Transport Infrastructure Development Corporation

North West Rail Link

Preferred project report

Volume 1

May 2007

Contents

Table Index

Appendices – volume 1

Appendices – volume 2

1. Introduction

1.1 Background

North West Sydney is one of the major growth areas in the Sydney metropolitan region. To improve access to employment and educational opportunities for existing and future residents, and to alleviate the growing traffic congestion in this area, the NSW Government proposes to build the North West Rail Link, a new heavy rail line linking Epping with the regional centres of Castle Hill and Rouse Hill.

The project would serve the growing population in North West Sydney and provide direct public transport connections to major centres including the Sydney CBD, North Sydney, North Ryde/Macquarie Park and Chatswood.

The project would service established residential areas (approximately two thirds of the proposed alignment traverses developed land) and it would also service the Balmoral Road Release Area, Rouse Hill development area and the North West Growth Centre, a growth area identified in the *Sydney Metropolitan Strategy, City of Cities – A Plan for Sydney's Future* (Department of Planning, December 2005).

The strategic objectives of the project are to:

» Enhance public transport along an established and growing corridor of travel demand by:
  – Directly linking the North West region and 'global arc' centres of Sydney, including the Sydney CBD;
  – Increasing access to the rail network across Sydney; and
  – Providing a spine for integrated public transport in North West Sydney.
» Provide local focus for employment and population growth patterns by:
  – Improving public transport access to centres, including Castle Hill, the Norwest Business Park, and Rouse Hill; and
  – Facilitating transit oriented development and reducing urban sprawl.
» Improve public transport service quality by:
  – Reducing journey times;
  – Providing 'all day' service;
  – Increasing passenger comfort and service reliability; and
  – Provide rail network congestion relief on the Richmond Line and the Western Line including relieving overcrowding on trains.
» Support positive changes to travel behaviour by:
  – Reducing car dependency; and
  – Providing opportunities to walk to rail stations.

1.2 The preferred project report

The North West Rail Link Environmental Assessment and Concept Plan (the environmental assessment) for the construction and operation of the North West Rail Link (the project) was placed on public exhibition from 22 November 2006 to 2 February 2007 as required by section 75H(3) of the *Environmental Planning and Assessment Act 1979*. Written submissions were invited during this period. Over 1,600 submissions were received during and immediately following public exhibition.

On 19 February 2007, the Director General of the Department of Planning required that, in accordance with Section 75H(6) of the *Environmental Planning and Assessment Act 1979,* the Transport Infrastructure Development Corporation (TIDC) respond to the issues raised in the submissions received.

In addition, as a number of modifications have been made to the project as described in the environmental assessment (outlined below), this report outlines these proposed changes to the project to minimise its environmental impacts.

The preferred project report (this report) incorporates the submissions report by providing TIDC's responses to issues raised in the submissions. It also describes the results of additional studies undertaken since the environmental assessment was placed on public exhibition, and provides details on proposed changes to the project as defined in the environmental assessment.

The project described in the environmental assessment involved the construction and operation of a twin track passenger railway, approximately 23 km in length, connecting with the existing Northern Line north of Epping Station and terminating at Rouse Hill. The project would be delivered in two stages. The first stage, between Epping and Hills Centre Station, is proposed to be operational by 2015. The second stage, between Hills Centre Station and Rouse Hill, is proposed to be operational by 2017.

Following additional investigations undertaken by TIDC, and in response to submissions made, TIDC has refined and modified the concept plan. The modifications involve:

1. Construction and operation of a direct tunnel connection between Epping and Franklin Road Station, rather than a surface connection off the Northern Line between north of Epping and Beecroft.
2. Moving Norwest Station approximately 100 metres to the east within the proposed rail corridor.

The Hills Centre to Rouse Hill Elevated Option (as described in the environmental assessment) has not been included as part of the concept plan.

The additional investigations undertaken since the completion of the environmental assessment are outlined in section 7.

The revised concept plan for which TIDC is seeking approval is the construction and operation of a twin track passenger railway, approximately 22 km in length, connecting Epping Station with Rouse Hill. Six new stations are proposed: Franklin Road Station, Castle Hill Station, Hills Centre Station, Norwest Station, Burns Road Station and Rouse Hill Station. The revised concept plan is outlined in section 8, which is followed by the revised statement of commitments (section 9).

The statement of commitments represent the investigations and mitigation measures that would be undertaken to inform and guide future design, planning and assessment of the project.

The preferred project report will be on public exhibition for at least 30 days and written submissions will be invited. Further information about the public exhibition of the preferred project report is provided in section 2.3.

1.3 Submissions received

The receipt of submissions in response to the public exhibition of the environmental assessment was coordinated and managed by the Department of Planning.

1.3.1 Number of submissions by stakeholder groups

A total of 1,626 submissions were received and registered by the Department of Planning. A breakdown of submissions by type of stakeholder is provided Table 1.1.

Table 1.1 Stakeholder group

Stakeholder group	Number of submissions received
Residents, businesses, community groups, private organisations	1,602
State Government agencies	14
Councils	5
Other	5
TOTAL	**1,626**

1.3.2 Government agency and local council submissions

Comprehensive submissions were received from government agencies and local councils, which raised a variety of issues and made a number of recommendations.

A summary of the key issues raised in these submissions is provided in Table A.1 of Appendix A, together with where these issues have been addressed in the report. Issues raised in submissions are addressed in sections 3 to 6.

Ongoing consultation would continue with government agencies and local councils during future stages of the project.

1.3.3 Methodology for reviewing community submissions

All submissions received were catalogued by the Department of Planning. Individuals who sent in submissions have not been identified in this report. Each submission has been given an identification number, and this has been used in the report to allow individuals to identify where their issues have been addressed. A letter has been sent to those who sent in a submission advising them of their identification number.

An assessment of each submission was undertaken, identifying all issues raised and coding the issues. There were 114 issue types identified and coded throughout the submission review process. These were categorised under 22 headings. The list of categories and the issues,

together with where they are addressed in this report, is provided in Table A.2 in Appendix A. Table A.3 in Appendix A identifies the issues raised in each submission.

Issues are addressed in Sections 3 to 6 of this report. Many of the issues raised were matters of detail that cannot be fully investigated at the concept plan level. These issues have been noted and would be resolved as part of the further design development and environmental assessment planned for the next stage of the project.

1.4 Contents of the preferred project report

This report provides a response to the issues raised in submissions received during the public exhibition of the environmental assessment. The report also includes a summary of the additional investigations undertaken. Finally, it presents further assessments that TIDC commits to undertake should the project be granted approval (the statement of commitments).

The report includes:

» Section 1 – introduction and context.

» Section 2 – a description of the communication activities undertaken in association with the environmental assessment and with the preferred project report.

» Sections 3 to 6 – a response to the issues raised in the submissions:

  – Section 3 responds to issues relating to project justification, design and project alternatives;

  – Section 4 responds to issues relating to the previously proposed surface connection (quadruplication) off the Northern Line;

  – Section 5 responds to issues relating to the key environmental assessment requirements; and

  – Section 6 responds to issues relating to community consultation and the assessment process.

» Section 7 – a summary of the outcomes of additional investigations.

» Section 8 – the preferred concept plan that TIDC is seeking approval for.

» Section 9 – the final statement of commitments, which outline the investigations and mitigation measures that TIDC would undertake to ensure that the future planning, assessment and design of the project minimises the potential for environmental impacts.

» Section 10 – where to from here.

Figures and drawings showing the project (as modified) are provided in Volume 2.

2. Community Involvement

2.1 Overview of activities undertaken during the environmental assessment

Since the commencement of the environmental assessment process, a number of communication activities have been undertaken, as outlined in Table 2.1. Communication activities prior to exhibition are described in Chapter 4 of the environmental assessment.

The objective of these activities was to raise community awareness of the project and provide an opportunity for input. Stakeholders targeted included:

» Landowners, residents and business owners;

» Statutory agencies; and

» Other key stakeholder groups (such as environmental, business and community groups).

Table 2.1 Overview of communication activities

Activity	Date
Communication activities prior to public exhibition and ongoing activities	
Project information line (1800 684 490)	Ongoing
Distribution of Planning Update (No. 1) to the community and stakeholders	June 2006
Advertisement in Hills News, Hills Shire Times and The Northern District Times.	July 2006
Stakeholder meetings (24)	September and October 2006
Project website	Established at beginning of project and regularly updated.
Public exhibition and associated communication	
Advertising of public exhibition by the Department of Planning	November 2006 and January 2007
Public exhibition and display	22 November 2006 to 2 February 2007
Distribution of Planning Update (No. 2) to the community and stakeholders	November 2006
Preparation of summary brochure	November 2006
Advertising about community information sessions in Hills News and Hills Shire Times and the Northern District Times and Rouse Hill Times	27 and 28 November 2006
Community information sessions (5)	November and December 2006

2.2 Public exhibition of environmental assessment

The environmental assessment was publicly exhibited by the Department of Planning from 22 November 2006 to 2 February 2007.

2.2.1 Advertising

The Department of Planning placed eight advertisements in four newspapers to inform the community of the public exhibition and the submissions process. Adverts were placed in the:

» Sydney Morning Herald (22 November 2006 and 10 January 2007);

» Daily Telegraph (22 November 2006 and 10 January 2007);

» Hornsby Advocate (23 November 2006 and 11 January 2007); and

» Hills News and The Northern News Kellyville (21 November 2006 and 9 January 2007).

2.2.2 Exhibition

The environmental assessment was exhibited at the following locations:

» Baulkham Hills Shire Council, 129 Showground Road, Castle Hill;

» Baulkham Hills Library, Railway Street, Baulkham Hills;

» Blacktown City Council, 62 Flushcombe Road, Blacktown;

» Castle Hill Library, corner Castle and Pennant Street, Castle Hill;

» Epping Library, Chambers Court, Epping;

» Hornsby Shire Council, 296 Pacific Highway, Hornsby;

» Pennant Hills Library, corner Ramsay and Yarra Road, Pennant Hills;

» Department of Planning, Information Centre 23-33 Bridge Street, Sydney;

» Transport Infrastructure Development Corporation, Level 7, Tower A, Zenith Centre, 821 Pacific Highway, Chatswood; and

» Nature Conservation Council of NSW, Level 5, 362 Kent Street, Sydney.

2.2.3 Public displays

Exhibition of the environmental assessment was supported by public displays at the exhibition locations, which included information posters and copies of newsletters and the summary brochure.

2.2.4 Website

The TIDC website (www.tidc.nsw.gov.au) includes up to date information about the project. An electronic copy of the environmental assessment was placed on the website.

2.2.5 Planning Update Number 2

A newsletter, North West Rail Link Planning Update Number 2 (November 2006), was prepared by TIDC to provide information on the environmental assessment, activities associated with public

exhibition and how people could make a submission and find out more. The newsletter also provided information on the community information sessions.

The newsletter was distributed to approximately 27,000 residents and businesses within 250 metres of the proposed alignment; individuals registered on the project mailing list; and registered stakeholder groups. Copies of the newsletter were also available at the following locations:

» Public exhibition locations;

» Community information sessions; and

» On the project website.

2.2.6 Letters to property owners

Letters were sent to all property owners within the 60 metre wide tunnel corridor and the 40 metre wide surface corridor. The letter outlined that the recipient's property was potentially affected by the project, and provided information on the project and how to find out more. A copy of Planning Update No.2 was also included with the letter.

2.2.7 Summary brochure

A summary of the environmental assessment was prepared (the executive summary of the environmental assessment), to provide information on the concept plan and an overview of the results of environmental assessment. Copies of the summary brochure were provided at the public exhibition locations and community information sessions and on request.

2.2.8 Staffed community information sessions

Project team members were available to discuss the project and the environmental assessment and concept plan in more detail at the following staffed community information sessions:

» Rouse Hill: Thurs 30 November 2006, Rouse Hill Community Centre;

» Cherrybrook: Sat 2 December 2006, Cherrybrook Technology High School Hall;

» Cheltenham: Thurs 7 December 2006, Cheltenham Recreation Club;

» Castle Hill: Sat 9 December 2006, Baulkham Hills Shire Council Admin Building; and

» Bella Vista: Sat 9 December 2006, Village Green Community Centre.

Sessions included a public display providing information on the concept plan (large figures showing the route overlaid on aerial photographs).

The sessions were advertised in Planning Update No. 2, the TIDC website and local newspapers:

» Hills News and Hills Shire Times (on 27 November 2006); and

» The Northern District Times and Rouse Hill Times (on 28 November 2006).

2.2.9 Additional stakeholder meetings

During public exhibition, TIDC met with the following organisations to discuss the project:

» RailCorp;

- Hornsby Shire Council;
- Baulkham Hills Shire Council;
- Blacktown City Council;
- Department of Environment and Climate Change (formerly Department of Environment and Conservation);
- Growth Centres Commission;
- Heritage Office;
- Department of Planning – Sydney North West Region;
- Ministry of Transport; and
- Beecroft-Cheltenham Civic Trust.

2.2.10 Station precinct planning workshops

A series of workshops was held with key stakeholders to discuss the indicative station precinct plans being prepared for the project (see section 7.4).

Attendees at the workshop included representatives from:

- Baulkham Hills Shire Council;
- Blacktown City Council;
- Hornsby Shire Council;
- RailCorp;
- RTA;
- Hillsbus;
- NSW Taxi Council;
- Department of Planning;
- Ministry of Transport;
- NSW Fire Brigade;
- Landcom; and
- Lend Lease.

The workshops provided an opportunity to discuss key issues relating to each station precinct with the key stakeholders; finalise the first stage of the planning process; and capture issues that need to be addressed during the next stages of the design process.

2.2.11 1800 project information line and project email

TIDC has a 1800 number and email address for the community to contact the project team. This hotline and project email has been ongoing throughout the exhibition period. Approximately 150 phone calls and emails were dealt with during the public exhibition period.

2.3 Communication activities associated with the preferred project report

The preferred project report will be placed on public exhibition by the Department of Planning for at least 30 days. During this time, the community and stakeholders will be invited to provide comment on any aspects of the project outlined in the report. Details of the communication activities to inform the community about the project and exhibition of the preferred project report (including the locations and times of the community information sessions) are outlined below.

2.3.1 Letters to submitters

A letter will be sent to persons/organisations that sent a submission advising of the completion of the preferred project report and their submission number. The submission number can be used to reference which sections of the report that issues raised in submissions have been addressed in (refer to Appendix A).

2.3.2 Public exhibition

Copies of the preferred project report will be available for review for at least 30 days at the following locations:

- Baulkham Hills Shire Council, 129 Showground Road, Castle Hill (Mon-Fri 8.30am-4.30pm);
- Baulkham Hills Library, Railway Street, Baulkham Hills (Mon 10am-8pm; Tues-Fri 10am-5.20pm; Sat 10am-1pm);
- Blacktown City Council, 62 Flushcombe Road, Blacktown (Mon-Fri 8.30pm-4.30pm);
- Castle Hill Library, Cnr Castle and Pennant St, Castle Hill (Mon-Fri 10am-8pm; Sat 10am-5pm; Sun 1pm-5pm);
- Epping Library, Chambers Crt, Epping (Mon-Fri 10am-9pm; Sat 9.30am-12pm; Sun 2pm-5pm);
- Hornsby Shire Council, 296 Pacific Highway, Hornsby (Mon-Fri 8.30am-4.30pm);
- Pennant Hills Library, Cnr Ramsay and Yarrara Road, Pennant Hills (Mon-Fri 10am-9pm; Sat 10am-4pm; Sun 2pm-5pm);
- Department of Planning, Information Centre, 23-33 Bridge Street, Sydney (Mon-Fri 9am-5pm);
- Transport Infrastructure Development Corporation, Level 7, Tower A, Zenith Centre, 821 Pacific Highway, Chatswood (Mon-Fri 8.30am-5.30pm); and
- Nature Conservation Council of NSW, Level 5, 362 Kent Street, Sydney (Mon-Fri 9.30am – 5pm).

Written submissions should be sent to:

The Director
Major Infrastructure Assessments
Department of Planning
GPO Box 39
Sydney NSW 2001

A submission can be as brief or as detailed as necessary. The inclusion of dot points, headings or numbering of issues should be considered to ensure all issues can be captured and considered.

2.3.3 Community information sessions

Three community information sessions will be held to discuss the preferred project report with interested members of the community. The sessions times and locations will be advertised in advance.

The community information sessions will provide an opportunity for members of the community to meet the project team and discuss any questions they may have. The sessions will also be an opportunity to review information on the indicative station precinct plans, and provide input into the next stage of the design process.

2.3.4 Planning Update no. 3

A planning update newsletter will be distributed to the local community and to the project mailing list advising of the exhibition of the preferred project report and outlining the next steps. The newsletter will also be available at the public exhibition venues and community information sessions.

2.3.5 Stakeholder meetings

Meetings will be held with stakeholders such as local councils, to provide an update on the project and discuss the next steps. Meetings will also be held to discuss the indicative station precinct plans to provide an opportunity for people to input to the next stage of the design process.

2.3.6 Website

The preferred project report is available to download from the TIDC website at www.tidc.nsw.gov.au.

2.3.7 Advertisements

Advertisements will be placed in local newspapers advising of the exhibition of the preferred project report and the locations and times of the community information sessions.

2.3.8 1800 number and email

The 1800 number and email address will continue to be available for the community to contact TIDC with any questions or concerns.

3. Issues relating to project development, design and alternatives

3.1 Summary of issues relating to project justification

Issues and comments included:

» Concerns regarding the level of government expenditure required and how it would be funded, including justification for expenditure in this region;

» Concerns that other transport links, such as the North West and Liverpool to Parramatta bus transitways, the Lane Cove (road) tunnel, or the Epping to Chatswood Rail Line, would be more effective than the project in reducing travel times; and

» The use of developer levies to fund parts of the project.

A total of 414 submissions expressed support for the project and noted that it would provide a much needed dedicated public transport link between the North West and other areas of Sydney, acknowledging benefits such as reduced private vehicle use, environmental benefits (such as improved air quality), and increased accessibility to the CBD and other areas.

Forty-seven submissions objected to the concept of providing a rail link to North West Sydney. Submissions noted the duplication of other transport links, lack of patronage to justify the project, cost of the project and potential impacts.

3.2 Response to issues relating to project justification

3.2.1 Concerns regarding funding/expenditure and patronage

Expenditure on this project is not justified

The project would be located in an area that is currently poorly served by dedicated public transport facilities. Residential and commercial development in North West Sydney will lead to significant increases in population and employment, with associated increases in travel demand. Whilst the project is mainly required to service established urban areas in North West Sydney, it would also service the transport needs of future growth areas.

Estimated patronage is not adequate to justify the project or produce a positive benefit cost ratio (BCR)

Section 5.3 of the environmental assessment notes that the estimated patronage would be up to 24 million per annum (by 2021) and is expected to continue to grow as the North West region continues to develop. As with all public infrastructure projects, the social and environmental benefits and the economic appraisal have been considered as part of the overall evaluation of the project.

Examples of the potential social and environmental benefits of the project include:

» Increased accessibility of groups that are more dependent on public transport such as school children and the elderly;

- Improvements to geographic equity – the project is consistent with commitments and strategies contained within the NSW Government's Sydney Metropolitan Strategy, State Plan[1] and Urban Transport Statement[2];
- External benefits – such as environmental benefits as a result of reductions in private vehicle use; and
- Transit oriented development benefits – benefits to areas surrounding station location in terms of development potential.

The project is also justified with regard to implementation of the NSW Government's Integrated Land Use and Transport package[3], which provides a framework for State government agencies, councils and developers to integrate land use and transport planning at the regional and local levels.

Project cost

The cost estimates of the project are being refined and will be finalised prior to construction commencing. Cost estimates will be subject to external review and verification.

Project funding

At this stage, it is planned that the State Government will fund the project. Specific funding arrangements have not been finalised, such as the potential use of developer levies and/or any value capture options.

3.2.2 Concerns that other transport links would be more effective in reducing travel times

The North West Transitway is designed to link areas in North West Sydney with the key western Sydney centres of Blacktown and Parramatta.

Whilst the North West Transitway will alleviate some road congestion in North West Sydney, it will focus on providing access to the Parramatta and Blacktown CBDs. The Transitway will have a separate but complementary role to the project. The North West Rail Link project would provide a trunk public transport link to the wider Sydney transport network and direct access to other centres in Sydney.

The Liverpool to Parramatta Transitway provides a regional link between Liverpool and Parramatta, and does not serve North West Sydney.

The project would enhance public transport along an established and growing corridor of travel demand by:

- Directly linking North West Sydney and 'global arc' centres of Sydney, including the Sydney CBD;
- Increasing access to the rail network across Sydney; and

[1] The State Plan, A New Direction for NSW, was launched by the Premier, Morris Iemma, on 14 November, 2006. www.nsw.gov.au/stateplan/

[2] The Urban Transport Statement: Responding to the Challenges of Travel and Transport within and across Sydney was launched by the Premier, Morris Iemma, on 20 November, 2006. http://www.nsw.gov.au/urban_transport.asp

[3] The Integrated Land Use and Transport (ILUT) package (Department of Urban Affairs and Planning, 2001. www.planning.nsw.gov.au/plansforaction/transport_planning.asp

» Providing a spine for integrated public transport in North West Sydney.

The road network and recent projects such as the Lane Cove tunnel do not provide the reduced congestion benefits that result from the project, nor achieve the objective of enhancing public transport access to North West Sydney.

In response to submissions that considered that the Epping to Chatswood Rail Line would be adequate to provide public transport improvements, it is important to note that the Epping to Chatswood Rail Line would not provide access to North West Sydney.

Overall, the project is considered an effective public transport mode that would improve travel times for commuters between Rouse Hill, Castle Hill and the CBD due to the high capacity, reliability (not being affected by traffic congestion) and clear route definition of rail systems.

3.3 Summary of issues relating to alternative projects to the North West Rail Link

Issues relating to selection of the project as the preferred option to provide public transport access to North West Sydney were raised in submissions. Suggested alternatives included:

» Commence the project at the Carlingford Line;

» Use of vacant space at the side of the M2 Motorway for a heavy rail line;

» Other forms of public transport, such as light rail, bus transitways or improved bus services;

» The (deferred) Epping to Parramatta Rail Link;

» Other rail projects that do not meet the objectives of the North West Rail Link project.

3.4 Response to issues relating to alternative projects to the North West Rail Link

3.4.1 Commence the project at the Carlingford Line and continue to Franklin Road Station

Connecting the North West Rail Link to the Carlingford Line, via a tunnel between Franklin Road Station and Carlingford, would not meet the primary objective of the Metropolitan Rail Expansion Program, which is to provide direct links between the new major growth and employment areas of the metropolitan region. Specifically, this alternative would not directly link North West Sydney to the 'global arc' centres of Sydney, including the CBD.

This rail connection would also not take advantage of key centres soon to be part of the CityRail network with the opening of the Epping to Chatswood Rail Line.

In addition, operation of the project during the morning two hour peak could involve at least eight trains per hour during peak periods (initially), and up to 12 trains per hour in the longer term, carrying up to approximately 14,000 passengers towards the CBD. There would be insufficient capacity on both the Carlingford and Western Lines to accommodate this demand, requiring significant (and costly) amplification to both corridors. Demand/capacity at existing rail stations would also be increased by additional arrival/departure to/from the CBD via the Western Line rather than spreading arrival/departure movements to/from north of the harbour.

Overall, it is likely that a rail connection from the North West via Carlingford would increase journey times between the North West and destinations on the global arc, making rail a less attractive option.

3.4.2 Vacant space at the side of the M2 Motorway should be considered for a rail link

A corridor of approximately 40 metres is required to develop a surface rail line. There is insufficient space at the side of the M2 Motorway for a corridor of this size.

In addition, the horizontal and vertical alignment of the M2 Motorway does not meet the design parameters necessary for the operation of a railway.

3.4.3 The option of light rail, bus transitways or improved bus services should be considered

As described in Chapter 6 of the environmental assessment, the NSW Government considered alternative modes and corridors during the option selection process. This involved determining which option (mode or corridor) would best meet the transport, land use, environmental and social objectives and provide the best value for money for the growing North West region. The review of alternatives included consideration of over 140 options based on previous technical studies, agency consultation and public submissions to the North West Rail Link Overview Report (Transport NSW, 2002) including:

» Heavy rail options;

» Light rail options;

» Transitway options; and

» Local bus options.

Key features of the evaluation results include:

» One of the heavy rail options (Epping to Rouse Hill via Castle Hill) performed significantly better than the other options;

» The heavy rail options outperformed the light rail and transitway options;

» The strong relative performance of the heavy rail options over other options in the economic appraisal is also reflected in the non-economic appraisal results;

» Heavy rail scores highest for four out of six of the non-economic criteria; and

Based on the detailed assessment of options, the heavy rail option, Epping to Rouse Hill via Castle Hill, was selected as the preferred option.

3.4.4 Construct the Epping to Parramatta Rail Link

The project would not preclude the construction of the rail link between Epping and Parramatta. The Epping to Parramatta section of the Parramatta Rail Link received approval from the Minister for Planning in February 2002. This section is currently deferred, pending a Government decision to proceed; however the rail corridor is protected under State Environmental Planning Policy No. 63 – Major Transport Projects.

The project (as modified) would use the existing stub tunnels as part of the underground link between Epping and Franklin Road Station. New stub tunnels would be constructed, as described in section 7.2, to allow for a future connection between Epping and Parramatta.

3.4.5 Other rail projects

Other heavy rail projects noted in submissions included:

» A rail line in tunnel between Castle Hill and Parramatta; and

» A rail line between Hornsby and Blacktown, via Castle Hill.

These alternatives do not meet the objectives of the project. The feasibility of these alternatives is not considered further in this report.

3.5 Summary of issues relating to project management

Issues relating to the overall management of the project included:

» Concerns about the proposed staging of the project and the timing of the stages;

» Interrelationships with other projects during design, construction and operation; and

» Concern about how the project would be constructed.

3.6 Response to issues relating to project management

3.6.1 Project staging

Requests to complete Stage 1 before 2015 and/or Stage 2 before 2017 and/or construct the project in a single stage, including concerns that staging of the project means that the second stage will be deferred indefinitely and not completed

The project forms part of the Metropolitan Rail Expansion Program and is a key component of the NSW Government's Sydney Metropolitan Strategy, State Plan[4] and Urban Transport Statement. In November 2006, the NSW Premier released an Urban Transport Statement outlining the range of projects that would be implemented by the NSW Government over the next ten years to improve transport in metropolitan Sydney. One such project was the North West Rail Link, to be delivered by 2017.

In November 2006, the NSW Government also announced that, in order to fast track delivery of the benefits of the project, it would be built in two stages. The first stage, between Epping and Hills Centre Station, is proposed to be operational by 2015. The second stage, between Hills Centre Station and Rouse Hill, is proposed to be operational by 2017.

3.6.2 Relationship to other projects and infrastructure

A number of submissions sought clarification on the interactions between the North West Rail Link project and other existing or planned rail infrastructure. In addition, submissions raised concerns about how the project would interact with development at Rouse Hill, Kellyville and

[4] The State Plan, A New Direction for NSW, was launched by the Premier, Morris Iemma, on 14 November, 2006. www.nsw.gov.au/stateplan/

Castle Hill. The relationship of the North West Rail Link project to other related projects and infrastructure is summarised below:

» The project is part of the Metropolitan Rail Expansion Program, which is a key element of the NSW Government's Metropolitan Strategy for Sydney. The program includes the North West Rail Link, the South West Rail Link and the CBD Rail Link. These projects would provide links between the major new growth and employment areas of the metropolitan region (the 'global arc').

» Existing Western Line from Blacktown to Strathfield - Western Line passengers who currently come from the North West would benefit from the project, as they would have the option of using the North West Rail Link and travelling down the Northern Line or North Shore Line to the Sydney CBD.

» Rouse Hill Regional Centre development - This centre is currently under development. Rouse Hill station is located within the development area and the stabling facility is located in close proximity. TIDC will be liaising with key stakeholders during precinct planning for Rouse Hill Station (refer commitment 9 in the statement of commitments) and ensure construction impacts are minimised (commitments 6 and 7).

» Balmoral Road Release Area - This release area is currently under development. Burns Road station is located within the release area. TIDC will be liaising with Baulkham Hills Shire Council and other key stakeholders during precinct planning for the station (refer commitment 9 in the statement of commitments) and ensure construction impacts are minimised (commitments 6 and 7).

» Castle Towers development - The proposed Castle Hill Station is located in the vicinity of the existing shopping centre, redevelopment of which is proposed by the owner. TIDC will be liaising with Baulkham Hills Shire Council and other key stakeholders during the precinct planning process for the station (refer commitment 10 in the statement of commitments).

3.6.3 Construction strategy and management

General construction impacts and environmental management

Some submissions considered that construction of the project would take too long and result in significant impacts during the construction period.

Construction is expected to begin in late 2009, with the first stage of the project (between Epping and Hills Centre Station) proposed to be completed by 2015. Construction of the second stage (between Hills Centre Station and Rouse Hill) would continue until 2017.

Construction planning requires further review and assessment, particularly as the project now incorporates the additional tunnel section between Epping and Franklin Road Station.

As with any major infrastructure project, it is acknowledged that there is the potential for significant impacts during construction. However, a range of construction strategies and mitigation measures are available to ensure that potential construction impacts are identified, assessed and managed (see commitments 4 and 5).

Specific concerns raised regarding construction within the Rouse Hill Regional Centre are noted. TIDC will be liaising with key stakeholders during the construction planning in the vicinity of Rouse Hill.

A construction strategy will be prepared defining the activities at each of the station sites and at other construction locations. In addition, communication and stakeholder liaison processes would be developed to ensure that the community and stakeholders are kept informed throughout the construction period (see commitments 2 and 3).

Further construction related measures in the statement of commitments are also proposed, including:

» Commitment 16, which aims to minimise and manage traffic impacts associated with construction;

» Commitment 18, which aims to minimise traffic disruptions associated with construction in the vicinity of major roads;

» Commitment 20, which establishes a process for construction noise and vibration management;

» Commitment 27, which aims to avoid or manage construction related impacts on flora and fauna;

» Commitment 29, which identifies further investigations into spoil reuse and transport;

» Commitment 31, which identifies further archaeological assessment required;

» Commitment 33 and 34, which establish consultation and management processes for indigenous heritage;

» Commitment 35, which identifies further investigations into geotechnical and groundwater issues;

» Commitment 37, which identifies further investigations into construction impacts on Elizabeth Macarthur Creek; and

» Commitment 45, which aims to minimise construction impacts on local businesses in the vicinity of construction sites.

Other submissions raised issues associated with potential construction impacts, such as noise or traffic impacts. These issues are addressed under the relevant heading in section 5 of this report.

Current construction activities

Some submissions queried whether current rail construction activities are associated with this project. These activities relate to various other rail projects that are underway (for example, the Epping to Chatswood Rail Line). None of these construction activities form part of this project.

3.7 Summary of issues relating to the concept plan as exhibited

Issues raised by submissions included:

» The reasons for changes in the location of the alignment, including those that have occurred since the 2002 Overview Report;

» Objections to having the tunnel underneath residential properties or schools;

» Objections to the location of the stabling facility at Rouse Hill;

» Objections to the viaduct section in the vicinity of Windsor Road; and

» Issues relating to stations including the selection of station locations proposed in the concept plan, the reasons for the stations selected, and suggestions regarding additional stations.

Submissions were received that supported or objected to various components of the concept plan, such as the surface works (quadruplication) of the Northern Line, the location of the stabling facility, the section of viaduct and the surface alignment.

Section 3.8 addresses the objections to, or queries about, aspects of the concept plan as it was described in the environmental assessment. Issues related to the aspect of the concept plan, such as noise or traffic impacts, are addressed under the corresponding heading in section 5.

Issues relating to the surface works on the Northern Line between north of Epping Station and Beecroft are discussed in section 4.

3.8 Response to issues relating to the concept plan as exhibited

3.8.1 Changes to the alignment since the 2002 Overview Report

Section 6.4.1 of the environmental assessment describes modifications to the proposed alignment that have occurred since the Concept Engineering Study[5] and exhibition of the Overview Report in 2002[6].

