

## 4. Additional investigations

### 4.1 Introduction

Several additional investigations have been undertaken since finalisation of the EA and Concept Plan. Some of these investigations were identified during the preparation of the EA and Concept Plan, some were undertaken in response to issues raised in the submissions, and some simply represent a continuation of the design development. The investigations and their outcomes are outlined in the following Sections.

### 4.2 Investigations completed in response to submissions

#### 4.2.1 Assessment of alternative horizontal and vertical alignment at Cowpasture Road

As detailed in Section 3.3, several submissions raised concerns about the visual and other impacts associated with the indicative vertical alignment of the SWRL in the vicinity of Cowpasture Road. A few submissions also requested that TIDC consider moving the alignment further to the south to minimise direct property impacts in this area. Suggestions that the SWRL could pass under Cowpasture Road and the Sydney Water Canal are not considered feasible due to the prohibitive cost of tunnelling, flooding issues, and risks associated with the potential for damage to the canal and the location of the major Sydney to Moomba and Eastern Australian Gas pipelines running adjacent to the canal.

TIDC has, however, undertaken further assessment of an alternative horizontal alignment that was suggested (including lowering of the vertical alignment), which is drawn on Figure 4-1. The alternative is compared with the proposed alignment in Table 4-1.

**Table 4-1 Comparison of proposed and alternative alignment in vicinity of Cowpasture Road**

<b>Issue for comparison</b>	<b>Proposed SWRL alignment at Cowpasture Road</b>	<b>Alternative alignment at Cowpasture Road</b>
Property impacts	1 less property directly affected.	Reduced amount of severance of 8 private properties directly affected off Bringelly Road.
Earthworks		Marginally improved earthworks.
Track and alignment	Shorter alignment by 50 metres. Larger curve radius of alignment. Decrease in severity of reverse curves.	
Visual impact	Lower indirect visual impact from embankment on adjacent property immediately to west of Cowpasture Road (see Figure 3-1).  The bridge would have a visual impact. Ways to mitigate this visual impact would be addressed during the further design development.	Height of embankment would be unchanged, but there would be a lower visual impact on properties that front Bringelly Road, and the maximum cutting depth would be slightly reduced.

Issue for comparison	Proposed SWRL alignment at Cowpasture Road	Alternative alignment at Cowpasture Road
Costs	Marginally lower capital and maintenance costs due to shorter length and larger curve radius.	Marginal difference.
Operations	Marginally shorter journey time.	

In consideration of the above, the suggested alternative alignment does not represent a better engineering design outcome at this location or for the SWRL alignment as a whole, nor does it result in any significant reduction in potential visual impacts or amenity. The alternative would not result in any significant lowering of the vertical alignment. The SWRL alignment is not, therefore, proposed to be amended. The management of visual impacts of the embankment through this area would be considered in the further design development and assessment (see SoC B36 in Appendix A).

#### 4.2.2 Assessment of alternative underpass at Glenfield South Junction

At the Glenfield community information session, and in submissions received, it was questioned whether the Glenfield South flyover could be replaced with an underpass under the Main South Line (i.e. a dive structure). TIDC has completed an assessment of this alternative and concluded that this option would not be feasible for the following reasons:

- The required grade of the new SWRL to pass under the Main South Line (approximately 4.9%) would be unacceptable given it is significantly steeper than the maximum allowable grade of 3%.
- The dive structure would have to be constructed on a tight radius curve and the tie in would be difficult and expensive to construct.
- There would be difficulties in providing appropriate flood protection to the dive structure.

For these reasons, it is concluded that the current flyover concept represents the best cost-effective option available and would be retained as part of the SWRL Concept Plan.

### 4.3 Parking provision at Glenfield Station

A review was undertaken of the parking provision at Glenfield Station, as a result of submissions received on the issue and the recent release of the NSW Government's (November 2006) Urban Transport Statement that commits to investigation of additional commuter parking at Glenfield. The review considered the form and level of the proposed commuter parking at Glenfield Station in the short term, and whether this could be delivered as part of the planned Stage A works.

The exhibited EA included a commitment that the proponent would replace, as a minimum, the estimated 120 parking spaces that would be lost as a result of construction of Stage B of the project (i.e. works to Glenfield Station). A number of submissions to the EA highlighted the increased problems with commuter parking on local streets at Glenfield and requested the provision of additional parking.

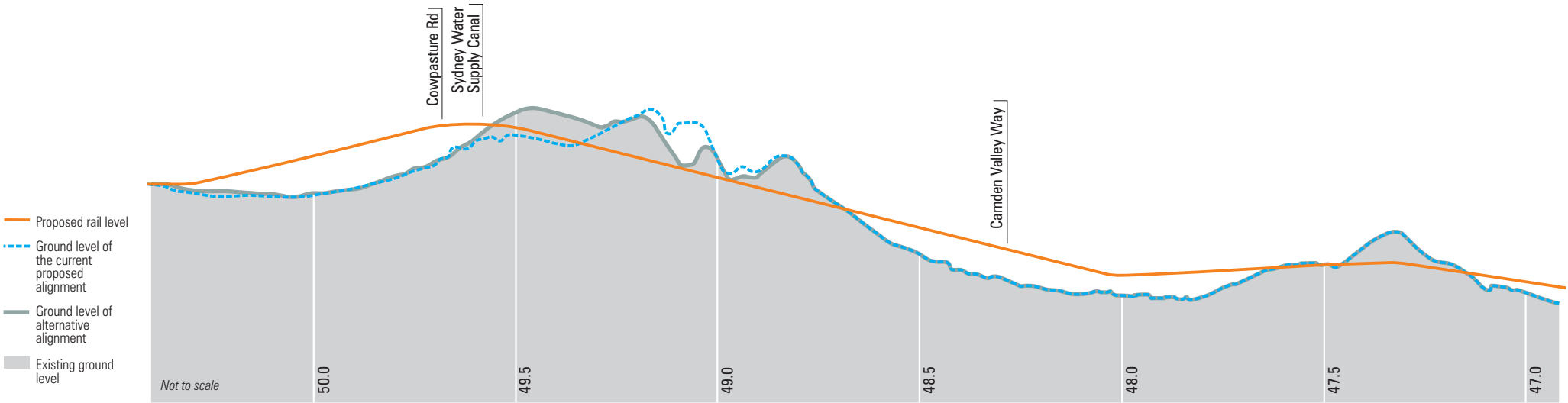
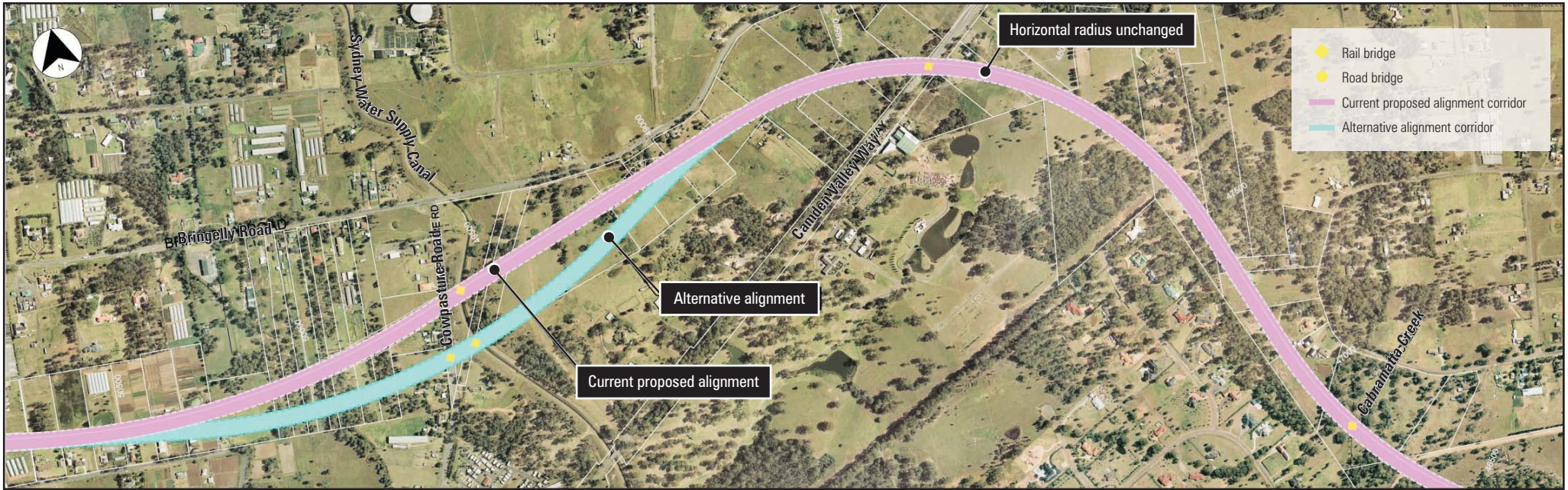


Figure 4-1 **Alternative horizontal and indicative vertical alignment in vicinity of Cowpasture Road**  
 Source: Connell Wagner (2007)

TIDC's further investigation of this issue found that:

- Providing at-grade parking on a currently unused parcel of RailCorp land could provide up to 280 additional parking spaces on the western side of the Station (i.e. replace the 120 spaces that would eventually be lost and provide an additional 160 spaces). An additional 15 spaces could be provided along the access road that services the station and school (by reconfiguration of the existing spaces near the access to the RailCorp land). (Note: The existing informal parking arrangements on the access road to the station and school provide 219 spaces.).
- A 2 level multi-storey car park on the RailCorp land could provide approximately another 280 spaces at this site. Alternatively, the provision of parking on the eastern side of the Station (where the 120 spaces would be lost) would require construction of a multi-storey car park, possibly utilising the existing council car parking opposite the station entrance and/or procurement of adjacent property. However, provision of a multi-storey car park solution is considered to be a long-term solution that needs to be assessed alongside the further planning and development of the SWRL stations.

Considering the above, together with the NSW Government's (2006a) Urban Transport Statement that undertakes to investigate additional commuter parking in the long term, it was concluded that the best option, in the short term, would be to provide some additional commuter parking at Glenfield Station. This would be best achieved by making use of existing RailCorp land on the western side of the corridor (see Figure 4-2) to construct up to 280 spaces at grade and delivered as part of the Stage A SWRL works to minimise the impacts on commuter car parking arising from the subsequent construction of Glenfield Station (Stage B). The proposed amended arrangement is described further in Chapter 5 - Modifications to the SWRL Concept Plan. The long-term provision of commuter parking would be considered in the SWRL further assessments, as detailed in the SoC B12 in Appendix A.

#### **4.4 Stabling facility train wash and access road**

Following exhibition of the EA and Concept Plan, RailCorp raised issues regarding the location of the proposed train wash facility at the stabling facility west of the planned Leppington town centre.

Figure 7-6 in the EA and Concept Plan showed an indicative design of the facility identified that a train wash facility could be accommodated on the southern side of the stabling tracks near to the proposed access road. RailCorp indicated that it would be operationally desirable for the train wash facility to be placed at the entrance to the facility, on the access roads. This would provide the advantage of minimising train movements.

As explained in Section 20.3.4 of the EA and Concept Plan, the layout of the facility (including the train wash) is indicative only and subject to further design development and assessment. Notwithstanding this, TIDC considered options for location of the train wash facility to demonstrate that the stabling facility footprint identified in the Concept Plan is feasible. The proposed amended location (see Figure 4-3) is approximately 150 metres further to the east than the previous location.

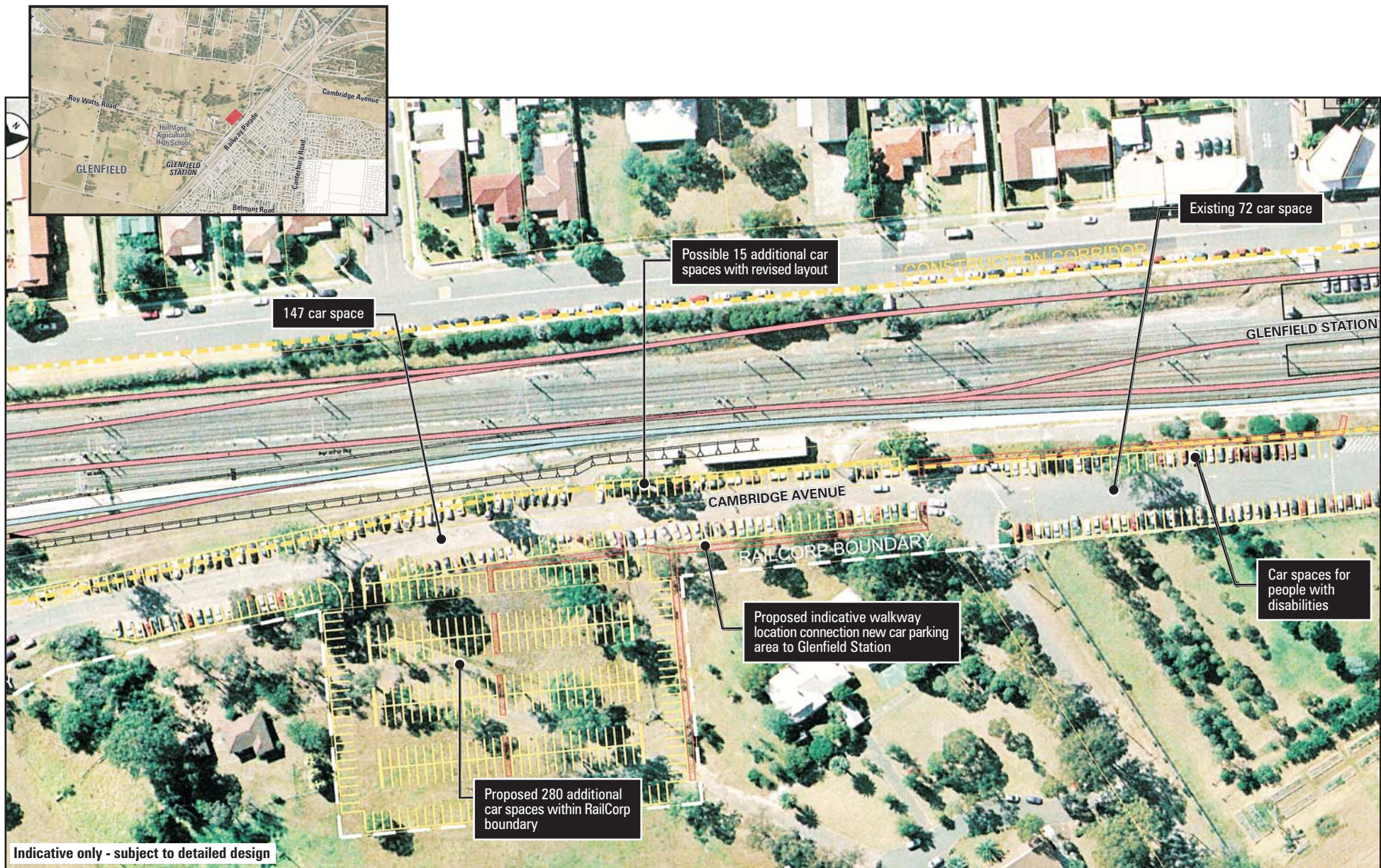


Figure 4-2 Additional commuter car parking provision, Glenfield Station



Figure 4-3 Revised indicative train stabling facility concept

The amended location:

- would mean that trains would not have to reverse out of the train wash facility (as they would in the previous location)
- would not change the footprint of the SWRL stabling facility
- would not substantially change the potential environmental impacts of the train wash facility.

