

F6 Corridor Public Transport Use Assessment

Final Draft Report

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Department of Infrastructure, Planning and
Natural Resources

Roads and Traffic Authority, NSW



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Executive Summary

Parsons Brinckerhoff Australia was engaged by the NSW Department of Infrastructure, Planning and Natural Resources (DIPNR) and the Roads and Traffic Authority of NSW (RTA) to undertake a study to identify and provide a preliminary assessment of potential public transport uses of the F6 corridor and local road connections. Based on the outcomes of this assessment the study identifies those parts of the corridor likely to be surplus to public transport requirements and able to be used for other purposes. A number of stakeholder meetings were held to obtain major stakeholder views on options and the implications these may have for the future use of the corridor.

The study focussed on investigating the range of potential modes that may best meet the objectives of the study. Based on the requirements of the brief, it is not necessarily intended that any one mode would be recommended but rather a range of feasible modes that may operate in the corridor have been identified.

The F6 Corridor

The F6 corridor currently traverses fifteen suburbs between Campbell Road, St Peters to the Royal National Park, Loftus. Originally set aside as part of the 1951 County of Cumberland Planning Scheme, the then road reservation connected central Sydney with the then planned Southern Freeway at Waterfall. However, a previous Government reduced the F6 corridor, particularly in the southern sections between Loftus and Waterfall, to preserve National Parks land and established open space areas. Over time, sections of the remaining reservation have been used as community open space and active recreation space.

The F6 reservation passes through four local government areas: Sutherland, Rockdale, Marrickville and the former South Sydney (now City of Sydney). The majority of the reservation passes north-south through the length of Sutherland and Rockdale areas. The northern end of the corridor crosses the eastern edge of Marrickville then into the southern edge of the City of Sydney local government areas.

On 6 September 2002, the then Minister for Transport and Roads, the Hon. Carl Scully MP, announced that the Government believed that the remainder of the reservation would better serve the population as a public transport corridor. The Minister also stated that such a public transport corridor would require a narrower reservation than that currently provided for a future freeway and would therefore allow the determination of which parts of the corridor can be provided as open space. (Refer to Appendix A for Ministerial press release).

On 28 February, 2003 the Minister for Roads also directed that the " Roads and Traffic Authority (is) not to construct any freeway or motorway on the proposed F6 corridor between St Peters and the Royal National Park which passes through the local government areas of Marrickville, Rockdale and Sutherland Shire". The Minister further directed "that the Roads and Traffic Authority (is) not to construct any road or transport development of any type between the Royal National Park and the southern side of Gymea Station, so this portion of the F6 corridor can be preserved, as much as possible. (Refer to Appendix A for copy of Government Gazette No. 54).

Stakeholder Consultation

Consultation with community and other stakeholders was a key component of this study with two rounds of community forums conducted at both the southern end (Sutherland) and the northern end of the corridor (Rockdale). Interested members of the public, community groups, special-interest groups and industry associations were invited to attend a workshop held early in the study process. Additional forums are planned at the end of the study to provide the community with the opportunity to comment on the study's outcomes.

Consultation was also conducted with relevant local Councils, RailCorp, the State Transit Authority and Sydney Airport Corporation through the project reference group and individual meetings.

The public submissions received through the consultation process mainly related to concerns over increasing population and congestion over the next ten years. Changes in the demographic characteristics of the area was also raised, in particular, the transport needs of an ageing population. Several issues were raised concerning public transport in the area such as a lack of frequent bus services, additional access required to connect centres including the hospitals and Caringbah town centre. Suggestions for improved public transport in the F6 corridor included: express bus services, light rail, a branching bus corridor, redirecting public transport from the F6 reservation onto existing roads and reducing the cost of public transport options. The improvement of cycling conditions to and between rail stations was also raised and the inclusion of a cycleway along the F6 reservation. Submissions also supported the use of the corridor for open space and nature reserves.

Study Overview and Key Findings

The study has investigated a range of possible public transport uses for the F6 corridor. Options have been considered for both the alignment of the corridor and the mode which would best meet the future needs of the population. As described above it was not the intention of the brief to identify a sole mode for implementation at this stage, but rather to identify a preferred mode or modes, to provide a basis for decision making on the continued reservation of land for public transport purposes and the extent of residual land which may result.

The study considered a range of options including alignments within the F6 reservation plus one that utilises adjacent local streets for public transport. The range of modes considered for use in the corridor included heavy rail, metro, light rail and busways. Each mode was assessed in conceptual design terms with regards alignment, cross sectional width and station locations. For the purpose of this strategic study and because of their similar performance characteristics, light rail and busways were grouped together as medium capacity modes for demand assessment purposes. Broad order of cost estimates were developed for each option. The options are summarised as:-

- *Heavy Rail – there are two options, both linking to the Cronulla Line at Miranda and running via the F6 reservation. One option is to connect to the Illawarra Line near Sydenham and the other option connects to the Airport Line west of the International Airport station;*
- *Light Rail and Busway – starting from Miranda and running via the F6 reservation to link to Sydenham Station and/or the International Airport station; and*
- *Light Rail and Busway – starting from Miranda and running on-street, generally parallel to the F6 reservation to link to Sydenham Station and/or the International Airport station.*

Modelling of the medium capacity modes demonstrated the best potential to attract passengers within the 2020 timeframe for this study with demands in the order of 4,000 peak direction passengers in the peak two hours. Within the two basic options, operation in an exclusive corridor was found to attract marginally more peak direction passengers. However, the on-street option

attracted more contra-peak passengers and also has the potential for closer integration with the community.