These changes have arisen from the outcomes of specialist studies and their recommendations, and the need to address concerns raised by the community, government agencies and other stakeholders during the exhibition of the Overview Report.

Specific concerns have been raised in the vicinity of Bella Vista, where the alignment was modified to minimise impacts on:

» Cumberland Plain Woodland (an endangered ecological community);

» The northern portion of the Bella Vista estate, by avoiding the requirement for a large cutting through the development;

» Sensitive land uses at the Hillsong Church (including an auditorium and a proposed television and radio studio); and

» Flooding and environmental risks associated with crossing Elizabeth Macarthur Creek in cutting.

Figure 1.3 in the Project Application and Preliminary Environmental Assessment (April 2006) shows the changes in the alignment since 2002. In addition to the requirement for a large cutting through the northern portion of the Bella Vista estate, the 2002 alignment would also be located under the existing residential areas south of Norwest Boulevard.

In the Beecroft area, the alignment (as exhibited in the environmental assessment) had been refined slightly from the 2002 alignment to straighten and simplify it. As discussed in Sections 7 and 8 of this report, the direct tunnel connection between Epping and Franklin Road Station is

[5] Arup Pty Ltd, North West Rail Link – Rail Infrastructure Study, Volume 1, Main Report, RIC, 2001.

[6] TransportNSW, Connecting Communities, North West Rail Link Overview Report, 2002

now the preferred alignment, and the tunnel alignment has therefore been modified in the Beecroft area as a result of further investigations.

Alignment in the street directory

A question was asked about the difference between the alignment presented in the environmental assessment to that shown in the street directory. The street directory provides an approximate route for future infrastructure based on information available to the publishers at the time of publication. It does not reflect an exact route location.

Following any concept plan approval, the publishers of street directories would have access to updated information, however the street directory should still not be used as a source for the exact route location. This information should be requested from TIDC if required.

3.8.2 Object to the tunnel being located beneath residential properties, schools or other sensitive receptors

The horizontal alignment has been designed to take advantage of roads and areas of public domain as far as practicable. However, the design of the rail corridor is constrained by a number of rail design parameters, including required gradients and curvatures. For this reason, in some areas, the corridor must pass beneath buildings.

The potential for impacts as a result of the construction and operation of a tunnel will depend on a number of factors including:

- The depth of the tunnel;
- The construction methodology;
- Geology of the area;
- The characteristics of buildings in the vicinity of the tunnel (eg type of foundation, wall materials etc);
- Train wheel condition;
- Rail track type; and
- Condition of the rails.

Regenerated noise (noise caused by vibrations travelling from the rail tracks through to the floor and walls of a building) may be experienced in some locations, depending on these factors.

Indicative depths of the rail tunnel are provided in Table 3.1.

The impacts of regenerated noise and vibration on residents and school students during operation of the rail line will be minimised through the use of appropriate track design. Different types of track design can be used to reduce the level of vibration caused at the track, and hence the level of vibration that reaches the surface. Extensive design work will be undertaken to ensure that stringent noise and vibration targets are achieved at all locations, including residential properties and schools.

The issue of noise and vibration from tunnel operation is addressed in section 5.6.

Table 3.1 Indicative depths of the rail tunnel

Location	Indicative depth of rail tunnel[1]	Geology[2]
Ray Road (Epping)	35-47m	Hawkesbury Sandstone
M2	27-31m	Hawkesbury Sandstone
Cheltenham Park (off Castle Howard Road)	28-43m	Ashfield Shale
(South of) Welham Street (Cheltenham)	38-41m	Ashfield Shale
Copeland Road (Cheltenham)	52-53m	Ashfield Shale
Fearnley Park (Hannah Road, Cheltenham)	25-35m	Ashfield Shale
Thompson's Corner	67-70m	Ashfield Shale
Castle Hill Road (at intersection with Victoria Road)	44m	Ashfield Shale
Robert Road (Cherrybrook)	26-27m	Ashfield Shale
Castle Hill Road (in the vicinity of the intersection with Old Northern Road)	44m	Ashfield Shale
Showground Road (at the intersection with Britannia Road)	30m	Hawkesbury Sandstone
Salisbury Road (at the intersection with Victoria Road)	27-29m	Hawkesbury Sandstone
Windsor Road (at the intersection with Salisbury Road)	48-50m	Hawkesbury Sandstone
Norwest Boulevard (at the intersection with Edgewater Drive)	22-25m	Hawkesbury Sandstone / Ashfield Shale
Cloverhill Grove (Bella Vista)	30-33m	Hawkesbury Sandstone / Ashfield Shale
Celebration Drive	18m	Ashfield Shale

Note [1] The depth is described as the distance between ground level and the rail track (ie, the bottom of the rail tunnel which has a diameter of 7 metres). This measurement is most relevant as the rail track is the source of groundborne vibration.

Note [2] Subject to detailed investigations.

3.8.3 Object to the location of the stabling facility at Rouse Hill

An interim stabling facility, as described in section 7.2.7 of the environmental assessment, is required as part of the project. The location is based on rail operational requirements, rail track design and the surrounding land uses in the vicinity of Rouse Hill. By crossing Windsor Road at the proposed location, direct impacts on existing heritage, commercial and residential properties on the eastern side of Windsor Road would be avoided.

The proposed location would be constructed in an area currently used for rural residential activities. This area, known as Area 20, is part of the North West Growth Centre. The Growth Centre Structure Plan suggests that Area 20 would consist of residential land uses. However, no precinct planning work has commenced. TIDC has been discussing land use issues with the Growth Centres Commission in regard to this site, which will continue as part of the next stage.

The stabling facility would be an interim facility, with a location for a permanent facility to be determined as part of the possible future extension of the North West Rail Link. Importantly, the location of the stabling facility does not preclude an extension of the North West Rail Link.

3.8.4 Object to the viaduct section in the vicinity of Windsor Road

A section of rail on viaduct from Samantha Riley Drive and over the Windsor Road/Old Windsor Road intersection, as described in section 7.2.4 of the environmental assessment and section 7.1.2 of this report, is proposed as part of the project. The rail alignment in this location traverses the Elizabeth Macarthur/Caddies Creek floodplain.

Crossing the floodplain requires particular attention to the selection of design and construction methodologies, to minimise impacts to this area and keep the rail line above the 1 in 100 year flood level, where the proposed alignment crosses Caddies Creek.

A rail tunnel in this location is possible, but would be difficult and more costly to construct due to the geology. Additionally, a tunnel section in this location would have greater impacts on the hydrogeology of the area. It is therefore considered appropriate to construct the rail line on viaduct in this section.

Additional visual impact assessment would be undertaken and measures to mitigate visual impacts would be developed (commitments 40, 41 and 42) as described in section 5.18.2.

3.8.5 Issues or questions relating to stations proposed in the concept plan

Lack of detail regarding station design and precinct design

Since the exhibition of the environmental assessment, initial station precinct planning has occurred and is detailed in section 7.4.

Many of the issues in relation to station design and precinct planning were matters of detail that cannot be fully addressed at the concept plan level. These issues have been noted and would need to be considered as part of further design development and the station precinct planning process.

The potential for impacts on existing structures or facilities within the station precincts will be assessed during the precinct planning process. Similarly, opportunities to integrate or support existing structures or facilities will be investigated, such as pedestrian links or improvements to public open space.

Security and safety issues associated with station design, station access and precinct planning will also be considered.

Franklin Road Station

The location of Franklin Road Station was questioned in some submissions, particularly its location in relation to main population centres.

During the early development of the project (prior to 2005) a number of alternative station locations were considered. The initial station and interchange options were compared based on a range of issues including:

» Potential vehicular and pedestrian access points;

- Connectivity to surrounding pedestrian catchments;
- Bus servicing patterns;
- For underground stations - closeness to the surface;
- Patronage potential;
- Engineering feasibility;
- Rail operational constraints regarding station spacing;
- Land use and availability; and
- Potential densification of the station precinct.

Franklin Road Station would be an underground station, located to the north of Castle Hill Road in Cherrybrook (near the boundary with West Pennant Hills), west of Franklin Road and east of Robert Road. This station would serve the population catchments of Cherrybrook and West Pennant Hills. A station in this area presents an opportunity to provide convenient bus access and potential park and ride facilities.

The site was chosen because of the large amount of available land and proximity to a main road and catchment area. It would have a large catchment area for walking/cycling, buses and kiss and ride, and park and ride. Some of the other options, such as Thompson's Corner, would result in a station that would be very deep and difficult to access.

The presence of both Franklin Road and Castle Hill Stations presents an opportunity for the development of bus routes linking residents in surrounding areas (such as Cherrybrook, West Pennant Hills, Thompson's Corner, Oakhill, Round Corner/Kenthurst, and Dural) to the stations.

Indicative plans for the Franklin Road Station precinct, including commuter parking, are discussed in section 7.4. The environmental assessment noted a target of 500 commuter car parking spaces. The indicative station precinct plans identify that this target could be exceeded, with approximately 960 spaces able to be accommodated on the site at grade.

Castle Hill Station

Concerns regarding the design of Castle Hill Station were raised. Some submissions considered that Castle Hill Station should include dedicated commuter parking.

Indicative plans for the Castle Hill Station precinct are discussed in section 7.4. The provision of commuter parking within the Castle Hill town centre is not considered feasible due to the high level of development in the area and desirable urban planning objectives for a regional centre. Access to the station will be by bus, taxi, walking/cycling or kiss and ride. This approach is consistent with the NSW Government's Integrated Land Use and Transport package[7], which provides a framework for State government agencies, councils and developers to integrate land use and transport planning at the regional and local levels.

Hills Centre Station

Concerns regarding the design of Hills Centre Station were raised, particularly the ability for this station to be accessible from surrounding land uses.

[7] The Integrated Land Use and Transport (ILUT) package (Department of Urban Affairs and Planning, 2001. www.planning.nsw.gov.au/plansforaction/transport_planning.asp

Indicative plans for the Hills Centre Station precinct, including commuter parking, are discussed in section 7.4. The accessibility of the station from the commercial precinct to the west of Cattai Creek requires further assessment in the next stage of the design process.

Significant additional investigations and planning is required for this station precinct to ensure that the project delivers an accessible and well connected station that is appropriate to the surrounding future development. Consultation and planning would be ongoing with Baulkham Hills Shire Council and other stakeholders.

The environmental assessment noted a target of 1,000 to 1,200 commuter car parking spaces at Hills Centre Station. However, the indicative station precinct plans identify that only approximately 640 spaces would be able to be accommodated on the site at grade.

Some submissions recommended moving Hills Centre Station to Carrington Road. The location of Hills Centre Station was subject to investigation prior to the North West Rail Link Overview Report (2002). A location on Carrington Road was investigated, and offered a potentially more visible station location and direct access for traffic. However, significant construction issues were identified at this site, including greater flooding risks, traffic disruptions and construction adjacent to residential properties.

Norwest Station

Concerns regarding the design of Norwest Station were raised. Some submissions considered that Norwest Station should include dedicated commuter parking.

Indicative plans for the Norwest Station precinct are discussed in section 7.4. The provision of commuter parking at this location is not considered feasible due to access and space constraints. However, shared parking arrangements would be further investigated (commitment 13).

A number of submissions recommended that a second station should be provided within the Norwest Business Park. The project alignment identifies six stations. During the design development a number of alternative station locations were considered. The proposed station locations were chosen to maximise access to the surrounding catchment area. A second station in the Norwest Business Park is likely to be too close to the proposed station to receive sufficient patronage for it to be viable.

Additionally, an additional station would increase travel times between Rouse Hill and the CBD.

Overall, it is considered that other areas of the Norwest Business Park could be better serviced by a high frequency bus service connecting with both Burns Road and Norwest stations.

As a result of further investigations undertaken since exhibition of the environmental assessment, the location of Norwest Station has been moved by 100 metres. This is discussed in section 7.5.

Burns Road Station

Concerns regarding the design of Burns Road Station were raised, particularly the relationship of the station with surrounding future land uses and Baulkham Hills Shire Council's draft Development Control Plan.

Indicative plans for the Burns Road Station precinct, including commuter parking design, are discussed in section 7.4. The environmental assessment noted a target of up to 1,200 commuter car parking spaces. However, the indicative station precinct plans identify that approximately 640

spaces would be able to be accommodated on the site at grade. This would be in addition to the 250 spaces at the existing Transitway park-and-ride facility.

Land use planning and the zoning of the Balmoral Road Release Area is the responsibility of Baulkham Hills Shire Council. Notwithstanding this, TIDC would consult with Council and other stakeholders to ensure that environmental planning instruments reflect requirements in relation to planning, construction and operation of the project, and include integrated planning provisions for appropriate development controls within the vicinity of the rail line.

Rouse Hill Station

Concerns regarding the design of Rouse Hill Station were raised, particularly the relationship of the station with the Rouse Hill Town Centre and the bus transitway.

Indicative plans for the Rouse Hill Station precinct are discussed in section 7.4.

The Rouse Hill Development Control Plan guides land use planning for the Rouse Hill Station precinct. TIDC would consult Baulkham Hills Shire Council, the Department of Planning, Landcom and other stakeholders to ensure that development of the project reflects requirements in relation to planning, construction and operation of the town centre.

Concerns that the concept plan does not include a station at Samantha Riley Drive

A station at Samantha Riley Drive was considered as part of the early development of the project. However, given that the station was positioned less than one kilometre north of Burns Road Station, it would have limited patronage benefits and would lead to an increase in the travel time from Rouse Hill to the CBD. It has therefore not been included as part of the concept plan. It is considered that residential areas near Samantha Riley Drive would be adequately serviced by bus connections to Burns Road or Rouse Hill Stations or by the park and ride facility at Burns Road. Adequate provision for kiss and ride would also be available at Burns Road and Rouse Hill Stations.

Whilst the project does not incorporate a station at Samantha Riley Drive, the design does not preclude a future station at this location.

Other alternative stations

Other potential station locations noted in submissions included:

» An underground station below the Beecroft Village Green, including underground commuter parking; and

» A station near Fairway Drive, Kellyville.

These potential station locations are not in the vicinity of the proposed alignment of the project. The feasibility of these suggestions is not considered further in this report.

3.9 Summary of issues related to the alternative options presented in the environmental assessment

Submissions included support for, or objections to, the alternatives presented in section 6.5 of the environmental assessment. In general:

» There was significant support for the Epping to Franklin Road Tunnel Option; and

» There was objection to the Hills Centre to Rouse Hill Elevated Option.

There were also several objections to the Epping to Franklin Road Tunnel Option and one submission supported the Hills Centre to Rouse Hill Elevated Option.

3.10 Response to issues related to the alternative options presented in the environmental assessment

3.10.1 Epping to Franklin Road Tunnel Option

A large number of submissions expressed support for this option or a variation to the direct tunnel connection. As outlined in section 1.2, the preferred project now incorporates a direct tunnel connection between Epping and Franklin Road Station (further information is provided in Sections 7.1 and 7.2). Some objections and issues were raised regarding the direct tunnel connection, and these are addressed below.

Section 3.11 provides responses to issues related to other suggested alternative alignments for the project.

The Epping to Franklin Road Tunnel Option will not provide the same operational benefits for freight

Improving rail freight operations is not an objective of the project. The State Infrastructure Strategy[8] identifies commitments to improve rail freight operations within the Sydney metropolitan area. The State Plan[9] identifies that amplification of the main north track would be delivered by 2012, which may include surface works (quadruplication) of the Northern Line between Strathfield and Hornsby to assist freight movements. The draft AusLink Sydney Urban Corridor Strategy[10] also identifies the upgrading of the Northern Line as a priority.

The Epping to Franklin Road Tunnel Option complicates (or precludes) the underground junction and alignment for a future connection to Carlingford and Parramatta

The North West Rail Link would not preclude the construction of the approved rail tunnel between Epping and Parramatta. The Epping to Parramatta rail link is currently deferred, pending a Government decision to proceed, however the rail corridor is protected under State Environmental Planning Policy No. 63.

The project would use the existing stub tunnels provided for this link, however new stub tunnels would be constructed as described in section 7.2.

Concerns about the potential environmental impacts of the Epping to Franklin Road Tunnel Option

The potential environmental impacts of the Epping to Franklin Road Tunnel Option would be consistent with the potential impacts as described in the environmental assessment for a rail tunnel. TIDC is seeking approval for a concept plan, and further environmental assessment would be carried out as part of the next stages of the planning and design process.

[8] http://www.treasury.nsw.gov.au/sis/part1-pp1-52.pdf

[9] The State Plan, A New Direction for NSW, was launched by the Premier, Morris Iemma, on 14 November, 2006. www.nsw.gov.au/stateplan/

[10] http://www.auslink.gov.au/whatis/network/corridors/draft_corridors.aspx

The cost of the Epping to Franklin Road Tunnel Option is unclear

The final estimate of overall project costs is still under review. However, a review of the cost of the surface works between Epping and Beecroft compared to the direct tunnel connection indicated there would likely be a significant project saving if the direct tunnel option was adopted.

3.10.2 Hills Centre to Rouse Hill elevated option

A significant number of submissions objected to this option and one submission supported this option. Based on additional review since the exhibition of the environmental assessment (refer section 7.1.2), this option will not be considered further and is not part of the concept plan.

3.11 Summary of issues relating to other suggested alternative alignments for the North West Rail Link

A number of submissions made suggestions about possible alternative alignments, including:

» Alternative locations for the direct tunnel connection between Epping and Franklin Road;

» Alternatives to locating the rail corridor below Bella Vista and Norwest Business Park;

» Placing the rail line in tunnel for the entire route;

» Modifications to the alignment near Showground Road and the Hills Centre Station; and

» Alternative dive locations associated with a surface connection off the Northern Line.

3.12 Response to issues relating to other suggested alternative alignments for the North West Rail Link

3.12.1 Alternative alignments for the direct tunnel connection between Epping and Franklin Road Station

Some submissions suggested alternative alignments for the direct tunnel connection between Epping and Franklin Road, including an option to run from Epping under the M2, then under Pennant Hills Golf Course and the Cumberland State Forest and onto the Franklin Road Station;

The preferred project now incorporates a direct tunnel connection between Epping and Franklin Road Station. As described in section 7.2, a review of the tunnel alignment was undertaken. This review identified a preferred tunnel alignment between Epping and Franklin Road Station and considered suggestions made in submissions. The preferred tunnel alignment was assessed using the following criteria:

» Rail design (length, track grades and track curves);

» Relationship with any future Epping to Parramatta rail tunnel connection;

» Constructability, cost and program;

» Maximising the use of public land (roads / parks) within the rail tunnel corridor; and

» Typical tunnel depth.

The preferred direct tunnel connection between Epping and Franklin Road Station has been modified from the alternative alignment described in the environmental assessment. The

preferred alignment, which forms part of the concept plan, is shown in the drawings provided in Appendix C (in Volume 2).

3.12.2 Alternatives to locating the rail corridor below Bella Vista and Norwest Business Park

The preferred alignment through the Norwest Business Park and Bella Vista area is considered to be the optimal alignment based on the technical, social, environmental and other factors that influence the rail design.

The potential for adjustments to the rail alignment in the vicinity of Bella Vista and Norwest Business Park was investigated in response to concerns from residential property owners within or adjacent to the proposed rail corridor. Additionally, owners/occupiers of commercial properties in the Norwest Business Park (predominantly along Meridian Place and Lexington Drive) raised concerns about the rail corridor passing beneath their properties. Investigations were informed by submissions received and detailed technical analysis. Four alternative alignments were investigated. Further information is provided in section 7.3.

Other suggestions for alternative alignments through this area included reverting to the alignment in the North West Rail Link Overview Report (2002) or relocating the alignment further to the north.

The alignment outlined in the North West Rail Link Overview Report (2002) was modified for the reasons discussed in section 3.8.1.

An alignment from Salisbury Road along the boundary of Norwest Business Park and the Golf Club would avoid the Norwest Business Park and therefore preclude a station in the Park. The assessment of station locations identified that Norwest Business Park is an important location for a station due to the large passenger catchment. The Norwest Business Park is identified in the NSW Government's Sydney Metropolitan Strategy as a 'specialised centre' with significant employment that would benefit from the provision of mass public transport.

3.12.3 Tunnel the entire length

Due to the cost implications associated with constructing and operating a new rail line completely in tunnel, surface sections have generally been proposed in areas that are yet to be completely developed. The western part of the study area is largely undeveloped and provides opportunities to incorporate the project into future land use planning as has already occurred as part of the Balmoral Road Release Area and Rouse Hill Town Centre.

3.12.4 Modifications to the alignment near Showground Road and the Hills Centre Station

This change was suggested to reduce the number of residential properties above the tunnel corridor. The horizontal alignment is chosen to balance its location with rail operational criteria, such as track curvature and grade. Changes to the horizontal alignment in the vicinity of Showground Road are restricted by the location of Hills Centre Station because the alignment must turn and straighten in this section whilst maintaining reasonable train operational criteria, as the station is required to be located on a straight section of track.

3.12.5 Alternative dive locations associated with a surface connection off the Northern Line

As outlined in section 1.2, the surface connection off the Northern Line is no longer part of the project, therefore any alternative dive locations are not considered further.

3.13 Summary of issues relating to operation

Issues relating to the operation of the project included:

» Rail safety and tunnel safety concerns;

» Queries regarding how the project would operate; and

» Other operational issues including the potential increase in operations along the Northern Line and the links between the project and the Rail Clearways program.

3.14 Response to issues relating to operation

3.14.1 Rail safety and tunnel safety concerns

Rail safety in the tunnel

Safety is a key component of all rail projects, including the North West Rail Link. Safety has and would be a focus throughout all stages of project development, from the early design stages right through to construction and commissioning.

Strict safety risk management processes would be used to ensure that safety risks are identified and that measures are implemented to ensure that the level of risk is minimised. The railway would also be designed to meet the latest statutory and RailCorp standards for track alignment and structural strength.

A comprehensive fire and life safety assessment will be undertaken in future stages of the design process.

Construction of twin tunnels is proposed, which is considered to have lower risks than a single tunnel. Twin tunnels provide the opportunity to evacuate from one tunnel into the other.

In accordance with the National Fire Protection Association Standard for Fixed Guideway Transit and Passenger Rail Systems, NFPA 130 (2003), cross passages for emergency egress to the opposite tunnel would be located 533 metres from each station, followed by spacings no greater than 243 metres apart. Emergency egress stairs, draught relief and ventilation structures would be incorporated into the station structures, along with associated equipment.

Potential affects of electro-magnetic fields

Investigations undertaken for the Epping to Chatswood Rail Line concluded that impacts of electro-magnetic fields on human health are unlikely, given that high frequency emissions would be attenuated by surrounding rock and that levels of electro-magnetic radiation produced by the project would be consistent with that associated with other rail lines. While noting the concerns raised, there are no Australian Standards for exposure to electro-magnetic radiation, although the NSW Health advocate a limit of 4 milliGauss for residential exposure. The likely levels resulting

from the rail tunnel would be well below this criterion. Therefore, impacts on human health as a result of electromagnetic fields are unlikely to result from the project.

3.14.2 Train operations

Projected rail traffic levels and stopping patterns

Detailed operational information has not been developed at this stage of the project. Detailed timetable planning would reflect passenger demands both in the North West region and throughout the rail network.

Operation of the project during the morning two-hour peak could involve at least eight trains per hour during peak periods (initially), and up to 12 trains per hour in the longer term, carrying up to approximately 14,000 passengers towards the CBD.

Stopping patterns would be linked to the operation of the CBD Rail Link and South West Rail Link services.

Clarification on passenger or freight (electric or diesel) trains used for the project

The project will be an electrified passenger only rail line.

Provision of track access for maintenance and emergency access

The provision of track access for maintenance and emergency access is subject to further design as described in the statement of commitments (commitment 19).

Emergency access or egress to/from the tunnel would be available at stations, which are located at regular intervals. In addition, and in accordance with required safety standards, a mid-tunnel emergency egress facility would provide access to the tunnel between Epping and Franklin Road Station. The location of this facility is subject to further design development.

Train speed

The rail alignment is generally designed to maximise train speeds to reduce journey times. Maximum design speeds of up to 115 km/hour are possible for the project. However, curved sections of the alignment, such as between Castle Hill and Hills Centre Station, may reduce design speeds to about 95 km/hour.

Average train speeds during operation would be less than the design speed, typically up to 100 km/hour.

Implementation of integrated ticketing

The Ministry of Transport currently sets government policy on integrated ticketing. TIDC supports the development of an integrated public transport ticketing system and the project would adopt Government policy at the time of opening.

3.14.3 Other operational issues

Increase in operations along Northern Line and at existing stations

Operating scenarios along the Northern Line would be considered by RailCorp in the future to provide services appropriate to demand and capacity. As the surface connection off the Northern

Line is no longer proposed as part of the project (see section 1.2), the project would not require, nor directly result in, an increase in operations along the Northern Line.

Links between North West Rail Link and the Rail Clearways program

The Rail Clearways program is an initiative of the NSW Government to improve capacity and reliability on CityRail's Sydney suburban network, which is recognised as one of the most complex in the world.

Due for completion in 2010, the Rail Clearways plan comprises 15 projects that will separate the network's 14 metropolitan rail routes into the following five clearway routes.

» Clearway 1 - Eastern Suburbs and Illawarra;

» Clearway 2 - Bankstown;

» Clearway 3 - Campbelltown Express;

» Clearway 4 - Airport and South; and

» Clearway 5 - North West.

The Rail Clearways program will be completed prior to the project becoming operational in 2015 (Stage 1) and 2017 (Stage 2).

3.15 Future extension beyond Rouse Hill

The Metropolitan Rail Expansion Program includes long term plans to extend the North West Rail Link to the Richmond Line. However, any future extension is not part of the North West Rail Link project for which TIDC is seeking concept approval and would be subject to a separate environmental assessment and approvals process.

As identified in the Government's Urban Transport Statement (2007), a new Centre for Transport Planning and Product Development has been created within the Ministry of Transport. The Centre is charged with the role of ongoing planning for the Metropolitan Rail Expansion Program, including preliminary investigations into the proposed extension of the North West Rail Link beyond Rouse Hill.

The Centre is commencing pre-feasibility investigations into the North West Rail Link extension and will consider a range of corridor and modal options to best meet the transport task for North West Sydney. It is expected that a preferred option will be identified by the end of 2007.

The completion of the extension investigations would be undertaken in consultation with the Growth Centres Commission.

Planning for bus services within the North West Growth Centre is the responsibility of the Ministry of Transport and Growth Centres Commission.

4. Issues relating to the surface works on the Northern Line between north of Epping Station and Beecroft

4.1 Overview

A large number of submissions (approximately 1,194 or 73% of submissions received) noted an objection to the proposed 2.5 km surface works on the Northern Line between north of Epping Station and Beecroft Station (including works at Cheltenham Station) described as part of the concept plan in the environmental assessment. Of particular concern was the tunnel dive point proposed adjacent to The Crescent in the vicinity of the Beecroft Village Green.

Specific concerns raised are summarised below.

Some submissions expressed support for the alternative to the surface connection described by the environmental assessment, which involved an underground rail connection between Epping and Franklin Road. Such submissions stated that this option would remove the impacts associated with the proposed surface works. Many community submissions also stated that this option would be cheaper, easier to construct, and provide more operational flexibility for the rail network.

Two submissions supported the surface works on the Northern Line between north of Epping Station and Beecroft Station.

4.2 Summary of issues relating to the surface works between north of Epping Station and Beecroft Station

Issues raised included:

- Potential for detrimental impact on the Beecroft-Cheltenham area in general;
- Loss of amenity and streetscape associated with the removal of trees for the project and the upgrading of Cheltenham Station,
- Potential impacts on community facilities including Booth Park, the Village Green, tennis courts and the Scout Hall;
- Potential for general impacts on the heritage significance of Beecroft and Cheltenham, as well as specific impacts on heritage listed items including heritage listed houses, gardens and trees;
- Potential for impacts on flora and fauna habitat as a result of clearing;
- Disruption to residents;
- Noise and vibration impacts during construction;
- Noise and vibration impacts as a result of increase in freight trains and/or trains being closer to residential properties;
- Noise levels near the dive point;

- Objection to the upgrading of Cheltenham Station due to impacts to the surrounding area, including noise, loss of amenity, reduction of commuter parking and removal of trees;
- Impacts of construction traffic; and
- Visual impacts of noise barriers.

4.3 Response to issues relating to the surface works between north of Epping Station and Beecroft Station

Following additional investigations undertaken by TIDC, consultation with key stakeholders, including RailCorp, and the exhibition of the environmental assessment, TIDC has determined that a direct tunnel connection between Epping and Franklin Road Station is the preferred option for the project.

Further detail is provided in section 7 and 8.

As the surface works on the Northern Line are no longer proposed as part of the project, the impacts outlined above would no longer be associated with the project. Where a submission raised other issues related to the tunnel sections of the project that would still apply, these issues are addressed in the relevant section of the report.

It is noted that the State Infrastructure Strategy[11] identifies commitments to improve rail freight operations within the Sydney metropolitan area. The State Plan[12] identifies that amplification of the main north track would be delivered by 2012, which may include surface works (quadruplication) of the Northern Line between Strathfield and Hornsby to assist freight movements. The draft AusLink Sydney Urban Corridor Strategy[13] also identifies the upgrading of the Northern Line as a priority.

[11] http://www.treasury.nsw.gov.au/sis/part1-pp1-52.pdf

[12] The State Plan, A New Direction for NSW, was launched by the Premier, Morris Iemma, on 14 November, 2006. www.nsw.gov.au/stateplan/

[13] http://www.auslink.gov.au/whatis/network/corridors/draft_corridors.aspx

5. Issues relating to the key assessment requirements

5.1 Summary of issues relating to land use, acquisition and infrastructure planning

Issues raised in submissions included the potential for impacts on:

» Future development above the rail tunnel corridor;

» Existing facilities, including the Castle Hill Showground and the need for relocation of facilities; and

» Integration with land use and infrastructure planning.

5.2 Response to issues relating to land use, acquisition and infrastructure planning

5.2.1 Impacts on future development

Impact on future commercial development due to the location of the tunnel corridor below commercial properties

Design requirements for parameters such as grade and curvature have been applied to both the indicative vertical and horizontal alignments to meet the proposed operational requirements of the project. Topography and the location of railway stations also play an important role in determining where the railway line is located relative to the surface.

The project involves extensive use of tunnelling. Development above, below and adjacent to the rail tunnel, or otherwise potentially impacting on the construction and operation of the project, would have to be designed taking the project into consideration.

The presence of the project does not necessarily preclude future development above the corridor. The extent of the potential constraint can only be determined based upon the type of development proposed and the location of the development. Sensitive design of any surface development could successfully mitigate the potential for physical impacts of the development on the project. The project will also incorporate appropriate design parameters to ensure that the potential for operational impacts (for example, regenerated noise), are minimised.

Future zoning of Castle Hill Showground

Land use planning and the zoning of the showground and surrounds is the responsibility of Baulkham Hills Shire Council and the Department of Planning.

TIDC would reaccommodate or replace any facilities or services at Castle Hill Showground directly affected by the construction site and/or location of station buildings at the Hills Centre Station to allow the Showground to continue to function in its current capacity.

5.2.2 Impacts on existing facilities

Impacts associated with construction of the Hills Centre Station

Section 7.5.7 of the environmental assessment includes information on the construction site required to construct the Hills Centre Station. This site would also provide construction support for launching the tunnel boring machines and for tunnel spoil removal. The site would use an area to the south west of the Castle Hill Showground Oval. Showground buildings and trees currently occupy this area. Facilities or services operating from these buildings would be reaccommodated by TIDC in consultation with the showground management committee, Baulkham Hills Shire Council and any other key stakeholders.

Use of the Council Depot site is proposed and would be considered in consultation with Council.

When operation of the project commences, Hills Centre Station would improve the accessibility of the Hills Centre area (including the showground) to Sydney's public transport network.

Need for relocation of existing facilities

Any temporary relocation of commercial, community or infrastructure/service facilities would be assessed as part of design development. If relocation were required, this would be undertaken in consultation with the relevant stakeholders.

