



WestConnex M4-M5 Link

Mainline Tunnel modification

Response to submissions report

November 2018



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Roads and Maritime Services

WestConnex M4-M5 Link

Mainline Tunnel modification - Response to submissions report

November 2018

Prepared for

Roads and Maritime Services

Prepared by

AECOM Australia

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Glossary and terms of abbreviation

Term	Meaning
A	
Acoustic louvre	Equipment that provides ventilation and reduces noise from operational facilities
AECOM	AECOM Australia Pty Ltd
AEP	Annual exceedance probability
AHD	Australian Height Datum The standard reference level used to express the relative height of various features. A height given in metres AHD is the height above mean sea level
Alignment	The geometric layout (eg of a road) in plan (horizontal) and elevation (vertical)
AM peak hour	Unless otherwise stated, this refers to vehicle trips arriving at their destination during the average one hour peak in the AM peak period between 7.00 am and 9.00 am on a normal working weekday
ANZECC	Australian and New Zealand Environment Conservation Council
ARI	Average recurrence interval An indicator used to describe the frequency of floods. The average period in years between the occurrence of a flood of a particular magnitude or greater. In a long period of say 1,000 years, a flood equivalent to or greater than a 100 year ARI event would occur 10 times. The 100 year ARI flood has a one per cent chance (ie a one-in-100 chance) of occurrence in any one year. Floods generated by runoff from the study catchments is referred to in terms of their ARI, for example the 100 year ARI flood
Arterial roads	The main or trunk roads of the state road network that carry predominantly through traffic between regions
AS	Australian Standard
B	

Term	Meaning
Background concentration (air quality)	Describes all contributing sources of a pollutant concentration other than road traffic. It includes, for example, contributions from natural sources, industry and domestic activity
Background noise level	The ambient sound-pressure noise level in the absence of the sound under investigation exceeded for 90 per cent of the measurement period. Normally equated to the average minimum A-weighted sound pressure level
Blasting	Rock blasting is the controlled use of explosives and other methods such as gas pressure blasting pyrotechnics or plasma processes, to excavate, break down or remove rock
Bus lane	A traffic lane dedicated to buses, but which can also be used by taxis, bicycles and motorcycles
C	
Campbell Road civil and tunnel site	A construction ancillary facility for the M4-M5 Link project at St Peters
Campbell Road motorway operations complex	An area where operational ancillary facilities are established. Located within the St Peters interchange, south of Campbell Road at St Peters, on land occupied during construction by the Campbell Road civil and tunnel site
Campbell Road ventilation facility	Ventilation supply and exhaust facilities, axial fans, ventilation outlets and ventilation tunnels. Located at St Peters, within the St Peters interchange site
Capacity	The nominal maximum number of vehicles which has a reasonable expectation of passing over a given section of a lane or roadway in one direction during a given time period under prevailing roadway conditions
Carriageway	The portion of a roadway used by vehicles including shoulders and ancillary lanes
Catchment	The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location
CEMP	<p>Construction Environmental Management Plan</p> <p>A plan developed for the construction phase of the project to ensure that all contractors and sub-contractors comply with the environmental conditions of approval for the project and that the environmental risks are properly managed</p>

Term	Meaning
CLM Act	<i>Contaminated Land Management Act 1997</i> (NSW)
CNVG	<i>Construction Noise and Vibration Guideline</i> (Roads and Maritime, 2016)
CNVIS	Construction Noise and Vibration Impact Statements
CNVMP	Construction Noise and Vibration Management Plan
Concept design	Initial functional layout of a road/road system or other infrastructure. Used to facilitate understanding of a project, establish feasibility and provide basis for estimating and to determine further investigations needed for detailed design
Construction	Includes all physical work required to construct the project
Construction ancillary facilities	Temporary facilities during construction that include, but are not limited to construction sites (civil and tunnel), sediment basins, temporary water treatment plants, precast yards and material stockpiles, laydown areas, workforce parking, maintenance workshops and offices
Construction fatigue	Impact on receivers in the vicinity of concurrent and/or consecutive construction activities
CSSI	Critical State significant infrastructure
Cumulative impacts	Impacts that, when considered together, have different and/or more substantial impacts than a single impact assessed on its own
D	
dB	Decibel - sound level measurement
dBA	A-weighted decibels A-weighting is applied to instrument-measured sound levels in effort to account for the relative loudness perceived by the human ear, as the ear is less sensitive to low audio frequencies
dBL	Linear weighted decibels
DEC	NSW Department of Environment and Conservation (now OEHL and EPA)
DECC	NSW Department of Environment and Climate Change (now OEHL)

Term	Meaning
DECCW	NSW Department of Environment, Climate Change and Water (formerly DECC, now OEH)
Detailed design	The phase of the project following concept design where the design is refined, and plans, specifications and estimates are produced, suitable for construction
DIN	German standard
Discharge	The rate of flow of water measured in terms of volume per unit time, for example, cubic metres per second (m ³ /s). Discharge is different from the speed or velocity of flow, which is a measure of how fast the water is moving (eg metres per second (m/s))
DP&E	NSW Department of Planning and Environment
DI-Water	NSW Department of Industry - Water
Drainage	Natural or artificial means for the interception and removal of surface or subsurface water
Drawdown	Reduction in the height of the water table caused by changes in the local environment
E	
EARs	Environmental Assessment Requirements
Earthworks	All operations involved in loosening, excavating, placing, shaping and compacting soil or rock
EB	Eastbound
Ecological community	An ecological community is a naturally occurring group of native plants, animals and other organisms that are interacting in a unique habitat
EIS	Environmental impact statement
Enabling works	Works which are required to enable the commencement of the main construction works
Entry ramp	A ramp by which one enters a limited-access highway/tunnel

Term	Meaning
Environment	As defined within the <i>Environmental Planning and Assessment Act 1979</i> (NSW), all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EP&A Regulation	Environmental Planning and Assessment Regulation 2000 (NSW)
EPA	NSW Environment Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
EPL	Environment Protection Licence under the <i>Protection of the Environment Operations Act 1997</i> (NSW)
Erosion	A natural process where wind or water detaches a soil particle and provides energy to move the particle
Exit ramp	A ramp by which one exits a limited-access highway/tunnel
F	
Feasible and reasonable	Consideration of standard or good practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. 'Feasible' relates to engineering considerations and what is practical to build. 'Reasonable' relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community expectations and nature and extent of potential improvements
Flood prone land	Land susceptible to flooding by the probable maximum flood. Note that the flood prone land is also known as flood liable land
Flood storage area	Those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. The extent and behaviour of flood storage areas may change with flood severity, and loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation. It is necessary to investigate a range of flood sizes before defining flood storage areas

Term	Meaning
Floodplain	Area of land which is inundated by floods up to and including the probable maximum flood event (ie flood prone land)
G	
GPS	Global positioning system
Groundwater	Water that is held in rocks and soil beneath the earth's surface
H	
ha	Hectare
Hazard	A source of potential harm or a situation with a potential to cause loss of human life or damage to physical assets
Heavy vehicles	A heavy vehicle is classified as a Class 3 vehicle (a two axle truck) or larger, in accordance with the Austroads Vehicle Classification System
HVNL	Heavy Vehicle National Law
I	
ICNG	<i>Interim Construction Noise Guideline</i> (NSW DECC 2009a)
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment
Infrastructure SEPP	<i>State Environmental Planning Policy (Infrastructure) 2007</i> (NSW)
Inner West Council	The amalgamation of the former local government areas of Ashfield, Leichhardt and Marrickville, proclaimed on 12 May 2016
Interchange	A grade separation of two or more roads with one or more interconnecting carriageways
J	
Just Terms Act	<i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW)
K	
kL	Kilolitre
Km	kilometres

Term	Meaning
L	
L/s/km	Litres per second per kilometre
L_{Aeq}	The 'energy average noise level'
L_{A90}	The "background noise level" in the absence of construction activities. This parameter represents the average minimum noise level during the daytime, evening and night-time periods respectively. The $L_{Aeq}(15\text{minute})$ construction Noise Management Levels (NMLs) are based on the L_{A90} background noise levels
L_{AFmax}	The maximum fast time weighted noise level from road traffic noise occurring at a particular location
Landscape character	The aggregate of built, natural and cultural aspects that make up an area and provide a sense of place. Includes all aspects of a tract of land – built, planted and natural topographical and ecological features
LEP	Local environmental plan
LGA	Local government area
Licensed discharge point	A location where a licensed operation discharges water to the environment in accordance with conditions stipulated within the site environment protection licence (EPL)
Local road	A road or street used primarily for access to abutting properties
Localised flooding	Localised flooding occurs when components of the drainage system are undersized or blocked and cannot accommodate the incoming overland surface flows, resulting in the flooding of a localised area
LoS	Level of service
M	
m	Metres
m^2	Square metres
m^3	Cubic metres

Term	Meaning
M4 East Motorway/project	A component of the WestConnex program of works. Extension of the M4 Motorway in tunnels between Homebush and Haberfield via Concord. Includes provision for a future connection to the M4-M5 Link at the Wattle Street interchange
M4-M5 Link	The approved project that is subject to this proposed modification. A component of the WestConnex program of works
Mainline tunnels	The M4-M5 Link mainline tunnels connecting with the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters
mg/L	Milligrams per litre
microSiemens per centimetre (mS/cm)	A measure of electrical conductivity. Commonly used to measure the salinity of water
Mid-block	Section of road between two intersections
Motorway	Fast, high volume controlled access roads. May be tolled or untolled
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
MVA	Megavolt-amp
N	
NB	Northbound
NCA	Noise catchment area
NCG	<i>Noise Criteria Guideline (Roads and Maritime, 2015)</i>
New M5 Motorway/project	A component of the WestConnex program of works. Located from Kingsgrove to St Peters (under construction)
NMG	<i>Noise Mitigation Guideline (Roads and Maritime, 2015)</i>
NML	Noise management level
Northcote Street civil site	An approved construction ancillary facility for the M4-M5 Link project located at Haberfield

Term	Meaning
Northcote Street civil and tunnel site	A construction ancillary facility for the M4-M5 project located at Haberfield which would be used as a civil and tunnel site for the proposed modification
NSW	New South Wales
NSW EPA	NSW Environment Protection Authority
NSW Health	NSW Department of Health
NWQMS	National Water Quality Management Strategy
NZ	New Zealand
O	
OEH	NSW Office of Environment and Heritage (Formerly DECCW)
OEMP	Operational Environmental Management Plan
OOHW	Out-of-hours work
ONVR	Operational Noise and Vibration Review
Overland flooding	Inundation by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam
P	
Parcel of land	Refers to an individual lot number (lot) and deposited plan (DP)
Parramatta Road East civil site	An approved construction ancillary facility for the M4-M5 Link project at Haberfield
Parramatta Road West civil and tunnel site	An approved construction ancillary facility for the M4-M5 Link project at Ashfield (as described in the M4-M5 Link EIS)
Parramatta Road East civil site	A construction ancillary facility for the M4-M5 Link project at Haberfield which would be used as civil sites in accordance with condition of approval C19 and other conditions of the project approval for the proposed modification
Parramatta Road West civil site	A construction ancillary facility for the M4-M5 Link project at Haberfield which would be used as civil sites in accordance with condition of approval C19 and other conditions of the project approval for the proposed modification
Pavement	The portion of a carriageway placed above the subgrade for the support of, and to form a running surface for, vehicular traffic

Term	Meaning
PCU	Passenger car unit
Peak discharge	The maximum discharge occurring during a flood event
Peak flood level	The maximum water level occurring during a flood event
PM	(Airborne) particulate matter
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of less than 10 micrometres (µm)
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of less than 2.5 micrometres (µm)
PM peak hour	Unless otherwise stated, this refers to trips travelling on the network during the average one hour peak period between 3pm to 6pm on a weekday
PMF	Probable maximum flood The flood that occur as a result of the probable maximum precipitation on a study catchment. The probable maximum flood is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation coupled with the worst flood producing catchment conditions. Generally, it is not physically or economically possible to provide complete protection against this event. The probable maximum flood defines the extent of flood prone land (ie the floodplain)
POEO Act	<i>Protection of the Environment Operations Act 1997</i> (NSW)
Pollutant	Any measured concentration of solid or liquid matter that is not naturally present in the environment
Portal	The entry and/or exit to a tunnel
Pre-construction	All work prior to, and in respect of the State significant infrastructure, that is excluded from the definition of construction
Probability	A statistical measure of the expected chance or likelihood of occurrence
Project	A new multi-lane road link between the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters. The project would also include an interchange at Lilyfield and Rozelle (the Rozelle interchange) and a tunnel connection between Anzac Bridge and Victoria Road, east of Iron Cove Bridge (Iron Cove Link). In addition, construction of tunnels, ramps and associated infrastructure to provide connections to the proposed future Western Harbour Tunnel and Beaches Link project would be carried out at the Rozelle interchange

Term	Meaning
Project footprint	The land required to construct and operate the project. This includes permanent operational infrastructure (including the tunnels), and land required temporarily for construction
Property	Based on ownership, with the potential to contain more than one lot and DP
Proponent	The person or organisation that proposes to carry out the project or activity. For the purpose of the project, the proponent is NSW Roads and Maritime Services
Public transport	Includes train, bus (government and private), ferry (government and private) and light rail (government and private) services
PV	Passenger vehicle
Pyrmont Bridge Road civil and tunnel site	A construction ancillary facility for the M4-M5 Link project at Annandale
Q	
R	
RAP	Remedial action plan
RBL	Rating background levels
REF	Review of environmental factors
RNP	Road Noise Policy
Road reserve	A legally defined area of land within which facilities such as roads, footpaths and associated features may be constructed for public travel
Road header	A commonly used machine for excavation in sandstone using picks mounted on a rotary cutter head attached to a hydraulically operated boom
Roads and Maritime	NSW Roads and Maritime Services
Runoff	The amount of rainfall that ends up as streamflow, also known as rainfall excess
S	
SB	Southbound
Scour	Removal of sediment such as sand and gravel from around bridge abutments or piers caused by moving water

Term	Meaning
SEARs	Secretary's Environmental Assessment Requirements Requirements and specifications for an environmental assessment prepared by the Secretary of the NSW Department of the Planning and Environment under section 115Y of the <i>Environmental Planning and Assessment Act 1979</i> (NSW)
Sediment	Material, both mineral and organic, that is being or has been moved from its site of origin by the action of wind, water or gravity and comes to rest either above or below water level
Sensitive receiver/receptor	Includes residences, educational institutions (including preschools, schools, universities, TAFE colleges), health care facilities (including nursing homes, hospitals), religious facilities (including churches), child care centres, passive recreation areas (including outdoor grounds used for teaching), active recreation areas (including parks and sports grounds), commercial premises (including film and television studios, research facilities, entertainment spaces, temporary accommodation such as caravan parks and camping grounds, restaurants, office premises, retail spaces and industrial premises)
SEPP	State Environmental Planning Policy
Settlement	Refers to how ground can move due to the construction of new infrastructure
Shoulder	The portion of the carriageway beyond the traffic lanes adjacent to and flush with the surface of the pavement
SMC	Sydney Motorway Corporation
Socio-economic	Involving combination of social and economic matters
Soil salinity	Salt content of soil
SPIR	Submissions and Preferred Infrastructure Report
Spoil	Surplus excavated material
SSI	State significant infrastructure
SSIAR	State significant infrastructure application report
St Peters interchange	A component of the New M5 project, located at the former Alexandria Landfill site at St Peters. Approved and under construction as part of the New M5 project. Additional construction works proposed as part of the M4-M5 Link project
Staging	Refers to the division of the project into multiple contract packages for construction purposes, and/or the construction or operation of the overall project in discrete phases

Term	Meaning
Stockpile	Temporary stored materials such as soil, sand, gravel, spoil/waste
Surface road concentration (air quality)	Describes the contribution of pollutants from the surface road network. It includes not only the contribution of the nearest road at the receptor, but also the net contribution of the modelled road network at the receptor
Surface water	Water flowing or held in streams, rivers and other wetlands in the landscape
SW	Water quality monitoring sample ID
T	
TBM	Tunnel boring machine
The Blue Book	<i>Managing Urban Stormwater – Soils and Construction Volumes 1 and 2</i> (NSW Government 2004 and 2006)
Total concentration (air quality)	The sum of the background, surface road and ventilation outlet concentrations. It may relate to conditions with or without the project under assessment
Transport for NSW	NSW Government Department Transport for NSW
Truck and dog construction vehicle	A vehicle with 20 cubic metre capacity and maximum length of 19 metres
TSP	Total suspended particulate (matter)
TSS	Total suspended solids
Tunnel boring machine	An excavation machine that 'bores' through soil or rock to create a tunnel with a circular cross section (as opposed to drilling and blasting methods)
Typical cross section	A cross section of a carriageway showing typical dimensional details, furniture locations and features of the pavement construction
U	
UDLP	Urban Design and Landscape Plan
UDLP land	Project land that has been identified as subject to the UDLP

Term	Meaning
Urban design	The process and product of designing human settlements, and their supporting infrastructure, in urban and rural environments
V	
V/C	Volume to capacity ratio
Ventilation facility	Facility for the mechanical removal of air from the mainline tunnels, or mechanical introduction of air into the tunnels. May comprise one or more ventilation outlets
VENM	Virgin excavated natural material
Ventilation outlet	The location and structure from which air within a tunnel is expelled
Visual amenity	Pleasantness or attractiveness of a place or area
W	
Wattle Street civil and tunnel site	A construction ancillary facility for the M4-M5 Link project located at Haberfield
Wattle Street interchange	An interchange to connect Wattle Street (City West Link) with the M4 East and the M4-M5 Link tunnels. Approved and under construction as part of the M4 East project. Additional construction works proposed as part of the M4-M5 Link project
WestConnex program of works	A program of works that includes the M4 Widening, King Georges Road Interchange Upgrade, M4 East, New M5 and M4-M5 Link projects
WRTM	WestConnex Road Traffic Model
Other	
µg	microgram
µg/m ³	micrograms per cubic metre

A Part A - Introduction and overview of consultation and submissions received

A1 Introduction and background

A1.1 Introduction

NSW Roads and Maritime Services (Roads and Maritime) is seeking to modify the approval for the construction and operation of the WestConnex M4-M5 Link (the project) (State Significant Infrastructure (SSI) 7485). The approved project comprises a multi-lane road link between the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters.

The proposed modification relates to Stage 1 of the project and principally involves removal of the Darley Road civil and tunnel site and changes to the arrangement of construction sites at Haberfield and Ashfield. In addition, the modification would also relocate the operational water treatment plant from proposed Darley Road motorway operations complex to the Campbell Road motorway operations complex at the St Peters interchange.

A Modification report (dated September 2018) was prepared and provided an environmental assessment and provided full details of the proposed changes to the approved project as part of the modification.

During the public exhibition of the Modification report, submissions were received by the NSW Department of Planning and Environment (DPE). This Response to submissions report has been prepared to respond to these submissions.

A1.2 Approved project

Approval for the construction and operation of the project was granted by the NSW Minister for Planning on 17 April 2018. The project approval provides for the construction and operation of a new multi-lane road link between the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters which is Stage 1 of the project. The project also includes an interchange at Lilyfield and Rozelle (the Rozelle interchange) and a tunnel connection between Anzac Bridge and Victoria Road, east of Iron Cove Bridge (Iron Cove Link), which is Stage 2 of the project. Stage 2 also includes the construction of tunnels, ramps and associated infrastructure to provide connections to the proposed future Western Harbour Tunnel and Beaches Link project at the Rozelle interchange.

In summary the approved project comprises:

- Twin mainline motorway tunnels between the M4 East at Haberfield and the New M5 at St Peters
- Connection of the mainline tunnels to the M4 East project, comprising tunnel-to-tunnel connections and entry and exit ramps connections between the mainline tunnels and the Wattle Street interchange at Haberfield
- Connection of the mainline tunnels to the New M5 project, comprising tunnel-to-tunnel connections to the New M5 mainline tunnels and entry and exit ramp connections between the mainline tunnels and the St Peters interchange
- The Inner West subsurface interchange (underground interchange at Leichhardt and Annandale) that will link the mainline tunnels with the Rozelle interchange and the Iron Cove Link
- A new interchange at Lilyfield and Rozelle (the Rozelle interchange) that will connect the M4-M5 Link mainline tunnels with City West Link, Anzac Bridge, Iron Cove Link and the proposed future Western Harbour Tunnel and Beaches Link
- Twin tunnels that will connect Victoria Road near the eastern abutment of Iron Cove Bridge and Anzac Bridge (the Iron Cove Link). Underground entry and exit ramps will also provide a tunnel connection between the Iron Cove Link and the New M5 project (via the M4-M5 Link mainline tunnels)

- Motorway operational infrastructure including substations, water treatment plans, ventilation facilities and outlets, offices, on-site storage and parking for employees. Tunnel ventilation systems, including ventilation supply and exhaust facilities, axial fans, ventilation outlets and ventilation tunnels.

The Environmental Impact Statement (EIS) describes construction and operation of the M4-M5 Link in two stages:

Stage 1¹, as described in the EIS included:

- Construction of the mainline tunnels between the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters, stub tunnels to the Rozelle interchange (at the Inner West subsurface interchange) and ancillary infrastructure at the Darley Road motorway operations complex (MOC1) and Campbell Road motorway operations complex (MOC5)
- These works are anticipated to commence in 2018 with the mainline tunnel opening to traffic in 2022.

Stage 2² as described in the EIS, included:

- Construction of the Rozelle interchange and Iron Cove Link including connection to the stub tunnels at the Inner West subsurface interchange, connection to the surface road network at Lilyfield and Rozelle, and construction of tunnels, ramps and associated infrastructure as part of the Rozelle interchange to provide connections to the proposed future Western Harbour Tunnel and Beaches Link project. Ancillary infrastructure will be provided at Rozelle West motorway operations complex (MOC2), Rozelle East motorway operations complex (MOC3) and Iron Cove Link motorway operations complex (MOC4)
- Stage 2 works are expected to commence in 2019 with these components of the project opening to traffic in 2023.

The M4-M5 Link project is part of the WestConnex program of works 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 and through local communities.

A more comprehensive overview of the M4-M5 Link project, as well as other aspects of the WestConnex program of works, is provided within the EIS and the Submissions and Preferred Infrastructure Report (SPIR).

The proposed modification relates to Stage 1 of the project and principally involves removal of the Darley Road civil and tunnel site and changes to the arrangement of construction sites at Haberfield and Ashfield. In addition, the modification would also relocate the operational water treatment plant from proposed Darley Road motorway operations complex to the Campbell Road motorway operations complex at the St Peters interchange.

A1.3 Proposed modification

The EIS for the project described and assessed 12 construction ancillary facilities. Part D of the SPIR described and assessed an additional construction ancillary facility, the White Bay civil site (C11). Section 6.5.1 of the EIS stated that the number, location and layout of construction ancillary facilities would be finalised as part of detailed construction planning for the project.

Within the Haberfield and Ashfield area, the EIS described and assessed two options for construction ancillary facilities (Option A and Option B as shown in **Table A-1**).

¹ M4-M5 Link Stage 1 (the mainline tunnel) is also commonly referred to as Stage 3A of the WestConnex program of works

² M4-M5 Link Stage 2 (the Rozelle interchange and Iron Cove Link) is also commonly referred to as Stage 3B of the WestConnex program of works

Table A-1 Possible construction ancillary facility combinations at Haberfield and Ashfield assessed in the EIS

Option A	Option B
Wattle Street civil and tunnel site (C1a)	Parramatta Road West civil and tunnel site (C1b)
Haberfield civil and tunnel site (C2a)	Haberfield civil site (C2b)
Northcote Street civil site (C3a)	Parramatta Road East civil site (C3b)

Section C6.1.3 of the SPIR clarified 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 and Ashfield.

Condition of approval C19 provides that only one of 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 Interim Construction Noise Guideline (NSW DECC, 2009) (ICNG).

Construction design and planning for the project has progressed since the assessment contained in the EIS and SPIR and a review of the concept design for the approved project has occurred. As a result, following ongoing construction design and planning, the proponent has further optimised the construction site arrangements assessed in the EIS and SPIR to reduce community impacts and to decrease the overall number of construction sites required for Stage 1 of the project.

The proposed modification relates to Stage 1 of the approved project. The following points provide an overview of the proposed modification:

- The Northcote Street civil site (C3a) would become a civil and tunnel site. This would result in 24 hours, seven days a week tunnelling works being carried out from this location within an existing acoustic shed. The Northcote Street site is currently being used for tunnelling as part of the M4 East project. A construction access tunnel is to be provided from the Northcote Street site that utilises part of the existing access tunnel for the M4 East project. Proposed spoil haulage routes to and from this site are identified in the Modification report. Relevant conditions of the project approval would apply to the use of this site for tunnelling and civil works to ensure potential impacts are managed consistently with the project approval
- The Parramatta Road West and Parramatta Road East civil sites (C1b and C3b) would be used as civil sites in accordance with the conditions of approval C19 and other conditions of the project approval. The sites would be used for site offices, light and heavy vehicle car parking, shuttle bus services, workshop and storage of equipment, materials and construction machinery. Both sites would operate 24 hours a day, 7 days a week in accordance with the conditions of the project approval. No tunnelling, tunnel spoil stockpiling and handling or tunnel spoil haulage would occur at these sites
- A temporary pedestrian walkway would be constructed above Parramatta Road to connect the Parramatta Road East and Parramatta Road West civil 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 pedestrian walkway would be demobilised upon completion of the construction phase of the project
- Removal of the Darley Road civil and tunnel site (C4) from the project. No construction activities or permanent operational infrastructure would be provided at this location. The EIS provided for construction spoil to be removed from the Darley Road site. This spoil would now be removed from other tunnelling sites
- The relocation of the 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.

For the proposed modification the indicative construction program for the mainline tunnels would extend through until Q1 2023.

The Modification report provides a detailed description of the proposed modification in Chapter 4 (Proposed modification) and an environmental assessment of potential impacts associated with the proposed modification in Chapter 6 (Environmental assessment) of the Modification report.

The Modification report identified that impact associated with proposed modification could generally be accommodated by the existing environmental management measures provided in the EIS and SPIR. An additional environmental management measure was recommended in relation to the visual impacts associated with the relocation of the operational water treatment plant to St Peters. Some environmental management measures were amended or deleted as a result of the removal of the Darley Road civil and tunnel site from the project.

Changes to a number of the conditions of approval were proposed to accommodate the proposed modification as described in Chapter 7 (Conditions of approval) of the Modification report. The proposed changes would provide certainty regarding the arrangement of construction ancillary facility sites at Haberfield and Ashfield and the removal of the Darley Road site at Leichhardt. All other conditions of approval would continue to apply to the project.

A1.4 Need for the proposed modification

Since approval was granted for the M4-M5 Link, a contractor has been appointed to construct Stage 1 of the approved project on behalf of the proponent, Roads and Maritime.

Construction design and planning has progressed since the assessment contained in the EIS and SPIR and a review of the concept design for the approved project has occurred. As a result, the proponent has further optimised the construction site arrangements assessed in the EIS and SPIR to reduce environmental and community impacts and to decrease the overall number of construction sites required for the project.

Not all of the changes proposed can be accommodated within the existing project approval. As such it is necessary to seek a modification to the project approval in accordance with Section 5.25 of the EP&A Act.

A1.5 Statutory context

The project was declared as State Significant Infrastructure (SSI) and Critical State Significant Infrastructure (CSSI) and was therefore assessed and approved under Part 5 of the EP&A Act.

Roads and Maritime as the proponent for the project, is proposing to modify project approval SSI 7485 under Section 5.25 of the EP&A Act. Section 5.25(2) of the EP&A Act states that “*the proponent may request the Minister to modify the Minister’s 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 under this Division*”.

Section 5.25(3) states that “*the request for the Minister’s approval is to be lodged with the Planning Secretary. The Planning Secretary may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister*”. Section 5.25(4) states that “*the Minister may modify the approval (with or without conditions) or disapprove of the modification*”.

The Modification report was prepared in accordance with the Environmental Assessment Requirements (EARs) developed for the modification which are detailed in Appendix A (Environmental Assessment Requirements) of the Modification report. The EARs were developed in consultation with DPE.

A1.6 Purpose of this document

A Modification report (dated September 2018) for the proposed modification was prepared in accordance with section 5.25 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). The Modification report provided an environmental assessment and provided full details of the proposed changes to the approved project as part of the modification.

During the public exhibition of the Modification report, submissions were received by the Department of Planning and Environment (DPE). The Secretary of the DPE provided copies of the submissions to Roads and Maritime. This Response to submissions report has been prepared to respond to these submissions.

The Response to submissions report has been provided to DPE for review and assessment. After DPE completes its assessment, a draft Environmental Assessment Report will be prepared for the Secretary of DPE, which may include additional recommended conditions of approval. The assessment report will then be provided to the NSW Minister for Planning, to determine the modification.

A copy of this Response to submissions report has been published by DPE on the DPE Major Projects website. The NSW Minister for Planning's determination, including any conditions of approval (if relevant) and the Secretary's report, will be published on DPE's website following determination.

This Response to submissions report has the following structure:

- **Part A** Introduction and overview of consultation and submissions received
- **Part B** Response to stakeholder submissions
- **Part C** Response to community submissions
- **Part D** Environmental management measures, conditions of approval and conclusion
- **Appendix A** Submitter identification number reference table.

A2 Community and stakeholder involvement

The proposed modification relates to Stage 1 of the M4-M5 Link project (the project) that is a component of the WestConnex program of works. Consultation with the community and stakeholders has occurred during the preparation of the Modification report and during public exhibition of the modification as described in the sections below.

Significant consultation with the community and stakeholders has taken place in relation to the wider WestConnex program of works as well as the M4-M5 Link project itself as described in section 5.3 of the Modification report.

A2.1 Consultation during the preparation of the modification report

For the proposed modification, a focused approach was taken to community and stakeholder involvement. Section 5.4 of the Modification report outlines the consultation carried out for the proposed modification.

The proposed modification was first communicated via a media release to the community and stakeholders on 28 June 2018. Since then, Roads and Maritime has engaged and consulted with the community and stakeholders. Various methods and tools have been utilised during this engagement. Section 5.4.2 of the Modification report provides a summary of the key consultation activities and consultation tools used.

The consultation activities and consultation tools used include:

- Media releases issued to Sydney metro news organisations
- M4-M5 Link Community Update Brochure provided via letterbox drop and uploaded to the WestConnex website (www.westconnex.com.au)
- M4-M5 Link Community Update email sent to all registered stakeholders
- WestConnex Community Reference Group meetings attended by various stakeholders with updates provided on the project
- Door Knocking of over 400 stakeholders in the Ashfield, Haberfield and Leichhardt area who could potentially be impacted by the proposed changes
- Door knocking of around 200 stakeholders along the proposed Northcote Street haulage routes
- Meetings and briefings provided to local, State and Commonwealth government agencies, elected representatives and other industry and other stakeholders.

The Modification report was placed on public exhibition for 14 days from 12 September 2018. During this period, consultation activities were carried out to provide community and stakeholders with an opportunity to find out detailed information about the proposed modification.

A2.2 Consultation during the public exhibition of the modification

The consultation activities that occurred during the public exhibition of the modification included:

- Provision of a 'Community Guide to the M4-M5 Link modification' factsheet to residents, businesses and other stakeholders that could be potentially impacted by the proposed modification. This factsheet was distributed at the commencement of the public exhibition of the modification. It outlined how to make a submission and focused on the potential impacts related to the modification. It was issued to residents, businesses and other stakeholders located close to the Northcote Street civil and tunnel site and proposed haulage routes, the Parramatta Road West and Parramatta Road East civil sites and the Campbell Road motorway operations complex at St Peters where the relocated operational water treatment plant is proposed
- Doorknocking potentially impacted residents, businesses and other stakeholders to explain the proposed modification and gather any feedback

- Sending emails directly to registered stakeholders, including residents, landowners, stakeholders, businesses and community groups
- Providing webpage updates about the modification, which were published on www.westconnex.com.au and included information on how to make a submission.

All feedback was collated and has been presented in this Response to submissions report.

A2.3 Consultation during the preparation of the Response to submissions report

After public exhibition of the Modification report and during the preparation of this Response to submissions report, consultation has been carried out with the community through meetings with the WestConnex Community Reference Groups. These have included:

- WestConnex Community Reference Group – Western on 19 September 2018
- WestConnex Community Reference Group – Central on 2 October 2018.

The meetings were attended by representatives from Roads and Maritime, DPE, Inner West Council, NSW Environment Protection Authority (EPA) and the community. The meetings provided the opportunity for the community to raise queries or concerns regarding the proposed modification.

Key concerns and queries raised in the Community Reference Group meetings included:

- Queries about avenues for community feedback on the proposed modification
- Queries about the impact of the removal of the Darley Road tunnelling site on other tunnelling sites
- Queries regarding new or amended spoil haulage routes and concerns regarding potential impacts associated with spoil haulage routes
- Concerns regarding pedestrian safety at the Parramatta Road West and Parramatta Road East civil sites
- Concerns regarding car parking impacts at Haberfield and Ashfield.

These concerns and queries have been raised in the community submissions for the Modification report and a response is provided in **Part C** (Response to community submissions).

A2.4 Future consultation

In addition to the consultation activities described below, three meetings are scheduled with the WestConnex Community Reference Groups which will:

- Provide an overview of submissions raised during public exhibition
- Provide an overview of how issues raised during public exhibition have been addressed
- Outline next steps regarding the determination of the proposed modification.

The meetings would take place as follows (on or around these dates):

- WestConnex Community Reference Group – Southern on 13 November 2018
- WestConnex Community Reference Group – Western on 27 November 2018
- WestConnex Community Reference Group – Central on 4 December 2018.