These modes also exhibited least cost per passenger in comparison to heavy rail with the on-street option being the lowest cost overall in terms of passenger and capital costs. The following table summarises the cost per passenger for each mode and alignment option.

Cost per Passenger for Various Modes and Options at Forecast Patronage

Mode/Option Description	Broad Costs	Total Cost per Passenger
Heavy rail	\$670-\$1,000M	\$50.00
Light rail in exclusive corridor	\$350-\$440M	\$9.20
Bus in exclusive corridor	\$200-\$260M	\$3.80
Light rail on street	\$280-\$340M	\$9.00
Bus on street	\$120-\$150M	\$2.70

Heavy rail's high cost can be attributed to its high capital cost and relatively low patronage, which is below that which would support heavy rail within the 2020 timeframe for this study. However, when considering the requirement to reserve land within the corridor for future public transport, the timeframe should be beyond 2020. The Illawarra Line is reaching capacity towards the end of the next decade and RailCorp's patronage forecasts for the South Coast and Illawarra Lines have demonstrated the need for additional capacity and/or lines, including potential metro lines in this corridor and other parts of the metropolitan area. In this regard it is considered that any change to the F6 corridor reservation should not preclude the potential for future development of a high capacity mode and hence an alignment width of 40 metres has been recommended. Based on this width it has been found that there are potentially residual lands which could be appropriately zoned for other uses.

A major challenge for the medium capacity system will be integration with the existing rail system. Whether the alignments connect with the Illawarra line at Sydenham or the Airport line, there are potential problems in finding seats on already congested trains. Further studies should examine the potential for extension of these options towards the city and in this regard extensions via the Airport towards Green Square and the CBD may offer the best opportunities.

This study has found that within the next 10 to 20 years a medium capacity mode could fulfil an effective public transport role in increasing the level of public transport use and management of travel demand in the corridor. These findings point to the need to consider the staged development of public transport services in the corridor. In principle, a staged approach could include:

1. Preservation of the option to provide for long term needs by establishing a reservation capable of meeting the needs of a heavy or metro style rail line. In this way the potential to develop lower capacity systems would also be protected.
2. In the short term, rationalise the existing bus network to develop high quality, high frequency, feeder services to existing Illawarra line stations, Sydney Airport and the CBD. The proposed initiatives under the Review of Bus Services in NSW (March 2004) could provide the basis for this rationalisation.

3. *Through this rationalisation process progressively develop a strategic bus service which mirrors the proposed corridor (similar routes are also referred to in Review of Bus Services in NSW). Provide a high quality service at minimum levels of service of 10 to 15 minutes in peak periods. In addition, consider improving catchment coverage by adjusting the service to use Chuter Avenue instead of the parallel "one sided" route along General Holmes Drive from Sans Souci to Monterey.*
4. *The strategic bus route/s should be structured to take advantage of current and future developments along the corridor. For example, consideration should be given to taking advantage of provisions within the Cooks Cove development for priority access to the airport across the Cooks River.*
5. *Develop bus priority systems on existing roads and where appropriate make use of the reserved exclusive public transport corridor to by-pass points of congestion.*
6. *Put in place a strategy to progressively develop a medium capacity transport system over the full corridor. This could be focused on either side of the Georges River in the initial stages of development and include connections to key transport nodes such as Rockdale and Miranda.*
7. *This strategy should firstly, fully investigate and recommend the most effective medium capacity mode (light rail, bus rapid transit systems) to serve this corridor. The strategy should include a schedule for development of the corridor over the next 10 to 20 years.*

Recommendations

The following key recommendation is made:

- *establish a reservation 40 metres wide to preserve the potential to develop a high capacity mode in the long term.*

Given the strategic nature of this study, consideration should be given to undertaking the following supplementary tasks;

- *undertake detailed network and patronage studies and a financial/economic assessment to confirm the most appropriate medium capacity mode and technology to serve the corridor;*
- *develop the engineering design, geotechnical studies and environmental assessment for the selected mode to confirm the reservation boundary to enable residual lands to be appropriately zoned for other uses.*
- *Undertake a detailed road network assessment of the selected public transport system including addressing potential by-pass opportunities (e.g. Miranda Town Centre) and their potential land requirements; and*
- *develop a detailed implementation strategy for progressive development of high quality public transport services in the F6 Corridor.*

Future Actions

This study has addressed a wide range of issues associated with the development of a public transport system within the F6 corridor. The study has highlighted the need for a range of additional studies and actions required to assist decision making with regards to a possible medium capacity mode and the final reservation of the corridor lands. These future actions should include:

- *detailed public transport feasibility and operations study. The study scope should include:*
 - *a more detailed patronage assessment (based on the current assessment) to focus on the passenger needs in the catchment and to support final decision making on the most appropriate mode for the corridor;*
 - *determination of the long term medium capacity mode best suited to meeting the passenger demands within the corridor;*
 - *engineering feasibility study to develop an optimum long term alignment and staging plan;*
 - *traffic studies to identify the interaction with the road network and necessary works to establish public transport priority;*
 - *public transport operations plan which integrates all modes within the corridor; and*
 - *detailed staging strategy for the progressive implementation of the public transport strategy.*

The above scope could be undertaken as a single feasibility study or managed as a series of sequential studies.

