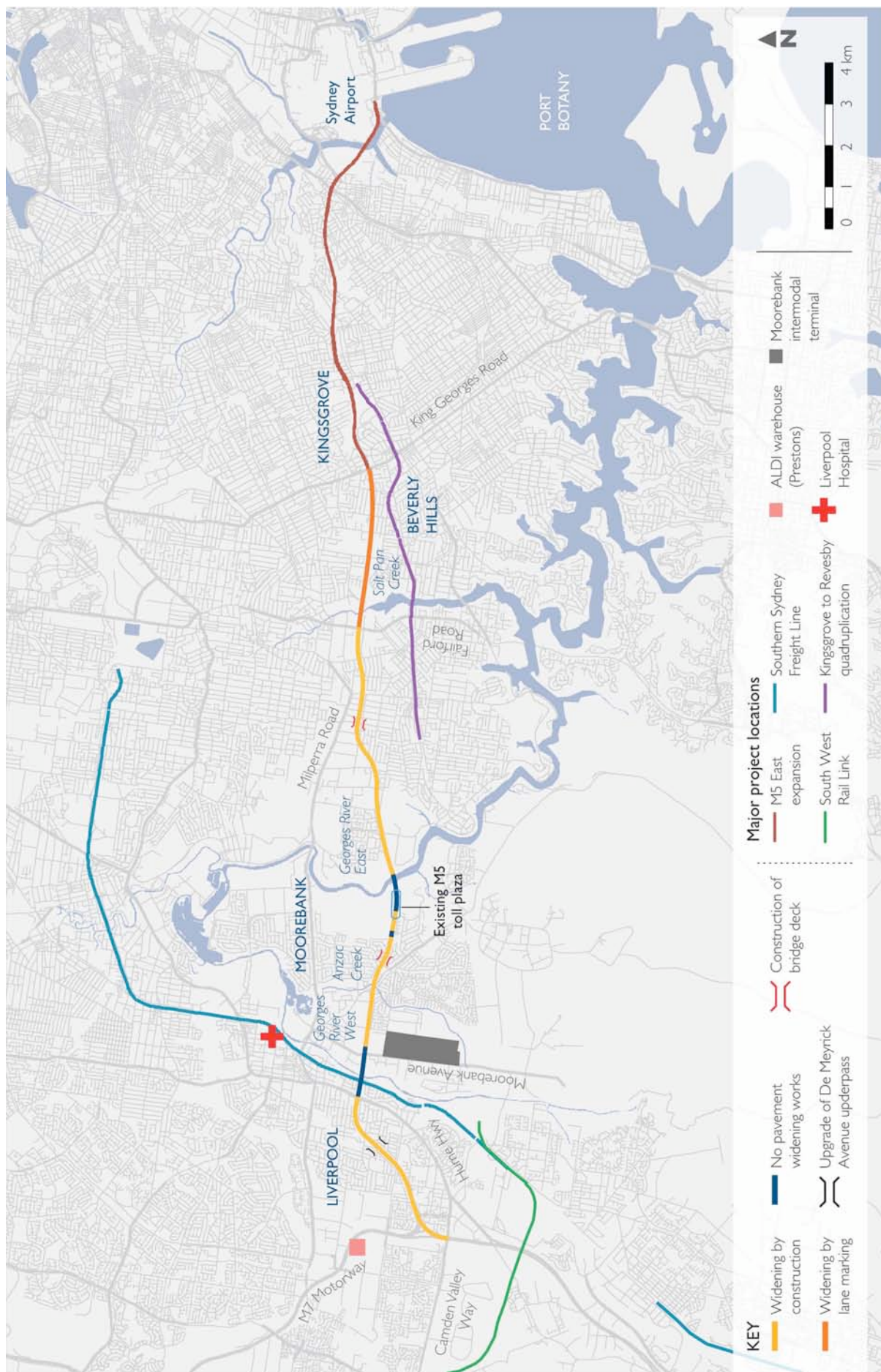




Biodiversity

Construction of the project includes:

- The removal of 0.22 hectares of mangroves within Salt Pan Creek (about 150 mature and 150 juvenile trees).
- Direct impacts on 0.02 hectares of saltmarsh vegetation.
- Removal of more than 0.12 hectares of Swamp oak floodplain forest (an endangered ecological community listed under the *Threatened Species Conservation Act 1995*).
- Removal of 20 individuals of the threatened flora species Downy Wattle (*Acacia pubescens*).
- Removal of about 30 individuals of the threatened flora population Gosford Wattle (*Acacia prominens*).