Other future consultation activities for the proposed modification would be consistent with the consultation activities described in the EIS, SPIR and Chapter 5 (Consultation) of the Modification report and as required by the conditions of approval for the approved project.

A2.4.1 Consultation during construction of the project

As the proposed modification relates primarily to construction activities for the project, communication and consultation with stakeholders and the community during construction would focus on providing updates on construction activities and program, responding to enquiries and concerns in a timely manner and minimising potential impacts where possible. During construction, a dedicated community relations team will deliver:

- A detailed Community Communication Strategy (identifying relevant stakeholders, procedures for distributing information and receiving/responding to feedback, and procedures for resolving stakeholder and community complaints during construction and operation) as required by condition of approval B1
- Notification letters and phone calls to residents and businesses directly affected by construction works, changes to traffic arrangements and out-of-hours works
- Face-to-face meetings with landowners as needed
- Regular community updates on the progress of the construction program
- Regular updates to the WestConnex website (www.westconnex.com.au)
- Media releases and project advertising in local and metropolitan English language and non-English language newspapers to provide contact information for the project team
- Site signage around construction ancillary facilities
- 24-hour, toll-free project information and complaints line, a dedicated email address and postal address.

A Complaints Management System will be in place for the duration of construction as required by condition of approval B8. This system will include the recording of complaints and how the complaint was addressed (within a Complaints Register). The system, which would be consistent with ISO 10002:2014 Guidelines for complaint management in organisations, would be developed for the M4-M5 Link project and implemented prior to the commencement of construction. The system will be maintained during construction by the relevant contractors and will be made available to the Secretary of DPE.

A Community Complaints Mediator will oversee the Complaints Management System and will follow-up on any complaint where the public is not satisfied with the response as required by condition of approval B13.

A Public Liaison Officer for construction ancillary facilities and for utility works will be appointed as required by condition of approval B6.

A website providing information in relation to the project has been established (www.westconnex.com.au/M4-M5LinkTunnels) and will be maintained for the duration of works, and for a minimum of 24 months following the completion of construction of the project as required by condition of approval B17.

A3 Submissions received

A3.1 Submitters

The modification public exhibition period of 14 calendar days commenced on 12 September and ended on 26 September 2018. Submissions in response to the Modification report were received and accepted by DPE during the public exhibition period via:

- Electronic submission (online) – www.majorprojects.planning.nsw.gov.au
- Email – plan_comment@planning.nsw.gov.au
- Post – Major Projects Assessment, NSW Department of Planning and Environment, GPO Box 39, Sydney, NSW, 2001.

A total of 37 submissions from 36 submitters were received in response to the Modification report. Of that total, 6 submissions were received from key stakeholders including NSW Government agencies and local councils and 31 community submissions were received from 30 community submitters. The types of submitters have been summarised in **Table A-2**.

Table A-2 Summary of submitters

Submitter type	Total submitters
Community	30
NSW Government agencies	3
Local councils	3
Total	36

The following key stakeholders provided a submission in response to the Modification report:

- NSW Environment Protection Authority
- NSW Health
- NSW Office of Environment and Heritage – Heritage Division as delegate of the Heritage Council of NSW
- City of Canada Bay Council
- City of Sydney Council
- Inner West Council.

The following key stakeholders reviewed the Modification report and noted that they had no comment on the proposed modification:

- NSW Department of Industry – Crown Lands
- NSW Department of Industry – Lands and Water
- NSW Office of Environment and Heritage Greater Sydney Branch
- Sydney Water.

A3.2 Overview of submissions and issues raised

Submissions from key stakeholders and the community raised the following key concerns regarding the proposed modification:

- Impacts related to the proposed construction site arrangement at Haberfield and Ashfield and the extended duration of construction impacts for this community which have already been subject to construction works associated with the M4 East project
- The use of the Northcote Street civil and tunnel site and the potential cumulative and consecutive noise and air quality impacts for receivers at Haberfield and Ashfield, which have already experienced impacts from the M4 East project in this area
- Potential traffic and traffic noise impacts associated with the use of the spoil haulage routes for the Northcote Street civil and tunnel site, with a focus on the potential impacts associated with spoil haulage Route A
- The ongoing use of Reg Coady Reserve for the 'G-loop' and associated noise and amenity impacts associated with the establishment, ongoing use and demobilisation of the 'G-loop' during construction
- Potential impacts associated with the use of the Parramatta Road West and Parramatta Road East civil sites for construction activities 24 hours per day, seven days per week, including dust and noise impacts
- Light and heavy vehicle access arrangements at the Parramatta Road West and Parramatta Road East civil sites and potential impacts to traffic and pedestrians including school children
- Impacts associated with the extension of the tunnelling component of the overall construction program by around six months as a result of the removal of the Darley Road civil and tunnel site from the project
- Impacts associated with the proposed operational water treatment plant at the St Peters interchange including:
 - Lack of design detail
 - Capacity of existing drainage infrastructure to cater for discharge flows from the water treatment plant
 - Water quality of treated discharge
 - Impacts of discharge flows on contaminated sediments within, and the heritage fabric of, Alexandra Canal
 - Drainage and flooding impacts
 - Impacts to proposed open space for the New M5 project.

A response to the key issues raised by stakeholders is detailed in **Part B** (Response to stakeholder submissions) and **Part C** (Response to community submissions).

A4 Clarifications

A4.1 Clarifications

A4.1.1 Figure 4-3 in Appendix B (Traffic and transport report) of the Modification report

This clarification has been made in response to an issue raised by Inner West Council which is discussed in **section B6.9.8**.

Figure 4-3 in Appendix B (Traffic and transport report) of the Modification report provides a swept path analysis at the Dobroyd Parade / Waratah Street intersection for a spoil haulage vehicle (truck and dog) exiting the G-loop and turning right onto Dobroyd Parade. The figure also showed a swept path for a heavy vehicle exiting Waratah Street and turning right onto Dobroyd Parade.

The truck shown exiting Waratah Street to Dobroyd was included to demonstrate the interaction between a heavy vehicle not related to the project turning right from Waratah Street and a spoil haulage vehicle for the project turning right out of the G-loop. The heavy vehicle was incorrectly shown as a project truck and dog vehicle when it should have been shown as a non-project vehicle.

There are no spoil haulage vehicle movements proposed into or out of Waratah Street as part of the proposed modification.

Figure 4-3 in Appendix B (Traffic and transport report) of the Modification report has been amended in **Figure A-1**.

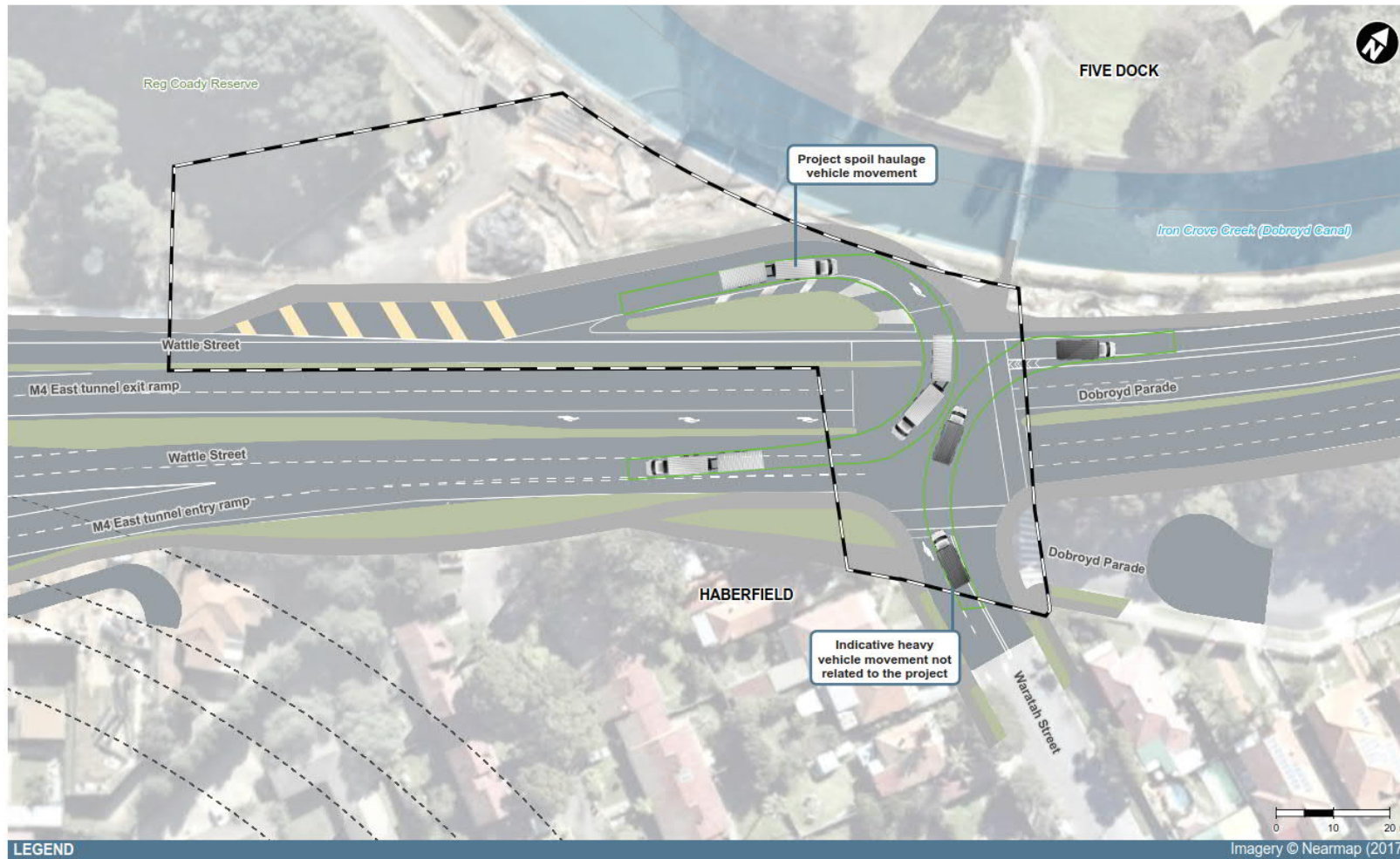


Figure A-1 Swept path analysis at the Dobroyd Parade / Waratah Street intersection

A4.1.2 Traffic mid-block assessment on Fairlight Street, Five Dock

In Appendix B (Traffic and transport report) of the Modification report, the assessment assumed that there were two lanes of traffic available during the AM peak on Fairlight Street at Five Dock. It has since been noted that on street parking is permitted during the AM peak in the westbound lane along this section of Fairlight Street. As a result, the theoretical mid-block capacity is reduced from 1800 Passenger Car Units (PUC) to 900 PCU in the AM peak.

The assessment of mid-block and intersection level of service for Fairlight Street during the AM peak in Appendix B (Traffic and transport report) of the Modification report has therefore been updated accordingly. The results of the updated mid-block assessment are provided in **Table A-3** (the change is highlighted in bold).

Table A-3 Revised 2021 AM peak hour mid-block operational performance summary¹

Location and direction		Mid-block capacity	Without construction			With construction (Modification)		
			Flow	V/C ²	LoS	Flow	V/C	LoS
Ramsay Rd, south of Fairlight St	NB	1800	690	0.38	B	710	0.39	B
	SB	1800	770	0.43	C	770	0.43	C
Fairlight St, west of Ramsay Rd	EB	1800	790	0.44	C	790	0.44	C
	WB	900	700	0.78	E	720	0.80	E
Great North Rd, south of Fairlight St	NB	900	540	0.60	D	540	0.60	D
	SB	900	550	0.61	D	570	0.63	D

Notes:

1. Traffic volume rounded to nearest 10.
2. Volume over capacity ratio.

Table A-4 provides a comparison of the mid-block performance between the original and revised assessment.

Table A-4 Comparison of 2021 AM peak hour mid-block operational performance summary in the original and revised assessment¹

Location and direction		Mid-block capacity	Without construction			With construction (Modification)		
			Flow	V/C ²	LoS	Flow	V/C	LoS
Original assessment								
Fairlight St, west of Ramsay Rd	WB	1800	700	0.39	B	720	0.40	B
Revised assessment								
Fairlight St, west of Ramsay Rd	WB	900	700	0.78	E	720	0.80	E

Notes:

1. Traffic volume rounded to nearest 10.
2. Volume over capacity ratio.

For AM peak hour mid-block performance, the revised assessment includes the following changes:

- For the without construction scenario, the volume to capacity ratio changes from 0.39 to 0.78 and from level of service changes from (LoS) B to a LoS E
- For the with construction scenario, the volume to capacity ratio changes from 0.40 to 0.80 and from level of service changes from (LoS) C to a LoS E.

Potential impacts to the mid-block LoS for Fairlight Street, west of Ramsay Road westbound as a result of the proposed modification would therefore be minor (change in V/C ratio of 0.78 to 0.80).

The results of the updated intersection assessment are provided in **Table A-5** (the changes are highlighted in bold).

Table A-5 2021 AM peak hour intersection operational performance summary¹

Cluster	Intersection	Without construction		With construction (Modification)	
		Volume (PCU)	LoS	Volume (PCU)	LoS
2	Ramsay Rd Fairlight St	2,070	D	2,090	D
	Great North Rd Queens Rd Fairlight St	2,840	E	2,860	E
	Great North Rd Ramsay Rd First Ave	1,880	F	1,880	F
	Queens Rd Harris St	2,460	C	2,460	C
	Great North Rd Lyons Rd	3,530	F	3,530	F

Notes:

1. Traffic volume rounded to nearest 10.

Table A-6 provides a comparison of the intersection operational performance between the original and revised assessment.

Table A-6 Comparison of 2021 AM intersection operational performance summary in the original and revised assessment¹

Intersection	Without construction		With construction (Modification)	
	Volume (PCU)	LoS	Volume (PCU)	LoS
Original assessment				
Ramsay Rd Fairlight St	2,070	D	2,090	D
Great North Rd Queens Rd Fairlight St	2,840	E	2,860	E
Revised assessment				
Ramsay Rd Fairlight St	2,070	D	2,090	D
Great North Rd Queens Rd Fairlight St	2,840	E	2,860	E

For AM peak hour intersection performance, the revised assessment would not change the outcome of the assessment in the proposed modification in Table 4-14 in Appendix B (Traffic and transport report) of the Modification report. The LoS at both intersections along this section of Fairlight Street (LoS D and E) do not change.

A4.1.3 Glossary of terms and abbreviations in Appendix B (Traffic and transport report) of the Modification report

In the Glossary of terms and abbreviation in Appendix A (Traffic and transport report) of the Modification report, the reference for the Haberfield civil site mentions that *This modification proposes to remove this construction ancillary facility from the project.*

This is not correct. As detailed in Table 1-1 of the Traffic and transport report (and Table 1-2 of the Modification report) there is no change proposed to the use of the Haberfield civil site in the modification. The proposed use and footprint of the Haberfield civil site is as detailed in sections B11.6.8 and C6.1.3 of the SPIR. The main purpose of the Haberfield civil site is to support fitout of a section of the Parramatta Road ventilation facility (which is being built by the M4 East project).

The proposed construction footprint and boundaries of the construction ancillary facilities at Haberfield/Ashfield is as shown on Figure 4-1 of the Modification report.

A4.1.4 Receiver at 30 Page Avenue, Ashfield

In Figure 6-3 of the Modification report and in Figure 3-1 and Figure 3-2 of Appendix C (Noise and vibration report) of the Modification report, the property at 30 Page Avenue, Ashfield is identified as a commercial receiver.

This is not correct. The property at 30 Page Avenue is a residential receiver (two level apartment block). The property is located on the opposite (western) side of Parramatta Road to the Northcote Street civil and tunnel site at a distance of around 50 metres. The existing noise environment would be dominated by road traffic noise from six lanes of traffic on Parramatta Road. Notwithstanding, the property is diagonally opposite the driveway entry to the acoustic shed for the Northcote Street civil and tunnel site.

The property at 30 Page Avenue is located within Noise Catchment Area (NCA) 01 as described in Appendix C (Noise and vibration report) of the Modification report.

A review of the properties eligible for at-property acoustic treatments for construction fatigue at Haberfield and Ashfield under condition of approval E88 is included in **section B1.2** of this report.

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B Part B - Response to key stakeholder submissions

The following key stakeholders provided a submission in response to the Modification report and a response to each submission is provided in this chapter:

- NSW Environment Protection Authority (EPA) (refer to **section B1**)
- NSW Health (refer to **section B2**)
- NSW Office of Environment and Heritage – Heritage Division as delegate of the Heritage Council of NSW (refer to **section B3**)
- City of Canada Bay Council (refer to **section B4**)
- City of Sydney Council (refer to **section B5**)
- Inner West Council (refer to **section B6**).

The following key stakeholders reviewed the Modification report and provided a submission noting that they had no comment on the proposed modification:

- NSW Department of Industry – Crown Lands
- NSW Department of Industry – Lands and Water
- NSW Office of Environment and Heritage Greater Sydney Branch
- Sydney Water.

B1 NSW Environment Protection Authority

B1.1 Construction noise

B1.1.1 Cumulative construction noise impacts with the M4 East project

Issue description

As noted in the EPA's previous submissions in relation to the M4-M5 Link, the EPA is concerned about cumulative construction noise impacts on noise sensitive receivers from this project and the M4 East, particularly night time noise impacts on residences.

Response

Potential construction noise impacts associated with the proposed modification are assessed in Chapter 5 of Appendix C (Noise and vibration report) of the Modification report.

There are three distinct types of 'cumulative' construction noise impacts that are referred to by submitters in relation to the proposed modification:

- Consecutive construction noise impacts, where construction noise impacts for the proposed modification would be experienced by receivers that have already been subject to noise impacts from a separate project (such as the M4 East project). This is also referred to as construction fatigue
- Construction noise impacts from overlapping works, where construction works for the proposed modification and a separate project(s) (such as the M4 East project) are undertaken in a particular area at the same time
- Construction noise impacts from multiple construction sites in a particular area which are in relatively close proximity to each other.

The potential for the project to result in cumulative noise impacts as described above is described in the following sections.

Consecutive construction noise impacts and construction fatigue

Consecutive construction impacts are described in detail in section 5.1.8 in Appendix C (Noise and vibration report) of the Modification report.

When evaluating the extent of noise impacts within the Haberfield area, it is noted that this area would likely be subject to potential construction impacts from works associated with other infrastructure projects, including the approved M4 East project currently under construction.

Appendix C (Noise and vibration report) of the Modification report considers the impacts associated with the use of the Northcote Street civil and tunnel site for the proposed modification in isolation and the potential impacts from consecutive projects (such as the M4 East project) that may be experienced over a longer duration by receivers near this site.

Many of the highly noise intrusive construction works associated with the Northcote Street civil and tunnel site have already occurred as part of the M4 East project (predominantly building demolition, bulk earthworks, construction of the acoustic shed and other construction activities outside of the acoustic shed). By re-using the existing infrastructure on the Northcote Street civil and tunnel site the potential noise impacts associated with the establishment of a new acoustic shed at a different tunnelling site are avoided and the highly noise intrusive construction works at the Northcote Street civil and tunnel site would be reduced by comparison to the M4 East project.

Nonetheless the continued use of the Northcote Street site for tunnelling activities within an acoustic shed as proposed by the modification is predicted to result in noise and vibration impacts for similar receivers in the surrounding area over a longer construction duration. This may result in construction fatigue impacts for some receivers.

Condition of approval E88 provides for the mitigation of construction fatigue and amenity impacts for receivers that have been impacted by high noise generating works associated with the M4-M5 Link project that have also been subject to noise impacts during the construction of the M4 East project. In order to provide a noise benefit to receivers who have been impacted by consecutive construction works, condition of approval E88 requires that at the receiver, noise mitigation in the form of at-property treatment must be offered to the land owners for habitable living spaces, or other mitigation or management measures as agreed by the occupier, to residential properties identified in Appendix E of the conditions of approval (refer to **section B1.2.1** for further information).

Condition of approval E89 provides that a Noise Insulation Program must be prepared and implemented for the duration of project works for receivers to which the requirements of conditions of approval E88 apply. The Program must be incorporated into the Construction Noise and Vibration Construction Environmental Management Plan (CEMP) Sub-plan.

In accordance with condition of approval E90, receivers which are eligible for receiving treatment under the Noise Insulation Program required under Condition E89 must have treatment implemented within six months following the commencement of construction which would affect the receiver. The implementation of the Noise Insulation Program must be prioritised based on the degree and duration of exceedance with high priority exceedances undertaken within three (3) months of the commencement of construction.

The Noise and Vibration Management CEMP Sub-Plan that will be prepared for the project will consider where longer term impacts are apparent and provide consideration of reasonable and feasible management measures to minimise impacts on the community. These measures would be consistent with the management and mitigation measures set out in the M4-M5 Link Environmental Impact Statement (EIS), Submissions and Preferred Infrastructure Report (SPIR) and the conditions of approval for the project, including condition of approval E88. Refer to **section B2.3.1** for further detail regarding relevant management measures and conditions of approval to manage construction noise and vibration impacts.

Condition of approval E67 also requires that all noise and vibration assessment, management and mitigation required by the project approval must consider the cumulative noise impacts of other approved Critical State Significant Infrastructure (CSSI) and State Significant Infrastructure (SSI) projects.

The conditions of approval provide a range of measures to manage potential noise impacts, including night time noise impacts. Relevant conditions include those relating to out of hours works scheduling and the identification of appropriate respite periods including for utility works (conditions of approval, E75, E76 and E78) and the restriction of highly noise intensive works (condition of approval E72). These measures would be implemented in accordance with Environment Protection Licence (EPL) 21149 which has been approved for the construction of the project.

Construction noise impacts from overlapping works

The potential for construction noise impacts from overlapping works of the proposed modification and the M4 East project is described below:

- At the Northcote Street civil and tunnel site, works for the proposed modification cannot commence until works for the M4 East project are complete in this location. There is therefore no potential for impacts associated with overlapping works
- At the Parramatta Road West and Parramatta Road East civil sites, works for the proposed modification would overlap with works for the M4 East project for around nine months. During this overlap period the M4 East project works are likely to be completion of the M4 East tunnel portals and ramps, road widening and landscaping on Parramatta Road and completion of the ventilation facility on the corner of Parramatta Road and Wattle Street. Works for the proposed modification would be focused on site establishment works such as building demolition, utility works and the establishment of the pedestrian walkway.

The potential for cumulative construction noise impacts is therefore limited to overlapping works for the Parramatta Road West and Parramatta Road East civil sites as part of the proposed modification and works for the M4 East. Given the nature of the proposed works which remain to be completed for the M4 East project and that no tunnelling works are proposed from the Parramatta Road West civil site for the proposed modification, potential cumulative noise impacts from overlapping works are considered to be generally consistent with or reduced by comparison to those outlined in Chapter 26 (Cumulative impacts) of the EIS.

Construction noise impacts from multiple construction sites

As described in section 5.5 of Appendix C (Noise and vibration report) of the Modification report, noise impacts associated with the operation of multiple construction ancillary facilities in proximity to each other such as the Northcote Street and Wattle Street civil and tunnel sites or the Parramatta Road West and Parramatta Road East civil sites are considered unlikely to occur given the following:

- The noise impacts at each site would be localised to receivers in close proximity to each construction site
- The separation distances and noise attenuation provided between the sites
- The location of the sites adjacent to heavily trafficked major roads such as Wattle Street and Parramatta Road which dominate the ambient noise environment.

As with all construction works associated with the project, the construction ancillary facilities around Haberfield and Ashfield will operate in accordance with the project conditions of approval.

B1.2 At-property acoustic treatments

B1.2.1 Properties eligible for at-property acoustic treatments at Haberfield and Ashfield

Issue description

The EPA notes that condition E88 of the M4-M5 Link infrastructure approval requires at-property noise mitigation under specified circumstances to properties identified in Appendix E of the approval, located in the vicinity of the Northcote St site [Northcote Street civil and tunnel site].

While the EPA notes that the Modification report (section 5.1.8) states that the proposed modification does not result in a change to the properties identified within Appendix E, as the footprint assessed in the EIS has not been modified, it is unclear whether there will be a significant increase in the level of night noise impacts from tunnelling or tunnel support activities on residences or the duration of impacts. The EPA would appreciate the opportunity to discuss with DPE the potential need to expand the number of properties to which condition E88 applies, to ensure that all properties with significant and long term construction impacts receive an early offer of at-property treatments. The EPA does not consider it appropriate for this decision to be deferred to the Construction Noise and Vibration Management Sub-Plan, as noted in the Modification report.

Response

Condition of approval E88 provides for the mitigation of construction fatigue and amenity impacts at select receivers within Haberfield and Ashfield. Condition of approval E88 identifies that at receiver noise mitigation in the form of at-property treatment must be offered to the land owner for habitable living spaces, or other mitigation or management measures as agreed by the occupier, to residential properties identified in Appendix E of the conditions of approval. Mitigation must be offered prior to the commencement of construction and installed within six months following the commencement of construction works.

In accordance with condition of approval E89, a Noise Insulation Program will be prepared and implemented for the duration of the construction of the project for the receivers to which the requirements of E88 apply. The Noise Insulation Program would include measures for the monitoring and review of the effectiveness of the program.

The purpose of condition of approval E88 is to provide mitigation for receivers affected by longer term construction works within Haberfield and Ashfield.

The properties identified in Appendix E of the conditions of approval were identified as receivers that would be impacted by high noise generating works associated with the M4-M5 Link project that have also been subject to noise impacts during the construction of the M4 East project. The high noise generating works include construction activities such as demolition works or the use of saw cutting or rock breakers associated with surface works, as opposed to tunnelling activities within an acoustic shed. As identified in Table 5-4 of Appendix C (Noise and vibration report) of the Modification report, tunnelling activities at the Northcote Street civil and tunnel site would be carried out within an acoustic shed and are predicted to result in minor to moderate impacts at surrounding receivers. Tunnelling activities within an acoustic shed are not considered to be high noise generating works.

Other properties on Wolseley Street, Northcote Street, Parramatta Road, Wattle Street, Page Avenue and Earle Avenue that have experienced construction noise impacts associated with the M4 East project were reviewed to determine the predicted change in noise impacts associated with use of the Northcote Street civil and tunnel site. The review was carried out to ensure a consistent approach to the application of condition of approval E88 in the vicinity of the Northcote Street civil and tunnel site. No other properties in addition to those identified in Appendix E of the conditions of approval were predicted to experience high noise generating works and therefore no additional properties were identified as requiring at-property treatments in accordance with condition of approval E88.

There are a number of conditions of approval to manage potential construction noise impacts as summarised in **section B2.3.1** and a range of environmental management measures are provided in Part E of the SPIR to manage potential impacts associated with tunnelling.

The proposed modification primarily relates to changes to tunnelling activities for the approved project. Demolition activities and surface works at Haberfield and Ashfield would be generally consistent with the construction works described in the EIS and SPIR and therefore the properties identified in Appendix E of the conditions approval do not require amendment.

The use of the Northcote Street civil and tunnel site for the proposed modification would enable existing M4 East infrastructure at the site such as the acoustic shed, driveways, water treatment plant, site offices and other structures to be re-used thereby reducing potential high noise generating works associated with site establishment activities. For the proposed modification, site establishment activities would not be required at the Darley Road site, and site establishment activities would be reduced compared to the approved project at the Parramatta Road West civil site as an acoustic shed would not be required to be constructed.

Changes to surface works for the proposed modification at Haberfield and Ashfield are limited to the establishment and decommissioning of the G-loop. Works for the establishment and decommissioning of the 'G-loop' would be carried out over a short duration (around two weeks for establishment and around eight weeks for decommissioning) and some of these works would be carried out during standard hours.

A construction road traffic noise assessment was carried out for the ongoing use of the G-loop as part of an assessment of the proposed spoil haulage routes (refer to Appendix C (Noise and vibration report) of the Modification report). The assessment determined that the predicted increase in the average noise predicted noise from construction traffic is below the 2 dBA increase threshold.

An assessment of the use of the 'G-loop' was conducted as part of the WestConnex M4 East CNVIS for the Northcote Tunnel Support Site (Renzo Tonin 2016) and, as a result, two properties (83 and 85 Dobroyd Parade) have been provided at-property treatment. Table 4-2 of the Modification report identified indicative construction vehicle numbers of around eight heavy vehicles arriving and departing in the AM and PM peak hours at the Northcote Street civil and tunnel site, which is less than the approved 20 heavy vehicle movements per hour from this site for the M4 East project (Roads and Maritime, 2015). Therefore potential traffic noise impacts would be comparable to, or reduced compared to the M4 East project. Receivers at the G-loop would not be highly noise affected for the proposed modification and therefore do not require further treatment under condition of approval E88.

We note the EPA's comment in requesting further discussions between EPA and DPE regarding condition of approval E88.

B1.3 Spoil haulage Route A

B1.3.1 Traffic congestion and traffic noise impacts

Issue description

To minimise noise impacts on residents, spoil trucks from the Northcote St site [Northcote Street civil and tunnel site] should preferably use the Wattle St and "G loop" route (Route B) and then the M4 East tunnel at all times. If this is not possible due to significant impacts on peak hour traffic flows on Wattle St/Dobroyd Parade from G loop operation, then use of Route A (Ramsay St/Fairlight St) could be considered at these times. The EPA considers that this route should not be used during evenings or night periods (ie 7pm to 7am).

Response

Spoil haulage routes

Two spoil haulage routes (Route A and Route B) are proposed to be used in association with the Northcote Street civil and tunnel site as described in section 4.2.4 of the Modification report. However, in response to feedback received from stakeholders during the consultation process it is proposed that Route A would generally only be used between 7am and 6pm Monday to Friday and 8am to 6pm on Saturdays, except in the following circumstances and in accordance with the relevant conditions of the project approval:

- During the early stages of construction until such time as the works to facilitate operation of the G-loop were completed and the G-loop was functional
- 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.

Once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. The majority of spoil haulage traffic movements are likely to be generated during standard construction hours. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, reduce impacts on the surface road network and to receivers near these surface roads

The restrictions suggested in the submission from the EPA regarding the use of Route A are considered to be generally consistent with the proposed modification, with the exception of the circumstances outlined above.

A spoil haulage protocol would be developed by the contractor in consultation with Roads and Maritime and the Transport for NSW Traffic Management Centre to manage spoil haulage movements on Routes A and B. The protocol would be documented in the Traffic and Transport and Access CEMP Sub-Plan.

The proposed spoil haulage routes are restricted to State roads that are controlled by Roads and Maritime and are heavily trafficked. In accordance with condition of approval E49, spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary.

The use of the M4 East tunnels (once operational) would generally be preferred for Route B spoil haulage, subject to the location of available spoil disposal sites and traffic conditions. The M4 East tunnels are anticipated to be operational at the end of Q1 2019.

Potential traffic and traffic noise impacts

A construction traffic assessment was undertaken for the construction ancillary facilities in the Haberfield and Ashfield area, including the proposed spoil haulage routes (refer to Appendix B (Traffic and transport report) of the Modification report). The assessment determined that there would be minimal impact on the mid-block roadway and intersection level of service through the Haberfield, Ashfield and Five Dock modelled road network for both Route A and Route B.

Table 4-2 of the Modification report identified indicative construction vehicle numbers of around eight heavy vehicles arriving and departing in the AM and PM peak hours at the Northcote Street civil and tunnel site, which is less than the approved 20 heavy vehicle movements per hour from this site for the M4 East project (Roads and Maritime, 2015). As required by condition of approval E49, spoil haulage vehicles would not be permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary.

A construction road traffic noise assessment was carried out for the two spoil haulage routes (refer to Appendix C (Noise and vibration report) of the Modification report) which is summarised **Table A-5**. The assessment determined that the predicted increase in average traffic noise from construction traffic is below the 2 dBA increase threshold (from the Road Noise Policy (DECCW 2011) (RNP)) for both spoil haulage routes.

Table B1 Construction road traffic noise assessment

Site	Vehicle type	Road	Predicted average traffic noise increase (dBA)	
			Daytime	Night time
Northcote Street civil and tunnel site	Light & heavy	Parramatta Rd	<0.5	<0.5
		Wattle St	<0.5	<0.5
		Ramsay St / Rd	<0.5	1.6
		Fairlight St	<0.5	1.7
		Great North Rd	<0.5	1.5

Route A would generally only be used between 7am and 6pm Monday to Friday and 8am to 6pm on Saturdays except in specific circumstances discussed above.

Once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. The majority of spoil haulage traffic movements are likely to be generated during standard construction hours.

The use of the M4 East tunnels (once operational) would generally be preferred for Route B spoil haulage, subject to the location of available spoil disposal sites and traffic conditions. The M4 East tunnels are anticipated to be operational at the end of Q1 2019.

B1.4 Operational water treatment plant at the St Peters interchange

B1.4.1 Potential for groundwater contamination

Issue description

RMS should consider whether the operational water treatment plant proposed to be relocated to the St Peters interchange site requires an environment protection licence under the Protection of the Environment Operations Act 1997 for contaminated groundwater treatment. Given the St Peters interchange site is a former landfill, there is potential for groundwater contamination in this area. RMS should note that the criteria for a contaminated groundwater treatment licence relates to the concentration of pollutants in the inflow to the treatment plant.

Response

The EPA's comment about the requirement for an EPL for the treatment of contaminated groundwater is noted. Roads and Maritime is committed to further discussions with EPA regarding the possible requirement for an EPL for contaminated groundwater treatment having regard to the results from the groundwater monitoring program for the project.

The EIS for the project described that an operational water treatment plant would be located at the Darley Road motorway operations complex. The removal of the Darley Road site from the project would result in the relocation of the operational water treatment plant to the Campbell Road motorway operations complex at the St Peters interchange.

The operational water treatment plant at the Campbell Road motorway operations complex would therefore treat the same groundwater inflows from the mainline tunnels that would have been treated at the Darley Road site including groundwater inflows from the area around the St Peters interchange associated with the former Alexandria Landfill.

