WestConnex M4-M5 Link

State Significant Infrastructure Modification Assessment (SSI 7485 MOD 1)

February 2019

Cover photo

M4-M5 Link Mainline Tunnel (Source: Roads and Maritime Services)

Disclaimer

Copyright notice

Glossary

Abbreviation	Definition
AA	Acoustics Advisor (for the project)
ANZECC	Australian and New Zealand Environment Conservation Council
Approval	Infrastructure Approval
CSSI	The Critical State Significant Infrastructure, as described in Schedule 1 of the infrastructure approval, the carrying out of which is approved under the terms of approval
Department	Department of Planning and Environment
DECC	Department of Environment and Climate Change
DECCW	Department of Environment, Climate Change and Water
DPI	Department of Primary industries
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPL	Environment Protection Licence
ER	Environmental Representative
ICNG	*Interim Construction Noise Guideline* (DECC, 2009)
LGA	Local government area
LoS	Level of service
Minister	Minister for Planning
NML	Noise management level
Relevant councils	City of Sydney Council City of Canada Bay Inner West Council
RMS	Roads and Maritime Services
RtS	Response to Submissions
SEARs	Secretary's Environmental Assessment Requirements
Secretary	Planning Secretary of the Department of Planning and Environment
SPIR	Submissions and Preferred Infrastructure Report
SSI	State Significant Infrastructure

Executive Summary

On 17 April 2018, the Minister for Planning approved the M4-M5 Link proposal. The approved project is Critical State Significant Infrastructure (CSSI) and comprises the construction and operation of twin multi-lane tunnels between the M4 East Motorway at Wattle Street, Haberfield and the New M5 St Peters Interchange, as well as an interchange at Rozelle and a twin tunnel connection from the Rozelle Interchange to the Iron Cove Bridge.

Roads and Maritime Services (RMS) (the Proponent) has lodged a modification application to:

- change the use of the approved Northcote Street construction ancillary facility at Haberfield from parking, laydown and storage to a tunnelling site;
- use the approved Parramatta Road East and West construction ancillary facilities for low impact works such as office accommodation, parking, storage and laydown;
- provide a temporary pedestrian walkway connection above Parramatta Road to connect the Parramatta Road East and West sites for the use of project staff only;
- remove the use of 7 Darley Road, Leichhardt for construction and operational purposes from the project; and
- relocate the approved operational water treatment plant from 7 Darley Road, Leichhardt to the Campbell Road motorway operations complex at the St Peters Interchange.

Assessment Process and Community Engagement

As the proposal has received 25 public submissions in the nature of objections, the Minister's determination functions cannot be delegated and the Minister is the approval authority.

The Modification Report was publicly exhibited from 12 to 26 September 2018 (14 days). A total of 40 submissions were received during the exhibition period. The Department undertook a site inspection of the proposed spoil haulage routes and construction ancillary facility locations at Ashfield/Haberfield and St Peters to better understand issues raised in submissions by the community and councils.

Further, the Department engaged with community representatives from Haberfield/Ashfield to discuss the proposed modification. Issues raised included pedestrian and cyclist safety around construction ancillary facilities, construction fatigue, construction worker parking on local streets, use of the proposed overhead pedestrian bridge by the community, property damage arising from tunnelling, and spoil haulage routes.

Key Assessment Issues

Traffic and Transport

To ensure pedestrian safety around the Parramatta Road East and West sites (former Muirs sites), the Department has recommended that heavy vehicle access to and from the sites be generally restricted to access and egress points on Parramatta Road. The Department has also recommended that entry and exit points for the Parramatta Road East and West sites are staffed with a traffic controller during school travel times to provide greater safety to children and families walking to and from Haberfield Demonstration Public School.

The Proponent has proposed two spoil haulage routes from the Northcote Street tunnelling site at Haberfield. Route A comprises the use of Ramsay Street/Fairlight Street/Great North Road. Route B comprises Wattle Street and a G-Loop off Wattle Street in the Reg Coady Reserve to allow spoil trucks to turn around and travel south-west along Wattle Street to the M4 East tunnels or Parramatta Road.

A key concern of councils and community members is noise generated by the use of Route A, particularly during the night-time period, as well as traffic impacts. The use of Route B as the preferred spoil haulage route would result in comparatively reduced traffic and noise impacts compared to Route A. Therefore, the Department has recommended conditions to restrict the use of Route A during certain circumstances such as peak traffic periods, periods of maintenance or unserviceability of the G-Loop, or as approved by the Planning Secretary. In addition, use during these restrictions is limited to 7:00 am to 7:00 pm daily.

Noise and Vibration

The Department's assessment has considered the noise and vibration impacts associated with the introduction of tunnelling activities at the Northcote Street construction ancillary facility, reconfiguration, use and decommissioning of the G-Loop, spoil haulage and the modified use of the Parramatta Road East and West construction ancillary facilities.

Use of the Northcote Street site for tunnelling is expected to result in some noise exceedances for nearby residents even though tunnelling will be undertaken within the existing acoustic shed. However, the impacted residents have been identified as qualifying for acoustic treatment as part of the construction Noise Insultation Program required by the infrastructure approval. Nevertheless, the Department has recommended that noise monitoring be undertaken during construction to confirm the predicted noise levels, as this would identify if other properties are eligible for noise insultation treatment.

The Department recognises that the proposed modification will generally result in a reduction in noise and vibration impacts as identified under the Environmental Impact Statement (EIS) and Submissions and Preferred Infrastructure Report (SPIR) with the elimination of tunnelling and tunnelling support activities at the Parramatta Road West and Darley Road sites. The Department considers that potential noise impacts associated with the uses identified in the Modification Report will be manageable through the existing infrastructure approval and recommended conditions (including noise monitoring) to ensure that the acoustic amenity of residents is safeguarded.

Air Quality

The assessment identified nuisance dust emissions from demolition, earthworks, construction and track-out activities as the main air quality issues. Dust nuisance was a key concern for the community and local councils during the construction of the M4 East project. However, given that the modification does not require significant demolition work nor substantial surface excavations, the Department is of the view that the modification is unlikely to generate significant air quality impacts which cannot be managed through existing conditions in the infrastructure approval. Notwithstanding, the Department has recommended that dust deposition monitoring be

undertaken to gauge dust generated by construction of the project. The location of the monitoring sites will be detained in the Construction Air Quality Management Plan.

Water Quality and Drainage

The modification will result in changes to the volume and rate of wastewater discharge from construction wastewater treatment plants consequent to the removal of the Darley Road site, and changes to the discharge of operational wastewater treatment flows due to the relocation of the operational water treatment plant to the Campbell Road Motorway Operations Complex at St Peters.

The Department is satisfied that the wastewater discharges from construction and operational water treatment plants would not adversely impact on the water quality of the receiving environments (Dobroyd Canal, Johnstons Creek and potentially Alexandra Canal) and that these systems have the capacity to convey the additional discharges. Furthermore, the infrastructure approval includes discharge criteria. Notwithstanding, conditions of approval have been recommended to ensure that any wastewater flows from the St Peters operational water treatment plant would not adversely impact on existing council and Sydney Water stormwater infrastructure, including Alexandra Canal.

Conclusions and Recommendations

The M4-M5 Link is a critical component of the WestConnex program of works, which in turn is key to achieving the Government's transport policy and objectives. The proposed modification would enable the use of existing tunnelling infrastructure used to construct the M4 East project and would allow for the removal of the Darley Road site.

The Department has reviewed the Modification Report, community, council and State government authority submissions, and the Response to Submissions and has assessed the key issues arising from the proposed changes to the approved project. These include traffic and access, noise and vibration, air quality, and water quality drainage.

Overall, the potential environmental impacts associated with the modification would be acceptable with the implementation of mitigations measures. On balance, the proposed modification would provide a number of benefits which outweigh the potential impacts. It is therefore recommended that the modification be approved subject to the recommended conditions.

Contents

1. Introduction

This report provides an assessment of a request to modify the State significant infrastructure (SSI) approval for the WestConnex M4-M5 Link project (SSI 7485). The M4-M5 Link (the project) is the third stage of the 33 kilometre-long WestConnex motorway program (refer **Figure 1**) that, together with the proposed future Sydney Gateway, would facilitate improved connections between western Sydney, Sydney Airport and Port Botany and south and south-west Sydney, as well as better connectivity between the important economic centres along Sydney's Global Economic Corridor.

Figure 1 | WestConnex overview (Source: M4-M5 Link EIS)

The M4-M5 Link will connect the M4 East project at Haberfield with the New M5 project at St Peters and comprises:

- new twin multi-lane tunnels between Wattle Street at Haberfield and the interchange at St Peters;
- a new interchange at Rozelle which includes tunnels, ramps and related infrastructure for a potential future Western Harbour Tunnel;
- a new tunnel connection from the Rozelle Interchange to the Iron Cove Bridge (Iron Cove Link);
- upgrades to the surrounding road network;
- new active transport facilities and the provision of up to 10 hectares of open space at Rozelle; and
- ancillary facilities including five motorway operation complexes and three tunnel ventilation facilities.

The approved project provides for the construction and operation of the project in two stages:

- Stage 1 – construction of the mainline tunnels between the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters. It is anticpated that he mainline tunnel will be open to traffic in 2022.
- Stage 2 – construction of the Rozelle Interchange and Iron Cove Link. Stage 2 works are expected to commence in 2019.

Figure 2 shows the main project components and location.

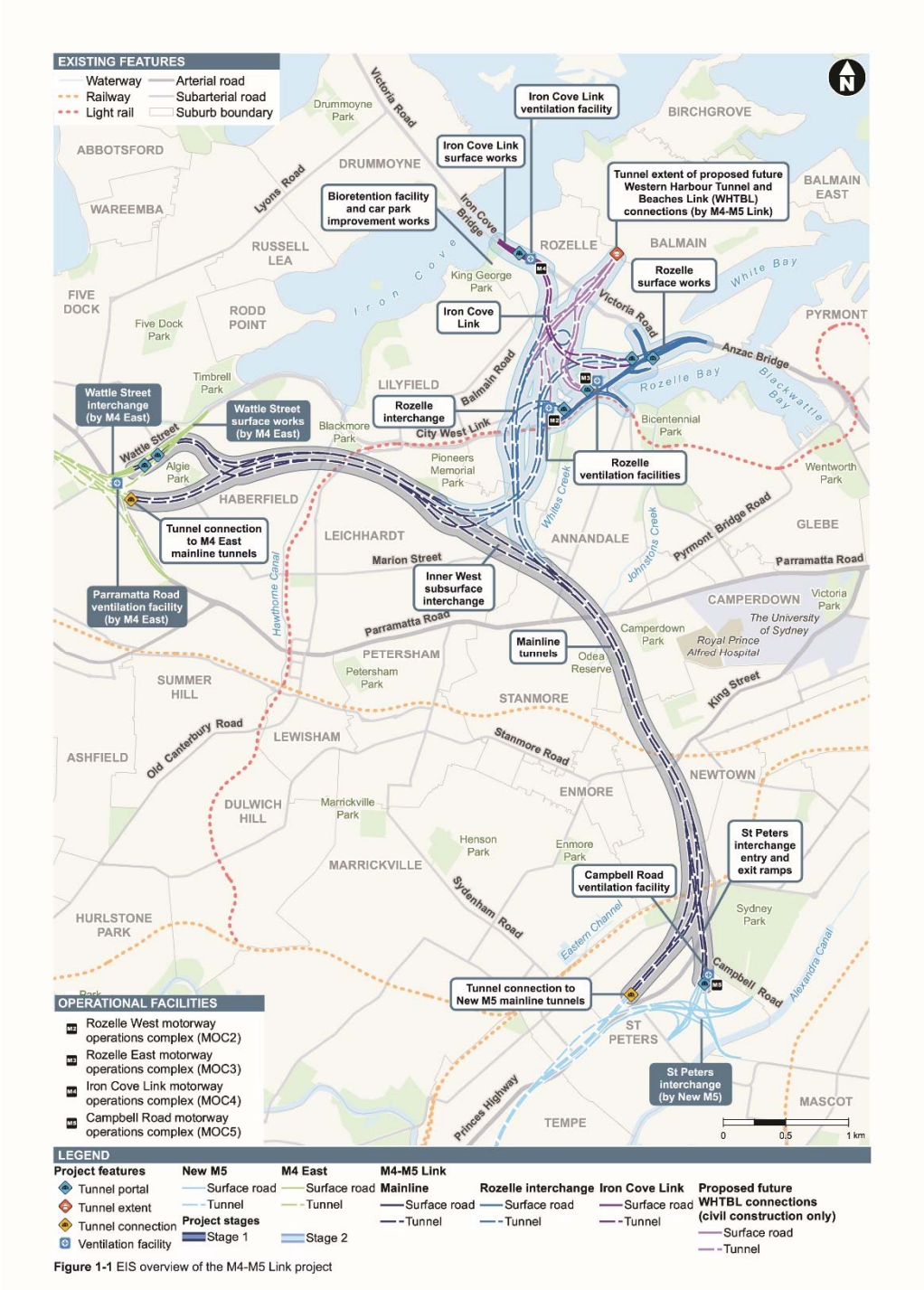

Figure 1-1 EIS overview of the M4-M5 Link project

Figure 2 | Project location and design elements (Source: Modification Report)

Works associated with Stage 1 of the project have commenced, with initial site preparatory works including demolition of existing structures at the Pyrmont Bridge Road construction ancillary facility.

The approved project provides for the operation of up to 13 construction ancillary facilities. Construction design and planning has progressed since the approval of the project resulting in the optimisation of the construction site arrangements. The modification request seeks to obtain approval for proposed new construction site arrangements (refer to **Section 2** for specific details).

The modification request was lodged on 11 September 2018 by Roads and Maritimes Services (RMS) (the Proponent) pursuant to section 5.25 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1 Background

The approved project is within two local government areas (LGAs) – Inner West and City of Sydney with the two tunnels, interchanges and major operational facilities traversing the suburbs of Ashfield, Haberfield, Leichhardt, Rozelle, Annandale, Stanmore, Camperdown, Newtown and St Peters.

The modification request also includes the use of a spoil haulage route within the City of Canada Bay LGA.

The route and interchanges and construction footprint are in an urbanised environment with diverse land uses along the route alignment including low to medium density residential communities around Haberfield, Ashfield, Rozelle, Leichhardt, Pyrmont and St Peters. Other uses include recreation, commercial and light-industrial and transport activities.

The Environmental Impact Statement (EIS) described and assessed 12 construction ancillary facilities. However only 10 were proposed to be used. Two options were identified for sites at Haberfield / Ashfield, each comprising three construction ancillary facilities:

- Option A – construction ancillary facilities C1a, C2a and C3a; and
- Option B – construction ancillary facilities C1b, C2b and C3b.