Visual and urban design

The project includes the introduction of new noise barriers at 30 locations, varying in height from one to four metres over a total length of 6850 metres on both sides of the rail corridor. These barriers will have a significant impact on the visual character of the corridor for those living adjacent to it, using the trains or passing across it.

Other visual impacts include the removal of vegetation, the lengthening of bridges and installation of new retaining walls.

Southern Sydney Freight Line project

The Southern Sydney Freight Line rail corridor crosses the M5 South West Motorway about 500 metres east of the Hume Highway (refer to Figure 9.7).

It will provide a dedicated, 36-kilometre freight rail line between Macarthur and Sefton. This third track in the rail corridor will allow passenger and freight services to operate independently. Construction of the project commenced in April 2009. The completion date is uncertain due to delays announced in November 2009.

Information on impacts was obtained from the *Southern Sydney Freight Line Environmental Assessment* (Parsons Brinkerhoff, 2006a).

Noise and vibration

Maximum noise levels from construction activities are predicted to exceed the noise criteria at all locations.

Areas close to bridge works and station works may be subject to construction noise for longer periods.

In terms of operational impacts, LAeq, 24h and LMax predictions for the closest noise catchment to the M5 South West Motorway (south of Liverpool), indicate that noise levels in 2018 with the Southern Sydney Freight Line (and mitigation in place) would be lower than those in 2008 without the Southern Sydney Freight Line. They are, however, expected to be slightly above the planning criteria of 55 dBA LAeq, 24h and 80 LMax.

Traffic and transport

Up to 45 trucks per day would access the site gates serving the Glenfield and Sefton Park Junction work areas over a period of up to 20 months. The total impact of construction traffic on the surrounding road network is estimated as a worst-case scenario of up to 840 truck daily movements on some of the main road links serving the route, in particular the Hume Highway and the south western M5 South West Motorway. This represents an increase of an average of around 2.3 per cent over 2002 traffic flow data for these two roads. However, to put these results into perspective, it should be noted that fluctuations in traffic flows of between five and 10 per cent throughout average weekdays are common on these roads.

Operationally, the increased rail freight will generally replace, or be a substitute for, heavy vehicle trips on the interstate road network. It is estimated that there will be 182,468 fewer semi-trailer net tonne kilometre road trips by 2018.

Biodiversity

The project includes the clearing of 2.1 hectares of native vegetation. This is not considered to be significant due to the condition, fragmentation and size of habitats to be cleared. Construction of the project will affect:

- About 0.4 hectares of Cumberland Plain Woodland in Leacock Regional Park.
- About 1.7 hectares of Sydney Coastal River Flat Forest at Bow Bowing Creek to the north of Narellan Road, adjacent to the Georges River at Casula and Liverpool, and at Cabramatta and Prospect creeks.
- One population of Downy Wattle covering about 400 square metres at Regents Park 'Triangle'. This population consists of three mature individuals and seven juvenile shoots and is of low significance.
- Marginal habitat for the Green and Golden Bell Frog in the south of Leacock Regional Park.
- Marginal habitat for the Cumberland Plain Large Land Snail in the south of Leacock Regional Park.

Visual and urban design

Near the M5 South West Motorway, the visual effect would be high in some sections from Casula to just north of Liverpool Railway Station. Significant volumes of fill would be used at this location to extend the railway corridor formation, resulting in the construction of batters and/or retaining structures.

South West Rail Link project

Stage 1 of the South West Rail Link – the Glenfield Transport Interchange – is underway, delivering an upgrade of Glenfield Station and essential rail infrastructure works to improve reliability and capacity. Construction of Stage 1 commenced in May 2009 with completion expected in 2013.