The former Alexandria Landfill is subject to a Remediation Order issued by the EPA under the *Contaminated Land Management Act 1997* and has been subject to a landfill closure management plan as part of the New M5 project which has involved a number of remediation measures including ground capping and containment and the establishment of a leachate treatment system and gas venting system.

Groundwater monitoring has been carried out for the project as described in section 19.1.3 of the EIS and has continued over a period of around two years. Conditions of approval C12 and D11 require the implementation of construction and operational groundwater monitoring programs respectively. The results of this monitoring will provide information regarding the groundwater quality along the project corridor including in the area surrounding the former Alexandria Landfill.

In accordance with condition of approval E187, the operational water treatment plant discharge criteria would comply with the Australian and New Zealand Environment Conservation Council (ANZECC) (2000) 95 per cent species protection level and a 99 per cent protection level for contaminants that bioaccumulate, unless other discharge criteria are agreed in consultation with relevant stakeholders including the EPA, NSW Department of Primary Industries (DPI) Water and Sydney Water. Discharge criteria for iron during operation must comply with the ANZECC (2000) recreational water quality criteria. It is noted that this condition relates to discharge water quality and not the quality of groundwater inflows.

B2 NSW Health

B2.1 Construction fatigue

B2.1.1 Construction fatigue at Haberfield and Ashfield

Issue description

Extended impacts on residents sensitive to construction fatigue around Northcote Street Civil and Tunnelling Site (NSCT) are noted. The site will now be utilised for tunnelling and 24 hours/7 days a week operation for a further 4 years. The community in this general area have already been impacted by WestConnex construction, and as such should be considered as very sensitive receivers.

The associated impact of the continued 24 hours/7 days a week use of G-loop for another 4 more years has the potential for further impact on already fatigued local residents. In addition, the removal of the Darley Street Civil and Tunnelling Site (DSCT) means that total tunnelling time for the project will increase by a further 6 months.

Response

Potential consecutive construction noise impacts associated with the use of the Northcote Street civil and tunnel site are discussed in **section B1.1.1** and **section B1.2.1**.

Construction fatigue

Construction fatigue relates to receivers in a particular area that experience construction impacts from a number of projects over an extended period of time with few or no breaks between construction periods. Construction fatigue may include traffic and access disruptions, worker parking in local streets, noise and vibration impacts, air quality impacts, visual amenity impacts and social impacts from projects that have overlapping construction phases or are back to back.

Construction fatigue may be felt by residents, businesses and social infrastructure users around Haberfield near the Northcote Street civil and tunnel site, G-loop at Reg Coady Reserve and the Parramatta Road West and Parramatta Road East civil sites where extensive construction work associated with the M4 East project has already been undertaken on or in the immediate vicinity of these sites.

Where construction timeframes are consecutive or overlap with other project activities for longer durations of time, individuals and communities may experience effects on mental health through stress and anxiety.

Construction fatigue impacts are likely to be reduced for the proposed modification around the Parramatta Road West site given that no tunnelling, tunnel spoil stockpiling and handling or tunnel spoil haulage would occur at this site.

The proposed modification would increase the duration of potential environmental impacts for sensitive users near the Northcote Street civil and tunnel site and therefore would also increase construction fatigue impacts associated with the project. Key potential environmental impacts that would contribute to construction fatigue would include:

- Noise, including noise from 24 hour a day tunnelling (refer to **section B2.3** for further detail)
- Traffic impacts from the movement of construction heavy vehicles (refer to **section B4.1.1** for further detail)
- Impacts to on-street car parking from construction light vehicles (refer to **section B6.10.3** for further detail)
- Air quality impacts, including potential dust impacts from tunnelling activities (refer to **section B2.2** for further detail)
- Construction night lighting impacts from construction facilities
- Impacts to receivers on Dobroyd Parade near the G-loop from construction traffic headlights.

Potential construction fatigue impacts associated with the proposed modification would be managed through the implementation of the approved environmental management measures for the project as summarised in Part E of the SPIR and the conditions of approval for the project, including:

- Preparation of a Noise and Vibration CEMP Sub-plan to manage potential construction noise and vibration impacts
- At receiver noise mitigation as required by condition of approval E88 to address construction fatigue and amenity (refer to **section B1.2.1** for further information)
- Preparation of Traffic and Transport and Access CEMP Sub-Plan, and Construction Parking and Access Strategy (CPAS) to manage potential traffic, transport, access and car parking impacts during construction
- Preparation of a Air Quality Sub-Plan to manage air quality impacts, including minimising dust generation during construction.

The construction night lighting assessment in section 6.3.6 of the Modification report identified low night light impacts to residential receivers around the Northcote Street civil site. Lighting would largely be contained within the acoustic shed and by site hoarding along the construction site boundary. This would minimise light spill onto adjoining residential properties.

The construction night lighting assessment in section 6.4.6 of the Modification report identified moderate night light impacts to residential receivers around the Parramatta Road West and Parramatta Road East civil sites. Lighting would be contained by site hoarding along the construction site boundary which would minimise light spill onto adjoining residential properties.

In accordance with condition of approval E122, the project must be constructed with the objective of minimising light spillage to residential properties. All lighting associated with the construction and operation of the project must be consistent with the requirements of *Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting* and relevant Australian Standards in the series *AS/NZ 1158 – Lighting for Roads and Public Spaces*. Notwithstanding, the mitigation measures must be provided to manage any residual night lighting impacts to protect properties adjoining or adjacent to the project, in consultation with affected landowners.

In accordance with condition of approval E122, consultation would be undertaken with receivers on Dobroyd Parade near Waratah Street to investigate options to reduce construction traffic headlight impacts associated with the use of the G-loop.

Construction road traffic noise at the 'G-loop'

A construction road traffic noise assessment was carried out for the proposed modification and is provided in section 5.1.9 of Appendix C (Noise and vibration report) of the Modification report.

For spoil haulage Route B (including the 'G-loop') the assessment indicated that that construction traffic is unlikely to result in a noticeable increase in noise levels at receivers along Wattle Street / Dobroyd Parade (noise levels are predicted to increase by less than 0.5 dBA during both the daytime and night time periods).

An assessment of the use of the 'G-loop' was conducted as part of the WestConnex M4 East CNVIS for the Northcote Tunnel Support Site (Renzo Tonin 2016) and, as a result, two properties (83 and 85 Dobroyd Parade) have been provided at-property treatment. Table 4-2 of the Modification report identified indicative construction vehicle numbers of around eight heavy vehicles arriving and departing in the AM and PM peak hours from the Northcote Street civil and tunnel site, which is less than the approved 20 heavy vehicle movements per hour from this site for the M4 East project (Roads and Maritime, 2015). As such, it is considered that the likely noise impacts from the proposed use of the 'G-loop' would be consistent with or less than that from the M4 East project, however these impacts would be extended for the proposed modification during tunnelling activities. The entire length of the construction period for the project would be around four years. Receivers at the G-loop are not predicted to be highly noise affected for the proposed modification and therefore do not require further treatment under condition of approval E88.

It is likely that the majority of spoil haulage traffic movements at the G-loop would occur during standard hours. There are relatively high existing traffic volumes along Wattle Street / Dobroyd Parade and Parramatta Road during both the day and night time periods and therefore spoil haulage traffic

movements associated with the project are unlikely to significantly increase the number of maximum night time noise level events.

In addition noise treatments have been implemented for properties along Wattle Street / Dobroyd Parade in the vicinity of the G-loop as part of other projects and programs including:

- As part of the Roads and Maritime Noise Abatement Program
- As part of the M4 East project including:
 - At-property treatment for two properties on Dobroyd Parade as described above
 - A noise barrier which has been constructed along the south side of Wattle Street between Martin Street and Parramatta Road.

The Traffic and Transport and Access CEMP Sub-Plan that will be prepared for the project will include instructions for the operation of vehicles using the G-loop to assist in minimising construction traffic noise.

Removal of the Darley Road civil and tunnel site

The removal of the Darley Road civil and tunnel site from the project would ensure that potential noise, air quality, traffic and other impacts associated with tunnelling are avoided in this area. In addition, potential ground-borne noise and vibration impacts associated with the proposed construction of a temporary access tunnel at this location would also be avoided.

The approved project would have involved the removal and transportation of around 550,300 cubic metres of tunnel spoil from the Darley Road civil and tunnel site as described in section 23.3.2 of the EIS. Given that the length of the mainline tunnel would not change for the proposed modification, this spoil volume would be required to be removed from other tunnelling sites (refer to Table 6-44 of the Modification Report).

The overall intensity (rate) of spoil removal at approved tunnelling sites is not expected to change, however the additional spoil to be removed at the other tunnelling sites as a result of the removal of Darley Road would require the extension of the tunnelling component of the overall construction program by around six months, including at Haberfield and Ashfield.

This would result in an increase in the duration of traffic, air quality, noise and other impacts directly associated with tunnelling at these locations as described in section 6.5 of the Modification report. These impacts were assessed in the following sections of the EIS:

- Chapter 8 (Traffic and transport) and Appendix H (Technical working paper: Traffic and transport) of the EIS
- Chapter 9 (Air quality) and Appendix I (Technical working paper: Air quality) of the EIS
- Chapter 10 (Noise and vibration) and Appendix J (Technical working paper: Noise and vibration) of the EIS.

The intensity of these potential impacts as described in the EIS would not change for the proposed modification but the impacts would extend over a longer duration. Potential impacts would be managed in accordance with the environmental management measures for the project as summarised in Part E of the SPIR and relevant conditions of approval for the project including condition C4 which requires the preparation of:

- Traffic and transport and access CEMP Sub-plan
- Noise and vibration CEMP Sub-plan
- Air quality CEMP Sub-plan.

To manage potential construction fatigue and amenity impacts associated with the project at Haberfield and Ashfield, condition of E88 requires that at receiver noise mitigation in the form of at-property treatment must be offered to the land owner for habitable living spaces, or other mitigation or management measures as agreed by the occupier, to residential properties identified in Appendix E of the conditions of approval.

B2.2 Air quality impacts at Haberfield and Ashfield

B2.2.1 Potential dust impacts

Issue description

Air pollution from demolition dust is also noted. Some receivers have now been reclassified from medium to high with this modification (page 6-22, Table 6-22). This is of concern particularly as it will occur in the area (Haberfield and Ashfield) where the community has already expressed considerable concerns about dust.

Response

The construction air quality assessment in Appendix D (Air quality report) of the Modification report involved the application of a semi-quantitative risk-based approach for the assessment of impacts. The assessment adopted a precinct based approach to assess the impacts associated with the construction sites at Haberfield and Ashfield. The assessment was undertaken for a number of construction activities including demolition, earthworks (tunnelling), construction and track-out.

Potential dust generating activities associated with the proposed modification primarily relate to the continued use of the Northcote Street site for tunnelling and spoil handling, which would be carried out within an acoustic shed, and spoil haulage.

Potential dust impacts associated with demolition activities at the Parramatta Road West and Parramatta Road East civil sites have already been assessed in the EIS and SPIR and there are no changes proposed as part of the modification.

The assessment determined that if mitigation measures (as described below) are implemented, construction dust is unlikely to represent a serious ongoing problem. Any effects would be temporary and relatively short in duration in the context of the total duration of the project. Provided that mitigation measures are implemented, the potential impacts are not considered to be significant.

Condition of approval E1 requires that all reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during the construction and operation of the project.

Condition of approval C4 requires the preparation of an Air Quality CEMP Sub-Plan for the construction of the project which will include a range of measures to ensure to manage potential dust impacts. This may include the following measures as described in Chapter 5 of Appendix D (Air quality report) of the Modification report:

- Regular communication will be carried out with other WestConnex projects under construction in close proximity to ensure that measures are in place to manage cumulative impacts
- Regular site inspections will be conducted to monitor potential dust issues. The site inspections, will be recorded and actioned appropriately within agreed timeframes by relevant project personnel
- Construction activities with the potential to generate dust will be modified or ceased during unfavourable weather conditions to reduce the potential for dust generation
- Measures to reduce potential dust generation, such as the use of water carts, sprinklers, dust screens and surface treatments, will be implemented within project sites as required
- Access roads within project sites will be maintained and managed to reduce dust generation
- Suitable dust suppression and/or collection techniques will be used during cutting, grinding or sawing activities likely to generate dust in close proximity to sensitive receivers
- Storage of materials that have the potential to result in dust generation will be minimised within project sites at all times
- All vehicles loads will be covered to prevent escape of loose materials during transport
- Adequate dust suppression will be applied during all demolition works required to facilitate the project

- Exposed soils will be temporarily stabilised during weather conditions conducive to dust generation and prior to extended periods of inactivity to minimise dust generation
- Haul roads will be treated with water carts and monitored during earthworks operations, ceasing works if necessary during high winds where dust controls are not effective
- At the commencement of establishment of project ancillary facilities, controls such as wheel washing systems and rumble grids will be installed at all site exits to prevent deposition of loose material on sealed surfaces outside project sites to reduce potential dust generation.

The Air Quality CEMP Sub-Plan would be subject to review and approval by DPE prior to the commencement of construction activities.

Potential dust generating activities for the proposed modification would be reduced compared to the M4 East project. For the M4 East project, demolition activities were required at a comparatively large number of properties along Wattle Street, Parramatta Road, Walker Avenue, Northcote Street, Wolseley Street, Martin Street and Ramsay Street. Significant surface works were required for the Wattle Street interchange, Parramatta Road interchange, Parramatta Road ventilation facility and these surface works occurred over a number of years.

For the proposed modification, construction activities are primarily related to tunnelling at the Northcote Street civil and tunnel site. Surface works at Haberfield and Ashfield are limited to establishment and decommissioning of the G-loop (which would be carried out over a limited duration) and demolition would be limited to the existing buildings at the Parramatta Road West and Parramatta Road East civil sites which have already been assessed and approved in the EIS for the project. Following the establishment of the construction ancillary facilities, dust generating works are limited compared to the M4 East project. At the Northcote Street civil and tunnel site activities would be undertaken within the acoustic shed and appropriate ventilation and dust management measures would be implemented (refer above).

B2.3 Noise and vibration impacts at Haberfield and Ashfield

B2.3.1 Construction noise impacts and sleep disturbance

Issue description

There are some sensitive receivers who may experience noise and/or vibration exceedances and some sleep deprivation associated with the modification without adequate mitigation. This particularly includes those impacted by tunnelling activities and the G-loop reconfiguring construction and decommissioning works.

Response

An assessment of potential noise and vibration impacts was carried out for the proposed modification and is provided in Appendix C (Noise and vibration report) of the Modification report.

Potential noise and vibration impacts

For the Northcote Street civil and tunnel site, minor noise impacts are predicted during the establishment and decommissioning of the site. The majority of these works would be conducted during standard daytime hours only and would be relatively short in duration. Tunnelling activities would occur largely within the existing acoustic shed and are predicted to result in minor to moderate impacts at surrounding receivers. A range of mitigation measures are available to mitigate these exceedances and impacts would be managed in accordance with relevant conditions of approval (discussed below).

Decommissioning of the acoustic shed at Northcote Street was proposed and assessed as part of the M4 East project however these works would now be delayed to occur at the end of construction for the M4-M5 Link project.

The sleep disturbance screening criterion is likely to be exceeded where the following works are occurring adjacent to residential receivers at the Northcote Street civil and tunnel site and at the G-loop:

- Tunnelling
- Tunnelling support activities
- G-loop establishment and decommissioning.

The noise assessment determined that for tunnelling and tunnelling support activities that the majority of the receivers are predicted to be subject to no or minor exceedances (1 to 5 dBA exceedances) of the night time Noise Management Levels (NMLs), with worst-case impacts of up to 10 dBA limited to only three receivers located to the west of the Northcote Street civil and tunnel site, on the west side of Parramatta Road near Page Avenue and Earle Avenue. A range of mitigation measures are available to mitigate these exceedances and impacts would be managed in accordance with relevant conditions of approval (discussed below).

The Modification report provided a conservative assessment of two options for how the construction access tunnel would connect with the mainline tunnels. Both options would connect to the mainline tunnels under residential properties situated between Walker Avenue and Alt Street. One option would be progressed subject to detailed design.

The new construction access tunnel at the Northcote Street civil and tunnel site would pass under less than 10 residential properties in the vicinity of Walker Avenue and Alt Street. The alignment of the construction access tunnel would be around 30 metres below ground surface where it passes under the residential properties. It is anticipated that the construction access tunnel would be constructed over a period of around nine months.

Construction of the access tunnel would result in minimal ground-borne noise impacts to these properties when road headers are being used. However, during rock-breaker tunnelling works it is predicted that the night time criterion would be exceeded at a number of sensitive receivers in the vicinity of the access tunnel. It is expected that a combination of road-headers and rock-breakers would be used during construction. The duration of exceedances of the night time criterion are predicted to be around three weeks for any receiver as tunnelling works progress along the construction access tunnel alignment.

A range of mitigation measures are available to mitigate ground-borne noise impacts as outlined in Part E of the SPIR and would be included in the Construction Noise and Vibration CEMP which will:

- Identify relevant performance criteria in relation to noise and vibration
- Identify noise and vibration sensitive receivers and features in the vicinity of the project
- Include standard and additional mitigation measures from the *Construction Noise and Vibration Guideline* (CNVG) (Roads and Maritime 2016) and details about when each will be applied
- Describe the process(es) that will be adopted for carrying out location and activity specific noise and vibration impact assessments to assist with the selection of appropriate mitigation measures
- Include protocols that will be adopted to manage works required outside standard construction hours in accordance with relevant guidelines
- Detail monitoring that will be carried out to confirm project performance in relation to noise and vibration performance criteria.

In accordance with condition of approval E82, mitigation measures must be applied when the following residential ground-borne noise levels are exceeded:

- a) evening (6:00 pm to 10:00 pm) — internal LAeq(15 minute): 40 dB(A); and
- b) night (10:00 pm to 7:00 am) — internal LAeq(15 minute): 35 dB(A).

The mitigation measures will be outlined in the Noise and Vibration CEMP Sub-plan. Refer to the sections below for further detail regarding relevant conditions of approval for the management of potential construction noise and vibration impacts during construction.

Potential noise impacts associated with the ‘G-loop’

Works for the establishment and decommissioning of the ‘G-loop’ would be carried out over a short duration (around two weeks for establishment and up to eight weeks for decommissioning) and some of these works would be carried out during standard hours.

Section 5.1.5 Appendix C (Noise and vibration report) of the Modification report identified that the operation of the concrete saw for the works is predicted to result in moderate NML exceedances of up to 20 dBA for five receivers. However, it was estimated that when the concrete saw is not in operation, NML exceedances would generally reduce by between 4 dBA and with the use of localised hoarding where feasible around the concrete saw noise levels would reduce by up to 10 dBA.

The establishment and decommissioning of the G-loop would be undertaken in accordance with the conditions of approval for the project. This includes E76 which requires appropriate respite periods to be identified and the community consulted with prior to any out of hours works which may require road occupancy and E72 which defines the time periods as to when highly noise intensive works can be conducted on the site (refer below).

Conditions of approval

The conditions of approval provide a range of measures to manage potential noise impacts, including out of hours noise impacts. Relevant conditions include those relating to out of hours works scheduling and the identification of appropriate respite periods and the restriction of highly noise intensive works as listed below:

- *A24: A suitably qualified and experienced Acoustics Advisor, who is independent of the design and construction personnel, must be nominated by the Proponent and engaged for the duration of works and for no less than six (6) months following completion of construction of the project.*
The details of the nominated Acoustics Advisor must be submitted to the Secretary for approval no later than one (1) month before commencement of works.
The Proponent must cooperate with the Acoustics Advisor by:
 - a) *providing access to noise and vibration monitoring activities as they take place;*
 - b) *providing for review of noise and vibration plans, assessments, monitoring reports, data and analyses undertaken; and*
 - c) *considering any recommendations to improve practices and demonstrating, to the satisfaction of the Acoustics Advisor, why any recommendation is not adopted.*
- *E72: Except as permitted by an EPL, highly noise intensive works that result in an exceedance of the applicable NML at the same receiver must only be undertaken:*
 - a) *Between the hours of 8:00 am to 6:00 pm Monday to Friday;*
 - b) *Between the hours of 8:00 am to 1:00 pm Saturday; and*
 - c) *In continuous blocks not exceeding three (3) hours each with a minimum respite from those activities and works of not less than one (1) hour between each block.*
- *E75: Out-of-hours works that are regulated by an EPL as per Condition E73(c) or through the Out-of-Hours Work Protocol as per Condition E77 include:*
 - a) *Works which could result in a high risk to construction personnel or public safety, based on a risk assessment carried out in accordance with AS/NZS ISO 31000:2009 "Risk Management – Principles and Guidelines"; or*
 - b) *Where the relevant road network operator has advised the Proponent in writing that carrying out the works and activities could result in a high risk to road network operational performance; or*
 - c) *Where the relevant utility service operator has advised the Proponent in writing that carrying out the works and activities could result in a high risk to the operation and integrity of the utility network; or*
 - d) *Where the TfNSW Transport Management Centre (or other road authority) has advised the Proponent in writing that a road occupancy licence is required and will not be issued for the works or activities during the hours specified in Condition E68 and Condition E69; or*
 - e) *Where Sydney Trains (or other rail authority) has advised the Proponent in writing that a Rail Possession is required.*
- *E76: In order to undertake out-of-hours work described in Condition E75, the Proponent must identify appropriate respite periods for the out-of-hours works in consultation with the community*

at each affected location. This consultation must include (but not be limited to) providing the community with:

- a) A schedule of likely out-of-hours work for a period no less than three (3) months;
- b) The potential works, location and duration;
- c) The noise characteristics and likely noise levels of the works;
- d) Likely mitigation and management measures.

The outcomes of the community consultation, the identified respite periods and the scheduling of the likely out-of-hour works must be provided to the Acoustics Advisor, EPA and the Secretary.

- E78: All works undertaken for the delivery of the project, including those undertaken by third parties, must be coordinated to ensure respite periods are provided. The Proponent must:
 - a) Reschedule any works to provide respite to impacted noise sensitive receivers so that the respite is achieved in accordance with Condition E76; or
 - b) consider the provision of alternative respite or mitigation to impacted noise sensitive receivers and
 - c) provide documentary evidence to the Acoustics Advisor in support of any decision made by the Proponent in relation to respite or mitigation.

EPL 21149

EPL 21149 provides for regulation of noise generating works including out of hours works. EPL 21149 provides for:

- Permitted hours for high noise generating works
- Exemptions to standard construction hours for:- low noise impact works; nominated exceptional circumstances; and tunnelling, tunnelling support and underground construction works
- Requirements for works outside of standard construction hours, including assessment, notification and respite coordination
- Community agreements to undertake works outside of standard construction hours.

B2.4 Environmental management measures

B2.4.1 Measures to manage potential construction impacts

Issue description

All feasible and reasonable measures are to be undertaken to prevent or minimise impacts to the community surrounding the construction areas, particularly when activities are conducted in the proximity of very sensitive or sensitive receivers where construction fatigue is most likely. Where levels of dust or noise above acceptable levels are identified, activities should be reviewed and additional mitigation measures applied to ensure acceptable levels are not exceeded.

Consideration should also be given for a broad range of suitable mitigation measures for residents who will experience extended consecutive and concurrent construction activities due to this modification.

[...]

...and a range of mitigation measures are recommended in the context of construction fatigue.

Response

The project approval includes a robust set of conditions to minimise potential construction impacts to local communities which apply to the approved project and would apply to the proposed modification. The conditions were prepared to address issues raised during the construction of other SSI and CSSI projects including the M4 East and New M5, including measures relating to:

- The appointment of an independent Acoustics Advisor (condition of approval A24)

- The preparation of a utilities management strategy (condition of approval E140) and appointment of a utility coordination manager (condition of approval E141)
- Construction fatigue (condition of approval E88)
- Out of hours work and respite periods (conditions of approval E76 to E78)
- Implementation of the noise insulation program within six months following the commencement of construction activities (condition of approval E89 and E90)
- Establishment of an Independent Property Impact Assessment Panel (condition of approval E109)
- Establishment of a Community Complaints Mediator (conditions of approval B13 to B16)
- The appointment of a Public Liaison Officer for construction ancillary facilities and for utility works (condition of approval B6)
- Clear identification of all construction spoil haulage vehicles (condition of approval A44)
- Restriction, management and real-time monitoring of the movement of spoil haulage vehicles (conditions of approval E49, E51, E52 and E53).
- Provision of real time noise and vibration monitoring as part of the Noise and Vibration Monitoring Program (condition of approval C11).

Conditions of approval relevant to the management of potential impacts to air quality are discussed in **section B2.2.1**. The management of potential construction fatigue impacts is discussed in **section B2.1.1**.

B2.5 Consultation

B2.5.1 Ongoing community consultation

Issue description

Ongoing engagement with the community prior to and during construction changes and events, including a complaints management system, community feedback systems, informing residents of changes to scheduled activities or of unplanned events...

Response

There are a range of conditions of approval relevant to community information, consultation and involvement that would be implemented for the project including:

- *B1: A Communication Strategy must be prepared to facilitate communication between the Proponent, and the community (including relevant councils, government authorities, adjoining affected landowners and businesses, and others directly impacted by the project)*
- *B2 The Communication Strategy must:*
 - a) Identify people and organisations to be consulted during the design and work phases*
 - b) Set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the project*
 - c) Identify opportunities to provide accessible information regarding regularly updated site construction activities, schedules and milestones at each construction site including use of construction hoardings to provide information regarding construction specific to the location*
 - d) Identify opportunities for the community to visit construction sites (taking into consideration on-site activities and workplace, health and safety requirements)*
 - e) Detail the measures for advising the community in advance of upcoming utility works*
 - f) Provide for the formation of issue or location-based community forums that focus on key environmental management issues of concern to the relevant community(s) for the project*

- g) *Set out procedures and mechanisms for consulting with relevant council(s) and government authorities/agencies, as required under the terms of this approval, including procedures for repeated requests and nil responses*
 - h) *Detail the roles and responsibilities of the Public Liaison Officer(s) engaged under Condition B6*
 - i) *Set out procedures and mechanisms:*
 - i. *Through which the community can discuss or provide feedback to the Proponent*
 - ii. *Through which the Proponent will respond to enquiries or feedback from the community*
 - iii. *To resolve any issues and mediate any disputes that may arise in relation to environmental management and delivery of the project*
 - *B6: A Public Liaison Officer(s) must be appointed for construction ancillary facility(s) and for utility works to assist the public with questions and complaints they may have at any time during construction.*
 - *B8: A Complaints Management System must be prepared prior to the commencement of any works in respect of the project and be implemented and maintained for the duration of construction and for a minimum for 12 months following completion of construction of the project*
 - *B9: The Complaints Management System must include a Complaints Register to be maintained recording information on all complaints received about the project during the carrying out of any works associated with the project and for a minimum of 12 months following the completion of construction of the project*
- B13: A Community Complaints Mediator that is independent of the design and construction personnel must be nominated by the Proponent, approved by the Secretary and engaged during all works associated with the project.*

In addition, Condition E1.2 of EPL 21149 includes the following measures related to consultation and engagement with noise sensitive receivers:

- *In relation to consulting and engaging with noise sensitive receivers for a community agreement, the following applies:*
 - a) *All noise sensitive receivers predicted by modelling to be impacted by noise greater than 5 dB(A) above RBL must be consulted on any proposed community agreement. This includes noise sensitive receivers that have declined to participate in previous agreements*
 - b) *All proposed agreements must include details for interpreting services for languages other than English where required*
 - c) *If a licensee is unable to contact a noise sensitive receiver after three attempts, including leaving "sorry I missed you" cards explaining the reason for the visit and requesting a return phone call, then the licensee will note that the receiver could not be contacted and the receiver will not be considered to have either agreed or disagreed*
 - d) *Records of the attempts to contact the receiver will be kept by the licensee.*

B3 NSW Office of Environment and Heritage

B3.1 Operational water treatment plant at St Peters interchange

B3.1.1 Potential impacts to the Alexandra Canal

Issue description

The use of existing drainage infrastructure (and drainage infrastructure being constructed for the New M5 project) will result in no additional works being undertaken which would further impact on the SHR listed Alexandra Canal (SHR No. 01621). The additional discharge flow is considered to pose a negligible impact on flow velocities and flow energy in the canal. It is agreed that the proposed modification would therefore not result in direct or indirect impacts to the Alexandra Canal. However, monitoring of drainage flows would ensure that any impacts to the Alexandra Canal from the additional run-off would be identified and able to be appropriately addressed. Please consider monitoring the drainage flows into Alexandra Canal to ensure that additional run-off does not cause harm to heritage fabric.

Response

The comment that the proposed modification will result in no additional works being undertaken which would further impact on the SHR listed Alexandra Canal is noted.

As described in section 6.6.4 of the Modification report, the treated tunnel discharge rate (around 23 litres per second) from the operational water treatment plant would be minor compared to flow rates and velocities from intermittent stormwater discharges at the outlet (likely to be greater than 1,000 litres per second) and compared to the overall flow rates in the Alexandra Canal.

The additional discharge flow for the proposed modification is considered to pose a negligible impact on flow velocities and flow energy in the canal. As described in section 6.6.4 of the Modification report, providing that appropriate dissipation / scour protection is in place at the existing outlet to cater for stormwater flows, the newly introduced continuous flow is unlikely to increase the risk of scour to the Alexandra Canal. The proposed modification would therefore not result in direct or indirect impacts to the heritage item. The following environmental management measures as summarised in Part E of the SPIR are relevant to the management of potential sedimentation or scouring:

- New discharge outlets will be designed with appropriate energy dissipation and scour protection measures as required to minimise the potential for sediment disturbance and resuspension in the receiving waters. Outlet design and energy dissipation/scour protection measures will be informed by drainage modelling
- Existing drainage outlets that will be subject to increased inflow from the project will be assessed. If necessary, energy dissipation or scour protection will be added to prevent sediment disturbance and resuspension in receiving waters.

An operational surface water quality monitoring program would be implemented which would be prepared in consultation with EPA, DPI Water, NSW Office of Environment and Heritage (OEH), Sydney Water and relevant councils.

B4 City of Canada Bay Council

B4.1 Spoil haulage Route A

B4.1.1 Potential impacts to amenity and traffic safety

Issue description

Significant concern is raised in relation to “Spoil haulage Route A” that is proposed to be used in association with the Northcote Street civil and tunnel site.

Route A includes Ramsay Road, Fairlight Street and Great North Road, Five Dock. It is noted that Route A would only be used between 7am to 6pm Monday to Friday and 8am to 6pm Saturday – with three exceptions. The first is during the early stages of construction until the G-loop is operational; the second is in the event of heavy traffic congestion, whilst the third is during arterial road network maintenance.

[City of Canada Bay] Council is concerned about amenity impacts on the many residents living on these streets. Concerns include noise, congestion, road safety (particularly for pedestrians and cyclists), diesel emissions and the possibility of parking and idling in local streets.

It is requested that Spoil haulage Route A does not proceed and that all spoil haulage occurs on Route B only.

Response

Spoil haulage routes

Two spoil haulage routes (Route A and Route B) are proposed to be used in association with the Northcote Street civil and tunnel site as described in section 4.2.4 of the Modification report. In response to feedback received from stakeholders during the consultation process undertaken during the preparation of the Modification report, it is proposed that Route A would generally only be used between 7am and 6pm Monday to Friday and 8am to 6pm on Saturdays except in the following circumstances and in accordance with the relevant conditions of the project approval:

- During the early stages of construction until such time as the works to facilitate operation of the G-loop were completed and the G-loop was functional
- 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.

Once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. Nonetheless, the majority of spoil haulage traffic movements are likely to be generated during standard construction hours. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, reduce impacts on the surface road network and to receivers near these surface roads

A spoil haulage protocol would be developed by the contractor in consultation with Roads and Maritime and the Transport for NSW Traffic Management Centre to manage spoil haulage movements on Routes A and B. The protocol would be documented in the Traffic and Transport and Access CEMP Sub-Plan.

In accordance with condition of approval E49, spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary.

A construction traffic assessment was undertaken for the construction ancillary facilities in the Haberfield and Ashfield area, including the proposed spoil haulage routes (refer to section 4.4 and 4.5 of Appendix B (Traffic and transport report) of the Modification report). The assessment determined that there would be minimal impact on the mid-block roadway and intersection level of service through the Haberfield, Ashfield and Five Dock modelled road network for both Route A and Route B.

Table 4-2 of the Modification report identified indicative construction vehicle numbers of around eight heavy vehicles arriving and departing in the AM and PM peak hours at the Northcote Street civil and tunnel site, which is less than the approved 20 heavy vehicle movements per hour from this site for the M4 East project (Roads and Maritime, 2015).

As described below, condition of approval E52 requires that construction vehicles must be managed to minimise parking, idling and queuing on public roads. The potential for construction vehicles to circulate around construction sites or along spoil haulage routes would be managed by:

- Scheduling of spoil haulage movements in consideration of the tunnel spoil production rate
- Regular communication with spoil haulage vehicle drivers eg via radio
- Real time monitoring of spoil haulage vehicles.

The marshalling of spoil haulage vehicles to the tunnelling sites would be managed through a spoil haulage protocol, which would be documented in the Traffic and Transport and Access CEMP Sub-Plan. It is advantageous for the contractor from a time and cost perspective to ensure the efficient movement of spoil haulage vehicles to and from tunnelling sites.

