



NSW GOVERNMENT
Department of Planning

MAJOR PROJECT ASSESSMENT: South West Rail Link



Director-General's
Environmental Assessment Report
Section 75I and 75N of the
Environmental Planning and Assessment Act 1979

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EXECUTIVE SUMMARY

The Transport Infrastructure Development Corporation (the Proponent) has sought concept plan approval for the construction and operation of the South West Rail Link (SWRL), a new passenger train line between Glenfield and Rossmore, servicing the South West Growth Centre in western Sydney. The SWRL would traverse over mainly greenfield areas that are designated for redevelopment as part of the South West Growth Centre. The preferred proposal involves:

- an upgrade of the existing Glenfield Station;
- grade separated flyovers north and south of Glenfield Station, to connect the new rail line to the existing rail network and avoid conflicts with existing passenger and freight traffic (known as the Glenfield North and Glenfield South Flyovers, respectively);
- a new rail line between the existing rail corridor at Glenfield and east Rossmore;
- two new stations located at the planned town centres of Edmondson Park and Leppington; and
- a train stabling facility in east Rossmore, west of the planned Leppington town centre.

The SWRL would entail considerable benefits to existing and in particular, future residents of South Western Sydney by delivering efficient public transport infrastructure to the South West Growth Centre, one of the key sites within Sydney targeted for urban land release to cater for Sydney's growth needs. The delivery of the SWRL is intrinsically linked to achieving State Government objectives of facilitating sustainable transit-oriented development in new release areas through the early establishment of efficient public transport infrastructure, which is key to encouraging reduced car dependency in new development areas. The SWRL would provide both existing and future residents within the Growth Centre with a high degree of access to public transport and, thereby, to employment, education, health, retail and recreation opportunities, in the Global Arc (central Sydney) and other major centres such as Parramatta and Liverpool. Reduced car dependency would provide personal financial benefits (with respect to fuel costs) and have regional economic, social and environmental benefits by reducing negative externalities such as accidents, noise/air pollution, greenhouse gas emissions and energy consumption. The proposal would also entail significant benefits to the existing rail network, by increasing service and stabling capacity. The proposal is wholly consistent with strategic planning objectives as provided in the *State Plan* and the *Sydney Metropolitan Strategy*.

Of the fifty six, agency and public submissions received on the proposal, the key concerns raised were: the preference for a route alignment south of the Forest Lawn Cemetery (rather than north of the Cemetery as proposed); impacts of the preferred alignment on future development potential; noise and visual amenity impacts; and traffic and transport provisions at stations. The Department has assessed the Proponent's Environmental Assessment and response to submissions, and issues raised in submissions and has focused its assessment on the following key issues: proposal alternatives; property and land use; traffic and transport; noise and vibration; surface water and hydrology; flora and fauna; heritage; and visual impacts. The Department considered that other issues were satisfactorily addressed by the Proponent's Statement of Commitments.

The Department is satisfied that the preferred proposal corridor, including alignment and location of stations and the stabling yard, has been designed to minimise impacts on the environment and the surrounding community, balancing technical, economic and social factors and with due consideration to feasible alternatives. Consequently, the Department supports the preferred corridor for the SWRL as proposed. The Department has furthermore, assessed the environmental impacts of the preferred proposal corridor and is satisfied that the proposal's impacts can be largely resolved to meet acceptable environmental standards, through further design development and refinement of mitigation measures. Although some residual impacts may remain, these impacts must be seen in the context of the development proposed for the entire South West Growth Centre (which would significantly alter the existing land use of the area) and must be balanced with the significant benefits generated by the proposal. The Department considers that the early establishment of the SWRL corridor would maximise the potential for impact avoidance and mitigation within the Growth Centre, through appropriate landuse integration. For the above reasons, the Department supports the granting of concept plan approval for the preferred proposal corridor.

Based on its detailed assessment of the proposal, the Department is further satisfied that the Glenfield rail corridor component of the proposed works (Stage A), which comprise the construction and operation of Glenfield North Flyover, partial construction of the Glenfield South Flyover and the establishment of temporary construction site(s), are sufficiently well defined and the assessment sufficiently advanced as to warrant project approval for these works at the same time as concept plan approval is granted for the entire proposal. To ensure that the project is constructed in a manner consistent with acceptable environmental standards, the Department has recommended that detailed conditions of approval in relation to the following matters form part of the project approval: construction work hours; construction noise and vibration goals; construction traffic management; the protection of vegetation of conservation significance including *Pimiolea spicata* soil seed banks; the avoidance of items of Aboriginal cultural heritage significance; and the protection of waterways.

All other aspects of the proposal (Stage B), with the exception of the Glenfield corridor works, are considered to require further assessment based on further design development, prior to seeking project approval. Notwithstanding, the Department is satisfied that the Stage B works centred around the existing rail precinct of Glenfield, which comprise the upgrade of the station itself and provision of various mode-of-access facilities including parking; are unlikely to generate significant environmental impacts and has recommended that further assessment of these works be progressed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The remaining works west of Glenfield, are proposed to traverse greenfield areas designated for redeveloped as part of the South West Growth Centre and are likely to involve significant issues with respect to land use integration with the Growth Centre. Consequently, the Department has recommended that the further assessment of Stage B works, west of Glenfield, be progressed under Part 3A of the EP&A Act with the Minister as the approval authority.

The Department has recommended that stringent further assessment requirements be imposed for all of the remaining Stage B works including: further design refinement at stations to address forecast patronage and mode-of-access requirements and ensure adequate integration with surrounding landuse; further assessment of reasonable and feasible operational noise mitigation measures; confirmation of biodiversity and indigenous heritage offsets; refinement of waterway crossing design; and refinement of urban design measures.

In addition to further assessment requirements, the Department has recommended that detailed conditions of approval in relation to compliance monitoring, community and stakeholder involvement and environmental management form part of the concept plan approval; with the aim of establishing an overall environmental management framework that would apply to all components of the SWRL granted project approval. This would ensure consistency in the environmental management of all projects subject to this concept plan approval, regardless of whether subsequent project approvals are granted under Part 3A or Part 5 of Act.

In summary, the Department is satisfied that the proposed SWRL is on balance justified, in public's interest and can be designed and constructed to meet acceptable environmental and amenity limits subject to the implementation of recommended conditions of approval and the Proponent's Statement of Commitments. Consequently, the Department recommends that the Minister grant concept plan approval for the entire proposal and project approval for the Stage A (Glenfield corridor) works.

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1 BACKGROUND

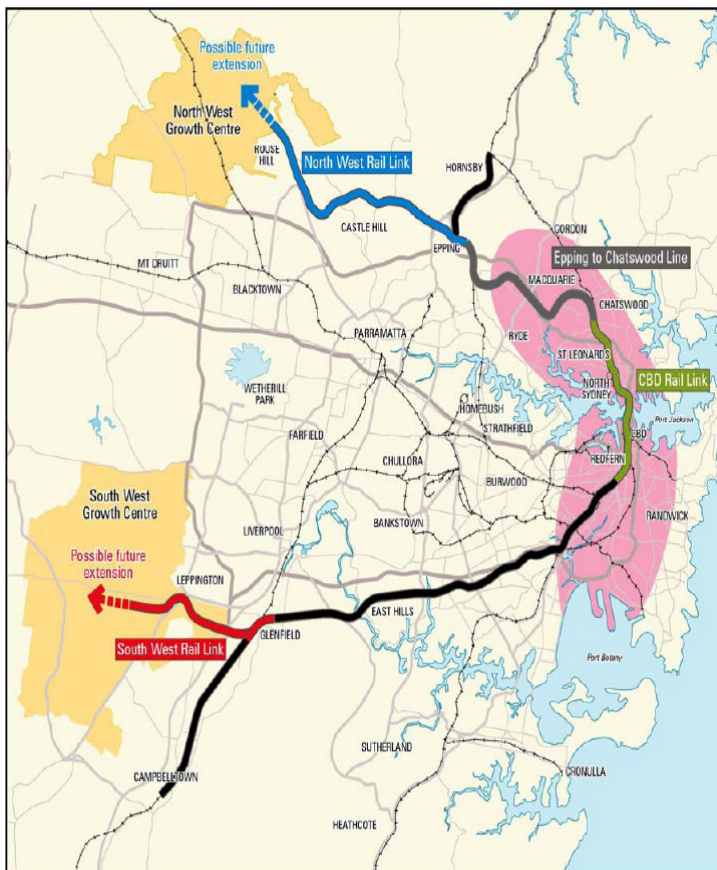
1.1 Strategic Context

In December 2004, the New South Wales Government announced its land release plan for Sydney's South West to respond to Sydney's growing population. The land release was underpinned by commitments to put in place support infrastructure for these new development areas at an early stage of land development.

In June 2005, the Government announced it would invest funds over the next 15 years to develop the Metropolitan Rail Expansion Program (See Figure 1.1), which comprises the following three separate rail link proposals:

- the North West Rail Link — a new rail line to Rouse Hill from Epping via Castle Hill with long-term plans to extend to Vineyard;
- the CBD Rail Link — a new rail line in tunnel between Central Station and the North Shore Line at St Leonards; and
- the **South West Rail Link** — a new rail line to Leppington from Glenfield Station, with long-term plans for an extension beyond Leppington.

Figure 1.1 Metropolitan Rail Expansion Program (Parsons Brinkerhoff, November 2006)



Also at this time (June 2005) the Government exhibited a Draft Structure Plan for the South West Growth Centre, identifying indicative land uses within the release areas of the Growth Centre, including major roads, public transport routes and future employment areas to accommodate up to 250,000 to 300,000 people including 90,000 to 115,000 dwellings. The South West Rail Link (SWRL) was identified as a key component of the Structure Plan.

In December 2005, the Government released an overarching Metropolitan Strategy for Sydney (*City of Cities, A Plan for Sydney's Future*) incorporating the Metropolitan Rail Expansion Program and existing land use planning for the Growth Centre. *State Environmental Planning Policy - Sydney Region Growth Centres 2006* (Growth Centres SEPP) was subsequently Gazetted in July 2006, to govern planning and development within the North West and South West Growth Centres.

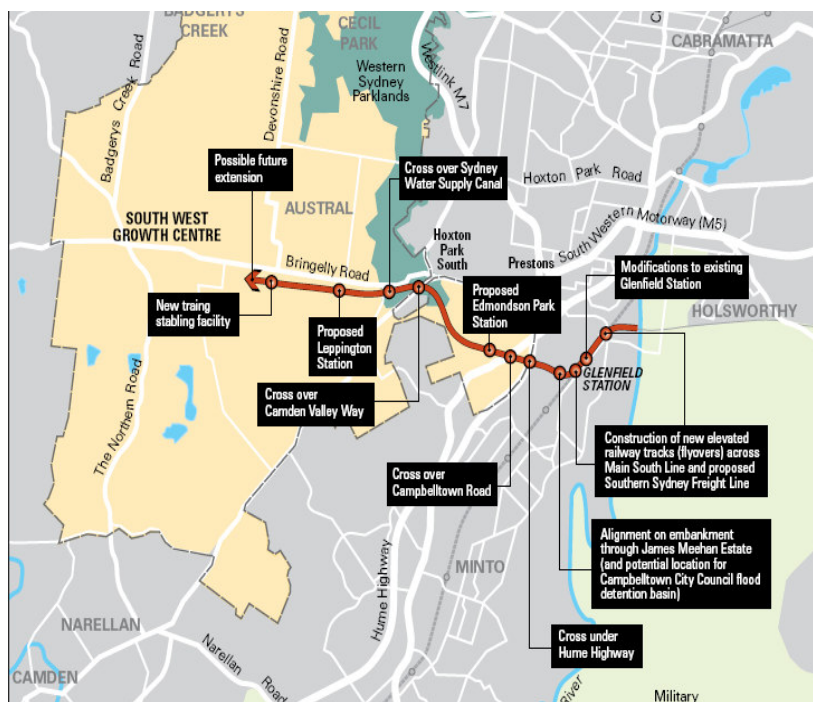
The SWRL comprises a key part of the anticipated urban infrastructure and transport network proposed for the South West Growth Centre and is identified as an integral component of both the Metropolitan Strategy (directives B4.2.1 and D1.1.1) and the Growth Centres SEPP (the South West Structure Plan Map).

1.2 Proponent

The Transport Infrastructure Development Corporation (TIDC) is a statutory State-owned corporation under the *Transport Administration Act 1988* with the principal function of developing major transport infrastructure proposals. TIDC has been charged by the Government to progress planning for the SWRL. Consequently, TIDC is the Proponent for the proposal. If approval is granted, the SWRL would be constructed by TIDC or an entity on TIDC's behalf and operated by RailCorp.

1.3 Location and Land Use

Figure 1.2 South West Growth Centre (Parsons Brinkerhoff, November 2006)



The South West Rail Link (SWRL) forms part of the South West Growth Centre as identified in the Growth Centres SEPP. The SWRL will commence at the existing rail network at Glenfield and head west to Rossmore, through three local government areas (LGAs): Campbelltown, Liverpool and Camden.

Apart from the rail precinct at Glenfield, the majority of the proposal would traverse through as yet undeveloped greenfield areas, which are designated for re-development as part of the South West Growth Centre (see Figure 1.2). These areas consist of rural-residential properties and fragmented remnant vegetation, disturbed by past agricultural use.

Existing transport networks in the subject site comprise: limited regional bus services, a rail network that does not extend west beyond Glenfield, a relatively good regional road network (including the South Western Motorway, the Hume Highway and the M7) and a relatively undeveloped local road network.

The Proponent is seeking approval to enable the SWRL to be developed in two stages (Stage A and B), if required (see Section 2). Stage A works would be confined to the existing rail precinct at Glenfield, in the Campbelltown LGA. Some Stage B works would also be undertaken at Glenfield, however the majority would extend outside the existing rail precinct at Glenfield, into greenfield/ undeveloped land west of Glenfield up to east Rossmore.

Existing Landuse - Glenfield

Glenfield due to its location at the junction of the Main South Line and the East Hills Line and therefore, at the confluence of three passenger services, is an important passenger rail hub and strong park and ride destination. Non-formalised parking currently centres on the existing station access road on the western side of the rail corridor. Land uses directly adjacent to the rail corridor include: the Glenfield Road residential estate (in progress) and Department of Education Land on the western side; and the Glenfield Waste Facility and residential/ retail landuse (including a number of schools and parklands) on eastern side of the rail corridor (see Figure 1.3).

In addition to passenger services, existing components of the Southern Sydney Freight Line (SSFL) (a dedicated freight line between Sefton and Macarthur, approved by the Minister for Planning on 21 December 2006), shares the rail corridor at Glenfield. The Stage A works would require the existing SSFL track to be moved to a parallel location to the west within the rail corridor.

Existing Land Use – West of Glenfield

After exiting the rail corridor at Glenfield, the SWRL is proposed to travel west through undeveloped State Government owned land known as the James Meehan Estate, which is bounded by educational land uses to the north (Hurlstone Agricultural High School, Campbell House School, Glenfield Park School and Ajuga School) and the State heritage listed Macquarie Fields House and residential development (Macquarie Links) to the south (See Figure 1.3). The James Meehan Estate would mainly be utilised during Stage B, and will only be required for

the Stage A works to locate temporary construction facilities and for a limited portion of Southern Flyover works (refer to Section 2).

Figure 1.3 Existing Land Use (Parsons Brinkerhoff, November 2006)

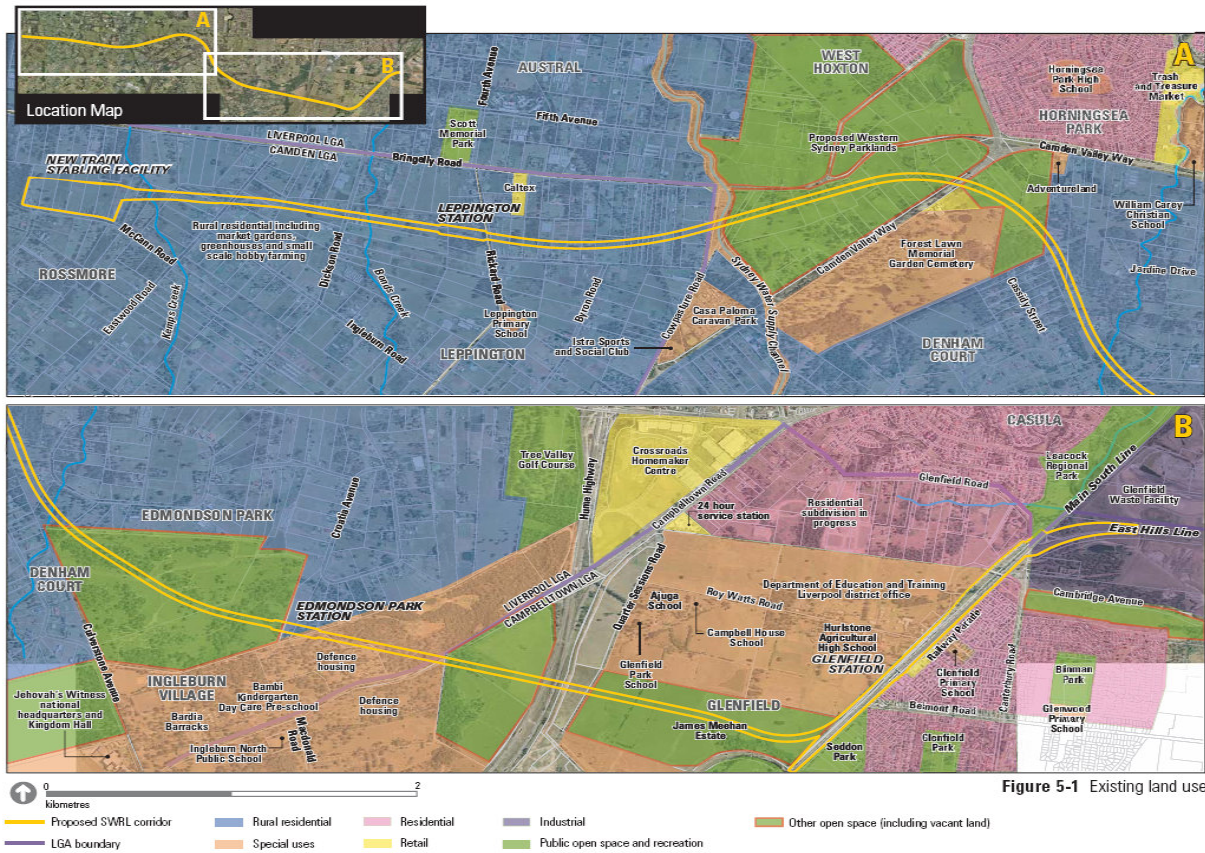


Figure 5-1 Existing land use

Continuing west, the SWRL (as part of Stage B works) would cross under the Hume Highway and travel North West through one of the first precincts of the Growth Centre to be released: the Edmondson Park Release Area. The release area, which is bounded by Camden Valley Way to the north, the suburb of Denham Court to the south west and the Hume Highway to the south east, is yet to be redeveloped from existing rural-residential and military landuse (at the Ingleburn military site) (see Figure 1.3). Within the release area, the SWRL would cross over Campbelltown Road and travel through the (heritage listed) Ingleburn military area and the future Edmondson Park town centre site (where one of the new stations would be located). The SWRL would remain east of the existing low-density residential suburb of Denham Court (see Figure 1.3).

Exiting the release area the SWRL (as part of Stage B works) would travel in a north westerly direction, around the northern boundary of the Forest Lawn Cemetery and over Camden Valley Way, remaining south of Bringelly Road and the established suburb of Horningsea Park. At this location, the SWRL would be traversing through parkland covered by the *Sydney Regional Environmental Plan No. 31 - Western Sydney Parkland* (SREP 31). Continuing west, the SWRL would cross over Cowpasture Road and the heritage listed Sydney Water Supply Canal and enter the rural residential suburbs of Leppington and Rossmore which are designated for development as part of the Growth Centre (i.e. the precincts of Leppington North, Leppington and Rossmore) (see Figure 1.3). The second new rail station would be located at the proposed new town centre at Leppington, which has been identified in the Sydney Metropolitan Strategy as a proposed 'Major Centre' (Regional Centre), with the capacity to provide up to 26,000 dwellings. The SWRL would cease at a new train stabling facility at Rossmore, which is proposed to be developed into residential use as part of the Growth Centre.

Future Land Use

The South West Growth Centre is subject to staged release by the Growth Centres Commission (the agency responsible for managing the development of the Growth Centres) to meet future housing demand and will be subject to significant redevelopment, which will substantially change the existing character and landuse intensity of the area. The SWRL would therefore be developed within an environment that is subject to ongoing

development and change. The assessment of the proposal has therefore needed to take into consideration the changing nature of proposal impacts within a social, cultural and biophysical environment in long-term flux; the potential cumulative impacts of various surrounding landuse being developed at the same time as the proposal; and the need to integrate the proposal as much as possible with the transport and landuse provisions planned for the Growth Centre.

With respect to future landuse (see Figure 1.4), Edmondson Park is likely to be developed first, as the area is already largely planned and has been rezoned. Some parts of this development (such as the Edmondson Park Town Centre area and Ingleburn Gardens Estate) are likely to be partially or wholly in place by the time the SWRL is expected to be constructed. Leppington and Rossmore have yet to be released for development and the timing of their development is as yet not confirmed, but would likely follow the construction of the SWRL. Other key planned developments in the vicinity of the SWRL corridor and the wider South West Growth Centre include:

- the development of a number of strategic bus corridors in the wider South West region; including a 'regional public transport boulevard' linking Liverpool to Leppington, Narellan and Campbelltown; and other regional and local bus routes and priority measures (see Figure 1.5);
- major upgrades to the road network in the Growth Centre, including to parts of Campbelltown Road, Bringelly Road, Camden Valley Way, Eastern Road, Ingleburn Road and Rickard Road (see Figure 1.6);
- construction of the Southern Sydney Freight Line alongside the Main South Line from Sefton to Macarthur, including a proposed passing loop at Glenfield North Junction;
- extension of the Leacock Regional Park to cover the Glenfield Waste Facility (when the waste facility ceases operation);
- development of the Glenfield Road residential estate for 1,000 dwellings (already commenced); and
- development of the Western Sydney Parklands, as a regional recreation and conservation resource.

The proposal represents a unique opportunity to establish major public transport infrastructure at the outset, prior to intensive land use development in new suburban areas and provide a framework to underpin future development.