Stage 2 is subject to approval (the Stage 2 environmental assessment is currently on exhibition). It would provide a new rail line between Glenfield and Leppington, including two new stations and train stabling. Glenfield Station is located about two kilometres to the south east of the M5 South West Motorway. From Glenfield Station, the proposed rail corridor continues north west for about 11 kilometres.

Information on impacts was obtained from the *South West Rail Link Glenfield to Leppington Rail Line Project Environmental Assessment* (Parsons Brinkerhoff, 2006b). These are summarised below.

Noise and vibration

Construction of Stage 2 would generate noise impacts along the proposed rail corridor.

Traffic and transport

The construction of the project would generate additional traffic on the regional road network.

Biodiversity

Impacts on native vegetation would include the clearing of threatened ecological communities as follows:

- 24.5 hectares of Cumberland Plain Woodland (*Threatened Species Conservation Act 1995*).
- 5.5 hectares of Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest (*Environment Protection and Biodiversity Conservation Act 1999*).
- 4.4 hectares of River-Flat Eucalypt Forest on Coastal Floodplains (*Threatened Species Conservation Act 1995*).

Threatened fauna likely to be impacted include the Cumberland Plain Large Land Snail, the Grey-headed Flying-fox and microbats.

Visual and urban design

Potential visual impacts would largely be mitigated by existing vegetation and the rolling topography of the area. Near the M5 South West Motorway, visual impacts are likely to be high at Glenfield as a result of the upgrade to Glenfield Station and the provision of the Glenfield Junction Southern Flyover.

Liverpool Hospital redevelopment project

Liverpool hospital is located about two kilometres to the north of the M5 South West Motorway.

The \$390 million redevelopment includes a new nine-storey hospital; a major refurbishment of the existing clinical services building; and an elevated road and separate pedestrian bridge over the railway that will link the eastern and western campuses.

Phase 1 of the redevelopment has been completed and phase 2 of the redevelopment will be completed in late 2011.

Information on impacts was obtained from the *Liverpool Hospital Redevelopment Director-General's Environmental Assessment Report* (DoP, 2007).

Noise and vibration

Noise impacts during construction are localised.

Traffic and transport

Construction traffic impacts are localised.

The total operational traffic generated by the hospital is expected to increase by over 70 per cent with the hospital redevelopment.

Biodiversity

There is little natural vegetation on the site and the hospital does not contain any threatened or vulnerable species, populations, communities or significant habitats. Construction impacts are being managed through the recommended conditions, ensuring any indirect impacts on Georges River ecology are minimal.

Visual and urban design

Visual impacts are localised.

Aldi warehouse and distribution centre project

This project has been completed and the warehouse was opened in November 2009.

The project involved construction and operation of a warehouse and distribution centre at Prestons, about 1.75 kilometres from the M5 South West Motorway.

Noise and vibration

The site is located in an industrial area. There may have been some minor exceedance of the construction daytime noise goals at residences south of the site (Latina Circuit) and at Sule College, by 3 dB(A) and 4 dB(A), respectively.

Traffic and transport

Construction traffic was not expected to be significant and was adequately accommodated by the road network and a temporary access road.

Biodiversity

Construction of the distribution centre resulted in clearing 10 hectares of vegetation, of which about five hectares was Shale Gravel Transition Forest, which is listed as an endangered ecological community under the *Threatened Species Conservation Act (1995)*. Aldi proposed to protect and enhance 1.5 hectares of land adjacent to the distribution centre in the eastern part of the site to high quality Shale Gravel Transition Forest.

Visual and urban design

The project resulted in the removal of native vegetation and construction of a distribution centre building, thereby significantly altering the visual nature of the site. The building has a maximum height of 20 metres on the eastern side, reducing to 8.5 metres on the western side. The northern façade along the M7 is about 273 metres long.

M5 East expansion project

Although not currently listed as a major project on the Department of Planning's register of major projects, this project has been considered, as it is a component of the M5 corridor expansion and would have substantial impacts.