- *Once a preferred mode is chosen, land use and urban design studies should be undertaken at an appropriate stage to address the most appropriate use for residual lands and to identify the urban design solutions for future station locations and the corridor in general.*
- *In order to improve the level of confidence for the definition of the future reservation the following activities should be undertaken:*
 - *obtain more detailed survey of the study area. We have established that digital aerial photography is available that will allow the generation of DTM mapping to 2 metre contours and an ortho-rectified aerial photo base with 0.3 metre pixels;*
 - *obtain a more accurate definition of the corridor boundary by obtaining the corridor coordinates from the RTA and plotting this on the cadastral base (the RTA has advised that it may require up to two years to acquire this data); and*
 - *undertake sufficient field investigations to allow zoning of the corridor in terms of environmental constraints, geotechnical conditions and flooding.*

1. Introduction

As part of the 1951 County of Cumberland Planning Scheme, a road reservation was set aside that connected central Sydney with the then planned Southern Freeway at Waterfall. This reservation, named the F6 Corridor, was planned to cater for the access requirements of anticipated future populations.

With the previous Government's focus on other major arterial transport routes, the extent of land occupied by the F6 corridor was reduced, particularly in the southern sections between Loftus and Waterfall, to preserve National Parks land and established open space areas. Over time, sections of the remaining reservation have been used as community open space active recreation space and have therefore maintained significant environmental value.

On 6 September 2002, the then Minister for Transport and Roads, the Hon. Carl Scully MP, announced that the Government believed that the remainder of the reservation would better serve the population as a public transport corridor. The Minister also stated that such a public transport corridor would require a narrower reservation than that currently provided for a future freeway and would therefore allow the determination of which parts of the corridor can be provided as open space. The Ministers' release is contained in *Appendix A*.

This study assessed the viability of using an existing asset, the F6 corridor road reservation, as a public transport corridor. The study evaluated a number of mode types that could fulfil a role in travel movements to, from and through the areas adjacent to the corridor.

1.1 The F6 Corridor

The F6 corridor currently extends between Campbell Road, St Peters to the Royal National Park, Loftus. The corridor generally refers to the area between St Peters and Loftus that could provide for transport connections between key nodes.

The reservation runs through the suburbs of Tempe, Kyeemagh, Banksia, Rockdale, Brighton-Le-Sands, Kogarah, Monterey, Ramsgate, Sans Souci, Sandringham, Taren Point, Miranda, Gymea, Kirrawee and Loftus. The indicative alignment of the F6 Corridor is shown in *Figure 1.1*. The Minister for Roads also directed that the "Roads and Traffic Authority (is) not to construct any freeway or motorway on the proposed F6 corridor between St Peters and the Royal National Park which passes through the local government areas of Marrickville, Rockdale and Sutherland Shire". The Minister further directed "that the Roads and Traffic Authority (is) not to construct any road or transport development of any type between the Royal National Park and the southern side of Gymea Station, so this portion of the F6 corridor can be preserved, as much as possible, for open space (NSW Government Gazette No 54). A copy of the relevant notation is contained in *Appendix A*.