Figure 1.4 Potential Future land Use (Parsons Brinkerhoff, November 2006)

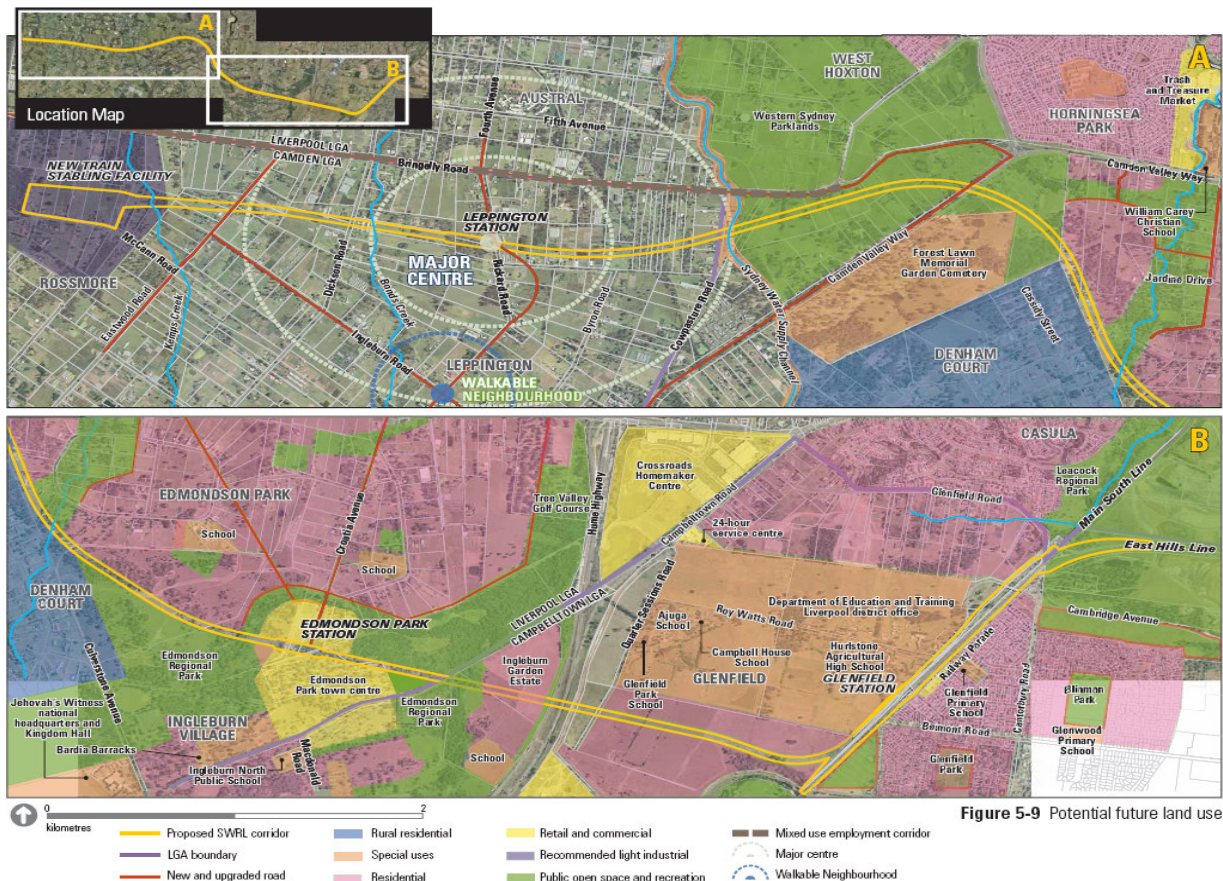


Figure 5-9 Potential future land use

Figure 1.5 Planned Bus Network (Parsons Brinkerhoff, November 2006)

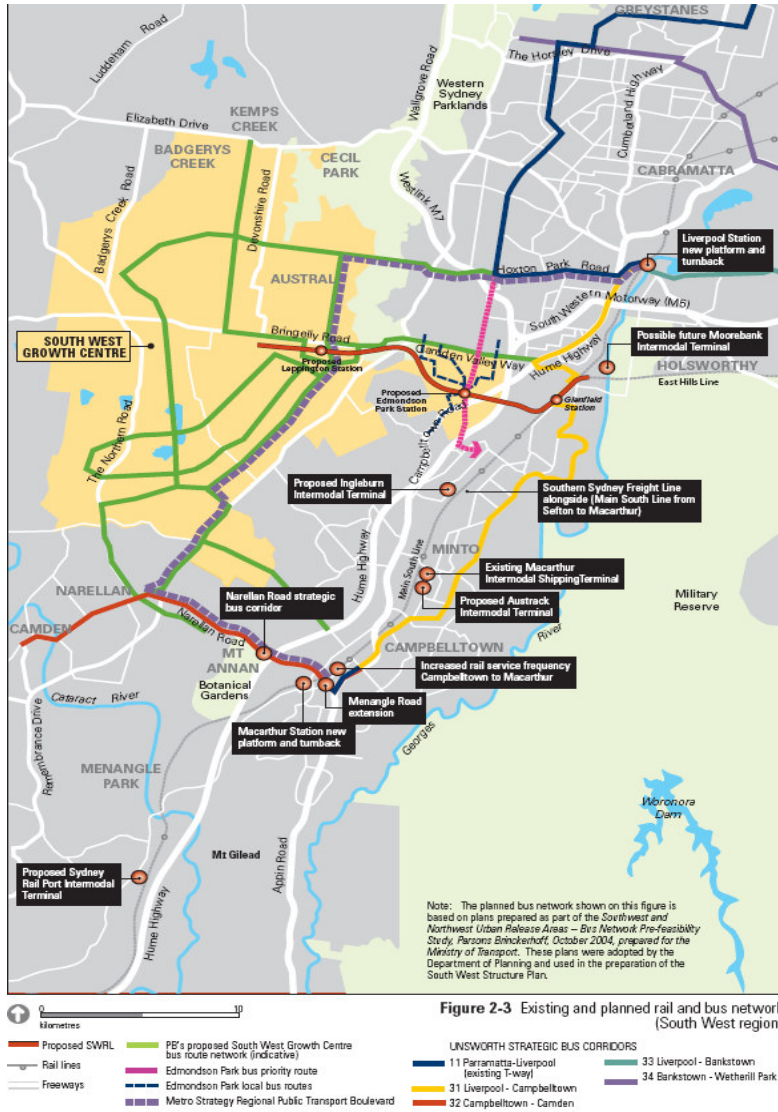
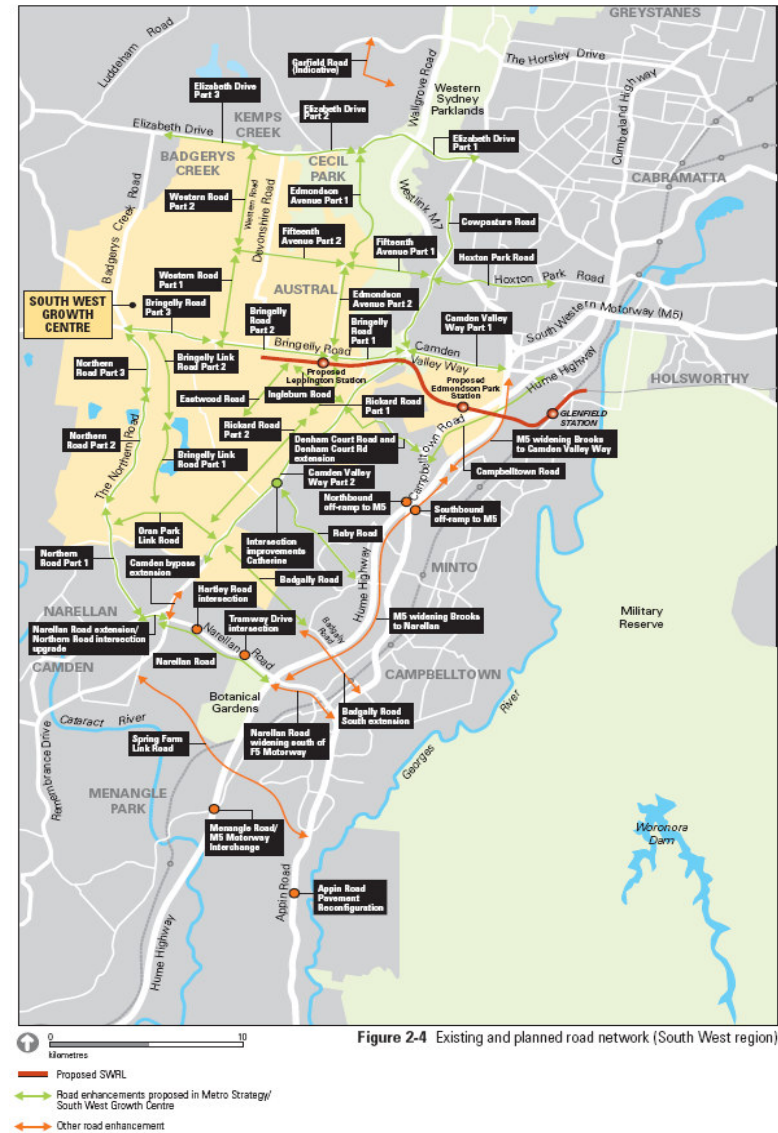


Figure 1.6 Planned Road Improvements (Parsons Brinkerhoff, November 2006)



2 PROPOSED DEVELOPMENT

2.1 Proposal Description

Key Proposal Components

The proposed South West Rail Link (SWRL) involves the construction and operation of approximately 13.1 kilometres of dual-track electrified rail between the existing rail network at Glenfield and east Rossmore in South-Western Sydney. The SWRL incorporates (see Table 2.1):

- a grade separated flyover over the Main South Line north of Glenfield Station to separate passenger rail traffic between the East Hills Line and Main North Line (the Glenfield North Flyover);
- an upgrade of Glenfield Station;
- two grade separated flyovers over the Main South Line and the Southern Sydney Freight Line south of Glenfield Station, to connect the SWRL to the existing network, without conflicting with freight traffic on the SSFL or passenger traffic on the Main South Line (the Glenfield South Flyover);
- a new rail line between the existing rail corridor at Glenfield (at the South Flyover junction) and east Rossmore;
- two new stations located in cuttings at the planned town centres of Edmondson Park and Leppington; and
- a train stabling facility in east Rossmore, west of the planned Leppington town centre.

Construction is planned to begin in 2009, with Stage A works to be completed by mid 2011 (if required) and Stage B in 2012. A rail extension beyond east Rossmore to Bringelly does not form part of this proposal.

Table 2.1 Key Proposal Components

Component	Description
Glenfield North Flyover	The construction and operation of a single track grade separated reinforced concrete flyover north of Glenfield Station to carry the Up East Hills Line over the Main South Line, passing under the Glenfield Road/Cambridge Avenue rail bridge. The Down East Hills Line would be re-aligned to the east of the existing Main South Line and a crossover constructed to the south of the flyover, to connect the Up East Hills Line with the Up South Main Line. The flyover would be built wide enough to make provision for future developments on the network. Works would be contained within the existing Glenfield rail corridor (i.e. land zoned for rail purposes) apart from approximately 1.18 hectares of Glenfield Waste facility land.
Glenfield South Flyover	The construction and operation of two single-track grade-separated concrete flyovers south of Glenfield Station, to carry the SWRL tracks over the Southern Sydney Freight Line (SSFL) and the Main South Line to connect with the existing network. The flyover footprint would encroach outside of the existing Glenfield rail corridor onto the State Government owned James Meehan Estate. In addition, to accommodate the flyover ramps, the existing SSFL track would need to be relocated to a parallel alignment approximately three metres to the west of its present location, remaining within the exiting Glenfield rail corridor.
Upgrade of Glenfield Station	The upgrade and operation of Glenfield Station: <ul style="list-style-type: none"> • the provision of two island platforms by constructing an additional platform face on the east side of station; shortening existing platforms by approximately 80 metres at the southern end and extending the platforms by 80 metres at the northern end; and provision of new overhead station concourse and pedestrian overbridge. The station upgrade would extend to the east of the existing Glenfield rail corridor affecting existing parking provisions on the western side of Railway Parade (the station entrance road); • provision of additional car parking to replace parking lost from Railway Parade as a result of Station upgrade and to cater for future commuter demand; • station precinct works along Railway Parade including provisions for bus, taxi and kiss and ride.
Corridor	The construction and operation of a new dual electrified rail line, 13.1 kilometres in length, between the existing rail network at Glenfield (at the South Flyover) and east Rossmore within a 40 metre wide corridor (60 metres at new stations), including cuttings, embankments, tunnelling, and several road and waterway crossings.
New Stations	The construction and operation of two new stations at Leppington and Edmondson Park in cuttings, generally within a 60 metre wide rail corridor. The design of the stations are yet to be finalised however are likely to involve: <ul style="list-style-type: none"> • Edmondson Park Station – island platform configuration with overhead platform; and • Leppington Station – twin island platforms with overhead concourse. Both new stations would include bus, taxi, kiss and ride, and car parking facilities, which may extend outside the 60 metre corridor.
Stabling Facility	The construction and operation of an approximately 500-metre long and 200-metre wide stabling facility at east Rossmore. The facility would provide stabling for 12 eight-car sets on opening, with space within the identified

	footprint to expand to 20 eight-car or to 10-car sets in the future. Facilities within the yard would include cleaning/light maintenance facilities, ablutions, administration offices, an access road, staff car parking and train wash facilities. The facility would be flood lit and fenced for security.
Ancillary Facilities	Ancillary facilities (including power supplies, sectioning huts, signalling structures, access roads, retaining walls and mounds, compounds sites, transport interchanges, parking provisions and other infrastructure required for the construction and operation of the proposal), will be contained within the defined 40m / 60m wide rail corridor as far as possible, but may encroach outside the corridor. The exact locations of these are subject to further detailed design and negotiation with landowners, however, likely construction locations are shown in Figure 2.1.

Figure 2.1 Likely Construction Work Sites (Parsons Brinkerhoff, November 2006)

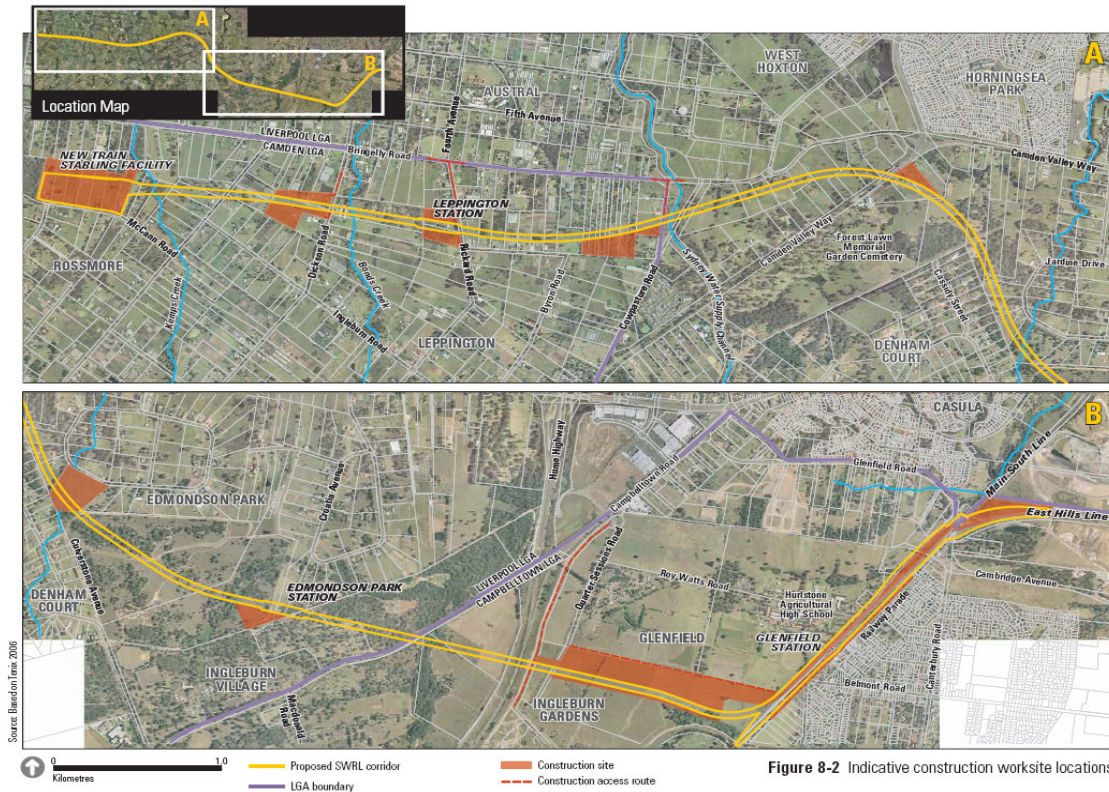


Figure 8-2 Indicative construction worksite locations

Potential Staging

The Proponent has sought approval for the SWRL to be developed in two stages (Stage A and B) (see Figure 2.2), such that if required, Stage A components may be constructed and operated independent of and earlier than Stage B works. The Proponent has expressed the position that the Stage A works are sufficiently well defined and the assessment of these works sufficiently well advanced to enable determination that no further assessment is required for these works. The works comprising Stage A and B have altered slightly since the exhibition of the Environmental Assessment, as outlined in Table 2.2.

Table 2.2 Stage A and B Works

	Stage A and B works described in EA	Alterations to Stage A and B since the Exhibition of the Environmental Assessment
Stage A	<ul style="list-style-type: none"> the construction of the Glenfield North Flyover, within the existing Glenfield rail corridor (i.e. land zoned for rail purposes) and approximately 1.18 hectares of Glenfield Waste facility land; initial works at the Glenfield South Flyover, encroaching on the State Government owned James Meehan Estate; track works within the existing Glenfield rail corridor (i.e. land zoned for rail purposes), including movement of the existing Southern Sydney Freight Line to a parallel location approximately three metres to the west; and 	<ul style="list-style-type: none"> the construction of the Glenfield North Flyover, within the existing Glenfield rail corridor (i.e. land zoned for rail purposes) and approximately 1.18 hectares of Glenfield Waste facility land; initial works at the Glenfield South Flyover, encroaching on the State Government owned James Meehan Estate; track works within the existing Glenfield rail corridor (i.e. land zoned for rail purposes), including movement of the existing Southern Sydney Freight Line to a parallel location approximately three metres to the west;

	<ul style="list-style-type: none"> establishing temporary construction facilities within the James Meehan Estate. 	<ul style="list-style-type: none"> formalising existing informal commuter parking spaces on the station access road on the western side of the rail corridor at Glenfield, providing 15 additional spaces; construction of a new parking lot on the western side of the existing Glenfield rail corridor within vacant RailCorp land, to create 280 spaces (the Glenfield car park); establishing temporary construction facilities within the James Meehan Estate; and operation of the Glenfield North Flyover by mid 2011, if required.
Stage B	<p>The construction and operation of the remaining portions of the SWRL, including:</p> <ul style="list-style-type: none"> the completion of the Glenfield South Flyover; the Glenfield Station upgrade works (including relevant parking provisions); the new rail corridor up to east Rossmore; the two new stations at Edmondson Park and Leppington; the new train stabling facility; and associated ancillary facilities. 	<p>The construction and operation of the remaining portions of the SWRL, including:</p> <ul style="list-style-type: none"> the completion of the Glenfield South Flyover; the Glenfield Station upgrade works (including additional parking provisions, as required); the new rail corridor up to east Rossmore; the two new stations at Edmondson Park and Leppington; the new train stabling facility (including minor alteration to the train wash location described in the Environmental Assessment - the new preferred location, subject to further detailed design, is 150 metres east of the location identified in the Environmental Assessment); and associated ancillary facilities.

Operational Timetabling

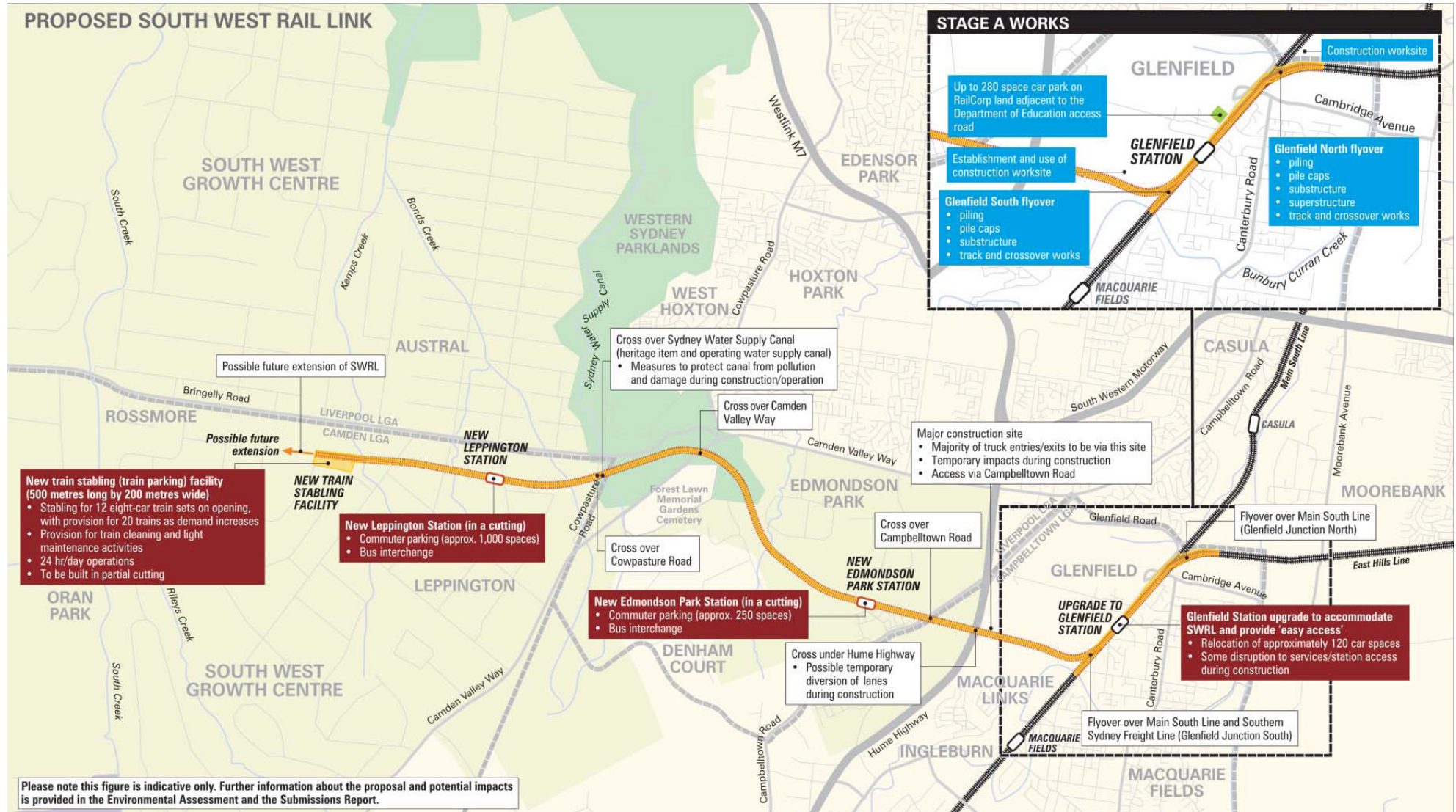
At the commencement of operations expected in 2012, the SWRL would provide eight train services from Leppington to the City during the morning peak (four via the East Hills Line and four via Granville) (see Table 2.3). Compared to existing, the SWRL would increase total morning peak rail services to the City from Glenfield by two trains per hour and to Blacktown by two trains per hour. Additionally, the SWRL would increase capacity on the East Hills Line, making it possible for the majority of City services from Glenfield during the morning peak to travel via the East Hills Line, which provides quicker travel times than via Granville. The indicative timetabling for 2012 is shown in Table 2.3.

Figure 2.3 Indicative Train Timetabling in 2012

Current timetable (AM Peak 1 hour)	Indicative 2021 timetable (AM Peak 1 hour)
<ul style="list-style-type: none"> 8 x East Hills Line (Macarthur/ Campbelltown to the City via Revesby); 2 x Main South Line (Campbelltown to the City via Granville); 4 x Main South Line (Glenfield to the City via Granville); and 2 x Cumberland Line (Campbelltown to Blacktown). 	<ul style="list-style-type: none"> 8 x East Hills Line (Macarthur/ Campbelltown to the City via Revesby); 4 x East Hills Line (Leppington to the City via Revesby); 4 x Main South Line (Leppington to the City via Granville); and 4 x Cumberland Line (Campbelltown to Blacktown).

In the long term (2017), SWRL services would be combined with the East Hill Line and Hornsby-Epping-Chatswood services, to form a new operating sector. Train timetabling for 2017 is not yet confirmed, however it is estimated that there would be 12-13 trains travelling from Leppington to the City via the East Hills Line in the AM peak and two trains travelling from Campbelltown to Leppington via the Main South Line in the AM peak.

Figure 2.2 SWRL Stage A and B works (Parsons Brinkerhoff, November 2006)



2.2 Proposal Need

Need for New Rail Line

A key objective of the NSW Government's approach to major land release is to ensure that key transport infrastructure is provided early, so that urban development in greenfield areas can be integrated with public transport, promoting sustainable transit oriented development. The area around Leppington and Edmondson Park currently has limited public transport provisions and is characterised by high car ownership and usage rates. The presence of reliable public transport as the area develops would help to influence travel behaviour away from motor vehicles towards more sustainable forms of transport. Strategic investigations into the public transport options for the area identified that a heavy rail option (such as the SWRL) would have significant advantages over light rail, bus transit way and bus network options with respect to financial feasibility, connectivity and patronage, and reducing vehicle kilometres travelled. The early introduction of the SWRL is considered key to facilitating sustainable transit-oriented development in the South West Growth Centre.

The SWRL would provide both existing and future residents with a high degree of access to public transport and, thereby, to employment, education, health, commercial services, and retail and recreation facilities. The proposal would increase access to the global arc (in particular, the Sydney Airport and Sydney CBD), as well as to regional and local centres. The SWRL would help meet the planned growth outcomes for the future centre of Leppington ('Major Centre') as provided in the Metropolitan Strategy and help consolidate the importance of existing centres (Liverpool and Parramatta) (also identified in the Metropolitan Strategy), by increasing access to and from these centres. The proposal would diversify employment opportunities and increase access to employment opportunities closer to residences. For these reasons, the proposal would facilitate the planned growth outcomes for the South West Growth Centre as a whole (proposed population of 270,000 people) by increasing the attractiveness of the new release areas to new residents and commercial development.