The conditions of approval for the approved project provide a number of measures to manage potential impacts associated with spoil haulage routes. These measures would apply to both Route A and Route B and include:

- *A44: All construction spoil haulage vehicles must be clearly marked as being for WestConnex M4-M5 Link (including CSSI application number) in such a manner to enable immediate identification within at least 50 metres of the vehicles*
- *E49: Spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary*
- *E51: All requests to the Secretary for local road usage need to include a traffic and pedestrian impact assessment, and should include a swept path analysis if required. The traffic and pedestrian impact assessment, incorporated in the Site Establishment Management Plan or Traffic and Transport CEMP as relevant, must:*
 - a) *demonstrate that the local road usage will not compromise the safety of the public and have minimal amenity impacts;*
 - b) *provide details as to the date of completion of the road dilapidation surveys for the subject local roads; and*
 - c) *describe the measures that will be implemented to avoid where practicable the use of local roads past schools, aged care facilities and child care facilities during peak times for operation.*
- *E52: Construction vehicles (including staff vehicles) associated with the project must be managed to:*
 - a) *Minimise parking on public roads*
 - b) *Minimise idling and queuing on public roads*
 - c) *Ensure spoil haulage vehicles must adhere to the nominated haulage routes*
- *E53: The locations of all construction spoil haulage vehicles must be able to be monitored in real time and the records of monitoring be made available electronically to the Secretary and the EPA upon request for a period of no less than one year following construction.*

Traffic safety

As noted in section 4.5.7 of Appendix B (Traffic and Transport report) of the Modification report there is a risk with construction traffic interacting with general traffic, with elevated risk when construction-related vehicles are entering and leaving construction sites.

Potential impacts on traffic safety were assessed in Appendix B (Traffic and Transport report) of the Modification report. The assessment identified that the change in construction traffic volumes would be low for the proposed modification when compared to existing traffic volumes on the road network

connecting to the construction ancillary facility locations and therefore is not expected to substantially impact road safety along the road network along spoil haulage routes to and from the Northcote Street civil and tunnel site.

All heavy vehicles would comply with road transport laws including compliance with standards for mechanical roadworthiness, mass limits, dimension limits, load restraint, driver licensing and vehicle registration, and driver work/rest hours. Relevant road transport law includes the *Work Health and Safety Act 2011*, *Heavy Vehicle National Law (NSW) (HVNL)*, and *Work Health and Safety Regulation 2017*. The HVNL establishes chain of responsibility provisions for every person in the transport supply chain including provisions for:

- Contractor management
- Vehicle operations
- Fitness for work
- Speeding.

Potential impacts on amenity

The potential environmental impacts associated with Route A and Route B were assessed in the Modification report including an assessment of potential traffic and traffic noise impacts in accordance with relevant guidelines.

A construction traffic assessment was undertaken for the construction ancillary facilities in the Haberfield and Ashfield area, including the proposed spoil haulage routes (refer to Appendix B (Traffic and transport report) of the Modification report). The assessment determined that there would be minimal impact on the mid-block roadway and intersection level of service through the Haberfield, Ashfield and Five Dock modelled road network for both Route A and Route B. The proposed modification would therefore have a negligible temporary impact to the total vehicle emissions along the spoil haulage routes.

Table 4-2 of the Modification report identified indicative construction vehicle numbers of around eight heavy vehicles arriving and departing in the AM and PM peak hours at the Northcote Street civil and tunnel site, which is less than the approved 20 heavy vehicle movements per hour from this site for the M4 East project (Roads and Maritime, 2015). As required by condition of approval E49, spoil haulage vehicles would not be permitted to use local roads within one kilometre of construction works and construction ancillary facilities. The majority of spoil haulage movements would be carried out during standard hours with fewer movements occurring during the evening and night time.

A construction road traffic noise assessment was carried out for the two spoil haulage routes (refer to Appendix C (Noise and vibration report) of the Modification report). The assessment determined that the predicted increase in the average noise from construction traffic is below the 2 dBA increase threshold for both spoil haulage routes as detailed in the RNP (refer to **Table B4-1**).

Table B4-1 Construction road traffic noise assessment

Site	Vehicle type	Road	Predicted traffic noise increase (dBA)	
			Daytime	Night time
Northcote Street civil and tunnel site	Light & heavy	Parramatta Rd	<0.5	<0.5
		Wattle St	<0.5	<0.5
		Ramsay St / Rd	<0.5	1.6
		Fairlight St	<0.5	1.7
		Great North Rd	<0.5	1.5

As described above, Route A would generally only be used between 7am and 6pm Monday to Friday and 8am to 6pm on Saturdays except in specific and limited circumstances.

As identified in Appendix D (Air quality report) of the Modification report, all construction vehicles will be inspected regularly and maintained to ensure that they comply with relevant emission standards.

B5 City of Sydney Council

B5.1 Operational water treatment plant at the St Peters interchange

B5.1.1 Drainage at the Campbell Road motorway operations complex

Issue description

The City [of Sydney Council] has an interest in the relocation of the operational water treatment plant from Darley Road to the Campbell Road motorway operation complex at St Peters Interchange.

In particular, the City seeks assurance that the Campbell Road drainage will not be compromised by the additional flow coming from the water treatment plant.

Response

As described in section 6.6.4 of the Modification report, the treated tunnel discharge rate (around 23 litres per second) from the operational water treatment plant would be minor compared to flow rates and velocities from intermittent stormwater discharges at the outlet (likely to be greater than 1,000 litres per second) and compared to the overall flow rates in the Alexandra Canal.

The strategy for treated tunnel discharges would be confirmed during detailed design and supported by hydrological and hydraulic modelling to assess the capacity of the drainage network to accept the additional flows. Where the options for discharge of treated tunnel water are not feasible or an alternative discharge option is identified during detailed design, further assessment would need to be carried out.

B5.1.2 Potential impacts to proposed open space

Issue description

We also request confirmation that the proposed relocation of the water treatment plant will not interfere with access into the proposed St Peters Interchange Recreational Area included in the New M5 Urban Design Landscape Plan.

Finally, the WestConnex Stage 3 M4-M5 Link Concept Design of May 2017 indicates the location of the cycle path within the vicinity of the proposed relocation site. The City requests details about the location of the cycle path in light of the proposal to relocate the operational water treatment plant from Darley Road to the Campbell Road motorway operation complex.

Response

As described in section 6.6.5 of the Modification report, the proposed modification would require an increase to the operational footprint of the Campbell Road motorway operations complex towards the south east to allow for the relocation the operational water treatment plant from Darley Road. The increase in footprint for the Campbell Road motorway operations complex would be around 0.2 hectares.

The increase in footprint of the motorway operations complex would have only a minimal impact on the total area of proposed open space on the southern side of Campbell Road at the St Peters interchange that is being delivered as part of the New M5 project. The increase in footprint would also have a small impact on the proposed landscaping area for the St Peters interchange to be provided in this location. The proposed modification would not compromise the functional area and layout of the active open space as proposed in the draft New M5 Urban Design and Landscape Plan (UDLP).

The final design of the open space on the southern side of Campbell Road at the St Peters interchange that is being delivered as part of the New M5 project is subject to ongoing consultation between Roads and Maritime and City of Sydney Council in accordance with Condition B62 (b) of the New M5 project approval. It is considered that there is sufficient area available for a shared path connection between the water treatment plant and active open space if the final design of the open space proposes to include a shared path connection in this location.

B6 Inner West Council

B6.1 Consultation

B6.1.1 Public exhibition period

Issue description

The short exhibition period (14 days in this case) has not allowed sufficient time for Council and the community to thoroughly assess the documentation and prepare a detailed submission, nor has it allowed for a draft submission to be considered at a Council meeting before being lodged.

Response

Under Part 5 of the EP&A Act, the Secretary of the NSW Department of Planning and Environment (DPE) has the discretion to determine the timing and duration of public exhibition periods for modifications to approved CSSI projects. For the proposed modification, the Secretary of DPE determined a public exhibition period of 14 (calendar) days.

Consultation activities undertaken prior to the public exhibition period are described in section 5.4 of the Modification report. Consultation activities included a number of briefings for local, State and Commonwealth government agencies including Inner West Council.

Consultation activities carried out with the community prior to the public exhibition period are discussed in **section B6.1.2**.

B6.1.2 Community information sessions

Given the modification has significant implications for residents of Haberfield-Ashfield and St Peters, Council believes that holding community information sessions at those locations would have been justified.

Response

Consultation activities undertaken prior to the public exhibition period are described in section 5.4 of the Modification report. Community notification for the proposed modification prior to the public exhibition of the Modification report included:

- Media releases to Sydney metro news organisations (28 June 2018)
- Letterbox drop of the M4-M5 Link Community Update Brochure to 60,000 households across the M4-M5 Link corridor (across a seven day period from 28 June 2018)
- Upload of the M4-M5 Link Community Update Brochure to the WestConnex website (live from 28 June 2018)
- M4-M5 Link Community Update Email to 4,571 registered stakeholders on the WestConnex database (29 June 2018).

Community engagement for the proposed modification prior to the public exhibition of the Modification report included:

- Meeting with the WestConnex Community Reference Group – Southern (12 June 2018)
- Meeting with the WestConnex Community Reference Group – Western (19 June 2018)
- Door knock of over 400 stakeholders in the Ashfield, Haberfield and Leichhardt area who could potentially be impacted by the proposed modification (29 June 2018)
- Meeting with the WestConnex Community Reference Group – Central (29 June 2018)
- Extraordinary WestConnex Community Reference Group Meeting (12 July 2018)

- Door knocking of around 200 stakeholders along the proposed spoil haulage routes for the Northcote Street civil and tunnel site
- Meeting with the WestConnex Community Reference Group – Southern (11 September 2018).

Refer to Table 5-4 of the Modification report for further information.

The makeup of the WestConnex Community Reference Groups includes:

- The WestConnex Community Reference Group – Western which covers the areas of Parramatta, Homebush, Strathfield, Concord, Ashfield and Haberfield
- The WestConnex Community Reference Group – Southern which covers the areas of Kingsgrove, Bexley North, Bardwell Park, Arncliffe, Tempe, Mascot, St Peters, Alexandria and Newtown
- The WestConnex Community Reference Group – Central which covers the areas of Leichhardt, Lilyfield, Rozelle, Balmain, Glebe, Annandale and Camperdown.

Each WestConnex Community Reference Group consists of five members of the community as well as representatives from relevant local councils, DPE and Roads and Maritime including the relevant project directors and community and stakeholder engagement representatives.

The consultation activities that occurred during the public exhibition of the modification included:

- Provision of a 'Community Guide to the M4-M5 Link modification' factsheet to residents, businesses and other stakeholders that could be potentially impacted by the proposed modification. This factsheet was distributed at the commencement of the public exhibition of the modification. It outlined how to make a submission and focused on the potential impacts related to the modification. It was issued to residents, businesses and other stakeholders located close to the Northcote Street civil and tunnel site and proposed haulage routes, the Parramatta Road West and Parramatta Road East civil sites and the Campbell Road motorway operations complex at St Peters where the relocated operational water treatment plant is proposed
- Doorknocking potentially impacted residents, businesses and other stakeholders to explain the proposed modification and gather any feedback
- Sending emails directly to registered stakeholders, including residents, landowners, stakeholders, businesses and community groups
- Providing webpage updates about the modification, which were published on www.westconnex.com.au and included information on how to make a submission.

All feedback was collated and has been presented in this Response to submissions report.

After public exhibition of the Modification report and during the preparation of this Response to submissions report, consultation has been carried out with the community through meetings with the WestConnex Community Reference Groups. These have included:

- WestConnex Community Reference Group – Western on 19 September 2018
- WestConnex Community Reference Group – Central on 2 October 2018.

The meetings were attended by representatives from Roads and Maritime, DPE, Inner West Council, City of Sydney Council, EPA and the community. The meetings provided the opportunity for the community to raise queries or concerns regarding the proposed modification.

Further Community Reference Groups will continue to occur as described in **section A2.4**.

B6.2 Cumulative impacts and construction fatigue

B6.2.1 Duration of construction impacts

Issue description

In relation to Part 5.1.8 Page 5-15, Council's main concern is with the length of time impacts will be endured (seven years in total), and the likelihood that there will be cumulative impacts from overlapping project stages, e.g. Stage 3 demolition/establishment works will be underway before Stage 1 is completed.

On Page 6-55 of the Modification report, construction fatigue from the extended construction period is acknowledged. After three years, construction fatigue is already an issue in Haberfield-Ashfield and St Peters, and some of these residents will be facing a further four years.

Response

Potential construction fatigue and cumulative impacts from overlapping projects are discussed in **section B1.1.1**, **section B1.2.1** and **section B2.1.1**.

Consecutive construction impacts are described in detail in section 5.1.8 in Appendix C (Noise and vibration report) of the Modification report. When evaluating the extent of noise impacts within the Haberfield area, it is noted that this area would likely be subject to potential construction impacts from works associated with other infrastructure projects, including the approved M4 East project currently under construction.

The impact of the extended duration of construction impacts may be felt by residents, businesses and social infrastructure users at Haberfield and Ashfield near the Northcote Street civil and tunnel site, G-loop at Reg Coady Reserve and the Parramatta Road West and Parramatta Road East civil sites where extensive construction work associated with the M4 East project has already been undertaken.

Where construction timeframes overlap or are proximal to other project activities for longer durations of time, individuals and communities may experience effects on mental health through stress and anxiety.

Construction fatigue impacts are likely to be reduced for the proposed modification around the Parramatta Road West given that the site no tunnelling, tunnel spoil stockpiling and handling or tunnel spoil haulage would occur at this site.

The proposed modification would increase the duration of potential environmental impacts for sensitive users near the Northcote Street civil and tunnel site and therefore would also increase construction fatigue impacts associated with the project. Key potential environmental impacts that would contribute to construction fatigue would include:

- Noise, including noise from 24 hour a day tunnelling (refer to **section B2.3** for further detail)
- Traffic impacts from the movement of construction heavy vehicles (refer to **section B4.1.1** for further detail)
- Impacts to on-street car parking from construction light vehicles (refer to **section B6.10.3** for further detail)
- Air quality impacts, including potential dust impacts from tunnelling activities (refer to **section B2.2** for further detail)
- Construction night lighting impacts from construction facilities
- Impacts to receivers on Dobroyd Parade near the G-loop from construction traffic headlights.

Potential construction fatigue impacts associated with the proposed modification would be managed through the implementation of the approved environmental management measures for the project as summarised in Part E of the SPIR and the conditions of approval for the project, including:

- Preparation of a Noise and Vibration CEMP Sub-plan to manage potential construction noise and vibration impacts
- At receiver noise mitigation as required by condition of approval E88 to address construction fatigue and amenity (refer to **section B1.2.1** for further information)
- Preparation of Traffic and Transport and Access CEMP Sub-Plan, and Construction Parking and Access Strategy (CPAS) to manage potential traffic, transport, access and car parking impacts during construction
- Preparation of a Air Quality Sub-Plan to manage air quality impacts, including minimising dust generation during construction.

Condition of approval E88 provides for the mitigation of construction fatigue and amenity impacts. Condition of approval E88 identifies that at receiver noise mitigation in the form of at-property treatment must be offered to the land owner for habitable living spaces, or other mitigation or

management measures as agreed by the occupier, to residential properties identified in Appendix E of the conditions of approval. Mitigation must be offered prior to works commencing.

The construction night lighting assessment in section 6.3.6 of the Modification report identified low night light impacts to residential receivers around the Northcote Street civil site. Lighting would largely be contained within the acoustic shed and by site hoarding along the construction site boundary. This would minimise light spill onto adjoining residential properties.

The construction night lighting assessment in section 6.4.6 of the Modification report identified moderate night light impacts to residential receivers around the Parramatta Road West and Parramatta Road East civil sites. Lighting would be contained by site hoarding along the construction site boundary which would minimise light spill onto adjoining residential properties.

In accordance with condition of approval E122, the project must be constructed with the objective of minimising light spillage to residential properties. All lighting associated with the construction and operation of the project must be consistent with the requirements of *Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting* and relevant Australian Standards in the series *AS/NZ 1158 – Lighting for Roads and Public Spaces*. Notwithstanding, the mitigation measures must be provided to manage any residual night lighting impacts to protect properties adjoining or adjacent to the project, in consultation with affected landowners.

In accordance with condition of approval E122, consultation would be undertaken with receivers on Dobroyd Parade near Waratah Street to investigate options to reduce construction traffic headlight impacts associated with the use of the G-loop.

The project approval includes a robust set of conditions to minimise potential construction impacts to local communities which apply to the approved project and would apply to the proposed modification. The conditions were prepared to address issues raised during the construction of other State SSI and CSSI projects including the M4 East and New M5, including measures relating to:

- The appointment of an independent Acoustics Advisor (condition of approval A24)
- The preparation of a utilities management strategy (condition of approval E140) and appointment of a utility coordination manager (condition of approval E141)
- Construction fatigue (condition of approval E88)
- Out of hours work and respite periods (conditions of approval E76-E78)
- Implementation of the noise insulation program within six months following the commencement of construction activities (condition of approval E89 and E90)
- Establishment of an Independent Property Impact Assessment Panel (condition of approval E109)
- Establishment of a Community Complaints Mediator (conditions of approval B13 to B16)
- The appointment of a Public Liaison Officer for construction ancillary facilities and for utility works (condition of approval B6)
- Clear identification of all construction spoil haulage vehicles (condition of approval A44)
- Restriction, management and real-time monitoring of the movement of spoil haulage vehicles (conditions of approval, E49, E51, E52 and E53).
- Provision of real time noise and vibration monitoring as part of the Noise and Vibration Monitoring Program (condition of approval C11).

Conditions of approval E76, E77 and E78 aim to reduce the impact of construction fatigue associated with construction noise from out of hours works. The conditions provide greater transparency regarding the coordination and scheduling of these works. Condition of approval E76 provides a mechanism for community consultation regarding the identification of respite periods for out of hours works. EPL 21149 also includes the following conditions which are relevant to the management of out of hours noise impacts and aim to manage construction fatigue impacts:

- Condition L4.5 which identifies community notification requirements for out of hours works

- Condition L4.9 which identifies that out of hours works cannot be carried out on the respite night of receivers that are likely to be affected by works for the M4 East or New M5 project or other works outside of the construction footprint for the project
- Condition L4.10 which identifies that the contractor may undertake works outside of standard hours (that are not already approved by the EPL) where agreement between the contractor and a substantial majority of noise sensitive receivers has been reached.

B6.3 Site Establishment Plans and Construction Environmental Management Plans

B6.3.1 Consultation for the preparation of management plans

Issue description

It is noted from the modification document that further details on all sites that are part of this modification will be within Site Establishment Management Plans (SEMPs) and/or Construction Environmental Management Plans (CEMPs). It is assumed that Council will have the opportunity to comment on these plans before they are finalised and approved, as has been the case to date with similar plans. Council continues to argue that given the size of this project and the extent of impacts, the community should also have an opportunity to comment on construction plans.

Response

Conditions of approval C4 and C22 require that relevant councils are consulted with during the preparation of CEMP Sub-plans and Site Establishment Management Plan (SEMP) respectively.

The conditions of approval for the project do not include the requirement for community input in the preparation of the CEMP Sub-Plans or SEMPs, consistent with the practice for other large infrastructure projects in NSW. However, once approved, the CEMP Sub-Plans and SEMPs will be made available on the WestConnex website to be viewed by the community.

B6.3.2 Conditions of approval

B6.3.3 Management and Mitigation Report

Issue description

Condition C21 required a Management and Mitigation Report to be prepared if Option B is chosen. Council seeks reassurance that the assessment undertaken for this third (hybrid) option is as comprehensive as would be required in the abovementioned report if Option B was chosen.

Response

The EIS for the project described and assessed 12 construction ancillary facilities. Part D of the SPIR described and assessed an additional construction ancillary facility, White Bay civil site (C11). Section 6.5.1 of the EIS stated that the number, location and layout of construction ancillary facilities would be finalised as part of detailed construction planning for the project.

Within the Haberfield and Ashfield area the EIS described and assessed two options for construction ancillary facilities (Option A and Option B).

Section C6.1.3 of the SPIR clarified that the appointed design and construction 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.

Condition of approval C19 provides that only one of 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' NMLs as identified in the ICNG. The Parramatta Road West and Parramatta Road East civil sites would be used for parking and other works that do not exceed the 'noise affected' NMLs for the proposed modification, which is consistent with the intent of condition of approval C19.

It is proposed in Chapter 7 (Conditions of approval) of the Modification report, that conditions of approval C20 and C21 are to be deleted because Option B is not being progressed.

The Modification report provides a full environmental assessment of the changes to the arrangement of construction sites at Haberfield and Ashfield, including environmental management measures. The Modification report was placed on public exhibition.

B6.4 Noise and vibration impacts

B6.4.1 Consecutive noise and vibration impacts

Issue description

On Page 5-37 cumulative noise & vibration impacts from Stage 3 works are assessed, e.g. simultaneous impacts from construction of pedestrian overbridge bridge and Northcote St site operations. It is stated that Stage 3 cumulative impacts “are not likely to be an issue” because: Haberfield-Ashfield sites are of sufficient distance from each other (so impacts will be localised); the sites are adjacent to heavily-trafficked roads that generate ambient noise; and CoA noise management requirements will adequately manage impacts from for night works. Given affected residents’ experiences with significant cumulative impacts from Stages 1 and 2, Council does not agree that cumulative impacts “are not likely to be an issue”.

Response

There are three distinct types of ‘cumulative’ construction noise impacts that are referred to by submitters in relation to the proposed modification:

- Consecutive construction noise impacts, where construction noise impacts for the proposed modification would be experienced by receivers that have already been subject to noise impacts from a separate project (such as the M4 East project). This is also referred to as construction fatigue
- Construction noise impacts from overlapping works, where construction works for the proposed modification and a separate project(s) (such as the M4 East project) are undertaken in a particular area at the same time
- Construction noise impacts from multiple construction sites associated with the same project in a particular area which are in relatively close proximity to each other.

Page 5-37 of Appendix C (Noise and vibration report) of the Modification report describes potential cumulative impacts from multiple construction sites for the M4-M5 Link project at Haberfield and Ashfield as opposed to cumulative impacts with other WestConnex projects.

Potential construction fatigue and cumulative impacts with other WestConnex projects are discussed in **section B1.1.1** and **section B2.1.1**. Consecutive construction impacts are described in detail in section 5.1.8 in Appendix C (Noise and vibration report) of the Modification report. When evaluating the extent of noise impacts within the Haberfield area, it is noted that this area would likely be subject to potential construction impacts from works associated with other infrastructure projects, including the approved M4 East project currently under construction.

The M4 East and New M5 projects involved more significant construction activities that involved high noise generating works such as surface works, utility works and demolition activities compared to the proposed modification.

In contrast, for the proposed modification construction activities are primarily related to tunnelling. Surface works at Haberfield and Ashfield are primarily limited to establishment and decommissioning of the G-loop (which would be carried out over a limited duration) and demolition would be limited to the existing buildings at the Parramatta Road West and Parramatta Road East sites which have already been assessed and approved for the project. The decommissioning of the Northcote Street civil and tunnel site including the acoustic shed was proposed and assessed as part of the M4 East project however these works would now be delayed to occur at the end of construction for the M4-M5 Link project.

B6.5 Construction fatigue

B6.5.1 Construction fatigue impacts associated with Northcote Street civil and tunnel site

Issue description

According to the modification, Northcote Street civil site (C3a) would become a civil and tunnel site, not just a civil site as currently approved. This will mean continuation of noise, dust and truck noise impacts from spoil extraction on adjacent residents, effectively extending the current impacts from three to seven years. It is extension of impacts at this site that is one of Council's main concerns with this modification.

Response

Potential construction fatigue and cumulative impacts are discussed in **section B1.1.1**, **section B1.2.1** and **section B2.1.1**.

The use of the Northcote Street civil and tunnel site for the proposed modification would enable existing M4 East infrastructure at the site such as the acoustic shed, driveways, water treatment plant, site offices and other structures to be re-used thereby reducing impacts associated with site establishment activities. The proposed modification would remove the environmental impacts associated with the tunnelling sites previously proposed at Darley Road and at the Parramatta Road West site.

Tunnelling activities at the Northcote Street civil site would be undertaken within the existing M4 East acoustic shed. Relevant environmental management measures and conditions of approval for the management of construction impacts are discussed in **section B2.1.1** (construction fatigue), **section B2.2.1** (air quality), **section B2.3.1** (noise and vibration) and **section B4.1.1** (spoil haulage impacts).

B6.6 Human health impacts

B6.6.1 Human health impacts from dust generation

Issue description

The health, visual and other impacts of construction dust are major issues, based on affected residents' experiences from Stage 1 and 2. The modification document explains these impacts include: annoyance due to dust deposition (soiling of surfaces) and visible dust plumes; elevated PM10 concentrations due to dust-generating activities; and exhaust emissions from diesel-powered construction equipment.

All these impacts are a concern, but the main issue for Council is the respiratory health effects of elevated particulate levels – mainly dust. It is noted in Appendix D Page 3-1 that the impact of dust particulates depends on a number of factors, including the nature/duration of activity, proximity/sensitivity of receptors, meteorological conditions and the effectiveness of mitigation measures.

The seven-year duration of dust impacts represents a health issue, and affected residents' experiences to date have shown that reporting and enforcement of dust containment has been difficult, e.g. residents have needed to provide photo or video evidence of dust leaving construction sites.

In Appendix A Figures 4-1 and A-1, the large number of 'sensitive receptors' to construction particulates around all construction sites at Haberfield-Ashfield and St Peters is noted. In Appendix A Table 4-7 there is a particulate assessment which concludes that the health risk from demolition is 'high', whilst from earthworks, construction and track-out it is 'medium'. The conclusion in Appendix A p.4-7 that "construction dust is unlikely to represent a serious ongoing problem" is disputed, particularly considering the duration of construction and dry conditions prevailing.

In Appendix A Part 5 Mitigation measures Table 5-1, the proposed mitigation measures are noted. Based on prior experience with Stage 1 and 2, Council is sceptical that these measures will reduce dust impacts to an acceptable level.

Response

Potential dust generating activities associated with the proposed modification primarily relate to the continued use of the Northcote Street site for tunnelling and spoil handling, which would be carried out within an acoustic shed, and spoil haulage.

Potential dust impacts associated with demolition activities at the Parramatta Road West and Parramatta Road East civil sites have already been assessed in the EIS and SPIR and there are no changes proposed to these demolition activities as part of the modification.

The construction air quality assessment in Appendix D (Air quality report) of the Modification report involved the application of a semi-quantitative risk-based approach for the assessment of impacts. The assessment adopted a precinct based approach to assess the impacts associated with the construction sites at Haberfield and Ashfield. The assessment was undertaken for a number of construction activities including demolition, earthworks (tunnelling), construction and track-out.

The assessment determined that if mitigation measures (as described below) are implemented, construction dust is unlikely to represent a serious ongoing problem. Any effects would be temporary and relatively short in duration in the context of the total duration of the project. Provided that mitigation measures are implemented, the potential impacts are not considered to be significant.

Condition of approval E1 requires that all reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during the construction and operation of the project.

Condition of approval C4 requires the preparation of an Air Quality CEMP Sub-Plan for the construction of the project which will include a range of measures to ensure to manage potential dust impacts. This may include the following measures as described in Chapter 5 of Appendix D (Air quality report) of the Modification report:

- Regular communication will be carried out with other WestConnex projects under construction in close proximity to ensure that measures are in place to manage cumulative impacts
- Regular site inspections will be conducted to monitor potential dust issues. The site inspections, will be recorded and actioned appropriately within agreed timeframes by relevant project personnel
- Construction activities with the potential to generate dust will be modified or ceased during unfavourable weather conditions to reduce the potential for dust generation
- Measures to reduce potential dust generation, such as the use of water carts, sprinklers, dust screens and surface treatments, will be implemented within project sites as required
- Access roads within project sites will be maintained and managed to reduce dust generation
- Suitable dust suppression and/or collection techniques will be used during cutting, grinding or sawing activities likely to generate dust in close proximity to sensitive receivers
- Storage of materials that have the potential to result in dust generation will be minimised within project sites at all times
- All vehicles loads will be covered to prevent escape of loose materials during transport
- Adequate dust suppression will be applied during all demolition works required to facilitate the project
- Exposed soils will be temporarily stabilised during weather conditions conducive to dust generation and prior to extended periods of inactivity to minimise dust generation
- Haul roads will be treated with water carts and monitored during earthworks operations, ceasing works if necessary during high winds where dust controls are not effective
- At the commencement of establishment of project ancillary facilities, controls such as wheel washing systems and rumble grids will be installed at all site exits to prevent deposition of loose material on sealed surfaces outside project sites to reduce potential dust generation.

The Air Quality CEMP Sub-Plan would be subject to review and approval by DPE prior to the commencement of construction activities.

Potential dust generating activities for the proposed modification would be reduced compared to the M4 East project. For the M4 East project, demolition activities with the potential for dust generation were required at a number of locations around Wattle Street, Parramatta Road, Walker Avenue, Northcote Street, Wolseley Street, Martin Street and Ramsay Street. Surface works with the potential for dust generation were required for the Wattle Street interchange, Parramatta Road interchange and these surface works occurred over a number of years.

For the proposed modification, construction activities are primarily related to tunnelling. Surface works at Haberfield and Ashfield are limited to establishment and decommissioning of the G-loop (which would be carried out over a limited duration) and demolition would be limited to the existing buildings at the Parramatta Road West and Parramatta Road East sites which have already been assessed and approved for demolition in the EIS for the project. Following the establishment of the construction ancillary facilities, dust generating works are limited compared to the M4 East project. At the Northcote Street civil and tunnel site activities would be undertaken within the acoustic shed and appropriate ventilation and dust management measures would be implemented (refer above).

B6.7 Pedestrian access and safety

B6.7.1 Obstruction of pedestrian access

Issue description

There is a need for strict conditions to ensure footpaths are not unduly obstructed by temporary works and (more importantly) by permanent infrastructure such as sign footings, electrical cabinets etc. This is currently a contentious issue for Stage 1, where footings for overhead signs, over-height detectors and electrical cabinets have been placed in a way that they obstruct pedestrian traffic and create a major visual impact. Council is keen to ensure this is not repeated for Stage 3.

Response

The need to ensure footpaths are not unduly obstructed by temporary works is noted. The proposed modification is focused predominantly on construction site arrangements which are temporary. The operational water treatment plant at St Peters would not obstruct existing or proposed footpaths.

Pedestrian access and safety during construction would be managed in accordance with the Traffic and Transport and Access CEMP Sub-Plan. Condition of approval E57 requires that 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.

The temporary overhead pedestrian walkway above Parramatta Road between the Parramatta Road West and Parramatta Road East civil sites would be contained within the respective construction sites and would not obstruct pedestrian access along the footpaths on either side of Parramatta Road.

B6.8 Northcote Street civil and tunnel site

B6.8.1 Air quality

Issue description

Section 6.3.2 states that dust is the main air quality impact, with the main sources being demolition, earthworks, construction and track-out (from trucks). Table 6-21 states that the risk for human health is 'high' for demolition and 'medium' for the other three activities. Council notes that as the Northcote Street site is already largely established, dust from demolition activities would be reduced. Council is still concerned about the health implications of dust from the other activities, particularly given the long duration of impacts. Council does not agree with the statement on Page 6-59 that air quality impacts resulting from this modification are "not significant".

Response

It is noted that the Northcote Street civil and tunnel site is already largely established as part of the M4 East project and potential dust impacts from demolition activities would be avoided for the use of the site. Potential dust generation would be associated with the decommissioning of the Northcote Street civil and tunnel site including the acoustic shed. These works were proposed and assessed as part of the M4 East project however they would now be delayed to occur at the end of construction for the M4-M5 Link project.

Potential air quality impacts associated with tunnelling and track out at the Northcote Street civil and tunnel site are discussed in **section B2.2.1**.

B6.8.2 Construction noise

Issue description

Council's concerns are verified by Figures 5-3 and 5-5, which shows high levels of noise from tunnelling and support works affecting residents in several streets around the site, including: Northcote, Wolseley, Wattle and Cove Streets and Walker at Haberfield; and Frederick and Knocklayde Streets and Earle and Page Avenues at Ashfield. Given the length of time these residents will be affected, there is a need to pay particular attention to how the impacts from this site can be reduced so that they are tolerable.

On Page 5-28 it is explained that the contractor will explore various mitigation options, including: site perimeter hoarding; localised enclosures around noise sources; judicious selection of fixed plant and equipment; optimisation of site layout to maximise localised shielding by on-site buildings; positioning of driveways away from sensitive receivers; and (if necessary) limiting noise intensive activities during sensitive periods. Council supports implementation of these and any other mitigation option that can benefit surrounding residents.

Response

Potential construction noise impacts around the Northcote Street civil and tunnel site are discussed in **section B1.1.1** and **section B2.3.1**.

The Council's support for the proposed noise mitigation options is noted.

B6.8.3 Construction vibration

Issue description

A further concern from the Northcote Street site is vibration impacts from construction of the access tunnels, particularly as they will be at shallow depth and will pass beneath a number of dwellings. In Table 5-12 and Figure 5-8 it is noted that rock-breaker tunnelling works will result in exceedances of acceptable vibration levels for around 40 'residential receivers'. Figure 6-5 shows that there is likely to be 1 to 2mm of settlement from access tunnels affecting dwellings in Walker Avenue and Alt Street at Haberfield, whilst Figure 6-6 shows 3 to 9mm of settlement affecting dwellings in Walker Avenue and Alt Street at Haberfield.

Response

Construction access tunnel

There is a construction access tunnel proposed from the Northcote Street civil and tunnel site. The Modification report provided a conservative assessment of two options for how the construction access tunnel connects with the mainline tunnels. Both options would connect to the mainline tunnels under residential properties situated between Walker Avenue and Alt Street. One option would be progressed subject to detailed design.

The construction access tunnel is located under Wattle Street, beneath land acquired for the M4 East project, and under a limited number of residential properties in Walker Avenue and Alt Street. The access tunnel is around at least 30 metres below ground in the vicinity of residential properties which is not considered to be a 'shallow' depth. Refer to Figure 4-4 of the Modification report which provides an indicative cross section of the construction access tunnel.

