

Level 7, 177 Pacific Highway
 North Sydney NSW 2060 Australia
 PO Box 632 North Sydney
 NSW 2059 Australia
 T +61 2 9928 2100
 F +61 2 9928 2444
 www.iacobs.com

Subject	Richmond Road upgrade – Construction traffic assessment	Project Name	Richmond Road upgrade – Review of Environmental Factors
Author	Phillip Truong	Project No.	IA301400
Date	4 May 2020		

1. Construction

1.1 Key assumptions

1.1.1 Construction phases

Construction of the proposal would comprise of the key activities outlined in Table 1-1. The construction methodology may vary from the indicative construction method provided in this section due to ongoing detailed design refinements, the identification of additional constraints, community and stakeholder feedback and construction contractor requirements.

Table 1-1 Construction phases and indicative activities

Phase	Key construction activities
W.01 – Early works / utilities – noise intensive works W.02 – Early works / utilities – typical works W.03 – Early works / utilities – out of hours works	<p>Early works would include:</p> <ul style="list-style-type: none"> Utility investigations typically using a vac-truck in order to expose, positively identify and survey the existing utilities Additional topographic, utility and feature survey works. <p>Several utilities are also present along the alignment which require re-location including removal of the redundant utility asset and installation of new underground utilities, comprising pit and pipe systems and associated cabling.</p> <p>NB: some of the new utility assets will not be installed until the new road embankment is constructed, so that the underground utilities can be installed beneath the new verge.</p> <p>Noise intensive equipment such as concrete saws and rock-breakers would be required at times during the works to remove existing pavement, stormwater pipes and concrete structures.</p> <p>Certain utility works along the alignment would require temporary lane closures particularly where they cross the existing road pavement and may be required to be completed outside standard construction hours to minimise potential traffic disruption.</p>
W.04 – Site establishment	<p>Site compound construction including clearing and grubbing, top soil stripping, hardstand construction, utilities services, buildings, material storage areas and other compound facilities. A temporary access road may also be necessary for the compound.</p>

Phase	Key construction activities
	<p>Temporary security fencing would be installed around the site compound and any other area where public access must be restricted such as storage facilities and water containment areas / basins.</p> <p>Temporary pedestrian fencing may be required at the southern end of the project where an existing shared user path has been previously constructed.</p> <p>Installation of erosion and sedimentation controls throughout the stage 1 works areas including sediment fencing, basins and other dirty water controls.</p> <p>Installation of temporary traffic control barriers along the full length of the existing roadway (western side) in order to separate the construction site from passing traffic. This would also include temporary signage, lighting and other traffic control devices. These barriers may need to be installed at night using trucks and franna cranes.</p>
<p>W.05 – Vegetation clearing</p>	<p>Extensive vegetation removal would be carried out to suit the footprint of the earthworks (embankment and cuttings), with the clearing limits extended to suit drainage works (opens channels, basins, transverse crossing inlet / outlet treatments and other drainage structures). Clearing is expected to cover the majority of the site.</p> <p>In some situations, it may be possible to leave the grasses and topsoil in place prior to the construction of the earth embankments, however this would not be determined until construction commences and so at this stage it is assumed all to be removed.</p> <p>All trees within the construction footprint will be removed, plus consideration would need to be given to trees whose roots are impacted by works such as drainage and utility works. Typically, these trees are also removed to avoid future issues, unless the design is adjusted to preserve significant / nominated trees without impacting the safe and efficient operation of the roadway.</p> <p>Trees and other large vegetation would be removed using chainsaws and mulched on-site (wood chipper/ tub grinder). It may be viable to reuse the mulch for the landscaping works including blending with topsoil prior to treating the embankment batters, or other disturbed site (e.g. site compound reestablishment). Surplus mulch would be removed from site.</p>
<p>W.06 – Roadworks – northbound W.07 – Roadworks – southbound W.08 – Roadworks – pavement works (out of hours works)</p>	<p>Road works would be required along the entire road alignment. The works would be split into constructing the northbound lanes first and then constructing the southbound lanes. Road construction would include:</p> <ul style="list-style-type: none"> ▪ Removal / demolition of existing pavements ▪ Removal of unsuitable materials ▪ Embankment foundation treatments ▪ Construction of the new embankment ▪ Excavation of cuttings ▪ Construction of the larger transverse drainage structures (box culverts) ▪ Installation of drainage pit and pipe systems