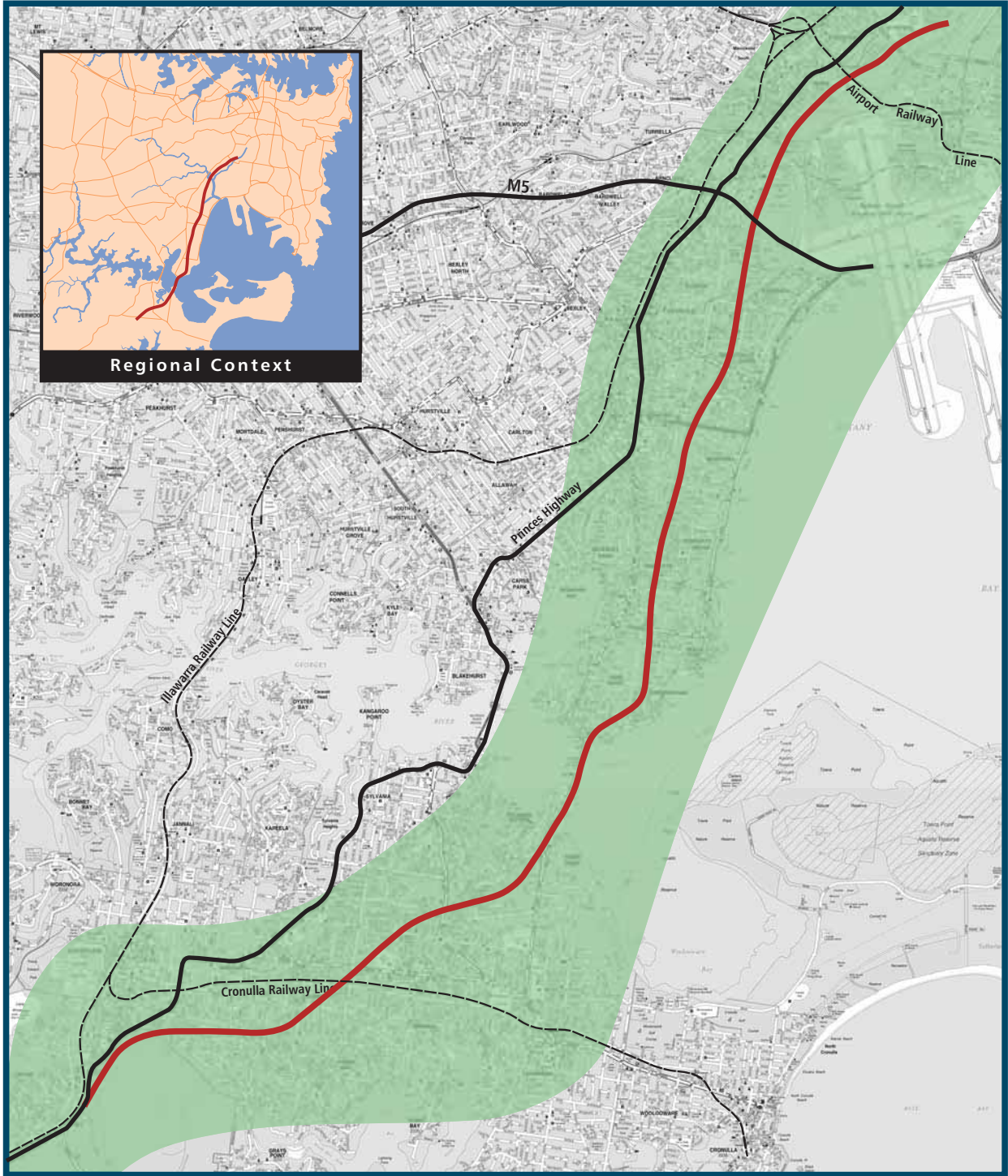


Figure 1.1 F6 CORRIDOR STUDY AREA



- Study area
- Current alignment of F6 corridor
- Highways
- Railway

The study area extends beyond the general corridor as described above to ensure that broad consideration is given to potential connections to the regional transport network and major land use destinations. In particular, the study area covers the area west to the Illawarra Rail Line, north to the Airport Rail Line and Central rail station.

The F6 reservation passes through four local government areas: Sutherland, Rockdale, Marrickville and the former South Sydney (now City of Sydney). The majority of the reservation passes north-south through the length of Sutherland and Rockdale areas. The northern end of the corridor crosses the eastern edge of Marrickville then into the southern edge of South Sydney local government areas.

Development of any project within the transport corridor along the F6 reservation was not identified in Action for Transport 2010, the State Government's 10 year strategic planning document for transport infrastructure and services released in 1998.

1.2 Background

The F6 Freeway corridor was one of the major roads for Sydney proposed in the 1951 County of Cumberland Planning Scheme. The County of Cumberland Planning Scheme provided an overall perspective of the planned future growth of the Sydney Region. Once the corridor was identified, the Department of Main Roads established a program of purchasing land within the corridor for future road infrastructure development. The original corridor extended from the end of the Southern Freeway at Waterfall through to the central Sydney CBD area. In the 1960s the section of the corridor over the Captain Cook Bridge and its southern approaches was built. This is the only section of the corridor that has been developed to a freeway standard.

In November 1977, the then Minister for Highways announced that the F6 corridor would be abandoned except for the section between Campbell Road, St Peters and Miranda. At that time, the Minister noted that the location of the termination point at Miranda required further investigation by the Department of Main Roads. Further investigations were also needed to determine appropriate connections to the CBD or to other planned motorways in the region such as the M5 East and Eastern Distributor.

In September 1987, the Minister for Roads formally abandoned the section of the F6 corridor between Farnell Avenue, Loftus and Waterfall. This reservation travelled mainly through the Royal National Park. The NPWS was notified of this advice in October 1987 and the reservation was removed from planning instruments.

In 1998 the Roads and Traffic Authority completed studies to reduce the width of the reservation between Campbell Road, St Peters and the Cooks River. The study identified a reservation wide enough for a future arterial road to service the adjoining industrial zoned land and to provide local traffic relief to the Princes Highway. The actual reservation is yet to be rezoned in local councils LEPs.

On 6 September 2002, the then Minister for Transport and Roads, Carl Scully MP, announced that the 20 kilometre freeway would be abandoned in favour of a public transport corridor and recreational uses. As a consequence of the Minister's announcement, this current study was commissioned by former Transport NSW and

RTA. Following changes in Government Departments, management of the study was transferred to the Transport Planning Division of DIPNR.