Potential ground-borne noise impacts

An assessment of potential ground-borne noise impacts associated with the construction access tunnel is provided in section 6.3.3 of the Modification report.

The new construction access tunnel at the Northcote Street civil and tunnel site would pass under less than 10 residential properties in the vicinity of Walker Avenue and Alt Street. The alignment of the construction access tunnel would be around 30 metres below ground surface where it passes under the residential properties. It is anticipated that the construction access tunnel would be constructed over a period of around nine months.

Construction of the access tunnel would result in minimal ground-borne noise impacts to these properties when road headers are being used. However, during rock-breaker tunnelling works it is predicted that the night time criterion would be exceeded at a number of sensitive receivers in the vicinity of the access tunnel. It is expected that a combination of road-headers and rock-breakers would be used during construction. The duration of exceedances of the night time criterion are predicted to be around three weeks for any receiver as tunnelling works progress along the construction access tunnel alignment. A range of mitigation measures are available to mitigate these impacts.

Condition of approval E82 requires that mitigation measures must be applied when residential ground-borne noise levels are exceeded. Mitigation measures would be outlined in the Noise and Vibration Management CEMP Sub-Plan.

Potential settlement impacts

Potential settlement impacts are assessed in section 6.3.5 of the Modification report. The construction access tunnel excavation is anticipated to result in less than three millimetres of additional surface settlement in the zone of influence (refer to Figure 6-5 of the Modification report). When combined with the predicted settlement levels described in section 12.3.4 of the EIS for this location associated with excavation of the mainline tunnels, the combined settlement impacts would be in the range of 10 to 12 millimetres (refer to Figure 6-6 of the Modification report).

The predicted settlement impacts at these residential properties would meet the maximum settlement criteria contained within condition of approval E103 (30 millimetres for low or non-sensitive properties and 20 millimetres for sensitive properties and heritage items). Potential settlement impacts would be managed in accordance with relevant conditions of approval including:

- *E101: A geotechnical model of representative geological and groundwater conditions must be prepared prior to excavation and tunnelling to identify geological structures and groundwater features. The model must include details of proposed excavations and tunnels, construction staging, and identify surface and sub-surface structures, including any specific attributes, which may be impacted by the project. The Proponent must use this model to assess the cumulative predicted settlement, ground movement, stress redistribution and horizontal strain profiles caused by excavation and tunnelling, including groundwater drawdown and associated impacts, on adjacent surface and sub-surface structures.*
- *E104: Should the geotechnical model in Condition E101 identify exceedances of the relevant criteria established by Conditions E102 and E103, the Proponent must implement an instrumentation and monitoring program to measure settlement, distortion or strain as required. The Proponent must also identify and implement appropriate mitigation measures in consultation with the owner(s) of the relevant surface and sub-surface structures prior to excavation and tunnelling works to ensure where possible that the surface and sub-surface structures will not experience exceedances of the relevant criteria.*
- *E105: The Proponent must offer pre-dilapidation surveys and must undertake and prepare pre-dilapidation reports where the offer is accepted, on the current condition of surface and subsurface structures identified as at risk from settlement or vibration by the geotechnical model described in Condition E101. The pre-dilapidation surveys and reports must be prepared by a suitably qualified and experienced person(s) and must be provided to the owners of the surface and sub-surface structures for review prior to the commencement of potentially impacting works*
- *E106: Where pre-dilapidation surveys have been undertaken in accordance with Condition E105, subsequent post-dilapidation surveys must be undertaken to assess damage to the surface and sub-surface structures that may have resulted from the construction of the CSSI within three (3) months of the completion of construction.*

- *E107: The results of the surveys must be documented in a Condition Survey Report for each surface and sub-surface structure surveyed. Copies of the Condition Survey Reports must be provided to the owner(s) of the structures surveyed within three (3) weeks of completing the surveys and no later than four (4) months following the completion of construction.*
- *E108: Where damage has been determined to occur as a result of the project, the Proponent must carry out rectification at its expense and to the reasonable requirements of the surface and sub-surface structure owner(s) within three (3) months of completion of the post-dilapidation surveys unless another timeframe is agreed with the owner of the affected surface or sub-surface structure.*
- *E109: The Proponent must establish an Independent Property Impact Assessment Panel before works that have the potential to result in property impacts commence. The Panel must comprise geotechnical and engineering experts independent of the design and construction team. The Panel will be responsible for independently reviewing Condition Survey Reports undertaken under Conditions E105 and E106, the resolution of property damage disputes, and the establishment of ongoing settlement and vibration monitoring requirements. The Secretary must be informed of the Panel Members prior to property impact.*

Either the affected owner or the Proponent may refer unresolved disputes arising from potential and/or actual property impacts to the Panel for resolution. All costs incurred in establishing and implementing the Panel must be borne by the Proponent regardless of which party makes a referral to the Panel.

B6.9 Spoil haulage routes

B6.9.1 Benefits of spoil haulage routes

Issue description

Council recognises there are some benefits from the spoil haulage route proposed in the modification over that already approved. The main benefit is removal of the Tebbutt Street 'B-loop', which Council had opposed as it included residential streets and sensitive uses such as a school. Chapter 6 explains that the modification's impact on traffic congestion would be minor compared to what is approved.

Response

The benefit of the spoil haulage routes is noted.

The Tebbutt Street 'B-loop' was proposed in the EIS as a spoil haulage route for the Parramatta Road West site. However no tunnelling, tunnel spoil stockpiling and handling or tunnel spoil haulage would occur at this site for the proposed modification and therefore the Tebbutt Street 'B-loop' is not required.

B6.9.2 General impacts associated with spoil haulage routes

Issue description

Whilst this may be the case, Council remains concerned about the multiple impacts from all spoil haulage routes regardless of whether or not they are approved - even where these are on main roads. Concerns include noise, congestions, road safety (particularly for pedestrians and cyclists), diesel emissions, dust track-out emissions and the possibility of parking and idling in local streets.

Response

Potential impacts associated with the spoil haulage routes for the Northcote Street civil and tunnel site are assessed throughout the Modification report. A discussion regarding the potential impact of the spoil haulage routes including road traffic noise, traffic, road safety and amenity impacts is provided in **section B4.1.1**. Relevant conditions of approval for the management of spoil haulage vehicles include:

- *A44: All construction spoil haulage vehicles must be clearly marked as being for WestConnex M4-M5 Link (including CSSI application number) in such a manner to enable immediate identification within at least 50 metres of the vehicles*

- *E49: Spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary*
- *E51: All requests to the Secretary for local road usage need to include a traffic and pedestrian impact assessment, and should include a swept path analysis if required. The traffic and pedestrian impact assessment, incorporated in the Site Establishment Management Plan or Traffic and Transport CEMP as relevant, must:*
 - a) *demonstrate that the local road usage will not compromise the safety of the public and have minimal amenity impacts;*
 - b) *provide details as to the date of completion of the road dilapidation surveys for the subject local roads; and*
 - c) *describe the measures that will be implemented to avoid where practicable the use of local roads past schools, aged care facilities and child care facilities during peak times for operation.*
- *E52: Construction vehicles (including staff vehicles) associated with the project must be managed to:*
 - a) *Minimise parking on public roads*
 - b) *Minimise idling and queuing on public roads*
 - c) *Ensure spoil haulage vehicles must adhere to the nominated haulage routes*
- *E53: The locations of all construction spoil haulage vehicles must be able to be monitored in real time and the records of monitoring be made available electronically to the Secretary and the EPA upon request for a period of no less than one year following construction.*

B6.9.3 Traffic noise

Issue description

It is noted that Route A would only be used between 7am-6pm Monday to Friday and 8am- 6pm Saturday – with three exceptions. The first is during early stages of construction until the G-loop is functional, the second is in the event of heavy traffic congestion, whilst the third is during arterial road network maintenance. It is acknowledged that streets along Route A are main roads with high levels of traffic, but Council is concerned about noise impacts on the many residents living on these streets.

As several of the Route A streets are within the Canada Bay Council area, it is expected that this council will also raise concerns about impacts on residents.

The night-time impact on these residents is explained on Page 5-18. Regardless of the route taken, noise from the large number of truck movements has a significant noise impact across a wide area. Council therefore supports any management measure that can reduce this noise. This includes: prohibiting parking/idling of trucks in residential streets; training contractors to minimise noise when entering and leaving sites; minimising use of compression brakes (noted on Page 5-18); and maximising use of M4 East tunnels (rather than surface roads) for spoil haulage.

Response

Potential impacts associated with the spoil haulage routes for the Northcote Street civil and tunnel site are assessed throughout the Modification report. A discussion regarding the potential impact of the spoil haulage routes including road traffic noise, traffic, road safety and amenity impacts is provided in **section B4.1.1**.

Once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. The majority of spoil haulage traffic movements are likely to be generated during standard construction hours. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, reduce impacts on the surface road network and to receivers near these surface roads

The use of the M4 East tunnels (once operational) would generally be preferred for Route B spoil haulage, subject to the location of available spoil disposal sites and traffic conditions. The M4 East tunnels are anticipated to be operational at the end of Q1 2019

B6.9.4 Ongoing use of Reg Coady Reserve

Issue description

Continued use of the G-loop (and fenced area adjacent to the G-loop) will continue to occupy Reg Coady Reserve and have a direct impact on the reserve's amenity and usability.

[...]

Noise and diesel/dust emissions from trucks using the G-loop will continue to affect residents in the vicinity. The G-loop will also continue to have road safety and congestion impacts.

Response

The proposed modification would retain the G-loop at Reg Coady Reserve that was established as part of the M4 East project as a heavy vehicle haulage route for the Northcote Street civil and tunnel site.

The EIS for the M4 East project described that the area of Reg Coady Reserve used for construction would be restored and returned to Inner West Council for use as open space following the completion of construction of the M4 East project. The proposed modification would effectively delay the restoration of the area of Reg Coady Reserve required for the G-loop until after the completion of construction activities for the M4-M5 Link project in Q1 2023. The existing lease agreement between Roads and Maritime and Inner West Council would need to be extended (beyond its current expiry in 2021) to allow for the continued use of the G-loop.

The area of land at Reg Coady Reserve that would be occupied for the proposed modification would be reduced compared to the larger area that has been occupied by the M4 East project. Reg Coady Reserve would be subject to staged rehabilitation works in accordance with the M4 East Residual Land Management Plan. On completion of the M4 East construction works, that part of Reg Coady Reserve that would not be used for the G-loop would be reinstated in accordance with the M4 East Residual Land Management Plan. On completion of construction of the M4-M5 Link project, the G-loop infrastructure would be removed and the remaining part of Reg Coady Reserve would be rehabilitated in accordance with the M4 East Residual Land Management Plan.

Potential road traffic noise impacts and air quality impacts associated with spoil haulage vehicles, including the use of the G-loop, are discussed in **section B4.1.1**. Relevant measures to manage potential air quality impacts associated with spoil haulage include:

- All vehicles loads will be covered to prevent escape of loose materials during transport
- At the commencement of establishment of project ancillary facilities, controls such as wheel washing systems and rumble grids will be installed at all site exits to prevent deposition of loose material on sealed surfaces outside project sites to reduce potential dust generation.

A construction traffic assessment was undertaken for the proposed spoil haulage routes from the Northcote Street civil and tunnel site, including the 'G-loop' as part of spoil haulage Route B. The assessment determined that there would be minimal impact on the mid-block roadway and intersection level of service through the Haberfield, Ashfield and Five Dock modelled road network. Use of the 'G-loop' would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, reduce impacts on the surface road network.

The assessment identified that there would be only minor impacts to the intersection level of performance at Dobroyd Parade and Waratah Street associated with the use of the G-loop. The swept path analysis at this intersection indicated that proposed turning movements could be made by a truck and dog vehicle without impacting on traffic and pedestrian safety.

B6.9.5 Pedestrian access at the G-loop

Issue description

On Page 6-9 it is noted that safe pedestrian pathways will be provided through provision of a shared path around the northern perimeter of the G-loop, in accordance with CoA E57. There is a need to ensure this path is established at the earliest opportunity, is direct, sufficiently wide and safe for all users.

Response

A short section of the pedestrian path along the north side of Dobroyd Parade would be realigned prior to the 'G-loop' becoming operational (as shown on Figure 6-7 of the Modification report) and would be designed in accordance with relevant design standards.

B6.9.6 Construction noise impacts for the establishment and decommissioning of the G-loop

Issue description

Council is also concerned about night-time noise impacts on residents from the establishment and decommissioning of the G-loop. From Page 5-13 and Table 6-26 it is apparent that construction of G-loop will have a significant noise impact for a period of weeks, particularly as works will need to occur at night so that peak (daytime) traffic Wattle Street / Dobroyd Parade is not affected.

Response

Works for the establishment and decommissioning of the 'G-loop' would be carried out over a short duration (around two weeks for establishment and around eight weeks for decommissioning). Where possible work would be carried out during standard construction hours but some works within and in the immediate proximity to the road carriageway would be required outside of standard hours.

Section 5.1.5 Appendix C (Noise and vibration report) of the Modification report identified that the operation of the concrete saw for the works is associated with predicted moderate NML exceedances of up to 20 dBA. However, it was estimated that when the concrete saw is not in operation, NML exceedances would generally reduce by 4 dBA and with the use of localised hoarding where feasible around the concrete saw noise levels by up to 10 dBA.

The establishment and decommissioning of the G-loop would be undertaken in accordance with the conditions of approval for the project and EPL 21149. This includes condition of approval E76 which requires appropriate respite periods to be identified and the community consulted with prior to any out of hours works which may require road occupancy and E72 and E75 which define the time periods as to when highly noise intensive works can be conducted on the site.

EPL 21149 provides for regulation of noise generating works including out of hours works. EPL 21149 provides for:

- Permitted hours for high noise generating works (condition L4.2)
- Exemptions to standard construction hours for:- low noise impact works; nominated exceptional circumstances; and tunnelling, tunnelling support and underground construction works (conditions L4.3 to L4.5)
- Requirements for works outside of standard construction hours, including assessment, notification and respite coordination (condition L4.6)
- Community agreements to undertake works outside of standard construction hours (condition L4.10).

B6.9.7 Traffic and pedestrian safety

Issue description

Examination of Figure 2-1 highlights the need for active traffic management wherever driveways for heavy vehicles cross footpaths – particularly important given the high volumes of truck traffic proposed and the truck/pedestrian safety issues that have been raised in relation to Stage 1. Key driveways are those at the entry and exit points to the Northcote Street site.

Response

Pedestrian connectivity would be managed in accordance with the Traffic and Transport and Access CEMP Sub-Plan. Condition of approval E57 requires that 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.

Table 4-2 of the Modification report identified indicative construction vehicle numbers of around eight heavy vehicles arriving and departing in the AM and PM peak hours at the Northcote Street civil and tunnel site, which is less than the approved 20 heavy vehicle movements per hour from this site for the M4 East project (Roads and Maritime, 2015).

Pedestrian access arrangements around the Northcote Street civil site along Parramatta Road and Wattle Street that are in place for the M4 East project would be retained for the proposed modification.

B6.9.8 Swept path analysis at Dobroyd Parade

Issue description

In Appendix B Figure 4-3, the swept path diagrams for spoil truck routes are noted, but it is questioned why a swept path has been shown for trucks exiting Waratah St to Dobroyd Parade when this is not a spoil haulage route.

Response

Figure 4-3 in Appendix B (Traffic and transport report) of the Modification report provides a swept path analysis at the Dobroyd Parade / Waratah Street intersection for a spoil haulage vehicle (truck and dog) exiting the G-loop and turning right onto Dobroyd Parade. The figure also showed a swept path for a heavy vehicle exiting Waratah Street and turning right onto Dobroyd Parade.

The truck shown exiting Waratah Street to Dobroyd was included to demonstrate the interaction between a heavy vehicle (not related to the project) turning right from Waratah Street at the same time as a spoil haulage vehicle (related to the project) was turning right out of the G-loop. The heavy vehicle was incorrectly shown as a spoil haulage vehicle when it should have been shown as a non-project heavy vehicle.

There are no spoil haulage vehicle movements proposed into or out of Waratah Street as part of the modification.

Figure 4-3 in Appendix B (Traffic and transport report) of the Modification report has been amended and the correct detail is shown in **Figure A-1**. This has been included as a clarification in **section A4.1.1**.

B6.10 Parramatta Road West and Parramatta Road East civil sites

B6.10.1 Benefits

Issue description

The modification proposes the Parramatta Road West and East sites (C1b and C3b) be used as civil sites, with no tunnelling to occur at these sites. Council is pleased that there will be no tunnelling, particularly as both sites are surrounded by sensitive uses such as residential areas and Haberfield Primary School.

[...]

Notwithstanding driveway traffic issues, provision of car parking on the Parramatta Road sites is welcomed to minimise parking pressures on residential streets, a significant issue for Stage 1. Table 6-9 shows that parking provision appears to be adequate. It is noted that CoA E54 requires actions for minimum use of kerbside parking by workers and that parking measures be subject to reviews, monitoring and corrective action for noncompliance. This is supported, with the aim that workers have no option but to park in the spaces provided, not on residential streets. Use of technology should also be considered, e.g. electronic parking validation necessary to commence work. Council supports the proposal to encourage workers to walk between all construction sites, noting that a shuttle bus will also be provided.

Response

The support for the change of use at the Parramatta Road West and Parramatta Road East civil sites and support for the provision of parking at these sites is noted. The potential use of technology to manage worker parking is being investigated by the construction contractor.

Condition of approval E52 requires that construction vehicles (including staff vehicles) associated with the project must be managed to minimise parking on public roads. . As required by condition of approval E54, a CPAS would be prepared by the contractor to assist with managing parking demand for the project. Refer to **section B6.10.3** for further discussion regarding construction worker car parking and the CPAS.

B6.10.2 Traffic and pedestrian safety

Issue description

Given the number of parking spaces and the nature of activities proposed for these sites, there will be frequent traffic movements on driveways crossing footpaths – creating traffic and pedestrian safety issues. Examining the indicative designs for these sites in Figure 2-13, it is apparent that there could be conflicts with parents and children on route to/from Haberfield Primary School.

It is appropriate that driveways not be created in Bland Street (as proposed) to avoid conflict with this pedestrian traffic, but creation of new driveways on both sides of Parramatta Road would create a risk.

Traffic controllers would be needed during school travel times. The driveways to/from Alt Street to the smaller construction sites (car park and warehouse/storage) may also need to be controlled even though it is acknowledged that pedestrian and vehicular traffic flows would be lower at that location.

Pedestrian/vehicle conflict issues would be exacerbated in Bland Street if/when the Woolworths site is developed. These issues would arise at both the construction and operational stages of the construction of the supermarket.

Response

Pedestrian access and safety would be managed in accordance with the Traffic and Transport and Access CEMP Sub-Plan. Condition of approval E57 requires that 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.

The use of local roads to access the Parramatta Road West and Parramatta Road East civil sites are included in the approved project. The EIS approved the use of the following access points from local roads:

- For the Parramatta Road East civil site
 - Access from the north side of Bland Street
 - Access from the north and south side of Alt Street
- For the Parramatta Road West civil site
 - Access from the north and south side of Alt Street.

The access point from the north side of Bland Street to the Parramatta Road East civil site identified in the EIS would not be used for the proposed modification because of the proximity of the access point to Haberfield Public School. However, an access point from the north side of Bland Street to the Parramatta Road West civil site would be used for the proposed modification. Construction vehicles would also access the Parramatta Road West and Parramatta Road East civil sites via Parramatta Road.

Access points via Alt Street and Bland Street are required for the following reasons:

- To distribute traffic movements across driveway access points to avoid congestion at any one access point
- To reduce the number of traffic movements entering and exiting the site directly to and from Parramatta Road so as to minimise impacts to traffic flow and safety on this road. This would also have benefits for pedestrian safety along both sides of Parramatta Road
- To allow for efficient internal traffic circulation within the sites, particularly for heavy vehicles given that the sites are elongated with a frontage of around 130 metres to Parramatta Road
- To allow construction vehicles to move directly between the adjacent construction sites on the north and south sides of Alt Street
- To provide an option for construction traffic to use the Bland Street and Parramatta Road signalised intersection to enter and exit the site from the east along Parramatta Road (if required).

It should be noted that the access points already exist and were previously used by the commercial premises that operated at the Parramatta Road West and Parramatta Road East civil sites.

Heavy vehicles would use the Bland Street and Alt Street access points to travel to/from Parramatta Road and the arterial network. Heavy vehicles are not permitted to use the sections of Bland and Alt Streets which extend beyond the extent of the construction site boundaries and would not be permitted to circulate in local residential streets.

A comparison of vehicle movements at the Parramatta Road West and Parramatta Road East civil sites for the EIS and the proposed modification is provided in **Table B6-1** for light vehicles and in **Table B6-2** for heavy vehicles.

As shown in **Table B6-1** there is an overall increase in daily light vehicle movements at the Parramatta Road West and Parramatta Road East civil sites. As shown in **Table B6-2**, there is an overall decrease in daily heavy vehicle movements at the Parramatta Road West civil site.

Table B6-1 Comparison of light vehicle movements at the Parramatta Road West and Parramatta Road East civil sites for the SPIR and the proposed modification

Construction site	Light vehicle movements									
	Daily (one way)		AM peak (arrive)		AM peak (depart)		PM peak (arrive)		PM peak (depart)	
	SPIR	Modification	SPIR	Modification	SPIR	Modification	SPIR	Modification	SPIR	Modification
Parramatta Road West civil site	10	306	10	18	0	5	0	5	10	31
Parramatta Road East civil site	150	210	50	12	0	4	0	4	150	20

Table B6-2 Comparison of heavy vehicle movements at the Parramatta Road West and Parramatta Road East civil sites for the SPIR and the proposed modification

Construction site	Heavy vehicle movements									
	Daily (one way)		AM peak (arrive)		AM peak (depart)		PM peak (arrive)		PM peak (depart)	
	SPIR	Modification	SPIR	Modification	SPIR	Modification	SPIR	Modification	SPIR	Modification
Parramatta Road West civil site	140	25	7	7	7	7	7	7	7	7
Parramatta Road East civil site	30	25	3	1	3	1	3	1	3	1

The light and heavy vehicle movements identified above would be split across the access points at each site including:

- Parramatta Road, Bland Street and Alt Street for the Parramatta Road West civil site
- Parramatta Road and Alt Street for the Parramatta Road East civil site.

Traffic movements at the Parramatta Road West and Parramatta Road East civil sites would primarily be light vehicle movements associated with construction worker parking. Light vehicle movements would be most frequent around construction worker shift changes. These shift changes would generally occur at 6am and 6pm and therefore would not coincide with school drop off and pick up times.

Some heavy vehicle parking is provided for at these sites which would reduce the likelihood of heavy vehicles parking in residents streets. The type of heavy vehicles likely to use the sites for parking would include rigid and articulated trucks dropping off or picking up materials or equipment from laydown areas, vehicles or equipment to be serviced at the workshop and short term layover of trucks across working shifts. No tunnel spoil trucks would use these sites.

Options would be investigated to manage the interaction between pedestrians (including school children) and construction traffic including as required:

- Pedestrian surveys to understand the extent of potential impact
- Construction worker inductions and training
- Signage and/or pavement linemarking
- Engineering controls such as barriers or gates
- Provision of a traffic controller on access points to and from Parramatta Road during school start and finish times.

The options would be investigated and documented in the traffic control plans for each construction site as contained in the Traffic and Transport and Access CEMP Sub Plan.

It is understood that a new development application for a proposed Woolworths supermarket development is being prepared and will be lodged with Inner West Council in the future. The proposed development is located on the corner of Parramatta Road and Bland Street, opposite the Parramatta Road West civil site. At this stage information about the scale of the development, access arrangements, traffic generation and timing for construction and operation of the project are not known.

Notwithstanding, the M4-M5 Link construction contractor and the proponent of the Woolworths development would be required to manage potential impacts to pedestrians during construction and operation. Consultation would be undertaken with the proponent for the Woolworths development to understand traffic and pedestrian access arrangements during construction and operation and to manage potential cumulative traffic and pedestrian access and safety impacts.

The existing Haberfield Pedestrian Bridge adjacent to the Woolworths development site provides a safe route for east-west pedestrian movements over Parramatta Road at this location.

B6.10.3 Construction worker parking and construction worker behaviour

Issue description

Importantly, use of the project's Parramatta Road car parks will reduce parking pressures in residential streets around the Northcote Street site. For Stage 1, residents of Northcote Street and surrounding streets have complained about worker parking pressures and the poor behaviour of workers accessing their cars, e.g. playing radios early in the morning and leaving rubbish on the street. These issues have persisted even after the project had employed security guards to prevent parking in these streets. Given the residents around the Northcote Street site will be enduring extended impacts, it is critical that every effort is made to minimise all impacts on these residents, including parking impacts.

Response

Construction worker parking

A total of around 200 car parking spaces would be provided at the Parramatta Road West and Parramatta Road East civil sites for the construction workforce. The parking spaces would be used by construction workforce staff working at other project construction sites and for some heavy vehicle parking. A shuttle bus service would be provided as required to transport the construction workforce to and from construction sites. Where possible the workforce would be encouraged to walk between sites. The Northcote Street civil site is located around 400 metres north of the Parramatta Road West and Parramatta Road East civil site so is within a reasonable walking distance.

A preliminary assessment of parking provision for the construction ancillary facilities in the Haberfield and Ashfield area indicated that the proposed parking provision of around a total of 200 spaces would be able to meet the majority of the forecast construction workforce parking demand (refer to Appendix B (Traffic and Transport report) of the Modification report for further information).

The provision of around 200 car parking spaces represents increased parking provision compared to the M4 East project, which included only limited off-street parking within the Haberfield and Ashfield area.

As required by condition of approval E54, a CPAS would be prepared by the contractor to assist with managing parking demand for the project. The CPAS will include:

- a) *Confirmation and timing of the removal of on- and off-street parking associated with construction of the project;*
- b) *Parking surveys of all parking spaces to be removed to determine current demand during peak, off-peak, school drop off and pickup, and weekend periods;*
- c) *Consultation with affected stakeholders utilising existing on- and off-street parking stock which will be impacted as a result of construction;*
- d) *Assessment of the impacts of changes to on- and off-street parking stock taking into consideration outcomes of consultation with affected stakeholders;*
- e) *Identification of mitigation measures to manage impacts to stakeholders as a result of on and off-street parking changes including, but not necessarily limited to, staged removal and replacement of parking, provision of alternative parking arrangements, managed staff parking arrangements and working with relevant council(s) to introduce parking restrictions adjacent to work sites and compounds;*
- f) *Provision of a shuttle bus service(s) to transport workers to site(s) and details of the shuttle bus service(s), including service timing and frequency;*
- g) *Mechanisms for monitoring, over appropriate intervals, to determine the effectiveness of implemented mitigation measures;*
- h) *Provision of contingency measures should the results of mitigation monitoring indicate implemented measures are ineffective; and*
- i) *Provision of reporting of monitoring results to the Secretary and relevant council(s) at three monthly intervals.*

As described above, monitoring would be carried out as part of the CPAS to determine the effectiveness of implemented mitigation measures.

Construction worker behaviour

Construction worker behaviour would be managed through the site induction process where behavioural expectations would be communicated to workers. A worker Code of Conduct will be provided as part of the induction process. All workforce and staff will be required to acknowledge and formally accept the Code of Conduct. The Code of Conduct will outline the key protocols for workers travelling to and from work, be it by foot, public transport or personal vehicle (among other things).

The primary goal will be to eliminate or minimise potential issues that may come from the following:

- Excess noise during shift change and travel to and from sites by foot

- Getting changed into and out of work clothes beside the road / in public
- Parking vehicles illegally
- Workers not parking in the facilities provided where possible
- Engaging with members of public in a way which may reflect poorly on the project
- Poor worker behaviour
- Littering and general site cleanliness.

The provision of around 200 car parking spaces at the Parramatta Road West and Parramatta Road East civil sites would reduce the interaction between construction workers and the community, as the movement of construction workers in residential areas between available parking spaces and construction sites would be minimised. Rubbish bins would be located at the car parking areas to reduce potential littering.

Complaints regarding construction worker behaviour would be managed in accordance with a complaints management system as required by condition of approval B8. A Community Complaints Mediator that is independent of the design and construction personnel would be nominated for the project as required by condition of approval B13. The role of the Community Complaints Mediator is to address any complaint where a member of the public is not satisfied by the Proponent's response.

B6.10.4 Relocation of bus stop on Parramatta Road

Issue description

Council would like to be involved in details of the proposed relocation of a bus stop on Parramatta Road to ensure there are no negative impacts from this action.

Response

The proposed relocation of a bus stop on Parramatta Road is not subject to the proposed modification. The relocation would occur via provisions in the Traffic and Transport and Access CEMP Sub-Plan for the project which includes consultation requirements with relevant councils as required by condition of approval C4.

The bus stop is proposed to be relocated to avoid the interaction between buses and light and heavy vehicles using the nearby driveway access point to the Parramatta Road West civil site from Parramatta Road.

In accordance with condition of approval E43, during construction, where bus stops are required to be temporarily closed or relocated, such closure must not occur until relocated bus stops are functioning, have similar capacity and are relocated within a 400 metre walking distance of the existing bus stop. Closures and relocation of bus stops during construction must be undertaken in consultation with Transport for NSW and relevant council(s).

B6.10.5 Noise mitigation for out of hours works

Issue description

It is noted that site establishment will be undertaken during standard daytime hours. Although both sites are proposed to operate 24/7, it is anticipated that most site activities and vehicle movements will occur during daytime construction hours. It is however important that noise mitigation measures are in place to ensure that night-noise from these sites does not create a disturbance for the many residents living near these sites.

Response

The conditions of approval provide a range of measures to manage potential noise impacts, including night time noise impacts. Relevant conditions include those relating to out of hours works scheduling and the identification of appropriate respite periods and the restriction of highly noise intensive works are discussed in **section B2.3.1**. Construction works hours and noise impacts would also be managed in accordance with the relevant conditions of EPL 21149.

As per the recommended amendment to condition of approval C19 in Chapter 7 (Conditions of

approval) of the Modification report, the Parramatta Road West and Parramatta Road East civil sites are to be used for parking and other works that do not exceed the 'Noise affected' Noise Management Levels as identified in the *Interim Construction Noise Guideline* (ICNG) (DECC, 2009) .

B6.10.6 Pedestrian walkway

Issue description

The modification proposes a temporary pedestrian walkway connection above Parramatta Road to connect the Parramatta Road East and West sites for use by project staff during the construction phase. Council does not object to this bridge (particularly as it will be temporary) but it is noted from Figure 5-9 and Tables 5-16 & 5-17 that there will be day and night impacts on nearby residential areas from its construction. In this regard, Council supports the site-specific construction noise mitigation measures shown in Table 5-18, including physical shielding, non-tonal reversing beepers and minimisation of reversing.

Response

The support for the proposed mitigation measures is noted. As described in section 6.4.3 of the Modification report, the construction works to install and decommission the bridge would be of a limited duration and carried out in accordance with relevant conditions of approval.

B6.11 Removal of Darley Road from the project

B6.11.1 Support

Issue description

The modification proposes removal of the Darley Road civil and tunnel site (C4) from the project, with no construction or infrastructure at this location. As stated above, there is no doubt that removal of the Darley Road site is a significant positive feature of this modification. Council and the community had always viewed this site as the most problematic of all the Stage 3 spoil extraction sites due to the number of residents affected and the particular traffic constraints.

Response

The support for the removal of the Darley Road civil and tunnel site is noted.

B6.11.2 Extended duration of impacts associated with tunnelling

Issue description

Removal of Darley Road however comes at the expense of an additional six months of construction activity at the other spoil extraction sites at Haberfield-Ashfield, Annandale-Camperdown and St Peters. This means an additional six months of noise, vibration and dust for residents near these sites than would have been the case if the project had proceeded as currently approved.

[...]

In opposing use of this site, Council has always acknowledged that its removal would inevitably mean that more spoil would need to be extracted from other Stage 3A spoil extraction sites. On Page 6-84 of the modification it is explained that removal of the Darley Road site will extend the Stage 3A works program by about six months. This will add six months of impacts to residents near construction sites at Northcote / Wattle Street, Haberfield, Pyrmont Bridge Road at Annandale-Camperdown and Campbell Street/Road at St Peters.

For affected residents of Haberfield-Ashfield and St Peters, this extra six months will be added to the three years of impacts endured from Stages 1 and 2 and four years of impacts from Stage 3. Given the added time increment of impacts, the long duration of impacts (over a total of seven years) and the fact that there are likely to be cumulative impacts from the overlap of Stages 1 and 2 with Stage 3, the health of these residents will no doubt suffer.

Council therefore continues to argue that particular attention be paid to residents living near all of the Stage 3A three spoil extraction sites to ensure impacts are reduced and their health is not unduly affected.

[...]

Council is concerned about increasing the duration of impacts on residents, particularly for the Haberfield and St Peters sites where residents have will have already endured years of impacts. Council is also concerned that the traffic impacts from the extension on the Bridge Road and St Peters sites does not appear to have been assessed in the modification.

Table 6-44 shows the actual increase in spoil removal from the other Stage 3A construction sites, whilst Table 6-43 shows 'sensitive uses' affected by the extended construction period. This shows affected uses will include residential areas, primary schools, pre-schools, church uses and a park.

Response

The removal of the Darley Road civil and tunnel site from the project would ensure that potential noise, air quality, traffic and other impacts associated with tunnelling and spoil haulage are avoided in this area. In addition potential ground-borne noise and vibration impacts associated with the proposed construction of a temporary access tunnel at this location would also be avoided.