Phase	Key construction activities
	<ul style="list-style-type: none"> ▪ Construction of the open drainage channels and permanent controls ▪ Utility works typically including communications, power, gas, water and sewer (where necessary) along with ITS and TCS networks ▪ Construction of the pavement layers including the subbase and the asphalt ▪ Major and minor sign structures including piling, concrete works and installation of overhead steel structures ▪ Tie-ins to existing pavement at the southern and northern limits <p>Vibratory and static rollers would be required during the earthworks to achieve the required strength and support the pavement which would also require compaction equipment for placement of the asphalt courses.</p> <p>Numerous construction activities have the potential to require temporary lane closures, particularly at pinch points between the active road and the construction works, such that additional clearance is necessary for the works to be undertaken. Other examples would include utility and drainage crossings beneath the active road. Temporary lane closures would occur outside standard construction hours to minimise potential traffic disruption.</p>
W.09 – Finishing works	<p>After the main construction works are complete, finishing works would be required which would include:</p> <ul style="list-style-type: none"> ▪ Installation of road furniture (i.e. lighting, safety barriers, guide posts, etc.) ▪ Installation of traffic control signals ▪ Pavement marking ▪ Installation of urban design treatments and features ▪ Landscaping works ▪ Removal of all remaining temporary works such as traffic control barriers, lighting, etc. <p>Finishing works generally have no requirement for noise intensive equipment.</p>
W.10 – Compound – operation	<p>The compounds would include site offices, laydown areas, worker amenities and workforce parking, as needed.</p>

1.1.2 Construction hours

Construction activities would generally be carried out during standard construction hours. These hours are:

- Monday to Friday: 7 am to 6 pm
- Saturday: 8 am to 1 pm
- No works on Sundays or public holidays.

Works outside of standard construction hours would be required for utility works, pavement works, traffic switches and finishing works as described in Table 1-1. These works would be managed in

accordance with principles and procedures included in the Construction Traffic Management Plan that would be developed by the construction contractor. This would include consideration of construction noise impacts associated with vehicle movements to / from the proposal site and potential increases in road traffic along haulage routes.

Other activities which may be carried out outside of the standard daytime construction hours would include:

- Work determined to comply with the relevant noise management level at the nearest sensitive receiver
- The delivery of materials outside approved hours as required by the NSW Police or other authorities for safety reasons
- Emergency situations where it is required to avoid the loss of lives and properties and / or to prevent environmental harm
- Situations where agreement is reached with affected receivers.

No other out-of-hours works are anticipated as part of the proposal.

1.1.3 Construction worker parking

All staff parking would be accommodated on-site and not on surrounding local streets.

1.1.4 Construction duration

Construction is proposed to commence in 2022 and be completed in 2024. The total duration of construction is anticipated to be around 18 months. Anticipated durations of each construction phase are detailed in Table 1-2.

Table 1-2 Construction duration

Phase	Estimated duration
W.01 – Early works / utilities – noise intensive works	4 weeks
W.02 – Early works / utilities – typical works	
W.03 – Early works / utilities – out of hours works	
W.04 – Site establishment	8 weeks
W.05 – Vegetation clearing	4 weeks
W.06 – Roadworks – northbound	6 months
W.07 – Roadworks – southbound	6 months
W.08 – Roadworks – pavement works (out of hours works)	12 weeks
W.09 – Finishing works	8 weeks
W.10 – Compound – operation	18 months

1.1.5 Construction site location and access

The construction site is located on Richmond Road in Marsden Park. Roads forming part of the construction vehicle route include Richmond Road and Garfield Road. Figure 1-1 shows proposed access and egress routes to the construction site.