The following terminology will be used through the study process in all reporting and documentation:

Term	Description
Alignment	A geometric layout, in plan following a general route within the reservation.
Reservation	The actual land as shown on RTA plans and zoned for transport uses.
Corridor	Refers to the general area between St Peters and Loftus that could provide for transport connections between key nodes. Includes movement systems and land uses. Refer Figure 1.1
Local Catchment	The immediate area that any potential public transport station or stop would serve. Typically within one kilometre of station locations and the area from which the majority of potential users of the transport facility would come from.
Regional Catchment	The broad area that any potential public transport facility would serve. Area from which potential users of a transport facility would come from using another mode of transport to connect to the services.

1.3 Study Objectives

The brief outlines the primary objectives of the study as:

- identify and provide a preliminary assessment of potential public transport uses of the corridor and local road connections;
- as a consequence, determine those parts of the corridor likely to be surplus to public transport requirements and able to be used for other purposes; and
- incorporate major stakeholder views on options and the implications.

The study is focussed on investigating the range of potential modes that may best meet the objectives of the study. It is not necessarily intended that any one mode would be recommended but rather a range of feasible modes that may operate in the corridor. An underlying objective is focussed on achieving broader government objectives for reduced levels of vehicle kilometres travelled (VKT) and improved air quality.

1.4 Study Process and Outcomes

The study process involved the generation of issues and ideas relating to the use of the F6 Corridor for public transport through community forums and technical reference group workshops. The paper included the strategic planning context, traffic and transport issues, community workshop summaries, social and environmental opportunities and constraints and a framework for the options evaluation.

The options were assessed in two phases. Phase 1 considered potential modes and alignment option, both within the corridor and on adjacent roads with five short listed

options being carried over to the next phase. Phase 2 involved a more detailed assessment of the five options including:

- two heavy rail
- two medium capacity modes encompassing operation "on road" and "in exclusive alignment":
 - ▶ light rail
 - ▶ bus transit

Each option was modelled using the Transport Data Centre Strategic Travel Model. This report summarises the options assessment and study findings.

The study area for assessment of public transport options is illustrated in *Figure 1.1*.

1.5 Stakeholder Consultation

Consultation with community and other stakeholders was a key component of this study.

Two rounds of community forums were conducted as part of the study. Interested members of the public, community groups, special-interest groups and industry associations were invited to attend a workshop held early in the study process. The first series of forums were held on the 10 and 13 March 2003. The forums were held at both the southern end (Sutherland) and the northern end of the corridor (Rockdale). Additional forums will be held at the end of the study to provide the community with the opportunity to comment on the study's preliminary outcomes.

Consultation was also conducted with relevant local Councils, RailCorp, the State Transit Authority and Sydney Airport Corporation through the project reference group and individual meetings.

The purpose of the initial community forums was to inform the community about the study and for the community to assist with identifying issues for consideration. The focus of the forums was a facilitated discussion with the community. The discussion was based on the following:

- identifying the potential major changes and key transport issues in the local area for the next 10 years; and
- determining what contributes to a successful public transport system.

A broad outline of the forums is provided in *Appendix B*. A comment sheet was made available at the meeting for attendees to complete if they had additional information they wished to provide. A total of 7 comment sheets were returned, along with three written letter submissions and 12 suggestion sheets for uses of the F6 corridor from Citizens Advocating Responsible Transport for the Shire (CARTS).

The submissions received mainly related to concerns over increasing population and congestion over the next ten years. Changes in the demographic characteristics of the area was also raised, in particular, the transport needs of an ageing population. Several

issues were raised concerning public transport in the area such as a lack of frequent bus services, additional access required to connect centres including the hospitals and Caringbah town centre. Suggestions for improved public transport in the F6 corridor, included express bus services, light rail, a branching bus corridor, redirecting public transport from the F6 reservation onto existing roads and reducing the cost of public transport options. The improvement of cycling conditions to and between rail stations was also raised and the inclusion of a cycleway along the F6 reservation. Submissions also supported the use of the corridor for open space and nature reserves. A summary of the initial community forums is provided below.

Rockdale

A total of 34 members of the community attended the forum at Rockdale Council Administration building on Monday 10 March 2003. Representatives from Council and Action for Public Transport also attended.

Key issues raised at this forum included:

- concerns about future development demands – increased urban densities leading to more traffic and pressure on public open space;
- effects of ageing population;
- concerns about existing public transport system, particularly access;
- concerns about cost of public transport system for the F6 corridor, its likely connections, impacts on existing road networks and patronage;
- suggestion to improve existing public transport systems first; and
- concerns about impacts on the environment and residential amenity.

Notes from the workshop are contained in *Appendix B*.

Sutherland

A total of 23 members of the community attended the forum at Sutherland Community Centre, Stapleton House, on Thursday 13 March 2003. Participants included the Member for Miranda, Hon Barry Collier MP, and representatives from Sutherland Council, the Southern Sydney Regional Organisation of Councils, Miranda Residents Precinct Association and Sutherland Shire Environment Centre. Some representatives attended the forum in a local resident capacity and some represented their groups.

