads.	All
Vehicles and Equipment		
A23	Engines of onsite vehicles and plant would be switched off rather than left idling for extended periods of time.	All
A24	Low emission vehicles and plant fitted with catalysts, diesel particulate filters or similar devices would be used, where feasible and reasonable.	All
A25	Plant would be well maintained and serviced in accordance with manufacturers' recommendations.	All
A26	Haul routes and plant (including generators) would be sited away from sensitive receivers, such as dwellings and schools, where feasible and reasonable.	All
A27	Vehicle emissions would be minimised through methods such as using alternative modes of transport, such as encouraging car pooling by construction workers, and maximising vehicle utilisation by ensuring full loading and efficient routing.	All
A28	Precautions would be implemented to prevent the occurrence of smoke emissions or fumes from site plant or stored fuel oils.	All

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9.13 Waste and resource management

Operation

No.	Mitigation Measure	Applicable Sites*
OpW1	Develop an Operational Environmental Management Plan including a section on Operational Waste and Resource Recovery Management. This would detail opportunities for avoiding waste generation and responsible disposal methods for different waste streams.	All
OpW2	Design innovation during the detailed design stage of the NWRL would provide opportunities to reduce the amount of resources required for operation.	All

Construction

No.	Mitigation Measure	Applicable Sites*
W1	All waste would be assessed, classified, managed and disposed of in accordance with the Waste Classification Guidelines (DECC, 2008).	All
W2	All waste materials removed from the sites would only be directed to a waste management facility lawfully permitted to accept the materials.	All
W3	Excavated material and spoil would be beneficially reused on the project site or other sites, where feasible and reasonable, in accordance with the spoil use hierarchy.	All
W4	Appropriate storage, treatment and disposal procedures would be implemented for any contaminated spoil.	All
W5	Cleared site vegetation would be mulched for reuse in rehabilitation and landscaping works. Topsoil generated during site preparation activities would be stockpiled for reuse in landscaping activities.	All
W6	Initial and ongoing education would be provided to staff and sub-contractors regarding the importance of appropriately managing waste.	All
W7	Recyclable wastes, including paper at site offices, would be stored separately from other wastes. Storage facilities would be secure and recyclables collected on a regular basis.	All
W8	Reusable materials would be stored separately, in secure facilities.	All
W9	Worksites would be free of litter and good housekeeping would be maintained.	All
W10	Vermin proof bins would be utilised onsite.	All
W11	Waste oil, other liquid wastes and spillages would be collected and stored in bunded areas.	All
W13	Waste truck loads would be covered, and tailgates secured prior to trucks leaving the worksite.	All
W14	Centralised reporting and auditing of waste volumes and disposal destinations would be employed.	All

No.	Mitigation Measure	Applicable Sites*
W15	Construction waste would be minimised by accurately calculating materials brought to the site and limiting materials packaging.	All
W16	Materials such as (noise hoarding, site fencing, and so on) would be reused or shared, between sites and between construction contractors where feasible and reasonable.	All

Site 1 - Epping Services Facility, Site 2 – Not Used, Site 3 - Cheltenham Services Facility, Site 4 - Cherrybrook Station, Site 5 - Castle Hill Station, Site 6 - Showground Station, Site 7 - Norwest Station, Site 8 - Bella Vista Station, Site 9 - Balmoral Road, Site 10 - Memorial Avenue, Site 11 - Kellyville Station, Site 12 - Samantha Riley Drive to Windsor Road, Site 13 - Old Windsor Road to White Hart Drive, Site 14 - Rouse Hill Station, Site 15 - Windsor Road Viaduct, Site 16 - Windsor Road Viaduct to Cudgegong Road, Site 17 - Cudgegong Road Station and Tallawong Stabling Facility, and Tunnels

9.14 Cumulative Impacts

Operation

No.	Mitigation Measure	Applicable Sites*
OpC1	Internal and external cumulative impacts for the operation of the NWRL would be managed and mitigated through a project wide OEMP.	All