For these reasons, it is concluded that the revised location represents the best operational option available within the proposed footprint for the stabling facility (subject to further design development).

## 4.5 Review of vertical alignment at Eastwood Road

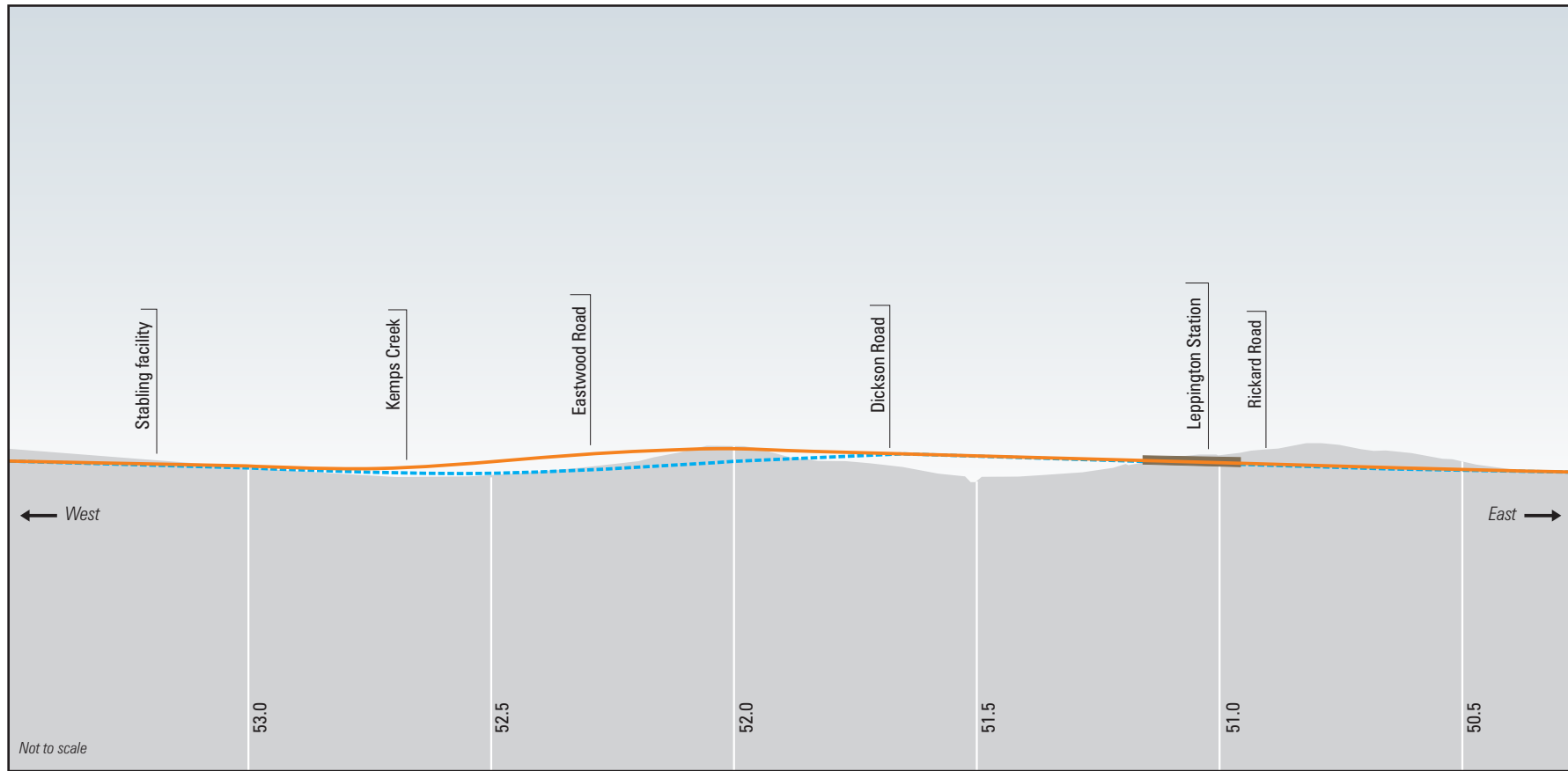
The indicative vertical alignment of the SWRL in the EA and Concept Plan (in Figure 20-2d), showed the SWRL crossing Eastwood Road at grade. To ensure consistency with the South West Growth Centre Structure Plan and minimise conflict between the SWRL and road operations/construction, TIDC further investigated the vertical alignment design in this area. The engineering concluded that the SWRL could pass over Eastwood Road in this area, subject to the confirmation of levels and required clearances during the further design. The revised indicative vertical alignment is shown in Figure 4-4 (including a comparison with the previous vertical alignment).

Amendments to the vertical alignment of the SWRL do not result in any changes to the Concept Plan. As noted within the EA, the vertical alignment is indicative only and subject to further design development and assessment.

## 4.6 Additional Aboriginal heritage assessment

A Preliminary Assessment of Aboriginal Archaeological and Cultural Heritage Values was prepared as part of the EA (see Technical Paper 6 in Volume 3). As explained in that assessment, TIDC was directed by the Department of Environment and Conservation and the Department of Planning to follow the Growth Centre Commission's *Protocol for Aboriginal Stakeholder Involvement in the Sydney Growth Centres* (Context Pty Ltd 2006a) and the *Precinct Assessment Method for Aboriginal Cultural Heritage in the Sydney Growth Centres* (Context Pty Ltd 2006b) in its assessment of impacts of the proposed SWRL. TIDC wrote to the Department of Environment and Conservation (now DECC) and it was agreed that given our concept level of assessment, preparation of an assessment to completion of Step 1 of the protocol was reasonable.

As explained in the EA (Technical Paper 6), the approach taken was modified slightly to address the SWRL as a concept approval for a linear infrastructure project being considered under Part 3A, rather than a precinct development, of which the above protocol and method were developed for. In addition to gathering and assessing existing information, a preliminary field investigation with Aboriginal stakeholders was undertaken to supplement and inform the available information. Results of all of these investigations and feedback received from stakeholders up until finalisation of the EA were included in the preliminary report.



- New indicative vertical alignment
- - - Old indicative vertical alignment
- Existing ground level

Figure 4-4 Revised indicative vertical alignment at Eastwood Road



In order to adequately complete Step 1 of the Precinct Assessment Method, by incorporating feedback from Aboriginal stakeholders on the results and outcomes of the preliminary assessment, Appendix D of this Submissions Report includes additional Aboriginal heritage assessment. The additional assessment includes provision of the preliminary assessment to Aboriginal stakeholders for comment, an Aboriginal stakeholder workshop on 13 December 2006 to discuss the findings of the preliminary assessment (and Stage A of the project – see Section 4.8), and the results of a site visit with an additional Aboriginal stakeholder that did not attend the visit in 2006.

The additional assessment found that the conclusions of the preliminary assessment remain valid and no changes are required to the recommendations as a result of the additional work completed since the EA and Concept Plan was prepared. Additional assessment is proposed as part of the further design development and assessment (see SoCs B24 and B25).

## 4.7 Sustainability workshop

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

The *State Plan – New Direction for NSW* (NSW Government 2006b) includes a number of sustainability objectives. These include:

- a high quality transport system
- cleaner air and progress on green house gas reduction
- increased use of renewable energy
- improved efficiency of water use.

TIDC is seeking to incorporate the principles of ecologically sustainable development (ESD) and sustainability initiatives into the MREP.

Sustainability opportunities could include aspects such as:

- use of green power
- beneficial reuse of spoil
- inclusion of rainwater tanks, solar panels and other design elements in station design
- reuse of treated tunnel groundwater for landscaping or other beneficial uses
- better use of the natural environment for noise mitigation
- use of recycled materials in the construction of the works
- energy management systems for stations
- protecting, maintaining and improving biodiversity values during project construction.

The first step in this process was a workshop held on 28 February 2007 to set the strategic direction for sustainability initiatives in TIDC.

The workshop focused on key sustainability directions for the MREP projects (including SWRL) and identified a number of sustainability initiatives that could be implemented as the project develops.

Commitment B1 in Appendix A states that core sustainability principles would be developed for the project, covering the following themes:

- energy
- greenhouse emissions
- water
- community and stakeholder involvement
- biodiversity
- resource recycling.

To develop these principles, a benchmarking exercise would be undertaken to enable sustainability goals and objectives to be determined, which would provide clear result areas and targets under each theme.

## 4.8 Glenfield Stage A

### 4.8.1 Additional engineering investigations

As noted within the EA and Concept Plan, the Glenfield Junction early works, identified as Stage A, could provide significant program advantages to the project. The works at Glenfield are on the critical path for project delivery. Since finalisation of the EA, the benefits of early commissioning of Glenfield Junction North were also flagged, and TIDC has completed further work on the design and construction of the proposed Stage A works. It is now proposed that an operating Glenfield Junction North is included as part of the Stage A works (i.e. the Glenfield North flyover could be fully constructed and commissioned independently from Stage B, if required). The proposed amendments to the project staging and construction sequence are described in Chapter 5.

### 4.8.2 Additional environmental investigations

Section 20.4 of the EA and Concept Plan identified the following additional investigations would be required to better define the impacts of the proposed Stage A works at Glenfield:

- further consultation with Aboriginal stakeholders about Stage A to determine any potential extent of Aboriginal heritage impacts in this locality
- targeted surveys for *pimelea spicata*, a known threatened plant species, to determine its presence at Glenfield Junction and the significance of any biodiversity impacts, if it is present
- noise assessment to determine the provision of reasonable and feasible noise mitigation, in particular the requirement for noise barriers
- clarification of the potential local traffic and transport impacts of the Glenfield Stage A works
- further assessment of the potential impacts on the Glenfield Waste Facility (integrity of the landfill and the presence of any contaminated/hazardous materials) and the development of design and other management measures.

As explained in Sections 4.3, 4.8.1 and Chapter 5, TIDC also proposes to add new commuter car parking and has revised the construction sequence to include full construction and, if required, commissioning of the Glenfield North flyover as part of the Stage A works. Some additional assessment was required to assess the potential impacts of these changes.

Furthermore, as Stage A of the project was not dealt with specifically (as succinct from the rest of the project) in the various technical assessments in the EA, this Section provides clarification on the potential impacts of Stage A in more detail.

These investigations are detailed below under headings that reflect the breakdown of key and other environmental issues in the EA. As the only change in footprint of the Stage A works is at the proposed additional commuter car park at Glenfield, this site is described first below.

Figure 4-5 clarifies the extent of the worksites proposed for use during Stage A.

### **Description of the Glenfield additional car park site**

The proposed additional car park site at Glenfield is shown in Figure 4-2. It is located on the access road servicing the Station and school, on the western side of the rail corridor, approximately 320 metres north of the existing Glenfield Station and 80 metres north of Roy Watts Road. The off-street car park site is approximately 68 metres by 97 metres in size. The site is relatively level (see Photograph 4-1).



**Photograph 4-1 Site of proposed Glenfield additional car park**



- Proposed SWRL corridor
- Potential haulage routes
- Construction site
- - - Construction access route
- - - LGA boundary

Figure 4-5 **Indicative construction worksite locations and haulage routes (Stage A)**

In terms of vegetation/biodiversity, although this site was not included in the Biodiversity Assessment (Technical Paper 3 in Volume 2 of the EA and Concept Plan), part of the site was visited as part of the overall assessment of the SWRL. The general vegetation was identified as Remnant 4 in Technical Paper 3.

The majority of the site has been mapped as Shale Plains Woodland as part of the Vegetation of the Cumberland Plain (NSW National Parks and Wildlife Service 2002a). Shale Plains Woodland is a sub-unit of Cumberland Plain Woodland, which is listed as an endangered ecological community under the *Threatened Species Conservation Act 1995* and the *Environment Protection and Biodiversity Conservation Act 1999*. This remnant has been mapped with a canopy cover of less than 10% and is classified as 'other remnant vegetation'. This is the lowest conservation category assigned to remnant vegetation as part of the mapping of remnant vegetation across the Cumberland Plain (NSW National Parks and Wildlife Service 2002b). This mapping was confirmed in the site inspection undertaken during the preparation of Technical Paper 3 in Volume 2 of the EA and Concept Plan (i.e. both the vegetation condition and fauna habitat condition were recorded as poor, see Site 4 in Appendix B of Technical Paper 3).

The vegetation consisted of scattered Grey Box (*Eucalyptus moluccana*), Forest Red Gum (*E. tereticornis*) and Spotted Gum (*Corymbia maculata*) (see Photograph 4-1). The shrub layer was largely absent and the groundcover was modified and consisted generally of introduced species. The north-west corner of the site is not mapped as native vegetation and is likely to consist of only the modified groundcover.

Fauna habitats were in poor condition, as evidenced by the general lack of structure, and were limited to upper canopy resources.

A number of threatened species of plant are known to occur in Shale Plains Woodland, including *Marsdenia viridiflora* (endangered population), *Acacia pubescens*, *Pultenaea pedunculata* and *Pimelea spicata*. However, given the degraded nature of the site it is unlikely that these species would occur.

It is possible that the threatened Cumberland Plain Land Snail occurs on this site, but given the highly degraded nature of the site this is unlikely.

There are no creeks crossing the site.

The site is zoned 'Special Uses A' under the Campbelltown LEP. The building to the north of the car park (see Figure 4-2) is the Glenfield Tutorial Centre, which is part of Campbell House School. The buildings to the south are also educational land uses. Roy Watts Road to the south of the car park site is a private access road to a number of educational facilities, including the Department of Education and Training, Hurlstone Agricultural High School, Campbell House School, Glenfield Park School and Ajuga School. On its eastern side, the car park site abuts the access road, which provides access to the Station and educational facilities. Across the rail corridor from the site (to the east) are Railway Parade, and retail and residential land uses.

## **Land use, property and infrastructure planning**

### ***Rail corridor and Glenfield North Junction works***

Part of the Glenfield North Junction works would be on land that comprises part of the Glenfield Waste Facility on the eastern side of the Main South Line and north of Cambridge Avenue. This land is zoned Rural A under the Campbelltown LEP.