Key issues raised at this forum included:

- impacts of likely demographic changes on public transport;
- concerns about issues of parking, transport and housing for Sydney's future;
- desire for east-west access not just north-south access;
- need for integrated public transport systems, appropriate planning and effective government-community communication;

- need for public transport systems to be attractive enough to encourage people to use rather than relying on motor vehicles;
- need to prioritise access as key issue for public transport;
- need to consider environmental and social/community impacts; and
- concerns about people who currently want to travel by train to Eastern Sydney, the CBD and beyond from the Cronulla area need to travel west for some 15 minutes before heading north.

Notes from the workshop are contained in *Appendix B*.

1.6 Base Engineering Model

A base engineering model in AutoCAD was created to develop and assess mode options.

The base engineering model consists of ortho-rectified photo mapping. The coverage of the model is to a minimum width of one kilometre either side of the F6 reservation from Campbell Road, St Peters (2003 UBD map 255 ref L14) to Farnell Avenue, Loftus (2003 UBD Map 332 ref G12) is 0.2 metre pixel aerial photography. The model also includes cadastral data for the same area. The enclosing rectangle is one metre pixel data to show the regional context and broader network connections.

The data sources for the base engineering model are:

- 0.2 metre pixel aerial ortho-rectified photo mapping, SKM 2000;
- 0.2 metre pixel aerial ortho-rectified photo mapping resampled Webmap 2000 data;
- 1 metre pixel aerial ortho-rectified photo mapping, Land and Property Information 1998 data, and
- Land and Property Information cadastral boundaries, 1998.

The RTA provided hard copy PIMS maps showing the F6 reservation on a cadastre base plan. This mapping was used to digitise an estimate of the F6 reservation onto cadastre and aerial photo mapping in CADD. The digitising was completed by estimating the location of the reservation based on property boundaries. The F6 reservation was not available from the RTA in digital georeferenced format. Therefore, the F6 reservation in the engineering model should be treated as indicative only.

Standard typical cross sections of heavy rail, light rail and bus based transit were developed to support the study and develop alignment options. These typical cross sections provide an indication of potential treatments and reservation requirements for a public transport corridor including a shared cycle and pedestrian path. Alternative treatments may evolve as part of further detailed design processes of preferred options in future studies.

The alignments, for these typical cross sections, include the horizontal design only and limited vertical design at key points only, such as the Georges River and Cooks River

crossings. It should be noted that vertical design sections are indicative only as they were completed using existing information sourced from the RTA and RIC and were not based on detailed engineering surveys or fieldwork.

More refined engineering evaluation would involve the development of a two-metre contour digital terrain model, to provide a precise analysis of the vertical alignments of the options and production of long sections and actual cross-sections. This analysis, along with a detailed geotechnical assessment of ground conditions, is required to determine the land requirements for batters and retaining walls.

Vertical alignments were not considered necessary at this pre-feasibility stage of assessing public transport uses for the F6 corridor.

Therefore a detailed assessment of batter requirements was not made. A conservative approach was taken to the corridor width and assessment of corridor requirements to allow for detailed engineering assessments as required to progress planning for a potential public transport system in this reservation.

This assumes that additional costs would be involved with developing retaining walls, if they were deemed to be required once detailed engineering designs were completed. The need for retaining walls would depend on the actual use of residual lands.

Further details on the assumptions are included in the relevant sections of this report.

2. Urban Planning Context

2.1 Strategic Planning Context

Sydney is increasingly being challenged to provide for anticipated population growth, and changes in household formation while maintaining environmental quality. The NSW Government has released a series of plans and strategies over the past five years to guide development and provision of infrastructure in Sydney. A new Metropolitan Strategy is currently being developed by DIPNR and will replace Sharing Our Cities and Action for Transport 2010. The Metropolitan Strategy website (www.metrostrategy.nsw.gov.au) states that the document will set out how the State Government intends to sustainably manage growth and change in Sydney and the Greater Metropolitan region over the next thirty years. It will be used to:

- promote community discussion on issues and directions;
- provide leadership and vision about the type of Sydney we want to live in and the options and challenges we face;
- coordinate State Government infrastructure, investment and service delivery decisions; and
- provide a framework for industry investment.

The F6 corridor reservation passes through four local government areas: Sutherland, Rockdale, Marrickville and the former South Sydney (now City of Sydney). There is strong support from each of these councils to reduce the impacts of increasing private vehicle and commercial freight travel and encourage public transport use through improvements to infrastructure, services and walking and cycling access. An overview of relevant State Government strategic plans and Council planning policies are provided in *Appendix C*.

The F6 reservation is a unique asset in an established urban area. The challenge, now that the freeway use has been abandoned, will be to ensure that decisions regarding the potential use of the reservation do not preclude any public transport options that may address longer term community needs. The corridor has been reserved for over 50 years and is a valuable community asset. Any decision regarding the strategic use of the asset should consider long term potential community needs in the corridor to ensure opportunities are not foregone.