Construction

No.	Mitigation Measure	Applicable Sites*
CI1	Internal and external cumulative impacts for the NWRL Stage 1 and Stage 2 construction works would be managed and mitigated through a project wide Construction Environmental Management Framework	All
CI2	**During construction, proponents of other major construction works in the vicinity of the SSI shall be consulted, and reasonable steps taken to coordinate works to minimise impacts on, and maximise respite for, affected sensitive receivers.**	All
C13	**TfNSW would review environmental impacts every six months during the construction phase. Any new impacts identified during construction would be addressed appropriately to reduce the cumulative effects and reported.**	All

Site 1 - Epping Services Facility, Site 2 – Not Used, Site 3 - Cheltenham Services Facility, Site 4 - Cherrybrook Station, Site 5 - Castle Hill Station, Site 6 - Showground Station, Site 7 - Norwest Station, Site 8 - Bella Vista Station, Site 9 - Balmoral Road, Site 10 - Memorial Avenue, Site 11 - Kellyville Station, Site 12 - Samantha Riley Drive to Windsor Road, Site 13 - Old Windsor Road to White Hart Drive, Site 14 - Rouse Hill Station, Site 15 - Windsor Road Viaduct, Site 16 - Windsor Road Viaduct to Cudgegong Road, Site 17 - Cudgegong Road Station and Tallawong Stabling Facility, and Tunnels


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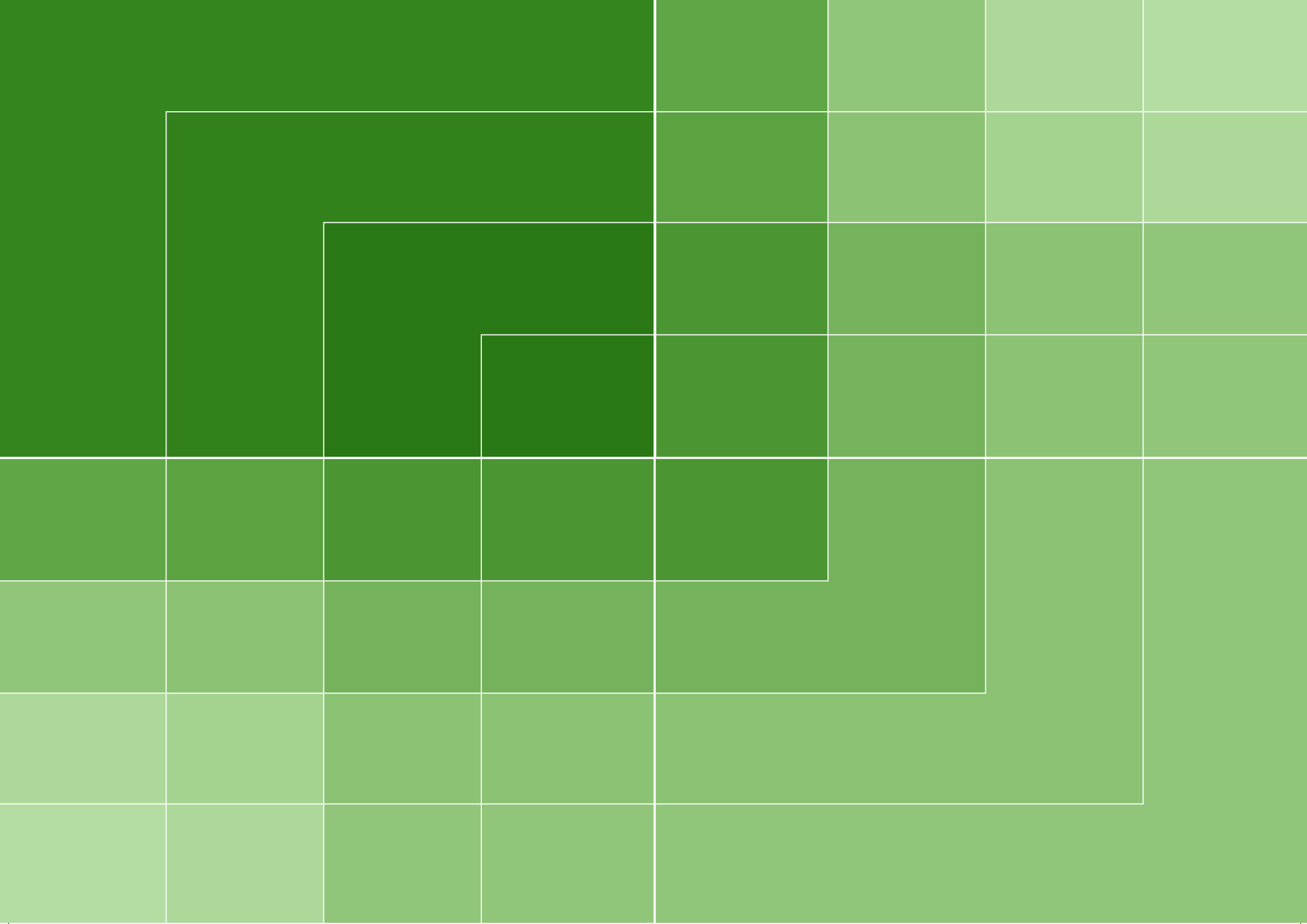