The approved project involved the removal and transportation of around 550,300 cubic metres of tunnel spoil from the Darley Road civil and tunnel site as described in section 23.3.2 of the EIS. Given that the length of the mainline tunnel would not change for the proposed modification, this spoil volume would be required to be removed from other tunnelling sites as outlined in **Table B6-3**.

Table B6-3 Comparison of indicative spoil volumes for the proposed modification

Tunnelling site	Spoil volumes (cubic metres) - EIS	Spoil volumes (cubic metres) – proposed modification
Northcote Street civil and tunnel site	n/a	566,300
Wattle Street civil and tunnel site	311,500	311,500
Parramatta Road West civil site	520,000	n/a
Darley Road civil and tunnel site	550,300	n/a
Pymont Bridge Road tunnel site ¹	854,500	1,190,400
Campbell Road civil and tunnel site	755,000	942,900

The overall intensity (rate) of spoil removal at approved tunnelling sites is not expected to change. Therefore the removal of spoil would require the extension of the tunnelling component of the overall construction program by around six months.

This would result in an increase in the duration of traffic, air quality, noise and other impacts directly associated with tunnelling at these locations as described in section 6.5 of the Modification report. These impacts were assessed in the following sections of the EIS:

- Chapter 8 (Traffic and transport) and Appendix H (Technical working paper: Traffic and transport) of the EIS
- Chapter 9 (Air quality) and Appendix I (Technical working paper: Air quality) of the EIS
- Chapter 10 (Noise and vibration) and Appendix J (Technical working paper: Noise and vibration) of the EIS.

The intensity of these potential impacts as described in the EIS would not change for the proposed modification but the impacts would extend over a longer duration. Potential impacts would be managed in accordance with the environmental management measures for the project as summarised in Part E of the SPIR and relevant conditions of approval for the project including condition C4 which requires the preparation of:

- Traffic and Transport and Access CEMP Sub-plan
- Noise and vibration CEMP Sub-plan
- Air Quality CEMP Sub-plan.

Relevant conditions of approval and other management measures for the management of impacts associated with tunnelling and spoil haulage are discussed throughout this report including in **section B2.3** (noise and vibration) **section B2.2** (air quality) and **section B6.9** (spoil haulage).

To manage potential construction fatigue and amenity impacts associated with the project, condition of E88 requires that at receiver noise mitigation in the form of at-property treatment must be offered to the land owner for habitable living spaces, or other mitigation or management measures as agreed by the occupier, to residential properties identified in Appendix E of the conditions of approval. Appendix E applies to receivers that would be impacted by high noise generating works associated with the project that have also been subject to noise impacts from the M4 East project.

B6.12 Operational water treatment plant at St Peters interchange

B6.12.1 Support

Issue description

The modification proposes relocation of the operational water treatment plant from the Darley Road site to the St Peters Interchange (SPI) site. In supporting removal of the Darley Road site from the approval, Council also supports removal of this permanent motorway support facility from the Darley Road site.

Response

The support for the relocation of the operational water treatment plant is noted.

B6.12.2 Visual impacts and impact to open space

Issue description

Council's main issues are visual impact and the possibility that this facility could occupy part of SPI site recreation area, reducing its size. This latter point is not clear from the modification document, other than on Page 9-2 there is a statement that the facility will have a "minimal impact" on the SPI recreation area. It is noted that visual impacts will be assessed as Stage 3 UDLP process, and in Table 8-1 it is stated there is a requirement to consider the design of the water treatment facility when viewed from SPI recreation area.

Response

As described in section 6.6.6 of the Modification report, the operational water treatment plant would have potential visual impacts on future users of the proposed open space to be provided by the New M5 project located directly to the east, as well as nearby residential receivers on Barwon Park Road and Campbell Road.

The proposed modification would comprise the addition of small scale structures for the operational water treatment plant that would be visually compatible with the portals, ventilation facilities, sub-station, at grade and elevated roadways and other structures that will form part of the broader St Peters interchange landscape. The operational water treatment plant would comprise an area of around 0.2 hectares and consist of buildings that are in the order of one to two storeys in height.

As described in section 6.6.6 of the Modification report, the following environmental management measure would be implemented to ensure the operational water treatment plant would be visually consistent with the adjacent open space areas that would be delivered for the New M5 project:

- The architectural design, detailing, fencing and landscaping of the water treatment plant would consider potential views from the proposed adjacent open space areas for the New M5 project.

The potential visual impact to future users of the active open space to be provided by the New M5 project and residential receivers on Barwon Park Road and Campbell Road is therefore considered to be minor.

A response to the issue regarding potential impacts to the proposed open space area at the St Peters interchange to be delivered by the New M5 project is provided in **section B5.1.2**.

B6.12.3 Impacts to Alexandra Canal

Issue description

Another issue is the quality and volume/rate of water of discharged. It is noted on Page 6-89 that three discharge options are proposed. Whichever option is chosen, Council is keen to ensure that water quality and the rate flow is such that there will in fact be a “negligible impact” on Alexandria Canal as is stated in the Modification report.

Response

As described in section 6.6.4 of the Modification report, the treated tunnel discharge rate (around 23 litres per second) from the operational water treatment plant would be minor compared to flow rates and velocities from intermittent stormwater discharges at the outlet (likely to be greater than 1,000 litres per second) and compared to the overall flow rates in the Alexandra Canal.

The water quality assessment carried out for the project (refer to Appendix E (Surface water and flooding report) of the Modification report) determined that:

- Treated discharges would result in a negligible impact on water quality within Alexandra Canal
- The number of constituents that currently exceed the NSW Water Quality Objectives for aquatic ecosystems in marine / estuarine waters within Alexandra Canal (i.e. copper, lead, zinc, nitrogen and phosphorus) would remain the same as described in the EIS.

In accordance with condition of approval E187, 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 that bioaccumulate unless other discharge criteria are agreed in consultation with relevant stakeholders including EPA, DI Water and Sydney Water. Discharge criteria for iron during operation must comply with the ANZECC (2000) recreational water quality criteria.

In addition, conditions of approval D8 and D9 outline the operational monitoring programs that must be prepared in consultation with relevant authorities to compare actual operational performance against predicted performance, including a Surface Water Quality Plan and Monitoring Program. Discharge from the operational water treatment plant would be monitored according to this plan and in accordance with an EPL for the operation of the project. Monitoring is likely to be carried out at the discharge outlet prior to discharge flows entering the stormwater system and Alexandra Canal.

B6.12.4 Operational noise

Issue description

Operational noise is a further issue, and Figure 6-1 shows there may be an operational noise impact on residents on Campbell Street (east) between Crown Street and Barwon Park Road. On Page 6-3, proposed noise mitigation measures noted, i.e. judicious location selection, noise barriers, silencers, acoustically-lined ductwork and acoustic louvres.

Council is keen to ensure that these measures are implemented as part of a set of actions designed to protect residents like these who will have endured a long period of construction impacts.

Response

As described in section 6.6.3 of the Modification report, the water treatment plant at the Campbell Road motorway operations complex has been modelled at a sound power level of 90 dBA. This is the maximum sound power level that results in compliance with the criteria at all residential receivers. The nearest sensitive receivers would be located around 120 metres to the north on Barwon Park Road.

The water treatment plant would include specific equipment designed to achieve compliance with the relevant criteria for noise output. The equipment and sound power levels modelled for the water treatment plant are indicative only and may be subject to change during the detailed design phase of the project. It is envisaged that the mechanical plant noise sources associated with the fixed facilities would be controllable by common engineering methods that may consist of:

- Judicious location selection
- Noise barriers
- Silencers
- Acoustically lined ductwork
- Acoustic louvres.

Any mechanical equipment selected would be subject to review and assessed for compliance with the established design criteria at the detailed design stage of the project. Specific mitigation measures would be determined at this point, taking account of cumulative noise emissions from relevant fixed facility noise sources at Campbell Road motorway operations complex.

An operational noise and vibration review would be carried out to confirm the effectiveness of noise and vibration control measures for the project in accordance with condition of approval E92. Monitoring of operational noise to compare actual noise performance against predicted noise levels would be carried out within 12 months of the operation of the project in accordance with condition of approval E95.

C Part C - Response to community submissions

C1 Construction impacts at Haberfield and Ashfield

18 submitters have raised issues regarding construction impacts at Haberfield and Ashfield.

C1.1 Extended duration of construction impacts

C1.1.1 Construction program and construction fatigue

Issue description

Submitters raised concern regarding the extension of construction impacts at Haberfield and Ashfield for the proposed modification for an additional four years. Submitters raised concern regarding the increased burden of construction impacts on Haberfield and Ashfield and suggested that a different tunnelling site should be chosen outside of the area.

Submitters raised general concerns about construction fatigue impacts associated the proposed extension of construction impacts given the impacts already experienced in the Haberfield and Ashfield area associated with the M4 East project. As a result submitters questioned the justification for the proposed modification and also expressed concern that the proposed modification is a breach of trust given previous commitments that work would be completed in this area by 2019.

Response

Roads and Maritime Services (Roads and Maritime) has further optimised the construction site arrangements assessed in the M4-M5 Link Environmental Impact Statement (EIS), Submissions and Preferred Infrastructure Report (SPIR) to reduce community impacts and to decrease the overall number of construction sites required for Stage 1 of the project, including the removal of the Darley Road tunnelling site. This is the result of the progression of construction design and planning since the assessment contained in the EIS and SPIR and a review of the concept design for the approved project.

The justification for the proposed modification is provided in Chapter 9 (Justification and conclusion) of the Modification report. The proposed modification would result in key benefits and impacts including the removal of the Darley Road civil and tunnel site, the extended use of existing infrastructure at the Northcote Street civil and tunnel site and the use of the Parramatta Road West and Parramatta Road East civil sites in accordance with condition of approval C19.

The environmental assessment in Chapter 6 (Environmental assessment) of the Modification considered the potential impacts associated with the proposed modification and the existing environmental management measures provided in the EIS and SPIR and the conditions of approval for the approved project. It was determined that the impacts associated with proposed modification can generally be accommodated by the environmental management measures provided in the EIS and SPIR.

Impacts associated with the proposed use of the construction sites at Haberfield and Ashfield were assessed in the EIS and SPIR and environmental management measures and conditions of approval were identified to manage potential impacts during construction. The key changes proposed for the modification are

- The Northcote Street civil site would become a civil and tunnel site. The Northcote Street site is being used for tunnelling as part of the M4 East project
- The use of spoil haulage routes for the Northcote Street civil and tunnel site
- The Parramatta Road West and Parramatta Road East civil sites would be used as civil sites in accordance with condition of approval C19 and other conditions of the project approval. No tunnelling, tunnel spoil stockpiling and handling or tunnel spoil haulage would occur at these sites

- The removal of the Darley Road civil and tunnel site from the project and the associated extended duration of tunnelling impacts at the other tunnelling sites for the mainline tunnels.

The proposed modification would not involve the extension of construction impacts at Haberfield and Ashfield for an additional four years compared to the approved project described in the EIS and SPIR. The proposed modification would extend the tunnelling component of the overall construction program for all tunnelling sites (not just at Haberfield and Ashfield) for Stage 1 of the project by six months and increase the total length of the program for Stage 1 of the project by around three months. This change is primarily as a result of the removal of the Darley Road site from the project.

The M4 East EIS acknowledges that the construction of the multiple stages of WestConnex would be staggered and would therefore result in extended construction periods for some residents in the vicinity of the project. This includes where consecutive construction periods would occur, particularly at Haberfield for works associated with the M4-M5 Link project. Construction for the M4 East project is expected to be completed in 2019. Significant civil works (including road widening, the construction of tunnel portals and ramps and the Parramatta Road ventilation facility) and utility works at Haberfield and Ashfield would primarily be constructed as part of the M4 East project.

Construction fatigue

Construction fatigue relates to receivers in a particular area that experience construction impacts from a number of projects over an extended period of time with few or no breaks between construction periods. Construction fatigue may include traffic and access disruptions, worker parking in local streets, noise and vibration impacts, air quality impacts, visual amenity impacts and social impacts from projects that have overlapping construction phases or are back to back.

Construction fatigue may be felt by residents, businesses and social infrastructure users around Haberfield near the Northcote Street civil and tunnel site, G-loop at Reg Coady Reserve and the Parramatta Road West and East civil sites where extensive construction work associated with the M4 East project has already been undertaken on or in the immediate vicinity of these sites.

Where construction timeframes are consecutive or overlap with other project activities for longer durations of time, individuals and communities may experience effects on mental health through stress and anxiety.

The proposed modification would increase the duration of potential environmental impacts for sensitive users near the Northcote Street civil and tunnel site and therefore would also increase construction fatigue impacts associated with the project. Key potential environmental impacts that would contribute to construction fatigue would include:

- Noise, including noise from 24 hour a day tunnelling (refer to **section C1.2.1** for further detail)
- Traffic impacts from the movement of construction heavy vehicles (refer to **section C3.1** for further detail)
- Impacts to on-street car parking from construction light vehicles (refer to **section C1.4.1** for further detail)
- Air quality impacts, including potential dust impacts from tunnelling activities (refer to **section C1.3.1** for further detail)
- Visual impacts from the ongoing use of construction ancillary facilities (refer to **section C4.7.1** for further detail)
- Construction night lighting impacts from construction facilities
- Impacts to receivers on Dobroyd Parade near the G-loop from construction traffic headlights.

Potential construction fatigue impacts associated with the proposed modification would be managed through the implementation of the approved environmental management measures for the project as summarised in Part E of the SPIR and the conditions of approval for the project, including:

- Preparation of a Noise and Vibration CEMP Sub-plan to manage potential construction noise and vibration impacts
- At receiver noise mitigation as required by condition of approval E88 to address construction fatigue and amenity at Haberfield and Ashfield
- Preparation of a Traffic and Transport and Access CEMP Sub-Plan, and Construction Parking and Access Strategy (CPAS) to manage potential traffic, transport, access and car parking impacts during construction
- Preparation of an Air Quality CEMP Sub-Plan to manage air quality impacts, including minimising dust generation during construction.

The construction night lighting assessment in section 6.3.6 of the Modification report identified low night light impacts to residential receivers around the Northcote Street civil site. Lighting would largely be contained within the acoustic shed and by site hoarding along the construction site boundary. This would minimise light spill onto adjoining residential properties.

The construction night lighting assessment in section 6.4.6 of the Modification report identified moderate night light impacts to residential receivers around the Parramatta Road West and Parramatta Road East civil sites. Lighting would be contained by site hoarding along the construction site boundary which would minimise light spill onto adjoining residential properties.

In accordance with condition of approval E122, the project must be constructed with the objective of minimising light spillage to residential properties. All lighting associated with the construction and operation of the project must be consistent with the requirements of *Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting* and relevant Australian Standards in the series *AS/NZ 1158 – Lighting for Roads and Public Spaces*. Notwithstanding, the mitigation measures must be provided to manage any residual night lighting impacts to protect properties adjoining or adjacent to the project, in consultation with affected landowners.

In accordance with condition of approval E122, consultation would be undertaken with receivers on Dobroyd Parade near Waratah Street to investigate options to reduce construction traffic headlight impacts associated with the use of the G-loop.

C1.2 Noise and vibration

C1.2.1 Cumulative construction noise impacts

Issue description

Submitters raised general concerns about cumulative construction noise impacts given the construction noise impacts already experienced in the area in association with the M4 East project.

Response

Potential construction noise impacts associated with the proposed modification are assessed in Chapter 5 of Appendix C (Noise and vibration report) of the Modification report.

There are three distinct types of 'cumulative' construction noise impacts that are referred to by submitters in relation to the proposed modification:

- Consecutive construction noise impacts, where construction noise impacts for the proposed modification would be experienced by receivers that have already been subject to noise impacts from a separate project (such as the M4 East project). This is also referred to as construction fatigue
- Construction noise impacts from overlapping works, where construction works for the proposed modification and a separate project(s) (such as the M4 East project) are undertaken in a particular area at the same time

- Construction noise impacts from multiple construction sites in a particular area which are in relatively close proximity to each other.

Consecutive construction noise impacts and construction fatigue

Consecutive construction impacts are described in detail in section 5.1.8 in Appendix C (Noise and vibration report) of the Modification report.

When evaluating the extent of noise impacts within the Haberfield area, it is noted that this area would likely be subject to potential construction impacts from works associated with other infrastructure projects, including the approved M4 East project currently under construction.

Appendix C (Noise and vibration report) of the Modification report considers the impacts associated with the use of the Northcote Street civil and tunnel site for the proposed modification in isolation and the potential impacts from consecutive projects (such as the M4 East) that may be experienced over a longer duration by receivers near this site.

Many of the highly noise intrusive construction works associated with the Northcote Street civil and tunnel site have already occurred as part of the M4 East project (predominantly building demolition, bulk earthworks, construction of the acoustic shed and other construction activities outside of the acoustic shed). By re-using the existing infrastructure on the Northcote Street civil and tunnel site the potential noise impacts associated with the establishment of a new acoustic shed at a different tunnelling site are avoided and the highly noise intrusive construction works at the Northcote Street civil and tunnel site would be reduced by comparison to the M4 East project.

Nonetheless the continued use of the Northcote Street site for tunnelling activities within an acoustic shed as proposed by the modification is predicted to result in noise and vibration impacts for similar receivers in the surrounding area over a longer construction duration. This may result in construction fatigue impacts for some receivers.

Condition of approval E88 provides for the mitigation of construction fatigue and amenity impacts for receivers that have been impacted by high noise generating works associated with the M4-M5 Link project that have also been subject to noise impacts during the construction of the M4 East project. In order to provide a noise benefit to receivers who have been impacted by consecutive construction works, condition of approval E88 requires that at the receiver, noise mitigation in the form of at-property treatment must be offered to the land owners for habitable living spaces, or other mitigation or management measures as agreed by the occupier, to residential properties identified in Appendix E of the conditions of approval.

Condition of approval E89 provides that a Noise Insulation Program must be prepared and implemented for the duration of project works for receivers to which the requirements of conditions of approval E88 apply. The Program must be incorporated into the Construction Noise and Vibration Construction Environmental Management Plan (CEMP) Sub-plan.

In accordance with condition of approval E90, receivers which are eligible for receiving treatment under the Noise Insulation Program required under Condition E89 must have treatment implemented within six months following the commencement of construction which would affect the receiver. The implementation of the Noise Insulation Program must be prioritised based on the degree and duration of exceedance with high priority exceedances undertaken within three (3) months of the commencement of construction.

The Noise and Vibration Management CEMP Sub-Plan that will be prepared for the project will consider where longer term impacts are apparent and provide consideration of reasonable and feasible management measures to minimise impacts on the community. These measures would be consistent with the management and mitigation measures set out in the M4-M5 Link Environmental Impact Statement (EIS), Submissions and Preferred Infrastructure Report (SPIR) and the conditions of approval for the project, including condition approval E88. Refer to **section C2.1.1** for further detail regarding relevant management measures and conditions of approval to manage construction noise and vibration impacts.

Condition of approval E67 also requires that all noise and vibration assessment, management and mitigation required by the project approval must consider the cumulative noise impacts of other approved Critical State Significant Infrastructure (CSSI) and State Significant Infrastructure (SSI) projects.

The conditions of approval provide a range of measures to manage potential noise impacts, including night time noise impacts. Relevant conditions include those relating to out of hours works scheduling and the identification of appropriate respite periods including for utility works (conditions of approval, E75, E76 and E78) and the restriction of highly noise intensive works (condition of approval E72). These measures would be implemented in accordance with Environment Protection Licence (EPL) 21149 which has been approved for the construction of the project.

Construction noise impacts from overlapping works

The potential for construction noise impacts from overlapping works of the proposed modification and the M4 East project is described below:

- At the Northcote Street civil and tunnel site, works for the proposed modification cannot commence until works for the M4 East project are complete in this location. There is therefore no potential for impacts associated with overlapping works
- At the Parramatta Road West and Parramatta Road East civil sites, works for the proposed modification would overlap with works for the M4 East project for around nine months. During this overlap period the M4 East project works are likely to be completion of the M4 East tunnel portals and ramps, road widening and landscaping on Parramatta Road and completion of the ventilation facility on the corner of Parramatta Road and Wattle Street. Works for the proposed modification would be focused on site establishment works such as building demolition, utility works and the establishment of the pedestrian walkway.

The potential for cumulative construction noise impacts is therefore limited to overlapping works for the Parramatta Road West and Parramatta Road East civil sites as part of the proposed modification and works for the M4 East. Given the nature of the proposed works which remain to be completed for the M4 East project and that no tunnelling works are proposed from the Parramatta Road West civil site for the proposed modification, potential cumulative noise impacts from overlapping works are considered to be generally consistent with or reduced by comparison to those outlined in Chapter 26 (Cumulative impacts) of the EIS.

Construction noise impacts from multiple construction sites

As described in section 5.5 of Appendix C (Noise and vibration report) of the Modification report, noise impacts associated with the operation of multiple construction ancillary facilities in proximity to each other such as the Northcote Street and Wattle Street civil and tunnel sites or the Parramatta Road West and Parramatta Road East civil sites are considered unlikely to occur given the following:

- The noise impacts at each site would be localised to receivers in close proximity to each construction site
- The separation distances and noise attenuation provided between the sites
- The location of the sites adjacent to heavily trafficked major roads such as Wattle Street and Parramatta Road which dominate the ambient noise environment.

As with all construction works associated with the project, the construction ancillary facilities around Haberfield and Ashfield will operate in accordance with the project conditions of approval.

C1.3 Air quality

C1.3.1 Dust generation and human health impacts

Issue description

Submitters raised concerns regarding air quality impacts during construction at Haberfield and Ashfield associated with the proposed modification:

- *Impacts from PM_{2.5}, and PM₁₀ particles*
- *Impacts from nuisance dust (eg impacts to pools, outdoor structures etc)*

Submitters raised concerns that air quality impacts associated with proposed modification would be similar to impacts for the M4 East project

Submitters requested that monitoring of dust impacts be carried out for the proposed modification.

Submitters raised concerns about human health impacts associated with air quality impacts, including to community members with existing health conditions such as asthma.

Response

The construction air quality assessment in Appendix D (Air quality report) of the Modification report involved the application of a semi-quantitative risk-based approach for the assessment of impacts. The assessment adopted a precinct based approach to assess the impacts associated with the construction sites at Haberfield and Ashfield. The assessment was undertaken for a number of construction activities including demolition, earthworks (tunnelling), construction and track-out.

Potential dust generating activities associated with the proposed modification primarily relate to the continued use of the Northcote Street site for tunnelling and spoil handling, which would be carried out within an acoustic shed, and spoil haulage. If not appropriately managed, construction dust impacts may lead to human health impacts in the form of respiratory health effects, especially for individuals with existing respiratory health conditions such as asthma.

Potential dust impacts associated with demolition activities at the Parramatta Road West and Parramatta Road East civil sites have already been assessed in the EIS and SPIR and there are no changes proposed to these demolition activities as part of the modification.

The assessment determined that if mitigation measures (as described below) are implemented, construction dust is unlikely to represent a serious ongoing problem at Haberfield and Ashfield. Any effects would be temporary and relatively short in duration in the context of the total duration of the project. Provided that mitigation measures are implemented, the potential impacts are not considered to be significant.

Condition of approval E1 requires that all reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during the construction and operation of the project.

Condition of approval C4 requires the preparation of an Air Quality CEMP Sub-Plan for the construction of the project which will include a range of measures to ensure to manage potential dust impacts including the following as described in Chapter 9 (Air quality) of the EIS:

- Regular communication will be carried out with other WestConnex projects under construction in close proximity to ensure that measures are in place to manage cumulative impacts
- Regular site inspections will be conducted to monitor potential dust issues. The site inspections, will be recorded and actioned appropriately within agreed timeframes by relevant project personnel
- Construction activities with the potential to generate dust will be modified or ceased during unfavourable weather conditions to reduce the potential for dust generation
- Measures to reduce potential dust generation, such as the use of water carts, sprinklers, dust screens and surface treatments, will be implemented within project sites as required
- Access roads within project sites will be maintained and managed to reduce dust generation
- Suitable dust suppression and/or collection techniques will be used during cutting, grinding or sawing activities likely to generate dust in close proximity to sensitive receivers
- Storage of materials that have the potential to result in dust generation will be minimised within project sites at all times
- All vehicles loads will be covered to prevent escape of loose materials during transport
- Adequate dust suppression will be applied during all demolition works required to facilitate the project
- Exposed soils will be temporarily stabilised during weather conditions conducive to dust generation and prior to extended periods of inactivity to minimise dust generation
- Haul roads will be treated with water carts and monitored during earthworks operations, ceasing works if necessary during high winds where dust controls are not effective

- At the commencement of establishment of project ancillary facilities, controls such as wheel washing systems and rumble grids will be installed at all site exits to prevent deposition of loose material on sealed surfaces outside project sites to reduce potential dust generation.

The Air Quality CEMP Sub-Plan would be subject to review and approval by DPE prior to the commencement of construction activities.

Potential dust generating activities for the proposed modification would be reduced compared to the M4 East project. For the M4 East project, demolition activities were required at a comparatively large number of properties along Wattle Street, Parramatta Road, Walker Avenue, Northcote Street, Wolseley Street, Martin Street and Ramsay Street. Significant surface works were required for the Wattle Street interchange, Parramatta Road interchange, Haberfield ventilation facility and these surface works occurred over a number of years.

For the proposed modification, construction activities are primarily related to tunnelling at the Northcote Street civil and tunnel site. Surface works at Haberfield and Ashfield are limited to establishment and decommissioning of the G-loop (which would be carried out over a limited duration) and demolition would be limited to the existing buildings at the Parramatta Road West and Parramatta Road East sites which have already been assessed and approved in the EIS for the project. Following the establishment of the construction ancillary facilities, dust generating works are limited compared to the M4 East project. At the Northcote Street civil and tunnel site activities would be undertaken within the acoustic shed and appropriate ventilation and dust management measures would be implemented (refer above).

C1.4 Impacts from construction workers

C1.4.1 Construction worker parking

Issue description

Submitters raised concerns regarding parking impacts from construction workers at Haberfield and Ashfield associated with the Northcote Street civil and tunnel site and the Parramatta Road West and Parramatta Road East civil sites, including parking near Haberfield Public School

Response

A total of around 200 car parking spaces would be provided at the Parramatta Road West and Parramatta Road East civil sites for the construction workforce at Haberfield and Ashfield. The parking spaces would be used by construction workforce staff working at other project construction sites and for some heavy vehicle parking. A shuttle bus service would be provided as required to transport the construction workforce to and from construction sites. Where possible the workforce would be encouraged to walk the relatively short distance between sites. The Northcote Street civil site is located around 400 metres north of the Parramatta Road West and Parramatta Road East civil site.

A preliminary assessment of parking provision for the construction ancillary facilities in the Haberfield and Ashfield area indicated that the proposed parking provision of around a total of 200 spaces would be able to meet the majority of the forecast construction workforce parking demand (refer to Appendix B (Traffic and Transport report) of the Modification report for further information).

The provision of around 200 car parking spaces represents increased parking provision compared to the M4 East project, which included only limited parking within the Haberfield and Ashfield area.

Traffic movements at the Parramatta Road West and Parramatta Road East civil sites would primarily be light vehicle movements associated with construction worker parking. Light vehicle movements would be most frequent around construction worker shift changes. These shift changes would generally occur at 6am and 6pm and therefore would not coincide with school drop off and pick up times.

Condition of approved E52 requires that construction vehicles must be managed to minimise parking, idling and queuing on public roads.

As required by condition of approval E54, a CPAS would be prepared by the contractor to assist with managing parking demand for the project. The CPAS will include:

- a) *Confirmation and timing of the removal of on- and off-street parking associated with construction of the project;*
- b) *Parking surveys of all parking spaces to be removed to determine current demand during peak, off-peak, school drop off and pickup, and weekend periods;*
- c) *Consultation with affected stakeholders utilising existing on- and off-street parking stock which will be impacted as a result of construction;*
- d) *Assessment of the impacts of changes to on- and off-street parking stock taking into consideration outcomes of consultation with affected stakeholders;*
- e) *Identification of mitigation measures to manage impacts to stakeholders as a result of on and off-street parking changes including, but not necessarily limited to, staged removal and replacement of parking, provision of alternative parking arrangements, managed staff parking arrangements and working with relevant council(s) to introduce parking restrictions adjacent to work sites and compounds;*
- f) *Provision of a shuttle bus service(s) to transport workers to site(s) and details of the shuttle bus service(s), including service timing and frequency;*
- g) *Mechanisms for monitoring, over appropriate intervals, to determine the effectiveness of implemented mitigation measures;*
- h) *Provision of contingency measures should the results of mitigation monitoring indicate implemented measures are ineffective; and*
- i) *Provision of reporting of monitoring results to the Secretary and relevant council(s) at three monthly intervals.*

As described above monitoring would be carried out as part of the CPAS to determine the effectiveness of implemented mitigation measures.

C1.4.2 Construction worker behaviour

Issue description

Submitters raised concerns regarding construction worker behaviour at Haberfield and Ashfield, citing examples from the construction of the M4 East project. Specific concerns were raised regarding:

- Sleep disturbance from workers arriving to start morning shifts
- Noise
- Workers parking on local streets and not in designated areas
- Anti-social behaviour
- Littering.

Response

Construction worker behaviour would be managed through the site induction process where behavioural expectations would be communicated to workers. A worker Code of Conduct will be provided as part of the induction process. All workforce and staff will be required to acknowledge and formally accept the Code of Conduct. The Code of Conduct will outline the key protocols for workers travelling to and from work, be it by foot, public transport or personal vehicle (among other things).

The primary goal will be to eliminate or minimise potential issues that may come from the following:

- Excess noise during shift change and travel to and from sites by foot
- Getting changed into and out of work clothes beside the road / in public
- Parking vehicles illegally
- Workers not parking in the parking facilities provided where possible
- Engaging with members of public in a way which may reflect poorly on the project
- Poor worker behaviour

- Littering and general site cleanliness.

The provision of around 200 car parking spaces at the Parramatta Road West and Parramatta Road East civil sites and the provision of a shuttle bus as required to transport the construction workforce to and from construction sites would reduce the interaction between construction workers and the community, as the movement of construction workers in residential areas between available parking spaces and construction sites would be minimised. Rubbish bins would be located at the car parking areas to reduce potential littering.

Complaints regarding construction worker behaviour would be managed in accordance with a complaints management system as required by condition of approval B8. A Community Complaints Mediator that is independent of the design and construction personnel would be nominated for the project as required by condition of approval B13. The role of the Community Complaints Mediator is to address any complaint where a member of the public is not satisfied by the Proponent's response.

C1.5 Compensation for impacts

C1.5.1 Impacts to property prices and compensation

Issue description

Submitters raised concern regarding the impact of the proposed modification on property prices in Haberfield. Submitters also requested compensation for potential impacts to property prices or other impacts associated with the proposed modification

Response

There are a large number of factors that influence the value of a property. Impacts on property values prior to and during construction would be of a temporary nature, and are likely to include uncertainty amongst property owners about property acquisition and the magnitude of potential amenity, accessibility and construction traffic impacts, as well as potential impacts to the perceived value of properties during the construction period.

Roads and Maritime would not provide financial compensation for potential impacts to property values or other impacts associated with the modification. The proposed modification proposes to manage the potential impacts associated with construction through the implementation of the environmental management measures and in accordance with the conditions of approval for the project which are discussed throughout this report.

Pre-dilapidation surveys and rectification work would be carried out if required to rectify potential direct impacts to property as a result of settlement or vibration associated with the project in accordance with conditions of approval E105, E108 and E109 described below:

- *E105: The Proponent must offer pre-dilapidation surveys and must undertake and prepare pre-dilapidation reports where the offer is accepted, on the current condition of surface and subsurface structures identified as at risk from settlement or vibration by the geotechnical model described in Condition E101. The pre-dilapidation surveys and reports must be prepared by a suitably qualified and experienced person(s) and must be provided to the owners of the surface and sub-surface structures for review prior to the commencement of potentially impacting works*
- *E108: Where damage has been determined to occur as a result of the project, the Proponent must carry out rectification at its expense and to the reasonable requirements of the surface and sub-surface structure owner(s) within three (3) months of completion of the post-dilapidation surveys unless another timeframe is agreed with the owner of the affected surface or sub-surface structure*
- *E109: The Proponent must establish an Independent Property Impact Assessment Panel before works that have the potential to result in property impacts commence. The Panel must comprise geotechnical and engineering experts independent of the design and construction team. The Panel will be responsible for independently reviewing Condition Survey Reports undertaken under Conditions E105 and E106, the resolution of property damage disputes, and the establishment of ongoing settlement and vibration monitoring requirements. The Secretary must be informed of the Panel Members prior to property impact.*

Either the affected owner or the Proponent may refer unresolved disputes arising from potential and/or actual property impacts to the Panel for resolution. All costs incurred in establishing and implementing the Panel must be borne by the Proponent regardless of which party makes a referral to the Panel.

C2 Northcote Street civil and tunnel site

14 submitters have raised issues regarding the use of the Northcote Street civil and tunnel site for the proposed modification.

C2.1 Noise and vibration

C2.1.1 Construction noise and vibration and sleep disturbance

Issue description

Submitters raised concern about construction noise and vibration impacts associated with the Northcote Street civil and tunnel site including sleep disturbance and associated human health impacts.

Response

An assessment of potential noise and vibration impacts was carried out for the proposed modification and is provided in Appendix C (Noise and vibration report) of the Modification report.

Potential noise and vibration impacts

For the Northcote Street civil and tunnel site, minor noise impacts are predicted during the establishment and decommissioning of the site. The majority of these works would be conducted during standard daytime hours only and would be relatively short in duration. Tunnelling activities would occur largely within the existing acoustic shed and are predicted to result in minor to moderate impacts at surrounding receivers. Impacts would be managed in accordance with relevant conditions of approval (discussed below).