In November 2006, TIDC consulted with the owners of this facility, L.A. Kennett Enterprises Pty Ltd (Kennett), who hold a licence for 'solid waste landfilling' and 'crushing, grinding or separating works' (i.e. the risk of contamination is relatively low). Kennett confirmed that the area adjacent to the East Hills Line, where construction of the Glenfield North flyover is proposed, is old compacted fill. Kennett did not identify any concerns regarding property/land use impacts of the flyover construction in this area, except for the need to consider access constraints, as discussed under the heading 'Traffic, transport, parking and access'. Initial investigations concluded that there is a separation between the current East Hills Line rail embankment and the Kennett's landfill in the location of the proposed works. Therefore, there is unlikely to be a requirement to build on old fill through this area. However this needs to be confirmed to inform the further design development.

Based on these findings, the SWRL works are not considered likely to have a significant impact on the existing or potential future operations of the site. Potential impacts of the works are considered to be manageable through design and implementation of standard management measures, as already proposed in the SoC. The proponent would continue to liaise with Kennett as a key stakeholder, in accordance with the communication processes identified in SoCs A9 and B3 in Appendix A. Further discussion of contamination issues is provided below in Table 4-4.

When operation of the facility ceases in the long term, the site is proposed to become public open space, as an extension of Leacock Regional Park. Only a very small strip of the Glenfield North flyover works would affect this land/future use.

The other works at Glenfield Junction proposed as part of Stage A would be located within the rail corridor. The removal of car parking and direct impacts on Railway Parade on the eastern side of the Station do not comprise part of Stage A works.

### ***James Meehan Estate worksite***

The part of the James Meehan Estate site that is proposed to comprise a worksite for construction of the Stage A works (see Figure 4-5), was recently acquired by the Department of Planning for the purposes of the SWRL project. The land acquired is undeveloped and comprises vacant grassed land with sporadic trees and no public access. Macquarie Field House to the south of the estate does not form part of the worksite area.

Direct land use and property impacts of this worksite would be negligible, considering the land is vacant and in government ownership. The land is currently unzoned under the Campbelltown LEP 112 – Macquarie Fields House. The site does not comprise part of the South West Growth Centre and the future use of the land has not yet been determined. A portion of the estate was identified by Campbelltown City Council as a potential regional flood detention basin. The layout and design of the worksite at this location would avoid any flood-prone land in this area, except where necessary (e.g. to construct the Glenfield South flyover and embankment structures through the floodplain). TIDC has included a commitment in the SoC to ensure that worksite planning on the James Meehan Estate worksite would manage potential flooding issues, and this would be undertaken in consultation with Campbelltown City Council (see SoC A18 in Appendix A).

### ***Glenfield additional car park site***

The proposed new car park site is owned by RailCorp and is currently vacant land that is fenced along the access road boundary. As noted above, the site is zoned Special Uses A, as are the adjacent rail corridor and educational uses. Direct land use and property impacts of the proposed car park would be negligible. Use of the car park by commuters would have the potential for some indirect impacts on the adjacent educational land uses in terms of traffic noise, traffic/transport and access impacts and noise during construction and operation. These issues are discussed under the relevant headings below.

### **Traffic, transport parking and access**

The Stage A works have been modified to enable full construction and commissioning of the Glenfield North flyover, if required. The flyover would carry the East Hills Line over the Main South Lines, providing rail network operational benefits.

Appendix E includes an additional traffic and transport assessment for the purpose of this Submissions Report to clarify the impacts of the Stage A works, including operational impacts of the Glenfield additional car park and construction impacts of all the Stage A works. The results of this assessment are summarised below.

### ***Operational impacts of the Glenfield additional car park***

Figure 2-2 in Appendix E presents the location of the proposed new car park area in relation to the surrounding road network. It is envisaged that the new off-street car park would contain one entry point and one exit point for vehicles. This is a suitable design as it would facilitate efficient traffic circulation by separating the movement of entering and exiting vehicles and minimising conflicts. No traffic signals or other traffic control measures would be required for the new car park.

The existing car parking area and access road are likely to experience an increase in traffic levels due to the introduction of the additional car parking spaces. In order to estimate this potential impact, the assessment in Appendix E assumed a worst-case situation where the majority of parking activity would occur within a 1-hour period in each of the morning and afternoon peaks (6.30-7.30 am and 5.30-6.30 pm). In this scenario, the likely level of traffic that would be generated on the western side by the commuter car parking area in the existing situation (219 spaces) during each of the morning and afternoon 1 hour peaks would be 219 vehicles/hour. In the scenario incorporating the proposed additions to car parking (514 spaces in total) on the western side of Glenfield Station, 514 vehicles/hour would be generated over the peak 1 hour in a worst-case scenario. That is, 295 additional vehicles per hour would be generated by the additional 295 car parking spaces on the western side of Glenfield Station in each of the morning and afternoon peaks.

The Glenfield Road intersection provides the only access point to the western side car park and would distribute traffic to and from surrounding districts primarily via Glenfield Road and Cambridge Avenue. It has been assumed that the traffic generated from the car parking area would be distributed evenly via these two major roads.

The above potential increase in traffic would result in a peak flow of approximately 1,785 vehicles per hour on Glenfield Road. This represents an increase of 20% over the existing situation during the morning and afternoon peak periods. Furthermore, this increase in traffic generation represents a 5% increase in overall average annual daily traffic on Glenfield Road. The main impact would be expected at the Glenfield Road intersection roundabout. It is not yet confirmed whether this roundabout has sufficient capacity to deal with the additional traffic prior to construction, or whether some other form of traffic control is required at the intersection. Intersection counts at the intersection in the morning and afternoon peaks are required in order to profile existing traffic flows (see SoC A14 in Appendix A). This data would be used to forecast the impacts on traffic flows through the intersection and clarify the need for any traffic management measures.

The Glenfield additional car park on the western side of the rail corridor is not likely to cause a significant increase in traffic on specific roads on the eastern side of Glenfield Station as a result of commuters that normally park on the eastern side driving around to the western side. This is because there is a variety of trip origins for vehicles usually parking on the western side of the Station, meaning that a variety of road routes would be used.

The new car park access is unlikely to significantly affect access to schools that use the access road, as the commuter car park peak would occur earlier in the morning and later in the afternoon than the school peak access times.

Based on the outcomes of this additional assessment, it is proposed that a turning circle is considered at the southern end of the Glenfield Station access road in the revised designs for the existing car park, so as to facilitate efficient vehicle movements (see SoC A15 in Appendix A). A turning circle would facilitate the circulation of vehicles looking for parking spaces along the access road.

### ***Impacts during construction of Stage A***

The likely worksite access points and haulage routes for Stage A of the project are shown in Figure 4-5. The location and extent of these worksites and access/haulage routes have not changed from that depicted in Figures 8-2 and 8-3 in the EA (although those figures did not specify which sites were for Stage A and which were for Stage B).

As explained in Chapter 5, Stages 2 and 3 of Stage A include some earthworks to construct the Glenfield North Junction flyover. Other materials would need to be delivered to construct the Stage A works. The proposed new car park is not anticipated to require more than minor earthworks as the site is relatively flat.

The access to the main Glenfield North Junction works would be through the Glenfield Waste Facility (main gates, through the rail underpass shown on Figure 4-5). As this is also the main access road to the waste facility itself, consideration would need to be given to the management of vehicle movements through that area. This and other worksite access measures at the other Stage A construction sites would be considered as part of the traffic management plans to be prepared in accordance with SoC A12 in Appendix A.



Table 7-1 in Technical Paper 1 in Volume 2 of the EA presented the estimated haulage vehicle trips that would be generated by earthworks associated with the SWRL works, which were classed according to different worksites in order to gain an indication of traffic generation from these individual sections. The Table also aggregated these estimated trips by road in order to gain an indication of the total trips likely to be generated on each haulage route during construction. The analysis in that Technical Paper indicated that construction of the Glenfield North Junction works would generate approximately 0.7 trips per work day on Glenfield Road/Cambridge Avenue for earthworks transportation during the construction period.

The assessment in Technical Paper 1 of the EA and Concept Plan did not consider vehicle movements associated with materials delivery, which would be the main issue associated with the Stage A works. Based on projects of a similar scale, when truck movements associated with materials delivery are included, up to 20 truck movements per day would be expected to access the Stage A work sites (in total). In addition, workers' personal vehicles would access and park within the Glenfield compound. The construction traffic movements expected are not considered large enough to have a noticeable impact on the surrounding road network.

SoCs A12 and A13 in Appendix A are proposed to manage construction traffic and access impacts of the Stage A works.

### **Noise and vibration**

Appendix F includes an additional construction and operational noise and vibration assessment for the Stage A works at Glenfield North Junction. The assessment includes consideration of the new *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* (IGANRIP, Department of Environment and Climate Change 2007), which provides 'noise trigger' levels that trigger the need for a project to conduct an assessment of potential noise and vibration impacts and examine what mitigation measures would be 'feasible and reasonable' to apply to ameliorate the project's impacts. 'Feasibility' relates to engineering considerations and what can practically be built or modified, given the opportunities and constraints of a particular site. 'Reasonableness' relates to the application of judgment, taking into account the following factors:

- noise-mitigation benefits — amount of noise reduction provided, number of people protected
- cost of mitigation — total cost and cost variation with benefit provided
- community views — aesthetic impacts and community wishes
- noise levels for affected land uses — existing and future levels, and changes in noise levels
- benefits arising from the development or modification (Department of Environment and Climate Change 2007).

The findings of this additional assessment are summarised below.

### ***Operational rail noise impacts***

The additional operational rail noise assessment was restricted to the component of the works between Chainage 30.5 and 32.9 kilometres (measured along the East Hills Line).

The remaining changes to rail operations (adjacent to and south of Glenfield Station) would be assessed separately as part of further assessments.

Operational noise emissions from the operation of trains at Glenfield North Junction (i.e. the area north of Glenfield Station) were predicted for the existing situation (year 2007 scenario), the 'after opening' scenario (year 2011) and the long-term situation (year 2017). No changes to the rail timetable are planned between 2017 and 2021, so 2017 is an appropriate long-term scenario. For each scenario, calculations were undertaken of  $L_{Amax}$  (the 'maximum noise level' occurring during a train passby noise event) and  $L_{Aeq(9hr)}$  (the night-time 'equivalent continuous noise level', representing the cumulative effects of all the train noise events occurring in the night-time period from 10 pm to 7 am).

The modelling assumed that the grade-separated Glenfield North flyover would be constructed with fixed-track concrete with low side screens/parapets.

For airborne noise created by the operation of surface track, trigger levels are provided in the new IGANRIP for rail infrastructure projects that include a 'new railway line' or 'redevelopment on an existing railway line'. In the vicinity of Glenfield, the 'redevelopment' trigger levels apply, and consist of two components: absolute  $L_{Aeq}$  and  $L_{Amax}$  noise level triggers and triggers based on the increase in  $L_{Aeq}$  and  $L_{Amax}$  noise levels.

The IGANRIP requires that the operational noise assessment determines both the individual and combined change in noise levels due to passenger and freight rail traffic through Glenfield Junction as a result of the Stage A works. Further assessment of potential mitigation measures is only required where there is a noticeable increase in noise levels due to a project (defined as 2dBA or more in  $L_{Aeq}$  or 3dBA or more in  $L_{Amax}$ ). The SWRL project (Stage A) is responsible for the slewing of the SSFL track at Glenfield Junction, but not any additional freight traffic in Year 2017. Additional freight movements through this area were assessed as part of the Southern Sydney Freight Line EA (ARTC 2006). Consequently, any project increases in noise levels (compared to the existing Year 2007 scenario) would be assessed based on:

- the combined (freight and passenger rail traffic) noise level in Year 2011 (after opening)
- the passenger rail traffic noise level (i.e. not including freight) in Year 2017.

The combined freight and passenger rail traffic noise levels in Year 2017 were predicted as part of the assessment for information purposes, but were not assessed against the IGANRIP trigger levels.

For the Year 2011 and Year 2017 noise modelling scenarios, the predicted increase in 'electric passenger train' noise levels was less than the noise trigger levels of 2 dBA and 3 dBA (for  $L_{Aeq}$  and  $L_{Amax}$  respectively) at existing and planned future sensitive receiver locations, during all assessment periods.

For the Year 2011 noise modelling scenario, the predicted increase in 'all train' noise levels was less than the noise trigger levels of 2 dBA and 3 dBA (for  $L_{Aeq}$  and  $L_{Amax}$  respectively) at sensitive receiver locations, during all assessment periods.

A project must increase the existing noise levels **and** exceed the  $L_{Amax}$  85 dBA,  $L_{Aeq}$  (9hour) 60 dBA noise trigger levels in order for it to trigger an assessment of mitigation measures. On this basis, the consideration of operational noise mitigation measures for Stage A is not required at this locality.

Even though the IGANRIP trigger levels would not be exceeded as a result of the Stage A rail operations, the following operational noise mitigation was recommended for Stage A of the project as a result of the additional assessment:

- the use of low level parapets on the Glenfield North flyover
- compliance measurements after opening and following the introduction of the SWRL train timetable.

The SoC in Appendix A includes a commitment to undertake this compliance monitoring and for the detailed design of the Glenfield North flyover to incorporate measures to minimise any increases in operational noise levels.

### ***Operational vibration impacts***

The effects of vibration in buildings can be divided into three main categories: those in which the occupants or users of the building are inconvenienced or possibly disturbed; those where the building contents may be affected; and those in which the integrity of the building or the structure itself may be prejudiced.

The applicable criterion for the assessment of operational vibration of the Stage A works was based on the vibration dose values nominated in BS 6472, and the DEC's *Assessing vibration: a technical guideline*. This comprises a 'human comfort' criterion. As the levels of vibration required to cause damage to buildings tend to be at least an order of magnitude (10 times) higher than those associated with human comfort, it is not necessary to set separate criteria for this proposal in relation to building damage from railway vibration.

Based on the additional assessment, none of the existing or planned sensitive dwellings would lie inside the 109 dB criterion contour (i.e. none of the potential receivers are predicted to experience levels above this criterion). The 106 dB (daytime 'perceptible' zone) and 103 dB (night-time 'perceptible' zone) contours were predicted to extend out to a maximum distance of 21 metres and 31 metres (from the track centreline) respectively. No existing or planned sensitive receivers lie within the daytime 'perceptible' zone. Vibration levels could approach perceptibility at some of the existing residential locations during the night-time period; however, the levels would be well below the 109 dB criterion.

In the Southern Sydney Freight Line EA (ARTC 2006), vibration emissions from the freight trains were predicted to comply with the human comfort and building damage criteria at all locations, and hence no mitigation measures were proposed. The proposed slewing of the Southern Sydney Freight Line to allow for the construction of the Glenfield North Junction as part of the SWRL Stage A works would place the Southern Sydney Freight Line tracks at least 40 metres away from the nearest sensitive receiver. As such, the vibration levels from the Southern Sydney Freight Line are still expected to comply with the criteria.

Recognising the above results, no mitigation measures are considered necessary in regard to operational vibration associated with Stage A of the project.

### ***Noise from operation of the Glenfield additional car park***

The additional car parking to be provided on the western side of Glenfield Station is anticipated to be used primarily during the am and pm peak period. Noise emissions from this use are predicted to comply with the relevant noise goals at all locations.