Figure 3 and **Figure 4** show the proposed construction ancillary facilities for Options A and B, respectively. It should be noted that sites C2a and C2b are the same site.

An additional construction ancillary facility was identified at White Bay in the Submissions and Preferred Infrastructure Report (SPIR).

The EIS indicated that the number, location and layout of construction ancillary facilities would be finalised as part of construction planning during detailed design. In addition, the SPIR indicated that the contractor may choose to use all or some of the construction ancillary facilities identified in the EIS, including any combination of the Option A and Option B facilities at Haberfield/Ashfield. However, the project approval restricts the use of construction ancillary facilities at Haberfield/Ashfield to only one of the options, except if one option is used for relatively low noise activities, such as parking.

1.2 Approval History

Approval for the construction and operation of the project was granted on 17 April 2018 by the NSW Minister for Planning (SSI 7485).

Figure 3 | Option A layout including compounds C1a, C2a and C3a at Haberfield (Source: M4-M5 Link EIS)

Figure 4 | Option B layout including compounds C1b, C2b and C3b (Source: M4-M5 Link EIS)

Relevant Conditions

The following is a list of the conditions of approval relevant to this modification request:

- Condition C11 - *The Noise and Vibration Monitoring Program must include provision of real time noise and vibration monitoring data. The data must be readily available to the construction team, Proponent, ER and AA. The Department and EPA must be provided with access to the real-time monitoring data, on request.*
- Condition C19 - *Only one of the two ancillary facility options (A or B) presented in Chapter 6 of the EIS can be implemented at Haberfield, except if one site is used for parking and other works that do not exceed the 'Noise affected' Noise Management Levels as identified in the ICNG.*
- Condition C20 - *Should Option B, as presented in Chapter 6 of the EIS, be progressed, a comparative analysis of environmental impacts of the use of the sites during construction of the project (excluding Site Establishment Works and erection of acoustic enclosures), must be undertaken. The comparative analysis must be undertaken for the following key environmental impacts: noise and vibration, traffic and transport, visual amenity and socio-economic.*
- Condition C21 - *In the event that Option B is progressed, for purposes other than for parking and works that do not exceed the 'Noise affected' Noise Management Levels as identified in the ICNG, the Proponent must submit a report outlining the findings of the comparative analysis required by Condition C20 to the Secretary for approval at least one (1) month prior to the establishment of the Option B construction ancillary facilities. The report must demonstrate how management and mitigation measures, consistent with those included in the documents referred to in Condition A1 and as required by the terms of approval, would be implemented to achieve, on balance, comparable environmental outcomes when compared to Option A.*
- Condition E49 – *Spoil haulage movements associated with the construction of the CSSI are not permitted to use local roads within one (1) kilometre of construction works and construction ancillary facilities, unless approved by the Secretary.*
- Condition E57 - *Safe pedestrian and cyclist access must be maintained around work sites during construction. In circumstances where pedestrian and cyclist access is restricted or removed due to construction activities, an alternate route which complies with the relevant standards must be provided and signposted.*
- Condition E71 - *Notwithstanding Conditions E70 and E73 spoil haulage from the Darley Road construction ancillary facility must only be undertaken during the hours specified in Conditions E68 and E69. Onsite deliveries to the Darley Road ancillary facility may only be undertaken outside the hours specified in Conditions E68 and E69 in accordance with Condition E73(e).*
- The "Note" under Condition E73 - *Section 5.24(1)(e) of the EP&A Act requires that an Environment Protection Licence (EPL) be substantially consistent with this approval. For example, an EPL cannot authorise spoil movements at the Darley Road construction ancillary facility outside of the hours specified in Conditions E68 and E69. Out of Hours Works considered under Conditions E73(c) and (d) must be justified and include an assessment of mitigation measures.*
- Condition E154 - *The Proponent must not destroy, modify or otherwise physically affect any heritage items, including human remains, outside of the CSSI boundary.*

- Condition E195 - *The Proponent must undertake further hydrological and hydraulic modelling based on the detailed design of the CSSI to determine the ability of the receiving drainage systems to effectively convey pavement drainage from the CSSI and wastewater flows from operational water treatment plants. The modelling must be undertaken in consultation with the relevant council(s) and Sydney Water and the outcomes documented in the Stormwater Drainage Report required under Condition E196*.

- Condition E196 - *The Stormwater Drainage Report must be prepared at least one (1) month prior to the commencement of any new drainage works, modifications or connections to existing drainage works, or construction of hard surfaces that are associated with the operation of the project and would result in runoff to existing stormwater drainage systems. The Stormwater Drainage Report must:*
  (a) assess the potential impacts of pavement drainage discharges from the CSSI drainage systems on the receiving environment and capacity of council or Sydney Water drainage infrastructure;
  (b) identify all mitigation measures to be implemented where pavement drainage from the CSSI drainage systems or is predicted to adversely impact on the receiving environment or capacity of council or Sydney Water drainage infrastructure; and
  (c) *set out a clear time frame for the implementation of mitigation measures*.

2. Proposed Modification

This proposed modification relates to Stage 1 (the mainline tunnel) of the approved project.

The Proponent seeks approval to:

- change the use of the approved Northcote Street construction ancillary facility at Haberfield from storage, laydown and parking to tunnelling and tunnel support facilities with consequential impacts on proposed spoil haulage routes;
- use the approved Parramatta Road East and West construction ancillary facilities for low impact activities including parking, laydown, storage and offices;
- provide a temporary pedestrian walkway connection above Parramatta Road to connect the Parramatta Road East and West construction ancillary facilities for the use of project staff only;
- remove the use of 7 Darley Road, Leichhardt for construction and operational purposes from the project; and
- relocate the approved operational water treatment plant from 7 Darley Road, Leichhardt to the Campbell Road motorway operations complex at the St Peters Interchange.

2.1 Change in use of the Northcote Street construction ancillary facility

The Northcote Street site is currently being used as a tunnelling site for the M4 East project and would continue to be used for this purpose under the modification. Tunnelling works would be carried out within an existing acoustic shed on the site 24 hours, seven days a week. Two stockpile areas with a combined capacity of around 7,000 cubic metres would be provided in the shed, to allow for the storage of spoil material prior to its removal from the site.

A construction access tunnel would be provided to the mainline tunnels from this site utilising part of the existing access tunnel for the M4 East project. The tunnel would pass under a limited number of residential properties in the vicinity of Walker Avenue and Alt Street (less than 10) and would have a maximum depth of 50 metres but would be around 30 metres below the surface where it passes under those residential properties.

Two spoil haulage routes are proposed from the site (Route A and Route B) as illustrated in **Figure 5**. Route B includes a G-Loop in Reg Coady Reserve to all trucks to turn around onto Wattle Street and enter into the M4 East tunnels or exit onto Parramatta Road.

The G-Loop has been used during the construction of the M4 East project. Minor changes would be required to the proposed intersection design at Dobroyd Parade and Waratah Street (after completion of the M4 East) to allow Route B to be used for the project. The Proponent has advised that once the G-Loop is operational, Route B would be the preferred spoil haulage route.

The Modification Report indicated that Route A would generally only be used between 7:00 am and 6:00 pm Monday to Friday and 8:00 am to 6:00 pm on Saturdays, except in the following circumstances: "

- during the early stages of construction until such time as the works to facilitate operation of the G-Loop are completed and the G-Loop is functional; "and

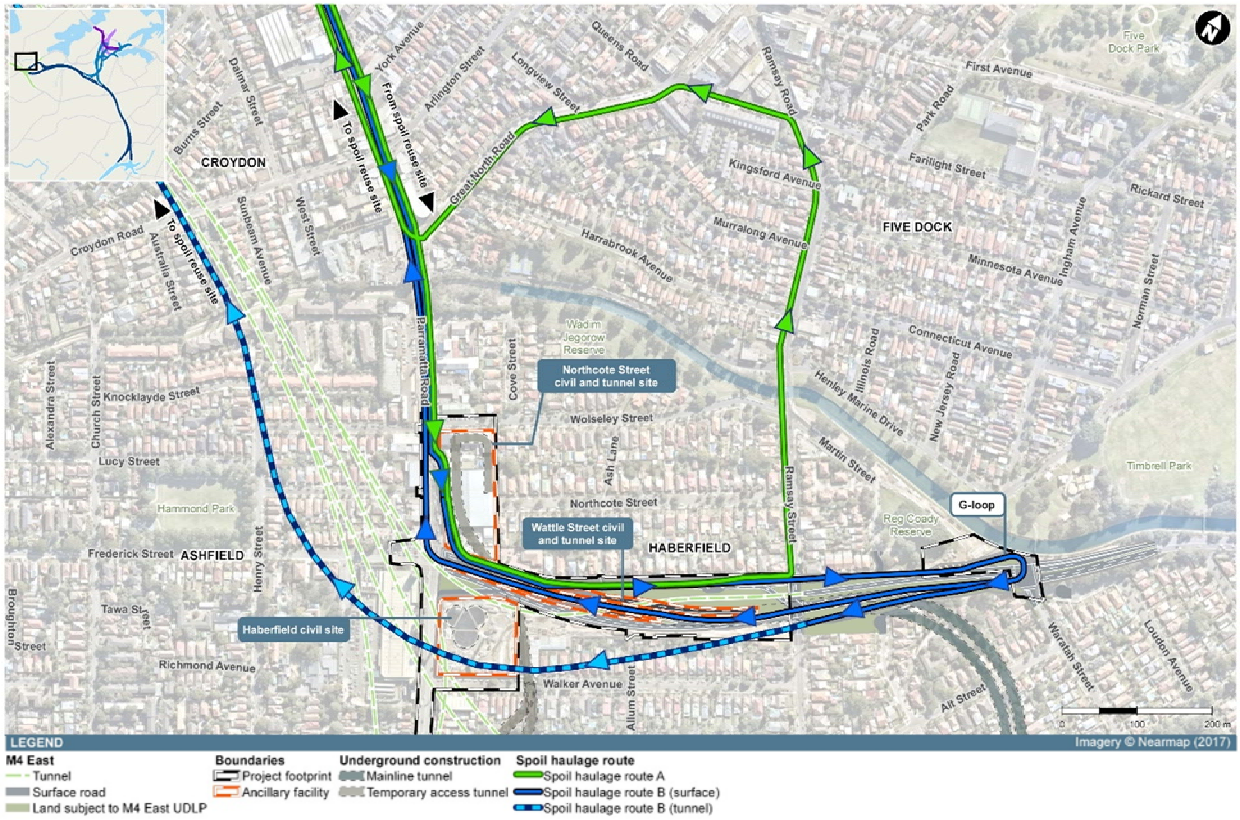

Figure 5 | Northcote Street construction ancillary facility – proposed spoil haulage routes (Source: Modification Report)

- in the event of heavy traffic congestion, an incident or maintenance works on the arterial road and/or motorway network which has the potential to detrimentally impact on the efficient use of the G-loop and result in delays for spoil haulage vehicles.

Following further detailed design and planning since the exhibition of the Modification Report, the Proponent has advised that it also intends to use Route A in the following circumstances:

- during peak traffic periods, specifically 7:00 am to 9:00 am and 4:00 pm to 6:00 pm on Mondays to Fridays and 8:00 am to 9:00 am and 4:00 pm to 6:00 pm on Saturdays; and
- in the event that there is insufficient capacity for a spoil haulage vehicle to enter the Northcote Street site and it must bypass the access gate into the Northcote Street site.

In addition, although the Modification Report indicated there would be up to eight spoil haulage movements per hour, the Proponent now estimates that there could be up to 15 movements per hour on average increasing to 20 movements per hour during peak spoil production. Further, the Proponent has indicated a revised spoil volume of 726,842 cubic metres (instead of 566,300 cubic metres as indicated in the Modification Report) consequent to spoil trucks using the Northcote Street site in lieu of the Wattle Street tunnelling site. The increase in spoil removal would result in tunnelling being completed around six months earlier than what was proposed in the original application.

2.2 Use of the Parramatta Road East and West construction ancillary facilities

The modification seeks to use the Parramatta Road West and Parramatta Road East sites (C1b and C3b) for construction support activities. The sites would operate 24 hours a day, seven days a week and be used for site

offices, heavy vehicle and workforce car parking (approximately 200 car parking spaces), shuttle bus services, workshops and storage of equipment, materials and construction machinery. The types of heavy vehicles likely to park on the sites include rigid and articulated trucks dropping off or picking up materials or equipment from the laydown areas, vehicles or equipment to be serviced at the workshop and short-term layover of trucks across working shifts. No tunnelling, tunnel spoil stockpiling, handling, or spoil haulage would occur at these sites.

2.3 Temporary pedestrian walkway connection above Parramatta Road

The Proponent proposes to construct a temporary pedestrian walkway above Parramatta Road to connect the Parramatta Road East and Parramatta Road West construction ancillary facilities sites. The pedestrian walkway would only be available for use by project staff during the construction phase of the project and would not be available for public use. The walkway would be removed following construction.

2.4 Removal of the Darley Road Construction and Operational Ancillary Facility

The modification seeks to remove the Darley Road construction and operational facility from the project, resulting in an extension to the tunnelling duration at the Northcote Street and Wattle Street (Haberfield), Campbell Road (St Peters) and Pymont Bridge Road (Camperdown) tunnelling sites. No construction activities or permanent operational infrastructure would be provided at this location. This reduces the area to be dedicated for open space by approximately 2,000 square metres.

2.5 Relocation of the approved operational water treatment plant

The modification request also involves the relocation of the approved operational water treatment plant from the Darley Road motorway operations complex (as described in the EIS) to the Campbell Road motorway operations complex at the St Peters Interchange. Additional land adjacent to the motorway operations complex would be required to accommodate the operational water treatment plant (refer **Figure 6**).