Access to high quality public transport would enable people of south western Sydney to participate in the global arc and surrounding centres, without high vehicle dependency and associated personal economic disadvantages (fuel and vehicle operation cost). Reduced car dependency would also have regional economic, social and environmental benefits by reducing negative externalities such as accidents, noise/air pollution, greenhouse gas emissions and energy consumption. Furthermore, reduced car dependency would have indirect road user benefits, by diverting commuters from road to rail, and thereby reducing congestion, improving travel time for road users and increasing the life of road infrastructure (and therefore the cost of road upgrade/ maintenance). Without the SWRL, increased demand for transport services from the development of the South West Growth Centre would need to be met from existing rail services along the Main South and East Hills Lines, and the existing arterial road network, leading to capacity and congestion constraints and reduced level of service. The cost of upgrading existing rail and road infrastructure (in existing developed areas), would be significant in comparison to the provision of new infrastructure in greenfield areas, as proposed.

The delivery of the SWRL is intrinsically linked to, and consistent with the objectives and planned outcomes of the *City of Cities - A Plan for Sydney's Future* (Sydney Metropolitan Strategy, December 2005); *State Infrastructure Strategy* (May, 2006); *State Plan – A New Direction for NSW* (November 2006); and *Urban Transport Statement* (November 2006), including:

- providing public transport system to support sustainable urban growth in north west and south west Sydney;
- improving efficiency and capacity of existing transport systems;
- implementing parking policy that complements public transport systems;
- encouraging increased use of public transport;
- improve connection between centres and access to services and employment; and
- reducing greenhouse gas emissions.

Each of the above documents specifically identifies the delivery of the Metropolitan Rail Expansion Program as a key objective.

Need for 2012 Start Up

The South West Rail Link is proposed to be delivered earlier (2012) than planned development within the South West Growth Centre. Apart from maximising the potential for land use development integration with public transport, the early delivery of the proposal would provide significant benefits to the operation of the existing rail network, which is predicted to be highly congested by that time. The additional train services from the SWRL would serve to increase capacity and relieve congestion on the existing East Hills Line and thereby improve levels of service, without the need for significant upgrade of the existing line.

Need for Stabling Facility

In addition to the need for a new service to the South West Growth Centre, there is specific need for new stabling capacity to be built into the new rail line proposal. A train stabling facility is required as a key component of the SWRL to support both rail patronage growth associated with the SWRL (i.e. from development of the South West Growth Centre), and additional passengers on the existing southern-western rail sector as a whole (i.e. Sector 2 of the Sydney metropolitan rail network comprising the Airport and East Hills Line, Main South Line (via Granville), Bankstown Line, and the Inner West Line). The stabling is required to store trains when they are not in operational use.

Currently, trains that operate within the Sector 2 network are stabled at Campbelltown, Liverpool, Flemington or Eveleigh, with Campbelltown stabling most of the trains needed for the Main South and East Hills Lines in the AM peak. However, due to capacity constraints, numerous Liverpool-commencement trains (Bankstown and Inner West Line) are also stabled overnight at Campbelltown. This means that up to four empty trains during the 1 hour morning peak, travel from Campbelltown northwards to Liverpool, restricting the number of City via East Hills trains to eight trains per hour. This places undue constraint on existing network efficiency and future growth requirements.

If stabling is not provided as part of the SWRL at east Rossmore, additional train stabling would be required at Campbelltown or elsewhere, resulting in significant future empty running of trains to the point of demand. In summary, stabling is needed as part of the SWRL to:

- reducing the need to run empty trains to meet peak hour train positioning requirements and relieving congestion by minimising empty running of trains;
- providing additional train storage capacity for increased services for the outer metropolitan area and south-west areas in particular; and
- providing capacity benefits for rail services between Macarthur and Glenfield.

Need for Stage A (Glenfield North Flyover) Works

Currently, the existing rail corridor at Glenfield services three passenger services and one freight service:

- East Hills Line services between Campbelltown/ Macarthur and the City via Airport or Sydenham;
- Main South Line services between Campbelltown and the City via Liverpool, Fairfield and Granville, some of which terminate at Glenfield;
- Cumberland Line services between Campbelltown and Blacktown; and
- freight services between the Australian Rail Track Corporation (ARTC) network south of Macarthur and Sefton Park Junction.

The existing at-grade configuration of the rail junction north of Glenfield Station, where trains have to wait to cross the path of trains travelling in the opposite direction, limits the capacity of the junction to approximately 10 train movements per hour. Such constraints mean that, without upgrade, the junction does not have the capacity to accommodate future growth on the network, including additional SWRL services. A grade separated flyover is proposed to be built as part of the Stage A works, to separate out the various rail services (existing and planned), and thereby accommodate future operational service requirements. The predicted growth on the Campbelltown to East Hills Line means that a flyover would need to be constructed at Glenfield north junction regardless of whether the SWRL (Stage B) works proceed, to ensure adequate level of service on the existing south west rail network.

The flexibility to allow the Glenfield Flyover to be operational earlier than the remainder of the project (i.e. by 2011 compared to 2012), would help ease the extreme operational loading pressures predicted for that time along the East Hills Line during the AM peak. While additional services (as generated by the SWRL) would be required to ease congestion *levels*, it is considered that the operation of the upgraded junction (the North Flyover), would at least alleviate the problem of rail crossing *delays* (so that delays are not added to the problems of congestion), and thereby provide some operational relief to existing passenger services during the AM peak. On these grounds there is justification for the Glenfield Flyover to be open earlier than the remainder of the proposal.

On the basis of operational benefits to the existing rail network, the construction and operation of the Stage A Glenfield Flyover is justified independent of the remainder of the SWRL.

Department's Position

The SWRL is a key infrastructure initiative that has the potential to underpin sustainable urban growth in the future growth areas of south western Sydney. The Department considers that the SWRL would provide considerable benefits to the South West Growth Centre and Sydney as a whole by encouraging the development of sustainable transit oriented urban communities in south western Sydney; increasing the efficiency of the existing transport system; increasing access to employment and social opportunities within existing and planned centres (particularly to the 'Global Arc', which is of significant importance to the Sydney's economy); and reducing negative externalities and costs associated with car dependency including green house gas emissions, road accidents and road maintenance costs.

Furthermore, the SWRL is wholly consistent with strategic land use policy for Sydney, as identified in the *City of Cities - A Plan for Sydney's Future* (Sydney Metropolitan Strategy, December 2005); *State Infrastructure Strategy* (May, 2006); *State Plan – A New Direction for NSW* (November 2006); and *Urban Transport Statement* (November 2006). Not proceeding with the proposal would mean that urban growth would outstrip existing public transport capacity, having detrimental consequences to Sydney's:

- Global economy - with reduced access to the employment opportunities in the 'Global arc' and increased costs of maintenance of existing road and rail infrastructure;
- living standards - with personal financial costs of car dependency, reduced access to social and economic opportunities and associated equity; and
- environmental quality - with greenhouse gas and air quality implications of increased car dependency.

The provision of heavy rail has been identified to provide significant advantages in comparison to other public transport modes with respect to maximising connectivity and patronage to public transport, which would be key to facilitating sustainable transit-oriented development in the new release areas. The heavy rail option was also found to be more economically and financially feasible than other transport modes. For the above reasons the Department considers the SWRL as a whole to be justified and in the public's interest.

The Department further considers that the proposal to develop the SWRL in two stages is justified as this would enable Stage A to be built independently of Stage B, to address significant capacity constraints expected to occur along the existing rail network in the near future. The development of the proposal in two stages would provide flexibility to enable Stage A (which would provide significant operational advantages to the existing rail network) to be constructed earlier if required, without the need to wait for the detailed design of the entire proposal to be finalised (Stage B).

3 STATUTORY CONTEXT

3.1 Major Project and Concept Plan

The South West Rail Link (SWRL) was declared to be a proposal to which Part 3A of the *Environmental Planning and Assessment Act, 1979* (EP& A Act) applies by Ministerial Order on 7 April 2006.

On 3 July 2006, the Minister for Planning authorised the submission of a concept plan for the SWRL, pursuant to Section 75M of the EP& A Act.

3.2 Permissibility

The SWRL would be located within the Local Government Areas of Liverpool, Campbelltown and Camden. As summarised in Table 3.1, the identified route corridor is not prohibited in any of the affected land use zonings. As described in Section 2.1, the locations of ancillary facilities are largely unknown at this stage and may be located outside of the current defined corridor. The Proponent would need to consider the zoning of any additional affected lands as part of further approvals.

Table 3.1 Relevant Land Zoning

Environmental Planning Instrument and Zone	Permissibility
<i>Sydney Regional Environmental Plan No.31 – Regional Parklands</i>	With consent
<i>Campbelltown (Urban Area) Local Environmental Plan (LEP) 2002</i>	
1(a) Rural	With consent
5(a) Special Uses 'A'	Without consent
<i>Campbelltown Local Environmental Plan (LEP) No. 112 – Macquarie Field House</i>	With consent
<i>Liverpool Local Environmental Plan (LEP) 1997</i>	
1(a) Rural	With consent
1(b) Rural – Future Urban	With consent
5 (a) Special uses	With consent
5 (a) Special uses – Public transport	With consent
5 (b) Special uses – Arterial Road	With consent
<i>Camden Local Environmental Plan (LEP) No. 48</i>	With consent
1(b) Rural 'B'	

Land zonings within the South West Growth Centre reflects existing land use. Only at the Edmondson Park Release Area has re-zoning occurred to reflect planned future land use (i.e. through amendments to the Campbelltown and Liverpool Local Environmental Plans in March 2006). The proposed SWRL was taken into account in this rezoning process, with land known (with a high degree of certainty) to be required for the new rail line designated as a 'public transport' or 'special use' corridor. However, where a large degree of uncertainty existed about the likely location of the route alignment, the rezoning of those sections of the Release Area was deferred until 'a preferred rail alignment has been identified and endorsed by the Department of Planning' (Clause 2(c) of the Liverpool LEP).

This means that re-zoning of the 'deferred area' will not be progressed by Council, until the Proponent has obtained planning approval for the SWRL route corridor (which is the subject of current concept plan application). Until that time, the current zoning of the area ('1(a) Rural' under the Liverpool LEP) would apply. As shown in Table 3.1, the proposal is permissible under this zoning.

In addition to the above, the amendments to the Campbelltown and Liverpool LEPs provided that the rezonings of Commonwealth owned defence land (the Ingleburn Military Area) will not take effect until the land is dedicated to the State Government, which is currently being progressed. Until then the existing zoning ('5(a) Special Use') applies. As shown in Table 3.1, the SWRL is permissible under the existing LEP zonings.

3.3 Relevant Environmental Planning Instruments

There are no environmental planning instruments (EPIs) applying to the proposal that substantially govern the carrying out of the development with the exception of *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (Growth Centres SEPP).

The Growth Centres SEPP applies to the entire SWRL. The aims of this SEPP are to:

- a) *co-ordinate the release of land for residential, employment and other urban development in the north west and south west growth centres of the Sydney Region;*
- b) *enable the Minister from time to time to designate land in those growth centres as ready for release for development;*
- c) *provide for comprehensive planning for those growth centres;*
- d) *enable the establishment of vibrant, sustainable and liveable neighbourhoods that provide for community well-being and high quality local amenity;*
- e) *provide controls for the sustainability of land in those growth centres that has conservation value;*
- f) *provide for the orderly and economic provision of infrastructure in and to those growth centres;*
- g) *provide development controls in order to protect the health of the waterways in those growth centres;*
- h) *protect and enhance land with natural and cultural heritage value; and*
- i) *provide land use and development controls that will contribute to the conservation of biodiversity.*

The proposal is consistent with the aims of the Growth Centres SEPP as it would provide vital transport infrastructure to the Growth Centre which would help facilitate its planned growth. The provision of this infrastructure early would promote sustainable land use development, by facilitating transit oriented development and maximising complementary land use integration. The Proponent has undertaken an environmental assessment of the proposal at a concept level, enabling impacts on ecological and cultural heritage, waterways and other matters, to be considered at an early stage, where there is still scope for detailed design to be refined to minimise impacts where required. Furthermore, the assessment has identified a preferred route alignment based on a comparative assessment of economic, social and biophysical factors.

Precinct planning has not yet been completed for the majority of the Growth Centre and consequently, landuse zoning and associated development controls yet to be substantially defined for the majority of the area. Until precinct planning occurs, Part 4 of the SEPP specifies matters that must be considered by a consent authority, prior to granting consent, to ensure that proposed development is not inconsistent with future land use. The project is an integral component of the South West Growth Centre, and planning to date for the Growth Centre has been undertaken with the requirements for the SWRL in mind. Specifically, the establishment of the SWRL corridor early would enable planned landuse to be integrated with the rail line, thereby minimising the likelihood of future landuse conflicts. For these reasons, the Department considers that the project would be consistent with the Growth Centre SEPP's objectives of minimising potential conflicts with planned future landuse.

Part 5 of the SEPP identifies additional matters that must be considered by a consent authority for development within land identified as 'Flood Prone and Major Creek Land' by the SEPP's Development Control Map. The proposal would affect Flood Prone and Major Creek Land, identified near Rossmore. The Department has considered these matters in its assessment of the hydrological impacts of the Proposal and considers the impacts of the proposal can be addressed as part of further detailed design (see Section 5.3.3).

Part 6 of the SEPP applies to vegetation within land identified by Part 3 of the SEPP, and 'Transitional Land' and 'Flood Prone and Major Creek Land' identified in the SEPP's Development Control Map. The Proposal does not affect any 'Transitional Lands' or land identified in Part 3 of the SEPP but, does affect 'Flood Prone and Major Creek Land'. Part 6 of the SEPP prohibits the clearing of native vegetation from lands subject to this Part, without development consent or an approval under Part 3A of the EP&A Act and specifies the matters that must be considered by a consent authority, with respect to a development that would affect vegetation on land subject to this Part. The Department has considered these matters

in its assessment of the ecological impacts of the proposal and considers the impacts of the proposal can be appropriately offset by relevant measures (see Section 5.3.4).

The Department is satisfied that the proposal as whole is consistent with the objectives and requirements of the Growth Centres SEPP.

3.4 Objects of the EP&A Act

Section 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) details the objects of the legislation. The objects of the Act are:

- (a) *to encourage:*
 - (i) *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment;*
 - (ii) *the promotion and co-ordination of the orderly and economic use and development of land;*
 - (iii) *the protection, provision and co-ordination of communication and utility services;*
 - (iv) *the provision of land for public purposes;*
 - (v) *the provision and co-ordination of community services and facilities;*
 - (vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats;*
 - (vii) *ecologically sustainable development;*
 - (viii) *the provision and maintenance of affordable housing; and*
- (b) *to promote the sharing of the responsibility for environmental planning between the different levels of government in the State; and*
- (c) *to provide increased opportunity for public involvement and participation in environmental planning and assessment.*

Of particular relevance to the environmental impact assessment and eventual determination of the subject concept plan application by the Minister are those objects stipulated under section 5(a). Relevantly, the objects stipulated under (i), (ii), (iv), (vi) and (vii) are significant factors informing determination of the application (noting that the proposal does not raise significant issues relating to matters such as communication and utility services, community services and facilities, or affordable housing). With respect to ecologically sustainable development, the EP&A Act adopts the definition in the *Protection of the Environment Administration Act 1991*, including the precautionary principle, the principle of inter-generational equity, the principle of conservation of biological diversity and ecological integrity, and the principle of improved valuation, pricing and incentive mechanisms.

It is important to recognise, that while the EP&A Act requires that the principles of ecologically sustainable development be encouraged, it provides other objects that must equally be included in the decision-making process for the subject proposal. The Department has considered the need to encourage the principles of ecologically sustainable development, in addition to the need for the proper management and conservation of natural resources such as natural areas and water resources; the promotion of orderly, economic use and development of land; and the provision of land for public purposes in Section 5 of this report. The agency and community consultation undertaken as part of assessment process (see Section 4), addresses objects 5(b) and (c) of the Act.

3.5 Minister's Approval Power

On 12 July 2006, the Director-General issued Environmental Assessment Requirements for the preparation of a concept plan for the SWRL, pursuant to Section 75F of the EP&A Act. The Proponent submitted a concept plan and Environmental Assessment with the Director-General in November 2006. Following review, it was concluded that the Environmental Assessment addressed the Director-General requirements pursuant to Section 75H and 75I(2)(g) of the EP&A Act. A copy of the Environmental Assessment is attached (see Appendix C).

The concept plan and Environmental Assessment were exhibited between 22 November 2006 and 2 February 2007, more than twice the minimum statutory period. The Environmental Assessment and information on the exhibition (including how to make a submission) was made available from the Department's website.

The Department has met its statutory obligations so that the Minister can make a determination regarding the proposal.

3.6 Nature of the Recommended Approval

In granting concept plan approval, the Minister has the power under Section 75P of the EP&A Act to determine that no further assessment is required for the proposal or any part of the proposal if he considers the level of detail provided in the concept plan is sufficient to also support project approval for all or part of the proposal, at that time. In this case the Minister can grant project approval to all or parts of the proposal, providing the Proponent approval to construct that part of the proposal (or the entire proposal).

If on the other hand the Minister determines that the level of detail provided in the concept plan is insufficient to support project approval for all or part of the proposal, the Minister can specify that further assessment of the proposal (or part) is required under Part 3A, 4 or 5 of the EP&A Act and outline the further assessments requirements that the Proponent must address in seeking further approval.

In summary there are three questions that the Minister must turn his mind to:

- whether the assessment for the SWRL demonstrates that the proposal as a whole is on balance justified and in the public interest, to warrant concept plan approval;
- whether sufficient assessment has been undertaken for any part of the proposal to support project approval (i.e. no further assessment requirements) for that part;
- where sufficient assessment has not been undertaken to support project approval, what further assessment requirements are necessary for the proposal (or part) and under what part of the Act, those further approvals should be sought by the Proponent.

The Department's assessment of these matters is discussed in detail in Sections 2, 5 and 6 of this report and summarised below. In relation to the first matter, the Department is satisfied that the Proponent's assessment has addressed the Director-General's environmental assessment requirements, and that the preferred proposal has been designed to balance technical, economic, social and environmental factors. Furthermore, the Department is satisfied that the proposal is wholly consistent with strategic planning objectives including as provided in the State Plan and would provide considerable benefits to the South West Growth Centre and Sydney as a whole. For these reasons, the Department considers the proposal, to be justified and in the public's interest and should be approved.

The Department recommends concept plan approval for the SWRL due to the large-scale, long-term and complex nature of the proposal. A concept plan approval would allow the rail corridor (including key design elements such as route alignment, station and stabling yard locations) to be established, while deferring their detailed design. This would enable the Proponent to time the detailed design of the proposal in line with landuse planning for the surrounding new suburbs, maximising the potential for land use and transport planning integration; while still providing certainty to the public and surrounding land owners of the general footprint of the rail line and enabling property acquisition of affected landowners to commence early.

In relation to the second matter, the Proponent has claimed that the Stage A works are sufficiently well defined, and the assessment for these works sufficiently well advanced, such as to allow the Minister to determine that no further assessment of these works is required (and hence grant project approval for Stage A at the same time that concept plan approval is granted for the entire proposal). The Department's assessment indicates that sufficient assessment has been undertaken for all aspects of Stage A, with the exception of the car parking provisions for which insufficient flora and fauna, indigenous heritage and operational traffic assessment has been undertaken. Notwithstanding this the

Department considers that there has been insufficient consideration of parking options at Glenfield at this time, to warrant project approval of the particular parking option proposed as part of Stage A. For these reasons, the Department recommends that all aspects of Stage A, except for the proposed car parking provisions, be granted project approval and that assessment of car parking options for Glenfield be deferred to Stage B.

With respect to the third matter, the Department considers that, with the exception of Stage A (discussed above), other aspects of the SWRL, collectively referred to as Stage B, are not sufficiently well defined to warrant project approval. However, the Department considers that the issues that remain to be addressed for the Stage B – Glenfield Station works (which comprise the upgrade of the station itself and the provision of various mode-of-access facilities including bus and parking provisions), are unlikely to have the potential to generate significant environmental impacts. The Department notes that the assessment and delivery of State infrastructure, which does not constitute a significant impact to the environment and is not of State or regional planning significance, would normally be carried out under Part 5 of the EP&A Act (rather than Part 4), which enables public authority Proponents (such as the Transport Infrastructure Development Corporation) to self assess and determine projects under the requirements of that Part. The Department is satisfied that given the nature and scale of works, the Glenfield Station upgrade works in isolation would not constitute a Major Project of regional and State significance, requiring the Minister's consideration. Consequently, the Department supports this component of the Stage B works being self-assessed and determined by the Proponent under Part 5 of the Act. Notwithstanding, the Department considers that the scope of assessment undertaken by the Proponent under Part 5, should be directed by the Minister, and has in this regard recommended further assessment requirements in relation to transport and traffic, noise, ecology, heritage and visual matters.

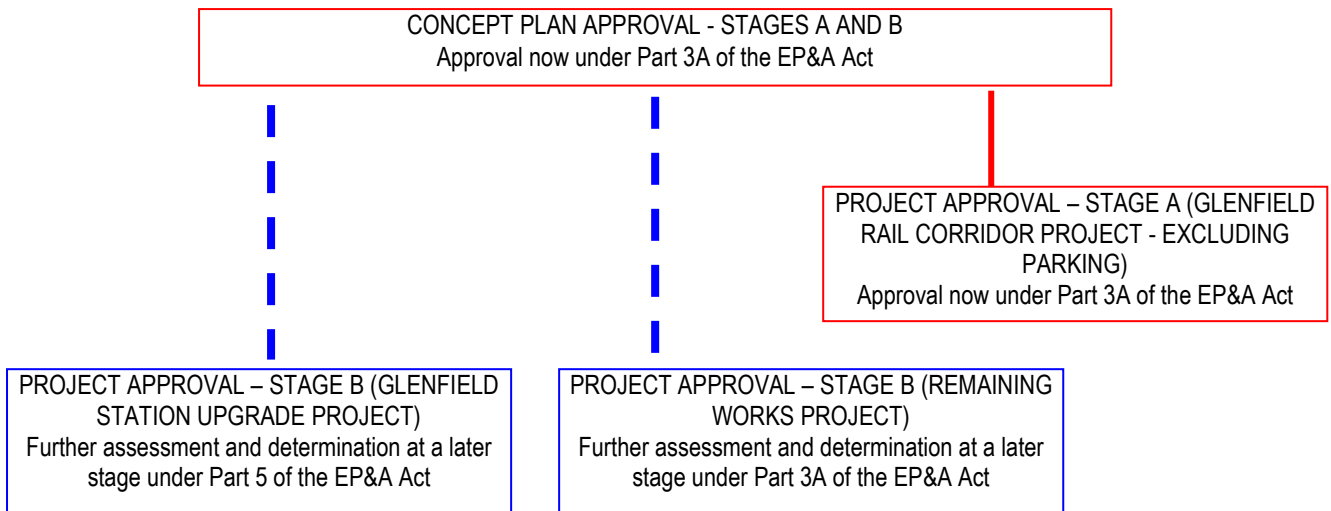
In comparison to the Stage B-Glenfield Station works, the issues that remain to be assessed for the remaining Stage B works (i.e. the new rail corridor from Glenfield to Rossmore) are likely to entail complex environmental and landuse issues requiring detailed consideration and resolution (as these components would traverse largely greenfield areas designated for redevelopment as part of the South West Growth Centre and therefore require coordination with the requirements of the Growth Centre). Consequently, the Department considers that further assessment and approval for the remainder of the Stage B works should be progressed under Part 3A rather than Part 5 of the Act. Because of the State and regional planning implications of the project and the fact that the project would traverse multiple LGAs, the Department considers that carriage of the project would best rest with the Minister under Part 3A of the EP&A Act. To ensure appropriate design development of the remaining Stage B works, the Department has recommended stringent further assessment requirements for the Stage B (remaining works) project, in relation to traffic and transport, noise, hydrology, ecology, heritage and visual impacts, which the proponent must address in seeking further project approvals for the works under Part 3A of the EP&A Act.

In summary, the Department recommends that concept plan approval be granted for the entire SWRL as proposed, and that as part of that concept plan approval, the Minister determine that:

- with the exception of the proposed car parking provisions, no further assessment is required for the Stage A (Glenfield rail corridor) project;
- further assessment is required for the Stage B (Glenfield Station) project (including relevant parking provisions) under Part 5 of the EP&A Act, in relation to transport and traffic, noise, ecology, heritage and visual impacts; and
- further assessment is required for the Stage B (remaining works) project under Part 3A of the EP&A Act, in relation to transport and traffic, noise, hydrology, ecology, heritage and visual impacts.