5.2.3 Integration with land use and infrastructure planning

Current planning controls and potential development pressures from a new station

This concern relates to land use planning and zoning, such as Local Environmental Plans and Development Control Plans. Land use planning and the zoning is the responsibility of Councils and the Department of Planning.

Any potential future land use zoning changes along or adjacent to the North West Rail Link are outside the scope of this project. Such changes would be subject to separate procedures and approval processes under the *Environmental Planning and Assessment Act 1979*.

TIDC would consult with stakeholders to ensure that planning instruments consider the project (commitment 6).

Road infrastructure planning

Additional concerns were raised with regards to road infrastructure planning, which is the responsibility of the RTA and local councils. TIDC would continue to consult with the RTA and local councils to ensure that future road upgrades are developed in consideration of the project. Specific investigations would be required, but not limited to, construction of the bridge over Windsor Road at Kellyville, and cut and cover construction under Norwest Boulevard, Windsor Road and Burns Road (commitment 18).

Preliminary investigations into the rail tunnel alignment in the vicinity of the RTA's proposed M2 to F3 road tunnel indicate that the North West Rail Link tunnels would maintain minimum clearances to any future M2 to F3 road tunnel above the project.

Utilities, including water supply networks

Adjustments and relocation of utility services are subject to further design development and would be undertaken in consultation with service providers.

Any requirements of Sydney Water and other utility providers would be informed by future investigations.

5.3 Summary of issues relating to traffic, transport, parking and access

Issues raised by submissions included:

» Potential impacts of construction traffic, traffic generation and access; and

» Provision and availability of commuter parking.

5.4 Response to issues relating to traffic, transport, parking and access

5.4.1 Traffic impacts of the project

Queries regarding potential traffic generation associated with construction

The potential impacts of traffic generated during the construction phase were outlined in the section 9.2.2 of the environmental assessment, which identified potential impacts associated with safety, road capacity, congestion, amenity and disruption to pedestrians/cyclists, and bus services (including bus transitways). Traffic impacts are expected to occur at all construction sites (including station sites) and as a result of the transportation of spoil.

These impacts require further assessment during the next stage of the planning process. While it is likely that these impacts would be consistent with the environmental assessment, they would be assessed (and dealt with) in more depth during the construction planning process, when the details of the construction process and staging are more developed.

As a result of further investigations (refer to section 7.8), construction planning would now focus on spoil truck movements from a number of sites rather than being concentrated at one site.

Commitment 16 aims to minimise and manage traffic impacts associated with construction, whilst commitment 18 aims to minimise traffic disruptions associated with construction in the vicinity of major roads.

Queries regarding the potential for impacts of additional traffic associated with station access on the road network

The potential operational characteristics associated with proposed stations were outlined in section 9.2.3 of the environmental assessment. Characteristics considered included the key access modes of vehicles (park and ride, kiss and ride, servicing), public transport (bus), taxi, cyclists and pedestrians.

Potential traffic impacts at each station could not be fully addressed at the concept plan stage. Issues raised have been noted and would be considered as part of the further design development and environmental assessment planned for the next stage of the project, including through the precinct planning process (section 7.4).

Commitment 11 states that further studies would be undertaken to consider the integration of the station with the local area during operation to ensure that predicted patronage and mode access

are catered for during operation. Studies would consider local connectivity requirements; pedestrian modelling (including emergency access); the potential impacts of traffic accessing the station from the surrounding road network; parking requirements and the integration of the Transitway and other bus services with the new rail stations.

Potential impacts on the road network surrounding each station would be investigated in accordance with the commitment 17, which identifies that future traffic modelling/analysis would be undertaken. Commitments 14 and 15 identify specific traffic access investigations in the vicinity of Franklin Road Station.

5.4.2 Commuter parking

Quantum of commuter parking

Some submissions expressed concern with the apparent lack of commuter parking at various locations, while others have expressed a perception that too much parking is proposed to be provided.

Section 7.2.9 of the environmental assessment identifies the opportunities and constraints associated with commuter parking at each station.

Decisions to provide commuter parking necessitate balancing a range of factors, for example:

» Provision of parking provides the opportunity for commuters to drive to the station in order to access the rail network;

» Commuter parking generates traffic movements (a high proportion during the peak periods), which can congest roads and intersections areas around stations and impact on local amenity;

» Commuter parking is expensive to provide and takes up valuable land around stations which could be used for land uses that bring value to (and derive value from) the investment in commuter rail; and

» Commuter parking, by its nature, can impact on the viability of feeder bus services, as they can divert potential users from public transport to private vehicles.

The locations, scale, design and quantum of park-and-ride facilities at stations would be reviewed during future design development and the precinct planning process (commitment 12).

Consistency with government policy on commuter parking

The provision of commuter parking at stations would be reviewed based on the transport principles established by the Metropolitan Strategy, specifically action item D3.2.1 – *Develop and implement a metropolitan-wide parking policy to encourage use of public transport to centres and ensure a consistent approach across centres*.

At present there is generally no charge for commuter parking associated with rail stations.

Concerns that not enough commuter car parking would be provided at Franklin Road and Hills Centre Stations

The scale, design and quantum of park-and-ride facilities would be further addressed by the precinct planning process, as outlined in section 7. This process would balance preliminary estimates for car parking provision with the spatial and functional constraints of specific sites.

Indicative plans for the station precincts, including commuter parking, are discussed in section 7.4. The environmental assessment noted a target of up to 1,200 commuter car parking spaces at Burns Road Station and a target of 1,000 to 1,200 commuter car parking spaces at Hills Centre Station. However, the indicative station precinct plans identify that, at both these locations, approximately 640 spaces would be able to be accommodated on each site at grade.

It should be noted that, as part of the ongoing precinct planning process, a detailed assessment would be undertaken to determine the traffic impacts associated with parking provision. The outcome of this investigation could modify the number of parking spaces eventually provided.

Concerns that no dedicated commuter car parking would be provided at Castle Hill Station

It is intended that Castle Hill Station will be the focus of a public transport hub and improve public transport access to the Castle Hill town centre, including Castle Towers. Castle Hill has been identified as a regional centre in the *Sydney Metropolitan Strategy, City of Cities – A Plan for Sydney's Future* (Department of Planning, December 2005). The presence of the station would provide an opportunity to augment existing bus connections to Castle Hill.

Castle Hill Station is not intended to function as a commuter park and ride station, whereas adjoining stations (Franklin Road and Hills Centre) would.

5.4.3 Cycle facilities and access to stations

The project would include cycle facilities in accordance with commitments 9 and 11. The role of each station within the context of provision of integrated pedestrian and cyclist facilities would be established in consultation with councils, government agencies, land owners and local communities (commitment 9).

For the project to meet its strategic objective, particularly the objective of providing opportunities to walk to stations, local connectivity requirements and bicycle facilities would need to be established at each station (commitment 11). However, additions to the larger cycle network would generally be the responsibility of local councils.

The precinct planning process would identify opportunities to develop good pedestrian and cycle links.

5.5 Summary of issues relating to noise and vibration

Concerns raised included:

- The potential for damage to buildings and structures (such as swimming pools) during construction and operation of the tunnel;
- The potential for noise impacts as a result of the construction of the tunnel and the use of tunnel boring machines, and the construction of the stations and other surface facilities, including at construction sites;
- The potential for noise impacts as a result of the operation of the tunnel, stations and ancillary facilities;
- The potential for noise impacts as a result of the operation of the viaduct over Elizabeth Macarthur Creek floodplain;
- The potential for noise impacts as a result of the operation of the stabling facility;

- Noise levels for staff and rail patrons (occupational health and safety issues);
- Level of noise assessment to date and the need for more detailed information in order to assess individual impacts; and
- Operational noise criteria that would be applied.

5.6 Response to issues relating to noise and vibration

5.6.1 Damage to buildings as a result of vibration – tunnel operation and construction

Concerns regarding the potential for damage to buildings and structures (such as swimming pools) as a result of the construction of the tunnel and the use of tunnel boring machines

The risk of damage to buildings, swimming pools or other structures from vibration during construction should be negligible given the proposed tunnel depths. Section 9.3.4 of the environmental assessment notes that regenerated noise during construction (created when vibrations produced by the tunnel boring machine (or other tunnelling equipment) travel up through the ground and into buildings causing flat surfaces in the building to vibrate) could be up to 50 dBA (decibels A-weighted). The corresponding vibration level encountered at buildings above the tunnel construction activities would be significantly less than standards at which even superficial cosmetic damage would be expected. Experience from construction of the Epping to Chatswood Rail Line indicates that there is negligible risk of vibration damage during the tunnel construction phase (provided that prudent construction and excavation management procedures are followed).

The statement of commitments (commitment 20) notes that processes would be established for detailed regenerated noise and vibration predictions, management of activities and machinery during construction and vibration monitoring and reporting. Commitment 2 notes that communication strategies for the construction stage would be implemented. For example, building condition surveys would be offered to property owners for all structures within a specified distance of the tunnel alignment. These surveys would be undertaken prior to construction as a precautionary measure. If a property owner believed damage had been caused as a result of construction, the building condition survey could be used to assess the claim.

If damage to property can be shown to have occurred as a result of construction activities, this damage would be rectified at no cost to the property owner.

Concerns regarding the potential for damage to buildings and structures (such as swimming pools) as a result of the operation of the tunnel

The vibration caused by operation of the trains in the tunnel would be significantly lower than the vibration caused during the construction of the tunnel.

Both regenerated noise (see section 5.6.3) and physical vibration in a building are caused by the same mechanism - vibration reaching the building after travelling through the ground.

The standards normally used as the basis for assessing the risk of vibration damage to structures are German Standard DIN 4150 Part 3 1999 and British Standard BS 7385 Part 2 1993. As it is generally more difficult to achieve the criteria for regenerated noise than the criteria in the

physical vibration standards, the design measures implemented to control regenerated noise would assist in reducing vibration levels from the operation of trains in the tunnel to well below the criteria in the vibration standards.

Based on achievement of the regenerated noise criteria, vibration should be imperceptible or barely perceptible at residential properties during the passing of most trains.

5.6.2 Damage to buildings as a result of vibration – surface operations and construction

Concerns regarding the potential for damage to buildings and structures as a result of surface construction activities

Section 9.3.3 of the environmental assessment noted that vibration during construction of surface sections may be perceptible but would not be expected to cause damage to buildings. Site specific construction noise and vibration management would be subject to further design and planning in accordance with commitment 20. At some locations, it may be appropriate to undertake building condition surveys before and after the construction works.

Concerns regarding the potential for damage to buildings and structures as a result of surface operation

Surface operations are proposed to take place between Burns Road Station and Rouse Hill Station.

On the western side of the railway corridor, Windsor Road would be located between the railway corridor and the nearest residential receiver locations. These locations would be unlikely to be affected by railway vibration.

On the eastern side of the railway corridor, vibration from train pass-bys could be perceptible at residential buildings within approximately 40 metres from the nearest track. However, compliance with the vibration criterion for human comfort would be achieved at all locations, provided that an appropriate buffer distance (within the rail corridor) is maintained. The potential for building damage from train pass-bys is negligible. Notwithstanding, mitigation of potential vibration impacts would be undertaken in accordance with commitment 24.

5.6.3 Noise impacts – tunnel construction and operation

Concerns regarding the potential for noise impacts and disturbance as a result of the construction of the tunnel and the use of tunnel boring machines

During construction, it is expected that regenerated noise would be experienced as a result of the construction of the tunnel. Section 9.3.4 of the environmental assessment notes that regenerated noise during construction (created when vibrations produced by the tunnel boring machine travel up through the ground and into buildings causing flat surfaces in the building to vibrate) is generally correlated with depth of the tunnel. For example, regenerated noise during construction could be up to 50 dBA (decibels A-weighted) above a tunnel depth of approximately 25 metres. However, regenerated noise at this level would typically only occur over a period of approximately 2 to 3 days at any one location as tunnelling activities pass below.

The statement of commitments (commitment 20) notes that processes would be established for detailed regenerated noise predictions, management of activities and machinery during

construction and noise monitoring and reporting. Commitment 2 notes that community consultation strategies for the construction stage will be implemented. For example, targeted notification of tunnel construction progress would be undertaken for the duration of construction and all reasonable and feasible mitigation measures to minimise impacts would be implemented.

Concerns regarding the potential for noise impacts and disturbance as a result of the operation of the tunnel

Regenerated noise during operation is created when vibrations produced at the track by trains running in the tunnel travel up through the ground and into buildings causing flat surfaces in the building to vibrate faintly. Regenerated noise would be assessed in accordance with the *Interim Guidelines for the Assessment of Noise from Rail Infrastructure Projects* (Department of Environment and Climate Change, 2006) as described in section 5.6.6.

The impacts of regenerated noise and vibration during operation of the project would be minimised through appropriate track design. Different types of track design can be used to reduce the level of vibration caused at the track, and hence the level of vibration that reaches the surface. Extensive design work would be undertaken to mitigate regenerated noise

No assessment of noise levels within tunnel and station environments for either passengers or railway staff.

Issues relating to noise levels within the tunnel and station environments for passengers and railway staff would be managed by a combination of design standards and relevant legislative requirements.

5.6.4 Noise impacts – surface operation and construction

Concerns about the potential noise and vibration impacts of general construction including the impacts of rock breaking and vibratory or impact pile driving

Surface track construction would occur between Balmoral Road Release Area and Rouse Hill. For this section of the project, section 9.3.4 of the environmental assessment concludes that it is likely that construction noise emissions would comply with the design objectives. However, for short periods of time, moderate exceedances of the noise goals would be expected at the closest receivers.

Commitment 20 notes that processes would be established for detailed construction noise predictions, management of activities and machinery during construction and noise monitoring and reporting. Standard construction management practices would also be implemented to minimise impacts, including the use of standard working hours where practicable. Commitment 2 notes that community consultation strategies for the construction stage would be implemented.

Concerns about the potential noise and vibration impacts of surface operations, including the stabling facility

During operation, where the surface track between Balmoral Road Release Area and Rouse Hill would be at grade, on embankment or on viaduct, noise mitigation in the form of source control measures or noise barriers would be considered to achieve compliance with project-specific noise levels.

The statement of commitments (commitment 22) specifies that any reasonable and feasible acoustic mitigation measures would be provided as part of the project to meet appropriate project-specific noise and vibration levels.

It is likely that operation of the stabling facility would occur when development of the surrounding area (Area 20 of the North West Growth Centre) has commenced. The Growth Centre Structure Plan suggests that Area 20 would be developed as residential. However, no precinct planning work has commenced. TIDC has been discussing land use issues with the Growth Centres Commission in regard to this site, which would continue as part of the next stage. For example, it may be possible to minimise the potential for impacts by providing buffer distances between the stabling facility and residential development, or by locating less sensitive land uses (such as light industrial and/or commercial) closest to the facility.

Commitment 23 notes that the extent of any physical noise mitigation measures such as barriers would be determined in consultation with the Department of Environment and Climate Change and the Growth Centres Commission. In addition, a review of the results of RailCorp's investigations into addressing horn noise issues would be undertaken and applied as relevant to the stabling operations.

5.6.5 Level of assessment

The project will be in tunnel for a distance of approximately 16 km between Epping and south of Burns Road Station. Surface impacts would be restricted to areas where the project would be at above ground (sections between south of Burns Road Station and Rouse Hill), at station sites and surface construction sites.

Page 1.4 of the environmental assessment notes that

> 'As the environmental assessment has been prepared for a concept plan for the project, detailed information on all aspects and therefore associated impacts is not yet available. The impact assessments undertaken for the environmental assessment have been undertaken to a broad level. Where further more detailed assessment is required, this forms part of the recommended mitigation measures/draft statement of commitments for the project.'

The noise and vibration assessment undertaken for the project is summarised in section 9.3 of the environmental assessment. The assessment made use of previous reports prepared by SKM in 2003[14], which are considered in most parts to be a reasonable indication of the prevailing noise environment.

Operation of the project would be subject to an environment protection licence under the *Protection of the Environment Operations Act 1997.*

5.6.6 Operational noise criteria

As part of the further design development and environmental assessment, project-specific operational noise levels for the project would be determined, guided by the Interim Guidelines for the Assessment of Noise from Rail Infrastructure Projects[15] prepared by the Department of Environment and Climate Change.

[14] SKM, 2003, 'NWRL Working Paper No 6, Noise and Vibration Assessment' prepare for RIC

[15] Department of Environment and Climate Change, February 2007

The Interim Guidelines describe an agreed process designed to assist the ongoing expansion of rail transport by ensuring that potential noise impacts associated with rail developments are assessed in a consistent and transparent manner. The guideline establishes 'noise trigger levels' and a process to establish project-specific noise levels for residential and other uses (eg schools, community facilities or facilities that may be sensitive to noise).

The noise trigger levels presented in the Interim Guideline are the levels that trigger the need for a project to conduct an assessment of its potential noise and vibration impacts and to examine what mitigation measures would be feasible and reasonable to apply to ameliorate these impacts. Importantly, the noise trigger levels are not intended to be applied automatically in any mandatory sense as conditions in statutory approvals or licences.

The Interim Guidelines note that social survey research conducted over the last 30 years and across different countries has shown that reaction to noise varies widely from individual to individual. Because of this, it is not possible to adopt noise levels that would guarantee no one will experience an impact from noise.

The noise and vibration trigger levels identified in the Interim Guideline have been derived from a review of both overseas research into reaction to noise and vibration and the practices applied in comparable overseas countries to assess and mitigate rail noise and vibration.

5.7 Summary of issues relating to ecological impacts

Issues included:

- The level of assessment;
- Impacts on biodiversity;
- Potential impacts on aquatic habitats and of within stream structures;
- Potential impacts associated with clearing of endangered ecological communities and other vegetation; and
- Potential for damage to vegetation due to water drawdown, subsidence and physical impacts on tree roots, including potential impacts at Devlins Creek.

5.8 Response to issues relating to ecological impacts

5.8.1 Level of assessment and impacts on biodiversity

The project would be in tunnel for a distance of approximately 16 km between Epping and south of Burns Road Station. Surface impacts would be restricted to areas where the project would be at the surface (sections between south of Burns Road Station and Rouse Hill), at station sites and surface construction sites.

Page 1.4 of the environmental assessment notes that

> 'As the environmental assessment has been prepared for a concept plan for the project, detailed information on all aspects and therefore associated impacts is not yet available. The impact assessments undertaken for the environmental assessment have been undertaken to a broad level. Where further more detailed assessment is required, this forms part of the recommended mitigation measures/draft statement of commitments for the project.'

The ecological assessment undertaken for the project is summarised in section 9.4 of the environmental assessment. The assessment made use of previous vegetation mapping prepared by SKM in 2003[16] where the alignment remained the same. These areas were verified during field surveys undertaken for the ecological assessment (refer Appendix D of the environmental assessment). In addition, surveys were undertaken of areas potentially impacted by new sections of alignment. A literature review that incorporated database searches, and a review of existing vegetation mapping and assessments of the area supplemented the field surveys.

The presence of a number of endangered ecological communities was verified by the ecological assessment (refer section 3.2.1 of the assessment) and their location outlined in Table 3.1 and shown in Figure 3.2. Although no threatened flora was observed, suitable habitat was identified for a number of species as outlined in Table 3.2 of the assessment.

The species noted by the Department of Environment and Climate Change in their submission were considered individually within the assessment (Table 3.2) based on habitat requirements and existing habitat along the alignment. A number of these species were considered as not likely to occur along the alignment due to the absence of any suitable habitat or supporting geology.

Those that were considered likely to occur were considered as a guild (a group of organisms that use the same environmental resources in a similar way) in the assessment due to similar habitat requirements and homogenous existing habitat within the potential impact zone of the project. The NSW threatened species assessment is outlined in section 4.2.2 of the ecological assessment.

The conclusion that the proposal would not significantly impact on the long-term survival of these species is based on a number of factors. Firstly, the project mainly passes through areas that have been subject to urban development, and the majority of clearance would occur in modified landscapes and planted gardens. These environments are unlikely to support populations of threatened flora.

Secondly, other vegetation to be cleared is predominantly canopy species (representative of communities) with weedy understoreys, subject to ongoing human disturbance and modification with continual urban works and access. These areas are not considered 'disturbed remnants' but are environments currently experiencing high modification and damage due to general development in the area, and are thus considered unlikely to support populations of threatened species.

Habitat assessments were undertaken to determine where suitable habitat for threatened fauna species was present. Targeted surveys for the Cumberland Land Snail were undertaken. An assessment to determine the presence of core Koala habitat was also undertaken. The likely presence of threatened fauna is outlined in Table 3.3 of the ecological assessment. Those species considered as likely to occur were considered as guilds (a group of organisms that use the same environmental resources in a similar way) for the impact assessment. In the majority of cases, the project was considered unlikely to significantly impact on threatened species, either because the impact was not direct, or the clearance of vegetation and any suitable habitat was of small areas unlikely to significantly impact on the survival of a population of threatened fauna.

[16] SKM, 2003, 'NWRL Working Paper No 1, Flora and Fauna Assessment' prepared for RIC

The Cumberland Land Snail was recorded during field surveys within the Cumberland Plain Woodland adjacent to the stabling facility. This area has been acquired by the RTA as compensatory habitat for this species and would not be impacted by the project.

Based on the assessment to date and the potential ecological impacts, the final statement of commitments (commitments 27 and 28) establishes processes for:

» Detailed ecological assessment to be undertaken at all construction sites; and

» Negotiation of biodiversity protection measures in accordance with the draft Growth Centres Conservation Plan[17] and the Department of Environment and Climate Change's draft Guidelines for biodiversity certification of environmental planning instruments[18]. These documents set agreed processes and methodologies for survey and assessment of biodiversity values.

5.8.2 Potential impacts on aquatic habitat and of within-stream structures

An aquatic impact assessment was not undertaken at this stage of the project, and this was not required by the Director-General's environmental assessment requirements. It is recognised that once the design is further advanced, an aquatic assessment would be required to determine any impact of instream structures and indirect impacts of associated works.

Commitment 25 states that the design of waterway crossings and structures would be undertaken with reference to the Guidelines for Design of Fish and Fauna Friendly Waterway Crossings (Fairfull and Witheridge 2003) and in consultation with NSW Department of Primary industries (Fisheries).

5.8.3 Impacts of clearing

Estimates of clearing associated with the project are considered in section 4.1.1 of Appendix D of the environmental assessment (the ecological assessment). Impacts on endangered ecological communities are discussed in section 4.2.3 (Appendix D of the environmental assessment). Table 4.2 of the assessment outlines the approximate areas of clearing that would occur.

Comment with regard to the endangered ecological community issues raised in submissions, including concerns raised by Department of Environment and Climate Change, is provided below:

» Blue Gum High Forest adjacent to the Franklin Road construction site: As stated in section 4.1.1 and Table 4.1 of the ecological assessment (Appendix D of the environmental assessment) this community would not be directly impacted by the project and a buffer zone would be incorporated into the construction works to avoid indirect impacts. The Department of Environment and Climate Change's recommended 20 metres buffer is acknowledged.

» Cumberland Plain Woodland adjacent to the stabling facility: As stated in section 4.1.1, Table 4.1 and 4.2.3 of the ecological assessment (Appendix D of the environmental assessment), this community would not be directly impacted, as the stabling facility does not encroach into this area and a buffer zone would be incorporated to avoid indirect impacts. The Department of Environment and Climate Change's recommended 20 metres buffer is acknowledged.

[17] www.gcc.nsw.gov.au/information/draft-growth-centres-conservation-plan.aspx

[18] http://www.nationalparks.nsw.gov.au/npws.nsf/Content/biodiversity_certification_draft

» Clarification regarding the mapping of Shale-sandstone Transition Forest: National Parks and Wildlife Native Vegetation of the Cumberland Plain (2002) maps a number of small patches of Shale/Sandstone Transition Forest (low sandstone influence) of varying condition in areas adjacent to the proposed alignment. These small patches occur outside the potential impact zone of the project. These areas were not mapped by the ecological assessment and the mapping of River-flat Eucalyptus Forest in the ecological assessment does not extend into these areas, nor contradict the mapping by National Parks and Wildlife Service. A small patch of medium condition Shale/Sandstone Transition Forest (high sandstone influence) mapped by National Parks and Wildlife Service occurs along the proposed alignment south of Schofields Road on the eastern side of Windsor Road, opposite Castlebrook Lawn Cemetery and Crematorium. This community was not observed during surveys undertaken as part of the ecological assessment, presumably as development in this area has impacted on vegetation.

Overall, much of the clearance that would occur as a result of the project is located within the Balmoral Road Release Area (in the vicinity of Burns Road Station), an area already planned for future urban development.

Impacts on Cattai Creek

It is likely that cut and cover construction would be required across Cattai Creek, which would result in vegetation removal within approximately 50 metres of the rail corridor. Temporary cofferdams would be installed within the creek. No other feasible construction methods have been identified to date.

Approximately 0.31 ha of vegetation that is characteristic of the endangered Sydney Turpentine Ironbark Forest community would be cleared as part of these works. This area comprises an intact understorey with low weed invasion upslope of a weed dominated riverbed and edge. Due to the high level of weed invasion along this creek, measures for the control of runoff would be required. Diligent mitigation measures would also be required to prevent the spread of *Phytopthora cinnamomi* (a rootrot fungus) if it occurs.

Revegetation and ongoing weed management of the area would be implemented as appropriate.

5.8.4 Impacts of water drawdown or subsidence on riparian vegetation and physical impacts on tree roots

If water drawdown occurred as a direct result of the construction of the rail tunnel, there would be the potential for adverse changes to creeks and subsequent changes in riparian vegetation. However, provided that appropriate tunnel design is implemented (such as tunnel lining), the likelihood of significant water drawdown is considered low.

The likelihood of subsidence as a result of the project is considered very unlikely and therefore no impacts on vegetation would be expected.

Further comment on geotechnical issues is provided in section 5.14.2.

It is expected that the depth of tunnelling would be adequate to avoid physical impacts on tree roots. Roots are unlikely to extend into the subsurface layers at the depth at which tunnelling would be undertaken.

5.9 Summary of issues relating to spoil handling

Two issues were raised in relation to spoil handling. Responses to these are provided below.

Section 5.4.1 addresses potential construction traffic issues.

5.10 Response to issues relating to spoil handling

5.10.1 Disposal of contaminated spoil

If any contaminated spoil material was generated from the project it would need to be transported to solid waste landfills in western Sydney that accept contaminated spoil, such as Penrith Waste at Mulgoa and the SITA landfill at Kemps Creek.

5.10.2 Disposal of spoil at sea and landfill considered unacceptable

The project is expected to generate a significant amount of spoil. Most of this excavated spoil would be from the bored tunnel and would be uncontaminated crushed sandstone and shale material, classified as 'virgin excavated natural material'.

The statement of commitments (commitment 29) outlines that further investigations will be undertaken as part of the design development into opportunities for beneficial reuse of spoil. Disposal of spoil at sea is the least preferred option and would only be investigated if all other options were not feasible.

5.11 Summary of issues relating to heritage

Issues raised in relation to indigenous heritage included:

» The need for further information on the consultation process with the Aboriginal community; and

» Comments regarding the statement of commitments and the need for further assessment.

Issues in relation to non-indigenous heritage included:

» Potential impacts on the 'Glenhope' heritage property near Franklin Road Station; and

» Potential impacts on heritage value as a result of the tunnel alignment being located below heritage homes/buildings.

5.12 Response to issues relating to heritage

5.12.1 Indigenous heritage

Consultation process undertaken with the local Aboriginal community

Letters have been received from Darug Tribal Aboriginal Corporation, Darug Custodian Aboriginal Corporation and Darug Aboriginal Cultural Heritage Assessments regarding the project. The Deerubbin Local Aboriginal Land Council is expected to reply in the near future.

The groups have all expressed that they would like to continue to be involved in the consultation process as the project moves beyond a concept level. Groups have expressed that they are in

agreement with the recommendations in the Archaeological Assessment of Indigenous Heritage report prepared by Jo McDonald Cultural Heritage Management (Appendix G of the environmental assessment).

Consultation would be ongoing as described in the statement of commitments (commitments 33 and 34).

The statement of commitments should separate indigenous heritage from non-indigenous heritage.

The statement of commitments (commitment 33) states that the Indigenous Heritage protocol and methodology developed for the Growth Centres would continue to be applied as the project progresses. Consultation with the Department of Environment and Climate Change and relevant groups (including the Deerubbin Local Aboriginal Land Council, Metropolitan Local Aboriginal Land Council, Darug Tribal Aboriginal Corporation, and Darug Custodians Aboriginal Corporation) would continue.

Commitment 34 aims to avoid or manage construction related impacts.

Further cultural heritage assessments to fulfil the requirements of the Growth Centres Commission Methodology would be undertaken during the project approval stage as required.

5.12.2 Non-indigenous heritage

Potential impacts on the 'Glenhope' property, 113 Castle Hill Road, opposite Franklin Road Station precinct

The Heritage Review undertaken by Casey & Lowe (Appendix H of the environmental assessment) identified that 'Glenhope', which is listed as a heritage item by the Baulkham Hills Local Environment Plan, is located on the southern side of Castle Hill Road.

The Heritage Review identified the potential for change in the vistas from the house.

An artist's impression has been prepared for Franklin Road Station that provides an indication of what the future precinct could look like, as viewed across Castle Hill Road towards the station in the vicinity of the Glenhope property. This is shown in Figure B in Appendix B (Volume 2). At this stage, a detailed visual impact has not been undertaken.

Commitment 32 identifies the need to undertake a view analysis from the Glenhope property during the next stage of project development.

There will also be opportunities for community and stakeholder involvement in the ongoing station precinct planning process, as described in section 7.

Loss of heritage 'value' due to the location of the rail tunnel beneath heritage listed items and buildings within a heritage precinct (eg Beecroft)

The Heritage Review undertaken by Casey & Lowe (Appendix H of the environmental assessment) concludes that the only potential impacts on heritage items or properties would be the potential for surface impacts as a result of the construction and operation of the project or visual changes (associated with new stations or surface works). There is not considered to be a loss of intrinsic heritage value due to the existence of a rail tunnel corridor.

5.13 Summary of issues relating to geology and groundwater

Potential issues relating to geology and groundwater include:

» Potential for risk and property damage as a result of tunnelling operations;

» Need for further information; and

» Potential environmental impacts of tunnel construction, including impacts on groundwater and watercourses.

5.14 Response to issues relating to geology and groundwater

5.14.1 Potential for risk and property damage

Tunnelling operations will damage buildings and/or structures through longer term subsidence

The potential for surface impacts as a result of the construction and operation of a tunnel is considered in section 5.6.

As the tunnel is excavated, the ground will be supported. The support to be installed will be determined based on a number of criteria, including control of ground movement. This will limit the potential for subsidence in both the short and long term.

Construction of the tunnel within shale geology

Tunnels have been constructed successfully in Sydney, other parts of Australia and internationally, with the ground cover above the tunnel varying from very shallow to very deep and in a range of ground conditions, including shale.

Procedures and measures will be implemented to address and mitigate the particular risks associated with tunnel construction along the route of the project.

Lack of geotechnical information

Detailed geotechnical investigations have not yet been undertaken for the project. Concerns raised have been noted and would be addressed during typical geotechnical investigations, which would inform design development and environmental assessment planned for the next stage of the project (commitment 35).

5.14.2 Potential environmental impacts of tunnel construction

The tunnel will act as a sub soil drain, lowering the water table

The tunnel may have an impact on the groundwater regime but this is dependent on the method of construction used and the type of lining that is installed. The type of lining used could either allow or prevent the water table to be drawn down. In areas that are particularly sensitive, a tunnel lining could be installed which prevents the lowering of the groundwater table. This is one of a number of issues which would be addressed during design.

Tunnelling will result in cracking of bedrock under the watercourses along the route, leading to loss of water

The bedrock through which the tunnel will pass is jointed/cracked in its natural undisturbed state. Some of these joints may open during construction, which could result in an increased risk of water ingress below watercourses, however this is dependent on a number of factors including the type of bedrock, the extent of naturally occurring joints, the depth of the tunnel and the type of lining to be installed. All these factors would be investigated during design. If it were considered that there is a risk of water ingress into the tunnel through bedrock, a lining would be installed. The timing of the installation of the lining would be planned to minimise the drawdown of flows from surface watercourses.