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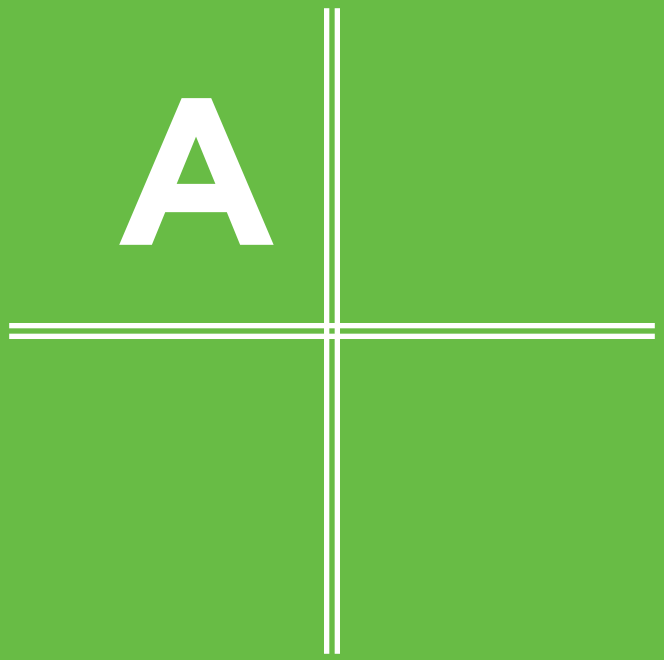