At the same time that concept plan approval is granted for the entire proposal, it is recommended that project approval is granted for all elements of Stage A with the exception of the car parking provisions. The nature of the recommended approval is summarised in Figure 3.1.

Figure 3.1 Nature of Recommended Approval



4 CONSULTATION AND ISSUES RAISED

4.1 Summary of Submissions

A total of 38 public submissions were received on the proposal. Of these 21 % expressed support for the SWRL as proposed; 21% expressed in principal support for the SWRL however expressed preference for various alternative components; 8 % objected to the SWRL and 50% did not state a position. In addition 15 agency and three council submissions were received, none raising objection to the proposal.

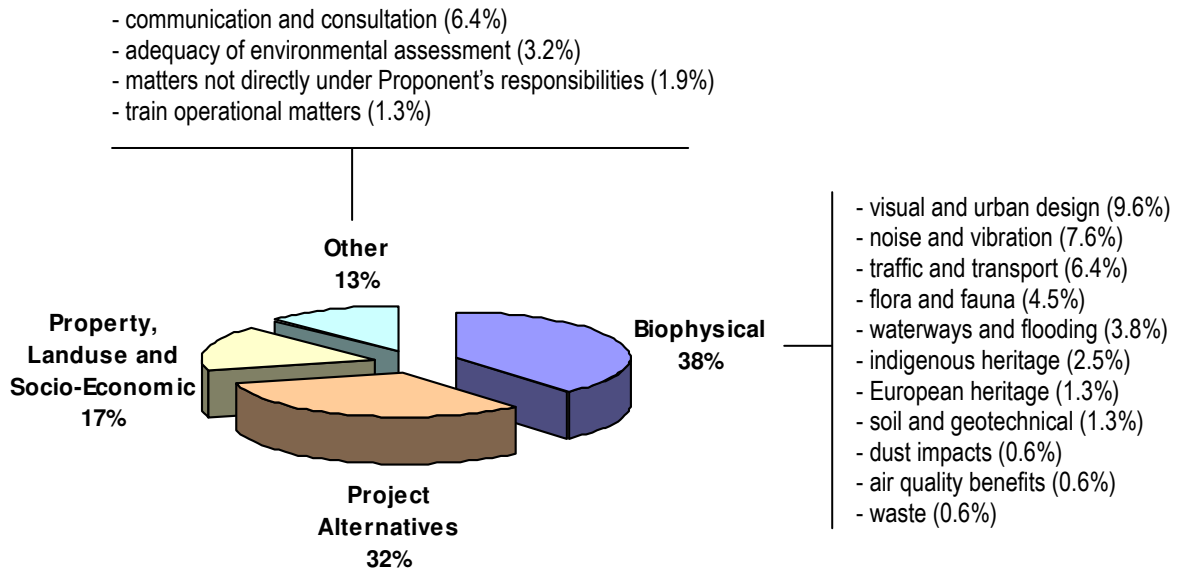
Copies of all submissions received on the proposal were forwarded to the Proponent and the Department of Environment Climate Change (DECC) in accordance with section 75H(5) of the EP&A Act. The Proponent was directed to respond to the issues raised in accordance with section 75H (6) of the EP&A Act. The Submissions Report prepared by the Proponent was subsequently made publicly available on the Department's website.

In addition to responding to submissions, the Proponent's Submissions Report detailed minor amendments to the proposal for which approval was being sought (see Section 2.1 of this report). Due to the minor nature of the amendments a Preferred Proposal Report was not considered necessary.

4.2 Public Submissions

A breakdown of issues raised in public submissions is presented in Figure 4.1, showing the number of times each issues was raised as a percentage. No submissions raised specific concerns regarding the Stage A works. While four of the 38 submissions raised concerns specific to Glenfield, these submissions did not distinguish between potential impacts from Stage A versus Stage B. The Glenfield-specific issues have been included in the overall count of issues presented below.

Figure 4.1: Breakdown of Issues in Public Submissions



Of the **biophysical** category, the Department is satisfied that issues relating to soil and geotech, dust and waste management have been adequately addressed in the Proponent's Submissions Report (Section 3.3) and these issues have not be considered further in this report. The air quality benefits of the proposal are considered in Section 2.2 of this report. The remaining key biophysical issues have been considered by the Department in Section 5.3 of this report.

The **proposal alternatives** category comprises all issues raised in relation to alternative proposal components including: preference for an alignment south of the Forest Lawn Cemetery rather than north of the Cemetery as proposed (4.5%); perceived planning deficiencies in alignment identification (3.8%); cost of the proposed alignment (4.5%); impact of alignments on the Western Sydney Parklands (1.9%); suggested refinements to the preferred alignment (6.4%); suggested refinements to the vertical alignment (4.5%); support for extension of the SWRL to Bringelly (1.9%); suggested changes to the Glenfield rail precinct (0.6%); support for station locations as proposed (1.9%); and objection to station locations as proposed (1.9%). Matters relating to proposal alternatives have been considered by the Department in Section 5.1.

The **property, land use and socio-economic** category comprised: acquisition and property impacts (12.1%); impacts to existing land use and infrastructure (2.5%); social amenity impacts (1.3%); and business impacts (0.6%). These matters have been considered by the Department in Section 5.2.

Other matters raised in submissions included: communication and consultation; the adequacy of information presented in the Environmental Assessment; train operational matters; and matters not directly within the Proponent's responsibilities, including the special infrastructure levy and the provision of other transport facilities such as bus networks.

In general, submissions relating to communication and consultation either raised concerns about the level of consultation/communication undertaken on the proposal and/or recommended that further detailed design be undertaken in consultation with relevant agencies, stakeholders and the community. Consultation undertaken by the Department is detailed in Section 2 of this report. In addition to the statutory requirements undertaken by the Department, the Proponent also undertook extensive consultation during the Environmental Assessment exhibition including, making the Environmental Assessment available on its website, providing free CD ROM copies of the Environmental Assessment on request; distributing approximately 3,500 newsletters to residents and businesses surrounding the proposal corridor and specific letters to landowners within the proposal corridor; and conducting three community information sessions at various locations along the corridor.

The Department is satisfied that the level of consultation undertaken meets statutory requirements, is commensurate with the significance of the proposal, and addresses the Director-General's requirements. With respect to further consultation, the Department fully supports the detailed design and implementation of the proposal in consultation with relevant agencies, stakeholders and the community, and has incorporated this requirement into its recommended conditions of approval. It is noted that the Proponent has also made commitments in this regard in its Submission Report (Statement of Commitments: A9, A10, B3 and B4).

Submissions relating to the adequacy of the Environmental Assessment raised concerns regarding the lack of detail of impact assessment. As noted in Section 3.5 of this report, the Environmental Assessment was reviewed prior to exhibition and was considered to meet the Director-General requirements pursuant to Section 75H(2) of the EP&A Act. It is noted that the Proponent has provided clarification to a number of issues that were described incorrectly in the Environmental Assessment, in Section 4.9 of the Submissions Report.

The Department considers that the issues raised in submissions regarding train operations and matters not under the Proponent's responsibilities, have been adequately responded to in the Submissions Report (Section 3.3) and these issues have not be considered further in this report.

4.3 Agency Submissions

Issues raised by agency and Council submissions are summarised in Table 4.1 below. In addition to the specific issues discussed below, all agencies recommended that there be continued engagement with public authorities during detailed design development and implementation of the proposal. The Department supports this and has incorporated recommended conditions of approval in this regard.

Table 4.1. Agency Submissions

Agency	Proposal Issues	Stage A Specific Issues	Department's Consideration
Department of Environment and Climate Change (DECC)	Raised no objection to the proposal in principle. Recommended that detailed ecological, heritage, noise and vibration assessments form part of any future application for the Stage B works. Concerns were also raised regarding the proposed lowering of watercourse 4 and 6.	Raised no objection to the Stage A works in principle, however raised concerns that insufficient ecological and indigenous heritage assessment had been undertaken of the proposed car park site and the James Meehan construction site to warrant project approval. In relation to noise, DECC required vibration monitoring to be undertaken at heritage structures (e.g. Hurlstone Agricultural College) during construction and post-operational compliance monitoring to confirm of noise modelling for Stage A.	Noise & Vibration – Section 5.3.2 Surface Water and Flooding – 5.3.3 Flora and Fauna – Section 5.3.4 Indigenous Heritage – Section 5.3.5
Department of Water and Energy (DWE)	Raised no objection to the proposal in principle. Strongly objected to the lowering of watercourses 4 and 6 for the construction of the Edmondson Park Station and recommended that all waterways adjacent to existing or proposed natural areas (i.e. particularly land zoned National Park Reserve or Recreation within the Edmondson Park Release Area), is bridged rather than crossed by culverts. Also recommended that ecology and access impacts to the SREP 13 Parklands be appropriately mitigated and offset.	Raised no objection to the Stage A works. Supported the Proponent's commitment to work with Campbelltown Council on flooding matters at the James Meehan construction work site	Proposal Alternatives - Section 5.1 Surface Water and Flooding – Section 5.3.3 Flora and Fauna – Section 5.3.4
Department of Primary Industries (DPI)	Raised no objection to the proposal. Recommended that the detailed design consider the <i>Guidelines for the Design of Fish and Fauna Friendly Waterway Crossings</i> . Noted that the subject site is underlain by coal resources and that the proposal should not preclude future potential for the mining of that resource.	No comments made.	Surface Water and Flooding – Section 5.3.3 The issue of coal resources has been addressed in Section 3.4 of the Proponent's Submissions Report
Growth Centres Commission (GCC)	Raised no objection to the proposal. Recommended that detailed noise assessment should consider implications of landuse based mitigation measures on the development potential of the Growth Centre; and that traffic and transport assessment /design should consider means for maximising integration with the other transport (road and bus) provisions proposed for the Growth Centre.	No comments made.	Traffic and Transport – Section 5.3.1 Noise & Vibration – Section 5.3.2

Agency	Proposal Issues	Stage A Specific Issues	Department's Consideration
Ministry of Transport (MoT)	Expressed support for the proposal. Recommended that further assessment should focus on: maximising integration of interchange facilities with the bus services proposed for the Growth Centre; maximising safety and accessibility in station design; maximising pedestrian and cycling links; supplying car parking provisions that are consistent with Government land use objectives for Edmondson Park and Leppington; and managing construction traffic impacts.	No comments made.	Traffic and Transport – Section 5.3.1
RailCorp	Expressed support for the proposal. Recommended that further design/ assessment should focus on: integration of SWRL with other transport provisions (existing and proposed) so as to maximise patronage to the new line; and integration of potential noise mitigation requirements into design development.	No comments made.	Traffic and Transport – Section 5.3.1 Noise & Vibration – Section 5.3.2
Road and Traffic Authority (RTA)	Raised no objection to the proposal. However raised concerns regarding the proposed cut and cover construction methodology across the Hume Highway (expressing preference for tunnel construction); objected to any construction methodology at road crossings that required full road closures (expressing preference for night time closures only or none at all); required that road crossings not preclude future upgrade/widening requirements; and that high quality construction traffic management be implemented in consultation with the RTA.	No comments made.	Property, Landuse and Socio-Economic – Section 5.2 Traffic and Transport – Section 5.3.1
Landcom	Expressed support for the proposal. Strongly support changes to waterways 4 and 6 as proposed in the Environmental Assessment, noting that planning for the Edmondson Park Town Centre had been based on these waterways been altered (i.e. diversion of waterway 4 to enable adequate drainage to the Town Centre and lowering of crossing 6 to enable the Edmondson Park station to be located in cutting and thus maximising integration with the Town Centre). Recommended measures for integrating the SWRL to the Edmondson Park Release Area including: maximising pedestrian and cycle access across the rail corridor; noise mitigation to suit future land use; parking provisions consistent with the Government policy; land acquisition that minimises severance and maximises future development potential; and development of complementary landuse in surplus acquisition land. Suggested that the majority of rail line within Edmondson Park town centre be located in cut and cover (to maximise connectivity north-south of the rail line and minimise visual severance); and relocate the proposed construction site at Edmondson Park north (rather than south) of the rail line. Additionally strongly support for extension of SWRL to Bringelly.	Raised no objection to the Stage A works, however raised concern that the increased role of Glenfield as a transport hub may impact on the economic viability of Edmondson Park.	Proposal Alternatives –Section 5.1 Property, Landuse and Socio-Economic – Section 5.2 Traffic and Transport – Section 5.3.1 Noise & Vibration – Section 5.3.2 Surface Water and Flooding – Section 5.3.3 Visual – Section 5.3.6

Agency	Proposal Issues	Stage A Specific Issues	Department's Consideration
Sydney Catchment Authority (SCA)	Raised no objection to the proposal. Required that further assessment focus on defining impacts to the Sydney Water Supply Canal (construction and operation) with respect to vibration, water quality/storm water and heritage, public safety, security and operational capacity.	No comments made.	Property, Landuse and Socio-Economic – Section 5.2 Noise & Vibration – Section 5.3.2 Heritage – Section 5.3.5
Department of Education and Training (DET)	Raised no objection to the proposal. Required that further assessment consider noise, dust, access, safety and traffic (construction traffic and haulage) impacts to schools adjacent to the proposal corridor, and define any impacts within school land.	Raised no objection to the Stage A works. Required impacts to schools in the vicinity of Glenfield to be considered.	Property, Landuse and Socio-Economic – Section 5.2 Traffic and Transport – Section 5.3.1 Noise & Vibration – Section 5.3.2 Dust – the Proponent's Statement of Commitments A27
Sydney Water Corporation	Raised no objection to the proposal. Required that further design/ assessment consider impacts to existing and proposed Sydney Water utility infrastructure.	No comments made.	Property, Landuse and Socio-Economic – Section 5.2
Sydney Ports	Expressed support for the proposal as it would support efficient freight movement by ensuring separation of freight rail and passenger rail (i.e. the Glenfield South flyover). Required that impacts to existing freight rail operations be minimised during construction.	Raised no objection to the Stage A works. Required that impacts to existing freight rail operations be minimised during construction.	Property, Landuse and Socio-Economic – Section 5.2 Traffic and Transport – Section 5.3.1 Noise & Vibration – Section 5.3.2
Australian Rail Track Corporation (ARTC)	Expressed in principle support for the proposal.	Raised no objection to the Stage A works, as long as design and construction is coordinated with the ARTC, so that impact to the Southern Sydney Freight Line and potential cumulative impacts during construction can be addressed.	Property, Landuse and Socio-Economic – Section 5.2
Commonwealth Department of Defence	Raised no objection to the proposal. Required clarification of various misdescriptions in the EA. Further (proposal-level) assessment would need to consider impacts to Matters of National Environmental Significance (NES).	No comments made.	Clarifications provided in Sections 3.4 and 4.9 of Submissions Report the Proponent's Statement of Commitment B26
Western Sydney Regional Organisation of Councils (WSROC)	Expressed strong support for the proposal and for its extension to Bringelly. Required further design development/ assessment to focus on: integration of SWRL with planned bus corridors for the Growth Centre; develop high quality station facilities (considering local traffic, kiss and ride facilities, cyclist and pedestrian provisions, transfer between bus and rail, and taxi facilities); and provision of adequate parking at new stations commensurate with need.	Raised no objection to the Stage A works. Required that the proposal be integrated with Southern Sydney Freight Line to minimise potential conflicts.	Proposal Alternatives - Section 5.1 Traffic and Transport – Section 5.3.1

Agency	Proposal Issues	Stage A Specific Issues	Department's Consideration
Campbelltown Council	<p>Raised no objection to the proposal. Required further consideration of the following matters: provision of parking to meet commuter parking demand and to offset lost parking (prior to removal of any parking); impacts to retail parking on Railway Parade; operational arrangements for pedestrians on Railway Parade; construction arrangements for bus, taxi and kiss & ride at Glenfield station; access to Glenfield station (including across the rail corridor) to be maintained during construction; traffic management plans to consider impacts to intersection level of service and be endorsed by Council; ensure minimal road closures of the Hume Highway, Campbelltown Road and Camden Valley Way during construction; works near Council's proposed flood detention basin to be designed to minimise flooding impact, in consultation with Council; appropriate mitigation of noise impacts; and community to be provided opportunity to have input into the urban design of the flyovers.</p>	<p>Raised no objection to the Stage A works. Of the Council's issues, the following are relevant to the Stage A works: provision of parking; access to Glenfield station (including across the rail corridor) to be maintained during construction; traffic management plans to consider impacts to intersection level of service and be endorsed by Council; works near Council's proposed flood detention basin to be designed to minimise flooding impact, in consultation with Council; and the public to be provided the opportunity to have input into the urban design of the flyovers.</p>	<p>Traffic and Transport – Section 5.3.1 Noise & Vibration – Section 5.3.2 Surface Water and Flooding – Section 5.3.3 Visual – Section 5.3.6</p>
Liverpool Council	<p>Expressed support for the proposal as well for extension to Bringelly. In line with Landcom, Council strongly supported the vertical alignment of the Edmondson Park Rail station to remain in cutting so as to maximise integration of the station with the new town centre. In this regard Council, objected to crossings 6 and 4 not being lowered/diverted, if this meant that the vertical alignment of the station would have to rise. Required further consideration of following matters: impact and offset requirements for the 'deferred area' within Edmondson Park (including ecology and heritage); implications of noise and vibration mitigation measures on the future development potential of the surrounding area and developer costs; further detailed assessment of ecology and hydrological impacts (including ecological impacts of proposed alterations to water courses and impacts to previously identified biodiversity corridor).</p>	<p>No comments made (Stage A works not within Liverpool LGA).</p>	<p>Proposal Alternatives - Section 5.1 Noise & Vibration – Section 5.3.2 Surface Water and Flooding – Section 5.3.3 Flora and Fauna – Section 5.3.4 Indigenous Heritage – Section 5.3.5</p>
Camden Council	<p>Raised no objection to the proposal. Required further detailed assessment/ design development to focus on: provision of commuter parking at new station commensurate with need; high quality bus interchange design; maximising pedestrian and cycle links; noise mitigation options (land use and at source) for stabling facility; integration of proposal with precinct planning for the new Leppington Town Centre; and land acquisition that does not prejudice the future development potential of land.</p>	<p>No comments made (Stage A works not within Camden LGA).</p>	<p>Property, Landuse and Socio-Economic – Section 5.2 Traffic and Transport – Section 5.3.1 Noise & Vibration – Section 5.3.2</p>

5 ASSESSMENT OF ENVIRONMENTAL IMPACTS

The Department's assessment has focused on matters identified by the Department, public submissions, and agency submissions as key issues associated with the proposal, that being: proposal alternatives; property and land use; and key biophysical issues (traffic and transport, noise and vibration, surface water and hydrology, flora and fauna, heritage and visual). Other issues are considered to be satisfactorily addressed by the Proponent's Submissions Report and Statement of Commitments (SoC).

5.1 Proposal Alternatives

5.1.1 Route Alignment

Issue

Planning for a new rail line to South Western Sydney has a long history, originally driven by the proposed Badgerys Creek Airport in the early 1990's and more recently, by planning for the proposed new residential development in Edmondson Park and Leppington. Following extensive studies and community consultation, route options for the South West Rail Link (SWRL) were narrowed down to a surface heavy rail line between Glenfield and Leppington either south of the Forest Lawn Cemetery or north of the cemetery (see Figure 5.1); and was released by the NSW Government on this basis in June 2005 as part of the *South West Rail Link Overview Report* (Overview Report).

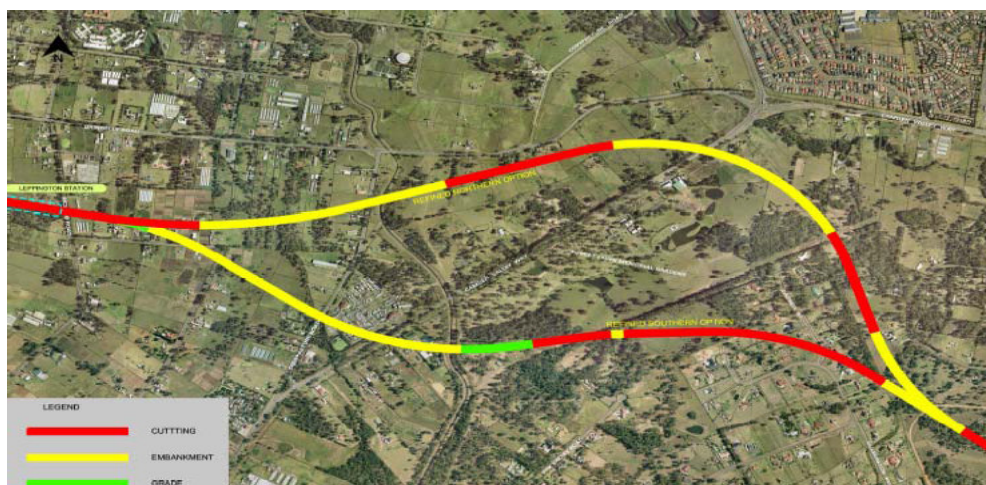
Figure 5.1 South West Rail Link Overview Report Northern and Southern Alignments (Parsons Brinkerhoff, November 2006)



In seeking concept plan approval the Proponent has further progressed the two alignment options, identifying a 'refined' northern and southern alignment (see Figure 5.2).

Based on a comparison of the costs and benefits of these two refined options (including constructability, operability, environmental, property and cost criteria), the Proponent has identified the 'refined' northern option as its preferred route option. An extension of the rail line to Bringelly does not form part of the proposal.

Figure 5.2 Refined Northern and Southern Alignments (Parsons Brinkerhoff, November 2006)



Submissions

A number of public submissions considered the planning process by which the preferred alignment was determined to be inherently unfair, with several submissions specifically expressing preference for an alignment south of the Forest Lawn Cemetery on the grounds that this was the alignment originally proposed for South Western Sydney. Submissions also objected to the northern alignment on the grounds of its impact to Western Sydney Parklands and raised concerns that the northern alignment would involve greater operating and maintenance costs. While not expressing a preference for the southern alignment, several submissions considered that minor amendments to the northern alignment would result in better acquisition/ property outcomes than the proposed alignment. Several submitters raised concerns regarding the vertical alignment of the proposal at Cowpasture Road. There was support from both the community and agencies for the SWRL to be extended to Bringelly.

Consideration

Northern vs. Southern Option

The Proponent's assessment indicates that in comparison to the refined southern option, the refined northern route would:

- have less impact on private properties (13 vs. 24 full acquisitions and two vs. 12 dwellings to be demolished¹); and
- have less residential amenity (noise and visual) impacts;
- be 500m longer and thus result in marginally higher running times (one minute longer) and approximately \$50,000 a year higher maintenance costs, but cost \$11million less to develop;
- have greater impact on cultural heritage (affecting areas of 'high' rather than 'moderate' sensitivity); and
- have greater impact on endangered ecological communities (an additional 1.6 hectares cleared), but less impact on areas of core habitat (0.3 hectares less);

With respect to existing special land use, the northern option would affect approximately 10 hectares of parkland subject to *Sydney Regional Environmental Management Plan No. 31 - Regional Parklands* (SREP 31) while the southern option would affect the Forest Lawn Cemetery and the Casa Paloma Caravan Park.

The Department notes that the key difference between the two alignment options is that the southern option would traverse an already established residential development (Denham Court) and therefore has the potential to generate greater property, noise and visual amenity impacts; while the northern alignment would travel through mainly greenfield land, which due to its less developed nature has the potential to result in greater ecological and heritage impacts but affect fewer properties. However, the impacts of the northern alignment on ecology and heritage must be seen in the context of the broader development proposed for the Growth Centre, which is proposed to significantly change existing landuse. In recognition of the likely scale of impacts, protocols for assessing and offsetting ecology and heritage impacts at a regional scale have been developed for the Growth Centre, and the Department is satisfied that the impacts of the northern alignment can be appropriately considered and offset in accordance with these established protocols.

It is specifically noted that a number of the ecology and heritage sites predicted to be impacted by the northern alignment would be subject to redevelopment as part of the Edmondson Park Release Area irrespective of which alignment is chosen for the SWRL; and that offsets will be developed for these impacts as part of the re-zoning process for the release area (including in consideration of the SWRL corridor). Consequently, the Department considers that the ecology and heritage impacts of the northern alignment can be resolved and should not preclude the location of the alignment.