5.15 Summary of issues relating to surface water and flooding

Issues included the need to fully consider surface water, drainage and flooding during the design of the project.

5.16 Response to issues relating to surface water and flooding

5.16.1 The design should adequately consider issues relating to surface water, waterways and flooding (including flood emergency response)

The design of the project would consider issues relating to surface water and flooding in accordance with State and local government requirements, such as the NSW Government Floodplain Development Manual 2005 (commitment 38).

The final statement of commitments also outlines that the following would occur:

» Detailed investigation of the hydrology and hydraulics would be undertaken as part of the design development at each construction site (commitment 36). This would include a two-dimensional model of the Caddies Creek confluence to facilitate a better understanding of the discharges at the confluence of the creeks and associated design requirements.

» Investigations into the construction and operational impacts on the Elizabeth Macarthur Creek would be undertaken (commitment 37).

» Further investigations into the location, size and treatment levels of a water treatment plant(s) (commitment 39).

The requirement for a water licence in accordance with the *Water Act 1912* would be informed by future investigations. Licences under the *Water Management Act 2000* would not be applicable to the project.

5.17 Summary of issues relating to visual and urban design

Issues included:

» Potential for visual impacts during construction;

» Potential for visual impacts on the existing urban form as a result of the presence of a new form of infrastructure in the vicinity of buildings; and

» The need to take into account visual and urban design considerations in the design process.

5.18 Response to issues relating to visual and urban design

5.18.1 Visual impacts during construction

As with any major infrastructure project, it is acknowledged that visual impacts would occur for the duration of construction. Potential visual impacts during construction include:

» Impacts associated with construction sites, including the use of cranes, machinery, construction activities and materials; and

» Loss of vegetation that currently provides visual landscape amenity.

Where possible, mitigation measures would be implemented. In order to identify appropriate mitigation measures, more detailed information on the construction methodology is required (commitments 4 and 5).

5.18.2 Urban design

New above ground structures, stations and changes to urban form at the interface between stations and the existing urban environment would result in a visual change to the existing environment.

Two artist's impressions have been prepared to provide an indication of the future urban form around the stations. These are shown in Figures B and C in Appendix B (Volume 2).

Commitment 40 describes the urban design principles to be used to guide the design of new stations and associated facilities; investigations to be undertaken as part of future design development; and general measures to mitigate visual impacts.

Further visual assessment of the project would be also undertaken as part of future design development (commitment 41). This would consider any urban design changes and opportunities for improvement.

General measures to mitigate any residual visual impacts would be implemented as described in commitment 42.

TIDC would use an Independent Design Review Panel to guide the application of urban design principles throughout the future design and assessment process (commitment 43). An Independent Design Review Panel has been established by TIDC and comprises the Government Architect, who chairs the meetings, two eminent architects, TIDC's Architectural Manager and relevant project staff. The panel reviews design proposals for consistency with the overall project design objectives, and with State and Local Government master planning.

Finally, public art would be incorporated into architectural elements or urban design treatments (commitment 44).

Concern regarding viaduct design and its role within the surrounding environment

The statement of commitments (commitment 40) describes the urban design principles that would ensure a co-ordinated design theme for the viaduct. The design would ensure that the structures are simple, integrated with the surrounding area and finished to a high quality.

TIDC has an established review process for urban design issues, described in commitment 43.

The RTA's urban design guidelines would be reviewed during future design development.

5.19 Summary of issues relating to economic and social impacts

A concern expressed in submissions related to potential impacts on property values for houses above or in the vicinity of the tunnel, or close to the stations or surface facilities. Residents were concerned that operation of the tunnel would result in adverse noise or vibration impacts thereby reducing the value of the property. Additionally, some submissions considered that the very existence of a rail tunnel corridor theoretically reduces the value of properties in the vicinity of that corridor. Other issues included the potential for lifestyle and amenity impacts, and the potential economic impacts on businesses during construction.

A number of commercial property owners raised concerns that a tunnel would restrict future development potential, particularly the ability to construct basement or underground development. This issue is discussed in section 5.2.1.

5.20 Response to issues relating to economic and social impacts

5.20.1 Property values and compensation

Potential for impacts on property values

The Department of Planning will negotiate with the owners of properties that would be directly impacted by surface sections of the project to partially or completely acquire their property as required, in accordance with the terms of the *Land Acquisition (Just Terms Compensation) Act 1991*.

The presence and location of a rail tunnel and/or rail corridor would not result in physical impacts to properties or facilities on the surface above the tunnel. A study by Graham & Dunn PC[19], which was cited in one submission to the environmental assessment, noted that studies have been unable to observe any change in the value of subject properties as a result of the presence of a tunnel easement. The study also notes that, where there is essentially no permanent physical damage to a property above an underground tunnel, there can be no case for a correlation to changes in property value.

A number of other studies have also been undertaken in relation to the effects of rail transit systems on property values. The overall conclusions support that rail infrastructure can have a positive impact on property values, particularly in the vicinity of station locations.

[19] Smith, LJ, Beaver, JA,. White, JG, and Hiatt, ZR (Graham & Dunn PC), 2005, 'Over and Under: A Practical Guide to the Condemnation of Aerial Guideway Easements and Tunnel Easements', Seattle, Washington

A study undertaken by PB[20] noted that 'it is clear that in most cases access to rail systems is valued by property owners and there is little support for the suggestion that proximity to rail actually decreases property values.'

Similarly, Booz Allen & Hamilton[21] undertook a survey of research on the impact of rail transit and property values, and concluded that, in general, proximity to rail is shown to have positive impacts on property values. The relative increase in accessibility provided by the new transit investment is the primary factor in increasing property values.

These studies note that a wide range of factors, including surrounding land uses, the real estate market, and proximity to stations, influences the potential for positive impacts on property values.

The potential for surface impacts as a result of the construction and operation of a tunnel is considered in section 3.8.2. Where there is essentially no measurable permanent damage to a property as a result of an underground tunnel, a potential for a negative correlation to changes in property value is considered to be unlikely.

The Government should be offering compensation for the decrease in property values

The ability to show a relationship between a significant infrastructure project and property values in the vicinity of the project is complex given the range of variables. As noted above, it is considered unlikely that there would be a negative correlation between property values and the project.

Compensation would be offered to property owners directly affected by the surface areas of the project in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. There is no provision in the Act for compensation for changes in property values.

5.20.2 Government use of surplus land after construction

A Land Asset Management Strategy considering any surplus land after construction would be developed jointly by the Department of Planning and TIDC in consultation with Councils, Growth Centres Commission and RailCorp (commitment 8). This strategy would investigate opportunities for amalgamation of parcels severed by the project and identify opportunities for development that is consistent with surrounding land use and local planning.

Consultation with relevant Councils, government, utility providers, land owners and communities would aim to encourage transit-orientated development around each station.

The role of each station would be further defined within the context of provision of public transport services, including the need and capacity of park and ride facilities, establishing connections with other transport modes (including the potential for integrated ticketing), and integrating pedestrian and cyclist facilities.

5.20.3 Lifestyle and amenity impacts

Some submissions expressed concern about the potential for negative impacts on people's lifestyles and the general amenity of their environment as a result of the project.

[20] PB, 2001, 'The effect of rail transit on property values: a summary of studies' Research carried out for Project 21439S, Task 7 NEORail II, Cleveland, Ohio

[21] Booz•Allen & Hamilton, 1999, 'Impacts of rail transit on property values' APTA 1999 Rapid Transit Conference Proceedings Paper

Railway infrastructure is an accepted form of infrastructure in a metropolitan area such as Sydney. Sydney has an existing railway network, with a large number of suburbs already located along and benefiting from the presence of the rail network. The Metropolitan Rail Expansion Program project involves an extension to an existing rail network to improve access to public transport for residents in the north west and south west regions of Sydney. Improved access to public transport will offer significant benefits to local communities in the vicinity of the rail lines. Improvements to access are considered to be a positive lifestyle impact.

Amenity impacts are discussed in section 9.11.3 of the environmental assessment. The potential for amenity impacts mainly relate to construction activities. These include:

» Traffic impacts (section 9.2.2 of the environmental assessment) – issues raised by submissions are discussed in section 5.4.1 of this report;

» Regenerated noise impacts (section 9.3.4 of the environmental assessment) – discussed in section 5.6.3 of this report;

» Potential for moderate exceedances of noise goals for short periods of time at the closest receivers for surface construction (section 9.3.4 of the environmental assessment) – discussed in section 5.6.4 of this report; and

» Visual impacts (section 9.10.2 of the environmental assessment) – discussed in section 5.18.1 of this report.

The response to the issues raised and the commitments made by TIDC in the final statement of commitments are outlined in the relevant sections of this report.

5.20.4 Potential economic impacts on businesses during construction

Potential economic impacts, including impacts during construction, are considered in section 9.12.2 of the environmental assessment.

As with any major infrastructure project, it is acknowledged that local businesses in the vicinity of construction may experience short term impacts such as:

» Alterations to access arrangements during construction and operation; and

» Potential for a downturn in trade during the construction period if the number of visitors reduce (as a result of any disruptions to access, reduction in the general amenity of the area and/or any reduction in car parking spaces).

Where possible, mitigation measures would be implemented as identified by the statement of commitments (commitment 45). Mitigation measures would require more detailed investigation, but would typically include the provision of adequate long term access to these businesses, as well as maintaining access throughout the construction period. These measures would assist in minimising the significance of these impacts.

During construction, impacts created by traffic/parking and noise/vibration would need to be managed to ensure that potential impacts experienced by businesses in the locality are minimised.

It is noted that, as for many large scale construction projects, there is potential for increased patronage of some types of local businesses in the vicinity of construction activities.

5.21 Other issues

5.21.1 Air quality impacts

Potential air quality impacts were discussed in section 10.1 of the environmental assessment. Three specific air quality issues were raised in submissions as follows.

Level of assessment

One submission noted that there was no assessment of the increase in air pollution during the construction and operation phases of the tunnel, and suggested that the project would result in air quality impacts via tunnel emissions.

During operation, tunnel emissions (via ventilation points) would not affect air quality as the project would use electric trains.

Air quality impacts were not considered to be a key issue for the environmental assessment of the project. Notwithstanding this, air quality impacts were outlined in section 10.1 of the environmental assessment. The project has the potential to generate dust emissions during construction. Detailed construction planning would be undertaken to ensure that this issue is managed.

Greenhouse emissions as a result of operation of the project

Concerns were raised in one submission that rail operations would require electricity generation at a remote source, thereby generating greenhouse emissions. It is acknowledged that the project would rely on the generation of electricity at a remote source. However, the air quality or greenhouse impacts of electricity generation are not addressed in this report.

TIDC has initiated a sustainability initiative for the project related to energy and greenhouse emissions (commitment 1).

Emission of brake dust

Brake dust would be emitted at locations where trains are required to slow or stop at stations. These emissions are not likely to result in any impact on surrounding receptors.

5.21.2 Station names

Blacktown City Council requested that the proposed Rouse Hill Station be renamed as 'Vinegar Hill Station' in recognition of the historic Battle of Vinegar Hill that occurred opposite the proposed station site.

The station names identified to date are for design and planning purposes only and have been selected based on geographic location. The final station names are yet to be determined and would be subject to processes established by the *Geographical Names Act 1966*.

The Geographical Names Board would determine the formal name of each station. All naming proposals are advertised in the New South Wales Government Gazette and the local press. Public comment would be invited, for which a period of one month is allowed. The Board treats all objections on their individual merits.

6. Summary of issues relating to community consultation and the assessment process

6.1 Summary of issues relating to community consultation

The most common concern raised relating to community consultation was a request for an extension of the submission period. Concerns about the level of community involvement in the design and assessment process were also raised by submissions.

Other issues included the availability of information and the need for ongoing community involvement.

6.2 Response to issues relating to community consultation

6.2.1 Community involvement to date

Community involvement prior to TIDC's involvement in the project

TIDC was assigned with responsibility for delivery of the project in November 2005, prior to this development of the project was the responsibility of the Department of Planning, Ministry of Transport and RailCorp.

As noted in section 4.1 of the environmental assessment, the early planning stages of the project were outlined in the North West Rail Link Overview Report – Connecting Communities (Transport NSW, 2002). The release of this report in 2002 by Transport NSW provided the first opportunity for public comment on the then preferred alignment. The aim of the preliminary consultation was to provide information about the proposed rail link and encourage community input into the early planning process.

Submissions received during the exhibition of the Overview Report provided an input into the various subsequent project planning studies, including the Assessment of Environmental Issues Report (SKM, 2003) and the North West Rail Link Alternatives Study (Booz Allen Hamilton and GHD, 2005), and were considered as part of the development of the proposed alignment (the project).

TIDC has been responsible for consultation undertaken in association with the environmental assessment, and information on this is provided in Chapter 4 of the environmental assessment, and section 2 of this report. It is outside the scope of this report to comment on the adequacy of consultation undertaken by other agencies as part of earlier stages of the project.

The exhibition period should be extended. The exhibition period fell over the Christmas/New Year holiday period, which meant that people were away

A number of submissions requested an extension of the exhibition period. Under Part 3A of the *Environmental Planning and Assessment Act 1979*, the Department of Planning is required to exhibit an environmental assessment for a minimum of 30 days. The Department of Planning

made a decision (in consultation with TIDC) to extend the exhibition period from 30 days to 72 days to accommodate the holiday period.

Submissions were also received and accepted an additional month after the exhibition period finished.

Meetings with stakeholders and community groups in September and October 2006

A community scan was conducted to identify key stakeholder groups likely to be interested in the project during the environmental assessment process. Stakeholders groups also included those that had shown interest in the project during previous stages of planning. Identified groups were invited by letter to meet with the project team. Table 4.2 in the environmental assessment outlines the groups that were contacted and those who meetings were held with.

The project team held 24 meetings with stakeholder groups in September and October 2006. These meetings provided an opportunity to explore issues related to the project and environmental assessment, and to capture issues from a cross-section of the community and stakeholders.

Level of community consultation undertaken during exhibition of the environmental assessment, including availability of information and community information sessions

The environmental assessment was publicly exhibited at 10 locations, including seven locations in north west and western Sydney, two locations in the CBD, and one in Chatswood.

As noted in section 2.3, TIDC supplemented the public exhibition with the following additional communication activities:

» Public displays;

» Project website;

» Distribution of Planning Update No. 2;

» Letter to property owners along the route;

» Preparation of a summary brochure;

» Five staffed community information sessions;

» Stakeholder meetings; and

» 1800 project information line and project email.

These activities provided a range of opportunities for people to contact the project team and find out information about the project.

As noted in section 2.3.6, five staffed community information sessions were held between 30 November and 9 December at the following locations:

» Rouse Hill;

» Cherrybrook;

» Cheltenham;

» Castle Hill; and

» Bella Vista.

Information sessions were organised at various locations along the route to ensure that people could access a session in their area. People could also attend an information session in other areas. Sessions were held over a two week period and included weekend and after hours sessions. The sessions extended over four hours and were organised as 'drop in sessions' to allow people to visit at any time.

Extent of notification to affected residents above or in the vicinity of the rail tunnel and stations

Newsletters were distributed to approximately 27,000 residents and businesses in the vicinity of the proposed corridor, individuals registered on the project mailing list, and identified stakeholder groups. The newsletter was also available at public exhibition locations, community information sessions, and on the project website.

Letters were sent to all property owners within the 60 metre wide tunnel corridor and the 40 metre wide surface corridor. The letter outlined that their property was within the proposed rail corridor and provided information on the project and how to find out more.

Advertisements were placed in local and metropolitan papers advising of the public exhibition and of the community information sessions.

All residents with an interest in the project were encouraged to contact the 1800 number to ask questions or receive further information.

6.2.2 Ongoing community involvement

Section 2.3 outlines the upcoming communication activities associated with the preferred project report. Further opportunities for the community and stakeholders to be involved in the project will be available during the future planning and design phases.

Communications processes would be developed and implemented throughout delivery of the project (commitment 2 in the statement of commitments) to meet the needs of the community and stakeholders and TIDC.

6.2.3 Other

Lack of public consultation on, and notification of the proposal to construct the Beecroft Traction Substation (or other construction/rail maintenance activities) on the Northern Line between Cheltenham and Beecroft

The Beecroft Traction Substation forms part of the Epping to Chatswood Rail Line Project (not the North West Rail Link project) and provides additional 1500V DC traction power to the rail network between Cheltenham and Beecroft stations. Construction of the substation commenced in March 2006.

Prior to the commencement of construction of the substation a 'Project Introduction' flyer was distributed to all local residents considered likely to be affected by construction activities associated with the project. A meeting with Cheltenham Girls High School was also undertaken to provide a briefing and discuss any issues.

Throughout the construction period local residents were kept up to date with project progress and the potential impacts of upcoming works via regular project update newsletters. The newsletters

also provided details of TIDC's website, and the contact details for TIDC's enquiries line and 24 hour construction response line for any enquiries or concerns.

TIDC project staff also liaised and met with directly affected residents to discuss various issues regarding the substation such as landscaping options.

Other construction activities are likely to be associated with routine rail maintenance undertaken by RailCorp. RailCorp would manage notification (as appropriate).

6.3 Summary of issues relating to the planning process

Concerns included:

» That the project is being 'fast tracked' by Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) which would result in limited (or no) input from local Councils, environmental authorities and the judicial system, and little consultation.

» Clarification about the 'concept plan' approval process and the level of assessment required for the Department of Planning to make a recommendation to the Minster for Planning.

» Concern that further project approvals would not be required.

» Concern that the statement of commitments is not adequate or does not address all mitigation measures recommended in the environmental assessment.

6.4 Response to issues relating to the planning process

6.4.1 The application of Part 3A to the project

The concept plan approval process

In August 2005 the EP&A Act was amended to include a new part, known as Part 3A, which consolidates the assessment and approval regime for all major projects that need the approval of the Minister for Planning. Previously these were dealt with under Parts 4 and 5 of the EP&A Act. Part 3A of the EP&A Act establishes an assessment and approval regime for development that is declared to be a Part 3A project by either a State Environmental Planning Policy or Ministerial Order (Section 75B).

The project was declared to be a project to which Part 3A applies by an order made by the Minister for Planning on 7 April 2006.

Division 3 of Part 3A provides a process for the environmental assessment and approval of concept plans for projects where the Minister for Planning has authorised or required a proponent to submit a concept plan under section 75M of the EP&A Act. On 3 July 2006 the Minister for Planning authorised TIDC to prepare a concept plan for the project.

The environmental assessment was prepared in accordance with the Director General's environmental assessment requirements issued on 12 July 2006.

As the environmental assessment has been prepared for a concept plan for the project, detailed information on all aspects and therefore associated impacts is not yet available. The impact assessments undertaken for the environmental assessment have been undertaken to a broad

level. Where further more detailed assessment is required, this forms part of the statement of commitments for the project.

The concept plan assessment and approval process enables a proponent to obtain approval for the key parameters of a major, complex project whilst allowing necessary flexibility to undertake more detailed design and assessment of the specific components of the project. This would enable matters such as the suitability of a site/route and environmental issues to be resolved early in the project planning process.

The concept plan approval process is particularly relevant to large scale, long term and complex infrastructure projects (such as this project) for which conceptual strategic planning work has already been undertaken. A concept plan approval would ensure better integration of land use and transport planning in the local government areas affected by the project. Importantly, concept plan approval would also enable further community involvement in the refinement of the project.

If the project had been undertaken prior to the commencement of Part 3A, it is likely that the Minister for Planning would have been the approval authority for the project under the former Division 4 of Part 5 of the Act.

Consultation and stakeholder involvement

TIDC has undertaken significant consultation for the project and has met all requirements of the EP&A Act. Under Part 3A of the Act (Section 75H(3)), the Director General of the Department of Planning must make the environmental assessment publicly available for at least 30 days.

The Department of Planning sought submissions from relevant government agencies during the exhibition period, and these submissions will be considered as part of the assessment process.

Chapter 4 of the environmental assessment provides information on consultation undertaken prior to, and during, preparation of the environmental assessment.

Section 2 of this report provides information on consultation undertaken during exhibition of the environmental assessment and outlines upcoming communication activities and opportunities for involvement.

6.4.2 Further project approvals

Part 3A of the EP&A Act provides for two distinct types of approval to be granted by the Minster for Planning. These are an approval of a concept plan under section 75O (concept plan approval) and an approval to carry out a project (project approval). A proponent is prohibited under section 75D from actually carrying out a project (or a particular stage of a project) until the Minister for Planning gives project approval for that project (or that particular stage of it). TIDC is seeking concept plan approval.

Under section 75P, the Minister for Planning has discretion, when giving concept approval, to make any (or any combination) of the following determinations:

» The further environmental assessment requirements for approval to carry out the project (or a particular stage of the project) under Part 3A;

» That approval to carry out the project (or any particular stage of it) is to be subject to Part 4 or Part 5 of the EP&A Act; and

» That no further environmental assessment is required for the project (or any particular stage of it), in which case the Minster for Planning may approve or disapprove of the carrying out of the project (or that stage of it) without further application or environmental assessment.

Under Section 750(5) of the EP&A Act, the conditions of approval from the Minister for Planning may include the requirements that TIDC must satisfy before final project approval would be given for the project (or any stage of the project), for the purpose of fulfilling the obligations in a statement of commitments.

Further information on the EP&A Act and its application to major projects is available from the Department of Planning's Information Centre:

23-33 Bridge Street
GPO Box 39 Sydney NSW 2001
Tel: 02 9228 6333
Fax: 02 9228 6555
Email: information@planning.nsw.gov.au
Web address: www.planning.nsw.gov.au

6.4.3 Adequacy of the statement of commitments

The environmental assessment included a draft statement of commitments prepared to outline the investigations and mitigation measures that TIDC would undertake to ensure that the future planning, assessment and design of the project minimises the potential for environmental impacts. The final statement of commitments is provided in section 9.

The final statement of commitments incorporates recommendations from Government agencies, local councils and community submissions where appropriate.

The statement of commitments includes those commitments relevant to the concept approval phase. Additional measures would be developed as part of any further approval process.

7. Additional investigations and option review

This section identifies the additional investigations that have been undertaken since exhibition of the environmental assessment. The investigations have, in some instances, identified changes to the project that have now been incorporated into the concept plan as described in section 8 of this report.

7.1 Review of alternative alignment options – direct tunnel connection and elevated option

The environmental assessment included two alternative options:

» A direct rail tunnel connection between Epping and Franklin Road Station; and

» An elevated rail alignment between Hills Centre and Rouse Hill.

A significant number of submissions were received in response to these options. TIDC reviewed these options to assess their viability and potential for inclusion as part of the concept plan (section 8). The results of the review are described below.

7.1.1 Direct rail tunnel connection between Epping and Franklin Road Station

Of the 1,626 submissions received, approximately 1,190 opposed the surface works on the Northern Line between Epping and Beecroft, and approximately 1,070 supported the alternative Epping to Franklin Road tunnel option.

As part of the ongoing technical development of the project, further work was undertaken comparing the design and constructability of the surface works between Epping and Beecroft with a direct tunnel connection between Epping and Franklin Road Station. The outcome of this work confirmed that the surface works would be complex and take a long time to construct, due to the need for extended track possessions (when the overhead power is switched off and trains do not run) to complete the work.

RailCorp has undertaken a review of the Epping to Franklin Road tunnel option and confirmed that both the surface connection off the Northern Line and the alternative direct tunnel option would be acceptable from an operational perspective. Taking into account project cost, operational flexibility, and impacts to the existing rail network during construction, maintenance and reliability, RailCorp have concluded that their preferred configuration would be the Epping to Franklin Road direct tunnel option.

Following additional investigations undertaken by TIDC and in response to submissions made to the environmental assessment, a review of feasible alignments for the Epping to Franklin Road tunnel option was undertaken. Based on this review it is proposed that the alignment be refined from that outlined in the environmental assessment to provide a more direct connection between Epping and Franklin Road. This alignment shortens the length of tunnel by approximately 200

metres and reduces the number of residential properties that would be located within the rail corridor (above the tunnel), from approximately 350 to 270 properties (see section 7.2).

In summary, the Epping to Franklin Road tunnel option has been adopted as part of the concept plan for the North West Rail Link for which TIDC is seeking approval. The direct tunnel option has the following advantages over a surface connection off the Northern Line:

» Provides physical separation of trains on the North West Rail Line from the northern line;

» Will involve minimal impacts on the existing rail network during construction;

» Simpler and less expensive to maintain (more reliable);

» Less expensive for the project (due to shorter total project length);

» Significantly reduced project risk associated with construction (because works adjacent to and integrated with operating rail line would no longer be required); and

» Reduced impact to local communities and environment.

Section 7.2 provides information on the selection process for alignment options for the direct tunnel connection.

7.1.2 Elevated rail connection between Hills Centre and Rouse Hill

Approximately 200 submissions expressed opposition to the Hills Centre to Rouse Hill Elevated Option and one submission supported it. The two local Councils (Baulkham Hills Shire Council and Blacktown City Council) were opposed to the option. Issues raised included:

» Visual and noise impacts;

» Introduction of an unusual or uncharacteristic structure into a suburban environment;

» Poor urban outcome;

» Land severance;

» Heritage impact at Bella Vista due to visibility of elevated rail;

» Impact to residential properties along Norwest Boulevard with respect to privacy, noise and vibration; and

» Significant impact on the Rouse Hill Regional Centre development due to open in October 2007.

As part of the ongoing technical development of the project, further work was undertaken to review the elevated option. This review indicated that there would be a number of significant impacts that had not previously been fully assessed. These included the following:

» The alignment would require demolition of up to two residential houses and two commercial properties adjacent to Norwest Boulevard;

» The alignment would impact on a number of development sites that already have been sold with development approvals;

» A significant worksite would be required on the southern side of Windsor Road to allow construction of dive structures for the alignment to pass under Windsor Road, which would impact on a hotel and commercial development in Salisbury Road;

- The alignment would be very close (less than 10 metres) to approximately 70 residential buildings that back onto Norwest Boulevard. This would pose significant challenges due to the proximity of the boundary to provide adequate privacy and noise mitigation measures. There may also be overshadowing issues;
- The Heritage Office has noted that the alternative elevated rail alignment would have an adverse impact on the curtilage of the heritage listed Bella Vista House and its view corridor (vista);
- Potential impact on future widening of Old Windsor Road and impact during construction on Old Windsor Road and the newly constructed North West Transitway; and
- Impact on the operation of the Castle Hill Showground during construction due to requirement for a zone of cut and cover construction (to create a covered rail alignment) across the showground.

Whilst each of the impacts could be dealt with individually as part of the design, the cumulative impact is potentially significant. Therefore, despite the cost savings, this option has not been adopted as part of the concept plan for the project and is no longer under consideration.

7.2 Direct tunnel connection at Epping and preferred alignment to Franklin Road Station

Following the decision to adopt the direct tunnel connection from Epping Station to Franklin Road Station as part of the project, a review of the tunnel alignment was undertaken. This review was undertaken in response to a number of submissions suggesting alternative alignments for the direct tunnel connection alignments, and to ensure that the alignment selected is the optimal alignment considering the range of technical, environmental and social factors that apply to the project.

7.2.1 Alignment review

The review of the alignment considered the following criteria.

Rail design (length, track grades and track curves)

The design of a rail alignment needs to consider constraints including maximum allowable grades and desirable track curvature. These elements ensure the rail line can operate effectively and, along with length of the line, will contribute to the speed and comfort of the journey.

Relationship with any future Epping to Parramatta rail tunnel connection

The direct tunnel connection would use stub tunnels constructed at Epping Station as part of the works on the Epping to Chatswood Rail Line. These stub tunnels were constructed to allow for a future connection between Epping and Parramatta. To ensure a future connection is not precluded, new stub tunnels would need to be constructed as part of the project. A corridor for the connection between Epping and Parramatta has already been approved, so consideration of this approved corridor and the location of the new stub tunnels was an important criterion in the review of the direct tunnel connection alignment.

Constructability, cost and program

Different alignments could result in different constructability issues, and factors such as length and curvature could lead to increases in cost or length of time for construction. These factors need to be assessed in the review of the alignment.

Maximising the use of public land (roads/parks) within the rail tunnel corridor

TIDC understands that, in general, the community would prefer the tunnel to be located below public land such as roads (for example, the M2 Motorway) or parks rather than under residential properties. Taking into consideration the design constraints of a rail alignment, the review attempted to maximise the amount of rail tunnel corridor underneath public land where possible.

Typical tunnel depth

The depth of a rail tunnel is one of the factors that influence the level of regenerated noise during operation that may be experienced at the surface (that is, the potential for noise as a result of the faint vibration of walls or floors caused by vibration transmitted from the rail through the ground). Topography and design constraints determine the depth of the tunnel, and this has been considered as part of the review of alignment options.

The environmental assessment alignment (shown in blue in Figure D in Appendix B (Volume 2)) is the alignment described in Figure 6.2 in the environmental assessment as the alternative Epping to Franklin Road Tunnel Option. From Epping, this alignment would pass beneath Devlins Creek at a depth[22], of 13 metres, increasing to 35 metres under Kandy Avenue. The alignment would continue under the M2 Motorway (with the tunnel at a depth of 22 metres), Lyne Road (increasing to 43 metres deep), and would follow the alignment of Beecroft Road between Cheltenham Road and Welham Street (at a depth of 59 metres). Under Beecroft Primary School the tunnel depth would be 49 metres, before reaching a shallow point at Devlins Creek of 24 metres. The alignment would then continue in a north westerly direction to Franklin Road Station. The tunnel depth would increase rapidly to 59 metres at Pennant Hills Road. At Castle Hill Road the tunnel depth would be 54 metres.

For option 1, the alignment (shown in green) would pass beneath Devlins Creek at a depth of 13 metres, increasing to 30 metres under the M2 Motorway. The alignment would follow the M2 Motorway to Cheltenham Park. In the vicinity of Cheltenham Road, the tunnel depth would be 27 metres. It would then continue in a north westerly direction to the south of Castle Howard Road (with the tunnel depth increasing to 39 metres), crossing beneath Murray Farm Road, Kenwick Lane, Copeland Road, Hull Road, Hannah Street, Fearnley Park, Chapman Avenue and Grace Avenue to Thompson's Corner. At Copeland Road the tunnel depth would be 53 metres, reaching a shallow point under Fearnley Park of 34 metres. It would then follow the ridge line and Castle Hill Road to Franklin Road Station. The tunnel depth would then increase rapidly to 71 metres at Pennant Hills Road. At Castle Hill Road the tunnel depth would be 54 metres.

For option 2, the alignment (shown in pink) would pass beneath Devlins Creek at a depth of 13 metres, increasing to 30 metres under the M2 Motorway. The alignment would follow the M2 Motorway up to Burns Road South. It would then cross beneath Burns Road South, the

[22] Tunnel depth is described as the distance between ground level and the rail track (ie, the bottom of the rail tunnel which has a diameter of 7 metres). This measurement is most relevant as the rail track is the source of groundborne vibration. (approximate only and subject to detailed design. All tunnel depths cited in this report are approximate only and subject to detailed design.

Pennant Hills Golf Course, Copeland Road, Hannah Street, Carlisle Cresent and Grace Avenue to Thompson's Corner. In the vicinity of Burns Road South, the tunnel depth would be 20 metres, becoming shallower under the Golf course (18 metres), before rising to 27 metres at Copeland Road. It would then follow the ridgeline and Castle Hill Road to Franklin Road Station. The tunnel depth would increase rapidly to 68 metres at Pennant Hills Road. At Castle Hill Road the tunnel depth would be 54 metres.

Based on these criteria, three feasible options were investigated, as shown in Figure D in Appendix B (Volume 2)). A comparison of the options is provided in Table 7.1.

Based on this comparison, the preferred alignment for the direct connection is option 1 (green). The alignment of option 1 offers the following advantages compared with the other options considered:

» It is shorter and straighter than the other two alignments;

» It has significantly less properties above the corridor than the environmental assessment alignment; and

» While there are marginally more properties above this corridor than option 2, it is generally deeper.

Option 1 now forms part of the concept plan for which approval is sought (as shown in Appendix C in Volume 2).