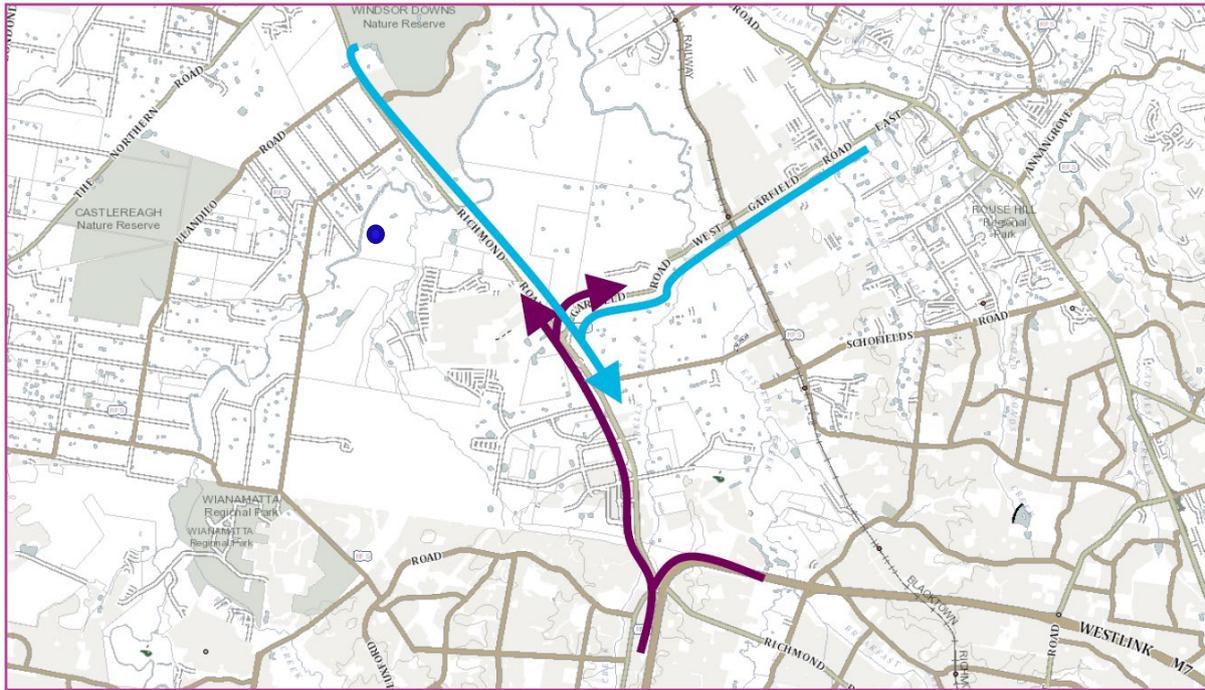


Figure 1-1 Construction site access and egress

1.1.6 Construction vehicles

It is anticipated that up to 50 personnel would be required to construct the proposal. This would generate a maximum of 50 light vehicle movements to the site prior to the commencement of work shifts and a maximum of 50 light vehicle movements from the site at the conclusion of work shifts.

In addition, it is anticipated that up to 55 heavy vehicles per day would be required to transport fill and other road materials during the construction period. This equates to 110 heavy vehicle movements per day (one heavy vehicle = two movements, one in and one out), or 10 heavy vehicle movements per hour during standard construction hours.

Construction site access and egress for light and heavy vehicles would be on roads shown in Figure 1-1.

Plant and equipment required to construct the proposal would vary with the construction activity being undertaken and would be shared across the construction phases.

1.2 Impacts on road network performance

As described in Section 1.1.6, construction of the proposal would generate a maximum of 50 light vehicle movements to the site prior to the commencement of work shifts and a maximum of 50 light

vehicle movements from the site at the conclusion of work shifts. In addition, there would be up to 10 heavy vehicle movements per hour during standard construction hours. The number of movements is considered to be relatively low and within the range of daily variations in traffic volumes on the road network when compared to existing background traffic. As a result, the impact of construction traffic on road network performance is anticipated to be minor.

1.3 Impacts on parking and property access

As described in Section 1.1.3, all staff parking would be accommodated on-site within the construction compound and not on surrounding local streets. There would be no impact to on-street parking and property access during construction of the proposal.

1.4 Impacts on the public transport network

There are no public transport services that operate on Richmond Road north of Elara Boulevard. There would be no impact on public transport services during construction of the proposal.

1.5 Impacts on the active transport network

There are no footpaths or shared user paths on Richmond Road north of Elara Boulevard and there are very low volumes of on-road cyclists on Richmond Road. There would be no impact on the movement of pedestrians and cyclists during construction of the proposal.

2. Management and mitigation measures

A Construction Traffic Management Plan would be prepared by the construction contractor that details construction work sites, access points, relevant signage, on-site parking arrangements, proposed heavy vehicle routes, traffic management measures, relevant correspondence with stakeholders (if applicable) and all traffic management and mitigation measures required to implement the proposed works. It would also include Traffic Control Plans, Vehicle Movement Plans and Traffic Staging Plans for each construction phase.

A summary of high-level management and mitigation measures is provided in Table 2-1.

Table 2-1 Management and mitigation measures

Impact	Safeguard	Construction phase
Traffic (construction vehicles)	<p>A Construction Traffic Management Plan (CTMP) would be prepared by the construction contractor in consultation with relevant local Councils and in accordance with relevant guidelines. The CTMP would outline:</p> <ul style="list-style-type: none"> ▪ Staging and planning of works to minimise the need to occupy roads where practicable, including identification of haulage routes ▪ Safe alternate routes for pedestrians and cyclists in accordance with relevant safety and accessibility standards where applicable and feasible 	All phases

Impact	Safeguard	Construction phase
	<ul style="list-style-type: none"> ▪ The requirements for traffic control plans to be prepared for each work area which would include details of site access and specific traffic control measures (including signage) to manage traffic movements ▪ Road safety audit requirements ▪ Parking arrangements for construction staff ▪ Identification of access arrangements at construction sites detailing vehicle access movements ▪ Measures to minimise changes to the existing road network, property access, bus stops and pedestrian/cyclist facilities where applicable and feasible ▪ Measures to communicate and notify of any changes in traffic conditions on roads or paths to road users, emergency services, public transport operators, and other relevant stakeholders ▪ Requirements for appropriate warning and signage for traffic and other road users such as cyclists and pedestrians in the vicinity of work areas and worksite access, and road diversions where applicable and feasible. 	
Traffic (wayfinding)	Clear wayfinding and safety signage would be provided to direct and guide vehicles not related to the proposal during road construction works. This would be supplemented by variable message signs to advise drivers of traffic diversions, speed restrictions or alternative routes.	All phases
Adjacent property access	Access to adjacent properties would be maintained.	All phases
Traffic (congestion)	Construction site traffic would be managed to minimise movements during peak periods.	All phases
Site access and egress	All vehicles would enter and exit construction sites in a forward direction, where feasible and reasonable.	All phases
Parking	All staff parking would be provided on-site and not on surrounding local streets.	All phases