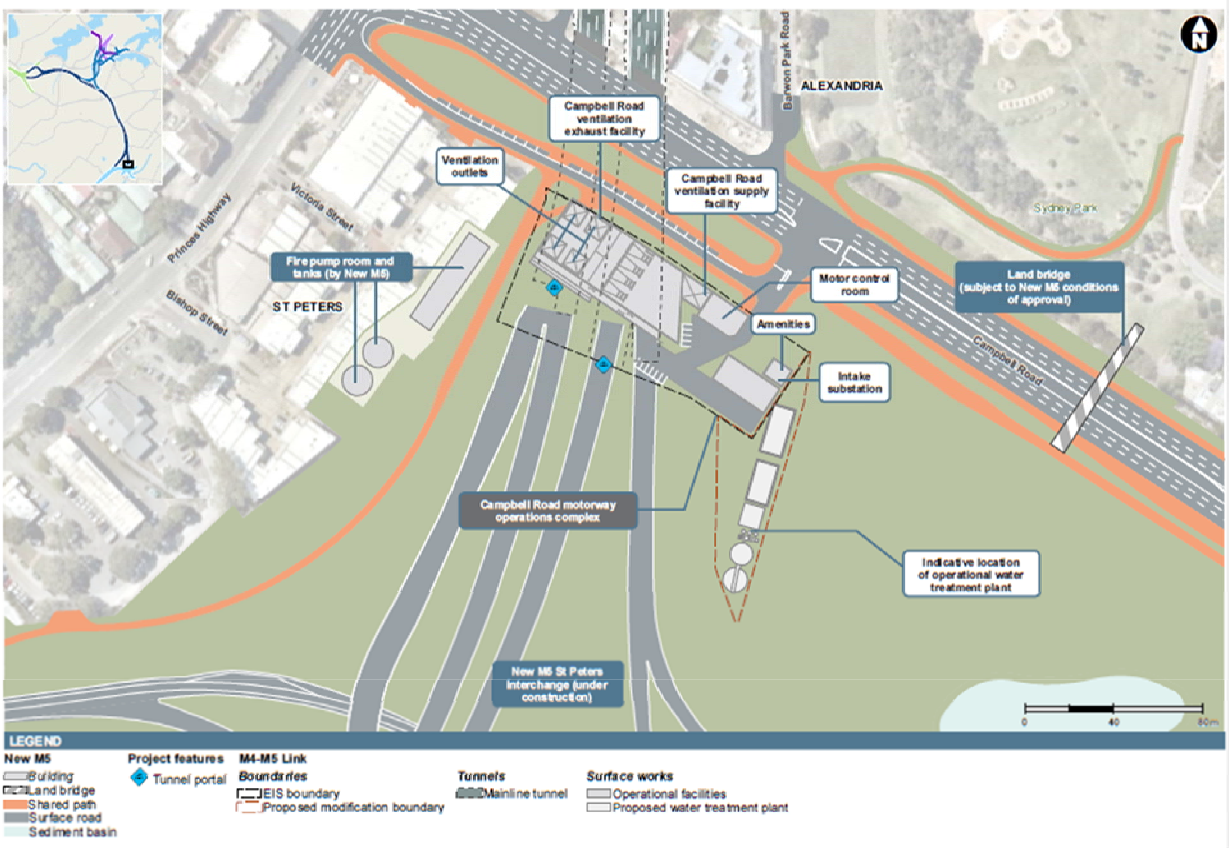

Figure 6 | Indicative Campbell Road motorway operations complex layout including proposed water treatment plant (Source: Modification Report)

Three options have been considered for the discharge of treated wastewater from the plant: "

- Option 1: discharge to the stormwater basin and/or drainage network within the St Peters Interchange site being constructed as part of the New M5 project. This drainage network would then discharge to Alexandra Canal;
- Option 2: discharge to existing council stormwater drainage network and then to Alexandra Canal; and
- Option 3: discharge to Sydney Water's sewerage system in accordance with a Trade Waste Agreement.

The detailed design for the water treatment plant may include a combination of the above options.

3. Strategic Context

WestConnex is identified in the *Future Transport Strategy 2056* and the supporting plan *Greater Sydney Services and Infrastructure Plan,* and is expected to deliver broad economic benefits to NSW in the order of $24.3 billion over its lifespan through improved access to and reliability of the motorway network.

The *State Infrastructure Strategy 2018-2038* stresses the importance of WestConnex in improving intercity and intracity general and freight transport connections and providing improved travel time and increased network capacity. WestConnex is also listed as a 'high priority initiative' in the *Australian Infrastructure Plan: The Infrastructure Priority List* (Infrastructure Australia, 2017).

The WestConnex program of works is covered by the *Central City District Plan* and *Eastern City District Plan* (Greater Sydney Commission, 2018) and is consistent with the district priorities for a productive city by improving access to employment and increasing efficiency of freight movements.

The M4-M5 Link is the final stage of the WestConnex program of works and is strategically justified in that it will:

- provide a new motorway link between the M4 East at Haberfield and the New M5 at St Peters;
- reduce future traffic volumes on north-south and east-west road corridors, including City West Link and parts of Victoria Road;
- reduce future traffic volumes on north-south and east-west road corridors, including City West Link and parts of Victoria Road;
- enhance the benefits achieved by the operation of the M4 East and New M5 projects by reducing traffic volumes on Parramatta Road, Southern Cross Drive, the Princes Highway, King Georges Road and the M5 East Motorway; and
- provide safer, faster and more reliable travel times for motorists, bus services and freight journeys on Sydney's road network.

The proposed modification is consistent with the NSW strategic planning policy framework, and the policies and plans which apply to the overall project also (as outlined above) also apply to the proposed modified works.

4. Statutory Context

4.1 Scope of Modifications

In accordance with section 5.25 of the EP&A Act, a proponent may request the Minister to modify an approval for State significant infrastructure. The Minister's approval for a modification is not required if the infrastructure as modified will be consistent with the existing approval. The proposed changes to the M4-M5 Link project are not consistent with the existing approval. Consequently, modification of the Minister's approval under section 5.25 of the EP&A Act is required.

Minister's approval and delegations

Under the Instrument of Delegation dated 11 October 2017, the functions and powers of the Minister for Planning under section 5.25 of the Act to determine a modification of the Minister's approval may be delegated whereby:

- the relevant local council has not made an objection;
- a political disclosure statement has not been made; and
- there are less than 25 public submissions in the nature of objections.

Twenty five submissions in the nature of objections have been received from the public. As such, the Minister's determination functions cannot be delegated, and the Minister is the approval authority.

5. Engagement

Under section 5.28(1)(g) of the EP&A Act, the Planning Secretary is required to make requests for modifications of approvals determined by the Minister publicly available. The Department considered that the modification application had the potential to impact residential receivers in around Ashfield and Haberfield including those who are currently experiencing construction fatigue, and consequently determined to publicly exhibit the modification request. The public exhibition period commenced on 12 September 2018 and concluded on 26 September 2018.

The Modification Report was made publicly available on the Department's website and was electronically available at NSW Service Centres. The Modification Report was exhibited at the following locations:

- Roads and Maritime Services - 20-44 Ennis Road, Milsons Point;
- City of Canada Bay Council Civic Centre – 1A Marlborough Street, Drummoyne;
- City of Sydney Council: Town Hall House, Level 2, 456 Kent Street, Sydney;
- Inner West Council Ashfield Customer Service Centre – 260 Liverpool Road, Ashfield;
- Inner West Council Leichhardt Customer Service Centre – 7-15 Wetherill Street, Leichhardt;
- Inner West Council Petersham Customer Service Centre – 2-14 Fisher Street, Petersham;
- Balmain Library – 370 Darling Street, Balmain;
- Five Dock Library – 4-12 Garfield Street, Five Dock;
- Haberfield Library – 78 Dalhousie Street, Haberfield;
- St Peters Library – St Peters Town Hall, Unwins Bridge Road, Sydenham; and
- Nature Conservation Council of NSW – Level 14, 338 Pitt Street, Sydney.

The Department advertised the public exhibition in the Sydney Morning Herald, Daily Telegraph and Inner West Courier.

The modification request was referred to the following government agencies for comment:

- Inner West Council;
- City of Sydney Council;
- City of Canada Bay;
- Environment Protection Authority;
- Office of Environment and Heritage;
- Heritage Council;
- Department of Industries;
- NSW Health; and
- Sydney Water.

The Department also notified Local Members of the exhibition in writing.

The Department undertook a site inspection of the proposed spoil haulage routes and construction ancillary facility locations at Ashfield/Haberfield and St Peters to better understand issues raised in submissions by the community and councils.

The Department engaged with community representatives from Haberfield/Ashfield in November 2018 to discuss the proposed modification. Issues raised included pedestrian and cyclist safety around construction ancillary facilities, construction fatigue, construction worker parking on local streets, use of the proposed overhead pedestrian bridge by the community, property damage arising from tunnelling induced subsidence, and spoil haulage routes.

5.1 Summary of Submissions

During the exhibition period, a total of 40 submissions were received, including nine from public authorities and 31 submissions from the public and special interest groups. Of the public submissions received, 25 objected to the proposal.

5.2 Key Issues – Government Agencies

Six submissions were received from State government agencies. None of the agencies objected to the proposal, however, they did raise issues for the Department's consideration including noise, traffic, air quality, groundwater and heritage.

The **Department of Industry**, **Crown Lands**, the **Office of Environment and Heritage** and **Sydney Water** did not provide any comments on the proposal.

The **Heritage Council** considers that the proposal to discharge flow into Alexandra Canal would have no additional impacts on the heritage item. However, the Heritage Council recommended that a condition be imposed requiring the Proponent to monitor drainage flows into Alexandra Canal to ensure that they do not cause harm to the heritage fabric.

The **Environment Protection Authority (EPA)** raised concern over cumulative construction noise impacts on sensitive receivers from the M4-M5 Link and M4 East, particularly night-time noise. The EPA considers that further opportunities to expand the number of properties receiving at-property treatments to reduce construction noise impacts should be investigated.

The EPA recommended that Route B and the M4 East Tunnel should be used for spoil haulage at all times and that use of the Route A route should be restricted to 7:00 am to 7:00 pm and only be considered where it is not possible to use Route B due to significant impacts on day-time peak hour traffic flows.

The EPA noted that the Proponent needs to consider whether an EPL is required for contaminated groundwater treatment at the proposed operational water treatment plant at St Peters.

NSW Health raised concerns in relation to human health due to the extension in the duration of tunnelling from the Northcote Street site and use of the G-Loop, particularly on resident's sensitive to construction fatigue, including sleep deprivation from night-time noise and vibration and increased air pollution from nuisance construction dust in the Haberfield/Ashfield area.

5.2.1 Council key issues

Submissions were received from three local government councils – City of Canada Bay, City of Sydney and Inner West Council.

The **City of Canada Bay Council** raised significant concern in relation to the use of Route A, in particular the associated amenity impacts to residents including noise, congestion, road safety, diesel emissions, and spoil haulage trucks parking and idling on local streets. The Council requested that Route A not be approved, and for spoil haulage to be restricted to Route B.

The **City of Sydney Council** sought clarification regarding the additional flow from the relocated water treatment plant at the Campbell Road motorway operations complex and questioned whether local drainage would be compromised by the additional flow. The Council also questioned whether the proposed water treatment plant would interfere with access to the proposed St Peter's recreational area and cycle path included in the New M5 Urban Design and Landscape Plan.

Inner West Council noted that the removal of the Darley Road tunnelling site would benefit the residents surrounding Darley Road however, it would result in an increase the duration of tunnelling at the Northcote Street site. Accordingly, Council raised concern for the health impacts associated with extended use of the Northcote Street on residents, including sleep deprivation and nuisance construction dust. It also raised concern over the potential for vibration impacts during the construction of the access tunnel from the site due to its shallow depth. Council also noted that extended use of the Northcote site would delay implementation of Haberfield Gardens and landscaping of other WestConnex Stage 1 residual lands.

Council also raised concern over noise, congestion, road safety, diesel emissions, dust track-out emission and parking impacts associated with spoil haulage, noting that use of the G-Loop would impact the amenity and delay the usability of Reg Coady Reserve. Council advocated for maximising use of the M4 East tunnels rather than surface roads for spoil haulage. It also recommended that traffic controllers manage traffic movements across driveways at the Parramatta Road East and West sites for pedestrian safety during school travel times.

Inner West Council also raised concern over the potential visual impacts associated with the proposed operational water treatment plant at St Peter's and its potential to impinge on the proposed recreation area. Further, it identified the need to ensure that the rate and quality of water discharges from the treatment plant would have a negligible impact on Alexandra Canal.

5.2.2 Key issues – Public and Special Interest Groups

A number of issues were raised from members of the public and special interest groups and the key issues are summarised below. All of the public submitters live or work within close proximity of the M4-M5 Link proposal. Further details of the issues raised in submissions are provided for each of the key issues in **Chapter 6**.

Traffic

- Concern over the volume of heavy vehicles including impacts on residential areas, bus services on Parramatta Road and impacts during morning and afternoon peak periods.
- Spoil haulage routes should not use local or other surface roads and should use M4 East Tunnel.
- Request that the temporary pedestrian bridge over Parramatta Road be made available for use by the public.
- Impact of construction worker parking on local streets.
- Pedestrian safety (especially for school children walking to and from Haberfield Public School during school travel times) and traffic impacts arising from access and egress points on Bland Street and Alt Street to the Parramatta Road East and West construction ancillary facilities.
- Concern over traffic impacts and motorist safety issues resulting from additional trucks on Fairlight Street and Great North Road, Five Dock as they are already operating above capacity and the road condition may further deteriorate.

Noise and Vibration

- Noise from construction workers parking on residential streets.
- Inadequate noise attenuation offered by Proponent to impacted residents.

- Concern for vibration impacts from tunnelling under homes.
- Noise from heavy vehicles disrupting businesses.
- Cumulative noise impacts associated with the extended use of Northcote Street site.
- Inappropriate use of compression braking leading to noise disruptions in residential areas.

Health Impacts

- Concern for sleep disturbance as a result of construction noise and spoil haulage movements.
- Concern for the health impacts of long-term construction including depression and anxiety.
- The communities around the tunnelling sites are experiencing construction fatigue.

Air Quality

- Concerns over the extended duration of construction air quality impacts and related health impacts on the adjoining community.
- Lack of trust in air quality modelling and monitoring undertaken by Proponent.

Surface and Groundwater

- Concerns over quality of discharged water from St Peters water treatment plant and its impact on water quality in Alexandra Canal.
- Concern for existing flooding and drainage issues around Alexandra Canal.
- Lack of information surrounding the proposed operational water treatment plant and wastewater disposal.
- Concern for volume of water entering Alexandra canal and potential to disturb contaminated sediments.

Social, Economic and Urban Design Considerations

- Loss of value to residential properties.
- Damage to properties arising from subsidence.
- The community believes it is unfair that tunnelling will be concentrated at the Northcote Street site.
- Continued use of Reg Coady Reserve by the project will reduce access to open space for community.
- Lack of improvements to urban design and community connectivity.
- Overshadowing of residential properties from multi-level site offices.

Strategic Merit, Community Consultation and the Planning Process

- The Government has failed to justify the strategic merit of WestConnex.
- The planning process is unfair.
- The 14-day exhibition period was insufficient to read the modification request and provide a submission.
- Lack of community consultation on the proposed modification.
- The community is not provided with the opportunity to provide input into Site Establishment Management Plans and Construction Environmental Management Plans.