Table 7.1 Direct tunnel connection between Epping and Franklin Road – comparison of options

Criteria	Environmental assessment alignment (blue)	Option 1 (green)	Option 2 (pink)
Rail design (length, track grades and track curves)	Approximately 6.3 km in length.	Approximately 6.1 km in length. Minimal curves result in many rail operational benefits, such as increased speed (and therefore better travel times), decreased maintenance costs, and improved passenger ride comfort.	Approximately 6.2 km in length.
Relationship with any future Epping to Parramatta rail tunnel connection	Does not preclude any future connection to Carlingford, but would mean any future rail corridor would be partly outside (to the north of) the approved rail corridor.	Does not preclude any future connection to Carlingford. No impact on approved rail corridor.	Does not preclude any future connection to Carlingford. No impact on approved rail corridor.
Constructability, cost and program	Additional length of this alignment results in greater costs.	Marginally preferred due to shorter alignment.	Additional length of this alignment results in greater costs.
Maximising the use of public land (roads/ parks) within the rail tunnel corridor	Passes below Beecroft Road and Castle Hill Road. Approximately 350 properties would be located within the 60 metres wide	Passes below the M2 Motorway, Cheltenham Park, Beecroft Park and Castle Hill Road. Approximately 270	Passes below the M2 Motorway, Pennant Hills Golf Course and Castle Hill Road. Approximately 250

Criteria	Environmental assessment alignment (blue)	Option 1 (green)	Option 2 (pink)
	rail tunnel corridor between Epping Station and Franklin Road Station.	properties would be located within the 60 metres wide rail tunnel corridor between Epping Station and Franklin Road	properties would be located within the 60 metres wide rail tunnel corridor between Epping and Franklin Road Station.
Typical tunnel depth [1] (approximate only and subject to detailed design)	Ranging from 13 metres immediately north of Epping Station to 59 metres under Beecroft Road.	Ranging from 13 metres immediately north of Epping Station to 53 metres under Copeland Road.	Ranging from 13 metres immediately north of Epping Station to 27 metres under Copeland Road.
	Under Beecroft Primary School the depth would be 49 metres, before reaching a shallow point at Devlins Creek of 24 metres.	A shallow point under Fearnley Park would be at a depth of 34 metres.	In the vicinity of Burns Road South, the depth would be 20 metres, becoming shallower under the Golf course (18m).

Note [1] The depth is described as the distance between ground level and the rail track (ie, the bottom of the rail tunnel which has a diameter of 7 metres). This measurement is most relevant as the rail track is the source of groundborne vibration.

7.2.2 Minimising environmental impacts

The direct tunnel connection provides a passenger rail link that reduces the potential environmental impacts associated with surface works, particularly those associated with the proposed tunnel dive site south of the Beecroft Village Green.

The preferred direct tunnel connection would result in the transfer of the potential for impacts (but not greater impacts) from residents above the environmental assessment alignment to residents above the preferred option 1 alignment. The potential for impacts associated with construction and operation noise and vibration would be mitigated though implementation of the measures described in the final statement of commitments (commitments 20 to 24).

7.3 Rail corridor alignment between Norwest Boulevard and Celebration Drive

Adjustments to the rail alignment in the vicinity of Bella Vista and Norwest Business Park were investigated in response to concerns from residential property owners within or adjacent to the proposed rail corridor. Some submissions also noted the potential for a second station below Lexington Drive. Additionally, owners/occupiers of commercial properties in the Norwest Business Park (predominantly along Lexington Drive) raised concerns with the rail corridor passing beneath their properties.

Submissions requesting that the rail corridor be located to the north of Norwest Business Park are addressed in section 3.12.2.

Investigations were informed by submissions received and detailed technical analysis. The review of the alignment took into consideration the following criteria,

Rail design (length, track grades and track curves)

The design of a rail alignment needs to consider constraints including maximum allowable grades and desirable track curvature. These elements ensure the rail line can operate effectively and, along with length of the line, will contribute to the speed and comfort of the journey.

Constructability, cost and program

Different alignments could result in different constructability issues, and factors such as length and curvature could lead to increases in cost or length of time for construction. These factors need to be assessed in the review of the alignment.

Maximising the use of public land (roads /parks) within the rail tunnel corridor

TIDC understands that, in general, the community would prefer the tunnel to be located below public land such as roads or parks rather than under residential properties. It is also noted that commercial property owners have a preference for the tunnel not to be located below commercial properties due to the potential restrictions on future development.

Typical tunnel depth

The depth of a rail tunnel is one of the factors that influence the level of regenerated noise during operation that may be experienced at the surface (that is, the potential for noise as a result of the faint vibration of walls or floors caused by vibration transmitted from the rail through the ground). Topography and design constraints determine the depth of the tunnel, and this has been considered as part of the review of alignment options.

Summary

Based on these criteria, four feasible options were investigated as shown in Figure E in Appendix B (Volume 2). A comparison of the options is provided in Table 7.2.

The environmental assessment alignment (shown in grey in Figure E in Appendix B) is the alignment described in the environmental assessment. This alignment would be located on the western side of Northridge Creek (a man-made creek).

Option 1 - Eastern alignment 1 (shown in blue) would be located on the eastern side of Northridge Creek.

Option 2 - Eastern alignment 2 (shown in green) would be located directly underneath Northridge Creek.

Option 3 - the Lexington Drive alignment (shown in pink) would follow Norwest Boulevard further to the west and then follow underneath Lexington Drive.

Table 7.2 Rail corridor options between Norwest Boulevard and Celebration Drive

Criteria	Environmental assessment alignment (grey)	Option 1 - eastern alignment 1 (blue)	Option 2 - eastern alignment 2 (green)	Option 3 - Lexington Drive alignment (pink)
Rail design (length, track grades and track curves)	Approximately 1.88 km in length.	Approximately 1.84 km in length.	Approximately 1.86 km in length.	Approximately 2.15 km in length. Includes a 400 metres radius curve which would impact on rail operations by reducing maximum train speeds to 80 km/h rather than 100 km/h. This track curve would also have greater maintenance requirements.
Constructability, cost and program	No specific issues	No specific issues	Additional tunnel lining may be required due to the location under Northridge Creek.	Additional length of this alignment would result in greater construction costs. May require specially designed rail track noise mitigation measures on the tight curve.
Maximising the use of public land (roads / parks) within the rail tunnel corridor	Approximately 28 residential and 11 commercial properties would be located within the 60 metres wide rail tunnel corridor.	Approximately 73 residential properties would be located within the 60 metres wide rail tunnel corridor.	Approximately 52 residential properties and one commercial property would be located within the 60 metres wide rail tunnel corridor.	Approximately 19 residential and 15 commercial properties would be located within the 60 metres wide rail tunnel corridor.
Typical tunnel depth [1] (approximate only and subject to detailed design)	Approximately 37 metres below Norwest Boulevard, rising to 11 metres north of Celebration Drive.	Approximately the same as the reference alignment.	Approximately the same as the reference alignment. However, there may be potential clearance issues under the artificial ponds of Northridge Creek.	Approximately the same as the reference alignment.

Note [1] The depth is described as the distance between ground level and the rail track (ie, the bottom of the rail tunnel which has a diameter of 7 metres). This measurement is most relevant as the rail track is the source of groundborne vibration.

Based on this comparison, the preferred alignment remains the environmental assessment alignment.

Although the two alternative eastern alignment options (options 2 and 3) reduce the number of commercial properties within the rail tunnel corridor, they would result in an increase in the number of residential properties located within the tunnel corridor.

Although option 3, the Lexington Drive alignment, reduces the number of residential properties within the rail tunnel corridor and uses road corridors as much as possible, it would still affect a similar number of residential properties and increase the number of commercial properties within the rail tunnel corridor. It also has significant rail design drawbacks with greater long term maintenance costs.

The environmental assessment alignment through the Norwest Business Park and Bella Vista area is considered to be the optimal alignment based on the technical, social, environmental and other factors that influence the rail design. The environmental assessment alignment therefore remains part of the concept plan for which approval is sought.

7.4 Indicative station precinct plans

7.4.1 Precinct planning process

TIDC engaged Cox Richardson Architects and Planners to prepare the first stage of station precinct plans for the new underground stations. The overall objective is to develop precinct plans that demonstrate excellence in urban design by:

» Sensitively integrating the station into the existing and future urban development context;

» Providing a positive contribution to the quality of the public domain;

» Enhancing the level of amenity for the local community (in particular rail patronage); and

» Minimising adverse impacts on the station environs.

The indicative precinct plans represent how the new stations could be integrated into the future urban fabric. Importantly, they show that the stations and associated surface facilities, including commuter car parking, could be accommodated within the nominated precincts. The plans are indicative only, and have been prepared to highlight potential configurations.

These plans represent the first stage of the process of developing the precinct plans to a detailed level ready for construction. The flowchart shown in Figure F in Appendix B (Volume 2) illustrates the steps in the process and the opportunities for input from stakeholders and the community.

As outlined in section 2.2.10, workshops have been held with key stakeholders to obtain input into the first stage of the process. Further opportunities for involvement from stakeholders and the community will be available as the plans develop.

TIDC is not seeking approval for the indicative precinct plans as part of the concept plan for the project. Approval for the design of the station precincts would occur at a later stage in the planning approval process.

The indicative station precinct plans are shown in Appendix D in Volume 2.

7.4.2 Franklin Road Station

Franklin Road Station is proposed to be located at the corner of Franklin Road and Castle Hill Road, Cherrybrook.

The key urban design issues that shaped development of the indicative station precinct plan for Franklin Road Station include:

» Vehicular access - providing ease of access for buses, taxis, kiss and ride and car parking.

» Topography - the site gradient falls relatively steeply from the south east to north west.

» Bus stops - good accessibility for buses is essential given the anticipated high level of patronage for this station. The indicative precinct plan shows three spaces along Castle Hill Road and three spaces within the site immediately adjacent to the station entry.

» Park and ride facility - The environmental assessment proposed a target of 500 car parking spaces at Franklin Road Station. The indicative station precinct plans show that approximately 960 car parking spaces could be accommodated at-grade on the precinct site. The agreed quantum of commuter parking would be subject to detailed traffic investigations and future precinct planning stages (commitment 12).

» Connectivity - Connectivity for pedestrian and cyclists is important, particularly from the area to the south of Castle Hill Road.

» Visibility - Locating the station entrance on Castle Hill Road would help promote the station.

7.4.3 Castle Hill Station

Castle Hill Station is proposed to be located within the Castle Hill regional centre, beneath Arthur Whitling Park (bounded by Old Northern Road, Old Castle Hill Road and McMullen Avenue).

The key urban design issues that shaped the development of the indicative station precinct plan for Castle Hill Station include:

» Pedestrian access - there are opportunities for excellent pedestrian access to the retail, commercial and residential areas that surround the station.

» Bus access - the bus interchange will use the area of Old Northern Road that is being developed as bus-only by Baulkham Hills Shire Council and the RTA as part of the Eastern Ring Road project.

» Visibility - Locating the station entrance on the natural ridge of the park would help promote the station.

» Impacts on Arthur Whitling Park - the plan aims to minimise the impact on Arthur Whitling Park by making use of the under used western end of the park.

7.4.4 Hills Centre Station

Hills Centre Station is proposed to be located adjacent to the Castle Hill Showground and the Hills Centre, with access via Carrington Road.

The key urban design issues that shaped the development of the indicative station precinct plan for Hills Centre Station include:

» Pedestrian connectivity - creating opportunities for pedestrian access from the civic and leisure precinct, the residential catchment and the light industrial area.

» Castle Hill Showground - maintaining the amenity and visual character of the Castle Hill Showground.

» Construction site requirements - the Hills Centre Station site would be used as a construction site for tunnelling and spoil removal for Stage 1 of the project.

» Park and ride facility - The environmental assessment proposed a target of 1,000 to 1,200 car spaces at Hills Centre Station. The indicative station precinct plan shows that 640 spaces could be accommodated at-grade on the proposed site. The agreed quantum of commuter parking would be subject to detailed traffic investigations and future precinct planning stages (commitment 12).

» Topography - the location of Cattai Creek and the topography of the site have been taken into consideration.

7.4.5 Norwest Station

Norwest Station is proposed to be located within Norwest Business Park, beneath Norwest Boulevard between Brookhollow Avenue and Century Circuit.

The key urban design issues that have shaped the development of the indicative station precinct plan for Norwest Station include:

» Integration with the Norwest Business Park - a high level of visibility and large catchment would help promote the station.

» Pedestrian connectivity - the existing street network footpath system and pedestrian crossings allow relatively simple pedestrian access to the station.

» Bus and car drop off - space for bus stops and taxi and car drop off spaces have been provided in close proximity to the station entrance on Norwest Boulevard.

» Shared parking - no park and ride facility is proposed at Norwest Station, however the potential for shared use arrangements with surrounding land uses would be investigated.

7.4.6 Burns Road Station

Burns Road Station is proposed to be located at the intersection of Old Windsor Road and Burns Road, Kellyville.

The key urban design issues that have shaped the development of the indicative station precinct plans for Burns Road Station include:

» Integration with the Transitway - need for efficient interchange between the two public transport modes.

» Amenity of station entry precinct - the station entry is set back from Old Windsor Road to improve the amenity of the station entry precinct.

» Park and ride facility - the environmental assessment proposed a target of 1,200 spaces at Burns Road Station. The indicative station precinct plan shows that 640 spaces could be accommodated at-grade on the site. The agreed quantum of commuter parking would be subject to detailed traffic investigations and future precinct planning stages (commitment 12).

» Consistency with draft Development Control Plan - the indicative station precinct plan is consistent with the draft Development Control Plan for the area. Further consultation with Baulkham Hills Shire Council, the Department of Planning and landowners would be required to ensure that the station design is integrated with future development planning and opportunities.

» Topography - the site falls to the east towards Elizabeth Macarthur Creek, and this has contributed to the location of the station entry precinct.

7.4.7 Rouse Hill Station

Rouse Hill Station is proposed to be located adjacent to Windsor Road, between Schofields Road and Sanctuary Drive, within the Rouse Hill Regional Centre development.

The key urban design issues that have shaped the development of the indicative station precinct plan for Rouse Hill Station include:

» Integration with the Rouse Hill Regional Centre - a simple concept allows for easy access to the station from all parts of the future central business area and town centre.

» Integration with the Transitway - need for efficient bus circulation/drop off and interchange between the two public transport modes.

» Visibility - a highly visible station from Windsor Road and the Rouse Hill Regional Centre is important.

7.5 Location of Norwest Station

The location for Norwest Station proposed by the concept plan (as described in the environmental assessment) was not highly visible due to its close proximity to the existing roundabout on Norwest Boulevard. Three (or possibly four) entrances would be required, and potential traffic conflicts were identified.

Norwest Station has therefore been moved approximately 100 metres to the east of the location identified in the environmental assessment. It would remain within the proposed 60 metre rail corridor. The new location would require only two station entry points, and would be located clear of the existing roundabout and traffic circulation. This would allow relatively simple pedestrian access to the station. The new location would be better integrated with the Norwest Business Park and result in less potential traffic conflicts associated with the roundabout (or future intersection). Bus and car drop off would be better placed under the new location in close proximity to the station entrance on Norwest Boulevard. The previous location would require bus and car drop off locations offset from the roundabout (or future intersection).

This modification would result in improved public amenity due to better connectivity and visibility of the station, and the ability to integrate it with the surrounding commercial precinct.

There would be neutral environmental impacts, but a positive public amenity/accessibility outcome as a result of this change.

7.6 Hills Centre Stabling

As part of Stage 1 of the project, an interim stabling facility would be constructed adjacent to Hills Centre Station. This facility would be used to stable trains and allow trains to turnback. The interim stabling facility would be located within the tunnels to the west of the station. The facility would be refitted as running tunnels as part of Stage 2 of the project. Stub tunnels would be required at the western end of the interim stabling facility for connection with the Stage 2 tunnelling works.

The function of the interim stabling facility is to provide stabling for four eight-car trains during operation of Stage 1 (for two years between 2015 and 2017). The facilities would also provide for the inspection and internal cleaning of the trains during operation of Stage 1.

The facility would comprise two parallel tunnels, connected by cross passages. The overall length of the tunnels would be approximately 400 metres.

Ventilation to the facility would be provided via the Hills Centre Station facilities. Ventilation within the tunnels would be drawn from the station end and exhausted via a shaft at the western end of the facility. This would require some surface construction works, however a specific location has yet to be determined.

7.7 Service facilities and emergency egress

There are a number of service facility requirements for the project. These include ventilation, traction power supply and water treatment plants. Emergency egress is required for the stations, the twin rail tunnels and as otherwise required.

The services requirements can be classified into three main groups:

1. Services required for the operation of the stations.
2. Primary services required for the operation of the tunnel, such as ventilation system, power and smoke control.
3. Secondary services required for the operation of the tunnel, such as station services (amenities, communications, air-conditioning etc).

TIDC has undertaken further investigations into the facilities required and these are discussed below. The location, scale and specific impacts of these facilities would be subject to further design.

7.7.1 Ventilation

Tunnel ventilation will be based on the push-pull method, which relies on the use of tunnel ventilation fans at each station working in unison to a pre-determined strategy to achieve required ventilation levels and smoke control within the tunnel. In addition to the tunnel ventilation system, a track exhaust system is also used.

The tunnel ventilation fans and track exhaust at each of the stations would be housed in service buildings located at or below the surface.

A ventilation building would also be required at the midpoint of the tunnel between Epping and Franklin Road Stations to optimise the ventilation performance. These stations are over 6 km apart, whereas other stations are only approximately 2-3 km apart. The ventilation building would contain a transformer room, switch room, extinguishing gas room, hydrant booster valve set, storage and/or amenities, and the fan plant room (including ventilation tunnel and shaft).

Potential locations for the ventilation building would need to take into consideration accessibility, surrounding development, air discharge direction options and noise criteria. A location for this facility has not been determined and is subject to further design, planning and assessment.

7.7.2 Traction power supply

Substations would be required at Franklin Road and Hills Centre Stations to provide traction power for Stage 1 of the project. These may be temporary or permanent. The final location and power supply requirements are subject to further design.

7.7.3 Ground water treatment

One or more water treatment plants would be required for the project to manage the inflow of groundwater within the tunnel during operation. Tunnel lining would minimise groundwater inflows, but some seepage would still occur. Seepage water entering the rail tunnels needs to be collected at the low points and pumped to water treatment plants where any pollutants are removed or treated prior to discharge.

Possible locations for a permanent water treatment plant are subject to further design of the rail tunnel and investigations into water recycling and reuse. It is likely that a water treatment plant would be constructed near the Hills Centre Station for treatment of ground water from Franklin Road to Hills Centre Stations (including any stabling drainage requirements). However, this may be a temporary water treatment plant.

A temporary Hills Centre water treatment plant would operate during Stage 1 only. Once construction of Stage 2 is complete, a permanent main water treatment plant would potentially be constructed near the Balmoral Road tunnel portals. This would be subject to further investigations.

7.8 Construction strategy and constructability investigations

Investigations into construction methods and planning have been ongoing and will continue as the project develops. An outline of some of the investigations undertaken by TIDC is provided below. The construction strategy will be subject to further confirmation during the future design and assessment stages.

7.8.1 Tunnel construction

Following further investigations, it is apparent that constructing the tunnel for Stage 1 from a single site, at Hills Centre Station, would have considerable program and construction implications. There is a risk that construction of Stage 1 of the project by 2015 could not be achieved by operating tunnelling activities from only one site that is at one end of the Stage 1 works. Construction risk is significantly increased if only one site is available. This risk is a result of issues such as:

» Potential breakdown of spoil conveyor;

» Transport of plant and materials along a long section of tunnel;

» Interface with station construction activities; and

» Ability to remove the tunnel boring machines.

In addition, tunnel access is no longer available from the previously proposed surface works associated with the surface works on the Northern Line and is also not available at Epping.

Therefore, another major tunnel construction site would be required. At this stage, it is considered that the Franklin Road Station site may be a suitable location.

The use of Franklin Road Station as a major tunnel support site would need to take account of the potential for impacts on surrounding land uses and would require extensive planning and the implementation of appropriate mitigation measures.

Preliminary construction site requirements would also be investigated at each station location and other areas along the corridor that may be used for construction support purposes. These uses include:

» Stockpiling and storage of materials;

» Removal of the tunnel boring machines;

» Construction of the surface sections; and

» Provision of temporary site accesses to the corridor.

Further detail would be provided as part of the next stage of the planning and design process.

7.8.2 Station construction

The conceptual designs for the six proposed stations have been developed further since exhibition of the environmental assessment. It was originally intended that all stations (except for Burns Road and Rouse Hill Stations) would be constructed as a mined cavern, thereby minimising surface works. However, as further architectural development and engineering optimisation of each station is undertaken, additional information on potential constructability issues has emerged.

A key aim of the additional station design work has been to enhance urban design outcomes and improve accessibility to the stations. This work has indicated that it may be preferable to locate the station concourse as close to the surface as possible, thereby minimising the vertical distance that passengers must travel to the ticket gates. This type of design would typically require additional construction from the surface.

Construction methods at each underground station location must be considered based on the most up to date designs, and are summarised below:

» **Franklin Road Station:** The method of construction is likely to include full length cut-and-cover. As described in section 7.8.1, another tunnel construction support site may be established at this site. Tunnel boring machines may be launched at this site with spoil from the tunnelling construction removed via Castle Hill Road.

» **Castle Hill Station:** The method of construction is likely to include partial cut-and-cover and partial mined excavation. The main activities at the site would be construction of the escalator shafts leading from the surface to the platform, and construction of ventilation/stair shafts. The station concourse box and shaft spoil would be removed to the surface at this station site.

» **Hills Centre Station:** Under staged delivery, the Hills Centre Station is likely to be the commencement point for construction with the tunnel boring machines, which would tunnel eastwards towards Epping. It is likely that the station itself would be constructed as partial cut-and-cover and partial cavern. It is likely that roadheaders would be used for excavation of the

mined sections of station and construction of the stabling tunnels to the west of the station. Removal of spoil via Showground Road to the north of the site would be investigated.

» **Norwest Station:** Construction of the underground station would be planned to minimise disruption of the road. The planning is focused on a configuration giving access to the station from both sides of the road, thus requiring a sub-surface crossing to access the station. Potential arrangements include constructing a central section of station by a top-down method of cut-and-cover progressively across the road alignment, thereby diverting traffic onto a temporary alignment along Norwest Boulevard. Spoil removal would be via Norwest Boulevard.

» **Burns Road Station:** There is no significant change to the method of construction for Burns Road Station outlined in the environmental assessment. The station would likely be constructed as a full length cut-and-cover structure.

» **Rouse Hill Station:** There is no significant change to the method of construction for Rouse Hill Station outlined in the environmental assessment. The station would likely be constructed as a full length cut-and-cover structure.

The construction methodology for each station does not form part of the concept plan for which approval is being sought and would be subject to considerable design, planning and assessment.

7.8.3 Surface alignment between Balmoral Road and Burns Road Station

Further investigations will examine both open cut and cut-and-cover configurations within the Balmoral Road Release Area (Kellyville), with the aim of achieving an alignment that is shallower and provides better amenity at Burns Road Station.

The potential for impacts such as noise and impacts on land use/future development would be considered as part of the further investigations.

7.8.4 Construction strategies

Commitments have been included in the final statement of commitments to guide construction planning, inform future impact assessment, and ensure that the construction strategy minimises the potential for environmental impacts.

A construction strategy would be developed for the tunnel to inform construction planning and confirm detailed activities and methodologies at each construction site (commitment 4). Detailed construction methodologies at each construction site would be developed, including spoil management, with the aim of minimising environmental impacts and informing future impact assessment (commitment 5).

7.9 Sustainability workshop

As specified by TIDC's Statement of Corporate Intent, the objectives for the Metropolitan Rail Expansion Program include implementing and maintaining sustainable environmental practices, and demonstrating excellence in design.

The NSW State Plan includes a number of sustainability objectives. These include:

» A high quality transport system;

» Cleaner air and progress on green house gas reduction;

» Increased use of renewable energy; and

» Improve efficiency of water use.

TIDC seeks to incorporate the principles of ecologically sustainable development (ESD) and sustainability initiatives into the Metropolitan Rail Expansion Program.

Sustainability opportunities could include aspects such as:

» Use of green power;

» Beneficial reuse of spoil;

» Inclusion of rainwater tanks, solar panels and other design elements in station design;

» Reuse of treated tunnel groundwater for landscaping or other beneficial uses;

» Better use of the natural environment for noise mitigation;

» Use of recycled materials in the construction of the works;

» Energy management systems for stations and;

» Protecting, maintaining and improving biodiversity values during project construction.

The first step in the process was a workshop held on 28 February 2007 to set the strategic direction for sustainability initiatives in TIDC.

The workshop focused on key sustainability directions for the construction and operation of the project and identified a number of sustainability initiatives that could be implemented as the project develops.

Commitment 1 states that core sustainability principles would be developed for the design, construction and operation phases of the project, covering the following themes:

» Energy;

» Greenhouse;

» Water;

» Community and stakeholder involvement;

» Biodiversity; and

» Resource recycling.

To develop these directions, a benchmarking exercise would be undertaken to enable sustainability goals and objectives to be determined, which would provide clear result areas and targets under each theme.

7.10 Additional assessments proposed for staged delivery of the project

Section 11.2 of the environmental assessment identified additional assessments required to advance the staged delivery of the project and determine the extent of potential impacts of stage 1 and 2, including:

- Further assessment of the construction methodology for spoil removal from the Hills Centre work site directly onto Showground Road (which would be required for stage 1) in consultation with Baulkham Hills Council and RTA with the aim of identifying measures to minimise construction impacts, particularly those impacts associated with construction noise and traffic disruptions;
- Consultation with Baulkham Hills Council, RTA, land owners, stakeholders and communities into the activities associated with the Castle Hill Showground, with the aim of identifying measures to minimise significant disruptions to events and activities during construction;
- Further design of the temporary stabling within the tunnel sections west of the Hills Centre Station; and
- Additional investigations into the footprint of construction works at the Hills Centre site with the aim of identifying measures to minimise impacts on Cattai Creek, riparian vegetation and facilities associated with the Castle Hill Showground.

Further information on the temporary stabling facility within the tunnel sections west of the Hills Centre Station is provided in section 7.6.

Construction activities and impacts associated with the Hills Centre Station site have not been investigated in detail at this stage. Investigations into construction methods and planning will continue as the project develops, as described in section 7.7.

8. The concept plan

8.1 Purpose of the concept plan

This report has responded to a range of issues, presented the findings of additional investigations and proposed changes to the concept plan to minimise the environmental impacts of the project. The concept plan has subsequently been modified as described below.

TIDC is seeking approval for the concept plan described in this section and the statement of commitments described in section 9. Should approval be granted, these commitments would guide subsequent phases of project development.

8.2 Outline of the scope of the project

On 7 April 2006 the Minister for Planning made an order declaring the North West Rail Link to be a project to which Part 3A of the EP&A Act applies. The Ministerial order described the North West Rail Link in general terms as follows:

The construction and operation of the North West Rail Link being:

» A heavy passenger railway off the Northern Line linking Epping with the regional centres of Castle Hill and Rouse Hill; and

» Associated infrastructure including stations, train stabling, roadways, car parks, bus interchanges, public amenities and intermodal facilities.

The project would be delivered in two stages.

» Stage 1 involves the construction of the North West Rail Link from Epping to Hills Centre Station, with this section expected to be operational by the year 2015; and

» Stage 2 involves the construction of the North West Rail Link from the Hills Centre to Rouse Hill, with this section expected to be operational by the year 2017.

8.3 Modifications to the concept plan

Following additional investigations undertaken by TIDC and in response to submissions made to the environmental assessment, TIDC has refined and modified the concept plan.

Changes made to the concept plan have been considered in accordance with section 75H(6)(b) of the EP&A Act with regard to minimising the potential environmental impacts of the concept plan, as described in section 7.

Direct tunnel connection between Epping and Franklin Road Station

As described in section 7.2, the project would now include construction and operation of a direct tunnel connection between Epping and Franklin Road Station, rather than the surface works on the Northern Line between north of Epping and Beecroft.

The direct tunnel connection would use the existing stub tunnels that were constructed as part of the Epping to Chatswood Rail Line project. New stub tunnels would be constructed as part of the project to enable any future connection to Parramatta (via Carlingford).

The direct tunnel alignment would follow a more direct route from Epping to Castle Hill Road (along a ridge line) to the west of Thompsons Corner, after which it joins the alignment presented in the environmental assessment (as shown in Figure A in Appendix B (Volume 2)).

Location of Norwest Station

As described in section 7.5, Norwest Station would be located approximately 100 metres to the east of the location identified in the environmental assessment. It would remain within the proposed 60 metre rail corridor.

8.4 The revised concept plan

TIDC is seeking approval of the concept plan described in the following sections. The rail corridor is shown in Appendix C (Volume 2). The revised concept plan set out in this section incorporates the modifications described in section 8.3.

8.4.1 Rail tunnel within a defined corridor

The project involves the construction and operation of a passenger railway line in new twin tunnels within a new 60 metre wide rail corridor. The tunnels would commence in the vicinity of Epping Station, with surface sections commencing in the Balmoral Road Release Area (Kellyville).

The proposed horizontal alignment of the rail corridor and an indicative vertical alignment of the rail track are shown in Appendix C (Volume 2).

Four new underground railway stations would be located within this tunnel section. Further information on these stations is provided in section 8.4.3 below.

8.4.2 Rail tunnel and lines within a defined corridor

The project involves the construction and operation of a section of new passenger railway line predominantly on the surface (with sections of cut-and-cover, cutting, embankment and viaduct) between the Balmoral Road Release Area (Kellyville) and the northern end of the stabling facility at Rouse Hill. The rail lines on the surface (cutting, embankment and viaduct) and associated infrastructure would be within a rail corridor that is generally 40 metres wide. The cut and cover rail sections and stations would be within a rail corridor that is generally 60 metres wide.

The viaduct would be constructed within a 40 metre corridor from Samantha Riley Drive to north of the Windsor Road/Old Windsor Road intersection (this would include a new bridge to be constructed over Windsor Road).

The proposed horizontal alignment of the rail corridor and an indicative vertical alignment of the rail track are shown in Appendix C (Volume 2).

Two new stations are proposed within this section at Burns Road and Rouse Hill. Information on these stations is provided in section 8.4.3 below.

8.4.3 Six new stations within a 60 metre wide rail corridor

The project involves the construction and operation of six new stations. The location of these new stations are shown in Appendix C (Volume 2). The new stations are identified as:

» Franklin Road Station;

» Castle Hill Station;

» Hills Centre Station;

» Norwest Station;

» Burns Road Station; and

» Rouse Hill Station.

Each of the stations would be located within a new generally 60 metre wide rail corridor.

The project requires the construction and operation of ancillary surface structures at each station. These ancillary structures would include access/egress, ventilation facilities and infrastructure to support public transport, commuter car parking (at Franklin Road, Hills Centre and Burns Road stations) and station facilities. These features would not necessarily be located within the nominated 60 metre wide corridor surrounding each station.

The approval of the location and general form of the stations would establish basic principles to enable locality (around the stations) and precinct planning to proceed. Further design development is proposed for the stations, and elements of the station precincts directly related to the project.

8.4.4 Park and ride facilities

The project would involve the construction and operation of commuter car parking (park and ride facilities) at selected stations. These facilities would not necessarily be located within the nominated 60 metre wide corridor surrounding the stations. Park and ride facilities, which are subject to further design and assessment including their scale, quantum and design are proposed at Franklin Road Station, Hills Centre Station and Burns Road Station. Shared park and ride facilities would be investigated at Norwest Station.

8.4.5 A train stabling facility at Rouse Hill

The project would include the construction and operation of a stabling facility (including associated infrastructure, access roads, staff facilities etc) within an area north west of the Rouse Hill Town Centre on the western side of Windsor Road within the Area 20 precinct of the North West Growth Centre.

