

4. Description of the proposal

4.1 Design and operations

4.1.1 Main components

The proposed South West Rail Link (the proposal) comprises the construction and operation of approximately 12 kilometres of dual-track electrified railway, between the junction of the East Hills Line and the South Main Line (the Glenfield junction) and the proposed stabling facility west of Leppington. The new railway would be constructed within an easement of 40 metres in width, over lands to the west of the existing Glenfield Railway Station. The railway would initially comprise two tracks, although the 40 metre corridor would provide sufficient width for potential future quadruplication and the construction of cuttings and embankments, as required. Various modifications to the existing track arrangements between Glenfield and Glenfield Junction would also be undertaken, including the construction of rail flyovers and the removal of some sections of existing track. Other railway-related ancillary infrastructure such as sub stations, sectioning huts, maintenance access roads and other operational facilities would also be constructed within this section of the railway.

The key features of the proposal are:

- Construction of a grade-separated flyover junction over the Main South Line to provide a connection to the East Hills Line north of the Glenfield Railway Station (referred to as Glenfield North Junction).
- Modifications to track lay-outs, requiring realignment of approximately 2km of track and installation of new cross overs at Glenfield.
- Reconfiguration of Glenfield Railway Station, including re-location of the station buildings and concourse to provide for centrally loaded platforms, reconfiguring the eastern platform to an island platform and movement of the platforms 80 metres north. The re-configuration of Glenfield station would include a high level concourse with easy access, commuter carparking and other changes to surrounding areas to provide additional facilities such as kiss and ride and bus stops;;
- Construction of flyovers over the South Main and Southern Sydney Freight Lines to the south of Glenfield Railway Station and movement of the existing Freight track (part of the Southern Sydney Freight Line) slightly west (referred to as Glenfield Junction South).
- Construction of approximately 12 kilometres of double track within an easement /corridor of approximately 40 metres width over lands to the south and west of the existing Glenfield Railway Station.
- Construction of two new railway stations, interchanges and commuter car parks at Edmondson Park and Leppington.
- Construction of a train stabling facility to the west of the Leppington Railway Station.

- Construction of ancillary facilities such as power supply, sectioning huts, signalling structures, access roads, and other infrastructure required for the operation and maintenance of rail services and infrastructure and
- Operation and maintenance of the proposal.

These components are shown in *Figure 4.1* and discussed in further detail below.

4.1.2 Glenfield junction

A single track, grade-separated reinforced concrete flyover is proposed at Glenfield Junction North to facilitate the passage of trains onto the Up East Hills Line and passing over the South Main Line. The flyover structure also needs to pass under the Glenfield Road/Cambridge Avenue overpass of the South Main Line.

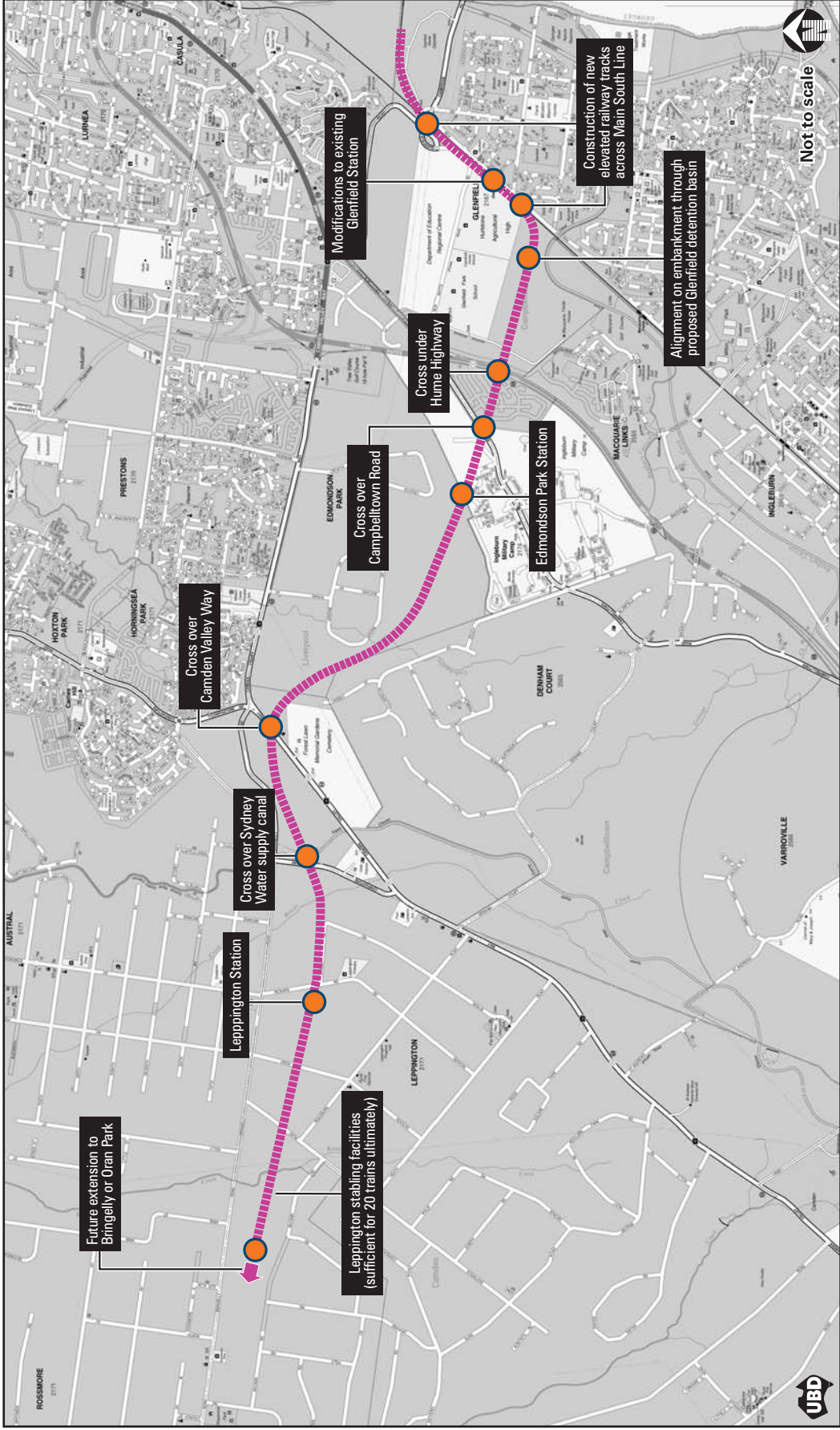
The Down East Hills Line would be re-aligned on the eastern side of the existing railway, and to the east of the existing down South Main (refer *Figure 4.2*). A crossover would also be constructed to the south of the flyover to connect the Up East Hills Line with the Up South Main.