The percentage of submissions which raised the above issues is presented in **Table 1**.

Table 1 | Key issues raised in Public and Special Interest Group submissions

Issue	% of Submissions
Noise and Vibration	63
Air Quality	40
Traffic	70
Health	63
Surface, groundwater and contamination	13
Socio-economic and place-making impacts	43
Strategic merit, community consultation and the planning process	27

5.3 Response to Submissions

Following completion of the public exhibition period, the Department directed the Proponent to prepare a response to the submissions received. The Proponent's Response to Submissions Report (RtS) was made publicly available on the Department's website on 14 November 2018.

The RtS was forwarded to the EPA and NSW Health. The EPA advised that the RtS addressed the issues raised in their submission. NSW Health recommended that consideration be given to more stringent mitigation measures to minimise additional impacts to resident's sensitive to construction fatigue.

The Department notes that there are no changes to the project resulting from the issues raised in submissions.

6. Assessment

6.1 Traffic, Transport and Access

Issue

The traffic impacts of the proposed modification were assessed through the existing traffic models used to assess the construction traffic impacts of the M4-M5 Link. The assessment included intersection and mid-block Level of Service (LoS) modelling with LoS A representing optimum conditions and LoS F the worst. The key traffic and access issues associated with the proposed modification are:

- the access and egress arrangements for the Parramatta Road East and West construction ancillary facilities and their consequent impacts on local traffic and pedestrian safety; and
- spoil haulage, particularly the use of Ramsay Street/Fairlight Street/Great North Road (Route A) as a spoil haulage route.

Other issues include the feasibility of making the proposed construction pedestrian overpass linking the Parramatta Road East and West sites available for community use and on-street parking by construction workers limiting resident parking.

Parramatta Road West and East Construction Ancillary Facilities

A limited number of changes are proposed to the construction vehicle access and egress arrangements described in the EIS and SPIR, as set out in **Table 2**.

Table 2 | Indicative access and egress to and from the Parramatta Road East and West construction ancillary facilities

Site	Access and egress points under the EIS and SPIR	Access and egress points under the Proposed Modification
Parramatta Road West site (C1b)	Parramatta Road Alt Street (light vehicles; heavy vehicles limited to crossover between sites)	Parramatta Road Alt Street (both light and heavy vehicles) Bland Street (both light and heavy vehicles)
Parramatta Road East site (C3b)	Parramatta Road Alt Street (light vehicles only) Bland Street (light vehicles only)	Parramatta Road Alt Street (both light and heavy vehicles)

The proposed modification seeks to intensify the use of the Alt Street access points by allowing unrestricted heavy vehicle movements, relocate the Bland Street access point from the Parramatta Road East site to the Parramatta Road West site, and allow the use of the Bland Street access point for both heavy and light vehicles without restriction (see **Figure 7**). Both Bland and Alt Streets and the section along Parramatta Road between the two streets are traversed by school children who attend the Haberfield Demonstration Public School which is located on Bland Street, immediately east of the Parramatta Road East construction ancillary facility.

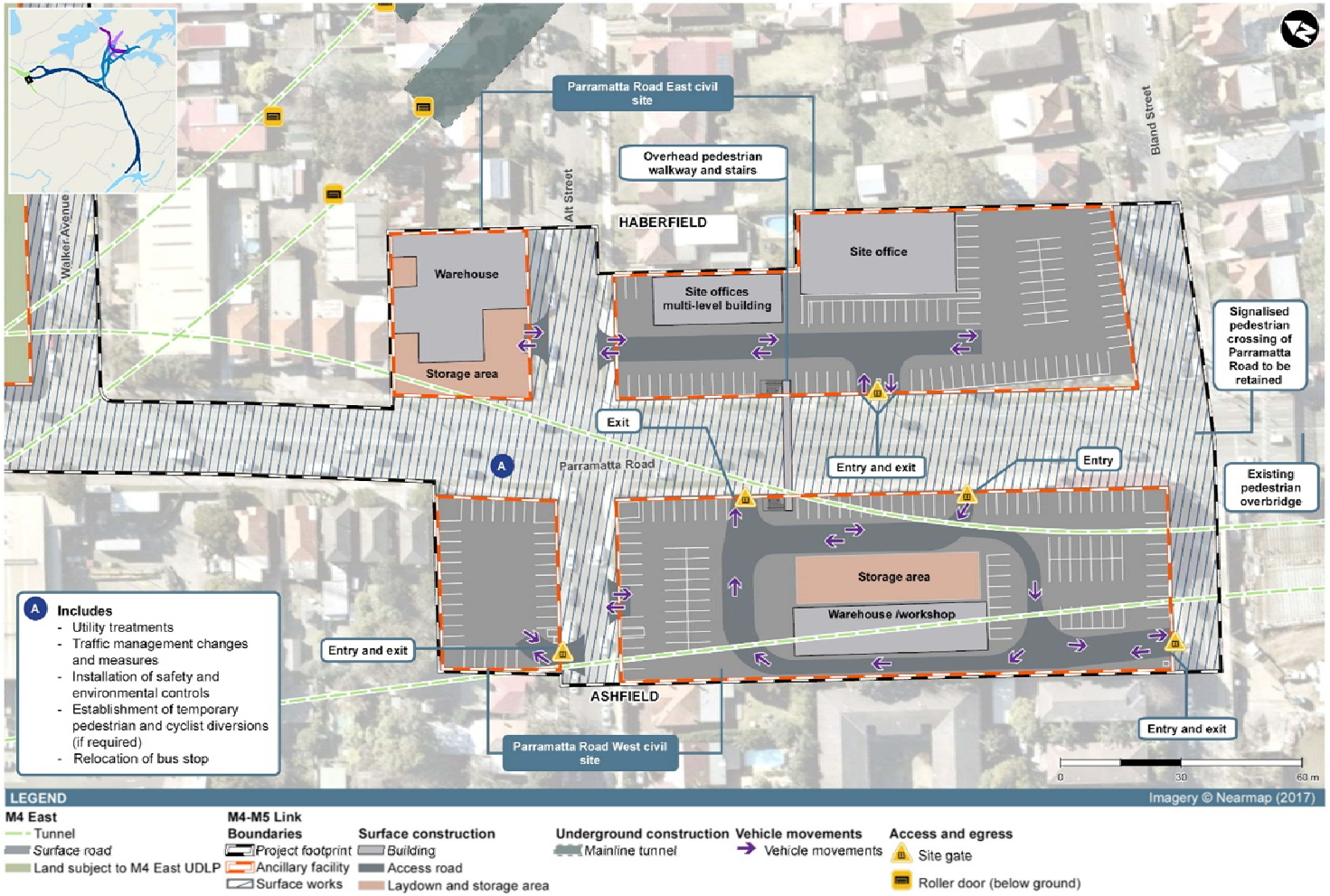

Figure 2-5 Indicative Parramatta Road West and Parramatta Road East site layouts

Figure 7 | Proposed Site Layouts - Parramatta East and West Construction Ancillary Facilities (Source: Modification Report)

Light vehicle movements to and from the Parramatta East site are predicted to decrease under the proposed modification when compared to the volumes predicted in the EIS due to the change in use. However, the number of light vehicle movements is predicted to increase at the Parramatta Road West site (see **Table 3** and **Table 4**). The combined number of heavy vehicles movements from both Parramatta Road sites would be limited to around 25 one way daily, with most of these movements occurring directly to or from the Parramatta Road access points.

Table 3 | Proposed changes to construction traffic volumes per hour – light vehicles (Source: Modification Report)

Site	Light vehicles (per hour, AM peak) under EIS	Light vehicles (per hour, AM peak) under Modification	Light vehicles (per hour, PM peak) under EIS	Light vehicles (per hour, PM peak) under Modification
Parramatta Road West site (C1b)	10	18	10	31
Parramatta Road East site (C3b)	50	12	150	20
Total for Both Sites	**60**	**30**	**160**	**51**

Table 4 | Proposed changes to construction traffic volumes per hour – heavy vehicles (Source: Modification Report)

Site	Heavy vehicles (per hour, AM and PM peak) under EIS	Heavy vehicles (per hour, AM and PM peak) under Modification
Parramatta Road West site (C1b)	7	7
Parramatta Road East site (C3b)	3	1
Total for Both Sites	**10**	**8**

Although the average combined hourly number of light vehicle movements from the two sites during the AM (7:00 – 9:00 am) and PM (3:00 – 6:00 pm) peak periods totals 30 and 51 movements, respectively, the Modification Report indicates that shift changes would likely occur at 6:00 am and 6:00 pm. Light vehicle movements during the shift changes are estimated at 200 movements (one way) split between the two sites.

Northcote Street Construction Ancillary Facility – Spoil Haulage Routes

Tunnelling, tunnel spoil handling and spoil haulage would be undertaken 24 hours a day, seven days a week in accordance with the infrastructure approval.

Two spoil haulage routes are proposed from the Northcote Street site as shown in **Figure 8** and detailed in **Table 5**.

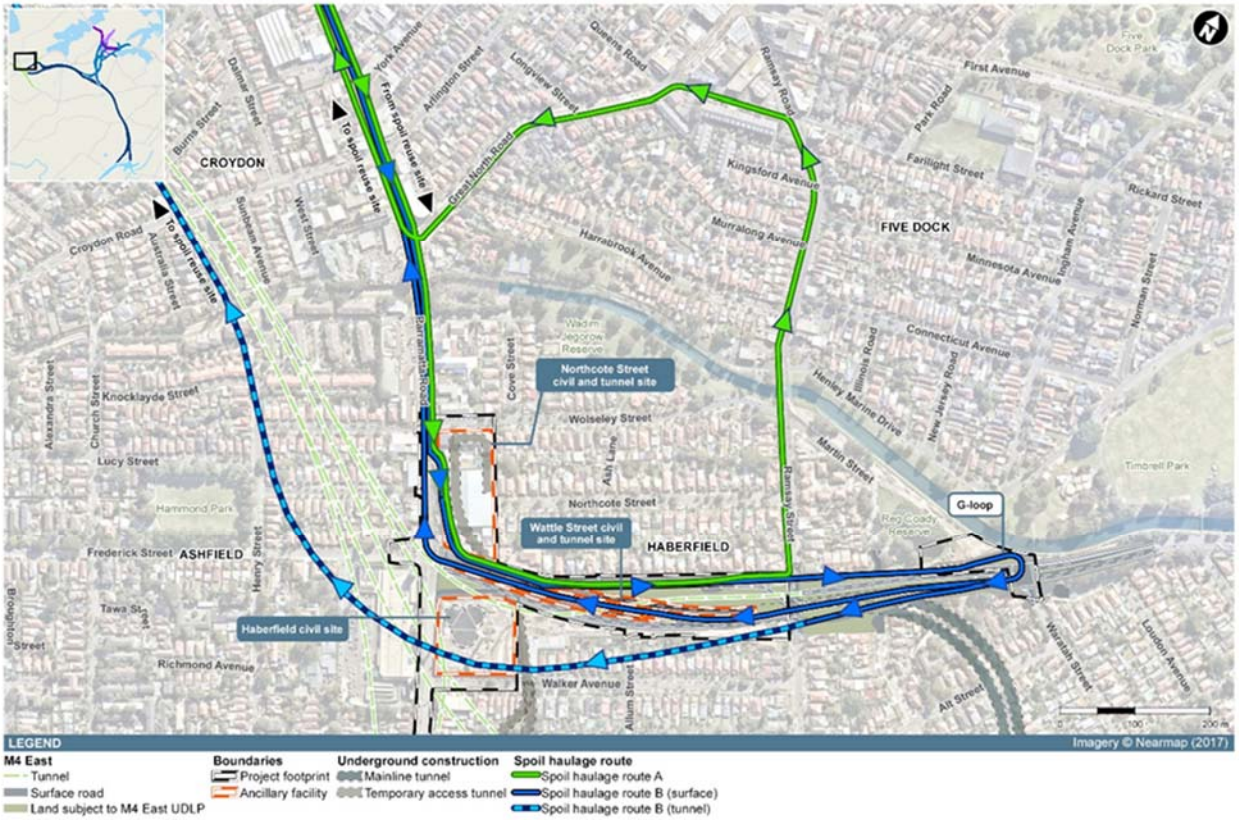

Figure 8 | Northcote Street construction ancillary facility – proposed spoil haulage routes (Source: Modification Report)

Table 5 | Proposed spoil haulage routes from Northcote Street construction ancillary facility – Route A and Route B

Route	Spoil haulage route
Route A	Entry: via Parramatta Road city bound with left turn into the site
	Exit: via left turn from site onto Wattle Street, then left turn onto Ramsay Street, then left turn onto Fairlight Street, then left turn onto Great North Road, then right turn onto Parramatta Road
Route B	Entry: via Parramatta Road city bound with left turn into the site
	Exit: via left turn from site onto Wattle Street, then left turn onto the dedicated temporary construction vehicle turning lane (the G-Loop) at the intersection of Dobroyd Parade and Waratah Street within part of the Reg Coady Reserve. Right turn onto Wattle Street from truck turning facility toward M4 East Motorway tunnels or Parramatta Road.
	The G-Loop would be accessible by the project's construction traffic only. The length of the G-Loop would allow about four truck and dog trailer combinations (each combination being about 20 metres long) to queue in the G-Loop, away from the eastbound Dobroyd Parade carriageway.

The Proponent has indicated that Route B would be the preferred spoil haulage route.

As noted in Section 2.1, consequent to further detailed design and planning, it is proposed that Route A would generally only be used during peak times on Mondays to Saturdays, with the exception of the following:

- during the early stages of construction; during periods when the G-Loop is not functional (e.g. repairs required or signal failure);
- in the event there is an incident or maintenance works on the arterial road and/or motorway network which has the potential to detrimentally impact on the efficient use of the G-Loop and result in delays for spoil haulage vehicles;
- in the event that there is insufficient capacity for a spoil haulage vehicle to enter the Northcote Street construction ancillary facility and it must bypass the access gate; and
- during peak spoil generating periods.

Notwithstanding, use of Route A is limited to 7:00 am to 7:00 pm daily.

The estimated hourly number of spoil haulage movements from Northcote Street will progressively increase as tunnelling progresses to peak capacity. During the first 10-11 months of tunnelling, the number of hourly spoil movements would remain at around eight with a maximum of around 15 trucks per hour. However, this could increase to a maximum of around 20 trucks per hour during peak spoil production, which would last for approximately six months.