The stabling facility is an interim facility and has been designed to form part of a future extension of the North West Rail Link. The stabling facility would provide for stabling of eight eight-car train sets. Facilities within the yard would include cleaning/ light maintenance facilities, ablutions, administration offices and staff car parking. The facility would be floodlit and fenced for security.

The approval of the location of this interim stabling facility would allow for future land use planning around the site and for future design development to progress.

8.4.6 Ancillary support facilities

Ancillary facilities including power supply, sectioning huts, signalling structures, access roads, and other infrastructure required for the operation and maintenance of rail services and infrastructure would be required. The existing facilities at Epping Station would also be used.

One emergency egress facility/vent shaft would be required at (approximately) the tunnel mid-point between Epping and Franklin Road Stations (surface location to be determined).

It is likely that water treatment plant/s would be required in the vicinity of tunnel portals and potentially in the vicinity of Hills Centre Station. Exact locations would need to be determined as part of an overall water treatment strategy.

Ancillary facilities would be contained within the rail corridor where practicable. Further design development, scoping requirements and assessment is required to determine these requirements for the project in more detail.

8.4.7 Construction work sites

A number of construction sites are required for construction works associated with the project. The need for these construction sites is based on the preliminary constructability assessment and design work. Construction sites are required in the following locations:

- Franklin Road Station;
- Castle Hill (generally within Arthur Whiting Park);
- Hills Centre Station;
- Norwest Station;
- Burns Road Station;
- Rouse Hill Station;
- Epping Station (access to the stub tunnels and service facilities);
- Vent shaft/emergency egress for the tunnel (surface location to be determined);
- Balmoral Road construction site;
- Temporary stabling within the tunnel sections west of the Hills Centre Station (including a surface location to be determined).
- Above ground construction areas and viaduct construction (between Balmoral Road Release Area (Kellyville) and Rouse Hill);
- Excavation works at Rouse Hill and Windsor Road; and
- Rouse Hill stabling area.

The tunnel support construction sites (involving spoil removal, tunnel boring machine launch etc) would involve 24 hour a day operations.

The construction sites associated with the project would be subject to refinement in terms of construction activities, location and size as a result of further design work.

9. Statement of commitments

The environmental assessment included a draft statement of commitments prepared to outline the investigations and mitigation measures that would be undertaken to ensure that the future planning, assessment and design of the project minimises the potential for environmental impacts.

Amendments have been made to the draft statement of commitments taking into account investigations done following public exhibition and the issues raised in submissions. The final statement of commitments for the project is provided in Table 9.1.

The statement of commitments would be informed by the future design development and assessment identified in section 10.2 of this report and the recommendations and mitigation measures outlined within the *North West Rail Link Environmental Assessment and Concept Plan* (November 2006) and the preferred project report.

Table 9.1 Final statement of commitments

Desired outcome	Action
Sustainability strategies	
Project development and delivery based around core sustainability principles.	1. Core sustainability principles would be developed for the design and construction of the project covering the following themes: » Energy » Greenhouse emissions » Water » Community and stakeholder involvement » Biodiversity » Resource recycling/minimisation To develop the principles a benchmarking exercise would be undertaken to enable sustainability goals and objectives to be determined, which would provide clear result areas and targets under each theme.
Communication processes	
A framework for community and stakeholder involvement is developed.	2. Communications processes would be developed and implemented throughout delivery of the project. These would include: – Opportunities to input into the design process such as at station precincts and structures and proposed mitigation measures (e.g noise barriers) for construction and operations; – Methods to inform the community of the progress and performance of the project and issues of interest to the community; – Processes to receive and manage complaints; and – Consultation with affected property owners. 3. Ongoing consultation would occur with Government agencies regarding issues raised during previous consultation and as identified within the Environmental Assessment and Concept Plan and the Preferred Project Report.

Desired outcome	Action
Design and construction strategies	
Potential for environmental impacts minimised by integrating assessment of environmental issues with development of design and construction strategies.	4. A construction strategy would be developed confirming detailed construction activities and methodologies at each construction site for the construction of the tunnel. 5. Detailed construction methodologies at each construction site would be developed, including spoil management, with the aim of minimising environmental impacts and informing future impact assessment.
Land use, property and infrastructure planning	
The project is integrated with land use planning of surrounding areas.	6. Consultation with Councils, the Growth Centres Commission, RailCorp and other relevant stakeholders would be undertaken to ensure environmental planning instruments reflect planning, construction and operation of the project and include integrated planning provisions for appropriate development controls within the vicinity of the rail line and stabling facility. 7. Land use and property impacts of the project, including construction sites and all ancillary facilities, would be further assessed in consultation with Councils and surrounding landowners. 8. A Land Asset Management Strategy to address 'land surplus to use', post construction would be developed jointly with the Department of Planning (Land Management Branch) in consultation with Councils, Growth Centres Commission and RailCorp. This strategy would investigate opportunities for land amalgamation of parcels severed by the project and identify opportunities for development that is consistent with surrounding land use planning. 9. Consultation with relevant Councils, government agencies, utility providers, land owners and communities involved in the planning of precincts in the vicinity of each station would be undertaken with the aim of encouraging transit-orientated development around each station. The role of each station within the context of provision of public transport services would be established, including the need and capacity of park and ride facilities, establishing connections with other transport modes (including the potential for integrated ticketing), and integrating pedestrian and cyclist facilities. 10. Further investigations would be undertaken with respect to the planned expansion of the Castle Hill Shopping Centre and integration of the project with the Castle Hill Draft Master Plan.
Traffic, transport, parking and access	
(i) Stations (including interchanges, commuter parking and other facilities) are planned and delivered in recognition of current and future traffic, transport and access requirements. (ii) Potential for traffic and transport impacts minimised during construction and operation.	11. At each station, further studies would be undertaken to consider the integration of the station with the local area to ensure that predicted patronage and mode access are catered for during operation. Studies would consider local connectivity requirements; pedestrian modelling (including emergency access); bicycle facilities; the potential impacts of traffic accessing the station from the surrounding road network; parking requirements and the integration of the Transitway and other bus services with the new rail stations. These investigations would be undertaken in consultation with Councils, RailCorp, Ministry of Transport and the Roads and Traffic Authority. 12. The location, scale, design and quantum of park-and-ride facilities at the Franklin Road, Hills Centre and Burns Road Station would be reviewed during further design. This is to be undertaken with reference to relevant parking policies and in consultation with Councils, RailCorp

Desired outcome	Action
	and the Ministry of Transport. 13. In consultation with Councils, RailCorp, the Ministry of Transport and surrounding landowners, investigate opportunities for 'shared use' or complementary parking facilities adjacent to Norwest Station. 14. In consultation with the RTA and Councils, investigate the feasibility of providing a direct access point to the Franklin Road site from Castle Hill Road and the potential for a signalised intersection at the intersection of Glenhope Road with Castle Hill Road. 15. In consultation with the RTA and Councils investigate potential access improvements to Franklin Road Station from areas to the north. 16. The design of construction activities would consider access points, surrounding intersections, bus routes and pedestrian flows. 17. Traffic modelling and traffic management analysis would be undertaken for the roads and intersections impacted by the project during the project construction and operation. This analysis would consider existing and planned road upgrades. 18. A detailed construction methodology for the construction over and/or under roads would be developed in consultation with the RTA and Councils with the aim of minimising traffic disruptions (including construction of the bridge over Windsor Road at Kellyville and cut and cover construction under Norwest Boulevard, Windsor Road and Burns Road). 19. Maintenance access points would be identified and planned in consultation with RailCorp and Councils.
Noise and vibration	
Design development and assessment adopts best practise measures to minimise construction and operational noise and vibration impacts.	20. A detailed noise and vibration assessment of the proposed construction activities, including blasting if required, would be undertaken as part of design development and would include the investigation of the potential need for reasonable and feasible mitigation in accordance with relevant policies and guidelines. 21. Consult with local Councils, Growth Centres Commission and RailCorp in relation to land use planning and development controls to minimise the need for physical noise mitigation. 22. In regard to operational noise, the Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects (Department of Planning, 2007) would be used to implement the following activities: – Modelling of operational noise impacts (including ground borne noise) in more detail as part of the design development; – Identification of acoustic mitigation measures to meet, where reasonable and feasible, the design goals; and – Select representative locations for the project at which it is appropriate to later assess compliance. 23. In regard to train stabling operational noise, the following would be undertaken: – Determine the extent of any physical noise mitigation measures in consultation with Department of Environment and Climate Change, RailCorp and Growth Centres Commission; and – Review the results of RailCorp's investigations into addressing horn noise and consider the feasibility in consultation with RailCorp of implementing a low volume horn test.

Desired outcome	Action
	24. Investigate feasible and reasonable mitigation measures to manage operational vibration in consultation with Councils, the Department of Environment and Climate Change and RailCorp.
Flora and fauna	
Assessment and management of biodiversity impacts is consistent with the regional approach to biodiversity management within the North West Growth Centre i.e. maintain or improve biodiversity values.	25. Design of waterway crossings and structures would be undertaken with reference to the Guidelines for Design of Fish and Fauna Friendly Waterway Crossings (Fairfull and Witheridge 2003) and Fish Passage Requirements for Waterway Crossings (2003) and considering the quality of riparian habitat present, in consultation with the Department of Primary Industries (NSW Fisheries) and other relevant Government agencies. 26. The location of structures associated with the rail tunnel, such as ventilation shafts, emergency egress/access points and discharge/runoff outlets, would be assessed with respect to the potential application of SEPP 19. 27. A detailed ecological assessment would be undertaken at all construction sites and along above ground sections of the project corridor. The assessment would identify areas to be avoided (where practicable), construction related impacts and how these can be managed; and, where required, describe measures to offset significant impacts on threatened species and/or endangered ecological communities. This assessment would be undertaken in consultation with the DECC, the Growth Centres Commissions, RailCorp and the Commonwealth Department of Environment and Water Resources as appropriate. 28. 'Improve and Maintain' assessments on biodiversity values would be undertaken to identify the potential impacts of the project and benefits from protection measures to be implemented. The methodology adopted for all parts of the project would be consistent with the draft Growth Centres Conservation Plan (GCC, 2007) and DEC's draft Guidelines for biodiversity certification of environmental planning instruments (2007).
Spoil	
Opportunities for beneficial reuse of spoil identified.	29. Further investigations would be undertaken as part of the design development into opportunities for beneficial reuse of spoil. As a result of these investigations further assessment of transport options and routes for spoil movement would be undertaken.
Heritage	
Potential for environmental impacts on indigenous and non indigenous heritage minimised through management measures that are consistent with established protocols and guidelines.	30. Additional research would be undertaken to determine the history and potential heritage significance of the sites identified in Castle Hill. Site-specific archaeological assessments would be undertaken in the event that they are found to have heritage significance. 31. Site-specific archaeological assessments would be undertaken for the two archaeological sites identified along Old Windsor Road and Windsor Road. 32. A view analysis would be undertaken to and from Rouse Hill House and its estate and the Glenhope property. If required appropriate mitigation measures would be identified. 33. The Indigenous Heritage protocol and methodology developed for the Growth Centres would continue to be applied as the project progresses, in consultation with DECC and relevant Indigenous groups.

Desired outcome	Action
	34. A detailed assessment would be undertaken in the vicinity of sites identified to have moderate to high archaeological potential. The assessment would identify areas to be avoided, construction related impacts and how these can be managed; and, where required, salvage excavation prior to any subsurface impact on the deposit. Advertising for interested parties would need to be undertaken prior to any subsurface investigation, in accordance with DECC requirements.
Geology, geotechnical and groundwater	
The project design minimises potential risks associated with geotechnical issues and groundwater.	35. Detailed geotechnical and groundwater investigations would be undertaken involving site investigations to inform future design development.
Hydrology and surface water	
The project design minimises potential risks associated with hydrology and surface water.	36. A detailed flood assessment would be undertaken in accordance with appropriate NSW Government guidelines and in consultation with Councils and relevant Government agencies. This would include a two dimensional model of the Caddies Creek confluence to facilitate a better understanding of the discharges at the confluence of the creeks and associated design requirements. 37. Investigations into the construction and operational impacts on the Elizabeth Macarthur Creek would be undertaken in accordance with relevant NSW Government guidelines. 38. The floodplain storage impacts would be defined during design development in accordance with the relevant NSW Government guidelines. 39. Further investigations into the location, size and treatment levels of a water treatment plant(s) would be undertaken in consultation with DECC, Councils and RailCorp. Investigations would include identifying discharge points, determining the receiving water quality and water re-use/recycling opportunities.
Visual impacts, landscape and urban design	
The project design is informed by best practise landscape and urban design principles and minimises visual impacts.	40. The following architectural, landscape and urban design principles would be used to guide the design of the new stations and transport interchanges, civil works (such as noise walls, embankments and the viaduct section) and/or the stabling facility concepts: – Reinforce the role of the station and transport interchange within its surrounding neighbourhood as the principal transport and community facility within the locality. – Stations and the stabling facility would be designed in the context of the scale, character and image of the surrounding area and enhance the presentation of the area to visitors, residents and travellers. – Maintain or improve the links across the project and to surrounding areas and activities. Where a connection between adjacent areas is desirable, pedestrian bridges or underpasses would be considered. – Easy access facilities would be incorporated into the station designs and integrated with the associated transport interchanges. – Movement networks should improve existing, or establish new comfortable and inviting pedestrian environments, including

Desired outcome	Action
	equitable access within the railway station and adjoining areas. – A design theme would be established for bridges/viaduct to link the overall rail design together. The design would ensure that the structures are simple, integrated with the surrounding area and finished to a high quality. Fencing, parapets and any railing on the bridges would also be integrated with the overall design. – Establish a hierarchy of access to stations consistent with NSW Govt policy package "*Integrating land –use and transport*" i.e prioritise public transport and other non-car based access to the rail stations and adjoining areas where possible. – Station precinct design should facilitate new development that reflects the highest standards and quality of design. 41. Visual impact assessment of the project would be undertaken as part of design development. This would consider both the existing and future urban environment to identify impacts and potential mitigation measures, such as architectural, landscape and/or urban design treatments. Additional assessments would apply to pedestrian and cycle facilities; proposed bridging structures; cutting and embankment treatments; landscape treatment projects; design of the stations and stabling facility; proposed acoustic treatments; and any visual buffer areas as required. 42. Measures to mitigate visual impacts and deliver high quality design outcomes would include: – Where noise walls are proposed, potential visual impacts would be minimised by implementation of urban design measures, developed in consultation with adjacent property owners (mitigation measures might include plantings and high quality facings near residential areas). – Earth mounding would be considered where space allows and where significant vegetation would not be lost. – The design of any civil works, such as noise walls, retaining walls, the viaduct and underpasses would adopt CPTED principles, including the need for unobstructed views into and outside of the underpass, effective drainage and ventilation, wide corridors and good lighting. – Light spill would be minimised as much as possible to reduce impacts on surrounding existing and future residents in accordance with relevant standards. 43. TIDC's Design Review Panel would guide the application of architectural, landscape and urban design principles throughout the design development. 44. Public art and interpretation would be incorporated into architectural elements or urban design treatments and would be assessed and implemented with design themes and urban design criteria (eg. graffiti management).
Economic impacts	
Potential business impacts identified and considered as part of design development.	45. An assessment of the potential impacts and benefits of construction and operation on adjacent businesses would be undertaken in consultation with business owners during the design phase.

10. Where to from here?

10.1 Concept approval

The Department of Planning will, on behalf of the Minister for Planning, review the environmental assessment, the preferred project report, and submissions received. Once the Department has completed its assessment, a draft assessment report will be prepared for the Director-General of the Department of Planning, which may include recommended conditions of approval.

The assessment report will then be provided to the Minister for Planning for consideration. The Minister for Planning may then approve the concept plan (with any conditions considered appropriate) or refuse to give approval.

The Minister for Planning's determination and the Director-General's report will be published on the Department of Planning's website immediately following determination with a copy of the preferred project report.

The conditions may include the requirements that TIDC must satisfy before final project approval is given for the project or any stage of the project for the purpose of fulfilling the obligations in a statement of commitments.

Should the concept plan be approved, further environmental assessment would be undertaken consistent with any conditions of approval and the statement of commitments. The delivery of the project and detailed construction staging has not been fully determined. It may be necessary to stage further environmental assessments to coordinate with the project delivery methodology. Should any staging occur, an assessment would be undertaken to determine the applicability of any conditions of approval or the statement of commitments prior to the commencement of that assessment. Subject to the terms of any concept plan approval, and in accordance with the statement of commitments, additional design and environmental assessment would be undertaken for the elements of the project described in section 10.2.

10.2 Additional investigations

10.2.1 Corridor design development and infrastructure

The vertical alignment and horizontal alignment of the project will require further design development to better define some elements of the rail infrastructure within and, in some cases, outside of the corridor, including where necessary:

- Topographical and geotechnical investigations;
- Structures, including rail overbridges, waterway crossings (bridges and reinforced concrete box culverts), retaining walls and noise walls;
- Earthworks - embankments and cuttings;
- Gantry structures and electrical infrastructure; and
- Adjustments and relocation of utility services.

More detailed designs for the rail alignment and associated infrastructure (such as water treatment plants, ventilation structures and sub stations) and, where relevant, architectural designs would be prepared.

10.2.2 Stations

It is proposed that additional design and environmental assessment is undertaken for each of the stations described in section 8.4. Design would incorporate the following elements:

- Engineering and architectural design of station buildings and associated structures (including emergency egress and ventilation structures were required);
- Track work in the vicinity of the stations;
- Bicycle and pedestrian facilities including easy access facilities;
- Landscaping and urban design;
- Transport interchange facilities - access, parking (where appropriate), bus bays and kiss and ride;
- Utility services modification and relocation;
- Ticket barriers, staff amenities and other facilities;
- Construction work sites;
- Temporary works during construction;
- Road crossings; and
- Diversions of watercourses where appropriate.

10.2.3 Stabling facility

Additional assessment is proposed for the stabling facility to cover future design work, including where necessary:

- Engineering and architectural design of buildings and associated structures;
- Track work and signalling;
- Potential noise barriers and other mitigation measures;
- Retaining wall structures;
- Landscaping and urban design; and
- Parking facilities.

10.2.4 Construction sites

Additional assessment is required to confirm the exact location, number, footprint and layout of the proposed construction sites.

Appendix A

Summary of submissions

Table A.1 Agency submissions

Agency	Issues raised	Where addressed in this report
Baulkham Hills Shire Council	» Opposition to any part of the rail line being above ground	Section 3.12.3
	» Use of the Balmoral Road construction site preferred compared to the Hills Centre Station construction site	Section 7.8
	» Consideration of a rail station at Samantha Riley Drive	Section 3.8.5
	» Development limitations and development potential in the vicinity of Franklin Road Station	Section 3.5.8 and 5.2.1
	» The need for additional commuter car parking at Hills Centre Station	Section 3.8.5 and 5.4.2
Department of Natural Resources[23]	» Need for a water licence	Section 5.16.1
	» Impacts on Cattai Creek	Section 5.8.2 and 5.8.3
Sydney Ports	» Support for the surface works (quadruplication) of the Northern Line	Section 4.1
Department of Primary Industries	» Connective or surface cracking of streams above the rail tunnel	Section 5.14.2
Department of Environment and Climate Change (DECC) (formerly Department of Environment and Conservation)[24]	» Project operational noise criteria	Section 5.6.6
	» Future assessment of noise and vibration	Section 5.6.5
	» Impacts on biodiversity	Section 5.8
	» Potential impacts of water drawdown on vegetation	Section 5.8.4
	» Further commitments regarding indigenous heritage	Section 5.12.1
Roads and Traffic Authority (RTA)	» Potential construction impacts on operation of the road network	Section 5.4.1
	» Potential impacts on the future M2 to F3 road tunnel	Section 5.2.3
	» Integration with the bus network	Section 5.4.1
RailCorp	» Integration of station precincts with surrounding land uses	Section 5.8.5 and 5.2.1
	» Potential operational noise mitigation measures and operational noise criteria	Section 5.6
Sydney Water	» Potential impacts on potable water supply, wastewater, stormwater, recycled water and fire fighting supplies	Section 5.2.3
	» Sydney Water certificates	Section 5.2.3
Blacktown City Council	» Integration of the stabling facility with future surrounding land uses	Section 3.8.3

[23] On 2 April 2007, the NSW Government announced, via Government Gazette No. 47, the Department of Natural Resources as abolished. The functions of the Department of Natural Resources have been transferred to the Department of Environment and Climate Change, the Department of Lands, the Department of Primary Industries, and the (new) Department of Water and Energy.

[24] On 2 April 2007, the NSW Government announced, via Government Gazette No. 47, that the Department of Environment and Conservation be renamed the Department of Environment and Climate Change.

Agency	Issues raised	Where addressed in this report
	» Development adjacent to or above the rail tunnel	
	» Air quality/tunnel ventilation strategies	Section 5.2.1
	» Water treatment strategies	Section 5.21.1
	» Renaming Rouse Hill Station to Vinegar Hill Station	Section 7.7
		Section 5.21.2
Council of Social Service of NSW	» Accessibility of stations	Section 5.8.5
	» Integration of stations with surrounding urban form and other transport links	Section 5.2.3
Growth Centres Commission	» Additional assessment of potential impacts on Area 20 of the North West Growth Centre associated with the stabling facility	Section 3.8.3
Ministry of Transport	» Integration of any future extension with planning for the North West Growth Centre	Section 3.15
	» Integration with the bus network	Section 5.4.1
	» Investigation of shared parking (at all stations) rather than dedicated commuter parking	Section 3.8.5 and 5.4.2
Hornsby Shire Council	» Opposition to the surface works (quadruplication) of the Northern Line	Section 4
	» Support for a direct tunnel connection between Epping and Franklin Road Station	Section 7.1
	» Significant land use implications in the vicinity of Franklin Road Station (consistency with the relevant Development Control Plan and commercial centres hierarchy to be investigated)	Section 3.8.5 and 5.2.1
	» Location of tunnel ventilation strategies	Section 7.7
	» Beneficial reuse of spoil	Section 5.10.2
	» Biodiversity impacts at Franklin Road Station	Section 5.8.3
	» Construction issues, such as dust control, waste management and sediment and erosion control	Section 3.6.3
Landcom	» Deliver the project faster and stages 1 and 2 concurrently	Section 3.6.1
	» Review the location of the stabling facility	Section 3.8.3
	» Consult with Landcom and other key stakeholders to integrate the design of Rouse Hill Station	Section 3.8.5
	» Commence detailed project approvals for the Rouse Hill Station to coincide with other development	Section 10.1
	» Use tunnelling techniques to minimise impacts	Section 3.12.3
	» Impacts on Rouse Hill bus interchange	Section 3.8.5
	» Development adjacent to or above the rail tunnel	Section 5.2.1
	» Consult with Landcom regarding the detailed design of the viaduct to consider its integration with surrounding Landcom projects and ensure visual impacts are mitigated	Section 3.8.4 and 5.18.2

Other issues raised

In addition to the issues summarised in Table A.1, a number of common concerns or recommendations to be addressed during the next stage of project design were identified. These included:

- Detailed traffic and accessibility investigations, including pedestrian and cycle connectivity;
- Construction impacts and management;
- Integration of the station precincts with current and future land use planning;
- Involvement in the future stages of the station precinct planning process;
- Detailed operational noise and vibration management and mitigation measures;
- Detailed geotechnical and groundwater investigations; and
- Detailed visual assessment and implementation of urban design principles.

Table A.2 Issues summary – community submissions

Issue code	Issue	Where addressed in this report
1. Project development, design and alternatives		
1.1 Project justification		
1.1.1	Expenditure and funding	Section 3.2.1
1.1.2	Modelling of patronage	Section 3.2.1
1.1.3	Duplication of other transport links (eg. Epping to Chatswood Rail Link, roads, transitway)	Section 3.2.2
1.1.4	Support for the North West Rail Link	Section 3.1
1.1.5	Objection to the North West Rail Link	Section 3.1
1.1.6	Other	-
1.2 Alternatives to the North West Rail Link		
1.2.1	Extend the rail line from Carlingford to the North West	Section 3.4.1
1.2.2	Light Rail and bus transitways	Section 3.4.3
1.2.3	Other	Sections 3.4.2, 3.4.4 and 3.4.5
1.3 Project management		
1.3.1	Project staging	Section 3.6.1
1.3.2	Construction timing	Section 3.6.3
1.3.3	Other	Section 3.6.2
1.4 The Concept Plan		
1.4.1	Support for the Concept Plan	Section 3.7
1.4.2	Questions about the Concept Plan (Change)	Sections 3.8.1, 7
1.4.3	Object to the location of the stabling facility at Rouse Hill	Section 3.8.3
1.4.4	Object to viaduct	Section 3.8.4
1.4.5	Franklin Road Station	Sections 3.8.5, 7.4.2
1.4.6	Castle Hill Station	Sections 3.8.5, 7.4.3
1.4.7	Hills Centre Station	Sections 3.8.5, 7.4.4
1.4.8	Norwest Station	Sections 3.8.5, 7.4.5
1.4.9	Burns Road Station	Sections 3.8.5, 7.4.6
1.4.10	Rouse Hill Station	Section 7.4.7
1.4.11	Need for Samantha Riley Station	Section 3.8.5
1.4.12	Other	Section 3.8.5
1.4.13	Object to tunnel being located beneath residential properties/schools	Section 3.8.2
1.5 Beecroft and Cheltenham		
1.5.1	Objection to the surface works (quadruplication) of the Northern Line	Section 4
1.5.2	Support for the surface works (quadruplication)	Section 4.1
1.5.3	Object to Cheltenham Station upgrade	Section 4
1.5.4	Environmental impacts of surface works (quadruplication)	Section 4
1.6 Epping to Franklin Road Tunnel Option		
1.6.1	Object to the Epping to Franklin Road Tunnel Option	Section 3.9
1.6.2	Support for the Epping to Franklin Road Tunnel Option	Sections 3.10.1, 7.1, 7.2
1.6.3	Other	Section 3.10.1
1.7 Hills Centre to Rouse Hill Elevated Option		
1.7.1	Object to Hills Centre to Rouse Hill Elevated Option	Section 3.10.2, 7.1.2
1.7.2	Alternative route for Hills Centre to Rouse Hill Elevated Option	Sections 3.10.2, 7.1.2
1.7.3	Support Hills Centre to Rouse Hill Elevated Option	Section 3.10.2

Issue code	Issue	Where addressed in this report
1.8 Other suggested alternatives		
1.8.1	Alternative to tunnel option to avoid residential areas	Sections 3.12.1, 7.2
1.8.2	Alternatives to minimise impacts on Bella Vista	Sections 3.12.2, 7.2
1.8.3	Tunnel for entire length	Section 3.12.3
1.8.4	Other alternatives	Sections 3.12.3, 3.4.5
1.8.5	Relocation of dive structures	Section 3.12.5
1.9 Operation		
1.9.1	Increase in operations along Northern Line and stations	Section 3.14.2
1.9.2	Links between the project and other networks	Section 3.14.3
1.9.3	Train operations	Section 3.14.2
1.9.4	Train speed	Section 3.14.2
1.9.5	Other	Sections 3.14.1, 3.14.3
1.10 Design details		
1.10.1	Concerns/queries about the design	Section 3.8
1.10.2	Integration with existing structures and facilities	Section 3.8.5
1.10.3	Level of detail and investigations to date	Sections 3.8.5, 7
1.10.4	Station precinct design (eg lack of detail)	Section 3.8.5
1.10.5	Depth of tunnel	Section 3.8.2
1.10.6	Safety issues/design	Section 3.14.1
1.10.7	Other	-
2. Key assessment requirements		
2.1 Land use and acquisition		
2.1.1	Impacts on future development	Section 5.2.1
2.1.2	Showground impacts and issues	Section 5.2.2
2.1.3	Relocation of existing facilities	Section 5.2.2
2.1.4	Integration with infrastructure planning (south west growth)	Section 5.2.3
2.1.5	Meeting the needs of new release and growth areas	Section 5.2.3
2.1.6	Integration with surrounding land use	Section 5.2.3
2.1.7	Other	-
2.2 Traffic, transport, parking and access		
2.2.1	Availability of commuter parking	Section 5.4.2
2.2.2	Nature of proposed parking structures	Section 5.4.2
2.2.3	Potential for traffic impacts (operational)	Section 5.4.1
2.2.4	Cycleways	Section 5.4.4
2.2.5	Need for integration of stations and alignment with surrounding transport network and accessibility	Sections 5.4.1, 7.4
2.2.6	Construction traffic impacts	Section 5.4.1
2.2.7	Other	Section 7.4
2.3 Noise and vibration		
2.3.1	Damage to buildings as a result of construction vibration	Sections 5.6.1, 5.6.2
2.3.2	Damage to buildings as a result of operation vibration	Sections 5.6.1, 5.6.2
2.3.3	Tunnel construction noise impacts	Section 5.6.3
2.3.4	Surface construction noise impacts	Section 5.6.4
2.3.5	Tunnel operation noise impacts	Section 5.6.3
2.3.6	Surface operation noise impacts	Section 5.6.4
2.3.7	Occupation health and safety issues	Section 5.6.3
2.3.8	Level of assessment	Section 5.6.5
2.3.9	Noise criteria	Section 5.6.6
2.3.10	Other	-

Issue code	Issue	Where addressed in this report
2.4 Ecological impacts		
2.4.1	Impacts of clearing	Section 5.8.3
2.4.2	Extent of clearance	Section 5.8.3
2.4.3	Catchment impacts	Section 5.8.1
2.4.4	Level of assessment	Section 5.8.1
2.4.5	Other	Section 5.8.2
2.5 Spoil handling		
2.5.1	Contaminated spoil	Section 5.10.1
2.5.2	Quantities, disposal etc	Section 5.10.2
2.5.3	Other	-
2.6 Heritage		
2.6.1	Indigenous heritage	Section 5.12.1
2.6.2	Non-indigenous heritage	Section 5.12.2
2.6.3	Other	-
2.7 Geology and groundwater		
2.7.1	Impacts of tunnelling and potential for subsidence/landslip/collapse	Section 5.14.1
2.7.2	Development in weathered shales is risky	Section 5.14.1
2.7.3	Impacts on groundwater	Section 5.14.2
2.7.4	Impacts on watercourses	Section 5.14.2
2.7.5	Other	-
2.8 Surface water and flooding		
2.8.1	Design should address surface water and flooding	Section 5.16.1
2.8.2	Flood response plans	Section 5.16.1
2.8.3	Impact on waterways	Section 5.16.1
2.8.4	Other	-
2.9 Visual and urban design		
2.9.1	Visual impacts	Section 5.18.1
2.9.2	Urban design considerations	Section 5.18.1
2.9.3	Other	-
2.10 Economic and social issues		
2.10.1	Impacts on property values	Section 5.20.1
2.10.2	Compensation	Section 5.20.1
2.10.3	Land acquisition	Section 5.20.1
2.10.4	Government to take advantage of increased land values	Section 5.20.2
2.10.5	Impacts on people's lives 1(social impacts)	Section 5.20.3
2.10.6	Economic benefits of growth	Section 5.20.1
2.10.7	Other	Section 5.20.4
2.11 Other issues		
2.11.1	Air quality issues	Section 5.21.1
3.0 Community consultation and the assessment process		
3.1	Requests for extension of submission period	Section 6.2.1
3.2	Community involvement in process to date	Sections 2, 6.2.1
3.3	Availability of information	Section 6.2.1
3.4	Blank issue	N/A
3.5	Ongoing community involvement	Section 6.2.2
3.6	Assessment process	Section 6.4.1

Table A.3 Issues raised by submissions

The first column of table shows the submission number assigned by the Department of Planning. The second column shows the issues raised by the submission, as coded for entry into the database. The issue covered by each issue code, and where it is addressed in this report, is detailed in Table A.2.