The M5 East expansion project involves widening the M5 East Freeway east of King Georges Road to four lanes in each direction. This would be achieved by providing four lanes in each direction from Beverly Hills to Earlwood, duplicating the M5 East tunnel from Bexley Road, Bexley North, to the Cooks River, Arncliffe and providing a connection to the airport and industrial areas of inner southern Sydney and Mascot. It would also involve widening of the M5 South West Motorway between Fairford Road and King Georges Road in the eastbound direction.

A project application for the project has not yet been submitted, but preliminary assessments are currently underway. The timing of the project is therefore uncertain, however it is unlikely that construction would commence during the construction period of the M5 West widening project.

Noise and vibration

During construction, noise impacts would be localised along the M5 East corridor. During operation, noise impacts, if any, would also be localised along the corridor.

Traffic and transport

The construction of the M5 East expansion would generate substantial construction traffic volumes for the local and regional network, particularly given the large quantity of tunnel spoil that would need to be removed. The project would also result in changes to traffic patterns during and following construction.

Biodiversity

At this stage, impacts on biodiversity are expected to be limited.

Visual and urban design

Visual impacts would be localised, but may be substantial as a result of new surface elements such as viaducts.

Moorebank Intermodal Freight Terminal

In the 2010–11 Budget, the Australian Government announced funding to complete the detailed planning on the Moorebank Intermodal Terminal, with the staged redevelopment of the hub expected to start in 2013, subject to final approval. The first stage is expected to be operational by 2016.

The Moorebank Intermodal Terminal would provide an integrated transport solution for the movement of freight to, from and within the Sydney basin to support national productivity and reduce business costs and urban traffic congestion by a more efficient distribution of containers by rail. It aims to address the shortage of intermodal terminal capacity in Sydney and complement other government investments in rail connections on the main interstate Melbourne–Sydney–Brisbane rail line as well as to Port Botany.

The design and environmental assessment processes for the project are in their preliminary stages and therefore limited information is currently available regarding likely impacts. It is expected however that construction and operational traffic and noise would be important issues for consideration.

9.9.4 Assessment of impacts

Table 9.13 provides a broad assessment of the likelihood of the identified projects interacting with the M5 West widening project to produce cumulative impacts. The likelihood is based on the construction period of each project in relation to the M5 West widening and the minimum distance to the M5 South West Motorway.

Table 9.13 Likelihood of project interactions with the M5 West widening project

Existing or proposed projects	Likelihood of interaction	Expected construction period	Minimum distance to project
Kingsgrove to Revesby quadruplication	High	Concurrent	400 metres
SSFL	High	Concurrent	Crosses M5 corridor
South West Rail Link	Low	Concurrent	2 kilometres
Liverpool Hospital redevelopment	Low	Concurrent	2 kilometres
Aldi Warehouse and distribution centre	None	Consecutive (preceding)	1.75 kilometres
M5 East expansion	High	Consecutive (superseding)	Adjacent at King Georges Road
Moorebank Intermodal Freight Terminal	High	Consecutive (superseding)	400 metres (estimate)

The potential cumulative impacts of these projects are discussed below in relation to:

- Concurrent impacts – That is, the potential cumulative impacts as a result of projects being constructed at the same time.
- Consecutive impacts – That is, the potential cumulative impacts as a result of a project being constructed before and after the construction of the M5 West widening project.

Concurrent impacts

Noise and vibration

The following cumulative construction noise impacts are expected:

- Kingsgrove to Revesby Quadruplication – Cumulative construction noise impacts are unlikely as major construction works are not proposed along the M5 South West Motorway between King Georges Road and Fairfield Road, the section of the motorway closest to the rail line works.
- Southern Sydney Freight Line – Cumulative construction noise impacts are unlikely as major construction works are not proposed along the M5 South West Motorway between Moorebank Avenue and the Hume Highway, the section of the motorway closest to the freight line works.
- South West Rail Link – The South West Rail Link work site closest to the M5 South West Motorway is about two kilometres to the south east. Given the distance between projects, cumulative construction noise impacts are not expected.
- Liverpool Hospital – The hospital is located about two kilometres to the north of the M5 South West Motorway. Given the distance between projects, cumulative construction noise impacts would not result.