4.1.3 Reconfiguration of Glenfield Railway Station

A substantial reconfiguration of Glenfield Railway Station would be required to accommodate the proposed South West Rail Link (see *Figure 4.3*). The existing station would be re-configured to accommodate two island platforms by the addition of a new platform face on the east side of the station. This will require the re-construction of the booking office. The reconfiguration also involves the repositioning of the platforms by shortening the existing platforms by approximately 80 metres at the southern end and extension of the northern end by 80 metres. An Easy Access upgrade and other modifications would be required and would include a new pedestrian overbridge. The concourse would be rebuilt approx 80 metres northwards towards the East Hills flyover. Glenfield Station would remain operational during construction. Once the new concourse is completed the existing concourse would be demolished.

The two South West Rail Link tracks would enter the existing rail corridor via ramps between the East Hills and Main South tracks in each direction. Crossovers and turnouts to both the north and south of Glenfield Railway Station, would provide a connection to or from either the East Hills or the South Main lines (refer *Figure 4.2*). The South West Rail Link tracks would pass over the proposed Southern Sydney Freight Line and South Main tracks on single track, grade-separated concrete flyovers south of Glenfield Railway Station.

The reconfiguration of Glenfield Railway Station and the construction of platforms would result in the loss of 120 existing commuter car spaces along the eastern side of the rail corridor at the station. Further investigations will be conducted during the environmental assessment to investigate alternate parking, kiss and ride and bus rail interchange facilities.



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Figure 4.1 Outline of key components for the South West Rail Link