### Construction noise impacts

At the majority of locations, the construction noise modelling indicated the relevant construction noise goals would be likely exceeded when worst-case plant and equipment are operating in close proximity to residential and commercial receiver locations, as identified in Tables 4-2 and 4-3. Primarily, this would be the result of the small distances involved between the construction plant and the nearest receivers, especially at Glenfield itself.

**Table 4-2 Predicted LA10 construction noise levels – site specific works**

Construction Site	Typical receiver location	LA10 daytime <sup>1</sup> construction noise objectives (dBA)	Predicted LA10 construction noise levels (dBA) - scenario <sup>2</sup>			
			1	2	3	4
Glenfield Junction North	Glenfield Road residential (100 metres)		74	63	65	60
	Foreman Street Residential (100 metres)	46	53	35	39	65
	Slessor Road residential (160 metres)		72	56	60	53
Glenfield Station	Railway Parade Residential (100 metres)	52	59	-	-	-
	Hurlstone Agricultural High School (45 metres)		46	-	-	-
Glenfield Junction South	Newtown Road Residential (130 metres)	46	50	73	-	-
Car park	Hurlstone Agricultural High School (20 metres)		80	81	-	-
	The Liverpool District Office of the Department of Education and Training (20 metres)	46	80	81	-	-
	Railway Parade residential (70 metres)	52	69	70	-	-

Note 1 Daytime construction noise objectives are presented in this table as most works would occur during this time period. Night-time noise objectives are listed in Table 14 of Appendix F and are typically 8 dBA lower than the daytime objectives.

Note 2 Shaded cells indicate a significant exceedance of 20 dBA or more above the daytime LA10 construction noise goal, for receivers surrounding each work site. Scenario 1 includes track and crossover removal north of Glenfield Station, piling works at Glenfield Junction North and South and earthworks at the car park worksite; Scenario 2 includes earthworks at Glenfield Junction North and South and car park construction at the car park worksite; Scenario 3 includes superstructure construction at Glenfield Junction North; and Scenario 4 includes track construction at Glenfield Junction North (refer Section 8.6.1 of Appendix F).

**Table 4-3 Predicted LA10 construction noise levels – corridor earthworks and track construction**

Construction site	Typical receiver location	L <sub>A10</sub> daytime <sup>1</sup> construction noise objectives (dBA)	Predicted L <sub>A10</sub> construction noise levels (dBA) - scenario <sup>2</sup>		
			1 <sup>3</sup>	2	3
Glenfield Junction North	Glenfield Road residential (100 metres)	46	66	64	73
	Foreman Street residential (100 metres)		66	64	73
	Slessor Road residential (160 metres)		62	60	69
North of Glenfield Station	Railway Parade residential (100 metres)	52	66	64	73
	Hurlstone Agricultural High School (45 metres)		74	72	79

- Note 1 Daytime construction noise objectives are presented in this table as most works would occur during this time period. Night-time noise objectives are listed in Table 14 of Appendix F and are typically 10 dBA lower than the daytime objectives.
- Note 2 Shaded cells indicate a significant exceedance of 20 dBA or more above the daytime LA10 construction noise goal, for receivers surrounding each work site. Scenario 1 includes excavation and compaction works, Scenario 2 includes overhead wiring works and Scenario 3 includes track laying (see Section 8.6.2 in Appendix F).
- Note 3 Rock breakers would generally not be required for excavation works, as the cuttings are predominantly in clay and shale. If required, noise from a rockbreaker would be 10 dBA to 15 dBA higher than predicted for earthworks (Although this may be reduced by shielding if the works are being undertaken at the base of a cutting).

It is acknowledged that some exceedances would be likely to occur during construction. This highlights the importance of managing the works to minimise both the noise levels and durations of the predicted exceedances.

In regard to noise from construction traffic on local roads, whilst individual truck noise events would be clearly perceptible, the L<sub>Aeq</sub> assessment indicated that they would not have a major impact on the acoustic amenity of this area. The relevant objectives from the DEC’s *Environmental Criteria for Road Traffic Noise* applicable to residential areas in the daytime period range from 55 dBA for local roads to 60 dBA for collector and arterial roads. The predicted noise levels are within this range.

As noted in SoC A22 in Appendix A, a site-specific Construction Noise and Vibration Management Plan (CNVMP) would be prepared prior to construction commencing, including consideration of the measures listed below and any other initiatives identified to minimise the noise impact. This would be developed based on the principles in TIDC’s draft Construction Noise Strategy (Rail Projects) for construction noise management. The following measures recommended in Appendix F would be considered in this CNVMP:

- Noise intensive construction works would be carried out during normal construction hours wherever practicable. Where works involving the operating line need to be carried out during weekend possessions, noise intensive activities should be scheduled to occur during the daytime, where possible.
- Quietest available plant suitable for the relevant tasks would be used insofar as possible.
- The duration of noise intensive activities would be minimised.
- Where appropriate and effective, site hoardings or temporary noise barriers would be used to provide acoustic shielding of noise intensive activities or fixed plant items.

- Rock breakers would be of the 'Vibro-silenced' or 'City' type, where feasible and reasonable.
- Activities resulting in highly impulsive or tonal noise emission (e.g. rock breaking) would be limited to 8 am to 12 pm Monday to Saturday and 2 pm to 5 pm Monday to Friday (except where essential during track possessions).
- Noise awareness training would be included in inductions for site staff and contractors.
- Noise generating plant would be orientated away from sensitive receivers, where possible.
- Notification would be provided to residents via newspaper advertising and letterbox drops, advising of the nature and timing of works, contact number and complaint procedures.
- Noise monitoring would be carried out to confirm that noise levels do not significantly exceed the predictions and that noise levels of individual plant items do not significantly exceed the levels shown in Table 15 in Appendix F of this Submissions Report.
- Deliveries would be carried out within standard construction hours, except as directed by the NSW Police or the Roads and Traffic Authority.
- Non-tonal reversing beepers or equivalent would be fitted and used on all construction vehicles and mobile plant regularly used on site and other vehicles where possible.
- Trucking routes to be via major roads, where possible.
- Trucks would not be permitted to queue near residential dwellings with engines running.
- The CNVMP would address Section 49 of the Occupational Health and Safety Regulation 2001.

### ***Construction vibration***

Construction activities would be managed to avoid structural damage due to vibration. With the exception of the Glenfield additional car park works, it is not anticipated that there would be a need to operate any vibration intensive plant items within 30 metres of a sensitive receiver.

Vibration emissions from pile driving activities are difficult to predict at this stage; however, they are an important potential impact source. The potential impact of piling work would be assessed in more detail at the CNVMP stage once more information concerning plant type and ground conditions is known. It is anticipated that any potential impacts would be satisfactorily mitigated on a case by case basis.

As sensitive receivers at the site of the Glenfield North Junction works are generally 40 to 100 metres from the majority of the works and 20 to 40 metres from the car park works, the impact on human comfort from construction vibration would be expected to be very limited; however, vibration emissions during the car park construction would need to be carefully managed.

At the car park site, some sensitive receiver locations (educational uses) would be as close as 15 metres from the edge of the work site. Smaller vibratory rollers would, therefore, need to be selected for some of the works to minimise potential impacts. The CNVMP would address this in more detail once the specifics of the construction methodology are known. This potential vibration impact would be manageable through correct plant selection and noise monitoring.

The additional assessment recommends the following measures are implemented for Stage A to mitigate construction vibration impacts, which would be considered in the development of the CNVMP:

- buffer zones are established and work within these zones is limited to activities that have been assessed as safe or to activities undertaken in conjunction with strict vibration monitoring (The buffer zones would depend on the construction equipment selected (refer Table 19 of Appendix F) and would be determined during the CNVMP assessment.)
- the smallest suitable size of vibratory roller is selected when working close to occupied residential buildings to minimise vibration impact (refer buffer distances in Table 19 of Appendix F)
- at those parts of Hurlstone Agricultural High School classified as heritage structures, and at any other identified heritage locations, vibration monitoring is undertaken to confirm safe working distances, with potential vibration impacts and mitigation measures assessed in more detail at the CNVMP stage
- vibration due to the Glenfield additional car park construction is assessed in detail at the CNVMP stage.

### **Hydrology and surface water**

The only waterway in the vicinity of the Stage A works is Bunbury Curran Creek, which lies to the south-west of Glenfield South Junction. The proposed worksite at the James Meehan Estate would be clear of this creek, but partly within its floodplain. As explained in Chapter 13 of the EA, this locality has been identified by Campbelltown City Council as the site of a potential Glenfield flood detention basin. Council has to yet to determine the need for this detention basin. The potential impact of the worksite in this area is a potential temporary loss of storage capacity for the basin. As explained above, the layout and design of the worksite at this location would avoid the flood-prone land in this area, except where necessary (e.g. to construct the Glenfield South flyover through the floodplain). TIDC has included a commitment in the SoC to ensure that worksite planning on the James Meehan Estate site would take into account flooding issues, and this would be undertaken in consultation with Campbelltown City Council (see SoC A18 in Appendix A).

### **Biodiversity**

#### ***Targeted survey for *pimelea spicata****

The biodiversity assessment completed for the SWRL EA and Concept Plan (see Technical Paper 3 in Volume 2) followed the Draft Guidelines for Threatened Species Assessment under Part 3A of the *Environmental Planning and Assessment Act 1979*, and included both desk-based searches of databases and historical records, as well as a habitat-based field survey along the proposed SWRL corridor. The survey was completed during winter when cryptic (i.e. species that are difficult to detect) or seasonal species of plant may not be observed. Therefore, a habitat-based as well as a precautionary approach were taken and species requiring further surveys were identified. In this process, habitat was identified for *Pimelea spicata* around Glenfield Junction, a cryptic species which is difficult to detect unless flowering.

*Pimelea spicata* is listed as endangered under both the NSW *Threatened Species Conservation Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. *Pimelea spicata* flowers sporadically throughout the year, with flowering likely to depend upon climatic conditions, particularly rainfall. Flowering times recorded for the species vary. Recorded flowering times have varied from year to year and have been noted as May to January (Rye 1990), peaking in March to April (Benson & McDougall 2001), with abundant flowering in winter and spring (June-September) of 2003 after the break of a drought. It is likely that *Pimelea spicata* flowers opportunistically and hence its peak flowering time may vary from year to year (NSW National Parks and Wildlife Service 2004).

For the above reasons, this species could potentially have been missed during flora surveys conducted as part of the environmental assessment process. Given that *Pimelea spicata* is small and cryptic, it was the subject of a specific targeted survey conducted in spring 2006, in the area of the Glenfield Stage A works.

The survey for this species was undertaken following the survey requirements outlined in the *Pimelea Spicata Recovery Plan (Draft)* (Department of Environment and Conservation 2004).

Given that *Pimelea spicata* flowers opportunistically and its peak flowering time can vary from year to year, survey of other known nearby sites with the species was undertaken to indicate the likely flowering time at the Glenfield Stage A site. *Pimelea spicata* was observed to be flowering abundantly at a reference site in Greystanes on Friday 6 October 2006. It was also known to be flowering at the Mount Annan Botanic Gardens at this time (Lotte von-Richter, Sydney Royal Botanic Gardens, pers comm. 4/10/06).

The Glenfield Stage A site was inspected for *Pimelea spicata* the following week on 11 October 2006. The survey of the site was undertaken in a random meander, favouring suitable habitat areas, with survey effort of at least one hour per hectare of suitable habitat.

The Glenfield Site A site has been highly disturbed in the past for agriculture (the James Meehan Estate site) and rail development. The area comprises open areas dominated by weeds as outlined in Technical Paper 3. No *Pimelea spicata* was recorded within the site and the species is considered unlikely to occur as a result of the site's disturbance history. For this reason, no additional mitigation or commitments are considered necessary.

A limitation of the study that should be noted is that a soil stored seed bank could exist in areas where mature plants are no longer apparent. Presence within the seed bank was not examined as part of this study.

The survey did not include the additional car parking area now proposed at Glenfield. This site is discussed further below.

### ***Impacts of Glenfield additional car park***

The proposed car park extension would remove approximately 0.48 hectares of Shale Plains Woodland. The vegetation on the site and immediately surrounding it is already 'edge affected'. Edge effects refer to differences in microhabitat conditions along boundaries of native vegetation remnants resulting from differences in physical conditions. The proposed car park extension would not increase the extent of edge effects.



Other impacts associated with the car park extension are generally as discussed in Section 4 of the Biodiversity Assessment (Technical Paper 3, Volume 2 of the EA and Concept Plan).

Significance assessments and a discussion of key thresholds were presented in the Biodiversity Assessment (Technical Paper 3). Given the relatively small area of the car park extension and the disturbed nature of the vegetation and fauna habitats on-site, it is unlikely that a significant impact on biodiversity would result.

TIDC has added a new SoC (see SoC A16 in Appendix A) to clarify that prior to construction at the site, biodiversity survey of the site would be completed following the draft *Threatened Biodiversity Survey and Assessment Guidelines for Developments and Activities* (National Parks and Wildlife Service 2004). This would include targeted survey for threatened species that have the potential to occur on-site. The site would be surveyed at a time of year suitable for the detection of a range of threatened species including in the flowering period of threatened species of plant (e.g. *Pimelea spicata*). If threatened or rare species are found on-site then suitable mitigation measures would be included in the Flora and Fauna Management Plan. A landscape plan would be prepared for the additional car park and would include the retention of existing trees where possible (see SoC A25 in Appendix A).

The mitigation measures included in Section 5 of Technical Paper 3 would be considered in the development of the Flora and Fauna Management Plan.

## **Heritage**

Appendix D outlines the additional consultation with Aboriginal stakeholders in regard to the Stage A works. In summary, the Stage A works were explained at the Aboriginal heritage workshop on 13 December 2007 and feedback sought. Representatives of the Cubbitch Barta Native Title Claimants Aboriginal Corporation, Darug Aboriginal Cultural Heritage Assessments, Darug Custodian Aboriginal Corporation, Darug Tribal Aboriginal Corporation and Northern Illawarra Aboriginal Collective identified that there was no benefit in conducting an additional site visit over the area of impact for the proposed Glenfield Stage A work, primarily because of existing disturbance by the rail corridor. The stakeholders agreed to forward written statements to identify this fact. The Tharawal Local Aboriginal Land Council was asked for comment but has not yet responded at this time. Written feedback received to date is included in Appendix D.

Notwithstanding the above, in the site visits undertaken with Aboriginal stakeholders, the James Meehan Estate area was only able to be viewed from the fence line and not walked over due to access constraints. However, this area was subject to an assessment in 2000 by Dallas Aboriginal Archaeological Excavations: *Macquarie Fields House Estate, Statement of Evidence for Winton Property Group, Land and Environment Court Proceedings No 10331 of 1999*.