In contrast, the Department considers that landuse is a key determining factor for the preferred route alignment. In this regard, the northern alignment clearly has less impact on private property in comparison to the southern alignment. Although, submissions suggested that refinements to a southern alignment could minimise property impacts, the Department notes under a southern alignment, impact to already established land use (i.e. residential development at Denham Court) would be unavoidable. The northern alignment would confine its impacts to as yet undeveloped rural residential land, which (unlike dwellings at Denham Court) are designated for

¹ Comparison of property impacts relate to the section of alignment approximately between Chainage 47.25 and 50.0. Property impacts associated with the entire alignment (Glenfield to east Rossmore) are discussed in Section 5.2.

redevelopment as part of the South West Growth Centre, regardless of the SWRL alignment chosen. By confining impacts to as yet undeveloped rural land, the preferred northern option maximises the potential for future land use to be integrated with the proposal rather than having to mitigate potentially significant (noise and visual) amenity impacts to already established land use. Future development around the preferred northern alignment would have the benefit of knowing of and accommodating for the SWRL in development design, so that the potential for land use conflicts is minimised. In this regard, the Department supports the avoidance of impacts to already established final land use in preference to mitigating impacts.

Some submissions raised concerns that the route selection and planning process was inherently unfair, as the preferred alignment option had deferred from early southern options considered, and that this indicated preferential treatment of Denham Court residents subject to the southern alignment compared to rural residential residents subject to the northern alignment. The Department notes that route selection is an iterative process, which evolves as information on site-specific impacts and reasonable and feasible alternatives becomes available. The Department does not consider that previously identified options should preclude the consideration of new options if these provide clear benefits over previously considered alternatives. The Department is satisfied that in the context of the established development pattern on site, the preferred northern option would provide better planning outcomes on balance, than a southern option because a southern alignment would affect already established land use, which unlike land subject to the northern alignment is not designated for rezoning or redevelopment. The Department does not consider this to be an equity issue as all rural residential properties affected by the northern alignment would be subject to independent property valuation and compensation under the *Land Acquisition (Just Compensation) Act 1991* (see Section 5.2).

Submissions also raised objections to the northern option due to its higher maintenance costs. The Department does not consider that an additional \$50,000 per annum maintenance cost constitutes a significant additional burden on public monies. Notwithstanding, it is considered that this figure is unlikely to constitute a true representation of cost difference between the two options if the higher acoustic mitigation costs likely to be associated with the southern option are taken into account.

Submissions also objected to the northern alignment on the grounds of impacts to the Western Sydney Parklands (WSP). The Department notes that the exact boundaries of the WSP are still being finalised, with the areas south of Bringelly Road/ Camden Valley Way (which the northern alignment would affect) being subject to SREP 31 but not covered by the *Western Sydney Parklands Act 2006*. Notwithstanding, assuming that the blocks to be affected by the northern alignment will constitute part of the WSP, the Department notes that this impact would be confined to the southern most extremity of the parkland, leaving the vast majority of the WSP (some 5280 ha) intact and untouched. The Department notes that the proposal is a permissible land use within the subject land, under SREP 31, and that the Proponent has committed to working with the Department of Planning's Metropolitan Open Space team to ensure that the design of the rail line is integrated with the existing and future land use of the area, including where relevant, measures to minimise visual, noise, flora and fauna and access impacts. For the above reasons, the Department does not consider that impacts to the parkland should preclude the location of the alignment as proposed.

In summary, the Department is satisfied that the proposed alignment north of the Forest Lawn Cemetery provides better planning outcomes than the southern option, and supports its identification as the preferred route option.

Amendments to the Preferred Northern Alignment

While supporting the avoidance of already developed land where possible in locating the proposed alignment, the Department acknowledges that this should be balanced by minimising impacts on future development potential. In this regard, several submissions were received from residents subject to the "deferred area" within the Edmondson Park Release Area and from residents in Leppington, suggesting refinements to the northern route alignment to minimise the land-take required for the rail line, so that the future development potential of the remaining lots could be maximised. In this regard submissions by Edmondson Park residents suggested that the preferred alignment to be pushed further towards the boundary of Denham Court (see blue alignment – Figure 5.3); and submissions by Leppington residents suggested that the alignment be pushed further south (see red alignment - Figure 5.3).

Figure 5.3 Alternative Alignment Suggestions (modified from Figure 16 of Appendix E of *South West Rail Link Environmental Assessment and Concept Plan Volume 1*, Parsons Brinkerhoff, November 2006)



The alternative suggested alignment at Edmondson Park has been further investigated by the Proponent and found to be technically feasible. The Proponent's investigations indicate that the alternative would affect the same number of properties but reduce the land take of those properties by approximately 1.72 hectares. However, the investigation also indicates that the alternative alignment would need to be 25 meters longer (with additional length of curved track compared to the preferred alignment), and extend further to the north into higher ground (involving additional cut volumes and retaining structures), in order for appropriate curvature to be achieved with the constraint of being closer to Denham Court.

The additional track length, cut volumes and retaining structures, required for the alternative alignment would add to the difficulty, length and impacts of construction as well as increase the capital/ construction costs of the proposal by two million dollars and maintenance requirements. The location of the alternative more to the north (just south of Bringelly road) may also affect road widening plans for this road. Furthermore, the alternative has the potential to generate additional noise and visual impacts for Denham Court receivers (by being closer to these receivers), thereby negating the principle of avoiding rather than mitigating impacts to existing receivers. On balance, the Department considers that the relatively marginal property benefits provided by the alternative alignment do not outweigh its significant disadvantages in terms of constructability, capital and maintenance costs, and potential impacts to existing receivers; and for these reasons does not support the changes to the preferred alignment at Edmondson Park proposed in submissions.

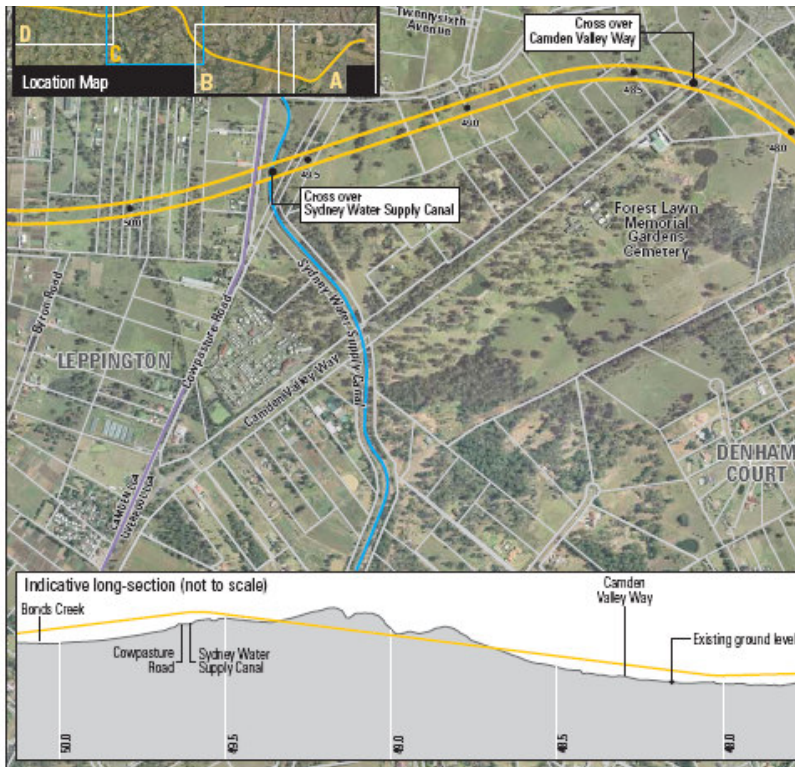
With respect to the alignment along Leppington, the Proponent's further investigation indicate that the alternative alignment would reduce the land take of eight properties, but directly affect one additional property and involve operational/ engineering disadvantages (including being longer by 50 metres and requiring tighter curvature) compared to the preferred alignment. Consequently, the Proponent has not proposed changes to its proposed alignment at Leppington. Based on the Proponent's investigations, the Department is satisfied that the preferred route alignment provides a balanced outcome between technical feasibility and land take. Notwithstanding, the Department notes that the Proponent has committed to finalising land acquisition requirements on a case by case basis with consideration to the requirements of the project and minimising impacts to properties. The Department supports this approach and has incorporated conditions reinforcing this commitment. Landowners would be fully compensated for the potential future development value of there land under the requirements of the *Land Acquisition (Just Compensation) Act 1991* (see Section 5.2).

In summary, the Department notes that changes to a particular point of the SWRL alignment to provide a positive outcome, invariably has the outcome of displacing or increasing impacts elsewhere along the alignment. The important point is that the alignment as a whole provides a reasonable and feasible balance between potential impacts and technical/ engineering factors. In this context the Department is satisfied that the preferred alignment design provides a balanced outcome between engineering feasibility (i.e. appropriate curvature), minimising land take, and providing adequate amenity (visual and noise) buffers to existing receivers. Notwithstanding, the

Department notes that ongoing detailed design would provide further opportunities for minimising impacts through refinements to alignment design, where possible, which would inform the future project application and assessment process (as relevant).

Vertical Alignment

Figure 5.4 Indicative Vertical Alignment (Parsons Brinkerhoff, November 2006)



West of Camden Valley Way, the SWRL is proposed to traverse through an area of rising grade in cutting and cross Cowpasture Road and the Sydney Water Supply Canal by bridges, before continuing west to approximately Byron Road, Leppington, on an embankment up to 10 metres in height (see Figure 5.4). A number of submissions raised concerns about the proposal's vertical alignment at the crossings on the grounds of noise and visual impacts, and strongly supported the rail line being undergrounded or that its vertical alignment be lowered through this section.

The Department understands that tunnelling under Cowpasture Road and the Sydney Water Supply Canal is not considered feasible

due to the prohibitive costs of tunnelling, flooding risks at dives and risks to infrastructure (the Sydney Water Supply Canal and the Sydney to Moomba gas pipeline). Furthermore, the Proponent has investigated the lower vertical alternative suggested by submitters, and found that once designed to acceptable engineering criteria, the alternative would not result in a significant change to vertical alignment to warrant changes to the preferred alignment. Notwithstanding, the Department notes that the preferred vertical alignment (with the exception of Stage A works) is indicative only and would be subject to further detailed design prior to project application being sought. There would be further opportunity to consider further reasonable and feasible mitigation and design options for this section of vertical alignment (and other components of Stage B) as part of this process. The Department has required the Proponent investigate further noise and visual mitigation options as part of further design refinements and assessment for Stage B.

SWRL Extension

Several public and agency submissions supported the fast tracking of the rail extension to Bringelly as part of the current proposal. The Department notes that the extension to Bringelly is not identified in the Government's Metropolitan Rail Expansion Program as being part of the SWRL, but rather as a separate discrete proposal. The Department understands that feasibility planning for the extension is currently being progressed by the Ministry of Transport, and notes that all stages of planning for the SWRL have been developed in consultation with relevant Government agencies to ensure that the design of the proposal would not compromise plans for the extension. The Department is satisfied that the project as proposed (i.e. without the extension) is justified in itself, and is satisfied that the proposed design would not preclude future extension plans. Any future application for an extension would be assessed separately on its merits.

5.1.2 Other Proposal Components

Issue

The preferred proposal involves two new stations in cuttings at Edmondson Park and Leppington, and a new stabling facility at east Rossmore. Previous planning for the South West Rail Link (SWRL) in the *South West Rail*

Link Overview Report identified Leppington Station near Byron Road and the stabling facility immediately west of Leppington Station (see Figure 5.1). The preferred project proposes to locate Leppington Station immediately west of Rickards Road and the stabling facility west of Kemps Creek. At Glenfield, an upgrade of Glenfield station and two new flyovers generally within the existing rail corridor are proposed.

Submissions

While submissions of both support and objection (on the grounds of flood risk) were received on the proposed location of Leppington Station, the proposed location of the stabling yard was supported. One submission raised concerns about the proposal not servicing Horningsea Park. One agency (Landcom) recommended changes to the design of Edmondson Park station for better integration with the town centre. One submission raised concerns regarding the proposed configuration of works within the rail corridor works at Glenfield (to be undertaken as part of both Stages A and B).

Consideration

Glenfield Rail Precinct

One submission suggested that the SWRL should join the East Hills Line on the western side of the Glenfield rail corridor (rather than the eastern side as proposed), so that associated impacts (traffic, noise etc) could be focused on the 'undeveloped' western side of the rail corridor rather than on the developed eastern side. The submitter also suggested that the Glenfield South flyover should be undergrounded to minimise visual and noise impacts.

The Department understands that both these options have been previously considered during design development for the Glenfield precinct and found to be less suitable compared to the preferred configuration. The Proponent considered the western track configuration to be unsuitable because it would:

- not allow SWRL services to access the Main South Line (MSL);
- require a much larger northern flyover to span the MSL and Southern Sydney Freight Line;
- create conflict between freight and passenger rail (reducing rail operational efficiency);
- require freight trains to pass through Glenfield station; and
- increase the foot print of the Glenfield station upgrade.

Similarly the SWRL dive option was eliminated as a preferred option by the Proponent due to:

- construction difficulties and cost associated with tight radius curves and tie-in;
- difficulties of protecting the dive from flooding impacts; and
- the unacceptable grades required to pass under the MSL (4.9%, when maximum allowable grade is 3%).

Based on the Proponent's assessment the Department is satisfied that the preferred rail configuration at Glenfield provides an optimal design outcome within the space and operational constraints of the existing rail corridor. The Department is satisfied that the preferred configuration would meet project objectives (i.e. minimising operational conflicts with existing passenger and freight services and improving network capacity) while minimising environmental impacts (i.e. minimising the footprint of works outside of the existing rail corridor and minimises visual intrusion through the size of flyovers and potential flood risk). The Department is satisfied that the residual traffic, noise and visual impacts of the Glenfield rail precinct works (particularly the Stage A works for which detailed design is advanced) can be satisfactorily managed (see Sections 5.3.1, 5.3.2 and 5.3.6).

Edmondson Park Station

Landcom suggested that the majority of the rail line within the Edmondson Park Town Centre (including the station) should be undergrounded through cut and cover, to maximise integration between the areas north and south of the rail line and minimise noise and visual impacts. The Department understands that this option would be cost prohibitive and would be technically difficult to achieve (as it would require the vertical alignment to go into deep cut immediately after crossing over Campbelltown Road). The Department is satisfied that the location of the rail line and station in cutting as proposed within the Edmondson Park Town Centre would provide for connectivity between the northern and southern sides of the town centre (through the station concourse being located at ground level and the construction of road overbridges), while at least partly mitigating noise and visual impacts.

Landcom has also raised preference for the construction site at Edmondson Park to be located north of the rail line rather than south of the rail line due to potential conflicts with proposed timing of development in these areas. The Department understands that construction locations for Stage B have not yet been finalised, and will be confirmed following further detailed design. The Department has incorporated conditions, requiring the Proponent consult with relevant stakeholders during further detailed design refinement, including regarding matters such as construction locations.

Leppington Station

The Department supports the preferred location of Leppington station compared to the location identified in the Overview Report as it allows for better integration with the planned Leppington Town Centre by being located close to Rickards Road, which (unlike Byron Road) is planned to be a major north-south link through the town centre. Better integration with the town centre would aid in maximising access and hence patronage to the station and better facilitate the development of sustainable transit-oriented development at Leppington. Furthermore, the new station location would (in contrast to the previous site) minimise flood risk by being located away from "Flood Prone and Major Creek Land", identified in the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (Growth Centres SEPP).

Horningsea Station Option

The Proponent has considered the option of providing an additional station to service Horningsea Park (located at Bringelly Road) however concluded that existing access constraints (i.e. the barriers of Camden Valley Way and Cowpasture Road and the non permeable development pattern of the suburb itself) is not likely to facilitate high patronage from this suburb, unless the alignment of the rail line was significantly changed, which would compromise the servicing of the Growth Centre (the key objective of the proposal). Furthermore, it is considered that the general improvements to road and bus services proposed as part of the Growth Centre, integrated with the interchange/ parking facilities proposed as part of the SWRL would sufficiently cater for the needs of Horningsea Park at the station locations proposed, without compromising service to the new Growth Centre. The Department notes that while a station near Bringelly Road does not form part of the preferred proposal at this stage, the design of the SWRL does not preclude its provision in the future.

Rossmore Stabling Facility

The Proponent's preferred stabling facility site has the potential to conflict with future land use identified for the precinct of Rossmore in the Growth Centres SEPP Structure Plan (i.e. "village centre"), with respect to noise and visual amenity. The Department notes that land use identified in the Structure Plan is indicative only, with detailed precinct planning to commence only once land is released for re-development. Rossmore is not planned for immediate release and as such, detailed planning has yet to commence within the precinct. The early establishment of the stabling yard would enable future precinct planning at Rossmore to occur with appropriate consideration of the stabling facility, so that development immediately surrounding the facility is complementary and compatible. The Department notes that the Proponent has commenced preliminary discussions with land use authorities regarding the development of light industrial/ commercial land use immediately surrounding the stabling facility.

The Department considers that the preferred stabling facility site, located away from the proposed Leppington Town Centre, would provide better landuse planning outcomes than the location proposed in the Overview Report, which by virtue of its proximity to the town centre would have caused significant noise and visual amenity impacts to land uses within the town centre and compromised a large area of developable land. The location of the stabling yard near the town centre, is likely to have necessitated large scale reconfiguration of the landuse planned for the town centre (including planned road and bus provisions and potentially the location of Leppington Station itself), to ensure that the growth and sustainable transit-oriented development objectives of the town centre, planned to be a Major Centre of regional importance, were not compromised. Under the preferred option, the stabling yard location does not have the same potential for disruption of planned development potential (i.e. affecting a minor precinct, rather than the major town centre). The early establishment of the stabling yard footprint would enable planned landuse to be appropriately reconfigured within and between precincts such that net development potential across these precincts is retained. It is noted that the Growth Centres Commission (GCC) does not object to the location of the stabling yard as proposed.

In summary, the Department is satisfied that the design to date of the main elements of the preferred proposal (Glenfield rail precinct, new station locations and the stabling facility) have aimed to provide a balanced outcome between technical feasibility and environmental impacts, and are justified on these grounds. However, the Department considers that with the exception of the Stage A works at Glenfield, design development for the proposal has not reached sufficient detail to enable construction as part of a project approval. The Proponent has committed to undertaking further detailed design with community and stakeholder input, to investigate further opportunities for minimising impacts where reasonable and feasible and inform future project applications sought for Stage B of the project. The Department supports this approach and has recommended conditions of approval requiring the Proponent to undertake further investigations into specific aspects of proposal design (e.g. station facilities and urban design) and to engage in consultative design.

5.2 Property, Landuse and Socio-Economic Impacts

Issue

The Proposal would directly affect a total of 86 properties: 55 privately owned and 31 Government owned (see Table 5.1). Of these, Stage A would affect one private property (Glenfield Waste Facility) and one Government property (the Department of Planning owned James Meehan Estate). Apart from these properties, Stage A works would be confined to the existing rail corridor (i.e. land zoned for rail purposes) and to RailCorp land, which would not require acquisition.

Of the affected properties, 36 of the privately owned properties are targeted for full acquisition and 19 for partial acquisition (including the Glenfield Waste Facility). All Government owned properties are targeted for partial acquisition, apart from the Department of Planning owned James Meehan Estate, which would be acquired in its entirety (see Table 5.1). Partial acquisition has the potential to sever existing access and sterilise landuse where land take makes the remaining property size unfeasible for existing landuse or affects future land development potential. In addition, the proposal has the potential to compromise landuse on adjacent properties due to amenity impacts (such as noise and visual impacts).

Table 5.1 Affected Properties

Land ownership and existing land use	Full acquisition	Partial acquisition	Total
<i>Private ownership</i>			
Englobo and Rural-residential lots (Glenfield, Edmondson Park)	3	10	13
Rural residential lots (Leppington)	33	9	42
Sub-total	36	19	55
<i>Government ownership</i>			
Department of Planning	1	15	16
Sydney Catchment Authority	-	1	1
Public roads	-	9	9
Commonwealth land (former Ingleburn Army Camp)	-	3	3
Landcom	-	2	2
Sub-total	1	30	31
TOTAL	37	49	86

The proposal would directly impact on the following existing land uses/infrastructure:

- Glenfield
 - Glenfield Waste Facility land (planned to become an extension of the Leacock Regional Parkland when the waste facility ceases operations);
 - the existing tracks of the Southern Sydney Freight Line (SSFL) within the existing Glenfield rail corridor;
 - vacant RailCorp land on the western side of the rail corridor at Glenfield; and
 - the James Meehan estate (currently vacant, planned land use unknown);

- West of Glenfield
 - the Growth Centre precinct of Edmondson Park, which has been rezoned but is yet to be redeveloped from existing rural residential and military (Ingleburn military area) land use;
 - the suburbs of Leppington and Rossmore, which are designated for redevelopment as part of the Growth Centre but are yet to be re-zoned. Current land use comprises rural residential land;
 - land subject to *Sydney Regional Environmental Plan No. 31 Sydney Regional Parkland (SREP 31)*, south of Bringelly Road; and
 - various existing road and utility infrastructure including the Hume Highway, Campbelltown Road, Camden Valley Way, Cowpasture Road, and the Sydney Water Supply Canal.

The proposal would also interact with various future land uses/ infrastructure as the Growth Centre develops, including planned public transport provisions (strategic bus corridor) and road enhancements.

Submissions

Property related impacts were raised by a significant proportion of public submissions (12.1%) and a number of agencies (Landcom/ Camden Council). Impacts to land use and infrastructure (road, utilities and the SSFL) were raised in community and agency submissions. A number of public submissions also raised concerns regarding the social amenity and economic (business) impacts of the proposal.

Consideration

Property and Acquisition

The majority of submissions on property related to the adequacy of property valuation, in particular whether valuations would take into account future development potential values for properties that are as yet unzoned or subject to the 'deferred area' zoning. All acquisition would be subject to the *Land Acquisition (Just Compensation) Act 1991*, which provides for independent valuation of property taking into account current market value, severance, special value, disturbance, solatium, and adverse impact to residual land (in the case of partial acquisition). The Department is satisfied that land valuation on this basis would provide for just compensation of affected landowners, including consideration of future potential. The zoning of the deferred area would be resolved following the confirmation of a preferred route alignment for the proposal (the current concept plan process). If timing of acquisition does not coincide with this rezoning process, future development values would still be taken into account as part of the property valuation process under the Act, with reference to surrounding zoning and enquiry to Council.

Submitters (including Landcom) emphasised that acquisition within Edmondson Park should minimise severance and sterilisation impacts so that the future development potential of remaining land can be maximised and that planned development for the area would not be compromised. Furthermore, submitters (including Camden Council) noted that landowners should be allowed the choice of partial or full acquisition, where possible. The Department understands that properties have been identified for full versus partial acquisition based on minimising severance and sterilisation impacts (i.e. properties were identified for full acquisition if partial acquisition was likely to cause significant severance or sterilisation of existing or future use). It is understood that the final property area affected will be based on a case-by case basis, balancing proposal requirements and impacts to landowners. The Department supports this approach and has recommended conditions of approval to reinforce this commitment. Furthermore, the Proponent has committed to preparing a Land Asset Management Plan in consultation with relevant stakeholders (including Landcom the Growth Centres Commission) to address the disposal of surplus acquisition land, including opportunities for amalgamating severed lots and promoting complementary land use.

A number of submissions raised concerns about the acquisition process having commenced prior to the approval of a preferred route alignment and that this indicated that a decision regarding the preferred route alignment had already been made. It is understood that the Department's Land Management Branch has commenced the voluntary acquisition of properties along the Proponent's preferred route alignment on behalf of the Proponent. Land acquisition undertaken on this basis (i.e. prior to planning approval of a preferred alignment) is undertaken at the Proponent's risk and does not have any bearing on the Department's assessment process. The Department has multiple functions, and its land management functions are entirely separate of its assessment functions. The Department notes that its merit assessment of the concept plan has been independent of and has

not been influenced or pre-empted by the acquisition process commenced by the Land Management Branch on behalf of the Proponent.

Public submissions also raised concerns that the surrounding land prices would be affected by the rail line. The Department considers that the proposal is likely to have a positive impact on property prices by helping deliver transit oriented development whereby properties close to stations would be highly sought after. The Department considers that the early provision of infrastructure would facilitate appropriate and complementary land use development around the rail line, which would mitigate against amenity impacts to future land use.