2.1.1 Key Issues in the Corridor

A review of existing information, community consultation and discussions with key stakeholders identified several issues for consideration in the study. The key issues raised, that were considered to be important in the context of this study, were:

- Existing traffic congestion;
- Lack of integrated public transport options;

- Large development demands in surrounding areas;
- High existing environmental and residential amenity; and
- Demographic changes such as an ageing population and smaller household occupancy rates impacting the population in the area and how people travel.

The F6 corridor as a potential public transport route presents several opportunities for addressing these issues in the corridor.

2.2 Current Land Use Zoning and Ownership

There is a mix of private and public land ownership along the F6 reservation. The majority of the corridor is in public ownership with land owned by various State and Local Government agencies. Assuming an average reservation width of 90 metres, the reservation occupies a substantial 180 hectares of land. The following section outlines zoning and ownership for various sections of the corridor starting from the southern end of the reservation.

The section of the corridor between Farnell Avenue, Loftus and Auburn Street South, Kirrawee lies mostly within the Royal National Park. The remaining corridor within Sutherland Shire is zoned in the current 2000 Local Environment Plan as “Special Use – Future Arterial Road”. Most of the land within the F6 Reservation in Sutherland Shire is publicly owned, the majority by the RTA. The 2003 Draft Peoples’ LEP proposes to rezone the land within the F6 reservation to “Transport Corridor”. The zone is generally described in the Draft LEP as having the potential to serve as a multi-modal transport link to serve metropolitan demands.

North of the Georges River land ownership in the corridor is split between private owners, DIPNR (formerly Planning NSW), Rockdale Council and the RTA. Small areas of land are also owned by the Department of School Education and Sydney Water. The land within this corridor is zoned 7(c) – “Transport Reservation Zone” in the Rockdale LEP.

The section of the F6 reservation between the Cooks River and Canal Road is located within the Marrickville local government area and is zoned 9(c) – “Arterial Road and Arterial Road widening”. Land adjacent to the corridor in Marrickville LGA is zoned open space, special uses, residential and industrial.

The section of the F6 reservation between Canal Road and Campbell Road is within the City of Sydney LGA. The actual corridor is zoned as 9 (a) - Arterial Road Reservation and adjacent properties are zoned 4 – Industrial. There are also some mixed uses and residential properties to the north of Campbell Road adjacent to Sydney Park, a major recreation and open space area for the residents of South Sydney. The section of the reservation in Sydney City LGA runs parallel to the Alexandra Canal.

2.3 Future Land Use Scenarios

The provision of public transport services in the F6 reservation has the potential to influence the land use and development patterns in the corridor.

The degree of influence will vary according to the mode that is implemented and the levels of service provided. However, generally, the provision of high quality trunk services will enable a higher level of land use development, particularly around public transport nodes such as heavy/light rail stations, bus stations/stops and interchanges. The types of land use opportunities along the corridor are, however related to the current use of the residual and surrounding land, overall demand for land uses in the region and compatibility with adjacent existing uses.

The current land use pattern within and surrounding the corridor reflects a situation where the private motor vehicle is the dominant form of transport. Residents rely on motor vehicles to travel between major land uses such as shopping centres, schools, the CBD and recreational facilities. Hence, a more dispersed pattern of land use is apparent. Improved transport choice (in the form of a public transport corridor) and convenience is likely to generate demand for changing land uses.

The majority of land use change would be in close proximity to key transport nodes. The provision of a public transport link would stimulate residential population growth the area, and in turn stimulate development, local commerce and demand for other transport services such as buses and taxis.

There would be opportunities for the provision of appropriate housing within walking distance of key nodes. This would provide more convenient and accessible housing choice and in turn lead to a reduction in dependence on car travel. Other relatively high intensity and employment land uses are appropriate for areas within walking distance of public transport nodes. These include commercial offices, libraries and civic uses, post offices, personal and convenience retailing, restaurants, education facilities, medical and health facilities and entertainment and recreation uses. Low intensity, car-oriented land uses such as industrial premises and bulky goods retailing would not be appropriate for areas surrounding stations.

The level of service of the mode of public transport to a particular node has a greater propensity to influence the level and range of development and activity surrounding it.

The types of land uses on residual lands and on areas between stations would, however, be influenced by the types of public transport under consideration. For example, a light rail line would enable a wider range of activities to be located in close proximity to the corridor as it would enable greater horizontal connectivity with pedestrian and vehicular crossing at surface level and allow maximum development to the edge of the rail corridor. Given that light rail is relatively quiet, more sensitive uses such as housing, schools and other community uses could also be located closer to stations and the corridor.

The width of the corridor and noise and safety provisions associated with a heavy rail option would restrict the range of land use potential along the corridor, particularly between stations. Uses such as light industry/commercial, open space and recreation

would be more suitable in these areas. The type of use is related to the existing use of the land and its compatibility with adjacent existing uses. For example, it would not be suitable to rezone an open space area to industrial particularly if it were adjacent to a residential area.

2.3.1 Current Population Projections

Current population and employment projections for Council areas surrounding the corridor indicates an overall increase in population of 10 percent and growth in employment of 10.5 percent between 2001 and 2021 (TPDC Land Use Model 2003 v1). Data for relevant local government areas is shown in the tables below.