The Proponent has assessed the potential traffic impacts resulting from the change in the number of spoil movements (15 trucks per hour) and time of movement along Route A and B (refer **Appendix H**). The revised construction traffic assessment predicts that use of either Routes A and B would have minimal impact on mid-block operational performance and intersection performance at most intersections along the proposed routes. A deterioration in performance is predicted to occur at Dobroyd Parade/Waratah Street where the LoS is predicted to deteriorate from B to C in the AM peak and from D to F in the PM peak period should it be used at those times. In addition, the updated traffic assessment indicated that the LoS at Parramatta Road/Croydon Road/Arlington Street intersection would deteriorate from D to F and at Fairlight Street/Great North Road/Queens Road from E to F.

Submissions

Submissions from the community raised a number of concerns in relation to traffic and access impacts, including:

- the use of Route A resulting in increased volumes of heavy vehicles on Fairlight Street and Great North Road through residential areas;
- motorist safety issues due to the condition of Great North Road and the potential for further deterioration should it be used as a spoil haulage route;
- impact of construction traffic on bus services on Parramatta Road;
- potential pedestrian safety and traffic impacts arising from access and egress points on Bland Street and Alt Street, and insufficient traffic controls particularly during school travel times;
- request that the temporary pedestrian bridge over Parramatta Road be made available for use by the public; and
- construction worker parking on local streets resulting in residents and their visitors having to park far from their homes / residents they are visiting.

The EPA, Inner West and City of Canada Bay Councils raised concern over the use of Route A, including congestion, road safety and the possibility of spoil haulage trucks parking and idling on local streets, with the EPA recommending that Route B and New M4 East Motorway tunnels be used at all times.

The Inner West Council raised concern about the impacts to traffic and pedestrian safety associated with vehicle entry and exit points on Bland and Alt Streets for the Parramatta Road construction ancillary facilities.

Consideration

Parramatta Road East and West Construction Ancillary Facilities

The Department considers that potential traffic impacts associated with the modified uses on the Parramatta Road East and West construction ancillary facilities can be largely addressed by the environmental mitigation measures committed to by the Proponent in the original application (for example, road safety audits and implementation of standard traffic control measures) and the existing conditions of the infrastructure approval which address traffic management, including heavy vehicle movements. However, there is concern regarding the proposed access points on Alt Street and Bland Street.

The Parramatta Road West site and that part of the East site between Bland and Alt Streets will have access and egress points on Parramatta Road. The Department considers that there is insufficient justification provided for heavy vehicles to access / exit the sites via Bland and Alt Streets when access / egress will be available from Parramatta Road. In addition, it is possible to construct an access point on Parramatta Road for that part of the Parramatta Road East site north of Alt Street. Further, the Department recognises the concerns raised in submissions by the community and Inner West Council regarding potential impacts on pedestrian safety due to heavy vehicles entering and exiting the sites on the heavily pedestrianised Alt and Bland Streets, and the need to prevent heavy vehicles travelling along narrow streets through established residential areas.

Consequently, the Department has recommended that heavy vehicle access to and from the sites be restricted to the access and egress points on Parramatta Road. The exception to this is where heavy vehicles from the Parramatta Road West site need to travel east. In these circumstances, heavy vehicles are permitted to make a left hand turn onto Bland Street and then a right hand turn onto Parramatta Road. Considering the small number of daily heavy vehicle movements, it is considered that this movement should not significantly impact on pedestrian safety.

The Proponent has committed to investigating options to manage the interaction between pedestrians (particularly school children attending Haberfield Demonstration School) and construction traffic including: construction worker inductions and training; signage and/or pavement line-marking; engineering controls such as barriers or gates; and provision of a traffic controller on access points to and from Parramatta Road during school start and finish times. The Department considers that mitigation measures must be implemented to ensure that pedestrian safety is not compromised and has recommended that heavy vehicle entry and exit points for the Parramatta Road East and West sites are staffed with a traffic controller between 7:30 am and 9:30 am and 2:30 and 4.30 pm during school terms whenever heavy vehicles enter or exit the site or should shift change overs occur during these times.

A Woolworths supermarket is proposed to be located on the corner of Parramatta Road and Bland Street, opposite the Parramatta Road West site. The Proponent has indicated that the project construction contractor and the Woolworths supermarket developer would manage potential impacts to pedestrians during construction and operation. Further, consultation would be undertaken with the supermarket developer to manage potential cumulative traffic and pedestrian access and safety impacts.

Northcote Street Construction Ancillary Facility - Spoil Haulage Routes

The community, Inner West and Canada Bay Councils objected to the use of spoil haulage Route A from the Northcote Street site on the grounds of traffic congestion, traffic safety and noise.

The use of Route B would have comparatively reduced traffic (and noise) impacts. The G-Loop has been used during the construction of the M4 East Motorway project without unreasonable impacts and only minor changes would be required to the proposed intersection design at Dobroyd Parade/Wattle Street/Waratah Street to allow the G-Loop to be used for this proposal with the M4 East Motorway operational. Use of the G-Loop also provides the opportunity for spoil haulage vehicles to directly access the M4 East Motorway tunnels, thereby avoiding the use of surface roads and subsequently reducing traffic noise impacts.

However, use of Route B during peak traffic periods (7:00 am to 9:00 am and 4:00 pm to 6:00 pm Monday to Saturday) would result in significant network impacts. Use of the G-Loop requires the stopping of all other vehicle movements at the signalised intersection with Waratah Street/Dobroyd Parade. This would result in eastbound queuing into the tunnel and significant increases in the westbound queuing along City West Link. Consequent to these impacts, the Department accepts the use of Route A during the peak AM and PM periods.

The traffic and transport assessment in the Modification Report and updated traffic assessment predict that the use of Route A would not significantly impact on traffic. However, the Department notes that the traffic modelling undertaken does not address traffic movements at off-peak times; is only calibrated and validated for the peak periods; and that traffic congestion occurs along spoil haulage Route A throughout the daytime (both peak and off-peak) when clearways along the route are not in operation.

Accordingly, the Department considers that Route A should only be used under certain circumstances and has recommended that use of Route A be restricted to the following:

- until such time that the G-Loop is functional or within two months of spoil haulage commencing at the Northcote Street construction ancillary facility, whichever is sooner;
- during the peask traffic periods of 7:00 am to 9:00 am and 4:00 pm to 6:00 pm, Monday to Friday (but not on public holidays) and 8:00 am to 9:00 am and 4:00 pm to 6:00 pm on Saturdays;
- during periods of maintenance and/or unserviceability of the G-Loop; and
- where there is an incident or maintenance works on the road network in the vicinity of the Northcote Street construction ancillary facility and G-Loop, that prevents spoil haulage vehicles from accessing or travelling on Route B.

Notwithstanding the above, the Department has also recommended that use of Route A be restricted to 7:00 am to 7:00 pm daily.

The Proponent has advised that the G-Loop has a capacity of approximately 15 trucks per hour based on signal phasing and is investigating whether the signal phasing could be further changed to increase this capacity. At peak spoil production, it may be possible to process more than 15 spoil trucks per hour through the Northcote Street site. The actual traffic flows on Wattle Street/Dobroyd Parade will not be known until the M4East tunnels are operating. At that time, the Proponent will be able to determine whether there is the potential to adjust the signal phasing at the G-Loop to enable an increased number of trucks movements, thereby avoiding or reducing the need to utilise Route A. Consequently, the Department has recommended that use of Route A in peak spoil generating periods be no greaster than six months and be approved by the Planning Secretary subject to the following information being provided:

- estimated dates and duration of the peak spoil generating period;

- estimated hourly number of spoil haulage vehicle trips on Route during the peak spoil generating period;
- at least six months of spoil haulage data; and
- analysis of the operational performance of the G-Loop.

The Department has also recommended that the Proponent report to the Department on the use of Routes A and B within the first four months of tunnelling commencing at Northcote Street and at three monthly intervals thereafter until the completion of tunnelling and backfilling from that site, to ensure that Route A is being used in accordance with the recommended conditions of approval.

The Proponent has indicated a need to use Route A outside of the peak periods in the event that there is insufficient capacity at the Northcote Street site for a truck to enter and it is turned away at the access gate to return at a later time. The Proponent has advised that the only feasible alternative routes to Route A are:

- Alternative Route 1 - Wattle Street/Dobroyd Parade, City West Link, Victoria Road, Lyons Road, Great North Road and Parramatta Road; and
- Alternative Route 2 - Parramatta Road, Liverpool Road, The Boulevard, Raw Square, Leicester Avenue and Parramatta Road.

Table 6 provides a comparision of the potential spoil haulage routes.

Table 6 | Comparison between potential holding routes for spoil haulage vehicles using Northcote Street site

Criteria	Route A	Alternative Route A	Alternative Route B
Overall distance	2.1 km	12.1 km	12.5 km
State roads under RMS control	Yes	Yes	Yes
Approximate travel time:			
• average 30 km/h speed	4 minutes	24 minutes	25 minutes
• average 20 km/h speed	6 minutes	36 minutes	37 minutes
• average 15 km/h speed	8 minutes	48 minutes	50 minutes
Number of traffic lights (incl. pedestrian traffic lights)	5	34	38
Approx. number of residential dwellings (one or two storeys) directly fronting route	135	511	399
Approx. number of residential apartment blocks (three storey or higher) directly fronting route	0	15	46
Number of shopping precincts along route	1	4	3
Number of schools directly fronting route	0	0	9

Use of the alternative routes would result in a significant increase in the time taken for spoil haulage trucks to return to the Northcote Street site due to the increased travel distance. In addition, the routes pass through local shopping districts and by a significantly larger number of residences. Consequently, the Department accepts Route A as a feasible holding route and has recommended its use be allowed when there is insufficient capacity for a spoil haulage vehicle to enter the Northcote Street site, noting that all such movements must be recorded.

Construction and Operation of Parramatta Road Pedestrian Overpass

Community submissions favoured the construction of the pedestrian overpass but objected to having its use restricted to the construction workforce.

The restriction of its use to construction personnel is considered reasonable as the landings for the proposed overpass will be located within the work zones that the general public are restricted from accessing. In addition, there is an existing pedestrian walkway overpass approximately 150 metres to the south that is open to the general public for use. Considering the footpaths along Parramatta Road adjacent to the Parramatta Road East and West sites will be maintained for pedestrian use and the existing overpass will remain, the general public will not be unfavourably disadvantaged by not being permitted to use the overpass.

Construction Workforce Car Parking

A recurring issue raised in community submissions was on-street parking by construction workers. The M4 East Motorway project provided limited off-street car parking for the construction workforce in Haberfield and Ashfield and hence workers parked on local streets. The community expressed discontent over the lack of on-street parking remaining for local residents due to on-street parking by M4 East construction workers' private vehicles. The community raised concern that a similar situation could occur when construction on the M4-M5 Link project commences.

The construction workforce associated with the M4-M5 Link is estimated to be in the order of 250 personnel in the Haberfield / Ashfield area. Under the modification, around 200 car parking spaces will be provided at the Parramatta Road East and West sites. As not all construction staff would drive, it is considered that there would be limited overflow of parking onto the local streets.

To reduce the likelihood of construction workers using on-street parking, the Proponent has committed to encouraging the construction workforce to use public transport (where feasible) and to walk between the Northcote Street, Parramatta Road and Wattle Street construction sites. The Proponent will also provide a shuttle bus service between the sites. The proposed construction pedestrian overpass will also facilitate improved construction workforce movement across Parramatta Road and will further assist in limiting the need for car travel and on-street car parking.

Furthermore, the infrastructure approval for the project requires the Proponent to develop and implement a Construction Parking and Access Strategy which include actions to avoid or minimise the use of on-street parking by construction workers. It is considered that this requirement together with the provision of parking at the Parramatta Road East and West sites will minimise on-street parking by construction personnel.

Conclusion

The Department has considered the traffic and access impacts associated with the proposed modification. The proposed modification would result in minimal change to the traffic and access impacts previously assessed in the M4-M5 Link EIS and SPIR. Although construction traffic impacts will be unavoidable, the majority of these impacts can be appropriately managed under the existing suite of Proponent commitments and conditions of the infrastructure approval. This includes the development and preparation of a Construction Traffic and Access Management Plan and a Construction Parking and Access Strategy.

Notwithstanding, the Department is concerned that use of the proposed Route A by spoil haulage trucks will result in a higher degree of traffic and noise impacts when compared to Route B, and has consequently limited its use. In addition, restrictions have been placed on the use of the access and egress routes from the Parramatta Road East and West construction ancillary facilities to improve pedestrian access and safety and reduce potential impacts on local traffic. The Department is satisfied that the provision of 200 parking spaces across the Parramatta Road East and West sites would minimise on-street parking by construction personnel.

6.2 Noise and Vibration

Issue

A noise and vibration assessment was undertaken by the Proponent in accordance with NSW Government noise guidelines to assess the impacts associated with the introduction of tunnelling activities at the Northcote Street construction site, the reconfiguration, use and decommissioning of the G-Loop, and the spoil haulage routes from the Northcote Street construction ancillary facility. In addition, the noise assessment addressed the construction of the pedestrian overhead bridge and operation of the proposed water treatment plant at St Peters. A qualitative noise assessment was undertaken for the Parramatta Road East and West sites. Subsequent to the revised spoil haulage volumes along Routes A and B, the Proponent submitted to the Department a revised noise assessment (refer **Appendix I**).

Northcote Street Construction Ancillary Facility

The Northcote Street site was used as a tunnel site for the M4 East Motorway project. The proposed modification seeks to retain the acoustic shed and the noise wall along the eastern boundary of the site. Tunnelling-related works would be carried out 24 hours a day, seven days a week within the existing acoustic shed.

The construction noise assessment predicted that construction noise management levels (NMLs) would be exceeded during tunnelling at 41 receivers, and during tunnelling support activities at 72 receivers at night time, due to the openings in both the site hoarding and the acoustic shed to allow truck access and egress from the site and concrete pumps associated with concrete deliveries, respectively. The exceedance of daytime and evening NMLs would be limited to three receivers (refer **Table 7**).