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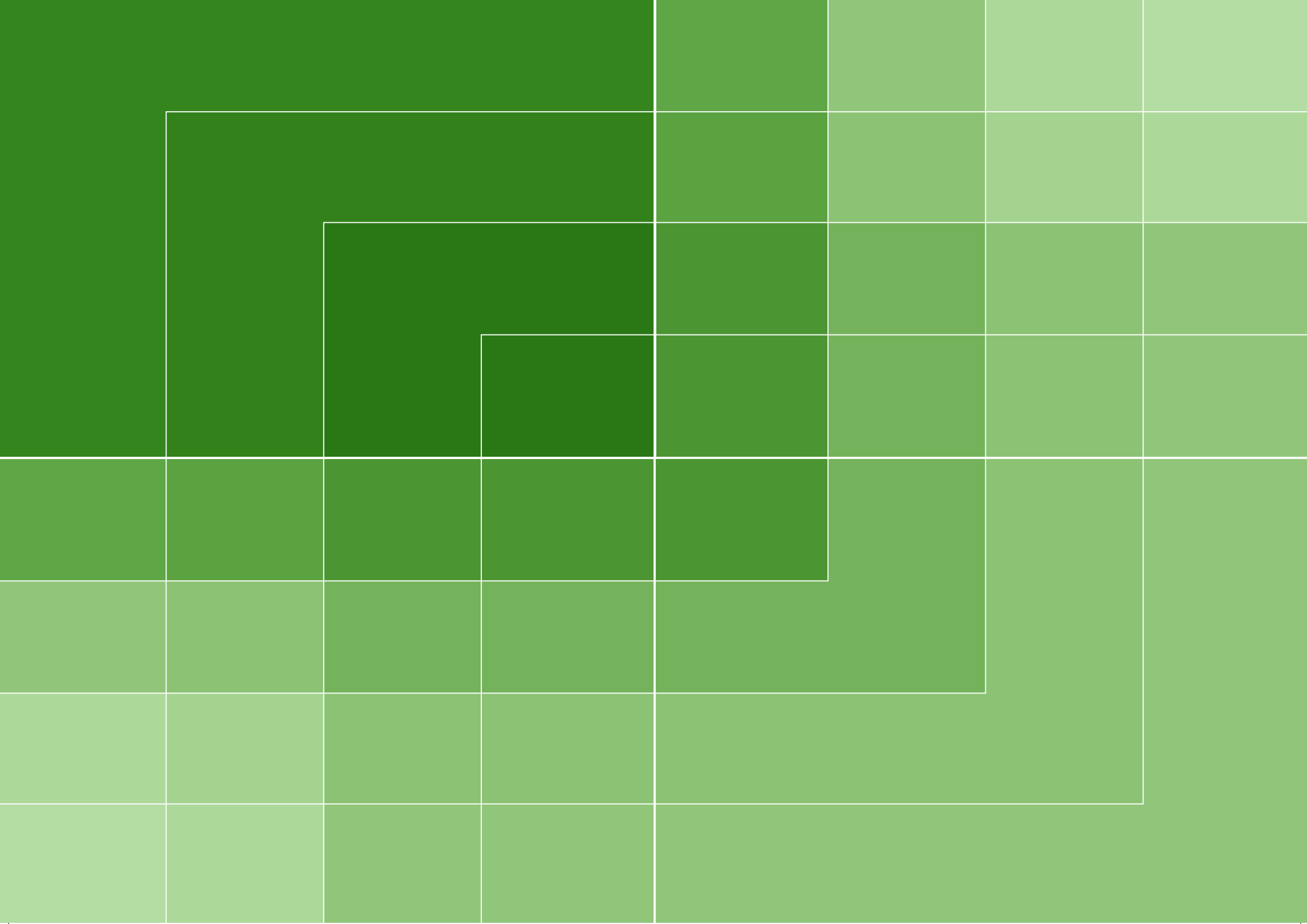