There are two known (listed) sites located on the James Meehan Estate (Sites 45-5-2744 and 45-5-2495 reported in technical Paper 6 in Volume 3 of the EA and Concept Plan). Both of these sites are located outside the proposed boundary of the James Meehan Estate worksite. However, the previous assessment indicated that there is moderate potential for subsurface profiles and surface expressions of sites in adjacent areas to be intact, and that there are other sites in the area that had not been recorded with the Department of Environment and Conservation.

The proposed site for additional car parking at Glenfield has not been fully assessed. However, there are no recorded archaeological sites at the site. Although the car park site is highly modified, further site assessment is required to confirm any potential Aboriginal sites.

Considering the above, prior to the establishment of construction sites at the James Meehan Estate and the Glenfield additional car park, a detailed assessment, consistent with the Growth Centre Commission's *Precinct Assessment Method for Aboriginal Cultural Heritage in the Sydney Growth Centres* (Context Pty Ltd 2006b) would be undertaken (see SoC A20 in Appendix A). This would ensure consistency in the assessment approach with the rest of the SWRL project.

### **Visual**

The EA included a photomontage of the anticipated view of the Glenfield North flyover looking north from Cambridge Avenue in Glenfield. The EA also identified that from Viewpoint 1 (at South Casula and Glenfield Road) to the north-west, the flyover would be evident, appearing as a new high bridge-like structure. Considering the low visual sensitivity of this viewpoint and the predicted moderate to high magnitude of visual change predicted, the visual impact would be low to moderate, from Viewpoint 1 and Cambridge Avenue (with a higher impact close up).

During construction of the Stage A works, there would be some visual impacts of the proposed worksites, including construction hoardings and security fencing, temporary material storage, heavy machinery and structures as they are constructed. The works within the rail corridor would be visible to users of Glenfield Station and local roads, as well as residents along Railway Parade. The preliminary works at Glenfield South Junction may be evident in the distance from Hurlstone Agricultural High School and from Seddon Park on Railway Parade. The James Meehan Estate worksite would be visible in the distance from Macquarie Fields House, but is unlikely to be highly visible from Hurlstone Agricultural High School or adjacent educational land uses. The Glenfield North Junction worksite would be largely removed from sensitive views. The temporary nature of the work sites means their visual impact would also be temporary and, therefore, of low impact.

TIDC has included a commitment in the SoC to implement visual screening where appropriate (i.e. where construction compounds and access roads are highly visible from surrounding areas and where space allows (see SoC A24 in Appendix A)).

### **Social benefits and impacts**

The operation of the Stage A works (i.e. the commissioning of the Glenfield North flyover and opening of the Glenfield additional car park on the western side of the rail corridor) would have major social benefits in terms of accessibility. Without upgrade, the Junction does not have the capacity for additional rail services to accommodate future growth on the network, including the SWRL (Stage B). The proposed new short-term car park at Glenfield would improve access for commuters and take pressure off parking on the eastern side of the corridor in residential streets.

The Stage A works would have some relatively minor social impacts on the local community during construction. Excluding visual, noise and traffic/access impacts covered above, other potential social impacts include:

- *Severance and connectivity impacts* – The Stage A works would not result in any severance of properties or property access. Access across the rail corridor at Glenfield and use of Glenfield Station would be retained at all times.

- *Impacts on health, wellbeing and safety* – Some of the schools at Glenfield raised concerns during the EA preparation about public safety of students around construction sites. This issue is considered manageable through standard management measures that would be employed to protect members of the public, including fencing and security at construction sites. The EA identifies the potential for works at Glenfield (including Stage A) to overlap with other developments in the area, like Edmondson Park, and for residents and users of educational facilities at Glenfield to experience ‘construction fatigue’ due to construction of the SWRL Glenfield works immediately following the Southern Sydney Freight Line works. The SoC includes a commitment to consult with the Australian Rail Track Corporation regarding the construction timing of the Southern Sydney Freight Line works and ways to minimise cumulative impacts. This should ensure that appropriate management measures are put in place to minimise cumulative social impacts of these works. Overall, it is considered that the Stage A works would not result in any significant impacts on health, wellbeing or safety of the local community.
- *Disruptions to utility services affecting daily life* – Standard measures would be applied to avoid impacts on services (see Table 4-4).
- *Impacts on public places and access* – The Stage A works would not have a significant impact on public places or access.

No specific additional mitigation is considered necessary to manage social impacts of the Stage A works.

### **Economic and business impacts**

The Stage A works alone are unlikely to have any significant negative impact on the business and economics of the area.

Local businesses in the Glenfield town centre (and surrounds) would be expected to benefit from trade arising from construction workers in the area, but may also be negatively affected during construction in terms of amenity (traffic disruption, noise and visual impacts). The main adverse impacts on these businesses would not occur during Stage A, as Stage A does not include the Glenfield Station works or impacts on Railway Parade, meaning any work would be remote of the shops in Glenfield.

Development pressures at Glenfield, identified in Chapter 18 of the EA, would be unlikely to arise until the construction and delivery of the main SWRL works (Stage B), which include works to Railway Parade and upgrade to Glenfield Station. The proposed new car park is similarly not expected to lead to development pressure.

Consultation with local businesses regarding management of the Stage A works would be undertaken as part of the Community Liaison Plan (see SoC A9 in Appendix A).

### **Other environmental issues**

Table 4-4 includes an environmental risk assessment of other environmental issues associated with Stage A of the project, to identify the risk of environmental impacts and confirm any management commitments required.

These issues are expected to be of lesser consequence than the key issues discussed above, and/or would be able to be managed through design, the application of best practice environmental management and proposed management measures and safeguards implemented through the SoC for Stage A. Other than the measures included in the SoC, no further assessment of these issues is considered necessary prior to construction.

**Table 4-4 Environmental risk analysis of ‘other environmental issues’ associated with Stage A**

Issue	Existing environment	Risk assessment	Management response
Community			
Air quality	<p>Limited industrial sources in the vicinity, other than the Glenfield Waste Facility.</p> <p>Local air quality primarily influenced by proximity to major traffic routes and regional pollution in the Sydney basin.</p>	<p>Operation of the Glenfield North Junction works and the Glenfield additional commuter car park would have potential minor benefits to regional air quality by encouraging a mode shift from private cars to public transport as a result of the development; although local emissions associated with use of the commuter car park itself would increase.</p> <p>During construction, some local air quality impacts (particulates) may result from vehicle/machinery emissions and dust, particularly during earthworks associated with Glenfield North Junction construction and movement of vehicles within the James Meehan Estate worksite. Potential receivers include educational facilities on the western side of the corridor and residents on the eastern side.</p> <p>An increase in carbon dioxide emissions from the combustion of fuels would result during construction, particularly from the movement of spoil by heavy vehicles and construction machinery.</p>	<p>Expected manageable level of impact during construction, subject to the application of standard mitigation and best practice construction measures.</p> <p>These would be included in an Air Quality Plan as part of the overall Construction Environmental Management Plan (CEMP) prepared prior to construction, following approval (see SoC A27 in Appendix A).</p> <p>The Air Quality Plan would address management of dust during construction, emissions from construction plant and vehicles, and other fugitive emissions.</p>
Hazard and risk	<p>The proposed works are largely located within an operating rail corridor, but also cross a waste facility, and semi-rural vacant land.</p>	<p>Hazards and risks during construction would include occupational health and safety risks to workers associated with the conduct of works over/under major arterial roads and within the operating railway corridor. Public safety is covered separately below.</p> <p>Hazards/risks would also include activities such as the storage and use of hazardous materials, and use of heavy machinery.</p> <p>Minor risk of operational hazards, as the rail track and flyover works would be designed to achieve RailCorp’s operational safety standards and operated in accordance with standard procedures in place across the entire network.</p>	<p>Expected manageable level of impact.</p> <p>Construction issues would be addressed through a Hazards and Risk Management Plan to be developed prior to construction as part of the overall CEMP (see SoC A28 in Appendix A).</p> <p>The proponent would liaise with RailCorp during the further design development to ensure management of potential hazard and risk is addressed through design commissioning and operation of the Glenfield Junction works in accordance with TIDC and RailCorp standard procedures.</p>

Issue	Existing environment	Risk assessment	Management response
Public safety		<p>There is some potential for security issues arising at the Stage A worksites after hours where there is limited opportunity for passive surveillance.</p> <p>Minor potential for students or other members of the public to be endangered during construction by construction machinery or transport vehicles entering/exiting worksites.</p> <p>Potential for public safety/security issues associated with the new car park (safety/security of pedestrians and cars).</p>	<p>Construction issues expected to be manageable through occupational health and safety measures included in the CEMP. All construction compounds and work areas would be fenced off during construction as per SoC A29 in Appendix A. Safety issues would also be addressed in the traffic management plans (see SoCs A12 in Appendix A).</p> <p>A Community Liaison Plan would provide information to the community to ensure awareness of the project.</p> <p>Operational risks associated with the car park and operation of Glenfield North Junction are expected to be a manageable subject to the application of NSW Police 'CPTED' (Crime Prevention Through Environmental Design) guidelines, including appropriate lighting, fencing of the railway corridor, security measures, installation of surveillance cameras, etc. These would be included as part of the design development process and based on existing similar precautions adopted at other areas in the Sydney railway network.</p>
Services and utilities	Large number of existing utilities and services in and near the rail corridor.	Excavation could result in damage to existing services and utilities, causing disruptions to services, inconvenience, or potentially hazardous situations.	<p>Expected manageable level of impact subject to liaison with utility owners, adoption of appropriate design protection measures, and standard construction, occupational health and safety procedures prior to construction commencement.</p> <p>A Services and Utilities Plan would be developed in consultation with utility owners following approval, prior to construction, as per SoC A30 in Appendix A.</p>
<b>Physical and biophysical</b>			
Soils and water quality and groundwater	<p>Site typically underlain by Bringelly Shale traversing the South Creek, Blacktown and Luddenham Soil Landscapes, as confirmed in Department of Land and Water Conservation, 1990, <i>Soils of the Penrith 1:100,000 Map Sheet</i>, GIS Database, accessed 27 March 2007, PB, Sydney.</p> <p>Some of these soil landscapes have high erodibility potential.</p>	Potential impacts include soil erosion and sedimentation of Bunbury Curran Creek and nearby drainage lines during construction, and the potential for salinity to affect foundations. No cuttings or waterway crossings proposed, but some earthworks.	<p>Expected manageable level of impact.</p> <p>Further investigation and characterisation of groundwater salinity levels and extent along the corridor is required so that structures can be designed to have the appropriate durability.</p> <p>Specific measures would be included in a Soil and Water Management Plan to be prepared prior to construction (see SoC A31 in Appendix A).</p>

Issue	Existing environment	Risk assessment	Management response
	<p>Topography is relatively flat, but rises to the west across the James Meehan Estate.</p> <p>Existing surface water quality in Bunbury Curran Creek to south of Glenfield Junction South works, is typical of those in urban and rural areas and subject to adverse human influences.</p> <p>Saline/soils groundwater is likely to be encountered.</p> <p>No acid sulfate soils are likely to be present, as confirmed through Department of Land and Water Conservation, 1998, <i>Acid Sulfate Soils Risk Mapping</i>, GIS Database, accessed 27 March 2007, PB, Sydney.</p>		
<p>Waste, energy and demand on resources</p>	<p>N/A</p>	<p>Potential impacts include the generation of various types of construction wastes, increased energy use and increased demand on local and regional resources.</p> <p>It is unlikely that development of the proposal would result in any resource becoming scarce or in short supply as relatively minor volumes of common resources would be required.</p>	<p>Manageable level of impact subject to the application of standard environment management measures.</p> <p>A Waste Management Plan would be prepared and would identify requirements for the application of the waste minimisation hierarchy principles of avoid/reduce/reuse/recycle/dispose and waste handling and disposal (see SoC A33 in Appendix A).</p>
<p>Contaminated land</p>	<p>The Glenfield Junction North works would cross land that comprises part of the Glenfield Waste Facility – see discussion above under ‘Land use and infrastructure impacts’. TIDC met with L.A. Kennett Enterprises Pty Ltd (Kennett) on 28 November 2006. The meeting revealed that:</p> <ul style="list-style-type: none"> <li>▪ The facility is a Class 2, non-putrescible waste facility that includes solid waste landfilling. This means that there is likely to</li> </ul>	<p>Initial investigations concluded that there is a separation between the current East Hills Rail embankment and the previous Kennett’s landfill in the location of the proposed works. Therefore, there would be no requirement to build on old fill through this area. However this needs to be confirmed to inform the further design development.</p> <p>Based on these findings and the fact that the facility is a non-putrescible waste facility, potential contamination impacts of the works are considered to be manageable through design and implementation of standard management measures,</p>	<p>Manageable level of impact expected.</p> <p>A Contaminated and Hazardous Materials Investigation Report would be prepared prior to construction, focusing on areas where soil is to be disturbed (see raised SoC A34).</p> <p>These investigations would identify the need for remediation and management of contaminated land that may be present.</p> <p>The proponent would continue to liaise with Kennett as a key stakeholder, in accordance with the communication processes identified in SoC A9 in</p>

Issue	Existing environment	Risk assessment	Management response
	<p>be building rubble, and there is some potential for contamination arising from lead paint and asbestos.</p> <ul style="list-style-type: none"> <li>▪ Based on Kennett’s knowledge of the construction of the East Hills Line, the line sits on a clay bridge with a 2 metre capping layer. No subsidence has occurred. The area adjacent to the East Hills line, where construction of the flyover is proposed, is old compacted fill.</li> </ul> <p>Rail corridor at Glenfield is potentially contaminated with heavy metals, hydrocarbons, pesticides/herbicides, arsenic and asbestos.</p> <p>Current and former agricultural land uses may have resulted in contamination in the James Meehan Estate site, including some illegal disposal of wastes including pesticides.</p>	<p>as already proposed in the SoC.</p> <p>Minor potential for contaminants in soils to cause harm to workers/the community or the environment, especially if enter drainage lines.</p>	<p>Appendix A.</p> <p>Any necessary remediation would be completed in accordance with the Contamination and Hazardous Materials Report prior to construction, as noted in SoC A34 in Appendix A.</p>

### **Statutory planning instruments**

Approval cannot be granted under Part 3A for a project that would (but for Part3A) be wholly prohibited under an environmental planning instrument. The Stage A works are not prohibited under the relevant local environmental planning instruments: the Campbelltown (Urban Area) Local Environmental Plan 2002 and the Campbelltown Local Environmental Plan No. 112 – Macquarie Field House.

The Stage A works are also considered to be generally in accordance with the heads of consideration of the state environmental planning policies (SEPPs) and regional environmental plans of relevance to the activity for the reasons detailed in Chapter 3 of the EA and Concept Plan.

In addition to the SEPPs and regional environmental plans covered in Chapter 3 of the EA and Concept Plan, Regional Environmental Plan No. 2 – Georges River Catchment is also relevant to the activity. The aim of this Plan is to protect the water quality of the Georges River and its tributaries and the environmental quality of the Georges River catchment. The achievement of the objectives of the Plan are facilitated by coordinated land use planning and development control. The Plan establishes a framework within which local, State and Federal agencies are required to consult to ensure a consistent approach to planning and development within the catchment. The REP sets out both general and specific planning controls for development in the Georges River catchment. Generally, the aims and objectives of the REP would be met by the SWRL Stage A works through the implementation of the management and mitigation measures set out in the SoC in Appendix A and through the further design development of the project.