Table 7 | Overview of number of residences where the NML would be exceeded - Northcote Street and G-Loop (Source: Modification Report)

Activity	Daytime ($L_{Aeq(15min)}$)		Daytime Out-of-Hours ($L_{Aeq(15min)}$)		Evening ($L_{Aeq(15min)}$)		Night time ($L_{Aeq(15min)}$)		Sleep Disturbance ($L_{A1(1min)}$)	
	1-10 dBA	11-20 dBA	1-10 dBA	11-20 dBA	1-10 dBA	11-20 dBA	1-10 dBA	11-20 dBA	1-10 dBA	11-20 dBA
Site Establishment	-	-	-	-	-	-	-	-	-	-
Tunnelling	-	-	1	-	1	-	41	-	162	8
Tunnelling Support Activities	-	-	2	-	2	-	71	1	35	-
Site Decommissioning	5	-	-	-	-	-	-	-		
G-Loop Establishment and Decommissioning	6	-	31	-	43	2	196	22	225	31

Tunnelling and the establishment and decommissioning of the G-Loop would result in exceedances of the sleep disturbance criteria at a large number of residences due to the large number of loud instantabeous noises that would be generated through the use of plant and equipment such concrete saws, mobile cranes and front end loaders as well as noise generated by heavy vehicles (including concrete trucks) .

Decommissioning works are predicted to cause minor exceedances of up to 10 dBA at five receivers during standard construction hours due to the use of excavators and concrete saws.

With respect to ground-borne noise, residents are unlikely to be unreasonably impacted by road header tunnelling works. However, during rock-breaker tunnelling works, it is predicted that the night-time criterion of 35 dBA would be exceeded by up to 14 dBA at 38 receivers near the access tunnel. The duration of exceedances of the night-time criterion would be limited as tunnelling works progress along the construction access tunnel alignment.

Spoil Haulage Routes A and B

Construction road traffic noise assessments were undertaken for the two proposed spoil haulage routes. The updated noise assessment predicts that construction traffic noise would increase by less than 0.5 dBA along Route B during both day time and night time. However, with respect to Route A, increases of up to 1.2 dBA would be experienced during the daytime and increases of 1.5-1.7 dBA would be experienced during the night time (refer **Table 8**).

Table 8 | Construction traffic noise assessment – Routes A and B from Northcote Street construction ancillary facility

Route	Vehicle type	Road	Predicted traffic noise increase (dBA)	
			Daytime ($L_{Aeq(15hour)}$)	Nighttime ($L_{Aeq(9hour)}$)
Route B	Light and heavy	Parramatta Road	<0.5	<0.5
Route B	Light and heavy	Wattle Street	<0.5	<0.5
Route A	Light and heavy	Wattle Street	<0.5	<0.5
Route A	Light and heavy	Ramsay Street/Road	<0.5 to 1.2	1.6
Route A	Light and heavy	Fairlight Street	<0.5 to 1.2	1.7
Route A	Light and heavy	Great North Road	<0.5 to 0.6	1.5

The Proponent has advised that hourly spoil haulage movements from the Northcote Street site will vary during the tunnelling program. The increase in spoil haulage movements would result in a variation in the predicted construction traffic noise along Route A of less than 0.5 dBA when there are eight movements per hour, up to 1.0 dBA when there are 15 movements per hour and up to 1.2 dBA should there be 20 movements per hour.

Route A passes by a large number of residential dwellings, including a two-storey (plus attic) apartment complex on the corner of Fairlight Street/ Ramsay Street/ Great North Road which comprises over 90 units.

The Modification Report states that the proposed reconfiguration works for the establishment and decommissioning of the G-Loop would be carried out over a two-week period and an eight-week period, respectively. The construction noise assessment report predicts that there would be moderate to high

exceedances of NMLs at night of up to 20 dBA for nearby residential receivers (see **Table 7**) but that such exceedances would generally reduce by up to 4 dBA when the concrete saw is not in operation and up to 10 dBA when localised hoarding is used around the concrete saw.

Parramatta Road East and West Construction Ancillary Facilities and Pedestrian Overpass

The noise assessment predicted that noise levels associated with activities on the sites would be consistent with, or comparatively reduced, with the noise levels in the EIS. In addition, noise levels would not exceed the "noise affected" NMLs set out in *the Interim Construction Noise Guideline* (DECC, 2009).

Although most of the construction of the pedestrian overpass would be undertaken during standard construction hours, the span lift would need to be constructed outside of standard hours to avoid impacts to traffic on Parramatta Road. This short-term event would result in noise exceedances above the sleep disturbance criteria at surrounding receivers.

Water Treatment Plant, St Peters Interchange

Construction of the water treatment plant as part of the Campbell Road motorway operations complex would be undertaken during standard construction hours and would not result in significant noise impacts to residential receivers.

Submissions

Submissions from the community raised a number of concerns in relation to noise and vibration impacts, including:

- noise from construction workers parking on residential streets;
- inadequate noise attenuation offered by Proponent to impacted residents;
- concern for vibration impacts from tunnelling under homes and potential subsidence issues;
- noise from heavy vehicles disrupting businesses;
- cumulative noise impacts associated with the extended use of Northcote Street site;
- use of spoil haulage Route A; and
- inappropriate use of compression braking leading to noise disruptions in residential areas.

The **EPA** raised concern with regards to cumulative construction noise impacts and the resultant construction fatigue experienced by receivers. The EPA recommended that the Department reassess and expand the number of properties that would be eligible for at-property noise mitigation treatments under Condition E88 of the project approval. Further, the EPA recommended that spoil haulage Route B use the M4 East Motorway tunnels at all times; but if the use of spoil haulage Route B is not possible due to significant impacts on peak hour flows then the use of spoil haulage Route A would be considered acceptable between 7:00 am and 7:00 pm only.

NSW Health raised concern regarding the additional and extended noise and vibration impacts experienced by residents around the Northcote Street construction ancillary facility and their sensitivity to construction fatigue given the proposed modification seeks to add another four years of construction on top of the construction associated with the M4 East Motorway project. NSW Health also highlighted the need for all reasonable and feasible measures be undertaken to ensure that acceptable levels of noise and vibration are not exceeded, that residents who experience extended consecutive or concurrent construction activities be given a broad range of mitigation measures, and that engagement with the community be ongoing with a proper complaint handling and management system in operation.

City of Canada Bay Council objected to the use of spoil haulage Route A through Haberfield and Five Dock on grounds of construction traffic noise.

Inner West Council raised concern with regards to cumulative construction traffic noise and vibration around Haberfield and Ashfield. More specifically, Council raised concerns about construction traffic noise associated with the use of spoil haulage Route A, vibration impacts from the construction of the access tunnels attached to the Northcote Street site, tunnelling noise and noise associated with the ongoing use of the G-Loop at Reg Coady Reserve. Operationally, Council raised issue with the noise impacts of the operational water treatment plant, relocated from Darley Road to the St Peters interchange, adjacent to residential receivers on Campbell Street.

Consideration

Northcote Street Construction Ancillary Facility

The approved project included the use of the Northcote Street site for low impact works such as storage, laydown and parking. The proposed modification seeks to introduce tunnelling, tunnel spoil stockpiling and handling and tunnel spoil haulage at the Northcote Street construction ancillary facility.

Although use of the Northcote Street site for tunnelling is not predicted to exceed daytime noise criterion, exceedances of up to 10 dBA are predicted at 41 residential receivers of a night time. In addition, there is the potential for 170 residential receivers to experience noise levels above the sleep disturbance criterion as a result of tunnelling activities. Tunnelling support activities are predicted to result in noise impacts of up to 10 dBA at 71 residnetial receivers during the night-time period, with 35 residential receivers predicted to experience nosie levels above the sleep disturbance criterion. The Proponent has committed to investigating a number of management measures to reduce noise from the site including shielding, partial closure of the roller door on the acoustic shed during out-of-hours periods and sealing of the site access point. Notwithstanding, it is noted that the first row of residences immediately adjacent to the eastern perimeter of the Northcote Street site have been identified as qualifying for acoustic treatment under the Construction Noise Insulation Program required by the infrastructure approval. Treatment under this program could effectively reduce noise impacts by up to 10 dBA.

The Department has acknowledged construction fatigue and sleep disturbance arising from night-time works. The infrastructure approval for the M4-M5 Link project included a number of conditions to manage these including the implementation of a Construction Noise Insulation Program, the provision of enhanced respite periods, out-of-hours works scheduling including utility coordination, and the appointments of an Acoustic Advisor, Community Complaints Mediator and Public Liaison Officer.

The Department has reviewed the residences eligible for construction noise treatment taking into consideration the noise assessment undertaken for the modification and noise monitoring information for the M4 East Motorway project. The results of the noise assessment and noise monitoring indicate that the proposed modifications should not result in additional receivers experiencing noise levels in exceedance of 75 dBA during the daytime or 65 dBA during the night-time. Consequently, no additional properties have been identified as eligible for treatment under the Noise Insulation Program. However, the Department has recommended that noise monitoring be undertaken during construction to confirm the predicted noise levels as a means of ensuring that no other properties are eligible for treatment.

In regards to ground-borne noise, the Proponent has proposed a number of mitigation measures including periods of respite and potential provision of alternate accommodation. In addition, the infrastructure approval requires the Proponent to implement mitigation measures when ground-borne noise exceed set criteria.

Spoil Haulage Routes A and B

The Proponent contends that construction traffic from light and heavy vehicles using the spoil haulage routes from the Northcote Street site will result in marginal change (less than 2 dBA) in noise levels at receivers along the proposed routes and this increase would not be perceptible. Furthermore, the increase is less than the 2 dBA criterion in the Road Noise Policy (DECCW, 2011) for noise mitigation.

It is important to recognise that Ramsay Street and Fairlight Street (Route A) currently have relatively low volumes of heavy vehicles during the night-time period (16 vehicles between 10:00 pm and 7:00 am pre WestConnex). The Proponent has indicated that an additional 54 heavy vehicles could utilise the route of a night time prior to the G-Loop being established. Furthermore, the size and type of heavy vehicles used for spoil haulage (truck and dog) are not common on these roads during the night-time period. In addition, the noise assessment assumes that the spoil haulage trucks would be in constant movement and does not take into account trucks breaking, accelerating or stopping. The current noise guidelines do not require assessment of potential sleep awakening resulting from maximum instantaneous noise levels associated with truck movements. Given the multiple traffic signals along Route A and the slight incline at the intersection of Great North Road and Fairlight Street, the Department is concerned that individual pass-by instantaneous noise levels could result in noise nuisance and has recommended restrictions on the use of Route A as discussed in **Section 6.1**. These restrictions would alleviate the concerns raised by councils and the community in their submissions. Furthermore, the restriction in the hours of use is consistent with the recommendation of the EPA.

In regards to Route B, the G-Loop has been used during the construction of the M4 East Motorway project and there have been no significant ongoing noise impacts reported. In addition, the noise assessment predicts average traffic noise increases of less than 0.5 dBA along the route. Accordingly, the Department is satisfied that use of the Route B is unlikely to significantly impact on the acoustic amenity of adjacent residents.

The Department acknowledges that the reconfiguration and decommissioning of the G-Loop would impact on the acoustic amenity of adjacent residents when works are undertaken outside of standard construction hours. However, these works would be of limited duration and carried out to avoid traffic impacts on the road network during busy periods. It is considered that this impact is offset by the acoustic and traffic benefits provided by the use of Route B compared to Route A. Further, the Department considers the noise impacts associated with the reconfiguration and decommissioning of the G-Loop reasonable and manageable under the existing conditions of the infrastructure approval relating to noise mitigation and provision of respite periods.

In its submission, the EPA recommended that spoil haulage Route B and the M4 East Motorway tunnels should be used at all times (rather than Parramatta Road), except under exceptional circumstances. The Department agrees that the use of the M4 East Motorway tunnels is preferable and notes that this will be a likely scenario based on the travel time efficiencies of using the tunnels. However, it also acknowledges that Parramatta Road is a State road and that not all spoil destinations will be efficiently served by the M4 East Motorway tunnels, and has therefore not recommended a prescriptive condition in relation to this matter.

Parramatta Road East and West Construction Ancillary Facilities and Pedestrian Overpass

The Department considers that the noise impacts associated with the construction and operation of the pedestrian overpass and Parramatta Road East and West sites can be effectively managed through noise management conditions in the infrastructure approval which include requirements for hours of construction, periods of respite, and out-of-hours works scheduling. In addition, under the existing approval, residents surrounding the construction ancillary facility sites are eligible for acoustic treatment under the Construction Noise Insulation Program.

The Department recognises that the proposed modification will generally result in a reduction in noise and vibration impacts as identified under the EIS and SPIR with the elimination of tunnelling and tunnelling support activities at the Parramatta Road West site. The Department is supportive of the reduced intensity of use at the sites and recognises that potential noise impacts associated with the uses identified in the Modification Report will be manageable, given the Proponent has indicated that the sites will be managed to ensure that all activities do not exceed the 'noise affected' NMLs as identified in the ICNG. Notwithstanding, the Department has reinforced this commitment in the recommended conditions of approval to ensure that the acoustic amenity of residents is safeguarded. In addition, the Department has recommended that noise monitoring be undertaken to confirm noise levels during the operation of the two sites. Where monitoring indicates that the noise levels are being exceeded, additional noise management measures must be implemented. Such noise management measures may include, but are not limited to, installation of localised enclosures around noise sources and at-property noise mitigation treatment.

Relocated Water Treatment Plant, St Peters Interchange

Inner West Council raised concern with regards to potential noise impacts of the relocated water treatment plant on nearby residences on Campbell Road. The nearest residents are at 1 and 2-34 Campbell Road and these are more than 100 metres away and will be separated from the site by a six-lane road, and are therefore unlikely to be impacted by the operation of the water treatment plant.

Noise impacts associated with construction of the water treatment plant would not be inconsistent with the construction scenarios assessed in the EIS and SPIR for the adjoining motorway operations complex and St Peters Interchange. The EIS and SPIR did not identify any significant noise impacts at nearby receivers as a result of construction of this infrastructure.

Accordingly, the proposed relocation of the water treatment plan to the Campbell Road motorway operations complex at the St Peters Interchange is considered acceptable from a construction and operational noise perspective.

Conclusion

The Department acknowledges that the modification will have additional construction noise impacts and that residents in the vicinity of Wattle Street/Parramatta Road at Haberfield/Ashfield are experiencing construction fatigue. Noise impacts are a significant community concern, especially noise from tunnelling-related activities at the Northcote Street site, including spoil haulage. The Department is satisfied that the noise and vibration impacts associated with the proposed modification can be appropriately managed through the range of mitigation measures committed to by the Proponent and conditions imposed under the infrastructure approval. However, the Department recommends that the existing conditions of the project approval be strengthened to limit the use of spoil haulage Route A. Further, the Department has recommended that noise monitoring be undertaken to confirm the predicted construction noise impacts and suitability of the proposed noise management measures, including any additional properties eligible for construction noise insulation.

6.3 Air Quality

Issue

The key air quality issue associated with the proposed modification is nuisance dust emissions from demolition, earthworks, construction and spoil haulage activities. Demolition activities primarily relate to establishment of the Parramatta East and West sites and to the reconfiguration of the G-Loop, while spoil haulage activities primarily relate to the Northcote Street site.