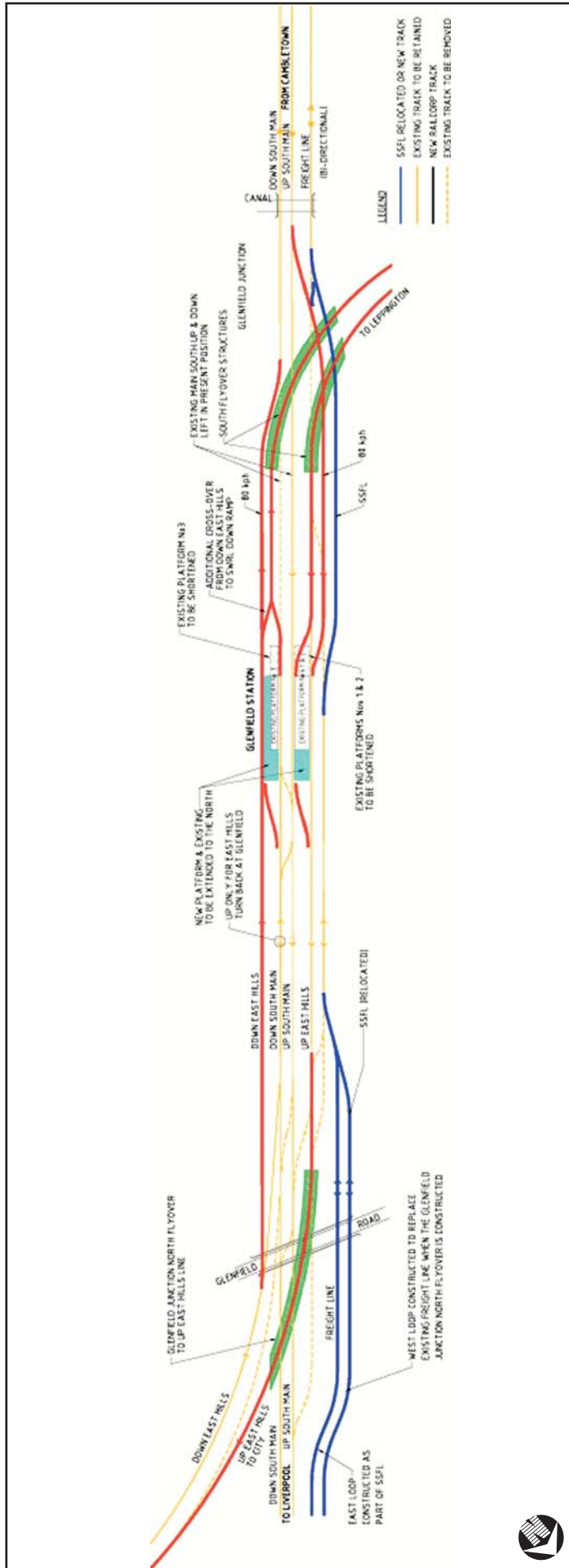


Figure 4.2 Schematic of track arrangements at Glenfield Junction



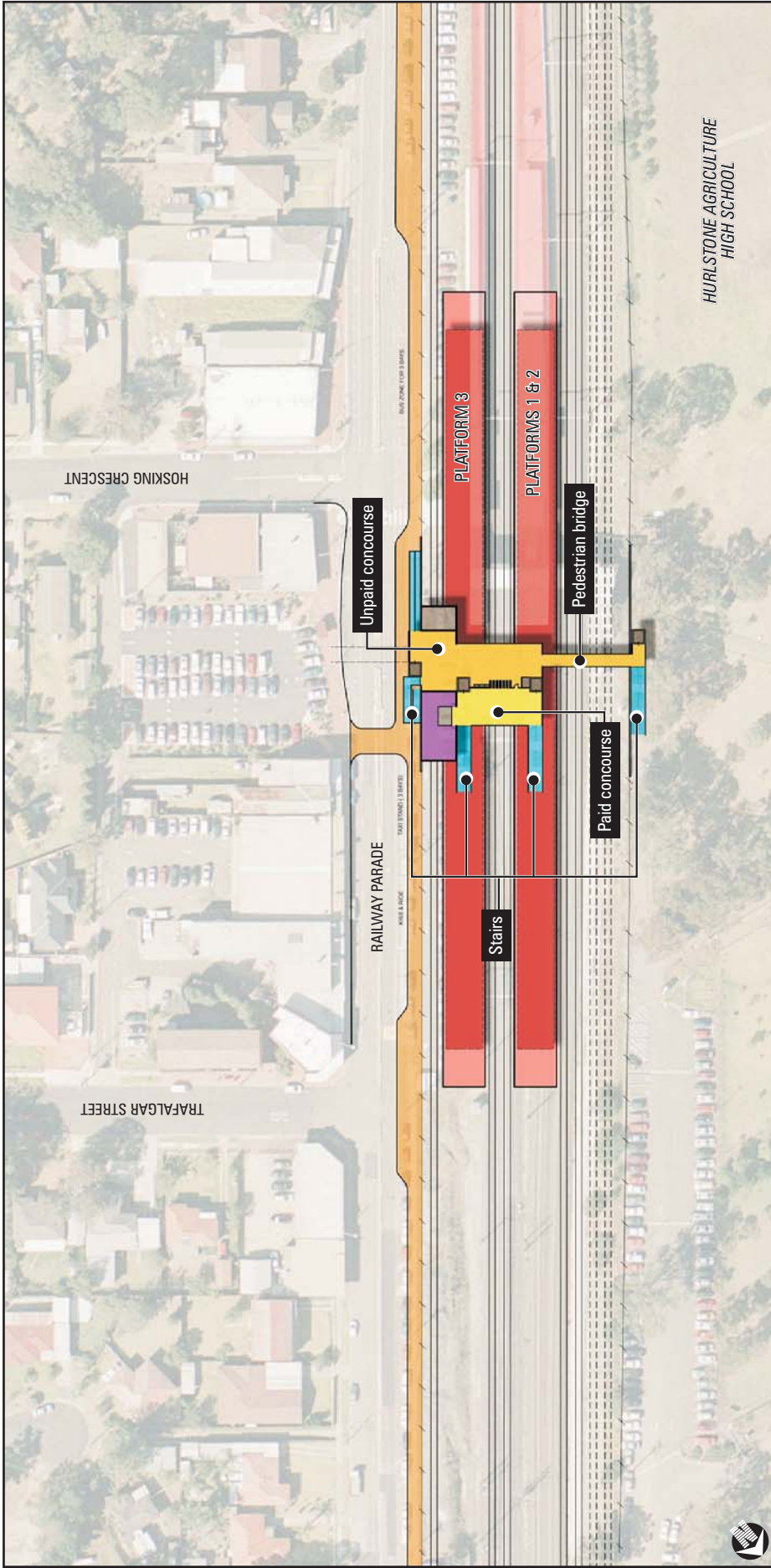


Figure 4.3 Proposed future arrangement of Glenfield Station

4.1.4 Route alignment

The indicative horizontal and vertical alignments of the South West Rail Link are shown in *Figures 4.4a-d*. As noted above, approximately 12 kilometres of dual track electrified railway would be constructed between Glenfield Junction North and the proposed stabling facility west of Leppington.

Approximately 600 metres south of the Glenfield Railway Station, the alignment would swing west from the existing rail corridor and proceed on embankment, approximately 7 metres high, through lands known as the James Meehan Estate and south of Hurlstone Agricultural High School. At the western extent of this area, the land rises steeply and the alignment would pass from embankment into cutting (around 14 metres deep), enabling it to pass under Quarter Sessions Road and the Hume Highway/South-western freeway.

West of the Hume Highway, the alignment enters the Edmondson Park Local Environmental Plan area, passing over Campbelltown Road into the former Ingleburn Military Camp area. Edmondson Park Railway Station would be located adjacent to the northern extent of the former military camp. The rail alignment and station would be in cutting, approximately 7 metres deep. This would facilitate its integration with the Edmondson Park Town Centre.

The alignment would then head to the north-west and north, up a 2.5% incline, remaining in a cutting of up to 10 metres. It would then fall at a 1.4% grade and bridge across Cabramatta Creek. In this area, the alignment would head in a northerly direction parallel to the edge of the Edmondson Park release area.

The alignment would then pass through a short stretch of cutting as it passes adjacent to Denham Court. From there it would proceed on embankment around the northern edge of the Forest Lawn Memorial Gardens Cemetery. The alignment would cross over Camden Valley Way. Between Camden Valley Way and Cowpasture Road, the alignment would rise at an approximate 2.5% grade, with a section in a cutting with a maximum depth of about 11 metres. Bridge structures would be used to cross Cowpasture Road and the Sydney Water Canal. West of the Sydney Water Canal the alignment would be on embankment, up to 10 metres high. The gradient of this section would fall at a grade of approximately 2.5%.

Leppington Railway Station would be located in a cutting, immediately west of Rickard Road and east of Bonds Creek.