Decommissioning of the acoustic shed was proposed and assessed as part of the M4 East project however these works would now occur at the end of construction for the M4-M5 Link project.

The sleep disturbance screening criterion is likely to be exceeded where the following works are occurring adjacent to residential receivers at the Northcote Street civil and tunnel site:

- Tunnelling
- Tunnelling support activities
- G-loop establishment and decommissioning.

The noise assessment determined that for tunnelling and tunnelling support activities that the majority of the receivers are predicted to be subject to no or minor exceedances (1 to 5 dBA exceedances) of the night time Noise Management Levels (NMLs), with worst-case impacts of up to 10 dBA limited to only three receivers located to the west of the Northcote Street civil and tunnel site on the west side of Parramatta Road near Page Avenue and Earle Avenue. Impacts would be managed in accordance with relevant conditions of approval (discussed below).

The Modification report provided a conservative assessment of two options for how the construction access tunnel connects with the mainline tunnels. Both options would connect to the mainline tunnels under residential properties situated between Walker Avenue and Alt Street. One option would be progressed subject to detailed design.

The new construction access tunnel at the Northcote Street civil and tunnel site would pass under less than 10 residential properties in the vicinity of Walker Avenue and Alt Street. The alignment of the construction access tunnel would be around 30 metres below ground surface where it passes under the residential properties. It is anticipated that the construction access tunnel would be constructed over a period of around nine months.

Construction of the access tunnel would result in minimal ground-borne noise impacts to these properties when road headers are being used. However, during rock-breaker tunnelling works it is predicted that the night time criterion would be exceeded at a number of sensitive receivers in the vicinity of the access tunnel. It is expected that a combination of road-headers and rock-breakers would be used during construction. The duration of exceedances of the night time criterion are predicted to be around three weeks for any receiver as tunnelling works progress along the construction access tunnel alignment.

A range of mitigation measures are available to mitigate ground-borne noise impacts as outlined in Part E of the SPIR and would be included in the Construction Noise and Vibration CEMP which will:

- Identify relevant performance criteria in relation to noise and vibration
- Identify noise and vibration sensitive receivers and features in the vicinity of the project
- Include standard and additional mitigation measures from the *Construction Noise and Vibration Guideline* (CNVG) (Roads and Maritime 2016) and details about when each will be applied
- Describe the process(es) that will be adopted for carrying out location and activity specific noise and vibration impact assessments to assist with the selection of appropriate mitigation measures
- Include protocols that will be adopted to manage works required outside standard construction hours in accordance with relevant guidelines
- Detail monitoring that will be carried out to confirm project performance in relation to noise and vibration performance criteria.

In accordance with condition of approval E82: Mitigation measures must be applied when the following residential ground-borne noise levels are exceeded:

- c) evening (6:00 pm to 10:00 pm) — internal LAeq(15 minute): 40 dB(A); and
- d) night (10:00 pm to 7:00 am) — internal LAeq(15 minute): 35 dB(A).

The mitigation measures must be outlined in the Noise and Vibration CEMP Sub-plan, including in any Out-of-Hours Work Protocol, required by condition of approval E77.

Conditions of approval

The conditions of approval provide a range of measures to manage potential noise impacts, including out of hours noise impacts. Relevant conditions include those relating to out of hours works scheduling and the identification of appropriate respite periods and the restriction of highly noise intensive works as listed below:

- *A24: A suitably qualified and experienced Acoustics Advisor, who is independent of the design and construction personnel, must be nominated by the Proponent and engaged for the duration of works and for no less than six (6) months following completion of construction of the project.*

The details of the nominated Acoustics Advisor must be submitted to the Secretary for approval no later than one (1) month before commencement of works.

The Proponent must cooperate with the Acoustics Advisor by:

- *providing access to noise and vibration monitoring activities as they take place;*
 - *providing for review of noise and vibration plans, assessments, monitoring reports, data and analyses undertaken; and*
 - *considering any recommendations to improve practices and demonstrating, to the satisfaction of the Acoustics Advisor, why any recommendation is not adopted.*
- *E72: Except as permitted by an EPL, highly noise intensive works that result in an exceedance of the applicable NML at the same receiver must only be undertaken:*
 - *Between the hours of 8:00 am to 6:00 pm Monday to Friday;*
 - *Between the hours of 8:00 am to 1:00 pm Saturday; and*
 - *In continuous blocks not exceeding three (3) hours each with a minimum respite from those activities and works of not less than one (1) hour between each block.*

- *E75: Out-of-hours works that are regulated by an EPL as per Condition E73(c) or through the Out-of-Hours Work Protocol as per Condition E77 include:*
 - *Works which could result in a high risk to construction personnel or public safety, based on a risk assessment carried out in accordance with AS/NZS ISO 31000:2009 “Risk Management – Principles and Guidelines”; or*
 - *Where the relevant road network operator has advised the Proponent in writing that carrying out the works and activities could result in a high risk to road network operational performance; or*
 - *Where the relevant utility service operator has advised the Proponent in writing that carrying out the works and activities could result in a high risk to the operation and integrity of the utility network; or*
 - *Where the TfNSW Transport Management Centre (or other road authority) has advised the Proponent in writing that a road occupancy licence is required and will not be issued for the works or activities during the hours specified in Condition E68 and Condition E69; or*
 - *Where Sydney Trains (or other rail authority) has advised the Proponent in writing that a Rail Possession is required.*
- *E76: In order to undertake out-of-hours work described in Condition E75, the Proponent must identify appropriate respite periods for the out-of-hours works in consultation with the community at each affected location. This consultation must include (but not be limited to) providing the community with:*
 - *A schedule of likely out-of-hours work for a period no less than three (3) months*
 - *The potential works, location and duration*
 - *The noise characteristics and likely noise levels of the works*
 - *Likely mitigation and management measures*

The outcomes of the community consultation, the identified respite periods and the scheduling of the likely out-of-hour works must be provided to the Acoustics Advisor, EPA and the Secretary.
- *E78: All works undertaken for the delivery of the project, including those undertaken by third parties, must be coordinated to ensure respite periods are provided. The Proponent must:*
 - *Reschedule any works to provide respite to impacted noise sensitive receivers so that the respite is achieved in accordance with Condition E76; or*
 - *consider the provision of alternative respite or mitigation to impacted noise sensitive receivers and*
 - *provide documentary evidence to the Acoustics Advisor in support of any decision made by the Proponent in relation to respite or mitigation.*

EPL 21149

EPL 21149 provides for regulation of noise generating works including out of hours works. EPL 21149 provides for:

- Permitted hours for high noise generating works
- Exemptions to standard construction hours for:- low noise impact works; nominated exceptional circumstances; and tunnelling, tunnelling support and underground construction works
- Requirements for works outside of standard construction hours, including assessment, notification and respite coordination
- Community agreements to undertake works outside of standard construction hours.

C2.2 Air quality

C2.2.1 Dust generation and human health impacts

Issue description

Submitters raised concerns regarding air quality impacts during construction at the Northcote Street civil and tunnel site including:

- Impacts from $PM_{2.5}$, and PM_{10} particles
- Impacts from nuisance dust (eg impacts to pools, outdoor structures etc).

Submitters requested that monitoring of dust impacts be carried out for the proposed modification.

Submitters raised concerns about human health impacts associated with air quality impacts, including to community members with existing health conditions such as asthma.

Response

The use of the Northcote Street civil and tunnel site for the proposed modification would result in potential air quality impacts including dust generation during construction. If not appropriately managed, construction dust impacts may lead to human health impacts in the form of respiratory health effects, especially for individuals with existing respiratory health conditions such as asthma.

Potential dust generating activities associated with the proposed modification primarily relate to the continued use of the Northcote Street site for tunnelling and spoil handling, which would be carried out within an acoustic shed, and spoil haulage.

The construction air quality assessment in Appendix D (Air quality report) of the Modification report involved the application of a semi-quantitative risk-based approach for the assessment of impacts associated with tunnelling and spoil handling. The assessment adopted a precinct based approach to assess the impacts associated with the construction sites at Haberfield and Ashfield. The assessment was undertaken for a number of construction activities including demolition, earthworks (tunnelling), construction and track-out.

The assessment determined that if mitigation measures (as described below) are implemented, construction dust is unlikely to represent a serious ongoing problem. Any effects would be temporary and relatively short in duration in the context of the total duration of the project. Provided that mitigation measures are implemented, the potential impacts are not considered to be significant. The implementation of mitigation measures would therefore also manage potential human health impacts associated with construction dust generation.

Condition of approval E1 requires that all reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during the construction and operation of the project.

Condition of approval C4 requires the preparation of an Air Quality CEMP Sub-Plan for the construction of the project which will include a range of measures to ensure to manage potential dust impacts. This may include the following measures as described in Chapter 9 (Air quality) of the EIS:

- Regular communication will be carried out with other WestConnex projects under construction in close proximity to ensure that measures are in place to manage cumulative impacts
- Regular site inspections will be conducted to monitor potential dust issues. The site inspections, will be recorded and actioned appropriately within agreed timeframes by relevant project personnel
- Construction activities with the potential to generate dust will be modified or ceased during unfavourable weather conditions to reduce the potential for dust generation
- Measures to reduce potential dust generation, such as the use of water carts, sprinklers, dust screens and surface treatments, will be implemented within project sites as required
- Access roads within project sites will be maintained and managed to reduce dust generation
- Suitable dust suppression and/or collection techniques will be used during cutting, grinding or sawing activities likely to generate dust in close proximity to sensitive receivers

- Storage of materials that have the potential to result in dust generation will be minimised within project sites at all times
- All vehicles loads will be covered to prevent escape of loose materials during transport
- Adequate dust suppression will be applied during all demolition works required to facilitate the project
- Exposed soils will be temporarily stabilised during weather conditions conducive to dust generation and prior to extended periods of inactivity to minimise dust generation
- Haul roads will be treated with water carts and monitored during earthworks operations, ceasing works if necessary during high winds where dust controls are not effective
- At the commencement of establishment of project ancillary facilities, controls such as wheel washing systems and rumble grids will be installed at all site exits to prevent deposition of loose material on sealed surfaces outside project sites to reduce potential dust generation.

The Air Quality CEMP Sub-Plan would be subject to review and approval by DPE prior to the commencement of construction activities.

C2.3 Impacts from construction workers

C2.3.1 Construction worker parking

Issue description

Submitters raised concerns regarding parking impacts from construction workers around the Northcote Street civil and tunnel site

Response

Potential parking impacts at Haberfield and Ashfield, including impacts associated with the use of the Northcote Street civil and tunnel site are discussed in **section C1.4.1**.

C2.3.2 Construction worker behaviour

Issue description

Submitters raised concerns regarding construction worker behaviour, citing examples from the construction of the M4 East project. Specific concerns were raised regarding:

- Sleep disturbance from workers arriving to start morning shifts
- Noise
- Workers parking on local streets and not in designated areas
- Anti-social behaviour
- Littering.

Response

Potential construction worker behaviours impacts at Haberfield and Ashfield, including impacts associated with the use of the Northcote Street civil and tunnel site are discussed in **section C1.4.2**.

C2.4 Construction access tunnel

C2.4.1 Settlement impacts

Issue description

Submitters raised concerns regarding the new construction access tunnel alignment for the Northcote Street civil and tunnel site including:

- Potential settlement impacts to properties above the tunnel
- Lack of mitigation to manage potential settlement impacts.

Response

The construction access tunnel runs beneath the Northcote Street civil and tunnel site, under Wattle Street and beneath land acquired for the M4 East project, and under a limited number of residential properties in Walker Avenue and Alt Street. The access tunnel is around at least 30 metres below ground in the vicinity of these residential properties. Refer to Figure 4-4 of the Modification report which provides an indicative cross section of the construction access tunnel.

Potential settlement impacts

Potential settlement impacts are assessed in section 6.3.5 of the Modification report. The construction access tunnel excavation is anticipated to result in less than three millimetres of additional surface settlement in the zone of influence (refer to Figure 6-5 of the Modification report). When combined with the predicted settlement levels described in section 12.3.4 of the EIS for this location associated with excavation of the mainline tunnels, the combined settlement impacts would be in the range of 10 to 12 millimetres (refer to Figure 6-6 of the Modification report).

The predicted settlement impacts at these residential properties would meet the maximum settlement criteria contained within condition of approval E103 (30 millimetres for low or non-sensitive properties and 20 millimetres for sensitive properties and heritage items).

Management of potential settlement impacts

Potential settlement impacts would be managed in accordance with relevant conditions of approval including:

- *E101: A geotechnical model of representative geological and groundwater conditions must be prepared prior to excavation and tunnelling to identify geological structures and groundwater features. The model must include details of proposed excavations and tunnels, construction staging, and identify surface and sub-surface structures, including any specific attributes, which may be impacted by the project. The Proponent must use this model to assess the cumulative predicted settlement, ground movement, stress redistribution and horizontal strain profiles caused by excavation and tunnelling, including groundwater drawdown and associated impacts, on adjacent surface and sub-surface structures.*
- *E104: Should the geotechnical model in Condition E101 identify exceedances of the relevant criteria established by Conditions E102 and E103, the Proponent must implement an instrumentation and monitoring program to measure settlement, distortion or strain as required. The Proponent must also identify and implement appropriate mitigation measures in consultation with the owner(s) of the relevant surface and sub-surface structures prior to excavation and tunnelling works to ensure where possible that the surface and sub-surface structures will not experience exceedances of the relevant criteria.*
- *E105: The Proponent must offer pre-dilatation surveys and must undertake and prepare pre-dilatation reports where the offer is accepted, on the current condition of surface and subsurface structures identified as at risk from settlement or vibration by the geotechnical model described in Condition E101. The pre-dilatation surveys and reports must be prepared by a suitably qualified and experienced person(s) and must be provided to the owners of the surface and sub-surface structures for review prior to the commencement of potentially impacting works*
- *E106: Where pre-dilatation surveys have been undertaken in accordance with Condition E105, subsequent post-dilatation surveys must be undertaken to assess damage to the surface and*

sub-surface structures that may have resulted from the construction of the CSSI within three (3) months of the completion of construction.

- *E107: The results of the surveys must be documented in a Condition Survey Report for each surface and sub-surface structure surveyed. Copies of the Condition Survey Reports must be provided to the owner(s) of the structures surveyed within three (3) weeks of completing the surveys and no later than four (4) months following the completion of construction.*
- *E108: Where damage has been determined to occur as a result of the project, the Proponent must carry out rectification at its expense and to the reasonable requirements of the surface and sub-surface structure owner(s) within three (3) months of completion of the post-dilapidation surveys unless another timeframe is agreed with the owner of the affected surface or sub-surface structure.*
- *E109: The Proponent must establish an Independent Property Impact Assessment Panel before works that have the potential to result in property impacts commence. The Panel must comprise geotechnical and engineering experts independent of the design and construction team. The Panel will be responsible for independently reviewing Condition Survey Reports undertaken under Conditions E105 and E106, the resolution of property damage disputes, and the establishment of ongoing settlement and vibration monitoring requirements. The Secretary must be informed of the Panel Members prior to property impact.*

Either the affected owner or the Proponent may refer unresolved disputes arising from potential and/or actual property impacts to the Panel for resolution. All costs incurred in establishing and implementing the Panel must be borne by the Proponent regardless of which party makes a referral to the Panel.

C2.5 Land use

C2.5.1 Future land use

Issue description

Submitters raised concerns regarding the future land use of the Northcote Street civil and tunnel site following the completion of construction.

Response

As described in section 6.3.5 of the Modification Report, remaining land at the Northcote Street civil and tunnel site not used for operational transport infrastructure would be rehabilitated and landscaped in accordance with the M4 East Residual Land Management Plan following completion of the construction of the M4-M5 Link project.

C2.6 Social and economic

C2.6.1 Amenity impacts

Issue description

Submitters raised concerns regarding ongoing amenity impacts around the Northcote Street civil and tunnel site.

Response

Potential impacts to amenity associated with the Northcote Street civil and tunnel site are described in section 6.3.7 of the Modification report. It was determined that potential noise, air quality and visual amenity impacts could be managed in accordance with the existing environmental management measures summarised in Part E of the SPIR.

It is acknowledged that the proposed modification would increase the duration of potential amenity impacts for sensitive users near the Northcote Street civil and tunnel site and therefore would also increase construction fatigue impacts associated with the project.

The use of the Northcote Street civil and tunnel site for the proposed modification would enable existing M4 East infrastructure at the site such as the acoustic shed, driveways, water treatment plant, site offices and other structures to be re-used thereby reducing potential amenity impacts associated with site establishment activities.

Potential dust and high noise generating activities for the proposed modification would be reduced compared to the M4 East project. For the M4 East project, demolition activities were required at a comparatively large number of properties along Wattle Street, Parramatta Road, Walker Avenue, Northcote Street, Wolseley Street, Martin Street and Ramsay Street. Significant surface works were required for the Wattle Street interchange, Parramatta Road interchange, Parramatta Road ventilation facility and these surface works occurred over a number of years.

For the proposed modification, construction activities are primarily related to tunnelling at the Northcote Street civil and tunnel site. Surface works at Haberfield and Ashfield are limited to establishment and decommissioning of the G-loop (which would be carried out over a limited duration). At the Northcote Street civil and tunnel site activities would be undertaken within the acoustic shed and appropriate ventilation and dust management measures would implemented (refer above).

C2.6.2 Impact to social infrastructure

Issue description

Submitters raised concerns regarding impacts to social infrastructure around the Northcote Street civil and tunnel site.

Response

Potential impacts to social infrastructure associated with the Northcote Street civil and tunnel site are described in section 6.3.7 of the Modification report, including impacts to Kingdom Hall of Jehovah's Witnesses at 12 Wattle Street, Haberfield and Reg Coady Reserve as summarised in **Table C-1**.

Table C-1 Social infrastructure likely to experience multiple construction effects

Use type	Social infrastructure facility	Change to environment	Potential socio-economic effects
Place of worship	Kingdom Hall of Jehovah's Witnesses at 12 Wattle St, Haberfield	<ul style="list-style-type: none"> Day and night-time noise exceedances anticipated Increased construction vehicles (Wattle Street) Visual amenity reduction (acoustic shed) Construction dust from tunnelling 	<ul style="list-style-type: none"> Reduced amenity and access, particularly when services and events are occurring.
Outdoor recreation	Reg Coady Reserve, Five Dock	<ul style="list-style-type: none"> Ongoing occupation of part of the reserve for the G-loop for a longer duration Noise and visual amenity reduction associated with reconfiguration works and use of the G-loop 	<ul style="list-style-type: none"> Reduced amenity and access, particularly when services and events are occurring Reduced area available for outdoor recreation Amenity impacts.

Potential impacts to social infrastructure have been reduced as a result of the following elements of the proposed modification:

- The use of the Northcote Street civil and tunnel site for the proposed modification would enable existing M4 East infrastructure at the site such as the acoustic shed, driveways, water treatment

plant, site offices and other structures to be re-used thereby reducing potential high noise generating works associated with site establishment activities

- The provision of around 200 car parking spaces at the Parramatta Road West and Parramatta Road East civil sites for construction workers would reduce potential impacts to on-street parking in the vicinity of the Northcote Street civil and tunnel site
- The potential use of the M4 East tunnels as part of spoil haulage Route B would reduce the requirement for spoil haulage vehicles to return along Wattle Street past the Kingdom Hall of Jehovah's Witnesses property.

The area of land at Reg Coady Reserve that would be occupied for the proposed modification would be reduced compared to the area that has been occupied by the M4 East project. Reg Coady Reserve would be subject to staged rehabilitation works in accordance with the M4 East Residual Land Management Plan. On completion of the M4 East construction works, that part of Reg Coady Reserve that would not be used for the G-loop would be reinstated in accordance with the M4 East Residual Land Management Plan. On completion of construction of the M4-M5 Link project, the G-loop infrastructure would be removed and the remaining part of Reg Coady Reserve would be rehabilitated in accordance with the M4 East Residual Land Management Plan.

Potential impacts to social infrastructure associated with the proposed modification would be effectively managed through the implementation of the approved environmental management measures for the project as summarised in Part E of the SPIR and the conditions of approval for the project, including:

- Preparation of a Noise and Vibration Management CEMP Sub-Plan to outline how potential construction noise and vibration impacts will be managed during the project
- At receiver noise mitigation as required by condition of approval E88 to address construction fatigue and amenity. 12 Wattle Street, Haberfield is a property listed for treatment in Appendix E of the conditions of approval
- Preparation of a Traffic and Transport and Access CEMP Sub-Plan, and Construction Parking and Access Strategy to outline how potential traffic, transport, access and car parking impacts would be managed during construction
- Preparation of an Air Quality CEMP Sub-Plan to outline how air quality impacts, including minimising dust generation, would be managed during construction
- Preparation of a Social Infrastructure Plan that will detail:
 - Measures that will be delivered as part of the project to improve community connectivity in areas affected by the project, including pedestrian and cyclist access
 - Community and social facilities, for example open space, that will be delivered or enhanced as part of the project
 - Community initiatives and programs that will receive support as part of the project, including the manner in which support will be provided.

The Social Infrastructure Plan will be prepared by a suitably qualified and experienced person in consultation with the community and relevant councils and implemented as part of the project.

C2.7 Urban design

C2.7.1 Delay of M4 East urban design and landscaping works

Issue description

Submitters raised concern regarding the delay of urban design and landscaping works for the M4 East project and recommended that further or improved urban design measures be implemented as compensation.

Response

Potential delay of urban design and landscaping works for the M4 East as a result of the proposed modification is limited to land at the Northcote Street civil and tunnel site and Reg Coady Reserve.

As described in section 6.3.5 of the Modification Report, once construction works are complete, the construction facilities would be removed and the site would be made suitable for a future use in accordance with the M4 East Residual Land Management Plan.

The area of land at Reg Coady Reserve that would be occupied for the proposed modification would be reduced compared to the area that has been occupied by the M4 East project. Reg Coady Reserve would be subject to staged rehabilitation works in accordance with the Residual Land Management Plan. On completion of the M4 East construction works, that part of Reg Coady Reserve that would not be used for the G-loop would be reinstated in accordance with the M4 East Residual Land Management Plan. On completion of construction of the M4-M5 Link project, the G-loop infrastructure would be removed and the remaining part of Reg Coady Reserve would be rehabilitated in accordance with the M4 East Residual Land Management Plan.

C3 Spoil haulage routes

21 submitters have raised issues regarding the proposed spoil haulage routes for the proposed modification.

C3.1 Traffic and transport

C3.1.1 Impacts to road condition

Issue description

Submitters raised concerns regarding the physical condition of roads along spoil haulage Route A, including Ramsay Road and Great North Road. Submitters were also concerned regarding impacts to the physical condition these roads from heavy vehicles.

Response

The existing condition of the roads along spoil haulage Route A is considered to be adequate for spoil haulage (refer to Plate 12 to Plate 17 in Appendix F (Site photos) of the Modification report. The roads for the spoil haulage routes are State roads (except as provided for by condition of approval E49) and Roads and Maritime is responsible for the routine maintenance and upgrade of these roads, if required.

Construction traffic volumes associated with the proposed modification are considered to be minor compared to existing traffic volumes along the spoil haulage routes. For example construction vehicle movements on Great North Road, south of Fairlight Street during peak periods would represent less than a four per cent increase compared to existing (without construction) volumes as identified in Table 4-12 of Appendix B (Traffic and Transport report) of the Modification report.

Once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, would reduce impacts on the surface road network. The majority of spoil haulage traffic movements are likely to be generated during standard construction hours.

C3.1.2 Traffic safety impacts

Issue description

Submitters raised concerns regarding traffic safety impacts associated with the interaction of spoil haulage vehicles with other vehicles on spoil haulage Route A, including specifically on Great North Road.

Response

As noted in section 4.5.7 of Appendix B (Traffic and Transport report) of the Modification report there is a risk with construction traffic interacting with general traffic, with elevated risk when construction-related vehicles are entering and leaving construction sites.

Potential impacts on traffic safety were assessed in Appendix B (Traffic and Transport report) of the Modification report. The assessment identified that the change in construction traffic volumes would be low for the proposed modification when compared to existing traffic volumes on the road network connecting to the construction ancillary facility locations and therefore is not expected to substantially impact road safety along the spoil haulage routes to and from the Northcote Street civil and tunnel site.

Potential impacts on traffic crashes were assessed in Appendix B (Traffic and Transport report) of the Modification report. The assessment identified that the change in construction traffic volumes would be low for the proposed modification when compared to existing traffic volumes on key arterial roads connecting to the construction ancillary facility locations and is not expected to substantially impact road safety. Ramsay Street, Fairlight Street and Great North Road are all State roads under the control of Roads and Maritime. Wattle Street and Parramatta Road are arterial roads.

The conditions of approval for the approved project provide a number of measures to manage potential impacts associated with spoil haulage routes. These measures would apply to both Route A and Route B and include:

- *A44: All construction spoil haulage vehicles must be clearly marked as being for WestConnex M4-M5 Link (including CSSI application number) in such a manner to enable immediate identification within at least 50 metres of the vehicles*
- *E49: Spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary*
- *E51: All requests to the Secretary for local road usage need to include a traffic and pedestrian impact assessment, and should include a swept path analysis if required. The traffic and pedestrian impact assessment, incorporated in the Site Establishment Management Plan or Traffic and Transport CEMP as relevant, must:*
 - d) *demonstrate that the local road usage will not compromise the safety of the public and have minimal amenity impacts;*
 - e) *provide details as to the date of completion of the road dilapidation surveys for the subject local roads; and*
 - f) *describe the measures that will be implemented to avoid where practicable the use of local roads past schools, aged care facilities and child care facilities during peak times for operation.*
- *E52: Construction vehicles (including staff vehicles) associated with the project must be managed to:*
 - a) *Minimise parking on public roads*
 - b) *Minimise idling and queuing on public roads*
 - c) *Ensure spoil haulage vehicles must adhere to the nominated haulage routes*
- *E53: The locations of all construction spoil haulage vehicles must be able to be monitored in real time and the records of monitoring be made available electronically to the Secretary and the EPA upon request for a period of no less than one year following construction.*

All heavy vehicles would comply with road transport laws including compliance with standards for mechanical roadworthiness, mass limits, dimension limits, load restraint, driver licensing and vehicle registration, and driver work/rest hours. Relevant road transport law includes the, *Work Health and Safety Act 2011*, *Heavy Vehicle National Law (NSW) (HVNL)* and *Work Health and Safety Regulation 2017*. The HVNL establishes chain of responsibility provisions for every person in the transport supply chain including provisions for:

- Contractor management
- Vehicle operations
- Fitness for work
- Speeding.

C3.1.3 Traffic network impacts

Issue description

Submitters raised concern regarding impacts to the traffic network including congestion at key intersections during construction from spoil haulage trucks and other construction vehicle movements including at:

- *Ramsay Street*
- *Fairlight Street*
- *Dobroyd Parade*
- *Great North Road*

- *Parramatta Road*
- *Wolseley Street*
- *Ilford Avenue*
- *Bland Street*
- *Roads in Balmain, Rozelle, Lilyfield, or Leichhardt.*

Submitters were also concerned that spoil haulage vehicles would stop or drive slowly along spoil haulage routes when waiting to access the Northcote Street civil and tunnel site and result in traffic congestion.

Response

A construction traffic assessment was undertaken for the construction ancillary facilities in the Haberfield and Ashfield area in Appendix B (Traffic and Transport report) of the Modification report, including the proposed spoil haulage routes from the Northcote Street civil and tunnel site. The assessment considered the movement of all light and heavy vehicles to and from all M4-M5 Link project construction sites that would travel through Haberfield, Ashfield and Five Dock.

The assessment determined that there would be minimal impact on the mid-block roadway and intersection level of service through the Haberfield, Ashfield and Five Dock modelled road network. Potential impacts are summarised in section 6.3.1 of the Modification report. Along the proposed spoil haulage routes in Haberfield and Ashfield, spoil haulage vehicles associated with the proposed modification would represent around a two to five per cent increase compared to existing traffic volumes. Along the proposed spoil haulage routes in Five Dock, spoil haulage vehicles associated with the proposed modification would represent around a one to four per cent increase compared to existing traffic volumes.

The proposed spoil haulage routes for the Northcote Street civil and tunnel site would be more direct and less constrained by comparison to the proposed spoil haulage route for the Parramatta Road West civil and tunnel site described in the EIS and SPIR which involved the use of the Tebbutt Street B-loop.

Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, would reduce impacts on the surface road network.

Once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, would reduce impacts on the surface road network. The G-loop is anticipated to be operational before the commencement of tunnelling activities from the Northcote Street civil and tunnel site or soon thereafter.

Relevant conditions of approval that would manage spoil haulage vehicles are outlined in **section C3.1.2**.

Condition of approved E52 requires that construction vehicles must be managed to minimise parking, idling and queuing on public roads. The potential for construction vehicles to circulate around construction sites or along spoil haulage routes would be managed by:

- Scheduling of spoil haulage movements in consideration of the tunnel spoil production rate
- Regular communication with spoil haulage vehicle drivers eg via radio
- Real time monitoring of spoil haulage vehicles.

The marshalling of spoil haulage vehicles to the tunnelling sites would be managed through a spoil haulage protocol, which would be documented in the Traffic and Transport and Access CEMP Sub-Plan. It is advantageous for the contractor from a time and cost perspective to ensure the efficient movement of spoil haulage vehicles to and from tunnelling sites.

Spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary. As a result spoil haulage vehicles for the Northcote Street civil and tunnel site would not travel on Wolseley Street, Ilford Avenue or Bland Street. The proposed modification does not propose any changes that would alter construction traffic volumes or spoil haulage routes on roads in Balmain, Rozelle or Lilyfield.

The provision of around 200 car parking spaces at the Parramatta Road West and Parramatta Road East civil sites, and the provision of a shuttle bus as required to transport the construction workforce to and from construction sites, would reduce the need for workers to travel and park on local streets.

Heavy vehicles would travel to the Bland Street and Alt Street access points via Parramatta Road and the arterial network. Heavy vehicles are not permitted to travel beyond the extent of the construction site boundaries on Bland Street and Alt Street. Refer to **section C4.1.1** for further information regarding traffic movements at the Parramatta Road West and Parramatta Road East civil sites.

C3.1.4 Traffic network impacts not considered in the traffic assessment

Issue description

Submitters raised concerns regarding impacts to the traffic impacts not considered in the traffic assessment including:

- *Impacts outside of peak times (eg at the end/start of construction worker shifts or during school drop off and pick up times)*
- *Impacts to other roads that intersect with roads that would be used for spoil haulage Route A such as Queens Road.*

Response

The construction traffic assessment in Appendix B (Traffic and Transport report) of the Modification report determined that there would be minimal impact on the mid-block roadway and intersection level of service through the Haberfield, Ashfield and Five Dock modelled road network during the AM and PM peaks. Assessment of potential impacts during the AM and PM peaks provides a worst-case assessment and potential construction traffic impacts outside of these times would be consistent or reduced compared to the peak periods.

Traffic movements at the Parramatta Road West and Parramatta Road East civil sites would primarily be light vehicle movements associated with construction worker parking. Light vehicle movements would be most frequent around construction worker shift changes. These shift changes would generally occur at 6am and 6pm and therefore would not coincide with school drop off and pick up times.

The construction traffic assessment considered potential impacts to key intersections along the spoil haulage routes, including the intersection of Great North Road/Queens Road/Fairlight Street. Refer to section 4.5.2 of Appendix B (Traffic and Transport report) of the Modification report for further information. No change in level of service (LoS) is predicted for this intersection as a result of the proposed modification in the AM (LoS E) or PM (LoS B) peaks. The LoS considers the average delay on all legs of the intersection, including on Queens Road.

C3.1.5 Objection to spoil haulage routes

Issue description

Submitters raised objections to the proposed spoil haulage routes for the Northcote Street civil and tunnel site including the following:

- *Route A and Route B should not be used and another alternative should be considered*
- *Route A should not be used at any time*
- *Spoil haulage trucks should avoid surface roads and travel through the M4 East tunnels only*
- *Concern that both routes would be used at the same time.*

Submitters requested clarification regarding which roads are included in the proposed spoil haulage routes (specifically whether Liverpool Road would be used).

Response

Spoil haulage routes

Two spoil haulage routes (Route A and Route B) are proposed to be used in association with the Northcote Street civil and tunnel site as described in section 4.2.4 of the Modification report. These proposed spoil haulage routes are shown on Figure 4-5 of the Modification report.

In response to feedback received from stakeholders during the consultation process prior to the lodgement of the Modification report, it is proposed that Route A would generally only be used between 7am and 6pm Monday to Friday and 8am to 6pm on Saturdays except in the following circumstances and in accordance with the relevant conditions of the project approval:

- During the early stages of construction until such time as the works to facilitate operation of the G-loop were completed and the G-loop was functional
- 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.

Once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, would reduce impacts on the surface road network. The majority of spoil haulage traffic movements are likely to be generated during standard construction hours. The use of the M4 East tunnels (once operational) would generally be preferred for Route B spoil haulage, subject to the location of available spoil disposal sites and traffic conditions.

A spoil haulage protocol would be developed by the contractor in consultation with Roads and Maritime and the Transport for NSW Traffic Management Centre to manage spoil haulage movements on Routes A and B. The protocol would be documented in the Traffic and Transport and Access CEMP Sub-Plan. Table 4-2 of the Modification report identified indicative construction vehicle numbers of around eight heavy vehicles arriving and departing in the AM and PM peak hours at the Northcote Street civil and tunnel site, which is less than the approved 20 heavy vehicle movements per hour from this site for the M4 East project (Roads and Maritime, 2015).

The conditions of approval for the approved project provide a number of measures to manage potential impacts associated with spoil haulage routes which are outlined in **section C3.1.2**.