Landuse and Infrastructure

The Stage A works would largely be contained to the existing rail corridor at Glenfield, however would affect parts of the Department of Planning owned James Meehan Estate (discussed further below) and approximately 1.18ha of the Glenfield Waste Facility, that is not used for waste disposal operations. This minor land take at the southern boundary of the Waste Facility would not affect the current functioning of the facility or compromise the viability of the proposed future land use on the site (i.e. extension of the Leacock Regional Park). The proposal's contribution to cumulative impacts on existing and future land use at the waste facility (i.e. in addition to the 2.29 hectares of land being removed by the Southern Sydney Freight Line) is considered to be minor. Potential access conflicts during construction are considered to be manageable and unlikely to compromise the functioning of the facility. In addition to this, the Proponent proposes to construct a car park on existing vacant land on the western side of the rail corridor at Glenfield as part of Stage A. The construction of a car park is considered to be consistent with existing and planned land use development in the area, as the western side of the corridor is already used for informal commuter parking and because the land is subject to an existing proposal to amend the Campbelltown LEP from Special Uses 5(a)-School to Special Uses 5(a) - Car Parking.

Both Stage A and B works are proposed to encroach on the James Meehan Estate. With the exception of potential conflicts with Campbelltown Council's plans to construct a flood detention basin on site, the land use impacts of the proposal (both Stage A and B) on the James Meehan Estate are considered to be negligible, as the site is vacant and Government owned and the future land use for the site is yet to be determined. Department has required the Proponent to construct Stage A works and design Stage B works, to ensure minimal disruption of Council's plans, in consultation with Council.

The majority of Stage B works would be within the suburbs of Edmondson Park, Leppington and Rossmore which at present consist mainly of rural residential (Edmondson Park, Leppington and Rossmore) and defence (Edmondson Park) land. Impacts to existing rural residential land use in Edmondson Park and Leppington are discussed in "*Property and Acquisition*" above. In relation to defence land use within Edmondson Park, this land is no longer used for defence purposes and is designated for disposal in its entirety to the NSW Government for redevelopment as part of Edmondson Park (94 hectares have already been sold to Landcom). Once this occurs, the new zonings gazetted as part of the Edmondson Park Release Area re-zoning process, would come into effect. Consequently, the SWRL would not compromise existing defence use; but has the potential to affect the heritage value of existing military facilities and traverse through potentially contaminated land (such as unexploded ordnance), which would require remediation. The Department has required further assessment of heritage impacts as part of the further approvals process for Stage B. The Proponent has committed to undertaking contaminated land assessments prior to seeking project approval for Stage B. The Department is satisfied with this approach.

Apart from the 'deferred' area, the re-zoning of Edmondson Park has already taken into account the provision of a new rail link, through the designation of a transport corridor zone (5(a) Special Uses A and 5(a) Special Uses-Public Transport) and complementary adjacent land use zoning to promote transit oriented development. As discussed previously, the zoning in the 'deferred' area would be resolved following the approval of a preferred route alignment for the SWRL (the current concept plan application). Although broad level landuse planning (re-zoning) has already taken the SWRL into account, the Department considers it necessary for the Proponent to be involved in the detailed precinct planning process for Edmondson Park, so that the SWRL can be integrated with the new release area, including maximising access and patronage and minimising visual, noise and vibration impacts. Rezoning to accommodate the rail line has yet to occur at Leppington and Rossmore; however, initial structure planning has identified Rossmore to be a 'village centre', which is unlikely to be compatible with the planned stabling facility at this location. However, this planning is indicative only and has not yet been "fixed"

through detailed planning. The early establishment of the stabling facility footprint would enable future precinct planning at Rossmore to occur with appropriate consideration of the stabling facility. The Department has recommended conditions of approval requiring ongoing consultation with relevant stakeholders (Councils, Landcom and Growth Centres Commission) during detailed design to maximise integration of the proposal with surrounding landuse planning and development.

The Stage B works would traverse land south of Bringelly Road, which are subject to *Sydney Regional Environmental Plan No. 31 Regional Parklands* (SREP 31). The proposal is a permissible landuse within the land, however without mitigation has the potential to sever external access to the subject parklands and creates a barrier between northern and southern areas of that land. The Proponent has committed to working with the Department's Land Management Branch to ensure that the design of the proposal is integrated with the site's land use including mitigation of access, noise and visual impacts as appropriate. The Department is satisfied with this approach and has incorporated conditions of approval reinforcing this commitment, including requirements for the Proponent to investigate options for improving pedestrian and cycle access to the parklands.

The proposal has the potential to impact on existing and planned future infrastructure during construction and operation through: physical damage (e.g. vibrational damage to the Sydney Water Supply Canal), disruptions to normal operations, or by constraining future growth/ upgrade requirements. The design of most of the proposal is not significantly well advanced to determine the likely extent of impacts to infrastructure in detail. However, the Department notes that the SWRL has been specifically designed to minimise operational conflicts with the existing rail network at Glenfield through the provision of flyovers, which enable the separation of passenger and freight traffic. To this end both the Australian Rail Track Corporation (ARTC) and Sydney Ports have expressed support for the proposed design, which aims to minimise potential conflicts with existing rail operations. To minimise potential impacts to infrastructure, the Department has recommended that the Proponent progress further design investigations in consultation with relevant agencies including service providers, to ensure that the project is designed with due regard for the requirements of existing and planned infrastructure. This would inform future application and assessment process and is in line with agency recommendations. The Department has also recommended that construction planning for Stage A be undertaken in consultation with relevant agencies (including the ARTC, RTA and service providers), so as to minimise potential construction conflicts with existing infrastructure.

Socio-Economic Impacts

A number of submission raised concerns regarding the general disruption to lifestyle and economic impacts resulting from the proposal (including uncertainty regarding acquisition impacts, stress and disruption associated with relocation, loss of income streams from impacts to market gardens, inability to find similar property elsewhere, construction disruptions, and loss of amenity from noise and visual impacts). The Department notes that some disruption is inevitable with all new development and that the impacts of the proposal must be set in the context of landuse intensification planned for the entire region (of which the proposal comprises but one part). Furthermore, these impacts must be balanced with the significant social benefits of the proposal.

Notwithstanding, the Department notes that the Proponent would be required to implement all reasonable and feasible mitigation measures to minimise amenity impacts during construction and operation including with respect to noise, vibration, visual and traffic impacts (see Section 5.3 of this report). With regards to specific acquisition related concerns, the Department notes that the establishment of the rail corridor early would allow for the early resolution of uncertainties associated with acquisition and that land valuation under the *Land Acquisition (Just Compensation) Act 1991*, would specifically take into account matters such as disturbance and special value.

The Department notes that amenity impacts to future land use can be largely resolved through appropriate land use development combined with proposal-specific mitigation measures. In this regard early establishment of the proposal corridor is an advantage as it would provide a framework around which future complementary landuse planning can occur. However, impacts to already developed areas, such as the Glenfield Road residential estate (in progress), established residential and educational receivers at Glenfield and established residential receivers at Denham Court, would need to be carefully managed. In addition, impacts to existing receivers, which are designated for redevelopment but are unlikely to have been re-developed into more complementary land use by the time the SWRL is built, would also need to be carefully managed. This is of particular relevance to rural residential receivers at Rossmore, where redevelopment is likely to lag behind the construction of the proposed

stabling yard. To manage these impacts, the Department has recommended further investigation of all reasonable and feasible mitigation measures for both existing and future receivers (with respect to noise, vibration and visual impacts) to form part of further assessment requirement for Stage B. For Stage A, the Department has recommended the preparation of a range of construction management plans to minimise construction related amenity impacts to surrounding receivers. Amenity impacts and mitigation measures are discussed in further detail in the following sections.

5.3 Biophysical Issues

5.3.1 Traffic and Transport

Issue

To maximise the public transport benefits of the SWRL, the Proponent would need to ensure that as much of the target receiver catchment (i.e. the South West Growth Centre) as possible has access to the proposal. Key design considerations in achieving this objective include:

- ensuring that station design facilitates transit oriented development, through its location within the planned new town centres and through the mode-of-access facilities provided;
- maximising access and connectivity to the stations, through integration with existing and planned pedestrian, cycle, bus and road infrastructure; and
- ensuring that the proposal does not form a barrier between development north and south of the rail line.

Being an already existing rail station precinct, design considerations at Glenfield would need to include:

- appropriately mitigating any impacts to existing mode-of-access provisions where affected;
- accommodating any additional patronage demand generated by the project; and
- opportunities for improvising existing access provisions to the Station including through integration with planned transport provisions.

Submissions

Issues raised by public and agency submissions on the proposal included:

- Glenfield
 - the need to replace any parking lost as a result of the proposal and support for any additional parking provisions;
 - maintenance of access across the rail corridor and to Glenfield Station during construction and operation;
 - minimising disruptions to existing mode-of-access provisions (i.e. bus, taxi and kiss and ride) at Glenfield Station during construction; and
 - traffic and access impacts to schools at Glenfield during construction and operation;
- entire proposal
 - management of construction traffic impacts in consultation with agencies, including minimising the need for full road closures during construction of rail crossings;
 - adequate pedestrian and cycle connectivity across the rail corridor, to stations, and to the Western Sydney Parklands;
 - transport provisions at stations (i.e. pedestrian, cycle, bus, parking, kiss and ride and taxi provisions) to address mode-of-access forecast and ensure consistency with Government objectives for sustainable transit-oriented development; and
 - the need to integrate the project with transport initiatives planned for the Growth Centre (e.g. bus corridors and road enhancements) to maximise access and patronage to the stations.

Consideration

Glenfield

Glenfield is expected to consolidate its importance as a transport hub with the construction of the SWRL and as a result of other transport initiatives planned for Glenfield (e.g. the Liverpool to Campbelltown strategic bus corridor). In particular, the confluence at this location of four separate passenger rail services (the SWRL, the East Hills Line, the Main South Line and the Cumberland Line), is expected to increase its attractiveness as a commuter parking destination. The potential need for additional parking at Glenfield is foreshadowed in the Government's Urban Transport Statement, which identifies 4000 additional parking spaces across several stations including Glenfield. Consequently, the design of the Glenfield station upgrade would need to ensure that

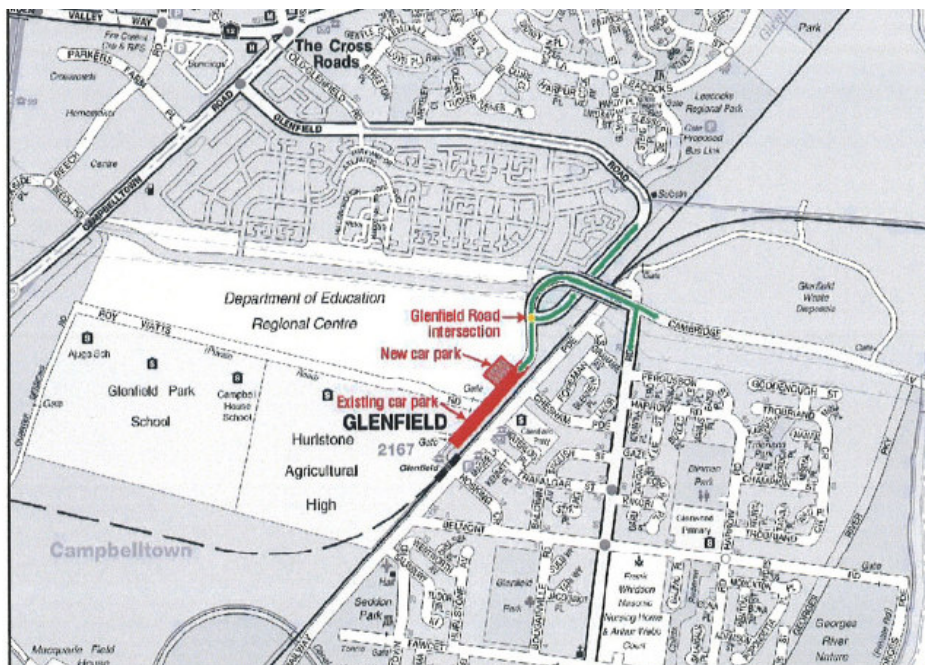
mode of access provisions (i.e. park and ride and bus) adequately caters for Glenfield's expected strategic transport function. The Proponent has based its planning for Glenfield station on existing patronage levels. The Department considers that the Proponent should review its patronage and mode-of-access predictions for Glenfield as part of further investigations for Stage B, to ensure that the design of Glenfield station makes adequate provision for potential increases to demand.

Given the expected increased attractiveness of Glenfield as a commuter rail destination, the Department considers it imperative that the upgrade of Glenfield Station does not constrain the efficient operation of mode-of-access to the station. In this regard, the Department considers that the Proponent should further assess the likely impacts to Railway Parade (as a result of the reconfiguration of Glenfield station) as part of further detailed investigations for Stage B. Specifically on:

- the efficient functioning of peak time traffic access to the station, including potential displacement of traffic impacts to surrounding local streets;
- potential conflicts between mode-of-access during peak time (including kiss and ride, taxi, bus, pedestrian and cyclists);
- capacity for integration with planned public transport provisions at Glenfield (i.e. the strategic bus corridor); and
- capacity for increasing cycle connectivity to Glenfield Station (including maintenance of the existing cycle path along Railway Parade).

The proposed reconfiguration of Glenfield Station as part of Stage B, would require the removal of approximately 120 parking spaces from Railway Parade on the eastern side of the rail corridor. To offset this loss, compensatory parking is proposed to be provided on the western side of the corridor as part of Stage A works: by formalising the existing informal car parking arrangement on the station access road creating 15 additional spaces (from 219 to 234) and creating 280 new spaces on existing vacant RailCorp land, resulting in a total of 295 additional spaces (see Figure 5.5). After compensating for the parking loses on the eastern side, the proposal would result in a net increase of 175 parking spaces.

Figure 5.5 Location of Proposed Parking (Parsons Brinkerhoff, November 2006)



The Department supports the provision of additional parking at Glenfield, however does not consider that sufficient investigation of parking options has been undertaken at Glenfield to warrant project approval being granted to a specific parking option at this stage.

In particular, the Department considers that parking provisions at Glenfield should not be resolved until patronage forecasts have been reviewed and mode-of-access

requirements resolved taking into account the objectives of the Urban Transport Statement. Resolution of the number of parking spaces required can then feed into decisions on the type of parking to be provided (e.g. at grade or multistorey) and where that parking should best be located (i.e. on the eastern or western side of the corridor). The Department does not support a particular option being committed to prior to other available options being fully considered. The Department does not consider that design development of parking options at Glenfield is sufficiently well advanced to warrant project approval as part of Stage A and recommends that this

element be considered in more detail as part of Stage B. As no additional commuter demand is proposed to be created as part of Stage A or any existing parking provisions proposed to be removed, the deferment of parking requirements to Stage B, would have no material impact at Glenfield. Consequently, the Department has recommended that the Proponent comprehensively investigate all available parking options for Glenfield as part of further assessment requirements for Stage B.

Under its current parking proposal, the Proponent has sought to provide parking on the western side of the rail corridor to replace parking lost from the eastern side of the corridor. Although this is unlikely to affect rail commuters (who have easy access to the station from both sides of the corridor), businesses on Railway Parade, which depend on parking on the eastern side of the rail corridor for convenient customer parking, may be adversely affected by such a proposal. Consequently, the Department has recommended that the Proponent specifically consider potential economic impacts to businesses on Railway Parade when determining locations for replacement parking at Glenfield. Furthermore, the Proponent has identified that the current car parking proposal has the potential to generate significant additional peak time traffic at Glenfield Road (the only access point to the western side of the rail corridor); however, not identified whether the Glenfield Road intersection in its current form would have sufficient capacity to deal with this increase or whether modification to the intersection would be required. The Department considers that comprehensive operational traffic assessments of any traffic generated by proposed parking provisions should also form part of further assessment requirements for Stage B.

With respect to construction impacts, the Stage A works would require a construction access track to be built off Campbelltown Road into the James Meehan Estate and would use Glenfield Road, Cambridge Avenue and part of Railway Parade for construction traffic. Up to 20 trucks movements per day is expected to be generated, which has the potential to create traffic impacts on local and arterial roads. Notwithstanding, the Department notes that construction traffic would be transient rather than continuous, and considers that impacts can generally be managed through standard traffic control measures. The Department has recommended that the Proponent prepare a construction traffic management plan prior to the commencement of construction of Stage A in consultation with relevant agencies (including Council and the RTA) which addresses matters such as:

- access impacts to adjacent receivers including the Glenfield waste facility, schools on the western side of the rail corridor, the Glenfield Road residential estate and other relevant residential and business receivers;
- cumulative impacts from surrounding construction works including the Southern Sydney Freight Line and the Glenfield Road residential estate;
- peak time congestion and intersection impacts at local and arterial roads, including at the proposed intersection of the construction access road with Campbelltown Road;
- the provision of dedicated parking for construction personnel at the James Meehan Estate construction compound to minimise impacts on existing commuter parking provisions at Glenfield station; and
- the maintenance of pedestrian access to Glenfield station and across the rail corridor during construction.

Remainder of Proposal

The Proponent has proposed new stations in the centre of the planned new town centres of Edmondson Park and Leppington. The Department supports this as it would facilitate transit oriented development around the stations and maximises access and patronage to the stations. The central location of stations would also facilitate integration with proposed public transport initiatives, which are expected to focus on the town centres (e.g. the Regional Public Transport Corridor Boulevard, which would travel through Leppington – see Figure 1.5). The Proponent has undertaken preliminary patronage and mode-of-access assessments for the new stations based on available land use planning information. The Department has recommended conditions of approval that require the Proponent engage in consultative design with relevant agencies (including the Growth Centres Commission, Landcom, Councils, and the Ministry of Transport), to ensure that the detailed design of the proposal (in particular station design, access, and transport interchange facilities) is integrated with the planned land use development and transport initiatives for the area, so as to maximise access opportunities to the stations.

At this stage the Proponent has proposed indicative parking figures of 250 spaces at Edmondson Park and 1000 short term (at opening) and 600 long term (shared use) spaces at Leppington. The low number of parking spaces proposed for Edmondson Park and Leppington (long-term) reflects Government objectives for transit oriented development and its overall parking policy of encouraging non-car access to town centre rail stations. The development of shared-use parking rather than station-specific parking, where rail commuters would share

available parking space at an adjacent landuse (such as a church), which has different peak usage times to rail commuter demand; also reflects these Government objectives.

A greater number of parking spaces are proposed for Leppington at proposal commencement in recognition that transit oriented redevelopment at Leppington would lag behind the construction of the SWRL and that parking would have to be provided to cater for existing car-based travel patterns until the area is redeveloped along transit-oriented principles. The successful transition to low levels of park-and-ride cannot be achieved by the Proponent alone. Reduced parking spaces alone, if not coupled with high quality public transport alternatives, is unlikely to change commuter travel patterns but rather displace parking pressure to surrounding streets or deflect patronage to other stations. For transit-oriented development to be achieved, land use and transport development would need to be successfully timed, coordinated and integrated between a range of agencies including GCC, Landcom, Councils, and the Ministry of Transport. Consequently, the Department considers consultative design to be of utmost importance and recommends that further assessment and planning for park-and-ride facilities be undertaken in consultation with relevant agencies, to ensure that the number and type of parking spaces provided meets community needs from proposal commencement to the culmination of development at the town centres. Specifically, the Department has required that the Proponent prepare a transition strategy to outline how park and ride levels provided at the commencement of operations would be transitioned to the desired long-term outcome, as part of further assessment requirements for Stage B.

The proposal has the potential to create a physical barrier severing existing formal and informal access and reducing future opportunities for connection between areas north and south of the rail corridor. In particular the proposal would sever access to and within areas of the parklands subject to SREP 31 (south of Bringelly Road). The Department notes that the location of the new stations in cuttings would minimise the barrier effect in the town centres, however, recommends that as part of further assessment requirements for Stage B, the Proponent undertake comprehensive investigations into opportunities for maximising pedestrian and cycle access along the proposal corridor including: opportunities to maintain and extend existing access provisions; provision of access across the rail corridor; and connectivity to stations, and to and within the parklands. With respect to construction impacts of Stage B, the Department recommends that further assessment requirements focus on: refining the construction methodologies for road crossings and haulage impacts (including congestion and intersection impacts at local and arterial roads at peak times and road closures requirements), in consultation with agencies.

5.3.2 Noise and Vibration

Issue

The Environmental Assessment includes an operational noise assessment for the rail corridor in accordance with the *Environmental Noise Control Manual* (ENCM) (EPA, 1994), and for the stabling facility in accordance with the *Industrial Noise Policy* (INP) (EPA, 2000). To account for changes to operational noise assessment protocol since the exhibition of the Environmental Assessment (for rail corridor noise), the Proponent undertook an updated operational noise assessment for the Stage A works to address the *Interim Guidelines for the Assessment of Noise from Rail Infrastructure Proposals* (IGANRIP) (DECC, April 2007). It was not considered necessary to update the Stage B assessment, as approval to construct these works was not being sought as part of the current application and because the existing assessment was considered sufficient to illustrate likely impacts at a broad level.

Notwithstanding, the proponent committed to undertaking an updated assessment of Stage B works in accordance with IGANRIP as part of further investigations. The Department and the Department of Environment Climate Change (DECC) support this approach. Operational vibration, construction noise, construction traffic noise and construction vibration were assessed for the entire proposal in accordance with the following guidelines: *Assessing Vibration: A Technical Guideline* (DECC, 2006); ENCM; *Environmental Criteria for Road Traffic Noise* (ECRTN) (EPA 1999); German Standard DIN 4150 and British Standard BS 6472, respectively. The assessment indicated that considerable noise and vibration impacts are likely at both existing and proposed future receivers, if no mitigation is provided.

Submissions

The main concerns raised in public and agency submissions were:

- noise impacts from vertical alignment of the rail line west of Camden valley way;
- the requirement for adequate noise mitigation;

- land use/ property impacts (such as loss of development potential) associated with noise mitigation requirements;
- impacts to educational receivers; and
- operational vibration impacts to the Sydney Water Supply Canal.

Specifically, the DECC recommended that the Proponent be required to implement:

- vibration monitoring during the construction of Stage A to monitor impacts to the Hurlstone Agricultural school (a sensitive heritage item); and
- operational compliance monitoring to confirm noise impacts from the operation of Stage A (if the northern flyover becomes operational prior to Stage B).

Consideration

Glenfield

The Stage A works would involve the full construction of the Glenfield North Flyover; construction of piles, pile caps and substructure for the Glenfield South Flyover; rearrangement of tracks (including slewing of the Southern Sydney Freight Line approximately three metres closer to sensitive receivers on the western side of the corridor); and if required, operation of the Glenfield North Junction by 2011. The commencement of Stage A operations (if required) in 2011 would consist of existing passenger train volumes travelling on the new Glenfield North Flyover and existing freight volumes travelling on a relocated dedicated freight line. New SWRL trains would not commence operations until the commencement of the entire proposal expected in 2012 (i.e. once the Southern Flyover is connected on to the rail network). By 2017, the passenger traffic associated with the SWRL and the freight traffic approved as part of the Southern Sydney Freight Line are expected to be representative of peak traffic volumes. As part of its operational noise assessment the Proponent has assessed potential impacts at 2011 (Stage A commencement at existing traffic volumes) and 2017 (entire proposal operational with associated increased passenger volumes plus already approved increased freight volumes as part of the Southern Sydney Freight Line). Modelling has considered both existing and planned future receivers.

Noise mitigation is triggered under the IGANRIP if a proposed development exceeds existing noise levels **and** the resulting noise levels exceed L_{Aeq} and L_{Amax} criteria specified in the guideline. An 'exceedance' of existing rail noise levels is defined as an increase of 2dB(A) or more in L_{Aeq} and 3dB(A) or more in L_{Amax} . The Proponent's modelling for the 'at commencement' (2011) scenario, compared predicted noise levels at 2011 (from the operation of Stage A), against existing noise levels in 2007, on the assumption that existing noise levels in 2007 would be representative of existing noise levels in 2011 (without the proposal) as no change in train volumes are expected in the interim. The modelling indicated that noise from the operation of Stage A in 2011 would not trigger mitigation requirements under IGANRIP.

For the 2017 scenario, the Proponent compared predicted noise levels at 2017 resulting from the operation of both Stage A and B, to existing noise levels at 2007. The Department in consultation with the DECC, considered that existing noise levels in 2007 would not be representative of likely existing noise conditions in 2017 (without the project), because freight volumes are expected to increase during that period as a result of the approved Southern Sydney Freight Line project. Consequently, the Department considered it more appropriate that the proponent model the following scenario: 'noise levels at 2017 with the operation of both Stages A and B of the SWRL' versus 'likely existing noise levels at 2017 without the SWRL'. The revised modelling undertaken by the Proponent concluded that the SWRL would not increase existing noise levels predicted for 2017 by more than 2db(A), and therefore would not trigger mitigation requirements under IGANRIP.