The proposed Leppington stabling facility would be partly in cutting and partly on embankment, approximately 2.5 kilometres to the west of Leppington Railway Station. The alignment through this section would run generally parallel to Bringelly Road, approximately 300 metres to the south. The stabling facility would be located between Kemps Creek and an existing woodland near Allenby Road. Further details of the stabling facility are provided in *Section 4.1.6*.

4.1.5 Edmondson Park and Leppington Railway Stations

The proposed new stations at Edmondson Park and Leppington would be designed to facilitate the adjoining retail/commercial activities planned within the respective town centres, and to provide an efficient interface between the transport facilities and these

premises. Both stations would include paid and unpaid concourse areas, pedestrian overbridges/connections to adjoining facilities, access for the mobility impaired (Easy Access), park-and-ride facilities, and facilities for transport interchange between bus and rail modes. *Figure 4.5* presents the proposed Edmondson Park station layout, *Figures 4.6* and *4.7* show an indicative structure plan and principal road context for the Leppington Town Centre.

Edmondson Park Station is planned to be serviced directly by an extension of the existing Liverpool to Parramatta strategic bus corridor. However, park-and-ride facilities would also be needed to serve local demand.

At Leppington, the station is located in close proximity to newly developing areas, and its relatively remote location from existing developed areas, would make it an attractive location for park-and-ride commuters, particularly in the short term as development and public transport networks become established. It is likely that many residents that currently park at other stations would shift to Leppington when park-and-ride supply is made available. However, the provision of park-and-ride facilities at Leppington needs to be carefully planned and implemented, to ensure that it would not impede development of the town centre and affect the overall amenity of the urban area.

4.1.6 Leppington Stabling facility

Leppington stabling facility would cover an area approximately 1 kilometre long and 100 metres wide in a mix of cutting and embankment. The design of the facility would allow for the stabling of 12, 8-car train sets at the commencement of the South West Rail Link operations, with ultimate provision for up to 20, 8-car sets. The stabling facility would be capable of accommodating 10-car sets in the future.

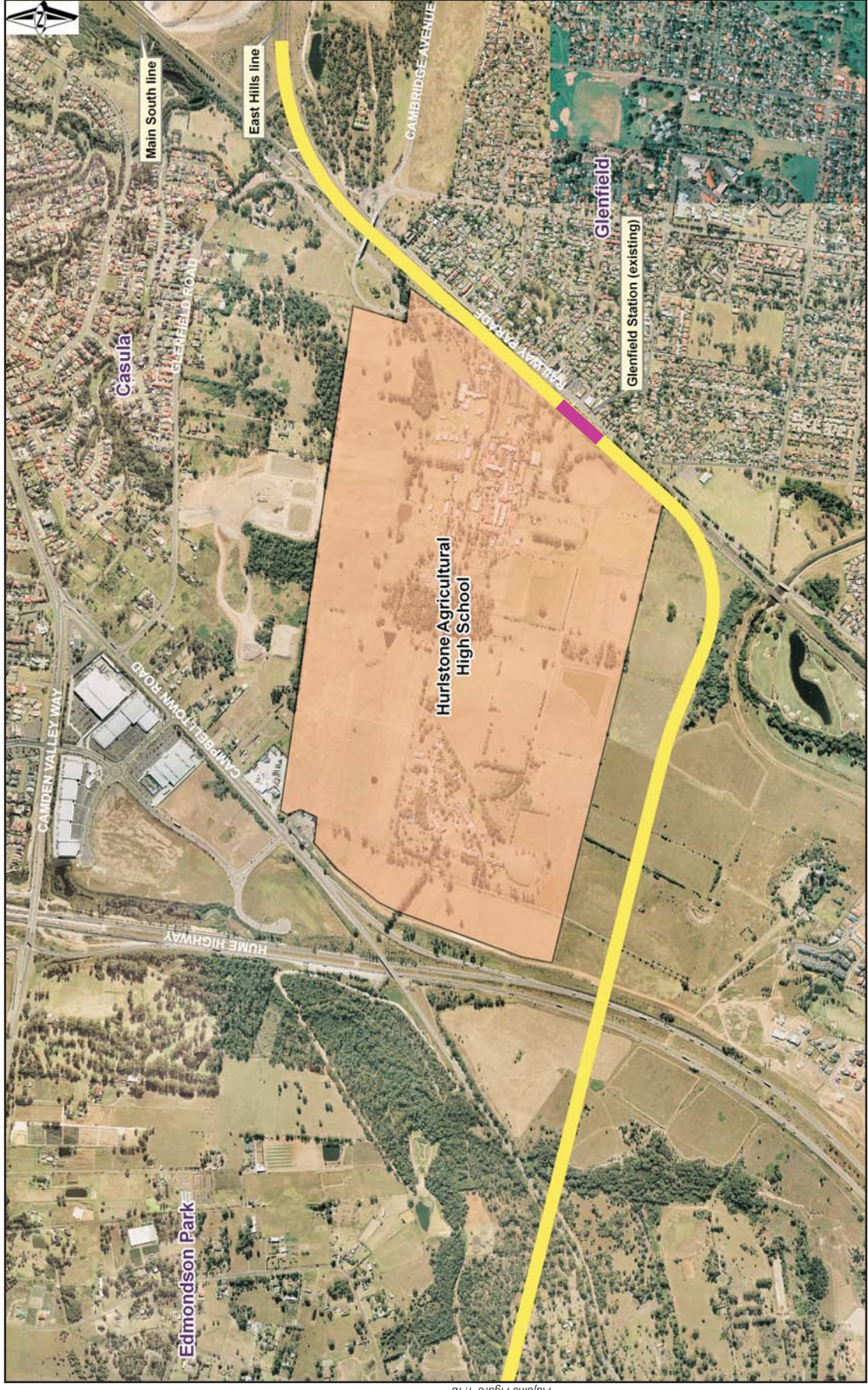
It is envisaged that additional facilities in the stabling yard would include cleaning/light maintenance facilities, ablutions, administration offices and train washing facilities. The facility would be lit by floodlights and fenced for security reasons. Access is proposed to be provided from McCann Road.