The TPDC Land use model assumes a total population in Sydney for 2021 at 4.893 million. The ABS 2002 Year Book for Australia provides projections for the Australian population to the year 2021 based on a combination of assumptions concerning future levels of births, deaths and migration. Three series of projections have been produced based on differing levels of these assumptions. The ABS 2021 population projection for Sydney ranges from 4.986 million (Series III) to 5.143 million (Series I). The TPDC population projections are low in comparison to the ABS projections. This data (Tables 2.1 and 2.2) will be used in further discussions of land use scenarios in Section 7.

Table 2.1: Local Government Area Population, 2003 and 2021

Local Government Area	2001	2021	Percentage Change
Sutherland Shire	213,400	220,000	3%
Hurstville	73,700	79,100	7%
Rockdale	93,000	108,100	16%
Kogarah	52,800	57,600	9%
Marrickville	78,000	82,300	6%
South Sydney	89,700	121,300	35%
TOTAL	600,600	668,400	11%

Source: TPDC Sydney Landuse Model (2003 v1)

Table 2.2: Local Government Area Employment, 2001 and 2021

Local Government Area	2001	2021	Percentage Change
Sutherland Shire	63,600	75,600	19%
Hurstville	26,800	32,700	22%
Rockdale	26,900	23,900	-11%
Kogarah	18,400	22,900	24%
Marrickville	34,100	33,900	-1%
South Sydney	111,700	120,400	8%
TOTAL	218,500	309,400	10%

Source: TPDC Sydney Landuse Model (2003 v1)

2.3.2 Council Planning Strategies

The corridor traverses four local government areas, including from north to south: South Sydney, Marrickville, Rockdale and Sutherland. The following provides an overview of the current strategic land use opportunities adjacent to the reservation.

Sutherland Shire

Sutherland Shire's housing strategy indicates that much of the growth in new multi-unit development has occurred in the residential flat buildings zones (Multi-dwelling 'B' Zones) located around main railway stations such as Sutherland, Gymea, Engadine, Miranda, Caringbah and Cronulla, and the Menai Town Centre, and in the multi-dwelling housing (townhouses) in the Multi-dwelling 'A' zone in areas in close proximity to retail/commercial centres, public transport, services and employment.

The capacity for further multi-unit development in existing zones is limited in the Multi Dwelling B zones with the exception of some areas within Sutherland, Cronulla and Caringbah. Further opportunities could be investigated for increasing the volume of land Multi Dwelling B zones adjacent to potential stations on a proposed F6 public transport corridor, particularly in the section north of the Kingsway to Port Hacking Road.

North of the Kingsway, the reservation is adjacent to open space, local housing, educational uses, community facilities and a child care centre. The section of corridor between Port Hacking Road and Taren Point Road has high environmental values and it is recommended that it remain as open space, recreational space and threatened specified buffer areas and protected wetlands.

The existing reservation skirts the north west boundary of the large Taren Point employment area. Whilst the opportunity for increasing the volume of industrial land appears limited, there could well be a strategic opportunity for the development of a commercial development as part of a potential Taren Point station.

Rockdale City Council

The Illawarra rail line, in the Rockdale local government area, has experienced significant levels of urban consolidation. Medium-high rise developments have been established along the rail line, particularly at Kogarah and Rockdale stations. Additional urban consolidation is currently underway with the residential and employment development at Wolli Creek rail station and the North Arncliffe precinct.

The F6 reservation passes through existing medium density residential zones through the suburbs of Brighton Le Sands, Monterey, Ramsgate and Sans Souci. These suburbs do not have high capacity public transport service to support any increases in residential development. The development of the F6 reservation as a high capacity public transport service may lead to the development of higher density residential uses in appropriate residual lands in and adjacent to the F6 reservation.

Rockdale City Council has adopted a strategy for the relocation of sporting clubs to accommodate the Cooks Cove Project. The F6 reservation is adjacent to some of these sporting fields and residual land should be considered for open space and recreation uses through this area.

Rockdale has two industrial employment zones, at Ramsgate and Rockdale, which would be accessible to the reservation. Redevelopment potential may centre upon the development opportunities within the Bay Street precinct. At the northern end of the Rockdale LGA, the Cooks Cove project will present a major mixed use redevelopment opportunity, adjacent to the airport on the existing Kogarah Golf Course site. It is intended that the golf course be relocated to links south of the Cooks Cove site.

Marrickville Council

The land use opportunities adjacent to the F6 corridor within the Marrickville municipality are limited to industrial, open space and road transport uses such as the St Peters Industrial Route (SPIR) corridor, discussed in *Section 4.3* of this report. However, it can be expected that the proposed upgrading of Sydney Airport (through its recent Masterplan) would be expected to induce significant land use change in areas close to the airport.

City of Sydney Council

There is only a short section (0.5 km) of the F6 corridor within the former South Sydney Council area. The lands adjoining this section of the corridor are industrial in nature and expected to remain so into the future. It is noted that, as with the Marrickville Council section, the expansion of the airport could be expected to influence land use in this area in future years.