The Proponent undertook a risk-based assessment of the potential air quality impacts of the proposed modification. The Proponent's assessment concluded that the greatest risk of dust nuisance would occur during the demolition and track-out activities.

Submissions

Submissions from the community raised a number of concerns in relation to air quality impacts, including:

- concerns over the extended duration of construction air quality impacts;
- lack of trust in air quality modelling and monitoring undertaken by Proponent;
- concerns regarding the health impacts of particulate matter; and
- concern for dust clogging up swimming pools.

Inner West Council raised concern for nuisance construction dust associated with use of the Northcote Street site for tunnelling, as well as concern for diesel emissions and dust track-out emissions.

NSW Health raised concerns in relation to air pollution from demolition dust at Haberfield and Ashfield.

City of Canada Bay noted significant concern for diesel emissions associated with the use of Route A for spoil haulage.

Consideration

The Department is aware that dust nuisance has arisen during the construction of the M4 East project and on this basis, the community and State and local government agencies are concerned that dust may be generated by construction activities for the M4-M5 Link. Construction of the M4 East required the demolition of numerous properties, surface cuttings and the construction of surface road infrastructure, all of which have the potential to generate dust.

The works associated with the modification do not require significant demolition works nor substantial surface excavations and infrastructure construction. Consequently, the potential for dust generation is significantly less than that which has been experienced during the construction of the M4 East project.

In addition, much of the site preparation at the Northcote Street site has already occurred as part of the M4 East project, including the construction of the acoustic shed and initial stages of the construction access tunnel.

Although demolition of the Parramatta Road East and West sites and decommissioning of the G-Loop have the potential to generate dust, the Department considers that any dust generating activities from these sites can be effectively managed through the existing conditions of approval. The existing conditions of approval require the Proponent to prepare a Construction Air Quality Environmental Management Plan to address environmental risks, including air quality, and the mitigation measures committed to by the Proponent in the EIS.

Dust emissions are also a risk during track-out activities including loading and transporting spoil to receiving facilities. However, the Proponent proposes to stockpile and load haulage vehicles inside the acoustic shed to minimise dust emissions and has committed to covering spoil haulage loads and installing wheel washing systems at Northcote Street. The Department is of the view that these measures would effectively manage dust and minimise nuisance and health impacts. Notwithstanding, the Department has recommended that the Proponent monitor dust deposition as a means of determining the relative contribution of any dust nuisance from the project, with the outcome that further management measures would be implemented should dust generation be of concern to the community. The location of the dust monitoring locations would be identified in the Construction Air Quality Management Plan.

Conclusion

The Department accepts that Proponent's conclusion that construction air quality impacts can be effectively managed to acceptable levels by implementing best practice measures for controlling dust and other fugitive emissions. Furthermore, the Department has recommended dust deposition monitoring as a check that air quality outcomes are acceptable.

6.4 Water quality and drainage

Issue

The key hydrological issues associated with the proposed modification are:

- changes to the volume and rate of wastewater discharges from construction water treatment plants consequent to the removal of the Darley Road site; and
- changes to the discharge of operational wastewater treatment flows due to the relocation of the operational water treatment plant from the Darley Road Motorway Operations Complex to the Campbell Road Motorway Operations Complex at the St. Peters Interchange.

Removal of the Darley Road tunnelling site would result in wastewater generated during the tunnelling phase being pumped to the temporary wastewater treatment plants at the Northcote Street and Pyrmont Bridge Road construction ancillary facilities and discharged into Dobroyd Canal and Johnstons Creek, respectively. The discharge at the Pyrmont Bridge Road site would increase from the approved project by approximately 15 per cent to 1,400 kilolitres of water per day. With the introduction of tunnelling at the Northcote Street tunnelling site, construction wastewater discharges from the Northcote Street tunnelling site would be approximately 1,100 kilolitres per day.

Under the proposed modification, a new operational water treatment plant would be constructed at the Campbell Road Motorways Operation Complex at St Peters. The Proponent has identified three discharge options for the wastewater flow:

- discharge to Alexandra Canal via the proposed stormwater infrastructure for the New M5; or
- discharge to Alexandra Canal via the existing drainage infrastructure; or
- discharge to the Sydney Water sewage network via a Trade Waste Agreement.

Alexandra Canal is a manmade concrete-lined canal which was originally part of a natural watercourse (Sheas Creek). Due to the historical use of the Canal, the sediments within the substrate are contaminated and subject to a Remediation Order issued by the EPA. Increases in the quantity and velocity of flows into Alexandra Canal has the potential to disturb contaminated sediments in the waterway which may influence local water quality.

Water quality monitoring shows elevated levels of metals (chromium (III+VI), copper, lead nickel and zinc) and elevated levels of nutrients (nitrogen, phosphorus and reactive phosphorus) in Alexandra Canal and Sheas Creek. These values are consistent with slightly to moderately disturbed trigger values for marine and estuarine waters.

Submissions

Submissions from the community raised various concerns in relation to water quality and drainage. These include:

- concerns over quality of discharged water from St Peters water treatment plant and its impact on water quality in Alexandra Canal;

- no definitive measure for wastewater disposal from the operational water treatment plant at the St Peters Interchange;
- existing flooding and drainage issues around Alexandra Canal;
- the level of detail surrounding the proposed operational water treatment plant; and
- the volume of water entering Alexandra Canal and potential to disturb contaminated sediments.

Agency and council submissions raised similar issues with the **City of Sydney** seeking clarification regarding the discharge of additional flow from the relocated water treatment plant at the Campbell Road Motorway Operations Complex and questioning whether local drainage would be compromised by the additional flow.

The **Inner West Council** identified the need to ensure that the rate and quality of water discharges from the treatment plant would have a negligible impact on Alexandra Canal.

The **Heritage Council** recommended that a condition be imposed requiring the Proponent to monitor drainage flows into Alexandra Canal to ensure that they do not cause harm to the heritage fabric.

The **EPA** stated that the Proponent needs to consider whether an EPL is required for contaminated groundwater treatment at the proposed St Peters operational water treatment plant.

Consideration

The Department considers that the increase in discharge from the construction water treatment plant at Pyrmont Bridge Road would not significantly impact on total water flows within the receiving environment and would be relatively minor in the context of overall catchment discharges. Similarly, the discharge volume into Dobroyd Canal is relatively minor in terms of total catchment discharges and the canal has the capacity to accept the additional flow. Further, it is noted that both receiving environments consist of concrete receiving channels and therefore the potential for scour and erosion resulting from discharges is negligible.

It is estimated that approximately 23 litres of treated tunnel water would be discharged per second from the operational water treatment plant at St Peters. Although this volume and rate is relatively small compared to the flow rates and velocities from stormwater discharges at the outlet into Alexandra Canal, which are likely greater than 1,000 litres per second, there is a need to confirm that adequate scour protection exists to cope with the treated tunnel discharges should the wastewater be directed to Alexandra Canal. The Proponent has committed to reviewing scour protection during detailed design.

Alexandra Canal is a State listed heritage item. As the Proponent is yet to determine if scour protection works are required and, if so, assess the potential for impacts in and on the fabric of the canal should additional protection works be required, the Department has recommended that the Proponent must not undertake works in or on the canal. Should the Proponent wish to undertake works, a modification to the approval would be required.

The water quality assessment undertaken by the Proponent concluded that minor increases to nutrient loading would pose a negligible risk to water quality in Alexandra Canal and therefore, nutrient removal processes within the water treatment plant are not considered necessary. Further, the existing infrastructure approval specifies that the operational water treatment plant discharge criteria must comply with the ANZECC (2000) 95 per cent species protection level and a 99 per cent protection level for contaminants (unless agreed in consultation with relevant stakeholders including EPA, DPI Water and Sydney Water), and the discharge criteria for iron must comply with the ANZECC (2000) recreational water quality guideline. As the wastewater discharges will comply with these criteria, the Department has not recommended any additional conditions of approval.

In regards to concerns raised in submissions regarding the capacity of existing stormwater drainage system to accept flows from the St Peters water treatment plant, the Department has recommended that the scope of the Stormwater Drainage Report required by the infrastructure approval be expanded, to include review of the existing stormwater system to convey flows from the water treatment plant.

Conclusion

The Department is satisfied that the wastewater discharges from construction and operational water treatment plants would not adversely impact on the water quality of the receiving environments and that these environments (Dobroyd Canal, Johnstons Creek and potentially Alexandra Canal) have the capacity to convey the additional discharges. In addition, any wastewater flows into Alexandra Canal are not likely to disturb contaminated sediments in the canal. Conditions of approval have been recommended to ensure that the final discharge method for wastewater flows from the St Peters operational water treatment plant would not adversely impact on existing stormwater systems, including Alexandra Canal.

6.5 Other Issues

The Proponent has also assessed the potential impacts of the proposed modification in relation to visual amenity (including lighting), land uses (open space) and subsidence. The Department is of the opinion that the Proponent has undertaken an adequate assessment of the issues and that they can generally be managed through the Proponent's management commitments and the conditions in the infrastructure approval. **Table 9** provides a summary of these issues and any recommended conditions of approval.

Table 9 | Summary of other issues raised

Issue	Consideration
Lighting Impacts	• The Response to Submissions Report acknowledges that headlights from heavy vehicles exiting the G-Loop causes nuisance to residents opposite the exit point. The Proponent has indicated that it would consult with residents to investigate options to reduce construction traffic headlight impacts, but has not committed to implementing measures. To ensure that measures are implemented following consultation, the Department has recommended a condition requiring the Proponent implement measures to prevent headlights from heavy vehicles exiting the G-Loop spilling onto residences in the vicinity of Dobroyd Parade / Wattle Street / Waratah Street.
Subsidence	• The potential for subsidence to arise from the construction of the access tunnel from the Northcote Street construction ancillary facility to the mainline tunnel was also raised as a concern in submissions. The infrastructure approval includes a suite of settlement-related conditions including preparation of a geotechnical model to assess potential settlement, settlement criteria, monitoring requirements, pre- and post-construction dilapidation surveys, requirements for rectifying any damage to property and infrastructure arising from settlement, and establishment of an Independent Property Impact Assessment Panel charged with responsibility for resolving property damage disputes. The Department considers that these requirements would effectively manage settlement issues.

Recreational Uses Reg Coady Reserve	• The proposed modification would retain the G-Loop at Reg Coady Reserve that was established as part of the M4 East project as part of the heavy vehicle haulage Route B. The area of land that would be occupied would be reduced compared to that utilised during the construction of the M4 East project. Use of the G-Loop would delay the restoration of the Reserve until 2023. The Department accepts this delay is acceptable when comparing the amenity benefits that would be provided to the community through the use of Route B as the main spoil haulage route when compared to Route A.
Recreational Uses St Peters Interchange	• The proposed operational water treatment plant at St Peters would require an increase in the footprint of the Campbell Road Motorways Operation Complex at St Peters by approximately 2,000 square metres, impinging on the proposed landscaping area to be provided in this location as part of the St Peters Interchange. The Proponent has advised that the water treatment plant would not compromise the amount or quality of the sporting facilities proposed as part of the New M5 project in this area.
Light Rail Stops	• Consequent to the deletion of the Darley Road site, the project will not impact on the Leichhardt North Rail stop. As such, the Department has recommended that condition E59 be amended to remove reference to this rail stop, as requested by the Proponent.
Typographical Error	• Condition E49 refers to "spoil hauage movements". This should read "spoil haulage vehciles" and consequently the Department has recommended that "movements" be amended to "vehicles".

7. Evaluation

The Department has reviewed the Modification Report, community and government authority submissions, and Response to Submissions and has assessed the key issues arising from the proposed changes to the approved project. This has been undertaken with advice from government agencies and councils.

The key issues associated with the proposed modification include the use of the Northcote Street construction ancillary facility for tunnelling, impacts associated with heavy vehicle movements, construction noise (both works and construction traffic), lighting (from heavy vehicle headlights on the G-Loop) and subsidence impacts were not envisaged under the approved project, as the site was not proposed as a tunnelling facility. The Proponent has included a range of environmental management measures which it is committed to implementing to manage the impacts arising from the use of the site. Based on its assessment, the Department has recommended further conditions of approval to address the community and councils' concerns on spoil haulage and noise nuisance.

The proposed modification would provide a number of benefits, such as reducing noise and traffic impacts to communities adjacent to the Parramatta Road West construction ancillary facility as this site would no longer be used for tunnelling. The provision of construction worker parking at the Parramatta Road East and West construction ancillary facilities would also alleviate the problems of on-street parking by construction workers which has been experienced during the construction of the M4 East project. The Department's recommendations restricting heavy vehicle access to and from the construction ancillary facilities to Parramatta Road, and the provision of traffic controllers at entry/exit points, would enhance pedestrian safety past the sites and avoid trucks utilising local roads.

The removal of the Darley Road, Leichhardt site would provide benefit to the local community surrounding the site, as they will not be subject to potential visual, noise and traffic impacts associated with tunnelling operations at the site. However, the Department acknowledges that removal of the site will result in an extension to the tunnelling timeframes at other locations. This is of particular concern for the communities at Haberfield /Ashfield which are already experiencing construction fatigue. The approval for the M4-M5 Link includes conditions to address construction fatigue and reduce construction impacts including (but not limited to) the implementation of a Construction Noise Insulation Program, coordination of utility management works, provision of periods of respite and the appointment of an Acoustics Advisor.

Minor visual, land use and hydrological impacts would be associated with the relocation of the operational water treatment plant from Darley Road, Leichhardt to the Campbell Road motorway operation complex at the St Peters Interchange. These impacts are considered acceptable and could be effectively managed through the Proponent's proposed management measures for the M4-M5 Link proposal and the conditions of approval relating to water quality and the amended stormwater drainage conditions. Issues associated with impacts on landscaping and open space at the St Peters Interchange would be managed through the New M5 approval.

The Department is satisfied that the issues raised in submissions have been appropriately considered and responded to by the Proponent. Overall, the merits of the modification have been evaluated and it is concluded that the benefits of the proposed modification outweigh the potential impacts. As such, the Department considers the proposed modification should be approved, subject to conditions.

8. Recommendation

It is recommended that the Minister for Planning:

- **considers** the findings and recommendations of this report; and
- **determines** that the request M4-M5 Link (SSI 7485 MOD 1) falls within the scope of section 5.25 of the EP&A Act;
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant approval to the request;
- **agrees** with the key reasons for approval listed in the draft notice of decision;
- **modify** the approval SSI 7485; and
- **signs** the attached Notice of Modification (**Appendix G**).