4.1.7 Future extension

The proposed alignment does not preclude a future extension of the South West Rail Link to either Bringelly or Oran Park. The direction of any future terminus would be determined by operational needs and the patterns of future development. Any proposed extension would be subject to a separate environmental impact assessment and approvals process.

4.1.8 Train operations

Trains on the South West Rail Link would operate to a regular pattern that would match demand during peak travel times and provide a satisfactory level of service at other times. Initially, at commencement of the South West Rail Link operations, it is anticipated that four trains per hour would depart from Leppington for the Sydney central business district via the East Hills Line. In addition to the Sydney CBD services via the East Hills Line, it is anticipated that four train services per hour would be provided from Leppington to the city via Liverpool. Services from Leppington to the Sydney CBD via the East Hills Line would increase to an estimated eight trains per hour in the morning peak, as demand increases.

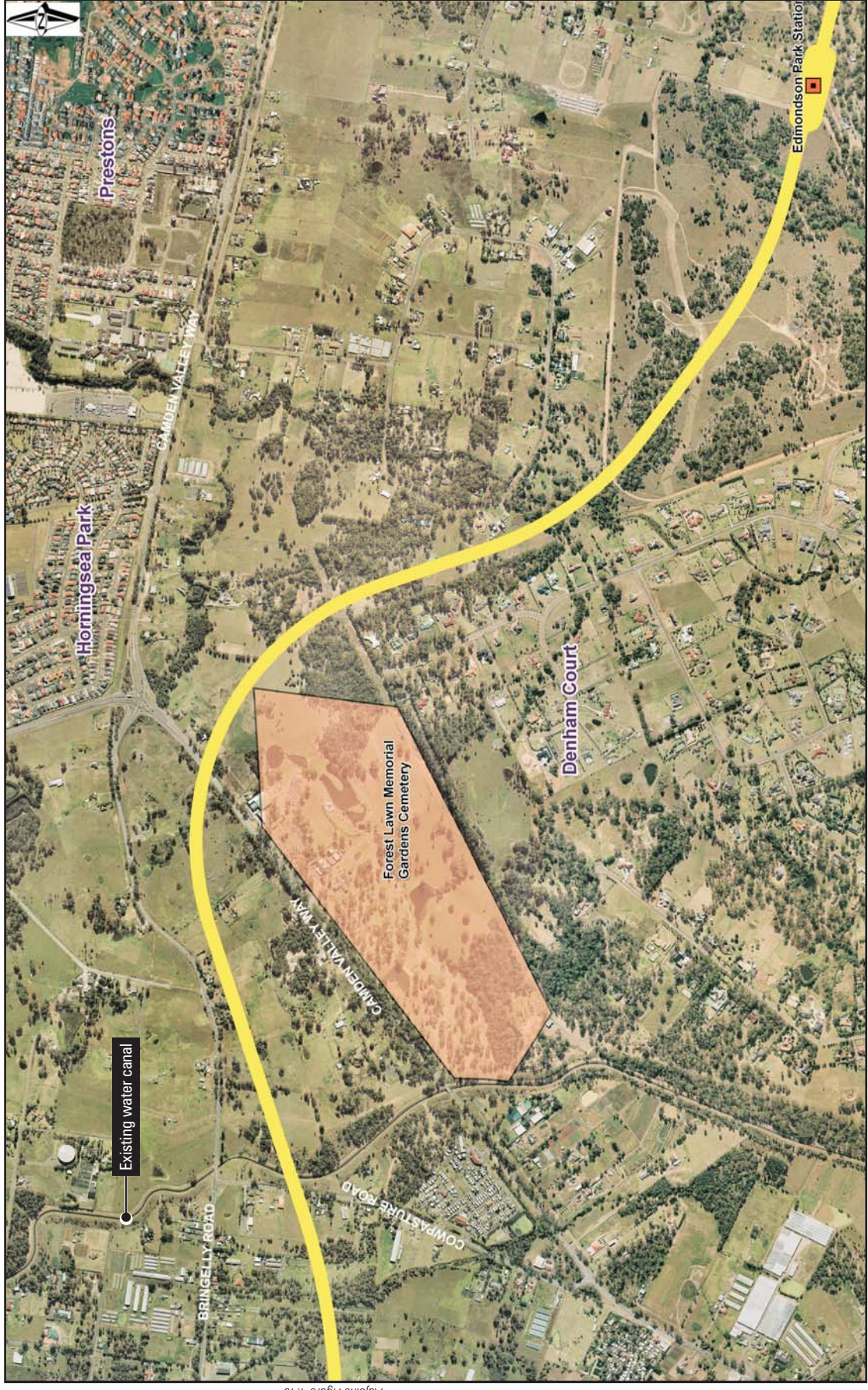


Adorns Figure 4.4b

Figure 4.4a Indicative horizontal alignment