The following cumulative operational noise impacts are expected:

- Kingsgrove to Revesby Quadruplication – Cumulative operational noise impacts are not expected, given that the identified residences which would be subject to acute noise from the M5 West widening project would not be affected by noise from the railway.
- Southern Sydney Freight Line – With mitigation measures in place, the Southern Sydney Freight Line is expected to reduce the operational noise impacts along this rail corridor, although levels would still exceed the planning criteria. Cumulative operational noise impacts are therefore not expected.
- South West Rail Link – Given the distance between projects, cumulative operational impacts are not expected.

- Liverpool Hospital redevelopment – Given the distance between projects, cumulative operational impacts are not expected.
- M5 East expansion – Operational noise along the corridor is likely to increase as a result of both projects, but this is unlikely to have any cumulative noise impacts at any individual locations. The M5 East expansion would be subject to its own approval process and should predicted noise levels be higher on the M5 West corridor as a result, consideration would need to be given to additional noise mitigation measures.

Traffic and transport

At a regional level, cumulative construction traffic impacts may occur where the above-mentioned projects use the same construction traffic routes at the same time as the construction traffic for the M5 West widening. Cumulative impacts may include traffic congestion (particularly if truck movements occur during peak hour and if truck queuing occurs), amenity impacts (such as noise, visual and air quality) on sensitive receivers near these construction traffic routes, and pavement degradation.

In terms of cumulative operational impacts, the operation of the Southern Sydney Freight Line is expected to result in 182,468 fewer semi-trailer net tonne kilometre road trips by 2018. The operation of the M5 East Expansion would result in increased efficiencies along the M5 corridor. The operational relationship between the M5 West widening and the M5 East expansion are discussed in section 8.1.6.

Biodiversity

Except for the Liverpool Hospital redevelopment project (and potentially the M5 East expansion project), all of the above-mentioned projects would require the removal of areas of vegetation, including threatened species. This would result in a cumulative loss of vegetation communities and threatened species within the area, including the Downy Wattle.

The mitigation and offset measures proposed as part of this project would protect known habitat for threatened species in the area, including Downy Wattle and the Green and Golden Bell Frog.

Visual and urban design

The M5 West widening, the M5 East expansion, the Kingsgrove to Revesby quadruplication, the Southern Sydney Freight Line, Stage 1 of the South West Rail Link and Liverpool Hospital redevelopment projects would all be constructed entirely or largely within existing corridors or footprints. As a result, the cumulative impacts of these projects are unlikely to result in cumulative changes to visual amenity for individual properties, but rather a changing landscape at a regional level as a result of additional noise walls and embankments, and new bridges and stations. The changes to the landscape are considered consistent with an urbanised environment in a large city.

Consecutive impacts

The construction of the Aldi warehouse and distribution centre at Prestons has already been completed and operation commenced in November 2009. Back-to-back construction impacts (or construction fatigue, as described in section 9.9.4) from this project are not anticipated given the distance between the projects (1.75 kilometres) and the timeframe between construction periods (over 12 months).

The M5 East expansion is expected to be constructed following completion of the M5 West widening project. The potential for cumulative (consecutive) noise impacts would only occur at the intersection of these projects at King Georges Road. As only minor works (lane re-marking) would be required at this location for the M5 West widening project, cumulative construction noise impacts are considered unlikely.

There is the potential for cumulative (consecutive) noise and traffic impacts in the vicinity of the Moorebank Intermodal Freight Terminal site. It is located in close proximity to the M5 South West Motorway and the proposed construction compound site on Moorebank Avenue.

9.9.5 Mitigation measures

The majority of the cumulative impacts would be mitigated and managed by the measures outlined in this chapter and in Chapter 8. Additional mitigation measures include:

- Consultation with local communities potentially affected by multiple projects.
- Consultation with the proponents of other nearby projects to increase the overall awareness of project timeframes and impacts.