Recommended by:

Keith Ng
Senior Planning Officer
Transport Assessments

Recommended by:

Glenn Snow
Director
Transport Assessments

9. Determination

The recommendation is: **Adopted / Not adopted by:**

The Hon. Anthony Roberts, MP
Minister for Planning

Appendices

Appendix A – List of Documents

Department of Environment and Climate Change, 2009. *Interim Construction Noise Guideline.*

Department of Environment, Climate Change & Water, 2011. *Road Noise Policy.*

Roads and Maritime Services, 2015. *Noise Criteria Guideline.*

Roads and Maritime Services, 2017. *M4-M5 Link Environmental Impact Statement.*

Roads and Maritime Services, 2018. *M4-M5 Link Submissions and Preferred Infrastructure Report.*

Roads and Maritime Services, 2018. *WestConnex M4-M5 Link Mainline Tunnel Modification Report.*

Roads and Maritime Services, 2018. *WestConnex M4-M5 Link Mainline Tunnel Modification Response to Submissions Report.*

Appendix B – Modification Report

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9612

Appendix C – Submissions

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9612

Appendix D – Submissions Report

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9612

Appendix E – Community Views

Issue	Consideration
Construction Traffic and Access • Concern over the volume of heavy vehicles traversing through residential areas and increased traffic during peak periods and ability of road network to accommodate the additional traffic • Spoil haulage vehicles should utilise the M4 East tunnels • Use of spoil haulage Route A • Road dilapidation arising from heavy vehicles traversing roads • Pedestrian safety around access and egress points on the Parramatta Road East and West construction ancillary facilities • Construction worker parking on local streets	*Assessment* • Traffic impacts associated with the use of the two proposed spoil haulage routes (A and B) would be minimal. However, Route B is the preferred spoil haulage route. • Pedestrian safety can be appropriately managed around the Parramatta Road East and West construction ancillary facilities due to the low number of heavy vehicle movements and implementation of traffic control measures. • Use of the G-Loop provides the opportunity for spoil haulage vehicles to directly access the M4 East tunnels, thereby avoiding the use of surface rods and subsequently reducing traffic (and noise) impacts. • The provision of over 200 parking spaces within the Parramatta Road East and West construction ancillary facilities would reduce the potential for construction workers to park on local streets. *Recommended Conditions/Response* • The Department has recommended restrictions on the use of Route A for spoil haulage, including limiting its use to primarily peak periods. • The infrastructure approval sets out requirements relating to road dilapidation surveys and repairs. • To enhance pedestrian safety, the Department has recommended that traffic controllers staff the entry and exit points on the Parramatta Road East and West construction ancillary facilities whenever heavy vehicles are entering or exiting the sites, or there are shift changes, during school travel times.
Construction Noise and Vibration • Traffic noise from spoil haulage trucks • Night-time noise generated from activities on the Northcote Street and Parramatta Road East and West construction ancillary facilities • Construction vibration from tunnelling under homes	*Assessment* • The construction noise assessment predicted exceedances of noise management levels at residents adjacent to the Northcote Street construction ancillary facility. The Proponent has committed to manage noise and vibration impacts. Furthermore, the receivers have been identified as qualifying for acoustic treatment under the existing construction Noise Insulation Program.

• Inadequate noise attenuation offered by the Proponent to impacted residential receivers • Cumulative noise impacts associated with the extended use of Northcote Street construction ancillary facility	• Noise impacts associated with the use of Route A would not be unreasonable and will be less than the 2 dBA criterion in the Road Noise Policy for noise mitigation. *Recommended Conditions/Response* • The approval requires the implementation of a construction Noise Insulation Program, periods of respite, and scheduling of out-of-hours works. Therefore, no other conditions are recommended in regard to the management of noise and vibration. • The Department has recommended noise monitoring be undertaken to confirm the predicted noise levels. • The Department has placed restrictions on the use of Route A for spoil haulage.
Air Quality • Dust nuisance and potential health impacts • Extended duration of air quality impacts in Haberfield / Ashfield • Consistently high levels of particulate matter recorded during air quality monitoring at Haberfield and Ashfield	*Assessment* • The assessment identified nuisance dust emissions from demolition, earthworks, construction and track-out activities as the main air quality issues. However, given that the modification does not require significant demolition work nor substantial surface excavations, the works are unlikely to generate significant air quality impacts. *Recommended Conditions/Response* • The Department considers that dust nuisance can be effectively managed by the measures proposed by the Proponent for the approved project including implementation of dust suppression techniques and covering of all loaded spoil haulage trucks. • Notwithstanding, the Department has recommended that dust deposition monitoring be undertaken to gauge the potential for dust nuisance.
Water Quality and Drainage • Concerns over the discharges from the St Peters operational water treatment plant on water quality within Alexandra Canal and the potential to disturb contaminated sediments within the substrate • Localised flooding and drainage issues arising from insufficient capacity of the existing stormwater system	*Assessment* • The assessment concluded that the additional discharges would not adversely impact on the water quality of the receiving environments or be of sufficient quantity and velocity to disturb sediments within Alexandra Canal. *Recommended Conditions/Response* • The infrastructure approval sets out water quality criteria for construction and operational water treatment plant discharges.

- The Department has recommended that the scope of the Stormwater Drainage Report required by the infrastructure approval include review of the existing stormwater system to convey flows from operational water treatment plants.

Appendix F – Consolidated Approval

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9612

Appendix G – Notice of Modification

Appendix H – Updated Traffic Assessment

Transport
Roads & Maritime
Services

Attachment 3.2 Update:

Technical Memo – M4-M5 Link Modification Traffic and Transport Analysis of 'likely' scenario (15 spoil truck movements per hour)

AECOM Imagine it. Delivered.

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney NSW 2000
PO Box Q410
QVB Post Office NSW 1230
Australia
www.aecom.com

+61 2 8934 0000 tel
+61 2 8934 0001 fax
ABN 20 093 846 925

Technical Note

To	[redacted]	Page	1
CC	[redacted]		
Subject	M4-M5 Link: Mainline Tunnel Modification – Modelling of additional construction spoil trucks using Route A		
From	[redacted]		
File/Ref No.	60584698	Date	11-Feb-2019
Client	Roads and Maritime Services		

1.0 Introduction

The traffic and transport assessment undertaken for the Mainline Tunnel Modification tested the impact of a construction spoil haulage route through Five Dock for exiting spoil trucks from the Northcote Street civil and tunnel site. This route was called Route A and comprised spoil trucks exiting via a left turn from the site onto Wattle Street, then a left turn into Ramsay Street/ Road, a left turn into Fairlight Street, a left turn into Great North Road, and a right turn into Parramatta Road. In the Mainline Tunnel Modification, a total of eight spoil trucks were tested using this route.

This technical memo summarises the results of updated traffic modelling undertaken to test a total of 15 spoil trucks using this route, i.e. an additional seven spoil trucks.

The critical intersections that would be impacted by this change are:

- Ramsay Road/Fairlight Street
- Great North Road/Fairlight Street/ Queens Road
- Parramatta Road/Great North Road
- Parramatta Road/Croydon Road/Arlington Street.

The intersections were modelled using the same 2021 construction LinSig models used in the previous Mainline Tunnel Modification assessment. It is noted that the intersections are not modelled as isolated intersections and the LinSig network model adjusts signal settings and offsets with changes in traffic volumes on different approaches to optimise vehicle throughput in the network.

The critical peak hour for the Ramsay Road/Fairlight Street and Great North Road/Fairlight Street/ Queens Road intersections is the 2021 AM peak hour, so the modelling for those two intersections has focused on the 2021 AM peak hour.

The critical peak hour for the Parramatta Road/Great North Road and Parramatta Road/Croydon Road/Arlington Street intersections is the 2021 PM peak hour, so the modelling for those two intersections has focused on the 2021 PM peak hour

2.0 Traffic modelling results

Table 1 presents the overall intersection level of service (LOS) and overall intersection delay, as well as the queue lengths on each pertinent approach, for the critical intersections under the previously modelled scenarios and the updated scenario.

Table 1 Impact on critical intersections in 2021 peak hour construction scenario

Intersection	Peak period	Measure	Without construction	With construction (SPIR Option A)	With construction (Modification: 8 trucks/hour on surface)	With construction (Update: 15 trucks/hour on surface)
Ramsay Rd/ Fairlight St	2021 AM	LoS	D	-	D	D
		Delay	52s	-	47s	49s
		Queue	74m	-	72m	77m
Comments	Minimal impact on overall intersection delay and queue length; no change to LoS. Additional seven trucks equivalent to 2% increase on Ramsay Road approach and 0.3% increase for the total intersection volume. Queue shown is for Ramsay Road (south approach) – minimal increase in queue length forecast but the signal timing adjustment causes changes on all approaches, with the overall intersection delay decreasing slightly. Minimal forecast impacts on delays and queue lengths on other approaches.					
Fairlight St/ Great North Rd/ Queens Rd	2021 AM	LoS	E	-	E	F
		Delay	67s	-	68s	75s
		Queue	133m	-	134m	134m
Comments	Small increase in overall intersection delay, but LoS changes from LoS E to LoS F. Additional seven trucks equivalent to 2% increase on Fairlight Street east approach and 0.3% increase for the total intersection volume. No change in queue length on Fairlight Street (east approach). Intersection is already over capacity without construction. The western approach on Queens Road experiences the major delays and this could be mitigated by holding back traffic at the upstream intersection (Queens Road/Harris Road).					
Parramatta Rd/ Great North Rd	2021 PM	LoS	F	F	F	F
		Delay	90s	96s	113s	102s
		Queue	225m	225m	164m	181m
Comments	Small reduction in overall intersection delay, as construction traffic shifts from approaching on Parramatta Road (east) to Great North Road; no change in LoS. Additional 15 trucks equivalent to 2% increase on Great North Road approach and additional seven trucks are 0.4% increase for the total intersection volume. Queue shown is for Great North Rd (north approach) – small increase in queue length forecast, but less delay on Parramatta Road with traffic shifting to Great North Road, so overall intersection delay decreases					
Parramatta Rd/ Croydon Rd/ Arlington St	2021 PM	LoS	D	E	F	F
		Delay	54s	59s	94s	96s
		Queue	32m	46m	115m	95m
Comments	Small reduction in overall intersection delay; no change in LoS. Additional seven trucks equivalent to 0.6% increase on Parramatta Road east approach and 0.2% increase for the total intersection volume. Queue shown is for Parramatta Rd (east approach) – small reduction in queue length forecast, due to slight changes in signals as the network is optimised.					

In summary:

- Modelling for the Ramsay Road/Fairlight Street intersection indicates minimal impact on delays and queue lengths.
- Modelling for the Great North Road/Fairlight Street/Queens Road intersection indicates there is small increase in overall intersection delay, which tips the level of service from LoS E to LoS F. There is potential for volumes at this intersection to be managed through holding traffic at the upstream Queens Road/Harris Road intersection, which is forecast to operate at LoS C in the 2021 construction AM peak hour.
- Modelling for the Parramatta Road/Great North Road intersection indicates a small improvement in overall intersection delay, as trucks are reallocated from the Parramatta Road east approach to the Great North Road approach. A small increase in queue length is forecast on Great North Road, but well within the available queue storage (about 400m back to Fairlight Street).
- Modelling for the Parramatta Road/Croydon Road/Arlington Street intersection indicates minimal impact on delays and queue lengths at the intersection.

It is noted that the additional truck volumes are a small percentage of the intersection traffic and are likely to fall within the daily fluctuation of volumes at the intersection. The modelled peak hour conditions are considered the worst traffic case, with impacts likely to be less in off-peak periods.

Appendix I – Updated Noise Assessment

Memorandum

To:	[redacted]	**At:**	RMS
From:	[redacted]	**At:**	SLR Consulting Australia Pty Ltd
Date:	6 February 2019	**Ref:**	
Subject:	Mainline Tunnel Modification Spoil Vehicle Movements		

CONFIDENTIALITY

This document is confidential and may contain legally privileged information. If you are not a named or authorised recipient you must not read, copy, distribute or act in reliance on it. If you have received this document in error, please telephone our operator immediately and return the document by mail.

SLR have revised the heavy vehicle traffic assessment prepared for the modification report based on updated vehicle movements supplied by RMS. The assessment revised heavy vehicles using Route A (as noted below) during the daytime hours only.

Inputs:

a. Route A - Exit Northcote Street via left turn from site onto Wattle Street, then left turn into Ramsay Street / Road, then left turn into Fairlight Street, then left turn into Great North Road, then right turn into Parramatta Road.
b. Daytime movements only between 0700 h and 1900 h
c. 2 Heavy vehicle scenarios - Maximum movements of 20 p/h (240 total between 0700 h to 1900 h) and 15 p/h (180 total between 0700 h to 1900 h).
d. Pre WCX-construction (2012) daily numbers of vehicle movements on the local road network (as noted in Table 1 below). 2012 has been selected as the base year to reflect the road network around these sites before construction of the M4 East commenced
e. Modified heavy vehicle assessment approach which differentiates between light trucks (typical small to medium rigid trucks) and heavy trucks (spoil trucks) in the modelling inputs. This is consistent with the modelling approach used for the modification assessment.

Table 1 Existing Daytime Vehicle flows

Road	Daytime 15hr 0700-2200		
	Heavy Trucks	Light Trucks	Light Vehicles
Wattle Street	2407	1402	37,321
Ramsay Street / Fairlight Street	33	89	12,711
Great North Road	243	648	18,378

Results of the modelling are presented in Table 2.

SLR Consulting Australia Pty Ltd 2 Lincoln Street Lane Cove NSW 2066 Australia (PO Box 176 Lane Cove NSW 1595 Australia)
T: +61 2 9427 8100 E: sydney@slrconsulting.com
www.slrconsulting.com ABN 29 001 584 612

Table 2 Construction road traffic noise assessment – Northcote civil and tunnel site

Site	Road	Predicted traffic noise increase (dBA) - Daytime 0700 h to 2200 h		
		Modification Report 8 Trucks p/h between 0700 and 1900 h	Scenario 1 15 Trucks p/h between 0700 and 1900 h	Scenario 2 20 Trucks p/h between 0700 and 1900 h
Northcote Street civil and tunnel site	Wattle St	<0.5	<0.5	<0.5
	Ramsay St / Rd	<0.5	1.0	1.2
	Fairlight St	<0.5	1.0	1.2
	Great North Rd	<0.5	<0.5	0.6

The results of the construction road traffic noise assessment presented in Table 2 shows that construction traffic is below the assessment criterion (2 dB) which reflects only a marginal forecast change in LAeq noise levels at receivers along the proposed routes.