The Department is satisfied that the Proponent's original modelling for the 2011 scenario and the revised modelling for the 2017 is appropriately rigorous and addresses the requirements of IGANRIP. Based on the modelling the Department is satisfied that the SWRL does not trigger mitigation requirements at Glenfield for either the operation of Stage A by itself or for the SWRL in its entirety. Notwithstanding, the Proponent has committed to designing Stage A (the Glenfield North Flyover) to minimise operational noise impacts by using low level parapets. The Department has also recommended that the Proponent undertake post operational monitoring at the commencement of Stage A to confirm modelling predictions, and where elevated impacts are identified to implement further reasonable and feasible mitigation measures. The Department has also required the Proponent to update its rail corridor noise assessment in accordance with IGANRIP as part of further assessment requirements for Stage B. For Glenfield this would mean a review of the 2017 scenario once the detailed design

of Stage B is known, to confirm whether the operation of the SWRL as a whole would trigger mitigation requirements for Glenfield. The DECC supports the Department's approach.

The Proponent's modelling indicates that the increased traffic associated with the new car park on the western side of the corridor would have a negligible effect on existing noise levels on Glenfield Road and to nearby school receivers due to different peak access times. Based on the Proponent's assessment, the Department is satisfied that the operation of the car park is unlikely to significantly impact on surrounding receivers. Notwithstanding, as stated in Section 5.3.1, the Department has recommended that the car park not be granted project approval as part of Stage A and that further investigation of parking options be undertaken as part of Stage B. The Department has recommended that the potential operational noise impacts of alternate parking provisions be considered as part of further assessment requirements for Stage B.

The Proponent's modelling also indicates that both passenger and freight train operations on the proposed new track arrangement would comply with the "low probability for adverse comment" human comfort criteria (109dbA – for 330 train events) and the "day-time perceptibility" criteria (106db(A)) at all existing and planned future receivers. However the modelling indicates that the "night-time perceptibility" criteria (103db(A)) would be approached at some existing residential locations, but only under worst case train speeds (115km/hr) which are not expected at this location. Based on the modelling the Department is satisfied that the proposal is unlikely to prove a source of vibration impacts to surrounding receivers.

The Proponent's assessment indicates that the construction noise and vibration impacts are likely to result in some nuisance impacts to nearest sensitive receivers. Notwithstanding, the Department recognises that these impacts would be finite and mostly transient and can be largely managed through standard mitigation measures. In this regard, the Department has recommended that the Proponent consider cumulative noise impacts; undertake pre-construction vibration monitoring of sensitive items such as the Hurlstone Agricultural School (to determine appropriate buffer distances); and consult with affected receivers (including schools) as part of its construction management strategy.

Remainder of Proposal

As discussed in Section 1.1.2, the Department is satisfied that the proposal (including vertical alignment and the Glenfield upgrade works) has been designed with adequate regard to environmental impacts (including noise) versus engineering feasibility. Notwithstanding, the operational noise assessment for the Stage B rail corridor, illustrates that significant noise impacts are likely at sensitive receivers without appropriate mitigation such as acoustic barriers or architectural treatment. In as yet undeveloped areas, future noise impacts maybe eliminated or the level of mitigation required reduced, if complementary (less noise sensitive) land use re-development occurs around the rail corridor. As part of further assessment requirements the Department has required the Proponent to revise its operational (rail corridor) noise assessment for Stage B, so that the noise impacts and mitigation requirements can be confirmed against current best practice assessment protocol (IGANRIP). The Department has required that all reasonable and feasible mitigation measures be considered, including land-use based measures where appropriate, in consultation with relevant agencies.

The operational noise impacts of the stabling facility were assessed in accordance with the DECC's Industrial Noise Policy (the relevant assessment protocol for fixed facilities), against "suburban" criteria based on the planned future landuse for the area (i.e. a "village centre" at Rossmore). Significant exceedance of amenity, intrusive and sleep disturbance criteria are predicted, including lengthy buffer distances (up to 320m) to achieve relevant criteria, even with the inclusion of noise barriers. Given that such exceedances would not be consistent with the proposed residential landuse of the site (particularly as the required buffer distances would compromise developable land), the Proponent has strongly supported the changing of planned surrounding landuse to commercial or light industrial. Such land uses would be less sensitive to noise impacts particularly at night time when the highest noise impacts from the stabling facility, though horn and brake testing, are expected. The Department supports the development of less noise sensitive land use immediately surrounding the stabling facility and considers that the early establishment of the stabling yard would facilitate precinct planning in this regard (see section 5.1.2).

While appropriate land use development may manage impacts to future receivers, impacts to existing receivers would remain until that re-development occurs. As the redevelopment of Rossmore is expected to lag behind the

construction of the SWRL, impacts to existing receivers would need to be carefully managed in the interim period. The Department has recommended that the Proponent revise its INP assessment and undertake a detailed investigation of reasonable and feasible mitigation options for the stabling facility as part of further assessment requirements for Stage B, considering impacts to both existing and future receivers. It is considered that this assessment should consider at source mitigation options such as full enclosure of the stabling facility and the feasibility of low volume horn tests.

The potential of the noise mitigation requirements of the proposal (including land required for noise barriers and land use changes) to impact on the development potential of adjoining land was raised as an issue of concern by a number of agency and public submissions. The Department does not consider that the rail line would significantly reduce development potential within the Growth Centre, as the Growth Centre has always been planned with the land requirements of the SWRL in mind (the new rail being an integral component of the Growth Centre). However, development potential at individual properties may be impacted and the Department considers that impacts should be considered on a case-by-case basis to determine a balanced outcome between the needs of the project and property impacts. The Department has recommended that the proponent confirms operational noise mitigation measures with consideration to potential landuse impacts in consultation with relevant land use authorities including Landcom and the Growth Centres Commission.

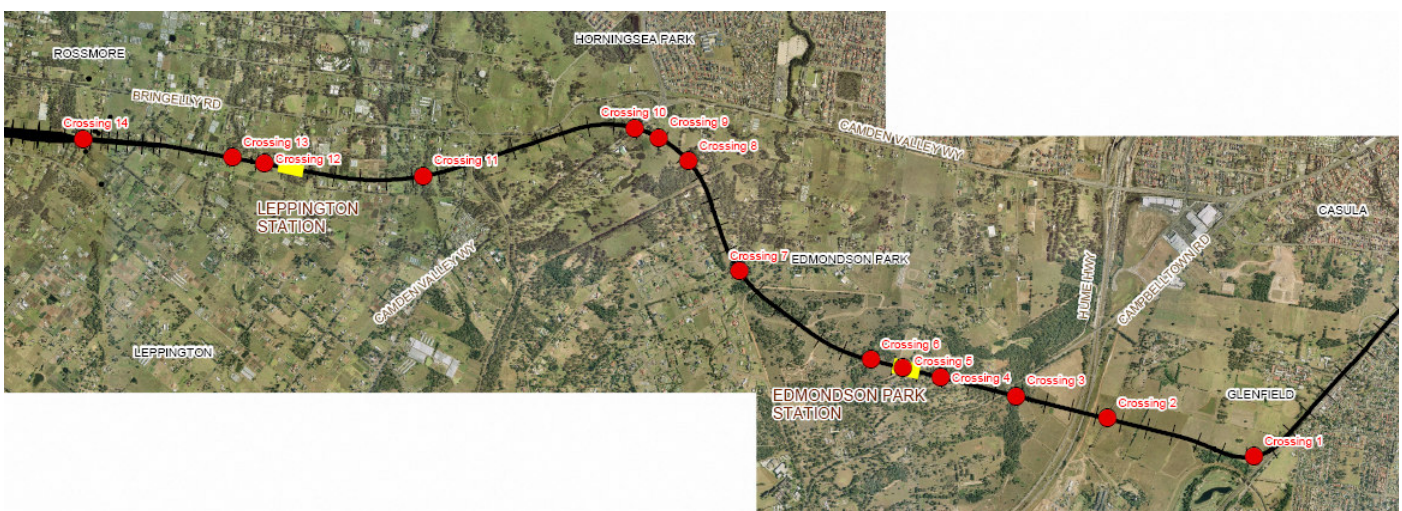
The operational vibration noise assessment indicates the proposal would comply with the "low probability for adverse comment" human comfort limits, which are considered to be acceptable for intermittent vibration under the DECC's *Assessing Vibration: A Technical Guideline*. The Department has required the Proponent to review its operational vibrational assessment following detailed design to confirm the impacts of the proposal and any required mitigation (such as the use of alternative track type). The construction impacts of the Stage B works are yet to be confirmed, and the Department has recommended requirements for the Proponent to assess the construction noise and vibration impacts (including defining likely vibration impacts to the Sydney Water Supply Canal) as part of further assessment requirements for Stage B.

5.3.3 Surface Water and Hydrology

Issue

The proposal would require 14 waterway crossings, traversing the Bunbury Curran Creek floodplain as well as the upper tributaries of Cabramatta, Bonds and Kemps Creek (see Figure 5.6). Edmondson Park Station would be located between two tributaries of Cabramatta Creek, and Leppington Station between Bonds and Scalabrini Creeks. The proposal would cross 'Flood Prone and Major Creek Land' as defined by the Growth Centre SEPP east of the stabling facility.

Figure 5.6 Waterway Crossings (Parsons Brinkerhoff, November 2006)



The proposal has the potential to change flood behaviour at each crossing, potentially affecting existing and planned future receivers and infrastructure, and ecology up and downstream of the crossings. Crossings 1-3, 7-10 and 12 are considered conventional crossings for which flooding impacts can be managed through standard drainage design. Notwithstanding, crossing 1 (within James Meehan Estate) has the potential to impact on plans

by Campbelltown Council to construct a flood detention basin at this location. To minimise the possibility of overflows from Crossings 4-6 to Edmondson Park Station (in cutting), the Proponent has investigated the need to lower Crossings 4 and 6.

Submissions

Public submissions both supported and objected to the proposed location of Leppington station on the grounds of flood risk. Public submissions also required that hydrology impacts be appropriately assessed, including impacts on riparian ecology. Agency submissions either strongly supported (Landcom and Liverpool Council) or objected (DWE and DECC) to the option of lowering crossings 4 and 6. DPI (Fisheries) required that waterway crossing be designed in accordance with the *Guidelines for Design of Fish and Fauna Friendly Waterway Crossings*. Liverpool Council and DWE also supported the consideration of more environmentally friendly crossings (such as bridges) rather than culverts. Campbelltown Council required that flood impacts in the vicinity of council's proposed detention basin be minimised.

Consideration

Stage A

There are no significant flooding issues for Stage A, apart from the potential of the proposed construction site at James Meehan Estate to affect Campbelltown Council's plans to construct a flood detention basin at this location. The Department has recommended that the Proponent consult with Council prior to and during construction of Stage A to ensure that the construction compound does not impact on Council's plans. The Department has also recommended conditions requiring the Proponent to design its construction compound so as to not affect existing flood behaviour or impact on the functioning of Bunbury Curran Creek (Crossing 1) or its riparian vegetation.

Remainder of Proposal

The Proponent has assessed the hydrology impacts of the proposal based on a design criteria of a 1 % Annual Exceedance Probability (AEP) (i.e. a 1 in 100-year Average Recurrence Level (ARL)), which is identified in the *Floodplain Development Manual (2005)* (FDM) as the criteria that flood planning levels for typical residential development are generally based. The FDM states that with few exceptions flood design criteria based on the Probable Maximum Flood (PMF) is neither feasible nor socially or economically justifiable, however, recommends the assessment of the full range of flood levels (up to and including the PMF), such that case-appropriate flood design criteria can be determined, based on site-specific flood risk, economic and social parameters.

The Proponent's assessment indicates that the use of standard drainage structures (culverts) would accommodate a 100-year ARI flood risk at all watercourses, however that there is potential for flooding impacts of various severity if culverts are blocked by debris or during larger flood events such as the PMF. Due to data limitations, PFM levels were not assessed for each watercourse. Based on the Proponent's modelling, the Department is satisfied that the proposal at a minimum can be designed to meet flood design criteria considered to be reasonable for residential development (i.e. the 1 in 100-year ARL). Notwithstanding, the Department considers the Proponent should be required to further model the hydrological impacts of the proposal as part of further assessment requirements for Stage B; specifically to assess the full range of flood levels up to and including the PMF at each waterway crossing (as recommended by the FDM) so as to determine whether a flood planning level other than the 1 in 100-year ARL may be appropriate at specific locations, taking into account site-specific flood risk, social and economic factors (such as impacts to development potential and the flood sensitivity of planned adjacent landuse).

The Proponent's assessment indicates that in order for flood design criteria to be met at specific locations (such as at stations), significant modifications to watercourses (including lowering and flow diversions) may be required. To ensure that the potential impacts of these modifications on up and downstream ecology are appropriately considered and mitigated, the Department has recommended that the further detailed hydrological assessments for Stage B also focus on potential ecology impacts, particularly to riparian and in stream habitat dependent on specific flow regimes, which may be affected by the proposed alterations to watercourses. The Department notes that the Proponent has committed to investigating alternate waterway crossings (e.g. bridges in place of culverts) with regard to the *Guidelines for Design of Fish and Fauna Friendly Waterway Crossings*, as part of further detailed design for Stage B, to minimise potential ecology impacts (including barriers to fish and fauna movement and instream disturbance). The Department supports this measure, and is satisfied that the implementation of the Proponent's commitments along with the Department's further assessment requirements, would enable the

ecological impacts of waterway modifications to be appropriately considered and mitigated as part of the project assessment process for Stage B.

With respect to flood risk at Leppington station, the hydrology assessment indicates that at the preferred location, Leppington station is set well above the 1 in 100 year ARI flood level for Scalabrini Creek, and that even in the event of substantial (50%) blockage the 1 in 100 year ARI flood level would be approximately 6.7 m below the design rail level. Based on the Proponent's assessment the Department is satisfied that the flood risks to Leppington Station at the preferred location are manageable.

The Proponent's assessment indicated that crossing 4 would need to be lowered (up stream and down stream) by 1.5 metres and crossing 6, by up to 3 metres to minimise flood impacts at Edmondson Park Station. To minimise the extent of lowering of watercourses, the assessment indicated that the vertical alignment of the station would need to be increased. Landcom and Liverpool Council have raised strong support for modifying the watercourses in preference to increasing the vertical alignment of the station, over concern that this would compromise the integration of the station to surrounding land use development as well as compromising land use that has been planned around the station. In contrast DWE and DECC raised strong concerns regarding the lowering of the watercourses on ecological grounds and potential inconsistency with surrounding land use zoning if upstream and downstream lowering works were to extend outside of the proposed rail corridor and onto land zoned 8(b) National Park.

The Department understands that flood mitigation options for Edmondson Park Station are yet to be finalised and will be subject to further detailed flooding assessment. The Proponent has committed to undertaking further design development of the vertical alignment of Edmondson Park station in consultation with relevant agencies (including Landcom, Councils and GCC). The Department supports this and has recommended conditions which require the Proponent to design Edmondson Park station with consideration to the land use planned for Edmondson Park Town Centre, including urban and conservation land uses. The Department notes that if the final design solution for Edmondson Park Station generates conservation impacts, over and above what has been accounted for by existing offset measures (implemented as part of Edmondson Park Release Area rezoning process), the Proponent would have to outline appropriate offsets for these impacts as part of the further assessment and approval process for Stage B.

As noted in Section 3.3, the proposal would traverse through 'Flood Prone and Major Creek Land' as defined by the Growth Centre SEPP. Part 5 of the Growth Centres SEPP requires consent authorities to consider a range of matters including whether a development would: increase flood affectation or flow distribution and velocities to surrounding development; allow safe occupation of flood prone land; detrimentally affect surrounding development; or result in unsustainable social and economic costs due to flooding. The Department notes that the proposal has been assessed in accordance with the principles of the *Floodplain Development Manual*, which provides for the selection of flood design criteria that balances flood risk with social and economic factors. This assessment approach is consistent with the objectives of the Growth Centres SEPP which aims to maximise development potential while not causing unacceptable flood risks to landuse. The Department is satisfied that the implementation of the Department's further assessment requirements (see below), would enable the hydrological impacts of the proposal to be considered with due regard to economic, social and ecological factors, consistent with the objectives of the Growth centres SEPP.

The Department recommends that the following matters form part of the further assessment requirements for Stage B:

- assessment of the full range of flood levels up to and including the PMF at each waterway crossing to confirm the flood planning design levels for the proposal, taking into account site-specific flood risk, social and economic factors in accordance with the *Floodplain Development Manual*;
- assessment of the impacts of waterway modifications on up and downstream ecology and riparian zones;
- identification of flooding impacts to existing and future receivers and infrastructure;
- addressing, as relevant, the requirement of the Growth Centres SEPP in relation to 'Flood Prone and Major Creek Land'; and
- ensuring that the design of the proposal does not preclude Campbelltown Council's plans to construct a flood detention basin at James Meehan Estate, unless otherwise agreed to by Council.

5.3.4 Flora and Fauna

Issue

Two endangered ecological communities occur within the study site:

- poor to medium condition (grazing affected) Cumberland Plain Woodland (CPW); and
- poor to good condition Sydney Coastal River Flat Forest, consistent with *River Flat Eucalyptus Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions* (RFEF) endangered ecological community.

The Proponent's ecological assessment indicates the proposal has the potential to affect up to 47.38 hectares of native vegetation comprising 20.01 hectares within the corridor, 14.91 hectares at construction sites and 12.46 hectares of edge effects. The vegetation communities impacted by the proposal are summarised in Table 5.2.

Table 5.2 Endangered Ecological Communities impacted by Proposal

Impact to Vegetation by Community				
Community Type	Core Habitat	Support for Core	Other	Total
CPW	9.24 ha	18.48 ha	9.28 ha	37.00 ha
RFEF	0.14 ha	9.00 ha	0.65 ha	10.38 ha
Project Total				47.38 ha

The Proponent's assessment also identified individuals of the threatened fauna species Cumberland Plain Large Land Snail (at Edmondson Park) and suitable habitat for the threatened flora species *Pimelea spicata* (near Glenfield) within the proposal corridor. The proposal has the potential cause habitat fragmentation; form a barrier to fauna movement (including impacting on potential a regional habitat corridors identified in the *Edmondson Park Ecological Assessment 2003* prepared by Eco Logical Australia Pty Ltd); and affect riparian and stream ecology through modifications to waterways. The proposal would also require vegetation clearing in 'Flood Prone and Major Creek Land' subject to the Growth Centre SEPP.

Planning for the Edmondson Park Release Area (apart from the 'deferred area') has already taken into account the impacts of SWRL corridor in devising appropriate offset measures (i.e. the land area reserved for "National Park/ Nature Reserve"). Appropriate offsets for the 'deferred area' will be determined when re-zoning commences for that area (expected once the Minister has made a determination on the SWRL alignment). Impacts associated with the remainder of the proposal (with the exception of the James Meehan estate, Flood Prone and Major Creek Land and the SREP 31 Parklands), are expected to be offset by the Growth Centres Biodiversity Certification process (Draft Growth Centres Conservation Plan), which is currently being considered by DECC and the Commonwealth Department of Environment and Water Resources. The Proponent has committed to determining appropriate offsets for the areas not covered by the Growth Centres Conservation Plan as part of Stage B.

Submissions

A number of submissions raised preference for alternative route alignments (tunnelling or southern alignment) on the grounds of impacts to flora and fauna. In addition, submissions highlighted the need for rigorous assessment and comprehensive mitigation of impacts, with avoidance preferred over offsets. One submission supported the creation of a buffer zone between the eastern boundary of Denham Court and the rail line, for fauna movement. As with public submissions, agencies (DECC, DWE and Liverpool Council) emphasised the need for adequate assessment (particularly appropriate survey methodology) and mitigation of ecological impacts. With respect to Stage A, the DECC raised concerns that inadequate survey of the proposed car park site had been undertaken to warrant proposal approval for that particular component of the Stage A works.

Consideration

Stage A

Following concerns raised by agencies and the Department regarding survey methodology, the Proponent undertook additional ecology assessment of the Stage A works as part of the Submissions Report, to confirm the flora and fauna impacts of Stage A; in particular targeted surveys for *Pimelea spicata* were undertaken. No threatened species or suitable habitat were identified in the revised assessment, which was limited to the Stage A rail corridor and the James Meehan Estate, although it was considered that seed banks of *Pimelea spicata* may be present in the soil at these locations. The revised assessment concluded that as the rail corridor and James

Meehan Estate were largely cleared and disturbed, no vegetation of high conservation significance (including any riparian vegetation at Bunbury Curran Creek) would be impacted by Stage A at these locations. Consequently, no offset measures are proposed. The proposed Glenfield car park site was not surveyed however, based on the habitat-based assessment undertaken as part of the Environmental Assessment, the vegetation on site was identified to be a degraded (less than 10% canopy cover) Cumberland Plain Woodland remanent. The construction of the Glenfield car park would require the removal of approximately 0.48 hectares of this vegetation. The Proponent has committed to undertaking detailed surveys of the car park (including for *Pimelea spicata*) prior to construction and considering appropriate offsets as part of further investigations for Stage B.

The Department is satisfied that the Proponent's revised assessment has adequately assessed the ecology impacts of the Stage A works within the rail corridor and the James Meehan Estate. The Department is satisfied that no significant flora or fauna would be affected at these locations, however has recommended conditions of approval requiring the Proponent to avoid impacting on any riparian vegetation at Crossing 1 and to protect any identified *Pimelea spicata* soil seed banks. However (as with DECC), the Department is concerned that appropriate assessment of ecology impacts (including targeted surveys of likely threatened species) has not been undertaken for the Glenfield car park. Although the site is relatively disturbed, given the close proximity of previous recordings of *Pimelea spicata* to the Glenfield rail corridor, the Department considers that granting approval prior to appropriate threatened species surveys being undertaken, would not prudent and would be inconsistent with ESD principles (the precautionary principle).

The Department considers that there is at this stage insufficient impact assessment on the car park to determine likely ecology impacts at this site (including details of mitigation/ offset measures) and recommends that project approval not be granted for the car park as part of Stage A works. As discussed in Section 5.3.1, the Department has recommended that alternate parking options be considered for Glenfield. Where these alternate options are likely to impact on ecology values, the Proponent would be required to appropriately assess and offset impacts as part of further assessment requirements for Stage B. The Department has recommended further assessment requirements in this regard.

Remainder of Proposal

As discussed in Section 1.1.2, the Department is satisfied that the preferred proposal alignment, consistent with the objects of the EP&A Act, provides an appropriate balance between environmental impacts, engineering feasibility and impacts to existing receivers. The Department considers that the impacts of the proposal must be seen in the context of re-development proposed for the entire Growth Centre. In this context, the Department supports offset for the proposal being incorporated into overall planning for the Growth Centre (the zoning for Edmondson Park and the biodiversity certification), so that the impacts of the proposal would not be considered in isolation but rather in the context of wide scale regional impacts. In this regard the Department believes that the Proponent should determine offsets for those areas not covered by the Growth Centres Conservation Plan, consistent with the objectives of the plan (i.e. of net neutral or beneficial biodiversity outcomes).

If vegetation clearing is required in Flood Prone and Major Creek Land, the Growth Centres SEPP requires the consent authority to consider whether: there is no reasonable alternative to the clearing; that as little as possible would be disturbed; that clearance would not cause salinity; that clearance would be offset; and that no more than 0.5ha is cleared unless essential. The Department considers that the proposal is consistent with the objectives of the SEPP because appropriate alternatives have been considered; the proposal (and therefore the clearing required) is essential to the development and success of the Growth Centre; the clearing impacts would be appropriately offset; and the salinity impacts of the proposal will be considered and mitigated as part of the proposal (see Soc A32 and SoC B45).

The Department notes the concerns raised in submissions regarding survey methodology and lack of detail regarding mitigation, however considers that the information presented was appropriate for a concept level assessment (which does not seek approval to construct). Further assessment for Stage B would need to focus on confirming the footprint of the proposal based on detailed design (including location of ancillary facilities) and undertaking supplementary assessment to fill in gaps in knowledge. In this regard, the Department notes, the Growth centres Commission has undertaken a comprehensive assessment of the ecological impacts of the entire Growth Centre as part of the Growth Centres biodiversity certification process. As the Growth Centres Conservation Plan covers most of the land required for the SWRL, the Proponent would not need to duplicate this

work, but focus further detailed assessment on areas not covered by the conservation plan, ensuring that survey and offset methodology is consistent with the protocols adopted in the plan.