### **Commonwealth matters of national environmental significance**

A checklist of matters of national environmental significance under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* is included in Appendix G. No matters are considered likely to be significantly affected by the Stage A works, so no referral is considered necessary at this stage.

### **Conclusion**

Based on the further assessment of the Stage A works above, all potential environmental impacts of the Stage A activities are considered to have been adequately assessed, or are considered manageable subject to the SoCs included in Appendix A.

## **4.9 Clarifications to the EA**

The following clarifications/corrections to the EA and Concept Plan are noted:

- The Hydraulic Analysis in Technical Paper 2 (Volume 2) to the EA made some worst-case assumptions in the preliminary modelling that require clarification: TIDC does not propose to lower any watercourses as part of the project, including Crossings 4 and 6 at Edmondson Park; although this is subject to further flooding and design assessment in the next project phase. Furthermore, although the preliminary modelling assumed box culverts would be provided at water crossings, this too is subject to further assessment in the next phase, and other forms of crossings, including bridges, would be considered (see SoCs B19 and B20 in Appendix A).
- There is an inconsistency between the areas of endangered ecological communities affected in the text in Section 4.1.1 and Table 4-1 in Technical Paper 3 – Biodiversity in Volume 2. The numbers shown in Table 4-1 are confirmed as correct.



- Section 4.2.3 in Technical Paper 4 – Biodiversity in Volume 2 notes that bridges would be provided across watercourses. This is not yet confirmed and is the subject of further assessment, which would consider any impacts on the quality of riparian habitat (see SoC in Appendix A).
- Section 10.2.2 in the EA and Concept Plan (Volume 1) states that all properties to the west of the Forest Lawn Memorial Gardens Cemetery are to be fully acquired. This is inconsistent with Table 10-1 in the EA which shows that 32 properties in Leppington are proposed to be full acquired and 10 partly acquired. It is confirmed that all of the affected lands west of the cemetery between Camden Valley Way and Cowpasture Road are owned by the Department of Planning or the NSW Government. Between Cowpasture Road and the stabling facility there are 44 targeted full acquisitions, of which 3 are roads (i.e. 41 possible full acquisitions of residential properties). The Department of Planning would consider partial acquisitions in this area, dependent on the land characteristics of the individual land parcels, the impacts of the project on the land and the commercial implications.
- Section 13.3.2 of the EA and Concept Plan (Volume 1) and the Executive Summary of Technical Paper 5 (Volume 3) incorrectly state that the sleep disturbance criteria is background plus 5dBA. This should be background plus 15dBA.
- The Department of Defence site at the Ingleburn Army Camp, Campbelltown Road, is incorrectly identified in the EA in statements on p68 and the area identified as 'Ingleburn Military Complex' in Figure 5-4 (Volume 1 of the EA and Concept Plan). It is clarified that the site is in fact 311 hectares in size and an additional 94 hectares was sold to the NSW Government in 1993. Figure 5-4 in the EA sought to identify the extent of key historic heritage items and places, including the Ingleburn Military Camp. It is confirmed that the area listed under the Commonwealth heritage list comprises about 120 hectares at Ingleburn Village.
- The zoning of the defence site and thus the proposed rail route is incorrectly described in Section 3.4.1, p44 of the EA and Concept Plan. The Campbelltown Local Environmental Plan 2002 (Amendment No.12) and the Liverpool Local Environmental Plan 1997 (Amendment No.83) were gazetted on 31 March 2006. However, provisions of the LEPs require the dedication of the conservation areas to the State Government in order for the zoning to have effect on the Defence-owned land. Thus the Defence site remains zoned as Special Uses Military. The timing of the dedication of the conservation land is dependent upon a decision concerning the NSW Government's priority sale offered to the Commonwealth for the Ingleburn Camp Site.
- The main EA (Volume 1), Section 3.4.2, states that 'The SWRL corridor is known to be contaminated in some areas, particularly through the former Ingleburn Army Camp (see Chapter 19).' It is clarified that the only area part of the former camp known to be contaminated is on land owned by Landcom. The extent of any contamination along the rest of the SWRL corridor is in fact not confirmed and further liaison is proposed with the Department of Defence regarding any contamination on its land. The EA includes a number of commitments to manage contaminated materials during construction to avoid impacts on residential areas (see SoC A34 for Stage A and B46 for Stage B). Any necessary remediation would be completed prior to construction and in accordance with standards procedures and guidelines.
- Engineering drawings for the Stage A works at Glenfield Junction are provided in Appendix H.



## 5. Modifications to the SWRL Concept Plan

### 5.1 Introduction

On the basis of its consideration of the submissions received, and the additional engineering and environmental assessment that has been undertaken (as set out in Chapter 4), TIDC proposes minor modifications to the SWRL Concept Plan.

The proposed modifications to the SWRL Concept Plan relate only to Stage A of the project.

The exhibited EA and Concept Plan stated that the works proposed for Stage A include:

- commencement of early works (Stages 1 to 4) at Glenfield North Junction and Glenfield South Junction (this excludes work at the direct interface with the Glenfield Station upgrade works which are part of Stage B)
- establishment and use of construction work sites (including the establishment of access tracks) at Glenfield and the James Meehan Estate.

Proposed changes to the Stage A works are set out below.

### 5.2 Changes to the Stage A works (Glenfield Junction early works)

#### 5.2.1 Construction staging

The construction staging, as outlined in Chapter 20.2 of the EA and Concept Plan, has been amended to allow the potential for the Glenfield North flyover to be commissioned independently of the Stage B works. The revised staging plans are shown in Figures 5-1a to h. These replace Figures 20-1a to 20-1d in the EA and Concept Plan.

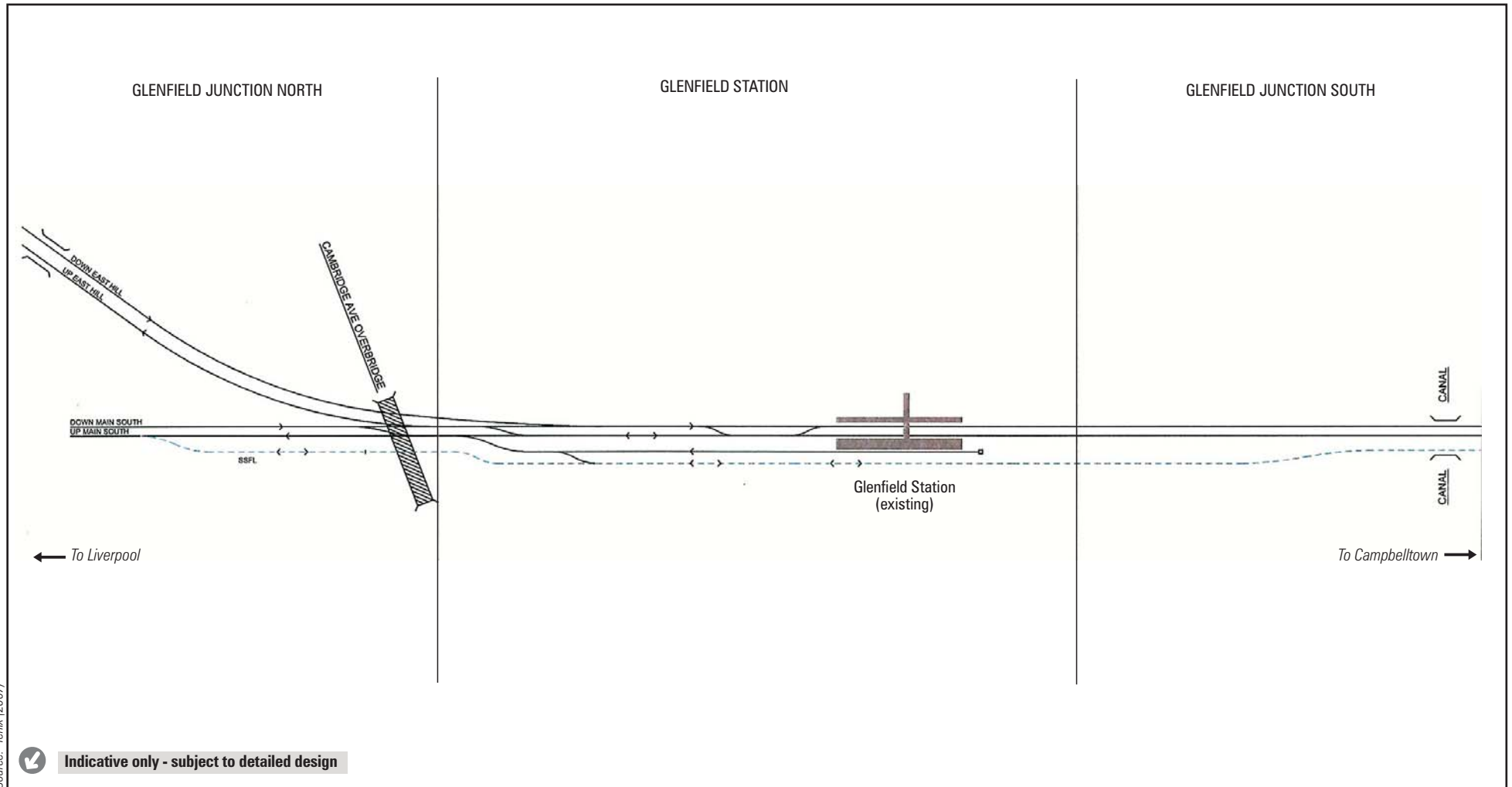
The commencement and completion of the Stage A works would, if required, allow trains to operate on the East Hills Line, via the Glenfield North flyover in advance of completion of the main SWRL alignment and Glenfield Station works, if required. Since the Glenfield Junction works are on the critical path for the delivery of the SWRL project, completion of the Glenfield North flyover would provide significant program advantages, as well as existing operational benefits to the rail network.

#### 5.2.2 Glenfield additional car parking provision

As outlined in Section 4.3, TIDC proposes to provide additional at-grade commuter car parking at Glenfield, in the short term, located on the RailCorp-owned land on the western side of the rail corridor. This parking would be established prior to the removal of any parking on the eastern side of Glenfield Station associated with the Stage B works.

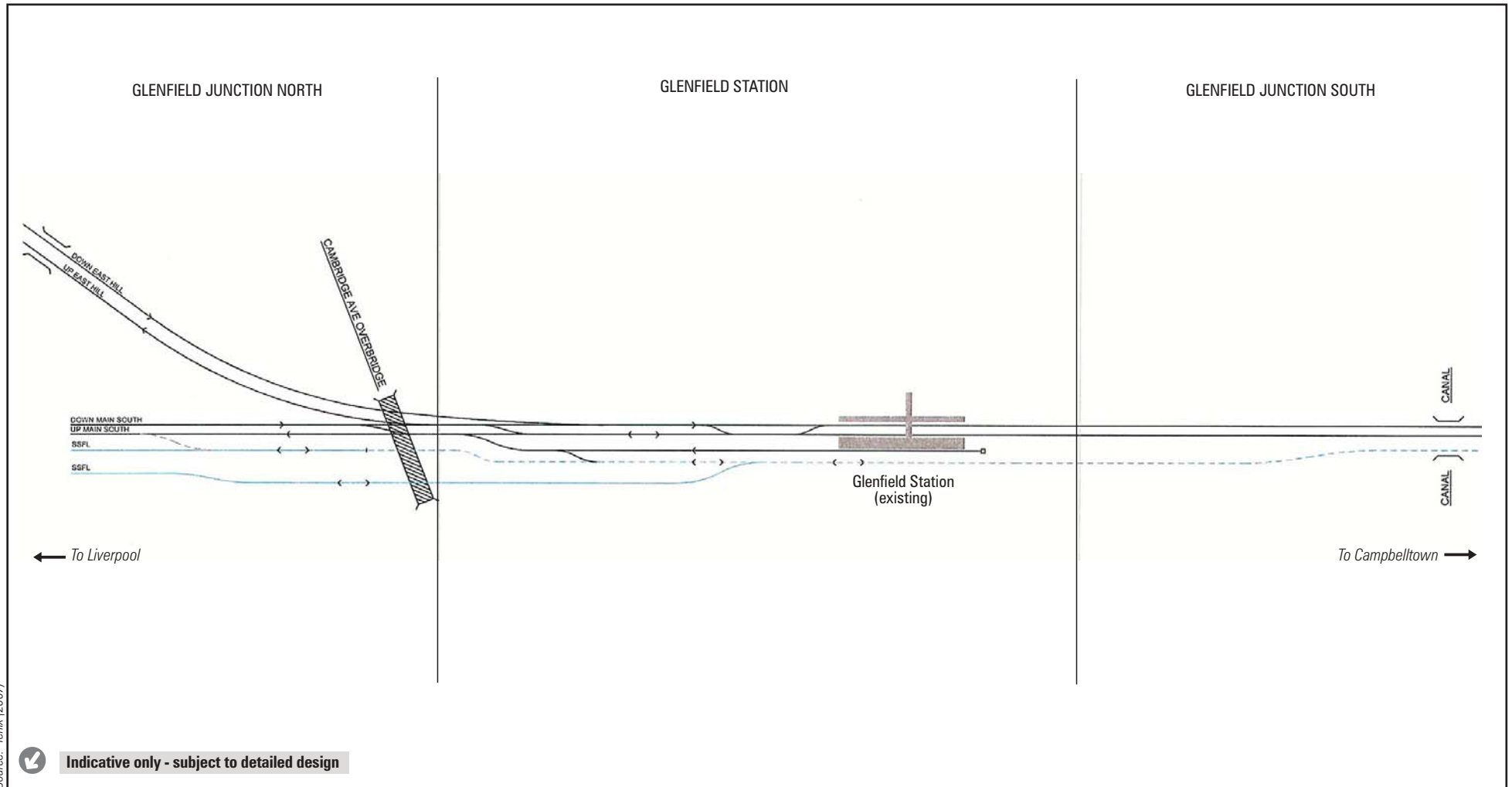
The site was previously flagged in the EA and Concept Plan (Figure 20-2a). The new car park would be commuter parking (generally all day parking). The proposed concept design (see Figure 4-2) allows for:

- up to 280 additional spaces, with access points to the access road to the station and educational facilities
- spaces for people with disabilities (5 to 15 spaces)
- an allowance for a new walkway to provide access from the new parking area to Glenfield Station.