- Preferred alignment
- Proposed rail station
- Existing rail station



Adjoins Figure 4.4c

Adjoins Figure 4.4a

Figure 4.4b Indicative horizontal alignment

0 800 metres



-  Preferred alignment
-  Proposed rail station



Figure 4.4c Indicative horizontal alignment

Adjoins Figure 4.4b



- Preferred alignment
- Proposed rail station

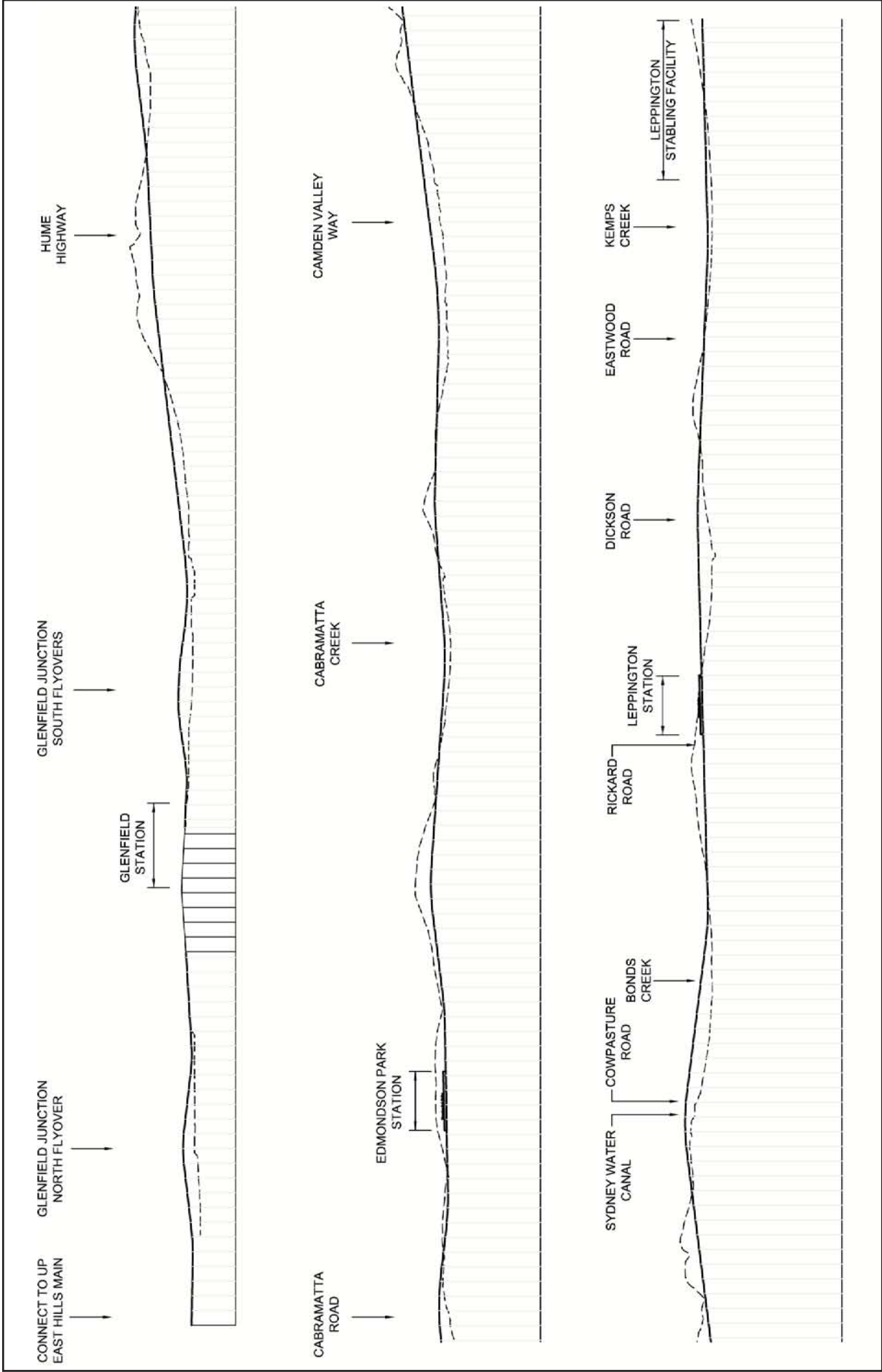


Figure 4.4d Indicative vertical alignment

--- Existing surface level

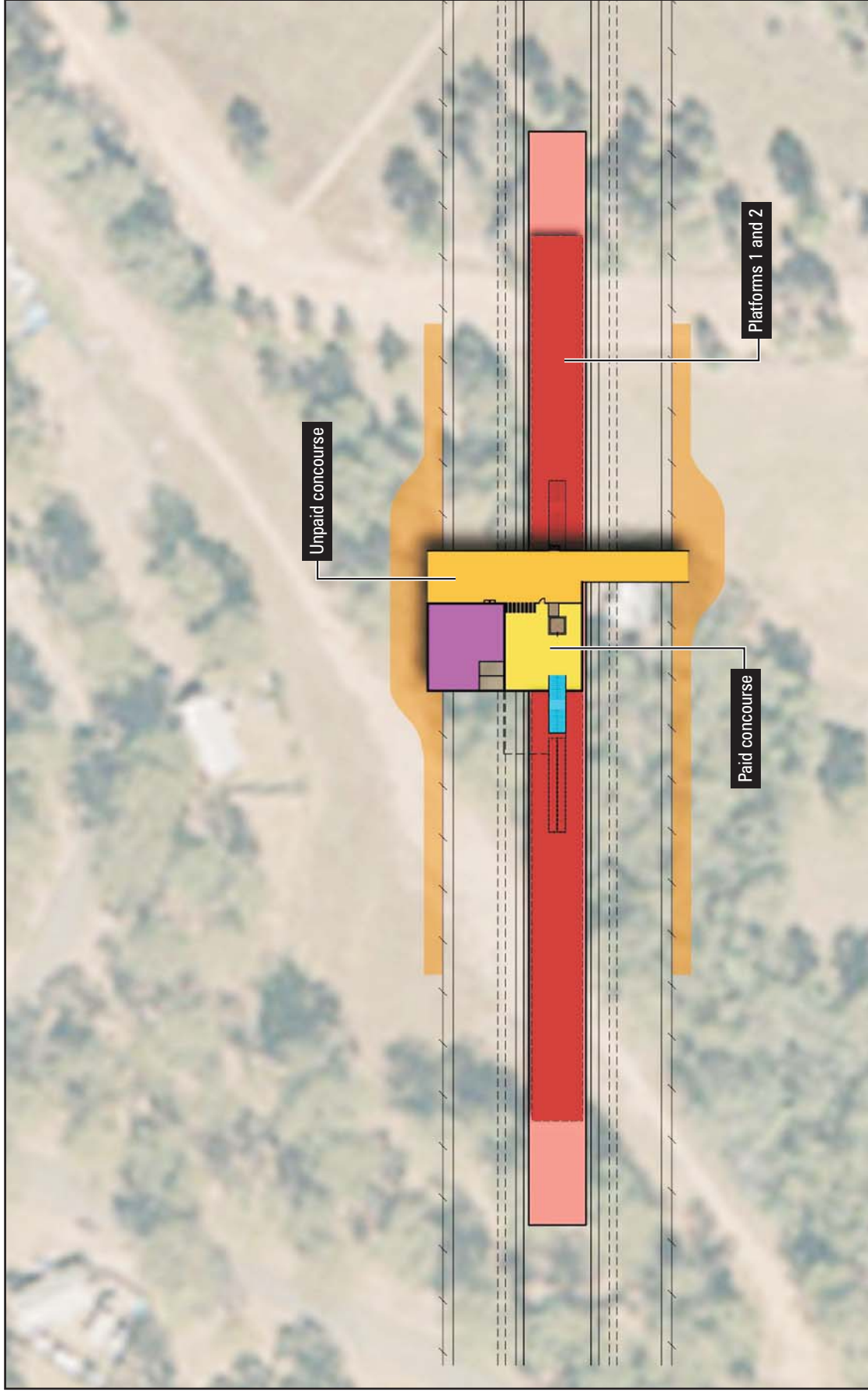


Figure 4.5 Proposed Edmondson Park station layout

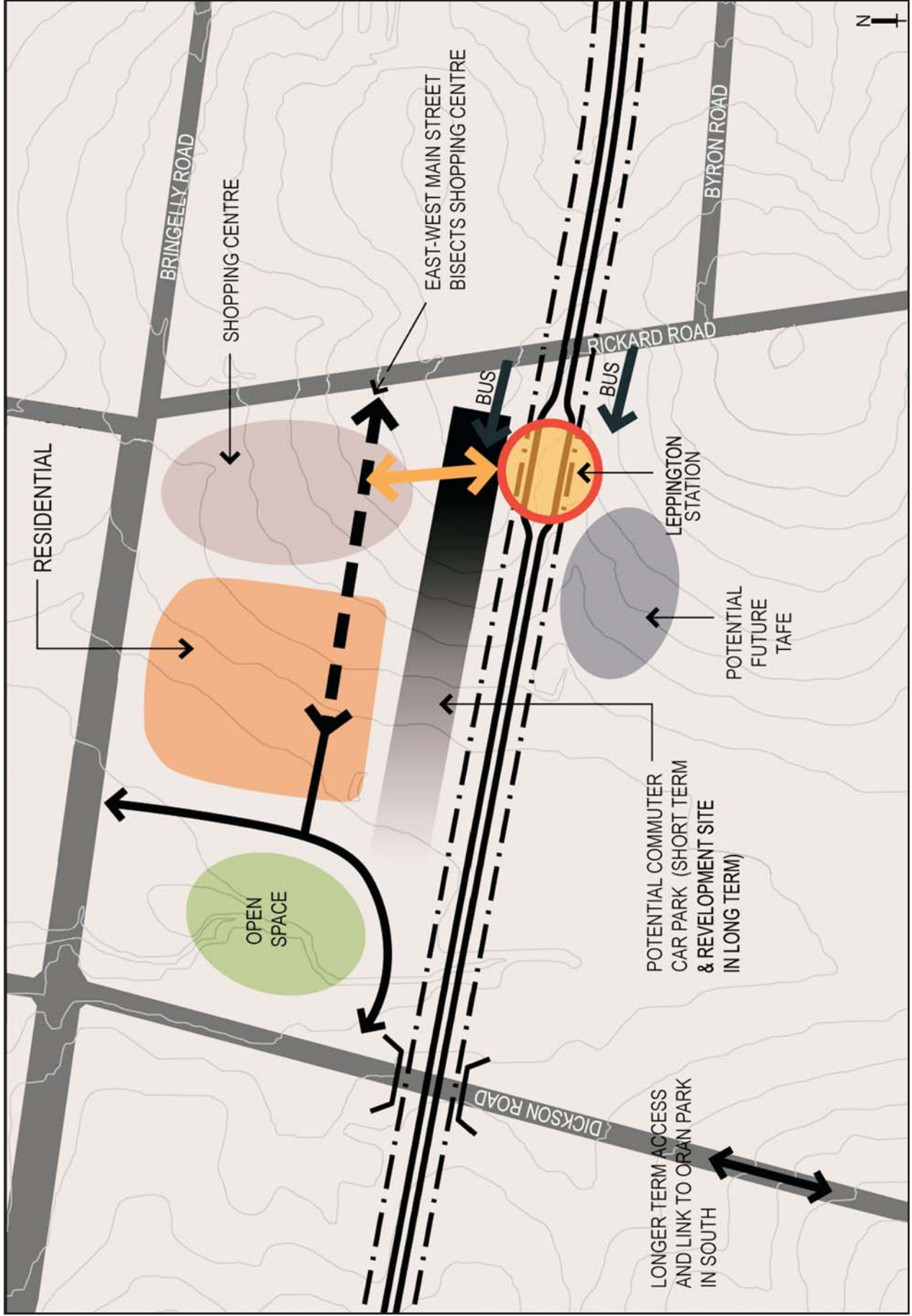


Figure 4.6 Leppington Town Centre urban structure plan

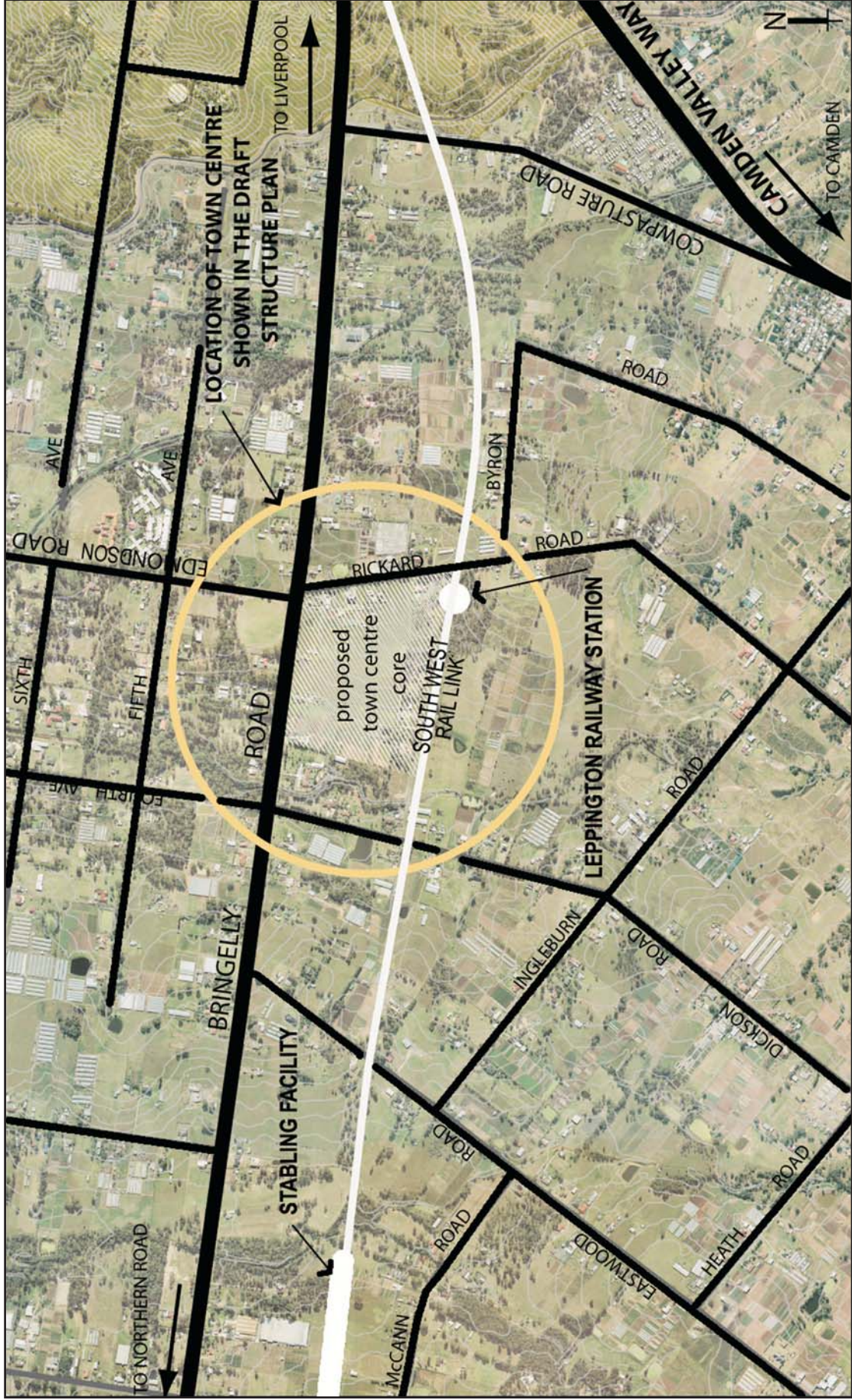


Figure 4.7. Leppington Town Centre principal road context

The resulting journey times along the East Hills Line, following implementation of the South West Rail Link, would be 46 minutes between Leppington and Central Railway Station (via the airport), and 40 minutes via Sydenham.

4.2 Construction outline

4.2.1 Construction and constructability

The principal construction issues that would need to be addressed as part of the planning for and development of the South West Rail Link include the:

- Construction of grade-separated structures over the South Main Lines north and south of the Glenfield Railway Station.
- Land requirements for construction near Glenfield Railway Station.
- The disposal of an excess of approximately 100,000 cubic metres of spoil.
- Crossings of major roads, such as the Hume Highway, Campbelltown Road, Camden Valley Way and numerous creeks.
- The locations of work sites.

The construction of grade-separated structures over the South Main Lines north and south of Glenfield Railway Station would present a major construction challenge, due to the need to maintain continuity of the existing passenger and freight services. However, some track possessions to accommodate major works are likely to be required and these would typically occur on weekends and off peak periods (such as the Christmas New Year holiday period). The construction of these structures would need to be conducted in stages, possibly with temporary diversions of trains onto different tracks during each work stage.

The proposed railway corridor consists of a number of embankments and cuttings, ranging up to 10 metres in depth. Alluvial deposits are likely to exist around various creeks along the alignment. These have intrinsic geotechnical problems related to their shrink-swell properties and dispersiveness. Some removal or strengthening of the track foundation could, therefore, be required.

A significant overall factor in the construction task will be the disposal of an estimated 100,000 cubic metres of excess spoil. Excess spoil could be re-used on-site for mounding to reduce noise effects from the operational railway.

Crossings of the Hume Highway, Quarter Sessions Road and Campbelltown Road need to be built without significant traffic congestion and impacts. To achieve this, pre-fabrication of the structures, or trenchless excavation methods, may be required. Manufacture of precast concrete units adjacent to road crossings may also be needed.

Construction sites of various sizes would be needed to construct the proposal. Primarily, these would be adjacent to specific work areas at the Glenfield Railway Station, near flyover structures, adjacent to main roads or under/ overpasses, and at the location of new stations and stabling facilities. In some locations, temporary construction access tracks would also need to be built to access proposed construction sites.

The estimated construction timeframe for the South West Rail Link is 3 years.