The Department has recommended that the Proponent consider the following matters as part of further assessment for Stage B:

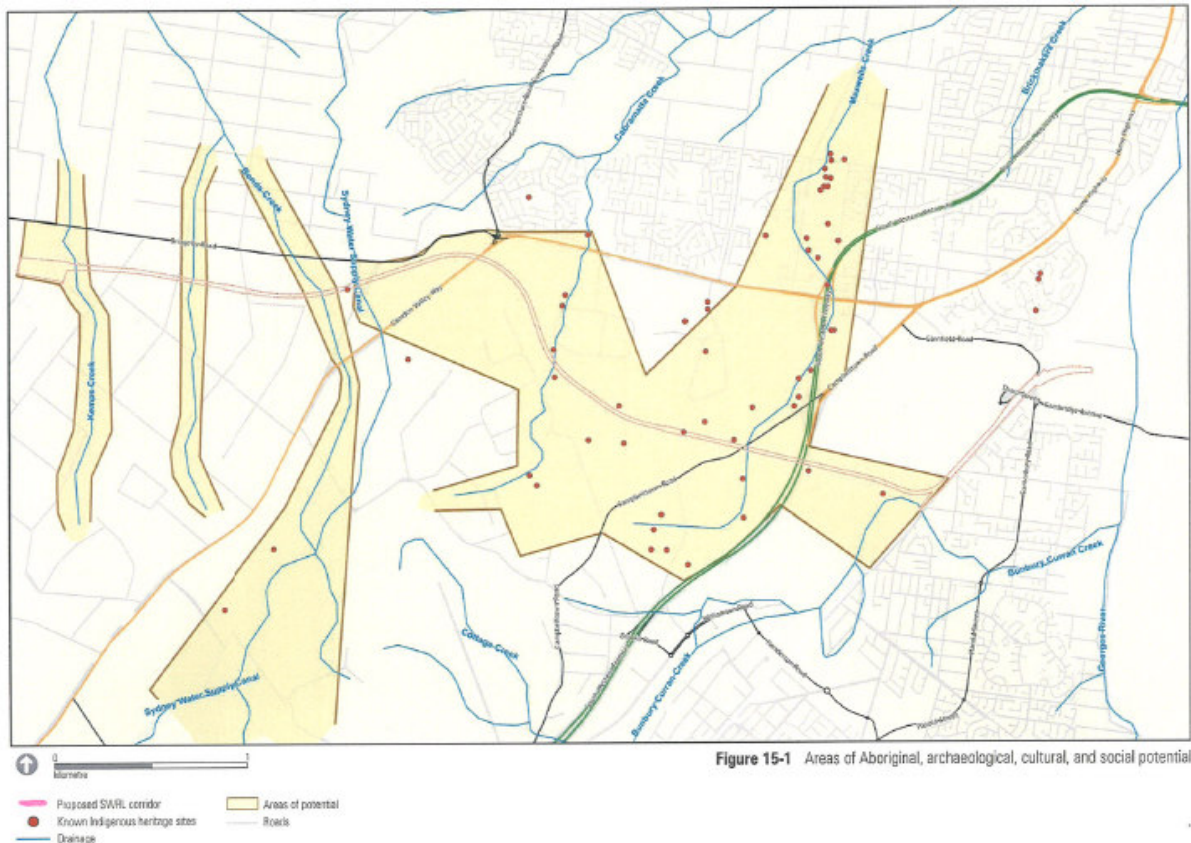
- confirmation of the footprint of the proposal and identification of impacts to threatened species, populations and ecological communities, utilising existing information (Growth Centres Conservation Plan) or undertaking additional surveys using appropriately rigorous and justified survey methodology;
- assessment of impacts to riparian and in-stream ecology and impacts to existing or planned biodiversity corridors (including the regional corridors identified in the *Edmondson Park Ecological Assessment 2003* prepared by Eco Logical Australia Pty Ltd). This includes opportunities for developing a buffer zone between the rail line and Denham Court as a biodiversity corridor;
- address as relevant, the requirement of the Growth Centres SEPP in relation to 'Flood Prone and Major Creek Land'; and
- demonstration that the impacts of the proposal have been appropriately offset to ensure no net loss of biodiversity values (with reference to the Growth Centres Conservation Plan and other measures) .

5.3.5 Indigenous and European Heritage

Issue

To ensure consistency of assessment within the Growth Centre, and ensure that impacts and mitigation are considered in the context of the entire Growth Centre, the DECC and GCC have developed an indigenous heritage consultation protocol and assessment methodology specific to the Growth Centres: *Protocol for Aboriginal Stakeholder Involvement in the Precinct Assessment Process* and *Precinct Assessment Method for Aboriginal Cultural Heritage*. Following consultation with the DECC, assessment up to Step 1 of the Precinct Assessment Method (involving the gathering and analysis of existing information) was considered sufficient for a concept level assessment. The assessment identified a range of areas of potential archaeological and cultural significance (see Figure 5.7), mainly centred around waterways and ridge lines and areas of historic or ceremonial association (e.g. Ingleburn Army Camp, Throsby land grant near Glenfield and Macquarie Field estate).

Figure 5.7 Areas of Indigenous Heritage Potential (Parsons Brinkerhoff, November 2006)



Although approval to construct is being sought for Stage A, no additional assessment (beyond Step 1) was undertaken for these works, mainly due to the majority of the works being confined to the existing disturbed rail corridor. No field survey was undertaken of the James Meehan Estate or the proposed car park site, however, based on previous studies of the James Meehan Estate, it is understood that the site contains two known (listed) Aboriginal sites, and has the potential to contain further artefacts as well as a moderate potential for subsurface artefacts. The proposed compound site would not affect the two known sites, however, to ensure that no impact would occur to other artefacts and areas of subsurface potential, the Proponent has committed to undertake a detailed indigenous heritage assessment of both the James Meehan Estate and the car park site, prior to construction in accordance with the *Precinct Assessment Method* (all steps).

The proposal has the potential to directly impact (including through vibration impacts) on the following European heritage items: the Hurlstone Agricultural High School (State and LEP listed), 2.9ha of the Ingleburn Military Area (national, State and LEP listed), the Sydney Water Supply Canal and associated row of Bunya Pines (State and LEP listed), a historic fence line in Leppington (not listed), and the historic road alignments of Old Cowpasture Road, Cowpasture Road and Camden Valley way (not listed). The proposal also has the potential to indirectly impact on the view sheds of Cowpasture Road, Camden Valley Way and Denham Court (not listed), Hurlstone Agricultural High School, and Macquarie Field House (State and LEP listed). Stage A impacts would be limited to potential construction vibration impacts to Hurlstone Agricultural High School and view impacts to the school and Macquarie Field House from the construction compound at the James Meehan Estate.

Submissions

Public submissions required adequate consideration and mitigation of indigenous heritage impacts. One public submission raised preference for the southern alignment on the grounds of indigenous heritage impacts. The DECC objected to any project approval being granted for Stage A on the grounds that assessment for the James Meehan Estate and the car park site had not extended beyond a concept level assessment (i.e. beyond Step 1, including not undertaking field surveys or determining appropriated mitigation measures as required by subsequent Steps). Liverpool Council noted that any impacts to heritage associated with the project, within the 'deferred area' at Edmondson Park, would need to be adequately offset. With respect to European heritage: public submissions required that impacts to the Ingleburn Military area be appropriately considered, and the Sydney Catchment Authority required appropriate consideration of impacts to the Sydney Water Supply Canal.

Consideration

Stage A

The Department understands that the decision to not undertake any further assessment of the Stage A works within the existing rail corridor was made in consultation with relevant indigenous heritage stakeholders, and considers this approach to be appropriate given the highly disturbed nature of the existing corridor. The Department shares DECC's concerns regarding the lack of assessment of the Glenfield car park, however, does not consider that upfront detailed assessment of the James Meehan Estate is necessary for the approval of this area as a construction site. The Department considers that appropriate conditioning (i.e. requiring TIDC to locate the construction compound away from any identified site or areas of potential), would enable the outcome of avoidance of any indigenous heritage potential to be achieved, without the requirement for detailed upfront assessment, which could unnecessarily delay the proposal. Due to the size of the James Meehan estate (which allows flexibility in the location of the compound site) and the nature of the works (which is relatively small scale and not requiring extensive soil disturbance), such conditioning is unlikely to unduly constrain the proposal. The Department notes that this approach is consistent with previous approvals where the details of construction sites may not be known at the time of proposal approval, and instead conditions of approval set criteria outlining the requirements that a construction site must meet (i.e. location away from indigenous heritage items/ vegetation of significance/ waterways etc). Under this approach, the detailed cultural heritage assessment of the site, to identify the areas that the construction compound must avoid, can be more appropriately dealt with post approval.

With respect to the Glenfield car park site, due to there being no flexibility on location (i.e. the entire site will be required for the car park), and therefore no potential for avoidance, the Department agrees with DECC's position that insufficient assessment has been undertaken of likely impacts and mitigation requirements, to warrant approval. The Department in particular considers that the relevant indigenous stakeholders should be provided the opportunity to make comment on the site, prior to approval. Consequently, the Department recommends that the car park site not form part of the proposal approval for Stage A. As discussed in Section 5.3.1, the

Department has recommended that alternate parking options be considered for Glenfield. Where these alternate options are likely to impact on heritage values, the Proponent would be required to appropriately assess and offset impacts as part of further assessment requirements for Stage B. The Department has recommended further assessment requirements in this regard.

With respect to European Heritage, Stage A has the potential to cause vibration impacts on the Hurlstone Agricultural School, and the construction compound at James Meehan Estate has the potential to affect the view sheds of the School and Macquarie Field House. To mitigate construction related visual impacts the Proponent has committed to implementing visual screening where reasonable and feasible, which is supported by the Department. Furthermore, the Department has incorporated conditions of approval requiring the Proponent to undertake vibration monitoring and establish appropriate buffer distance prior to commencement of construction, so as to prevent vibration related damage to the School.

The Remainder of the Proposal

As discussed in Section 1.1.2, the Department is satisfied that the preferred proposal alignment, consistent with the objects of the EP&A Act, provides an appropriate balance between environmental impacts (including impacts to indigenous heritage), engineering feasibility and impacts to existing receivers. The Department supports the assessment of indigenous heritage impacts, in accordance with the *Growth Centres Precinct Method*, as this enables the impacts of the proposal to be considered in the context of wide scale regional impacts rather than in isolation. This in turn enables mitigation requirements to focus on landscape scale rather than artefact scale mitigation, allowing far more scope for a meaningful outcome to be achieved for indigenous stakeholders. Consequently, the Department has recommended further indigenous heritage assessments for Stage B to particularly focus on confirming the regional significance of the proposal's impacts in the context of development planned for the entire Growth Centre and to determine mitigation priorities on this basis. As identified by Liverpool Council, the assessment for Stage B would need to confirm how any impacts of the proposal within the 'deferred area' would be mitigated as part of the re-zoning process.

The Proponent has committed to undertaking further detailed design with the objective of minimising direct impacts (including vibration) to identified heritage items, in consultation with affected authority owners (e.g. Sydney Catchment Authority) and in accordance with relevant heritage policies and procedures (*Heritage Analysis Ingleburn Defence Site and Conservation Management Plan for the Upper Canal, Pheasant's Nest to Prospect Reservoir*). The Proponent has also committed to considering measures to minimise heritage view shed impacts during detailed design. The Department supports these measures and has recommended further assessment requirements for Stage B, which reinforce these commitments to progress design development sympathetic to heritage values.

5.3.6 Visual

Issue

The proposal would add an entirely new feature to the landscape between Glenfield and Rossmore, which has the potential to create visual severance by presenting a barrier between areas north and south of the new rail corridor. In addition, specific component of the proposal (e.g. flyovers, road and waterway crossings, noise walls etc) have the potential to be especially visually intrusive.

Submissions

The main concerns raised in public submissions were regarding visual impacts from the vertical alignment of the rail line west of Camden Valley Way and requirements for appropriate visual mitigation and urban design outcomes. One submission raised concerns regarding the visual impacts of the southern flyover, and one regarding the visual impact of noise walls. Campbelltown Council recommended that community members have the opportunity to provide input into the urban design of the flyovers and Landcom required that the design of the rail line within Edmondson Park not physically or visually divide the town centre.

Consideration

Glenfield

As discussed in Section 1.1.2, the Department is satisfied that the rail configuration at Glenfield has been designed to balance technical feasibility with environmental impacts, including visual severance and amenity. Being an already established rail corridor precinct, the Department does not consider that the proposed changes at Glenfield consisting of the construction of flyovers and the station upgrade are likely to generate significant

visual impacts, because the changes would be consistent with the existing rail-based landuse rather than an addition of an entirely new landuse. Notwithstanding, the Proponent has committed to ensuring that the urban design of both the flyovers and the station upgrade at Glenfield are integrated and consistent with surrounding land use, such that the new elements do not create visually obtrusive features at the Glenfield rail precinct. The Proponent has also committed to implementing visual screening where reasonable and feasible, to minimise construction related visual impacts of Stage A. The Department is satisfied that the implementation of these measures would enable the visual impacts of the Glenfield works to be adequately considered and mitigated and has incorporated conditions of approval to reinforce these commitments.

As discussed in Section 5.3.1, the Department has recommended that alternate parking options be considered for Glenfield. Where these alternate options are likely to result in visual impacts, the Proponent would be required to appropriately assess and mitigate impacts as part of further assessment requirements for Stage B. The Department has recommended further assessment requirements in this regard.

The Remainder of the Proposal

As discussed in Section 1.1.2, the Department is satisfied that the proposed alignment at Edmondson Park Town Centre and near Cowpasture Road has been designed to balance technical feasibility with environmental impacts, including visual severance and amenity. Notwithstanding, the Department notes that without adequate mitigation the preferred proposal has the potential to adversely impact on visual amenity. The Department considers that the visual impacts of the proposal must be considered in the context of the broader redevelopment proposed for the area, which would significantly change the existing largely rural landscape of the area. The proposal would become more consistent with landuse in the area and cause less visual impacts, as the planned suburban and town centre functions develop. The Department has recommended measures to minimise the barrier impacts of the rail line in section 5.3.1 of this report.

The Proponent's submission's report includes detailed statement of commitments in relation to visual and urban design including requirements to:

- ensure that the design of the new stations are consistent with the context, character and image of planned land use in respective town centres;
- ensure integration of all elements of the project including stations and the stabling faculty with surrounding land use, in consultation with relevant land use authorities (including GCC and Landcom);
- consider Crime Prevention Through Environmental Design Principles as part of urban design;
- consider heritage values during further design development, including measures to minimise impacts to heritage view sheds where possible;
- further visual assessments of existing and future receivers, as part of detailed design investigations to consider appropriate mitigation requirements including, buffer distances and light spill mitigation;
- consider noise wall design to minimises visual severance impacts;
- specific urban design criteria for potentially visually intrusive structure such as bridges; and
- consultative design with relevant agencies and community members.

The Department is satisfied that the implementation of these measures would enable the visual impacts of the proposal to be adequately considered and mitigated and has incorporated conditions of approval to reinforce these commitments. The Department in particular, supports the Proponent's commitment to provide relevant stakeholders the opportunity to have input into design development (where relevant) and has reinforced this commitment through the recommended conditions of approval.

6 CONCLUSION AND RECOMMENDED APPROVAL

The Department accepts that the South West Rail Link (SWRL) would entail considerable benefits to existing and in particular, future residents of South Western Sydney by delivering efficient public transport infrastructure to the South West Growth Centre, one of the key sites within Sydney targeted for urban land release to cater for Sydney's growth needs. The delivery of the SWRL is intrinsically linked to achieving State Government objectives of facilitating sustainable transit-oriented development in new release areas through the early establishment of efficient public transport infrastructure, which is key to encouraging reduced car dependency in new development areas. The SWRL would provide both existing and future residents within the Growth Centre with a high degree of access to public transport and, thereby, to employment, education, health, retail and recreation opportunities, in the Global Arc (central Sydney) and other major centres such as Parramatta and Liverpool. Reduced car dependency would provide personal financial benefits (with respect to fuel costs) and have regional economic, social and environmental benefits by reducing negative externalities such as accidents, noise/air pollution, greenhouse gas emissions and energy consumption. The proposal would also entail significant benefits to the existing rail network, by increasing service and stabling capacity. The proposal is wholly consistent with strategic planning objectives as provided in the *State Plan* and the *Sydney Metropolitan Strategy*.

The Department has assessed the Proponent's Environmental Assessment and response to submissions, and the submissions received on the proposal, and is satisfied that the preferred corridor for the SWRL has been determined based on an appropriate balance of technical feasibility and economic, social and environmental matters, with due consideration to feasible alternatives. Consequently, the Department supports the proposal footprint identified in the Proponent's submission's report, including the alignment north of the Forest Lawn Cemetery, new station locations and stabling yard location, as the preferred corridor for the SWRL. The Department has furthermore, assessed the environmental impacts of the preferred proposal corridor and is satisfied that the proposal's impacts can be resolved through further design development and refinement of mitigation measures, to meet acceptable environmental standards. Consequently, the Department recommends that the concept plan approval be granted for the preferred proposal corridor.

Concept plan approval does not provide approval to construct, but rather establishes the proposal corridor for which further detailed design is required to be undertaken. The Department's assessment has specifically considered whether any particular component of the preferred proposal corridor, is sufficiently well defined at this stage, and the assessment sufficiently well advanced to require no further assessment requirements. In this regard, the Department considers that the Proponent has undertaken an adequate and appropriate level of environmental assessment for the Stage A (Glenfield rail corridor) works, comprising the works listed below, and therefore recommends that the Minister grant project approval for these works, at the same time that concept plan approval is granted for the entire proposal:

- the full construction and operation of the Glenfield North Flyover (and associated track reconfigurations) independent of Stage B projects, if required;
- the partial construction of the Glenfield South Flyover; and
- establishment of temporary construction sites, at the James Meehan Estate.

To ensure that the Stage A project is constructed in a manner consistent with acceptable environmental standards, the Department has recommended that stringent conditions of approval in relation to the following matters form part of the project approval: construction work hours; construction noise and vibration goals; construction traffic management; the protection of vegetation of conservation significance including *Pimielea spicata* soil seed banks; the avoidance of items of Aboriginal cultural heritage significance; and the protection of waterways.

All other aspects of the proposal (collectively referred to as Stage B), with the exception of the Glenfield corridor works, are considered to require further assessment based on of further design development, prior to seeking project approval (i.e. approval to construct). The Department notes that the Proponent proposed to implement specific parking facilities at Glenfield Station as part of the Stage A works. However, the Department considers that there has yet to be sufficient investigation of parking options at Glenfield at this time, to warrant project approval of the specific parking option proposed. The Department considers that further investigation of parking

options for Glenfield would need to form part of further design development and assessment that is required for the remainder of the proposal.

With regard to the remaining components of the proposal, which require further assessment and design development, the Department considers that these can be divided into two distinct parts:

- works centred around the existing Glenfield rail precinct; and
- works west of Glenfield, traversing mainly greenfield land that is subject to redevelopment as part of the South West Growth Centre.

The Department considers that the issues that remain to be addressed for the works around Glenfield (which comprise the upgrade of the station itself and the provision of various mode-of-access facilities including bus and parking provisions), are unlikely to have the potential to generate significant environmental impacts. Unlike the new stations proposed at Edmondson Park and Leppington, Glenfield is an existing functioning station within an already established town centre. The upgrade of the Glenfield station would not involve the introduction of a new landuse, but rather constitute a consolidation of existing urban and rail landuse, consistent with the existing land use function and character the area. Further, as the proposal would mainly be constructed on already developed land within or surrounding the existing rail corridor, it is considered the works would have low potential to affect completely undisturbed sites, characterised by high conservation values (unlike the new rail corridor which would affect greenfield/ less disturbed areas).

The Department notes that the assessment and delivery of State infrastructure, which does not constitute a significant impact to the environment and is not of State or regional planning significance, would normally be carried out under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) (rather than Part 4), which enables public authority Proponents (such as the Transport Infrastructures Development Corporation) to self assess and determine projects under the requirements of that Part. The Department is satisfied that given the nature and scale of works, the Glenfield Station works in isolation would not constitute a Major Project of regional and State significance, requiring the Minister's consideration. Furthermore, unlike the works west of Glenfield which would traverse across multiple local Government areas (LGAs), and where the Minister would have a role in coordinating issues across multiple LGAs, the Glenfield station works would be contained within a single local Government area (Campbelltown). The Department notes that the works in question are of a similar nature and scale to other rail projects (such as specific rail clearway projects) that are currently subject to assessment and determination by the Proponent under Part 5 of the Act. For the above reasons, the Department supports this component of the Stage B works being self-assessed and determined by the Proponent under Part 5 of the Act.

Whilst being satisfied that the Glenfield station works in themselves are unlikely to result in a significant environmental impact and therefore more appropriately assessed under Part 5 of the Act, the Department nevertheless considers it imperative, that the works are not assessed in isolation but remain consistent with the overall assessment and objectives for the SWRL. Consequently, the Department considers that the Proponent should be required to undertake its Part 5 assessment for Glenfield Station, in accordance with the environmental assessment requirements specified by the Minister. This would ensure consistency of assessment and ensure that the issues of concern identified as part of the current concept plan assessment, are further considered by the Proponent. The Department has also recommended agency and public consultation requirements consistent with those that would otherwise have been undertaken for a Part 3A project (i.e. 30 day exhibition and agency consultation during exhibition) to ensure consistency of consultation across all projects associated with the concept plan, and to ensure continued Department input into the project. To ensure that the Station works are designed to be consistent with existing landuse, and that associated mode-of-access provisions are commensurate with need and located appropriately, the Department has recommended further assessment requirements in relation to transport and traffic, noise, ecology, heritage and visual matters.

In comparison to the Glenfield Station works, the issues that remain to be assessed for the works west of Glenfield (i.e. the new rail corridor from Glenfield to Rossmore) are likely to entail significant environmental impacts requiring detailed consideration and resolution. For example, the Department notes that significant additional design refinement is required at the new stations to address forecast patronage and mode-of-access requirements and ensure adequate integration with surrounding town centres. Similarly further clarification of reasonable and feasible operational noise mitigation measures; confirmation of biodiversity and indigenous heritage offsets; refinement of waterway crossing design; and refinement to urban design and visual mitigation

are all necessary, with respect to these remaining works. Given the likelihood of significant impacts, the Department does not support these remaining components being subject to Part 5 of the Act.

Given the complexity of the issues involved, and the fact that the new rail line would need to be developed in conjunction and consistent with the South West Growth Centre (requiring coordination of several State agencies, including the Growth Centres Commission, Ministry of Transport, RailCorp, Landcom and the Roads and Traffic Authority), the Department considers that it to be most appropriate that the further assessment and approval for the Stage B works west of Glenfield should rest with the Minister. To ensure appropriate design development of the remaining works west of Glenfield, the Department has recommended stringent further assessment requirements in relation to traffic and transport, noise, hydrology, ecology, heritage and visual impacts, which the proponent must address in seeking further project approvals for the works under Part 3A of the EP&A Act.

In addition to further assessment requirements, the Department has recommended that detailed conditions of approval in relation to compliance monitoring, community and stakeholder involvement and environmental management form part of the concept plan approval; with the aim of establishing an overall environmental management framework that would apply all components of the SWRL that are granted project approval. This would ensure consistency in the environmental management of all projects subject to this concept plan approval, regardless of whether subsequent project approvals are granted under Part 3A or Part 5 of the Act.

In summary, the Department is satisfied that the proposed SWRL is on balance justified, in the public interest and can be designed and constructed to meet acceptable environmental and amenity limits subject to the implementation of recommended conditions of approval and the Proponent's Statement of Commitments. Consequently, the Department recommends that the Minister grant concept plan approval for the entire proposal and as part of the concept plan approval determine that:

- with the exception the proposed car parking provisions, no further assessment is required for the Stage A (Glenfield rail corridor) project;
- further assessment is required for the Stage B (Glenfield Station) project (including relevant parking provisions) under Part 5 of the EP&A Act, in relation to transport and traffic, noise, ecology, heritage and visual impacts; and
- further assessment is required for the Stage B (remaining works) project under Part 3A of the EP&A Act, in relation to transport and traffic, noise, hydrology, ecology, heritage and visual impacts.

The Department also recommends that project approval be granted to the Stage A (Glenfield corridor) project at the same time that concept plan approval is granted for the entire project.

APPENDIX A. RECOMMENDED CONDITIONS OF APPROVAL

APPENDIX B. STATEMENT OF COMMITMENTS

APPENDIX C. ENVIRONMENTAL ASSESSMENT

APPENDIX D. RESPONSE TO SUBMISSIONS