Source: Tenix (2007)

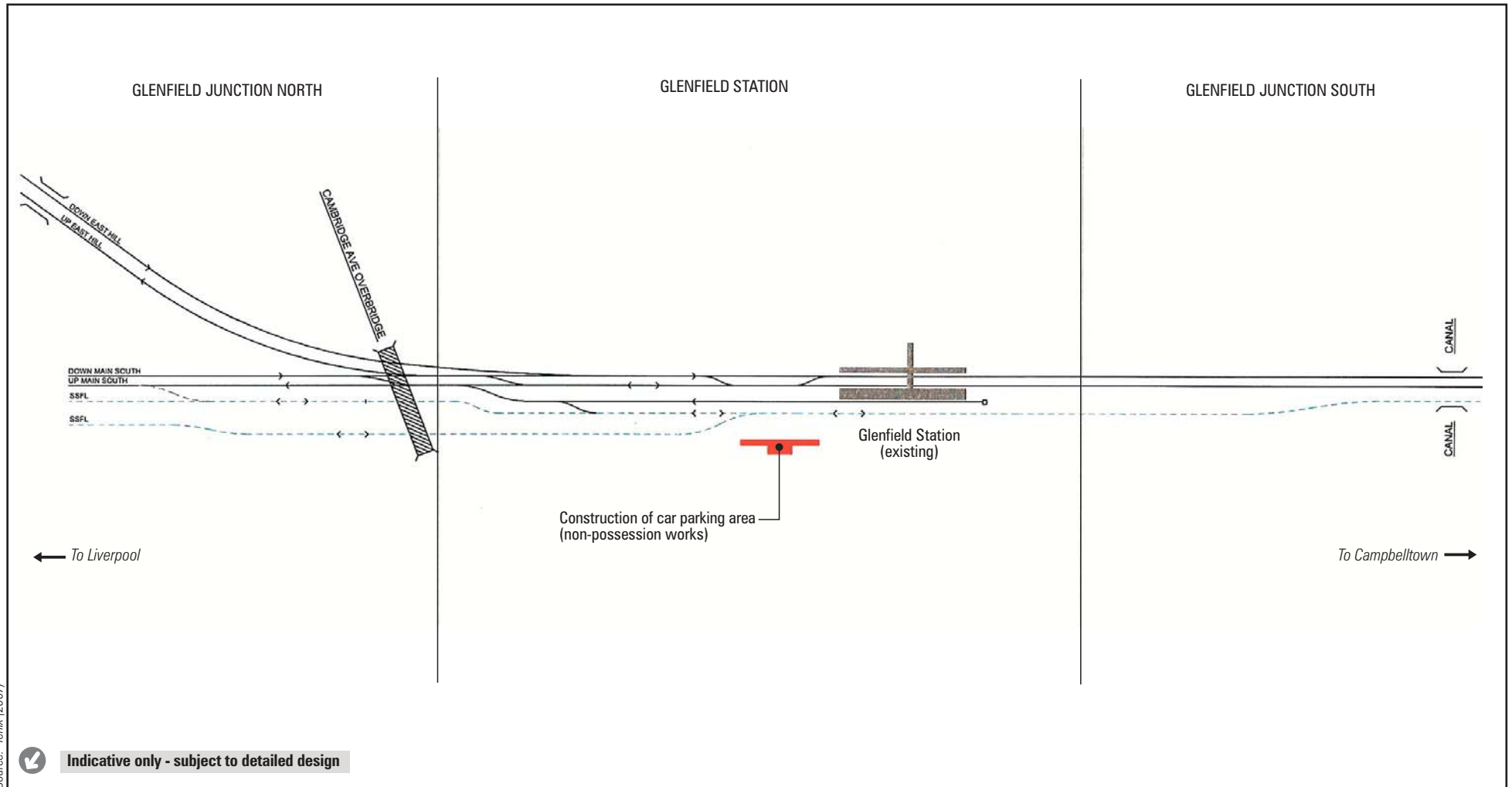
Figure 5-1a **Glenfield Junction early works (Stage 1A - pre-ARTC works)**



Source: Tenix (2007)

- Existing tracks in operation
- Existing operating Southern Sydney Freight Line (SSFL)
- New Southern Sydney Freight Line (SSFL)
- Completed works - operational

Figure 5-1b **Glenfield Junction early works (Stage 1B - works by ARTC, pre-SWRL)**



Source: Tenix (2007)

Figure 5-1c **Glenfield Junction early works (Stage 1C - start of SWRL)**

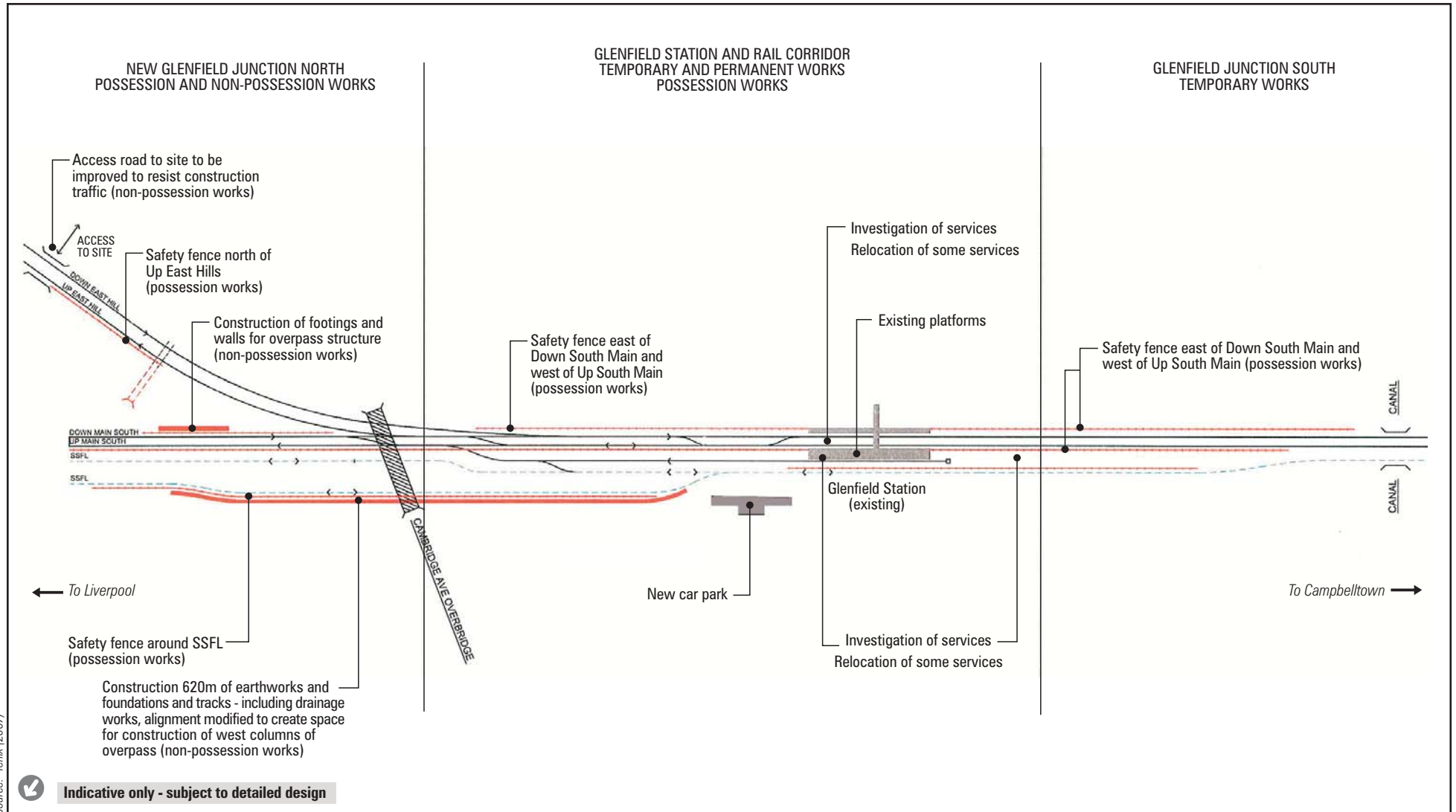
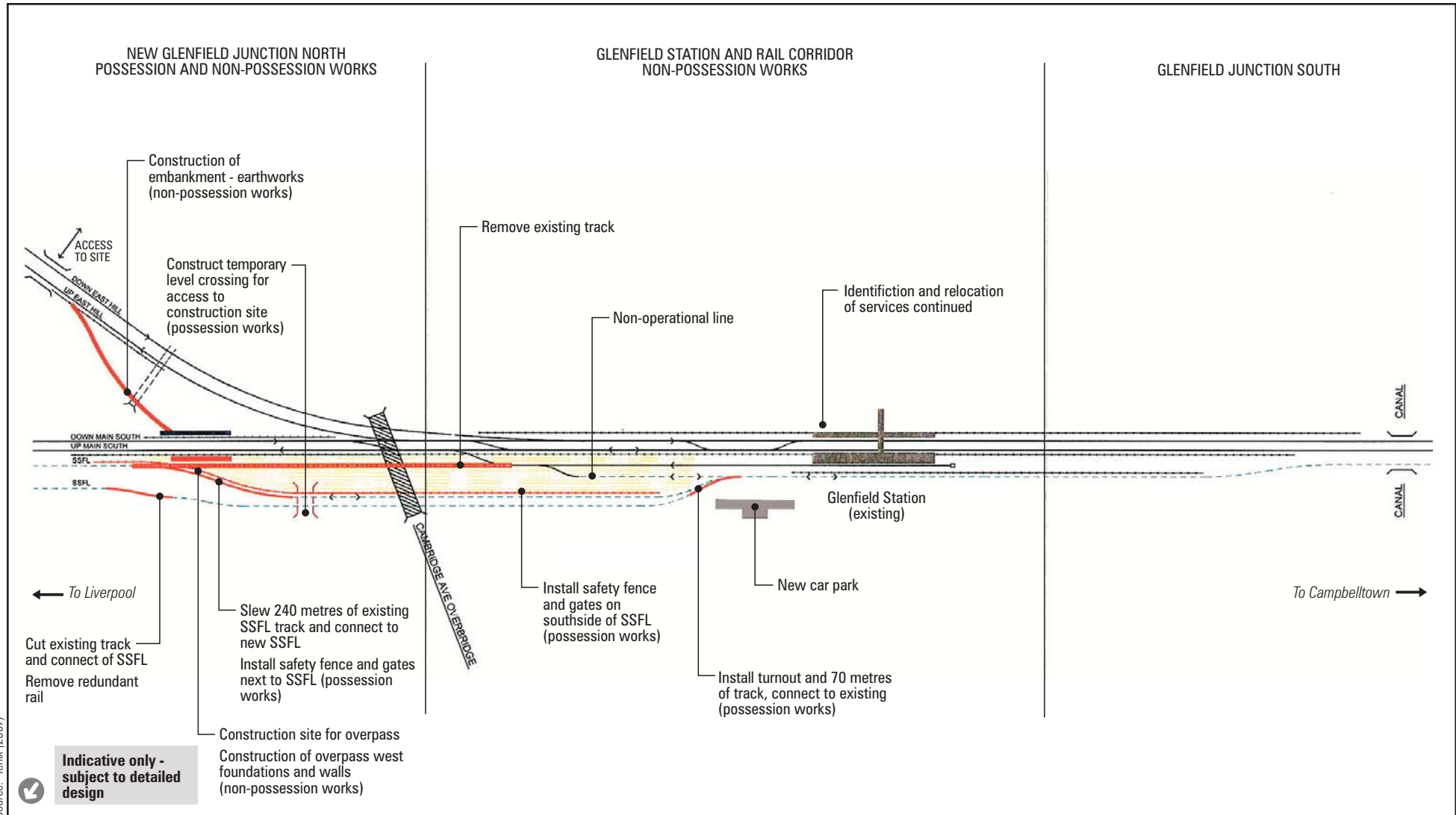


Figure 5-1d Glenfield Junction early works (Stage 2)

Source: Tenix (2007)

- Existing tracks in operation
- Existing operating Southern Sydney Freight Line (SSFL)
- Completed works - operational
- Completed works - non-operational
- Construction works
- - - Safety fence



Source: Jenix (2007)

**Indicative only - subject to detailed design**

- Existing tracks in operation
- Completed works - operational
- Completed works - non-operational
- - - Existing operating Southern Sydney Freight Line (SSFL)
- Construction works
- ⋯ Safety fence

Figure 5-1e Glenfield Junction early works (Stage 3)