Appendix

Rouse Hill Town Centre Northern Frame Future Noise Predictions

Noise levels in Table A-1 have been predicted at an assumed 10 levels of each building, at the points shown in Figure A-1. (This is an information document and is indicative only).

Figure A-1 RHTC North Buildings and
Locations for Indicative Future Rail Noise Levels

Table A-1 Predicted Future Rail Noise Impacts at Locations shown in Figure A-1

Reference point	Approximate distance from near track (m)	Floor	L_{Amax} (dBA)	$L_{Aeq(15h)}$ (dBA)	$L_{Aeq(9h)}$ (dBA)
1	40	Ground	73	57	52
		1	73	57	52
		2	74	58	53
		3	75	58	53
		4	76	59	54
		5	78	61	56
		6	81	63	58
		7	83	65	60
		8	84	66	61
		9	85	66	61
2	30	Ground	75	59	54
		1	75	59	54
		2	76	60	55
		3	77	61	56
		4	78	62	57
		5	81	65	60
		6	85	68	63
		7	87	69	64
		8	88	70	65
		9	88	69	64

Reference point	Approximate distance from near track (m)	Floor	L_{Amax} (dBA)	$L_{Aeq(15h)}$ (dBA)	$L_{Aeq(9h)}$ (dBA)
3	35	Ground	74	59	54
		1	75	59	54
		2	76	60	55
		3	76	61	56
		4	78	62	57
		5	80	64	59
		6	84	67	62
		7	85	68	63
		8	87	69	64
		9	87	69	64
4	40	Ground	74	58	53
		1	74	59	54
		2	75	59	54
		3	76	60	55
		4	77	61	56
		5	79	63	58
		6	83	65	60
		7	85	67	62
		8	85	68	63
		9	86	68	63

Reference point	Approximate distance from near track (m)	Floor	L_{Amax} (dBA)	$L_{Aeq(15h)}$ (dBA)	$L_{Aeq(9h)}$ (dBA)
5	50	Ground	73	58	53
		1	73	58	53
		2	74	59	54
		3	75	60	55
		4	77	61	56
		5	80	63	58
		6	82	65	60
		7	83	66	61
		8	83	67	62
		9	84	67	62
6	60	Ground	72	57	52
		1	73	58	53
		2	73	59	54
		3	74	59	54
		4	76	61	56
		5	79	62	57
		6	81	64	59
		7	83	65	60
		8	83	66	61
		9	83	66	61

Reference point	Approximate distance from near track (m)	Floor	L_{Amax} (dBA)	$L_{Aeq(15h)}$ (dBA)	$L_{Aeq(9h)}$ (dBA)
7	65	Ground	72	57	52
		1	72	57	52
		2	73	58	53
		3	74	59	54
		4	75	60	55
		5	77	62	57
		6	80	63	58
		7	82	64	59
		8	82	65	60
		9	82	65	60
8	70	Ground	71	56	51
		1	72	57	52
		2	72	58	53
		3	73	59	54
		4	74	60	55
		5	76	61	56
		6	79	62	57
		7	80	63	58
		8	82	64	59
		9	82	65	60

Reference point	Approximate distance from near track (m)	Floor	L_{Amax} (dBA)	$L_{Aeq(15h)}$ (dBA)	$L_{Aeq(9h)}$ (dBA)
9	90	Ground	70	56	51
		1	71	57	52
		2	72	57	52
		3	73	58	53
		4	74	59	54
		5	76	60	55
		6	78	61	56
		7	79	62	57
		8	80	63	58
		9	80	63	58
10	100	Ground	69	55	50
		1	70	56	51
		2	71	57	52
		3	72	58	53
		4	73	59	54
		5	75	60	55
		6	76	61	56
		7	78	62	57
		8	79	62	57
		9	80	63	58

Reference point	Approximate distance from near track (m)	Floor	L_{Amax} (dBA)	$L_{Aeq(15h)}$ (dBA)	$L_{Aeq(9h)}$ (dBA)
11	110	Ground	69	55	50
		1	70	56	51
		2	70	56	51
		3	71	57	52
		4	72	58	53
		5	74	59	54
		6	75	60	55
		7	77	61	56
		8	78	62	57
		9	79	62	57
12	140	Ground	68	54	49
		1	68	55	50
		2	69	55	50
		3	70	56	51
		4	71	57	52
		5	72	57	52
		6	73	58	53
		7	74	59	54
		8	76	60	55
		9	76	60	55

Reference point	Approximate distance from near track (m)	Floor	L_{Amax} (dBA)	$L_{Aeq(15h)}$ (dBA)	$L_{Aeq(9h)}$ (dBA)
13	> 140	Ground	67	54	49
		1	68	54	49
		2	69	55	50
		3	69	56	51
		4	70	56	51
		5	71	57	52
		6	72	57	52
		7	73	58	53
		8	75	59	54
		9	75	59	54
14	> 140	Ground	67	53	48
		1	67	54	49
		2	68	54	49
		3	69	55	50
		4	69	56	51
		5	70	56	51
		6	71	57	52
		7	72	57	52
		8	74	58	53
		9	75	59	54