Submission Number	Issues
1	1.1.4, 1.4.2, 1.5.1, 1.6.2
2	1.1.4, 1.5.1, 2.3.3, 2.3.6, 2.6.2
3	1.4.6
4	1.5.1, 1.5.4, 1.6.2, 1.8.5, 2.3.4, 2.4.1, 3.1
5	1.8.5
6	1.1.4, 1.4.12, 1.4.2, 1.5.1, 1.8.5, 2.10.5, 2.3.4, 2.3.6
7	1.5.1, 1.5.4, 1.9.3, 2.10.5, 2.3.8, 3.6
8	1.1.3, 1.5.1, 1.5.3, 1.5.4, 1.6.2
9	1.4.13, 1.7.1, 1.8.3, 2.3.2
10	1.4.13, 1.5.1, 1.5.4, 1.6.2
11	3.1, 3.1
12	1.1.4, 1.5.2, 1.6.1, 1.9.2
13	1.4.11, 2.2.1, 2.2.5
14	1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.8.1, 2.6.2, 3.2
15	1.5.1, 1.5.4, 1.6.2
16	1.1.4, 1.5.1
17	1.1.1, 1.1.5
18	1.5.1, 1.5.4, 1.6.2, 2.10.2
19	1.7.1, 1.8.4, 2.1.1
20	1.1.4, 1.5.1, 1.5.4
21	1.10.4, 1.4.1, 2.2.4
22	1.5.4, 1.6.2
23	1.5.4, 1.6.2, 1.8.5, 3.2
24	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
25	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
26	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.3.3
27	1.5.3, 1.5.4, 2.2.3, 2.3.6
28	1.1.5, 1.4.13, 1.5.4, 1.6.2, 2.10.1, 2.10.5, 2.10.7
29	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.3.4, 2.3.6
30	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
31	1.5.4, 1.6.2
32	1.4.11
33	1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.2.6
34	1.10.5, 1.2.2, 1.4.13, 1.4.2, 1.8.1, 1.8.4, 2.10.1, 2.10.2, 2.3.6, 2.3.8, 3.2
35	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 1.8.5, 2.2.6
36	1.1.4, 1.5.1, 3.1
37	1.1.4, 2.1.2
38	1.8.1, 2.10.5
39	1.5.4, 1.6.2
40	1.5.3, 1.5.4, 1.6.2
41	2.1.1, 2.2.3, 2.2.5, 2.2.7
42	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.5
43	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.5
44	1.5.1, 1.5.4, 1.6.2
45	1.1.5, 1.4.13, 1.5.4, 1.6.2, 1.8.5, 2.3.7
46	1.1.4, 1.5.1, 3.1
47	1.5.3, 1.5.4, 1.6.1
48	1.1.4
49	1.5.4, 1.6.2
50	1.5.3, 1.5.4, 1.6.2
51	1.1.4, 1.2.1, 1.3.1, 1.5.1, 1.5.4, 1.6.2, 3.3
52	1.4.2, 1.5.1, 3.5
53	1.1.4, 1.5.1, 3.1
54	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.2.6
55	1.4.13, 1.5.4, 1.6.2
56	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
57	1.4.13, 1.5.1, 1.5.4
58	1.1.4, 1.5.1, 3.1
59	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
60	1.1.4, 1.5.1, 3.1
61	1.1.4, 1.5.1, 3.1
62	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.5
63	1.1.4, 1.5.3, 1.5.4, 1.6.2, 1.8.3
64	1.8.1
65	1.5.4, 1.8.1, 2.3.5, 3.2, 3.3, 3.6
66	1.5.4, 1.8.1
67	1.1.4, 1.5.1, 3.1
68	1.5.3, 1.5.4, 1.8.1, 1.8.5
69	1.1.1, 1.4.12, 1.4.2, 1.9.5, 2.2.1, 3.2
70	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.6.2, 2.2.6

Submission Number	Issues
71	1.5.1, 1.5.4, 1.6.2
72	1.8.1, 1.8.4
73	1.1.4, 1.5.1, 3.1
74	1.10.3, 1.4.7, 1.9.5, 2.10.1, 2.10.4, 2.10.6, 2.11.1, 2.3.8, 2.3.9
75	1.4.2, 1.4.2, 2.3.1, 2.3.2, 2.3.3, 2.3.5
76	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.8.5, 1.8.5, 3.2
77	1.4.12, 1.5.1, 1.5.3, 1.5.4, 3.2
78	1.1.4, 1.1.5, 1.5.3, 1.6.2, 1.8.1
79	1.5.1, 1.6.2
80	1.5.1, 1.5.3, 1.5.4, 1.6.2
81	1.1.4, 1.5.1, 1.6.2
82	1.1.5, 1.2.1, 1.4.13, 1.5.1, 1.8.1
83	1.4.13, 1.6.1, 1.8.1, 3.1
84	1.1.5, 1.4.13, 1.5.3, 2.10.5, 2.2.6
85	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2
86	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2
87	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
88	1.6.2
89	1.5.1, 1.5.4, 1.8.1, 2.10.2
90	1.5.1, 1.5.4
91	1.1.5, 1.4.13, 1.5.4, 1.8.1, 1.8.4, 2.10.1
92	1.1.4, 1.5.1, 1.5.4, 1.6.2
93	1.1.4, 1.5.1, 1.5.4
94	1.1.5
95	1.5.1
96	1.10.1, 1.4.13, 2.3.1, 2.3.2, 2.3.5
97	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.5
98	1.1.5, 1.2.1, 1.5.1, 1.5.4, 1.6.2, 3.2
99	1.5.1, 1.5.3, 1.5.4, 1.6.2
100	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.2.6
101	1.5.1, 1.8.1
102	1.1.5, 1.4.13, 1.5.4, 1.8.1, 2.10.1, 2.3.1, 2.3.3, 2.3.5
103	1.1.4
104	1.1.4, 1.5.1, 1.5.4, 1.8.1, 2.3.1, 2.3.3
105	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.8.4, 2.10.5
106	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.8.1, 2.10.1, 2.3.1, 2.3.2, 2.3.3, 2.3.5
107	1.5.1, 1.8.1
108	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.4
109	1.4.13, 1.5.1, 1.5.4, 1.6.2, 1.9.3, 2.1.6,

Submission Number	Issues
	2.10.2, 2.3.1
110	1.4.7
111	1.5.1, 1.5.4, 1.6.2, 3.1
112	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.1, 2.3.1, 2.3.2
113	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.3, 2.3.5, 2.3.7
114	1.1.4, 1.5.1, 1.5.4, 1.6.2
115	2.4.5, 2.7.1, 2.7.4, 2.8.1, 2.8.3
116	1.5.1, 1.5.4, 1.6.2
117	1.1.4, 1.5.1, 1.5.4, 1.6.2
118	1.5.1, 1.5.4, 1.6.2
119	1.1.4, 1.5.1, 1.5.4, 1.6.2
120	2.4.1
121	1.5.1, 1.8.1
122	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.2.6
123	1.3.1, 1.7.1, 2.1.4
124	1.5.1, 1.5.4
125	1.4.13, 1.5.1, 1.5.3, 1.6.2
126	1.1.4, 1.5.1, 1.5.4, 1.6.2
127	1.1.4, 2.1.6, 2.2.1, 2.2.2, 2.2.3, 2.2.5
128	1.1.4, 1.4.12, 1.5.1, 1.6.2, 2.3.6
129	1.2.1, 1.5.1, 1.5.4, 1.6.2, 2.6.2
130	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.3, 2.3.3, 2.3.5, 2.3.6
131	1.1.5, 1.7.1, 1.8.2, 2.2.3
132	1.5.1, 1.5.4
133	1.5.1, 1.5.4
134	1.5.1, 1.5.4
135	1.5.1, 1.5.4
136	1.4.13, 1.7.1, 1.8.2
137	1.4.13, 1.7.1, 1.8.2
138	1.4.13, 1.7.1, 1.8.2
139	1.4.13, 1.7.1, 1.8.2
140	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
141	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
142	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
143	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
144	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.10.1, 2.10.2, 2.2.6, 2.3.3, 2.3.5, 2.3.7
145	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 2.3.2, 2.3.5
146	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2,

Submission Number	Issues
	2.2.6, 2.3.2, 2.3.5
147	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
148	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
149	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
150	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
151	1.1.4, 1.2.1, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.8.5
152	1.5.4, 1.6.2
153	1.1.4, 1.4.13, 1.8.2, 2.10.5, 2.3.1, 2.3.3, 2.3.5
154	1.10.5, 1.4.2, 1.9.4, 2.3.1, 2.3.3, 2.3.5, 2.3.7
155	1.5.1, 1.5.3, 1.5.4, 1.6.2
156	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.8.1
157	1.1.4, 1.5.3, 1.5.4, 1.8.5, 3.2
158	1.1.4, 1.10.5, 1.4.13, 1.5.1, 1.5.3, 1.6.2, 1.6.2, 2.2.6, 2.3.2, 2.3.5
159	1.7.1, 1.8.2
160	1.4.11
161	1.5.1, 1.5.4, 1.6.2
162	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
163	1.1.4, 1.1.4, 1.10.5, 1.4.13, 1.4.2, 1.5.4, 1.6.2, 1.8.1, 2.10.1, 2.3.3, 2.3.5
164	1.1.4, 1.1.4, 1.10.5, 1.4.13, 1.4.2, 1.5.4, 1.8.1, 2.10.1, 2.3.3, 2.3.5
165	1.5.1, 1.8.1
166	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
167	1.5.1, 1.5.4, 1.6.2
168	1.4.13, 1.5.4, 1.6.2, 2.3.1, 2.3.2, 2.3.3, 2.3.5
169	1.5.1, 1.5.4, 1.6.2
170	1.4.13, 1.7.1, 1.8.2
171	1.4.13, 1.7.1, 1.8.2
172	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
173	1.5.1, 1.5.4, 1.8.5
174	1.4.13, 1.7.1, 1.8.2
175	1.5.1, 1.5.4, 1.6.2
176	1.6.2
177	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
178	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
179	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
180	1.4.13, 1.7.1, 1.8.2
181	1.4.13, 1.7.1, 1.8.2
182	2.10.1, 2.3.3, 2.3.5, 2.7.1
183	1.7.1, 1.8.1
184	1.4.13, 1.7.1, 1.8.2
185	1.4.13, 1.7.1, 1.8.2
186	1.4.13, 1.7.1, 1.8.2
187	1.4.13, 1.7.1, 1.8.2
188	1.4.13, 1.7.1, 1.8.2
189	1.4.13, 1.7.1, 1.8.2
190	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
191	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
192	1.4.13, 1.7.1, 1.8.2
193	1.4.13, 1.7.1, 1.8.2
194	1.4.13, 1.7.1, 1.8.2
195	1.4.13, 1.7.1, 1.8.2
196	1.4.13, 1.7.1, 1.8.2
197	1.4.13, 1.7.1, 1.8.2
198	1.4.13, 1.7.1, 1.8.2
199	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.5
200	1.1.4, 1.5.1, 1.5.4, 1.6.2
201	1.1.4, 1.5.1, 1.5.4, 1.6.2
202	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
203	1.5.1, 1.5.3, 1.5.4, 1.6.2
204	1.1.4, 1.5.1, 1.5.4
205	1.1.5, 1.5.1, 1.5.4, 1.8.1
206	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
207	1.5.1, 1.5.4, 3.1
208	1.5.1, 1.5.4, 3.1
209	1.5.4, 3.1
210	1.1.5, 1.5.1, 1.5.4, 1.8.1
211	1.1.4, 1.5.1, 1.5.4, 1.6.2
212	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
213	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
214	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
215	1.1.4, 1.5.1, 1.5.4, 1.6.2
216	1.1.4, 1.5.1, 1.5.4, 1.6.2

Submission Number	Issues
217	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
218	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
219	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
220	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
221	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
222	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
223	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
224	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
225	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
226	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
227	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
228	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
229	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
230	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
231	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
232	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
233	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
234	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
235	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
236	1.5.2, 1.6.1
237	1.1.4, 2.7.3, 2.7.4, 2.8.3
238	3.6
239	1.1.5, 1.1.6, 1.8.1, 1.8.4, 2.10.1, 2.10.2, 2.10.5, 3.2
240	1.6.2, 1.6.3, 3.1, 3.2, 3.6
241	1.5.1, 1.5.4, 1.6.2
242	1.5.1, 1.5.4, 1.6.2
243	1.5.1, 1.5.4, 1.6.2
244	1.5.1, 1.5.4, 1.6.2
245	1.5.1, 1.5.4, 1.6.2
246	1.5.1, 1.5.4, 1.6.2
247	1.5.1, 1.5.4, 1.6.2

Submission Number	Issues
248	1.5.1, 1.5.4, 1.6.2
249	1.5.1, 1.5.4, 1.6.2
250	1.5.1, 1.5.4, 1.6.2
251	1.5.1, 1.5.4, 1.6.2
252	1.5.1, 1.5.4, 1.6.2
253	1.5.1, 1.5.4, 1.6.2
254	1.5.1, 1.5.4, 1.6.2
255	1.5.1, 1.5.4, 1.6.2
256	1.5.1, 1.5.4, 1.6.2
257	1.5.1, 1.5.4, 1.6.2
258	1.5.1, 1.5.4, 1.6.2
259	1.5.1, 1.5.4, 1.6.2
260	1.5.1, 1.5.4, 1.6.2
261	1.5.1, 1.5.4, 1.6.2
262	1.5.1, 1.5.4, 1.6.2
263	1.5.1, 1.5.4, 1.6.2
264	1.5.1, 1.5.4, 1.6.2
265	1.5.1, 1.5.4, 1.6.2
266	1.5.1, 1.5.4, 1.6.2
267	1.5.1, 1.5.4, 1.6.2
268	1.5.1, 1.5.4, 1.6.2
269	1.5.1, 1.5.4, 1.6.2
270	1.5.1, 1.5.4, 1.6.2
271	1.5.1, 1.5.4, 1.6.2
272	1.5.1, 1.5.4, 1.6.2
273	1.5.1, 1.5.4, 1.6.2
274	1.5.1, 1.5.4, 1.6.2
275	1.5.1, 1.5.4, 1.6.2
276	1.5.1, 1.5.4, 1.6.2
277	1.5.1, 1.5.4, 1.6.2
278	1.5.1, 1.5.4, 1.6.2
279	1.5.1, 1.5.4, 1.6.2
280	1.5.1, 1.5.4, 1.6.2
281	1.5.1, 1.5.4, 1.6.2
282	1.5.1, 1.5.4, 1.6.2
283	1.5.1, 1.5.4, 1.6.2
284	1.5.1, 1.5.4, 1.6.2
285	1.5.1, 1.5.4, 1.6.2
286	1.5.1, 1.5.4, 1.6.2
287	1.5.1, 1.5.4, 1.6.2
288	1.5.1, 1.5.4, 1.6.2
289	1.5.1, 1.5.4, 1.6.2
290	1.5.1, 1.5.4, 1.6.2

Submission Number	Issues
291	1.5.1, 1.5.4, 1.6.2
292	1.5.1, 1.5.4, 1.6.2
293	1.5.1, 1.5.4, 1.6.2
294	1.5.1, 1.5.4, 1.6.2
295	1.5.1, 1.5.4, 1.6.2
296	1.5.1, 1.5.4, 1.6.2
297	1.5.1, 1.5.4, 1.6.2
298	1.5.1, 1.5.4, 1.6.2
299	1.5.1, 1.5.4, 1.6.2
300	1.5.1, 1.5.4, 1.6.2
301	1.5.1, 1.5.4, 1.6.2
302	1.5.1, 1.5.4, 1.6.2
303	1.5.1, 1.5.4, 1.6.2
304	1.1.4, 1.10.3, 1.10.7, 1.3.1, 1.3.2, 1.4.10, 1.4.2, 1.7.1, 2.2.1, 2.2.5, 2.2.6, 2.3.4, 2.3.6, 2.9.1, 3.5, 3.6
305	1.4.13, 1.7.1, 1.8.2, 2.10.1
306	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
307	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
308	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
309	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
310	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
311	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
312	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
313	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
314	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
315	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
316	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
317	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
318	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
319	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
320	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
321	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
322	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
323	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
324	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
325	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
326	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
327	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
328	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
329	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
330	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
331	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
332	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
333	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
334	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
335	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
336	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
337	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
338	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
339	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
340	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
341	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
342	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
343	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.6.2, 2.2.6, 2.3.2, 2.3.5
344	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.6.2, 2.2.6, 2.3.2, 2.3.5
345	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
346	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
347	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
348	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
349	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
350	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
351	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
352	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
353	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
354	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
355	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
356	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
357	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
358	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
359	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
360	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
361	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
362	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
363	1.1.4, 1.4.12, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.2, 2.3.5
364	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
365	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2

Submission Number	Issues
366	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
367	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
368	1.5.1, 1.5.3, 1.5.4, 1.6.2
369	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
370	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
371	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
372	1.5.1, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
373	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
374	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
375	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
376	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
377	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
378	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
379	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
380	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
381	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
382	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
383	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
384	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
385	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
386	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
387	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
388	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
389	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
390	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
391	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
392	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
393	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
394	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
395	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
396	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
397	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
398	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
399	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
400	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
401	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
402	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
403	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
404	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
405	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
406	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
407	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
408	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
409	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
410	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
411	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
412	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
413	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
414	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
415	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
416	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
417	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
418	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
419	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
420	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
421	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
422	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
423	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
424	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
425	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
426	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
427	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
428	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
429	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
430	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
431	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
432	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
433	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
434	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
435	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
436	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
437	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
438	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
439	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
440	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
441	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
442	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2

Submission Number	Issues
443	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
444	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
445	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
446	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
447	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
448	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
449	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
450	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
451	1.4.13, 1.5.1, 1.5.4, 1.6.2
452	1.1.5, 1.2.3, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.2
453	1.2.1, 1.5.1, 1.5.4, 1.8.1, 3.2, 3.6
454	1.1.5, 1.10.5, 1.4.13, 1.5.4, 1.8.1, 1.8.4, 2.10.1, 2.3.5
455	1.5.1, 1.5.4, 1.6.2
456	1.5.1, 1.5.4, 1.6.2
457	1.1.5, 1.2.3, 1.5.1
458	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.3.3, 2.3.5
459	1.1.4, 1.5.1, 1.5.4, 1.6.2
460	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
461	1.1.4, 1.5.1, 1.5.4, 1.6.2
462	1.5.1, 1.5.4, 1.6.2
463	1.5.1, 1.5.4, 1.6.2
464	1.5.1, 1.5.4, 1.6.2
465	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.5
466	1.5.1, 1.5.4, 1.6.2
467	1.5.1, 1.5.3, 1.5.4, 1.6.2
468	1.5.1, 1.5.3, 1.5.4, 1.6.2
469	1.1.4, 1.5.1, 1.5.4, 1.6.2
470	1.5.1, 1.5.4, 1.6.2
471	1.1.4, 1.5.1, 1.5.4, 1.6.2
472	1.5.1, 1.5.4, 1.6.2
473	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.2
474	1.5.1, 1.5.1, 1.5.4, 1.6.2, 3.2
475	1.4.13, 1.5.1, 1.5.4, 1.6.2, 3.2
476	1.5.1, 1.5.4, 1.6.2
477	1.5.1, 1.5.4, 1.6.2, 2.10.1
478	1.5.1, 1.5.4, 1.6.2
479	1.5.1, 1.6.2
480	1.1.4, 1.5.1, 1.5.4, 1.6.2, 1.6.2
481	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.5
482	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.5
483	1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.8.1, 2.10.1
484	1.5.1, 1.5.3, 1.5.4, 1.6.2
485	1.5.1, 1.5.4, 1.6.2
486	1.5.1, 1.5.4, 1.6.2
487	1.5.1, 1.5.3, 1.5.4, 1.6.2
488	1.4.13, 1.5.1, 1.5.4, 1.6.2, 3.2
489	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
490	1.10.5, 1.4.13, 1.5.1, 1.5.4, 1.8.1
491	1.5.1, 1.5.3, 1.6.2
492	1.5.1, 1.5.3, 1.6.2
493	1.2.1, 1.5.1, 1.5.3, 1.5.4, 1.6.1
494	1.5.1, 1.5.4, 1.6.2
495	1.5.1, 1.5.3, 1.6.2
496	1.5.1, 1.5.3, 1.5.4, 1.6.2
497	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
498	1.4.13, 1.7.1, 1.8.2
499	1.4.13, 1.7.1, 1.8.2
500	1.4.13, 1.7.1, 1.8.2
501	1.5.1, 1.5.4, 1.6.2, 3.6
502	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
503	1.4.13, 1.5.1, 1.5.4, 1.6.2
504	1.5.1, 1.5.4
505	1.5.1, 1.5.4, 2.10.2, 2.3.2, 2.3.5
506	1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.3.1, 3.2
507	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
508	1.1.4, 1.10.4, 2.2.3, 2.2.5, 3.2, 3.6
509	1.4.8, 1.7.1, 2.2.5, 2.3.5, 2.3.6
510	1.1.4, 1.2.1, 1.4.13, 1.5.1, 1.5.4, 1.8.1, 2.3.1, 2.3.2, 2.3.7
511	1.1.4, 1.5.1, 1.5.4, 1.6.2
512	1.4.12, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.8.1, 2.9.2
513	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 2.7.1, 2.7.5, 3.5
514	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
515	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
516	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
517	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
518	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
519	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
520	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
521	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
522	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
523	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2

Submission Number	Issues
524	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
525	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
526	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
527	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
528	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
529	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
530	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
531	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
532	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
533	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
534	1.1.4, 1.1.6, 1.4.13, 1.5.1, 1.5.3, 1.5.4
535	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
536	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
537	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
538	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
539	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
540	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
541	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
542	1.4.13, 1.5.1, 1.6.2, 3.1
543	1.4.13, 1.5.1, 1.6.2, 3.1
544	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
545	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
546	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
547	1.4.13, 1.5.1, 1.6.2, 3.1
548	1.4.13, 1.5.1, 1.6.2, 3.1
549	1.4.13, 1.5.1, 1.5.4, 1.6.2, 3.1
550	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
551	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
552	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
553	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
554	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
555	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
556	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
557	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
558	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
559	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
560	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
561	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
562	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
563	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
564	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
565	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
566	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2

Submission Number	Issues
567	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
568	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
569	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
570	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
571	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
572	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
573	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
574	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
575	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
576	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
577	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
578	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
579	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
580	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
581	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
582	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
583	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
584	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
585	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
586	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
587	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
588	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
589	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
590	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
591	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
592	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
593	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
594	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
595	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
596	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
597	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
598	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
599	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
600	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
601	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
602	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
603	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
604	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
605	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
606	1.5.1, 1.5.4, 1.6.2, 3.6

Submission Number	Issues
607	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
608	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
609	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
610	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
611	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
612	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
613	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
614	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
615	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
616	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
617	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
618	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
619	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
620	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
621	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
622	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
623	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
624	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
625	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
626	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
627	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
628	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
629	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
630	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
631	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
632	1.1.4
633	1.1.4, 1.5.1, 1.5.4, 1.6.2
634	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
635	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
636	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
637	1.5.1, 1.6.2
638	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
639	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
640	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
641	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
642	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
643	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
644	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
645	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
646	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
647	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
648	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
649	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6

Submission Number	Issues
650	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
651	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
652	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
653	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
654	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
655	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
656	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
657	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
658	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
659	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
660	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
661	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
662	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
663	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
664	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
665	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
666	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
667	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
668	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
669	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
670	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
671	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
672	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
673	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
674	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
675	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
676	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
677	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
678	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
679	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
680	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
681	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
682	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
683	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
684	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
685	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
686	1.4.13, 1.5.1, 1.6.2, 3.1
687	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
688	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
689	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
690	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
691	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
692	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6

Submission Number	Issues
693	1.5.4
694	1.5.4
695	1.5.1
696	1.5.1, 1.6.2
697	1.5.1, 1.5.3, 1.5.4, 1.6.2
698	1.1.4, 1.5.1, 1.5.4, 1.6.2
699	1.4.13, 1.7.1, 1.8.2
700	1.1.4, 1.5.1, 1.5.4, 1.6.2
701	1.1.4, 1.5.1, 1.5.4, 1.6.2
702	1.1.4, 1.5.1, 1.5.4, 1.6.2
703	1.1.4, 1.5.1, 1.5.4, 1.6.2
704	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
705	1.1.4, 1.10.7, 1.3.1, 1.4.13, 1.4.8, 1.7.1, 1.8.2, 1.8.5, 2.1.1, 2.1.6, 2.3.1, 2.3.2, 2.3.6
706	1.1.4, 1.10.5, 1.10.7, 1.3.1, 1.4.13, 1.4.8, 1.4.9, 1.7.1, 1.8.2, 1.8.5, 2.1.1, 2.1.6, 2.2.5, 2.3.1, 2.3.2, 2.3.6
707	1.4.13, 1.5.1, 1.5.4, 1.6.2
708	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2
709	1.5.1, 1.5.4, 1.6.2, 2.10.1, 2.3.3
710	1.4.13, 1.5.1, 1.5.4, 1.6.2
711	1.5.1, 1.5.4, 1.6.2
712	1.1.4, 1.5.1, 1.5.4, 1.6.2
713	1.5.1, 1.5.4, 1.6.2
714	1.5.1, 1.5.4, 1.6.2
715	1.1.4, 1.5.1, 1.5.4, 1.6.2
716	1.1.4, 1.5.1, 1.5.4, 1.6.2
717	1.5.1, 1.5.4, 1.6.2
718	1.5.1, 1.5.4, 1.6.2
719	1.4.13, 1.5.1, 1.5.4, 1.6.2
720	1.5.1, 1.5.4, 1.6.2
721	1.1.1, 1.1.5, 1.2.1, 1.2.3, 1.4.13, 1.5.1, 1.5.4, 2.10.1
722	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
723	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
724	1.2.1, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.6.3, 2.3.3, 2.7.1, 3.2, 3.6
725	1.5.1, 1.5.4, 1.6.2
726	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
727	1.5.1, 1.5.4, 1.6.2
728	1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.3.1
729	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
730	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.3.1, 2.3.5

Submission Number	Issues
731	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
732	1.5.1, 1.5.4, 1.6.2
733	1.1.4, 1.5.1, 1.5.4, 1.6.2
734	1.2.1, 1.6.2
735	1.5.1, 1.5.4, 1.6.2
736	1.4.1, 1.7.1, 2.10.1
737	1.10.6, 1.5.1, 1.5.3, 1.5.4, 1.5.4, 3.2
738	1.1.4, 1.10.4, 2.2.1, 2.2.3, 2.2.5, 2.2.6
739	1.10.2, 2.2.3, 2.2.5, 2.2.6
740	1.5.1, 1.5.4, 1.6.2
741	1.5.1, 1.5.4, 1.6.2, 2.3.3, 2.3.4
742	1.4.1, 1.7.1, 1.8.2, 2.10.1
743	1.4.13, 1.7.1, 1.8.2
744	1.4.1, 1.7.1, 1.8.2, 2.10.1
745	1.4.13, 1.7.1, 1.8.2
746	1.4.1, 1.7.1, 1.8.2, 2.10.1
747	1.4.1, 1.7.1, 1.8.2, 2.10.1
748	1.4.1, 1.7.1, 1.8.2, 2.10.1
749	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
750	1.1.4, 1.3.2, 1.4.13, 1.5.1, 1.5.4, 1.6.2
751	1.1.4, 1.3.2, 1.4.13, 1.5.1, 1.5.4, 1.6.2
752	1.2.3, 1.5.1, 1.5.4, 1.6.2, 2.10.7, 2.2.5
753	1.1.4, 2.2.1, 2.2.3, 2.2.5, 2.2.7
754	1.5.1, 1.5.4, 1.6.2
755	1.1.5, 1.4.13, 1.5.1, 1.5.4, 1.6.2
756	1.1.4, 1.4.11
757	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
758	1.10.4, 1.4.12, 1.4.5, 2.2.1, 2.2.3, 2.2.4, 2.2.5, 3.2
759	1.4.2, 1.4.2, 1.7.1, 2.10.1, 2.10.5, 3.2
760	1.5.1, 1.5.4, 1.6.2
761	1.1.5, 1.2.1, 1.5.1, 1.5.4, 1.8.1
762	1.1.4, 1.1.5, 1.4.13, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
763	1.1.5, 1.2.1, 1.5.1, 1.5.4, 1.8.1
764	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
765	1.5.1, 1.6.2
766	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
767	1.1.5, 1.2.1, 1.5.1, 1.5.4, 1.8.1
768	1.1.5, 1.8.4, 2.10.7
769	1.1.4, 1.5.4, 1.6.3, 2.4.2, 2.4.4
770	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
771	1.4.13, 2.10.1, 2.10.2, 2.10.5, 2.3.1, 2.3.3,

Submission Number	Issues
	2.7.1, 3.2
772	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
773	1.5.1, 1.5.4, 1.6.2
774	1.5.1, 1.5.4, 1.6.2
775	1.5.1, 1.5.4, 1.6.2
776	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
777	1.5.1, 1.6.2
778	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
779	1.5.1, 1.5.3, 1.5.4, 1.6.2
780	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
781	1.5.1, 1.5.3, 1.5.4, 1.6.2
782	1.3.2, 1.4.11, 2.2.7
783	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.6.2, 2.2.6, 2.3.2, 2.3.5
784	1.1.4, 1.7.1
785	1.1.4, 1.7.1
786	1.5.3, 1.5.4, 2.8.3
787	1.5.1, 1.5.1, 1.5.4, 1.6.2, 1.6.2
788	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
789	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
790	1.10.5, 2.1.1, 2.10.1, 2.10.2
791	1.4.11, 2.3.6
792	1.10.2, 1.10.5, 1.10.7, 2.10.7, 2.2.6, 2.3.2, 2.3.4, 2.9.1, 3.5
793	1.5.1, 1.5.4, 1.6.2
794	1.5.1, 1.5.3, 1.5.4, 1.6.2
795	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
796	1.4.2, 1.7.1, 2.1.1, 3.2
797	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
798	1.1.4, 1.4.13, 1.5.1, 1.5.1, 1.5.3, 1.5.3, 1.5.4, 1.5.4, 1.6.2, 1.6.2, 2.3.2
799	1.4.13, 1.5.1, 1.5.3, 1.6.1, 1.6.3, 1.8.1, 2.4.5, 2.6.2
800	1.4.13, 1.5.1, 1.5.3, 1.6.1, 1.6.3, 1.8.1, 2.4.5, 2.6.2
801	1.4.13, 1.7.1, 1.8.2
802	1.4.13, 1.7.1, 1.8.2
803	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
804	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
805	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
806	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
807	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
808	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
809	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
810	1.5.1, 1.5.4, 1.6.2, 3.6
811	1.1.4, 1.5.1, 1.6.2
812	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
813	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
814	1.1.4, 1.10.6, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 1.8.4, 2.10.5, 2.3.4
815	1.4.13, 1.7.1, 1.8.2
816	1.4.13, 1.7.1, 1.8.2
817	1.4.13, 1.7.1, 1.8.2
818	1.4.13, 1.7.1, 1.8.2
819	1.4.13, 1.7.1, 1.8.2
820	1.4.13, 1.4.13, 1.7.1, 1.7.1, 1.8.2, 1.8.2
821	1.10.6, 1.5.4, 1.6.2, 2.3.4, 2.3.6
822	1.10.6, 1.5.4, 1.6.2, 2.3.4, 2.3.6
823	1.4.13, 1.7.1, 1.8.2
824	1.4.13, 1.7.1, 1.8.2
825	1.4.13, 1.7.1, 1.8.2
826	1.4.13, 1.7.1, 1.8.2
827	1.4.13, 1.7.1, 1.8.2
828	1.4.13, 1.7.1, 1.8.2
829	1.4.13, 1.7.1, 1.8.2
830	1.4.13, 1.7.1, 1.8.2
831	1.10.6, 1.5.1
832	1.5.1, 1.5.4, 1.6.2
833	1.4.1, 1.7.1, 1.8.2, 2.10.1
834	1.4.1, 1.7.1, 1.8.2, 2.10.1
835	1.4.11
836	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
837	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
838	1.4.13, 1.7.1, 1.8.2, 2.10.2, 2.10.3, 2.10.5, 2.3.1, 2.3.2, 2.3.3, 2.3.5, 2.3.7, 3.5
839	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
840	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
841	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
842	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
843	1.5.1, 1.5.4, 1.6.2, 2.6.2
844	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
845	1.4.11, 2.2.3
846	1.1.5, 1.2.3, 1.5.1
847	2.3.6
848	1.4.11