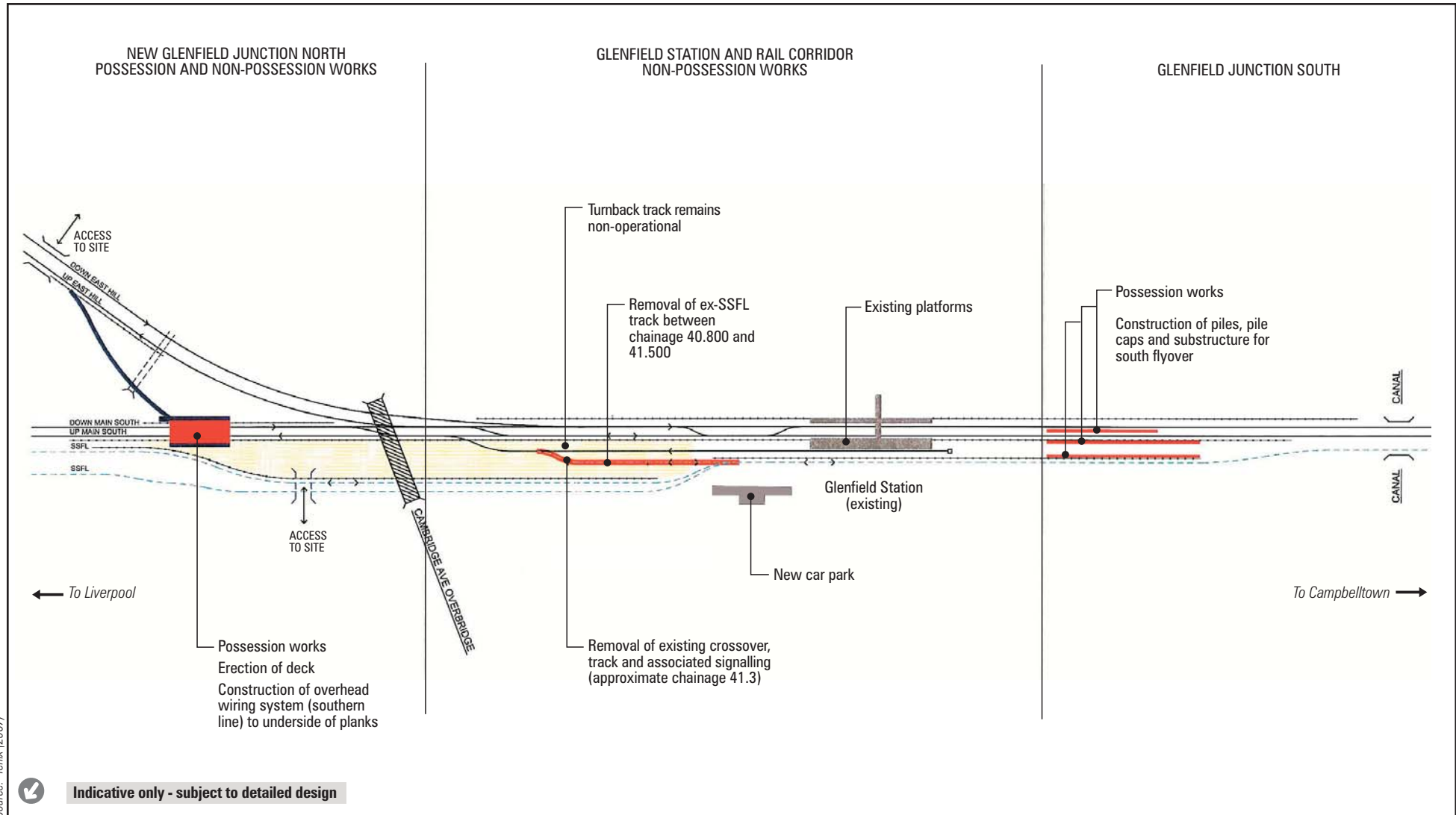
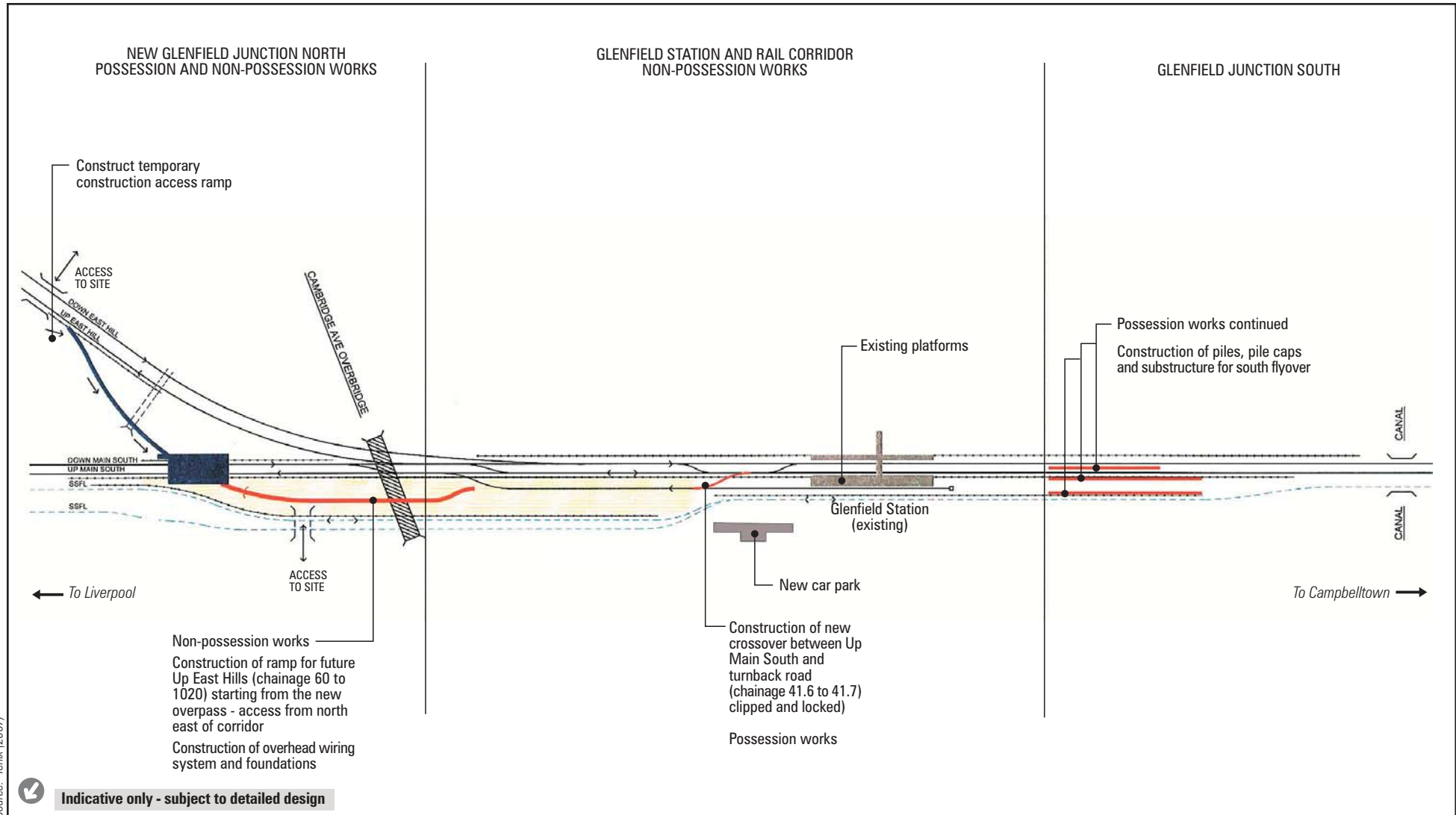


Figure 5-1f **Glenfield Junction early works (Stage 4A)**

Source: Tenix (2007)

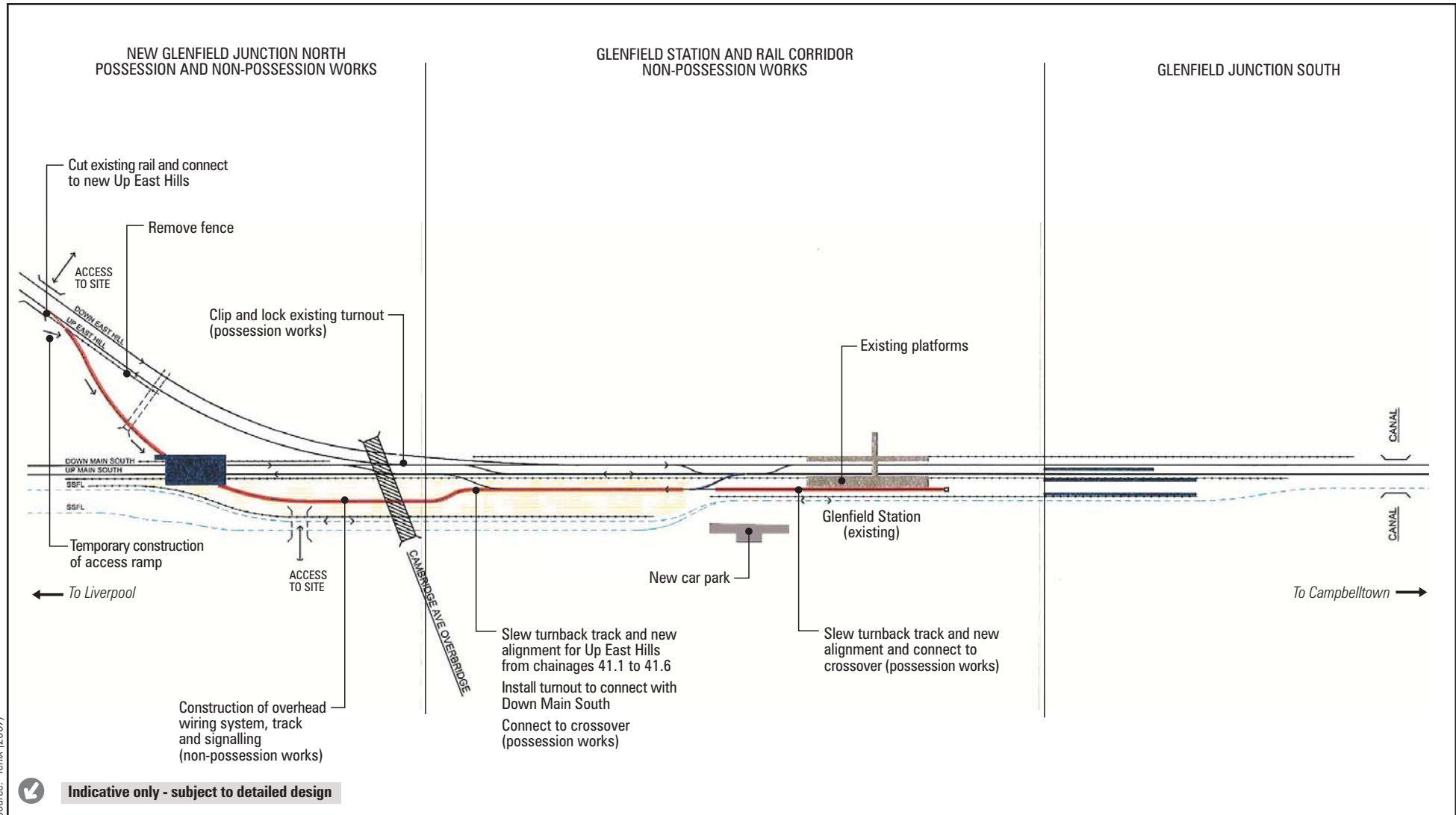
- Existing tracks in operation
- Existing operating Southern Sydney Freight Line (SSFL)
- Completed works - operational
- Completed works - non-operational
- Construction works



Source: Tenix (2007)

- Existing tracks in operation
- - - Existing operating Southern Sydney Freight Line (SSFL)
- Completed works - operational
- Completed works - non-operational
- Construction works

Figure 5-1g Glenfield Junction early works (Stage 4B)



Source: Tenix (2007)

- Existing tracks in operation
- - - Existing operating Southern Sydney Freight Line (SSFL)
- Completed works - operational
- Completed works - non-operational
- Construction works

Figure 5-1h Glenfield Junction early works (Stage 4C)

Parking aisles would be located in a north-south direction to allow flexibility in providing construction staging of the site, depending on future car park requirements.

Additionally, it is proposed to upgrade the existing car parking along the access road to the station and school. The reconfiguration of the parking on the access road would provide an additional 15 spaces to the estimated existing 219 spaces.

The provision of this new parking at Glenfield would raise the total provision of parking on the western side of Glenfield station from 219 to a maximum of 514. As discussed in Section 4.3, this parking would be built as part of Stage A early works, and prior to the loss of any parking on the eastern side, to minimise impacts on parking during construction of the station upgrade works (Stage B).

## **5.3 Impacts of the proposed modifications**

### **5.3.1 Glenfield North flyover commissioning and operation**

The modification to the construction staging to include completion of the Glenfield North Junction works as part of Stage A of the project provides the opportunity for the junction to be commissioned and opened independently of the Stage B works. The revised construction staging allows for early commissioning of the Glenfield North Flyover and hence bring forward the operational benefits of this junction (i.e. it should improve the reliability and capacity of the Junction earlier).

The outcomes of the additional noise assessment, as documented in Section 4.8, indicate that the increase in operational noise levels associated with operation of the Glenfield North flyover would not be above the trigger levels outlined in the new IGANRIP. On this basis, the consideration of noise mitigation measures is not warranted at this locality. Notwithstanding this, the following operational noise mitigation is proposed to be implemented for Stage A of the project (see SoCs A21 to A23 in Appendix A):

- Detailed design of the Glenfield North flyover would incorporate measures to minimise any increase in operational rail noise levels.
- Compliance measurements would be undertaken after opening and following the introduction of the SWRL train timetable, in accordance with the IGANRIP.

### **5.3.2 Glenfield additional commuter car park**

Considering the relevant findings detailed in Section 4.8, inclusion of the Glenfield additional car park as part of Stage A would be expected to have some additional impacts. In summary:

- The additional car park has the potential to increase peak traffic levels on Glenfield Road (approximately 20% increase), with the main impact focused on the Glenfield Road roundabout. It would need to be confirmed whether this roundabout has sufficient capacity to deal with the additional traffic prior to construction. A revised SoC identifies how this is proposed to be addressed. This is unlikely to significantly affect access to educational uses adjacent, as the peak period for access to/from the station differs from the school hours.

- Noise emissions from operation of the car park are predicted to comply with the relevant noise goals at all locations. Due to the proximity of the car park to sensitive receivers (educational land uses), significant exceedances of construction noise goals are predicted during the car park construction, and would need to be carefully managed, along with construction vibration.
- The proposed car park extension would remove approximately 0.48 hectares of Shale Plains Woodland, which is a sub-unit of Cumberland Plain Woodland, listed as an endangered ecological community under the *Threatened Species Conservation Act 1995* and the *Environment Protection and Biodiversity Conservation Act 1999*. The vegetation is already edge affected and hence the proposed car park extension would not increase the extent of edge effects. Given the relatively small area of the car park extension and the disturbed nature of the vegetation and fauna habitats on-site, it is unlikely that a significant impact on biodiversity would result. The area is proposed to be surveyed prior to construction to confirm impacts and identify appropriate management measures (see SoC A16 in Appendix A). As per SoC A25, a landscape plan would be prepared for the additional car park and would include the retention of existing trees where possible.
- No significant impacts on hydrology/surface water or other environmental issues would be expected as a result of the construction/operation of this car park.
- There would be no direct property impacts, because RailCorp owns the site and the site is vacant land.

### 5.3.3 Conclusions

The proposed modifications would have a minor or beneficial impact on the environment, subject to the implementation of the SoCs outlined in Appendix A.

The proposed modifications are unlikely to have a significant impact on any matters of national environmental significance identified under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

## 5.4 Modifications to the SoC

Based on the outcomes of the additional investigations detailed in Chapter 4, consideration of the submissions received and proposed modifications to Stage A of the project, the draft SoC outlined in Chapter 21 of the EA and Concept Plan has been amended and finalised. The reasoning for the changes is explained in Chapters 3 and 4.

The modified SoC is included in Appendix A.



## 6. Conclusions and next steps

This Submissions Report has addressed the outcomes of the consultative process conducted during and following the public exhibition of the EA and Concept Plan for the proposed SWRL.

In addressing both compliance with legislative requirements and the requirements of the consultative process, this Submissions Report demonstrates that:

- TIDC has considered all issues arising from the submissions and provided a written response to the issues (Chapter 3).
- In responding to the issues relating to the Glenfield Stage A works, additional investigations and design work have been undertaken to adequately respond to these issues (Chapters 4 and 5).
- Minor modifications to the SWRL concept have been proposed and a justification that each modification is minor or beneficial in impact has been included (Chapter 5).
- An SoC, which has been amended as a result of the submissions received and the additional assessments undertaken, demonstrates the proponent's commitment to a comprehensive management approach to minimise environmental impacts (Appendix A).

In consideration of the above, it is proposed that the SWRL project as described in the EA and Concept Plan and amended by this Submissions Report should proceed for the approval of the Minister for Planning.

Should the Concept Plan for the SWRL be approved, further environmental assessment would be undertaken, consistent with any conditions of approval and the SoCs. It has not yet been determined how the project would be delivered (i.e. the contract form), or whether any construction staging is proposed. It may be necessary to divide or stage further environmental assessments to coordinate with the project delivery and methodology. Should any division or staging occur, an assessment would be undertaken to determine the applicability of any conditions of approval or SoCs prior to the commencement of that assessment.





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