Submission Number	Issues
849	1.1.5, 1.5.1, 1.5.3, 1.5.4, 1.6.3, 2.1.6, 2.2.5, 3.2
850	1.4.13, 2.3.5, 2.3.8, 2.3.9
851	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
852	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
853	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
854	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
855	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
856	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
857	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
858	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
859	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
860	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
861	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
862	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
863	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
864	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
865	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
866	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
867	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
868	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
869	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
870	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
871	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
872	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
873	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
874	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
875	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
876	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
877	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
878	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
879	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
880	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
881	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
882	1.1.4, 1.4.13, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
883	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
884	1.4.13, 1.5.1, 1.6.2, 3.1
885	1.4.13, 1.5.1, 1.5.3, 1.5.4
886	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
887	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
888	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
889	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
890	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
891	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
892	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
893	1.5.1, 1.5.4, 1.6.2, 3.6
894	1.5.1, 1.5.4, 1.6.2, 3.6
895	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
896	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
897	1.5.1, 1.5.4, 1.6.2, 3.6
898	1.5.1, 1.5.4, 1.6.2, 3.6
899	1.5.1, 1.5.4, 1.6.2, 3.6
900	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
901	1.5.1, 1.5.4, 1.6.2, 3.6
902	1.4.13, 1.5.1, 1.6.2, 3.1
903	1.4.13, 1.5.1, 1.6.2, 3.1
904	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
905	1.4.13, 1.4.2, 1.4.8, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.7.1, 1.8.2, 2.2.3, 2.3.2
906	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
907	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
908	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
909	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
910	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
911	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
912	1.5.1, 1.5.4, 1.6.2, 3.6
913	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
914	1.5.1, 1.5.4, 1.6.2, 3.6
915	1.5.1, 1.5.4, 1.6.2, 3.6
916	1.5.1, 1.5.4, 1.6.2, 3.6
917	1.5.1, 1.5.4, 1.6.2, 3.6
918	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
919	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
920	1.5.1, 1.5.4, 1.6.2, 3.6
921	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
922	1.5.1, 1.5.4, 1.6.2, 3.6
923	1.4.13, 1.5.1, 1.6.2, 3.1
924	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
925	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
926	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
927	1.1.5, 1.2.1, 1.4.13, 1.5.1, 1.5.4, 1.8.1
928	1.5.1, 1.6.2
929	1.1.4, 1.5.1, 1.5.4, 1.6.2

Submission Number	Issues
930	1.7.1, 2.1.1, 2.10.1
931	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
932	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
933	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
934	1.1.4, 1.5.1, 1.6.2
935	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
936	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
937	1.1.4, 1.5.1, 1.5.4, 1.6.2, 1.9.3, 2.3.8
938	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
939	1.5.4, 1.6.2
940	1.5.1, 1.5.4, 1.6.2, 1.5.3
941	1.5.1, 1.5.4, 1.6.2, 1.5.3
942	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
943	1.10.5, 1.7.1, 1.8.2
944	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
945	1.5.1, 1.5.4, 1.6.2
946	1.5.4, 1.6.2
947	1.4.13, 1.7.1, 1.8.2, 1.9.3, 2.2.3, 2.2.6, 3.3
948	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
949	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
950	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
951	1.5.4, 1.6.2
952	1.10.5, 1.7.1, 1.8.2
953	1.4.1, 1.7.1, 1.8.2, 2.10.1
954	1.1.2, 1.1.4, 1.10.4, 1.10.6, 1.3.2, 1.4.5, 2.2.2, 2.2.3, 2.2.5, 2.2.5, 2.3.1, 2.3.3, 2.3.5, 2.6.2
955	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
956	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
957	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
958	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
959	1.4.13, 1.7.1, 1.8.2
960	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
961	1.4.11, 2.3.6
962	1.4.11, 2.3.6
963	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
964	1.4.13, 1.5.1, 1.5.4, 1.6.2
965	1.5.1, 1.5.4, 1.6.2, 3.6
966	1.5.1, 1.6.2
967	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
968	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
969	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
970	1.4.5, 1.8.4
971	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
972	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
973	1.1.5, 1.2.1, 1.5.1, 1.5.4, 1.8.1
974	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
975	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
976	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
977	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
978	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
979	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
980	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
981	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
982	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
983	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
984	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
985	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
986	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
987	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
988	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
989	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
990	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
991	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
992	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
993	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
994	1.4.1, 1.7.1, 1.8.2, 2.10.1
995	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
996	1.4.1, 1.7.1, 1.8.2, 2.10.1
997	1.4.1, 1.7.1, 1.8.2, 2.10.1
998	1.4.1, 1.7.1, 1.8.2, 2.10.1
999	1.4.1, 1.7.1, 1.8.2, 2.10.1
1000	1.4.1, 1.7.1, 1.8.2, 2.10.1
1001	1.4.13, 1.7.1, 1.8.2
1002	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1003	1.5.1, 1.5.4, 1.6.2, 3.6
1004	1.5.1, 1.5.4, 1.6.2, 3.6
1005	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1006	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2,

Submission Number	Issues
	2.2.6, 2.3.2, 2.3.5
1007	1.5.1, 1.5.4, 1.6.2, 3.6
1008	1.5.1, 1.5.4, 1.6.2, 3.6
1009	1.4.13, 1.5.1, 1.5.1, 1.6.2, 3.1, 3.1
1010	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1011	1.4.13, 1.5.1, 1.6.2, 3.1
1012	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1013	1.1.4, 1.4.11
1014	1.5.1, 1.5.4, 1.6.2, 1.8.1
1015	1.1.1, 1.1.4
1016	1.1.4, 1.10.4, 1.11.1, 2.2.5, 2.3.6
1017	1.7.1, 1.8.2, 2.1.1, 2.3.5
1018	1.5.1, 1.5.3, 1.5.4, 1.6.
1019	1.5.1, 1.5.4, 1.6.2
1020	1.4.13, 1.5.1, 1.5.4, 1.6.2
1021	1.5.1, 1.5.4, 1.8.1
1022	1.1.4, 1.10.2, 2.1.6, 2.1.7
1023	1.4.13, 1.7.1, 1.8.2
1024	1.4.13, 1.5.1, 1.5.4, 1.6.2
1025	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
1026	1.4.13, 1.5.1, 1.5.4, 1.6.2
1027	1.4.13, 1.5.1, 1.5.4, 1.6.2
1028	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.1
1029	1.4.13, 1.5.1, 1.5.4, 3.
1030	1.5.1, 1.6.2
1031	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
1032	1.5.1, 1.6.2
1033	1.10.2
1034	1.4.13, 1.5.1, 1.5.3, 1.5.4, 3.1, 3.6
1035	1.1.5, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.1, 1.8.1
1036	1.5.1, 1.6.2
1037	1.1.4, 1.5.1, 1.5.4, 1.6.2
1038	1.4.13, 1.5.1, 1.5.4, 1.6.2
1039	1.1.4, 1.10.1, 1.3.1
1040	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1041	1.5.1, 1.6.2
1042	1.5.1, 1.8.1
1043	1.1.4, 1.5.1, 1.5.4, 1.6.2
1044	1.1.4, 1.5.1, 1.5.4, 1.6.2
1045	1.1.4, 1.5.1, 1.6.2
1046	1.6.2, 2.4.1
1047	1.5.1, 1.5.4, 1.6.2
1048	1.5.1, 1.5.3, 1.6.2
1049	1.5.1, 1.5.3, 1.5.4, 1.6.2
1050	1.5.1, 1.5.3, 1.5.4, 1.6.2
1051	1.5.1, 1.5.4
1052	1.4.4, 2.5.2
1053	1.1.4, 1.4.13, 1.5.3, 1.5.4, 1.6.2
1054	1.5.1, 1.8.1
1055	1.5.1, 1.6.2
1056	1.5.1, 1.5.1, 1.5.4, 1.5.4, 1.6.2, 1.6.2
1057	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.6.2
1058	1.1.4, 1.5.1, 1.6.2
1059	1.1.4, 1.5.1, 1.6.2
1060	1.1.5, 1.2.3, 1.4.13, 1.4.13, 1.5.1, 1.5.4, 2.10.1, 2.10.7
1061	1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.9.2
1062	1.5.1, 1.5.4, 1.6.2
1063	1.1.4, 1.5.1, 1.5.4, 1.6.2
1064	1.1.4, 1.2.2, 1.5.3, 1.5.4, 1.6.2
1065	1.5.1, 1.5.4, 1.6.2
1066	1.5.4
1067	1.5.1, 1.5.3, 1.5.4, 1.6.2
1068	1.5.1, 1.5.3, 1.5.4, 1.6.2
1069	1.1.4, 1.4.13, 1.4.2, 1.4.4, 2.3.3, 2.3.6
1070	1.1.5, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1071	1.5.1, 1.5.3, 1.5.4, 1.6.2
1072	2.10.2, 2.10.5, 3.6
1073	1.1.4, 1.4.13, 1.4.2, 1.4.4, 2.3.3, 2.3.6
1074	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1075	1.4.13, 2.10.1, 2.10.2
1076	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1077	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1078	1.1.4, 1.5.1, 1.5.4, 1.6.2, 1.9.5, 3.1, 3.2, 3.3
1079	1.5.1, 1.5.2, 1.5.4, 1.6.2
1080	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1081	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1082	1.1.5, 1.4.13
1083	1.5.1, 1.5.4, 1.5.4, 1.6.2
1084	1.5.1, 1.5.4, 1.6.2
1085	1.1.4, 1.5.1, 1.5.4, 1.6.2, 2.3.3, 2.3.5, 2.3.9
1086	1.1.4, 1.5.1, 1.5.4, 1.8.1, 2.10.1
1087	1.4.8, 1.7.1, 1.8.2, 2.1.1, 2.2.3, 2.3.2, 2.3.5
1088	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2

Submission Number	Issues
1089	1.5.1, 1.5.4, 1.6.2
1090	1.5.1, 1.5.4, 1.6.2
1091	1.5.1, 1.5.3, 1.5.4, 1.6.2
1092	1.5.1, 1.5.3, 1.5.4, 1.6.2
1093	1.8.2, 2.1.1
1094	1.5.1, 1.5.4, 1.6.2
1095	1.4.1, 1.7.1, 1.8.2, 2.10.1
1096	1.1.5, 1.5.1, 1.5.4, 1.8.1, 2.10.1, 2.10.2, 2.10.5, 2.3.5, 2.4.5, 2.6.2, 3.2
1097	1.4.13, 1.5.1, 1.5.4, 1.6.2
1098	1.4.13, 1.5.1, 1.5.4, 1.6.2
1099	1.10.5, 1.7.1, 1.8.2, 2.1.1, 2.2.3, 2.3.5
1100	1.10.5, 1.7.1, 1.8.2, 2.1.1, 2.2.3, 2.3.5
1101	1.10.5, 1.7.1, 1.8.2, 2.1.1, 2.2.3, 2.3.5
1102	1.10.5, 1.7.1, 1.8.2, 2.1.1, 2.2.3, 2.3.5
1103	1.10.5, 1.7.1, 1.8.2, 2.1.1, 2.2.3, 2.3.5
1104	1.10.5, 1.7.1, 1.8.2, 2.1.1, 2.2.3, 2.3.5
1105	1.4.13, 1.7.1, 2.1.1, 2.3.1, 2.3.2, 2.3.5
1106	1.4.13, 1.7.1, 2.1.1, 2.3.1, 2.3.2, 2.3.5
1107	1.4.13, 1.7.1, 2.1.1, 2.3.1, 2.3.2, 2.3.5
1108	1.4.13, 1.7.1, 2.1.1, 2.3.1, 2.3.2, 2.3.5
1109	1.4.13, 1.7.1, 2.1.1, 2.3.1, 2.3.2, 2.3.5
1110	1.4.13, 1.7.1, 2.1.1, 2.3.1, 2.3.2, 2.3.5
1111	1.4.13, 1.7.1, 2.1.1, 2.3.1, 2.3.2, 2.3.5, 2.3.5
1112	1.4.13, 1.7.1, 2.1.1, 2.3.1, 2.3.2, 2.3.5
1113	1.4.13, 1.7.1, 2.1.1, 2.3.1, 2.3.2, 2.3.5
1114	1.4.13, 2.1.1, 2.3.1, 2.3.2
1115	1.1.4, 1.5.1, 1.5.4
1116	1.1.3, 1.8.2
1117	1.4.1, 1.7.1, 2.10.1
1118	Agency submission – refer Table A.1
1119	1.5.1, 1.5.3, 1.5.4, 1.6.2
1120	1.10.6, 1.4.13, 1.5.1, 1.5.4, 1.6.2
1121	1.1.4, 1.10.4, 1.3.1, 2.1.6, 2.2.5
1122	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.8.1, 2.3.9, 3.2
1123	1.10.6, 1.4.13, 1.8.2, 2.1.1, 2.10.1, 2.3.3, 2.3.4
1124	1.5.1, 1.5.3, 1.5.4, 1.6.2
1125	1.4.12, 1.4.5, 1.9.1, 3.2
1126	1.1.4, 1.5.1, 1.5.4, 1.6.2
1127	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1128	1.5.1, 1.5.4, 1.6.2
1129	1.5.4, 1.8.1

Submission Number	Issues
1130	1.4.13, 1.7.1, 1.8.2
1131	1.4.13, 1.5.1, 1.5.4, 1.6.2
1132	1.4.13, 1.5.1, 1.5.4, 1.6.2
1133	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1134	1.10.7, 1.2.3, 1.4.13, 1.4.4, 1.7.1, 1.8.2
1135	1.2.1, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.8.1, 1.8.5, 2.3.5
1136	1.5.1, 1.5.3, 1.5.4, 1.6.2
1137	1.5.1, 1.5.4, 1.6.2
1138	1.4.1, 1.4.13, 1.5.1, 1.5.4
1139	1.6.2
1140	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1141	1.5.1, 1.6.2
1142	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1143	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1144	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1145	1.1.4, 1.5.1, 1.5.4, 1.6.2
1146	1.5.1, 1.5.4, 1.6.2
1147	1.10.1, 1.10.2, 1.4.1, 1.7.1, 2.3.10
1148	1.4.1, 1.4.13, 1.7.1
1149	1.4.13, 1.5.1, 1.5.4, 1.6.2
1150	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.3, 2.3.4
1151	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.6
1152	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.7
1153	1.1.4, 1.5.1, 1.6.2
1154	1.4.13, 1.5.3, 1.5.4, 1.6.2
1155	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1156	1.1.4, 1.10.6, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1157	1.1.4, 1.5.1, 1.5.4, 1.6.2
1158	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 1.8.1
1159	1.4.1, 1.7.1
1160	1.5.1, 1.6.2
1161	1.5.1, 1.5.3, 1.5.4, 1.6.2
1162	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.5
1163	1.1.4, 1.4.7, 2.2.6
1164	1.2.1, 1.5.1, 1.5.4, 1.6.2
1165	1.4.13, 1.7.1, 1.8.2
1166	1.1.4, 2.1.2
1167	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 3.5
1168	1.5.1, 1.5.3

Submission Number	Issues
1169	1.4.11
1170	1.1.4, 1.5.1, 1.5.4, 1.6.2
1171	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1172	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1173	1.5.1, 1.6.2
1174	1.5.4
1175	1.4.13, 1.7.1, 1.8.2
1176	1.4.13, 1.7.1, 1.8.2, 2.2.3
1177	1.4.13, 1.7.1, 1.8.2
1178	1.4.13, 1.7.1, 1.8.2
1179	1.4.13, 1.7.1, 1.8.2
1180	1.4.13, 1.7.1, 1.8.2
1181	1.4.13, 1.7.1, 1.8.2
1182	1.4.13, 1.7.1, 1.8.2
1183	1.4.13, 1.7.1, 1.8.2
1184	1.4.13, 1.7.1, 1.8.2
1185	1.4.13, 1.7.1, 1.8.2
1186	1.4.13, 1.7.1, 1.8.2
1187	1.4.13, 1.7.1, 1.8.2, 1.8.4
1188	1.4.13, 1.7.1, 1.8.2
1189	1.4.13, 1.7.1, 1.8.2
1190	1.4.13, 1.7.1, 1.8.2
1191	1.4.4, 1.7.1, 1.7.2, 3.2
1192	1.4.13, 1.7.1, 1.8.2
1193	1.4.13, 1.7.1, 1.8.2
1194	1.4.13, 1.7.1, 1.8.2
1195	1.4.13, 1.7.1, 1.8.2
1196	1.4.13, 1.7.1, 1.8.2
1197	1.4.13, 1.7.1, 1.8.2
1198	1.4.13, 1.7.1, 1.8.2
1199	1.4.13, 1.7.1, 1.8.2
1200	1.4.13, 1.7.1, 1.8.2
1201	1.4.13, 1.7.1, 1.8.2
1202	1.4.13, 1.7.1, 1.8.2
1203	1.4.13, 1.7.1, 1.8.2, 2.3.1, 2.3.2, 2.3.3, 2.3.5
1204	1.4.13, 1.7.1, 1.8.2
1205	1.4.13, 1.7.1, 1.8.2
1206	1.4.13, 1.7.1, 1.8.2
1207	1.4.13, 1.7.1, 1.8.2
1208	1.4.13, 1.7.1, 1.8.2
1209	1.4.13, 1.7.1, 1.8.2
1210	1.4.13, 1.7.1, 1.8.2

Submission Number	Issues
1211	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1212	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1213	1.5.1, 1.5.4, 1.6.2
1214	1.5.4, 1.6.2
1215	1.1.5, 1.7.1, 2.2.3
1216	1.4.13, 1.7.1, 1.8.2
1217	1.4.13, 1.7.1, 1.8.2
1218	1.4.13, 1.7.1, 1.8.2
1219	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1220	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1221	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1222	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1223	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1224	1.10.6, 1.4.13, 1.7.1, 1.8.2, 2.10.1, 2.3.5, 2.3.9, 3.1, 3.2
1225	1.4.13, 1.8.4, 2.2.3, 2.3.1
1226	1.1.4, 1.4.11
1227	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.8.1, 2.10.1, 2.3.3, 2.3.5, 2.3.9
1228	1.5.1, 1.5.3, 1.5.4, 1.6.2
1229	1.1.4, 1.5.1, 1.6.2
1230	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1231	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1232	1.1.1, 1.1.5, 1.2.1, 1.2.3, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.8.1, 2.10.1, 2.3.5, 2.3.8, 2.3.9
1233	1.4.13, 1.7.1, 1.8.2, 3.2
1234	1.4.11
1235	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1236	1.4.11
1237	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2, 3.2
1238	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1239	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1240	1.4.13, 1.5.4, 1.6.2
1241	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1242	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1243	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1244	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1245	1.5.1, 1.6.2
1246	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1247	2.1.2, 2.2.1, 2.2.3

Submission Number	Issues
1248	1.5.1, 1.5.4, 1.6.2
1249	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1250	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.1, 2.10.2, 3.2
1251	1.5.1, 1.5.4, 1.6.2
1252	1.4.13, 1.5.1, 1.5.4, 1.6.2
1253	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1254	1.2.3, 1.5.4
1255	1.5.1, 1.5.4
1256	1.2.1, 1.4.13, 1.5.1, 1.5.4, 1.6.2
1257	1.4.8, 1.7.1, 1.7.2, 1.8.4, 2.1.6, 2.10.7, 2.10.7, 2.2.5, 2.2.6, 2.2.6, 2.3.1, 2.3.3, 2.3.4, 2.9.1, 3.5
1258	1.1.5, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1259	1.2.1, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 1.8.1, 2.5.2
1260	1.5.1, 1.5.4, 1.6.2
1261	1.5.1, 1.5.3, 1.5.4, 1.6.2
1262	1.5.1, 1.5.4, 1.6.2, 1.8.1, 3.2
1263	1.5.1, 1.5.4, 1.6.2
1264	1.6.2
1265	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1266	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1267	1.7.1, 1.8.2, 3.1
1268	1.4.11
1269	1.5.1, 1.5.4, 1.6.2
1270	1.1.4, 1.10.7, 1.11.1, 1.3.1, 1.4.11, 1.4.12, 1.4.7, 1.6.3, 1.7.1, 1.8.2, 2.1.2, 2.1.4, 2.1.6, 2.11.1, 2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6, 2.2.7, 2.3.5, 2.3.6, 2.6.1, 2.6.2, 2.9.1
1271	1.5.1, 1.5.4, 1.6.2, 3.2
1272	1.5.1, 1.5.4, 1.6.2, 3.2
1273	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1274	2.2.4
1275	1.5.1, 1.5.4, 1.6.2
1276	1.1.4, 1.5.1, 1.5.4, 1.6.2
1277	1.1.5, 1.4.13, 1.4.8, 1.7.1
1278	1.1.4, 1.5.1, 1.5.1, 1.5.4, 1.6.2
1279	1.5.1, 1.5.4, 1.6.2
1280	1.2.1, 1.5.1, 1.5.4, 1.8.1
1281	1.1.4, 1.5.1, 1.5.4, 1.6.2
1282	1.1.5, 1.4.13, 1.4.8, 1.7.1
1283	1.1.4, 1.5.1, 1.5.4, 1.6.2
1284	1.5.1, 1.5.4, 1.6.2

Submission Number	Issues
1285	1.1.4, 1.5.1, 1.5.4, 1.6.2
1286	1.4.1, 1.7.1, 1.8.2, 2.10.1
1287	1.5.3, 1.5.4, 1.6.2
1288	1.1.4, 1.3.2, 1.6.2, 1.7.1
1289	1.1.5, 1.10.6, 1.4.13
1290	1.5.1, 1.5.4
1291	1.5.4, 1.6.2
1292	1.5.1, 1.5.4, 1.6.2
1293	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.3.5, 2.3.8, 3.2, 3.3, 3.5
1294	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1295	1.2.3, 1.5.1, 1.5.4, 1.6.2, 3.2
1296	1.1.4, 1.5.4, 1.6.2, 1.6.3, 3.5
1297	1.5.1, 1.5.4, 1.6.2
1298	3.1
1299	1.5.1, 1.5.4, 1.6.2
1300	1.1.4, 1.4.13, 1.7.1, 1.8.2, 3.1
1301	1.1.1, 1.1.4, 1.4.13, 1.7.1, 2.3.5
1302	1.1.4, 1.5.4, 1.6.2
1303	1.2.1, 1.5.1, 1.5.4, 1.6.2
1304	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
1305	1.2.3, 1.5.1, 1.5.4, 1.6.2, 3.2
1306	1.1.4, 1.10.3, 1.10.4, 1.10.7, 1.5.4, 2.2.1, 2.2.3, 2.2.5, 2.4.1, 2.4.4, 2.5.2, 2.6.1
1307	1.5.1, 1.6.2
1308	1.5.1, 1.5.4, 1.6.2
1309	1.1.1, 1.10.1, 1.10.3, 1.5.4, 1.5.4, 1.5.4, 1.6.2, 2.3.8, 3.6
1310	1.5.4, 1.8.1, 2.3.3
1311	1.5.1, 1.5.3, 1.5.4, 1.6.2
1312	1.5.4, 1.6.2
1313	1.5.1, 1.5.4, 1.6.2, 3.6
1314	1.4.1, 1.6.2
1315	1.4.1, 1.9.3
1316	1.5.1, 1.5.4, 1.6.2, 3.6
1317	1.4.13, 1.5.1, 1.5.4, 1.6.2
1318	1.5.1, 1.5.4, 1.6.2
1319	3.1
1320	1.5.1, 1.5.4, 1.6.2
1321	3.1
1322	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
1323	1.1.4, 1.5.1, 1.5.4, 1.6.2
1324	1.5.1, 1.5.4, 1.6.2
1325	1.1.4, 1.5.1, 1.5.4, 1.6.2

Submission Number	Issues
1326	1.6.2
1327	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1328	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1329	1.5.4, 1.6.2
1330	1.5.1, 1.5.4, 1.6.2
1331	1.4.13, 1.7.1, 1.8.2, 3.1
1332	1.5.1, 1.5.4, 1.6.2
1333	1.5.1, 1.5.4, 1.6.2
1334	1.10.4, 1.7.3
1335	1.5.1, 1.6.2, 1.8.4
1336	1.5.3, 1.5.4, 1.6.2, 1.8.1
1337	1.5.1, 1.5.4, 1.6.2
1338	1.5.1, 1.5.3, 1.5.4, 1.6.2
1339	1.5.1, 1.5.4, 1.6.2, 2.2.6
1340	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
1341	1.1.4, 1.3.2, 1.6.2, 2.3.3, 2.3.5
1342	1.6.1, 1.10.4, 1.7.3
1343	1.5.1, 1.5.4, 1.6.2, 2.3.3
1344	3.1
1345	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1346	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1347	3.1
1348	1.5.4, 1.6.2
1349	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.8.4
1350	1.1.4, 1.5.1, 1.5.4, 1.6.2
1351	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.8.4
1352	1.5.1, 1.5.4, 1.6.2, 2.3.5
1353	3.1
1354	1.7.1, 3.1
1355	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.3, 2.3.5
1356	1.7.1, 3.1
1357	1.1.4, 1.11.1, 1.5.4, 2.2.2, 2.2.5, 2.2.5, 2.4.4
1358	1.5.1, 1.5.4, 1.6.2, 2.3.3, 2.3.5
1359	1.5.1, 1.5.4, 1.6.2
1360	1.7.1, 1.8.2, 3.1
1361	1.1.4, 1.5.1, 1.5.4, 1.6.2
1362	3.1, 3.3
1363	3.1
1364	1.5.1, 1.6.2
1365	1.7.1
1366	1.5.1, 1.5.3, 1.5.4, 1.6.2

Submission Number	Issues
1367	1.1.2, 1.4.12
1368	1.1.4, 1.4.11, 2.3.6
1369	1.1.4, 1.5.4, 1.6.2
1370	1.4.11
1371	3.1, 3.2
1372	1.7.1
1373	1.5.1, 1.6.2
1374	1.1.4, 1.4.11
1375	3.1, 3.2
1376	1.5.4, 1.6.2
1377	1.7.1, 3.1
1378	1.1.4, 1.5.1, 1.5.4, 1.6.2
1379	1.5.1, 1.5.4, 1.6.2
1380	3.1, 3.3
1381	1.1.4, 1.5.1, 1.5.4, 1.6.2
1382	1.1.4, 1.3.1, 1.3.2, 1.4.1
1383	1.5.3, 1.5.4, 1.6.2
1384	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1385	3.1
1386	1.5.1, 1.6.2
1387	1.5.1, 1.5.4, 1.6.2, 2.9.2, 3.2, 3.6
1388	1.5.1, 1.5.4, 1.6.2
1389	1.5.1, 1.5.4, 1.6.2, 2.10.1
1390	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5, 3.2
1391	1.4.1, 1.7.1, 1.8.2, 2.10.1, 3.1
1392	1.4.1, 1.7.1, 1.8.2, 2.10.1, 3.2
1393	1.1.4, 1.2.1, 1.6.2
1394	1.1.5, 1.5.1, 1.5.4, 1.8.1
1395	1.5.1, 1.5.4, 1.6.2
1396	1.4.2, 1.7.1
1397	1.1.4, 1.5.1, 1.6.2
1398	1.1.4, 1.10.4, 1.4.1, 2.2.1, 2.2.4, 2.2.5
1399	3.1, 3.2
1400	1.1.4, 1.5.1, 1.5.4, 1.6.2
1401	1.5.1, 1.5.3, 1.5.4, 1.6.2
1402	1.5.1, 1.5.4, 1.6.2
1403	1.5.1, 1.5.4, 1.6.2
1404	1.5.1, 1.5.4, 1.6.2
1405	1.1.4, 1.5.1, 1.5.4, 1.6.2
1406	1.4.13, 1.5.3, 1.5.4, 1.6.2
1407	1.5.1, 1.5.4, 1.6.2, 3.2, 3.3
1408	1.4.13, 1.5.1, 1.6.2
1409	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2,

Submission Number	Issues
	2.2.6, 2.3.2, 2.3.5
1410	1.5.1, 1.5.4, 1.6.2, 3.2, 3.3
1411	1.4.11
1412	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
1413	1.1.4, 1.4.13, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.6
1414	1.2.2, 1.5.1, 1.5.4, 1.6.2
1415	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1416	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1417	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
1418	1.1.4, 1.5.1, 1.5.4, 1.6.2, 3.2, 3.3
1419	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
1420	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 3.2, 3.2
1421	1.4.11, 1.7.1
1422	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.5, 2.2.6, 2.3.3, 2.3.5
1423	1.1.5, 1.4.13, 1.7.1, 1.8.2, 1.8.3
1424	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.2.6, 2.3.2, 2.3.5
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1448	1.4.13, 1.5.1, 1.6.2
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1482	1.1.4, 1.5.1, 1.5.4, 1.8.1
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1484	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2

Submission Number	Issues
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1487	1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1488	3.1, 3.2
1489	1.1.5, 1.10.6, 1.5.2, 1.6.1, 1.6.3, 2.6.2
1490	1.1.4, 1.4.13, 1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.10.1, 2.3.1, 2.3.2, 2.3.3, 2.3.5
1491	1.1.4, 1.5.1, 1.5.4, 1.6.2
1492	1.1.4, 1.5.1, 1.5.4, 1.6.2
1493	1.1.4, 1.2.1, 1.4.13, 1.5.1, 1.5.4, 1.6.2, 2.3.1
1494	1.5.2, 1.6.1
1495	1.1.4, 1.2.1, 1.5.1, 1.5.3, 1.5.4
1496	1.1.4, 1.7.1, 2.1.2, 2.2.5
1497	1.5.1, 1.5.4, 1.6.2
1498	1.5.1, 1.5.4, 1.6.2
1499	1.5.1, 1.5.4, 1.6.2
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1504	1.5.1, 1.5.4, 1.6.2
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1516	1.5.1, 1.5.4, 1.6.2, 3.6
1517	1.5.1, 1.6.2, 1.8.1
1518	1.1.4, 1.5.1, 1.5.4, 1.6.2, 1.9.2
1519	Agency submission – refer Table A.1
1520	Agency submission – refer Table A.1
1521	Agency submission – refer Table A.1
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Submission Number	Issues
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1531	1.4.13, 1.5.1, 1.5.4, 1.6.2
1532	1.5.1, 1.5.4, 1.8.1
1533	1.1.5, 1.4.13, 1.5.1, 1.5.4, 2.10.1, 2.3.5
1534	1.5.1, 1.5.3, 1.5.4, 1.6.2
1535	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
1536	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
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Submission Number	Issues
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1568	1.2.3, 1.9.5
1569	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
1570	1.4.13, 1.5.4, 1.6.2, 1.9.3, 2.10.1
1571	1.11.1, 1.7.1, 2.1.6
1572	1.7.1
1573	1.4.13, 1.7.1, 1.8.2, 2.2.3
1574	1.1.4, 2.2.5
1575	1.1.4, 1.7.1
1576	1.4.13, 1.5.1, 1.5.4, 1.6.2
1577	Agency submission – refer Table A.1
1578	1.4.13, 1.7.1, 3.1
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1581	1.5.1, 1.5.4, 1.6.2
1582	1.1.4, 1.5.1, 1.5.3, 1.5.4, 1.6.2
1583	1.1.4, 1.4.13, 1.5.1, 1.5.4, 1.6.2
1584	1.4.13, 1.5.1, 1.5.4, 1.6.2
1585	1.5.1, 1.5.4
1586	1.5.1, 1.5.4, 1.6.2
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1594	1.5.1, 1.5.3, 1.5.4, 1.6.2, 2.3.2
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1606	1.5.1, 1.5.4, 3.2
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1624	3.1, 3.2, 3.6
1625	1.5.1, 1.5.4, 1.6.2
1626	1.7.1

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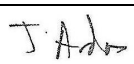
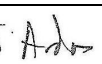
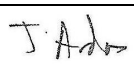
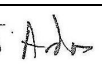
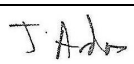
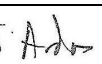
1	A Raleigh	J Ardas		J Ardas		18/4/07
2	A Raleigh	J Ardas		J Ardas		10/5/07
3	A Raleigh	J Ardas		J Ardas		21/5/07