Liverpool Road would not be used as a spoil haulage route for the Northcote Street civil and tunnel site or any other tunnelling sites for the project. It should also be noted that The Tebbutt Street 'B-loop' was proposed in the EIS as a spoil haulage route for the Parramatta Road West site. However, no tunnelling activities would be carried out at the Parramatta Road West site for the modification and therefore the Tebbutt Street 'B-loop' is not required.

C3.1.6 Impacts to public transport

Issue description

Submitters raised concerns regarding traffic impacts to public transport associated with spoil haulage vehicles including the movement of buses on Parramatta Road.

Response

As described in section 6.3.1 of the Modification report, the minor changes in peak hour construction volumes for the proposed modification are likely to result in a minor impact on buses commensurate with the impact on general traffic.

The use of the M4 East tunnels (once operational) would generally be preferred for Route B spoil haulage, subject to the location of available spoil disposal sites and traffic conditions. The use of the tunnels would reduce potential traffic impacts to Parramatta Road.

C3.1.7 Impacts to pedestrian and cyclist safety

Issue description

Submitters raised concerns regarding pedestrian and cyclist safety impacts associated with the spoil haulage routes, including specifically at:

- *Great North Road*
- *G-loop and Dobroyd Parade.*

Response

As noted in section 4.5.7 of Appendix B (Traffic and Transport report) of the Modification report there is a risk with construction traffic interacting with general traffic, with elevated risk when construction-related vehicles are entering and leaving construction sites.

As described in section 4.4.5 and section 4.5.5 of Appendix B (Traffic and Transport report) of the Modification report, key elements of the Northcote Street civil and tunnel site would be consistent with the layout used for the M4 East project, including the vehicle entry and exit locations and the arrangements around the G-Loop. Safe pedestrian and cyclist access would be maintained through the provision of a re-aligned shared path around the northern perimeter of the G-loop during construction (refer to Figure 6-7 of the Modification report) in accordance with condition E57 of the project approval.

Great North Road is a relatively wide road with a posted speed limit of 60 kilometres per hour. There are signalised pedestrian crossings along this section of the route at the Fairlight Street and Parramatta Road intersections. As identified in section 4.5 of Appendix B (Traffic and Transport report) of the Modification report, Great North Road would have an acceptable mid-block LoS for the proposed modification (LoS D).

As described in section 2.1.4 of Appendix B (Traffic and Transport report) of the Modification report, the Route A spoil haulage route may require pedestrian protection in the signal timing (ie a head start for the green signal for pedestrians before the green signal for left-turning vehicles) for pedestrian crossings on the western leg of the Great North Road/Parramatta Road, Ramsay Road/Fairlight Street and Fairlight Road/Great North Road intersections. This would be decided in conjunction with TMC and would be documented in the Traffic and Transport and Access CEMP Sub-Plan that will be prepared for the project.

The operation of the G-loop for Route B would have no impact on the existing signalised pedestrian crossing of Dobroyd Parade at its intersection with Waratah Street (refer to Figure 2-7 of Appendix B (Traffic and Transport report) of the Modification report). The use of the M4 East tunnels for Route B would reduce potential interactions between spoil haulage vehicles and pedestrians and cyclists.

C3.2 Noise and vibration

C3.2.1 Traffic noise and sleep disturbance

Issue description

Submitters raised concerns regarding traffic noise and sleep disturbance impacts to residents and businesses from spoil haulage vehicles travelling on the following roads:

- *Fairlight Road*
- *Great North Road*
- *Parramatta Road*
- *Wattle Street*
- *Dobroyd Parade*
- *Wolseley Street.*

Response

A construction road traffic noise assessment was carried out for the two spoil haulage routes (refer to Appendix C (Noise and vibration report) of the Modification report) which is summarised in **Table A-5**. The assessment determined that predicted increase in the average noise from construction traffic is below the 2 dBA increase threshold (from the Road Noise Policy (DECCW 2011) (RNP)) for both spoil haulage routes.

In accordance with condition of approval E49, spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary. The spoil haulage routes are generally limited to State roads that are controlled by Roads and Maritime and are heavily trafficked.

Table C-2 Construction road traffic noise assessment

Site	Vehicle type	Road	Predicted average traffic noise increase (dBA)	
			Daytime	Night time
Northcote Street civil and tunnel site	Light & heavy	Parramatta Rd	<0.5	<0.5
		Wattle St	<0.5	<0.5
		Ramsay St / Rd	<0.5	1.6
		Fairlight St	<0.5	1.7
		Great North Rd	<0.5	1.5

Once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, would reduce impacts on the surface road network.

Spoil haulage would be carried out 24 hours per day, seven days per week, however the majority of spoil haulage traffic movements are likely to be generated during standard construction hours. The use of the M4 East tunnels (once operational) would generally be preferred for Route B spoil haulage, subject to the location of available spoil disposal sites and traffic conditions.

Spoil haulage vehicles for the Northcote Street civil and tunnel site would not travel on Wolseley Street. The indicative site layout for the Northcote Street civil and tunnel site (refer to Figure 4-2 of the Modification report) does not include a driveway access to Wolseley Street.

C3.2.2 At-property noise treatments

Issue description

Submitters requested at-property noise treatments for properties along the spoil haulage routes including along Wattle Street and Ramsay Street.

Response

The proposed haulage routes include arterial and State roads which are heavily trafficked. Table 4-2 of the Modification report identified indicative construction vehicle numbers of around eight heavy vehicles arriving and departing in the AM and PM peak hours at the Northcote Street civil and tunnel site. In accordance with condition of approval E49, spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary.

As described in **section C3.2.1**, the construction road traffic noise assessment determined that the predicted increase in the average noise from construction traffic is below the 2 dBA increase threshold (from the RNP) for both spoil haulage routes and therefore additional at-property noise treatments are not required.

Route A would generally only be used between 7am and 6pm Monday to Friday and 8am to 6pm on Saturdays except in the following circumstances and in accordance with the relevant conditions of the project approval:

- During the early stages of construction until such time as the works to facilitate operation of the G-loop were completed and the G-loop was functional
- 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.

Once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. The majority of spoil haulage traffic movements are likely to be generated during standard construction hours. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, reduce impacts on the surface road network and to receivers near these surface roads.

A spoil haulage protocol would be developed by the contractor in consultation with Roads and Maritime and the Transport for NSW Traffic Management Centre to manage spoil haulage movements on Routes A and B. The protocol would be documented in the Traffic and Transport and Access CEMP Sub-Plan.

Noise treatments have been implemented for a number of properties along Wattle Street / Dobroyd Parade in the vicinity of the G-loop as part of other projects and programs including:

- As part of the Roads and Maritime Noise Abatement Program
- As part of the M4 East project including:
 - At-property treatment for two properties at 83 and 85 Dobroyd Parade located in the vicinity of the G-loop
 - A noise barrier which has been constructed along the south side of Wattle Street.

Notwithstanding, the Traffic and Transport and Access CEMP Sub-Plan that will be prepared for the project will include instructions for the operation of vehicles entering and leaving the sites to assist in minimising construction traffic noise.

C3.3 Air quality

C3.3.1 Impacts from dust and vehicle emissions

Issue description

Submitters raised concerns regarding air quality impacts from both dust and vehicle emissions along the proposed spoil haulage routes.

Response

Table 4-2 of the Modification report identified indicative construction vehicle numbers of around eight heavy vehicles arriving and departing in the AM and PM peak hours at the Northcote Street civil and tunnel site. The predicted number of light and heavy vehicle movements (as described in section 6.3.1 of the Modification report) from the Northcote Street civil and tunnel would not change significantly for the proposed modification compared to the traffic volumes in the EIS and the proportion of heavy vehicles compared to existing traffic along the spoil haulage routes would be minor. The proposed modification would therefore have a negligible temporary impact to the total vehicle emissions along the spoil haulage routes.

The proposed spoil haulage routes for the Northcote Street civil and tunnel site would be more direct and less constrained by comparison to the proposed spoil haulage route for the Parramatta Road West civil and tunnel site described in the EIS and SPIR. The proposed spoil haulage routes would be restricted to State roads that are controlled by Roads and Maritime.

As described above, once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. The use of the M4 East tunnels (once operational) would generally be preferred for Route B spoil haulage (subject to the location of available spoil disposal sites and traffic conditions) which would reduce impacts on the surface road network and to receivers near these surface roads.

All spoil haulage vehicles would be appropriately covered to minimise potential dust impacts from the transport of spoil. At the commencement of establishment of project ancillary facilities, controls such as wheel washing systems and rumble grids will be installed at all site exits to prevent deposition of loose material on sealed surfaces outside project sites to reduce potential dust generation.

All construction vehicles will be inspected regularly and maintained to ensure that they comply with relevant emission standards.

C3.4 Land use

C3.4.1 Ongoing use of Reg Coady Reserve

Issue description

Submitters raised concerns about the ongoing use of Reg Coady Reserve, given that the area of land was planned to be restored in 2019 for the M4 East project. Submitters requested compensation for this impact.

Response

The proposed modification would retain the G-loop at Reg Coady Reserve that was established as part of the M4 East project as a heavy vehicle haulage route for the Northcote Street civil and tunnel site.

The EIS for the M4 East project described that the area of Reg Coady Reserve used for construction would be restored and returned to Inner West Council for use as open space following the completion of construction of the M4 East project. The proposed modification would effectively delay the restoration of the area of Reg Coady Reserve required for the G-loop until after the completion of construction activities for the M4-M5 Link project in Q1 2023. The existing lease agreement between Roads and Maritime and Inner West Council would need to be extended (beyond 2021) to allow for the continued use of the G-loop. Pedestrian connectivity through Reg Coady Reserve and across Dobroyd Parade would be maintained during construction.

The area of land at Reg Coady Reserve that would be occupied for the proposed modification would be reduced by comparison to the area that has been occupied by the M4 East project. Reg Coady Reserve would be subject to staged rehabilitation works in accordance with the M4 East Residual Land Management Plan. On completion of the M4 East construction works, that part of Reg Coady Reserve that would not be used for the G-loop would be reinstated in accordance with the M4 East Residual Land Management Plan. On completion of construction of the M4-M5 Link project, the G-loop infrastructure would be removed and the remaining part of Reg Coady Reserve would be rehabilitated in accordance with the M4 East Residual Land Management Plan.

C3.5 Social and economic

C3.5.1 Impacts to amenity and businesses

Issue description

Submitters raised concerns regarding amenity impacts and associated impacts to businesses from the movement of spoil haulage vehicles on spoil haulage Route A.

Response

It is noted that there are a number of residential receivers and businesses located along Route A including along sections of Ramsay Street and Fairlight Street. There is the potential for these businesses to experience construction traffic noise and air quality impacts.

As described in **section C3.2.1** and **section C3.3.1**, construction traffic noise and air quality impacts associated with the spoil haulage Route A are considered to be minor and therefore associated amenity impacts to businesses along Route A would be minor.

As described in section 4.2.4 of the Modification report, Route A would generally only be used between 7am and 6pm Monday to Friday and 8am to 6pm on Saturdays except in the following circumstances and in accordance with the relevant conditions of the project approval:

- During the early stages of construction until such time as the works to facilitate operation of the G-loop were completed and the G-loop was functional
- 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.

The spoil haulage routes are generally limited to State roads that are controlled by Roads and Maritime and are heavily trafficked.

Once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, reduce impacts on the surface road network and to receivers near these surface roads. The majority of spoil haulage traffic movements are likely to be generated during standard construction hours.

C3.6 Human health

C3.6.1 Human health impacts from traffic noise and sleep disturbance

Issue description

Submitters raised concerns regarding health impacts from traffic noise and sleep disturbance associated with spoil haulage vehicles.

Response

There is the potential for receivers along the spoil haulage routes to experience construction traffic noise impacts which may result in sleep disturbance and associated human health impacts.

The spoil haulage routes are generally limited to State roads that are controlled by Roads and Maritime and are heavily trafficked, including Parramatta Road and Wattle Street.

A construction road traffic noise assessment was carried out for the two spoil haulage routes (refer to Appendix C (Noise and vibration report) of the Modification report) and the results are summarised in **Table B6-3**.

Table C-3 Construction road traffic noise assessment

Site	Vehicle type	Road	Predicted average traffic noise increase (dBA)	
			Daytime	Night time
Northcote Street civil and tunnel site	Light & heavy	Parramatta Rd	<0.5	<0.5
		Wattle St	<0.5	<0.5
		Ramsay St / Rd	<0.5	1.6
		Fairlight St	<0.5	1.7
		Great North Rd	<0.5	1.5

The assessment determined that predicted increase in the average noise from construction traffic is below the 2 dBA increase threshold (from the RNP) for both spoil haulage routes. Construction traffic noise is therefore unlikely to result in sleep disturbance impacts or associated impacts to human health.

With regard to reaction to potential sleep disturbance awakening events, the RNP gives the following guidance regarding sleep disturbance:

From the research on sleep disturbance to date it can be concluded that:

- *maximum internal noise levels below 50–55 dBA are unlikely to awaken people from sleep*
- *one or two noise events per night, with maximum internal noise levels of 65–70 dBA, are not likely to affect health and wellbeing significantly.*

In accordance with condition of approval E49, spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary.

Once G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, reduce impacts on the surface road network and to receivers near these surface roads. The majority of spoil haulage traffic movements are likely to be generated during standard construction hours. The use of the M4 East tunnels (once operational) would generally be preferred for Route B spoil haulage, subject to the location of available spoil disposal sites and traffic conditions.

C3.6.2 Vehicle emissions

Issue description

Submitters raised concerns regarding health impacts from haulage vehicle emissions.

Response

Table 4-2 of the Modification report identified indicative construction vehicle numbers of around eight heavy vehicles arriving and departing in the AM and PM peak hours at the Northcote Street civil and tunnel site. The predicted number of light and heavy vehicle movements (as described in section 6.3.1 of the Modification report) from the Northcote Street civil and tunnel would not change significantly for the proposed modification compared to the traffic volumes in the EIS and the proportion of heavy vehicles compared to existing traffic along the spoil haulage routes would be minor. The proposed modification would therefore have a negligible temporary impact to the total vehicle emissions along the spoil haulage routes.

The proposed spoil haulage routes for the Northcote Street civil and tunnel site would be more direct and less constrained by comparison to the proposed spoil haulage route for the Parramatta Road West civil and tunnel site described in the EIS and SPIR. The proposed spoil haulage routes would be restricted to State roads that are controlled by Roads and Maritime.

As described above, once the G-loop is in operation, Route B would be the preferred spoil haulage route and would be available for use 24 hours a day and 7 days a week in accordance with condition of approval E70. Use of the G-loop would allow spoil haulage vehicles the option of using the M4 East motorway tunnels and, as a result, reduce impacts on the surface road network and to receivers near these surface roads.

All spoil haulage vehicles would be appropriately covered to minimise potential dust impacts from the transport of spoil. At the commencement of establishment of project ancillary facilities, controls such as wheel washing systems and rumble grids will be installed at all site exits to prevent deposition of loose material on sealed surfaces outside project sites to reduce potential dust generation. All construction vehicles will be inspected regularly and maintained to ensure that they comply with relevant emission standards.

Potential human health impacts associated with haulage vehicle emissions are therefore considered to be unlikely given the application of the management measures outlined above.

C4 Parramatta Road West and Parramatta Road East civil sites

10 submitters have raised issues regarding the use of the Parramatta Road West and Parramatta Road East civil sites for the proposed modification.

C4.1 Traffic and transport

C4.1.1 Impact to local roads

Issue description

Submitters raised concerns regarding the use of residential roads for heavy vehicles to access and park at the Parramatta Road West and Parramatta Road East civil sites including:

- Ilford Avenue
- Bland Street
- Denman Street
- Alt Street.

Submitters noted that there are three tonne limits for heavy vehicles on Bland Street and Alt Street.

Submitters suggested that heavy vehicles should not be able to access the Parramatta Road West and Parramatta Road East civil sites.

Response

In accordance with condition of approval E49, spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary.

The use of local roads to access the Parramatta Road West and Parramatta Road East civil sites are included in the approved project. The EIS approved the use of the following access points from local roads:

- For the Parramatta Road East civil site
 - Access from the north side of Bland Street
 - Access from the north and south side of Alt Street
- For the Parramatta Road West civil site
 - Access from the north and south side of Alt Street.

The access point from the north side of Bland Street to the Parramatta Road East civil site identified in the EIS would not be used for the proposed modification because of the proximity of the access point to Haberfield Public School. However, an access point from the north side of Bland Street to the Parramatta Road West civil site would be used for the proposed modification. Construction vehicles would also access the Parramatta Road West and Parramatta Road East civil sites via Parramatta Road.

Heavy vehicles would use the Bland Street and Alt Street access points to travel to/from Parramatta Road and the arterial network. Heavy vehicles are not permitted to use the sections of Bland and Alt Streets which extend beyond the extent of the construction site boundaries and would not be permitted to circulate in local residential streets.

A comparison of vehicle movements at the Parramatta Road West and Parramatta Road East civil sites for the EIS and the proposed modification is provided in **Table C4-1** for light vehicles and **Table C4-2** for heavy vehicles.

Table C4-1 Comparison of light vehicle movements at the Parramatta Road West and Parramatta Road East civil sites for the SPIR and the proposed modification

Construction site	Light vehicle movements									
	Daily (one way)		AM peak (arrive)		AM peak (depart)		PM peak (arrive)		PM peak (depart)	
	SPIR	Modification	SPIR	Modification	SPIR	Modification	SPIR	Modification	SPIR	Modification
Parramatta Road West civil site	10	306	10	18	0	5	0	5	10	31
Parramatta Road East civil site	150	210	50	12	0	4	0	4	150	20

Table C4-2 Comparison of heavy vehicle movements at the Parramatta Road West and Parramatta Road East civil sites for the SPIR and the proposed modification

Construction site	Heavy vehicle movements									
	Daily (one way)		AM peak (arrive)		AM peak (depart)		PM peak (arrive)		PM peak (depart)	
	SPIR	Modification	SPIR	Modification	SPIR	Modification	SPIR	Modification	SPIR	Modification
Parramatta Road West civil site	140	25	7	7	7	7	7	7	7	7
Parramatta Road East civil site	30	25	3	1	3	1	3	1	3	1

As shown in **Table C4-1** there is an overall increase in daily light vehicle movements at the Parramatta Road West and Parramatta Road East civil sites. As shown in **Table C4-2**, there is an overall decrease in daily heavy vehicle movements at the Parramatta Road West civil site.

The light and heavy vehicle movements identified above would be split across the access points at each site including:

- Parramatta Road, Bland Street and Alt Street for the Parramatta Road West civil site
- Parramatta Road and Alt Street for the Parramatta Road East civil site.

The movement of heavy vehicles was included as part of construction traffic numbers that informed the assessment in Appendix B (Traffic and Transport report) of the Modification report including the assessment of potential impacts to traffic and pedestrian safety.

Heavy vehicles would travel to the Bland Street and Alt Street access points via Parramatta Road and the arterial network. Heavy vehicles are not permitted to travel beyond the extent of the construction site boundaries on Bland Street and Alt Street.

The type of heavy vehicles likely to use the sites for parking would include rigid and articulated trucks dropping off or picking up materials or equipment from laydown areas, vehicles or equipment to be serviced at the workshop and short term layover of trucks across working shifts.

Access points via Alt Street and Bland Street are required for the following reasons:

- To distribute traffic movements across driveway access points to avoid congestion at any one access point
- To reduce the number of traffic movements entering and exiting the site directly to and from Parramatta Road so as to minimise impacts to traffic flow and safety on this road. This would also have benefits for pedestrian safety along both sides of Parramatta Road
- To allow for efficient internal traffic circulation within the sites, particularly for heavy vehicles given that the sites are elongated with a frontage of around 130 metres to Parramatta Road
- To allow construction vehicles to move directly between the adjacent construction sites on the north and south sides of Alt Street
- To provide an option for construction traffic to use the Bland Street and Parramatta Road signalised intersection to enter and exit the site from the east along Parramatta Road (if required).

It should be noted that the access points already exist and were previously used by the commercial premises that operated at the Parramatta Road West and Parramatta Road East civil sites.

The use of local roads by heavy vehicles would be minimised as far as practicable and would be managed in accordance with the Traffic and Transport and Access CEMP Sub-Plan. Heavy vehicles would use the Bland Street and Alt Street access points to travel to/from Parramatta Road and the arterial network. Heavy vehicles are not permitted to use the sections of Bland and Alt Streets which extend beyond the extent of the construction site boundaries and would not be permitted to circulate in local residential streets.

The conditions of approval for the approved project provide a number of measures to manage potential impacts to local roads including:

- *E49: Spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary*
- *E51: All requests to the Secretary for local road usage need to include a traffic and pedestrian impact assessment, and should include a swept path analysis if required. The traffic and pedestrian impact assessment, incorporated in the Site Establishment Management Plan or Traffic and Transport CEMP as relevant, must:*
 - a) *demonstrate that the local road usage will not compromise the safety of the public and have minimal amenity impacts;*

- b) *provide details as to the date of completion of the road dilapidation surveys for the subject local roads; and*
- c) *describe the measures that will be implemented to avoid where practicable the use of local roads past schools, aged care facilities and child care facilities during peak times for operation.*
- *E52: Construction vehicles (including staff vehicles) associated with the project must be managed to:*
 - a) *Minimise parking on public roads*
 - b) *Minimise idling and queuing on public roads*
 - c) *Ensure spoil haulage vehicles must adhere to the nominated haulage routes*
- *E53: The locations of all construction spoil haulage vehicles must be able to be monitored in real time and the records of monitoring be made available electronically to the Secretary and the EPA upon request for a period of no less than one year following construction.*

C4.1.2 Pedestrian and cyclist safety

Issue description

Submitters raised concerns regarding pedestrian and cyclist safety impacts associated with construction traffic from the Parramatta Road West and Parramatta Road East civil sites including at:

- *Parramatta Road, Alt Street and Bland Street (including potential impacts to school children)*
- *Denman Street.*

Submitters requested additional measures be implemented to manage pedestrian safety including traffic controllers or a crossing guard for Haberfield Public School.

Submitters also raised concerns about potential pedestrian safety impacts associated with cumulative construction and operational traffic movements associated the proposed Woolworths development on the corner of Bland Street and Parramatta Road.

Response

Pedestrian connectivity would be managed in accordance with the Traffic and Transport and Access CEMP Sub-Plan. Condition of approval E57 requires that 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.

A comparison of vehicle movements at the Parramatta Road West and Parramatta Road East civil sites for the EIS and the proposed modification is provided in **Table B6-1** for light vehicles and in **Table C4-2** for heavy vehicles.

The light and heavy vehicle movements identified above would be split across the access points at each site, including:

- Parramatta Road, Bland Street and Alt Street for the Parramatta Road West civil site
- Parramatta Road and Alt Street for the Parramatta Road East civil site.

Traffic movements at the Parramatta Road West and Parramatta Road East civil sites would primarily be light vehicle movements associated with construction worker parking. Light vehicle movements would be most frequent around construction worker shift changes. These shift changes would generally occur at 6am and 6pm and therefore would not coincide with school drop off and pick up times.

The use of local roads to access the Parramatta Road West and Parramatta Road East civil sites are included in the approved project as shown on the indicative site layouts in Figure 6-18 and Figure 6-20 of the EIS.

The driveway to provide access from Bland Street to the Parramatta Road East site identified in the EIS would not be used for the proposed modification because of the proximity of the access point to Haberfield Public School. However, an access point from the north side of Bland Street to the Parramatta Road West civil site would be used for the proposed modification. Construction vehicles would also access the Parramatta Road West and Parramatta Road East civil sites via Parramatta Road.

Heavy vehicle parking is provided at the sites which would reduce the likelihood of heavy vehicles parking in residential streets. The type of heavy vehicles likely to use the sites for parking would include rigid and articulated trucks dropping off or picking up materials or equipment from laydown areas, vehicles or equipment to be serviced at the workshop and short term layover of trucks across working shifts. No tunnel spoil trucks would use these sites.

Heavy vehicles would use the Bland Street and Alt Street access points to travel to/from Parramatta Road and the arterial network. Heavy vehicles are not permitted to use the sections of Bland and Alt Streets which extend beyond the extent of the construction site boundaries and would not be permitted to circulate in local residential streets.

Options would be investigated to manage the interaction between pedestrians (including school children) and construction traffic including as required:

- Pedestrian surveys to understand the extent of potential impact
- Construction worker inductions and training
- Signage and/or pavement linemarking
- Engineering controls such as barriers or gates
- Provision of a traffic controller on access points to and from Parramatta Road during school start and finish times.

The options would be investigated and documented in the traffic control plans for each construction site as contained in the Traffic and Transport and Access CEMP Sub Plan.

It is understood that a new development application for a proposed Woolworths supermarket development is being prepared and will be lodged with Inner West Council in the future. The development is located on the corner of Parramatta Road and the opposite side of Bland Street to the Parramatta Road West civil site. At this stage information about the scale of the development, access arrangements, traffic generation and timing for construction and operation of the project are not known.

Notwithstanding, the M4-M5 Link construction contractor and the proponent of the Woolworths development would be required to manage potential impacts to pedestrians during construction and operation. Consultation would be undertaken with the proponent for the Woolworths development to understand traffic and pedestrian access arrangements during construction and operation and to manage potential cumulative traffic and pedestrian access and safety impacts.

The existing Haberfield Pedestrian Bridge adjacent to the Woolworths development site provides a safe route for east-west pedestrian movements over Parramatta Road at this location.

C4.1.3 Shuttle bus

Issue description

Submitters questioned the need for a shuttle bus and suggested that construction workers could walk between sites.

Submitters raised concern regarding the ability of the shuttle bus and other construction vehicles to turn right out of the Parramatta Road West civil site on to Parramatta Road.

Response

A shuttle bus service would be provided as required to transport the construction workforce to and from construction sites. Where possible the workforce would be encouraged to walk between sites. The Northcote Street civil and tunnel site is located around 400 metres north of the Parramatta Road West and Parramatta Road East civil sites so is within a reasonable walking distance.

Construction vehicles would not turn right directly on to Parramatta Road from the Parramatta Road West civil site. There is a raised median along this section of Parramatta Road that prevents this movement. Construction vehicles would exit the site via Bland Street and use the existing signalised intersection to turn right onto Parramatta Road travelling south. This movement would only be used by a small number of construction vehicles, as most would travel to the north along Parramatta Road.

C4.2 Pedestrian walkway

C4.2.1 Availability of walkway for public use

Issue description

Submitters requested that the pedestrian walkway between the Parramatta Road West and Parramatta Road East civil sites be made available for use by the public.

Response

The entry and exit points for the temporary overhead pedestrian walkway are located within the Parramatta Road West and Parramatta Road East civil sites to avoid potential conflict between construction activities and the general public. The use of the pedestrian walkway by the public would raise potential health and safety issues as a result of pedestrians interacting with a construction site.

The existing Haberfield Pedestrian Bridge is located around 100 metres to the south and provides east-west pedestrian connectivity across Parramatta Road.

C4.3 Noise and vibration

C4.3.1 Construction noise and vibration and human health impacts

Issue description

Submitters raised concerns about construction noise and vibration impacts associated with the Parramatta Road West and Parramatta Road East civil sites and associated human health impacts related to sleep disturbance, stress, anxiety and other psychological impacts.

Response

The Parramatta Road West and Parramatta Road East civil sites would be used in accordance with condition C19 and other conditions of the project approval. The sites would be used for parking and other works that do not exceed the 'noise affected' Noise Management Levels (NMLs) as identified in the Interim Construction Noise Guideline (NSW DECC, 2009) (ICNG).

The sites would be used for site offices, light and heavy vehicle car parking, shuttle bus services, workshop and storage of equipment, materials and construction machinery. Both sites would operate 24 hours a day, 7 days a week in accordance with the conditions of the project approval.

The sites would be used to support civil and tunnelling construction activities at other project construction sites, primarily within the Haberfield and Ashfield area. No tunnelling, tunnel spoil stockpiling and handling or tunnel spoil haulage would occur at these sites.

A qualitative consistency assessment by comparison to the impacts assessed for these sites in the EIS was undertaken for the proposed use of the Parramatta Road West and Parramatta Road East

civil sites (refer to Appendix C (Noise and vibration report) of the Modification report). The use of the sites is considered to be consistent with the assessment of noise impacts undertaken in the M4-M5 Link EIS and SPIR and would not result in a change to the mitigation measures proposed. The proposed modification would remove tunnelling activities from the Parramatta Road West site and is therefore expected to result in a reduction in the impact on nearby receivers previously predicted in association with tunnelling activities.

A CNVIS will be prepared based on the finalised construction methodology and will include consideration of the indicative revised layout and use of the site, including the location of specific items of plant. The CNVIS will include details of how the noise emissions from the sites will be managed to achieve compliance with the applicable noise management levels as required by condition of approval C19. Where non-compliances are predicted within the CNVIS, at source noise mitigation options will be explored that may include, but are not limited to:

- Site perimeter hoarding
- Localised enclosures around noise sources
- Judicious selection of fixed plant and equipment
- Optimisation of site layout to maximise localised shielding by on-site buildings
- Positioning driveways away from sensitive receivers
- If necessary, limiting noise intensive activities during sensitive periods.

EPL 21149 for the construction of the project identifies permitted hours of operation for construction activities. Additional measures and relevant conditions of approval to manage potential noise and vibration are described in **section C2.1.1**.

C4.4 Air quality

C4.4.1 Dust generation and human health impacts

Issue description

Submitters raised concerns regarding air quality impacts during construction at the Parramatta Road West and Parramatta Road East civil sites:

- *Impacts from $PM_{2.5}$, and PM_{10} particles*
- *Impacts from nuisance dust (eg impacts to pools, outdoor structures etc)*

Submitters were concerned regarding potential dust generation associated with demolition activities and requested that monitoring of dust impacts be carried out for the proposed modification.

Submitters also raised concerns about human health impacts associated with air quality impacts, including to community members with existing health conditions such as asthma.

Response

The use of the Parramatta Road West and Parramatta Road East civil sites for the proposed modification would result in potential air quality impacts including dust generation during construction. If not appropriately managed, construction dust impacts may lead to human health impacts in the form of respiratory health effects, especially for individuals with existing respiratory health conditions such as asthma.

The construction air quality assessment in Appendix D (Air quality report) of the Modification report involved the application of a semi-quantitative risk-based approach for the assessment of impacts. The assessment adopted a precinct based approach to assess the impacts associated with the construction sites at Haberfield and Ashfield. The assessment was undertaken for a number of construction activities including demolition, earthworks (tunnelling), construction and track-out.

The assessment determined that if mitigation measures (as described below) are implemented, construction dust is unlikely to represent a serious ongoing problem. Any effects would be temporary and relatively short in duration in the context of the total duration of the project. Provided that mitigation measures are implemented, the potential impacts are not considered to be significant. The implementation of mitigation measures would therefore also manage potential human health impacts associated with construction dust generation.

Potential dust impacts associated with demolition activities at the Parramatta Road West and Parramatta Road East civil sites have already been assessed in the EIS and SPIR and there are no changes proposed as part of the modification.

Condition of approval E1 requires that all reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during the construction and operation of the project.

Condition of approval C4 requires the preparation of an Air Quality CEMP Sub-Plan for the construction of the project which will include a range of measures to ensure to manage potential dust impacts. This may include the following measures as described in Chapter 5 of Appendix D (Air quality report) of the Modification report:

- Regular communication will be carried out with other WestConnex projects under construction in close proximity to ensure that measures are in place to manage cumulative impacts
- Regular site inspections will be conducted to monitor potential dust issues. The site inspections, will be recorded and actioned appropriately within agreed timeframes by relevant project personnel
- Construction activities with the potential to generate dust will be modified or ceased during unfavourable weather conditions to reduce the potential for dust generation
- Measures to reduce potential dust generation, such as the use of water carts, sprinklers, dust screens and surface treatments, will be implemented within project sites as required
- Access roads within project sites will be maintained and managed to reduce dust generation
- Suitable dust suppression and/or collection techniques will be used during cutting, grinding or sawing activities likely to generate dust in close proximity to sensitive receivers
- Storage of materials that have the potential to result in dust generation will be minimised within project sites at all times
- All vehicles loads will be covered to prevent escape of loose materials during transport
- Adequate dust suppression will be applied during all demolition works required to facilitate the project
- Exposed soils will be temporarily stabilised during weather conditions conducive to dust generation and prior to extended periods of inactivity to minimise dust generation
- Haul roads will be treated with water carts and monitored during earthworks operations, ceasing works if necessary during high winds where dust controls are not effective
- At the commencement of establishment of project ancillary facilities, controls such as wheel washing systems and rumble grids will be installed at all site exits to prevent deposition of loose material on sealed surfaces outside project sites to reduce potential dust generation.

The Air Quality CEMP Sub-Plan would be subject to review by EPA and relevant councils and approval by DPE prior to the commencement of construction activities.

C4.5 Land use

C4.5.1 Future land use

Issue description

Submitters raised concerns regarding the future land use of the Parramatta Road West and Parramatta Road East civil sites following the completion of construction.

Response

The Parramatta Road West and Parramatta Road East civil sites would be on land zoned B6 Enterprise Corridor under the Ashfield LEP. The objectives of this zone include to promote businesses along main roads and to provide a range of employment uses. The land is also subject to the *Parramatta Road Corridor Urban Transformation Strategy* (UrbanGrowth NSW 2016).

No change is proposed to the future land use of the Parramatta Road West and Parramatta Road East civil sites described in Chapter 12 (Land use and property) of the EIS. Following the completion of the construction of the project, the Parramatta Road West and Parramatta Road East civil sites would be restored to generally the existing ground level or as otherwise agreed with Roads and Maritime. Future development would be determined by Roads and Maritime in accordance with the relevant zoning and policy controls applicable at that time.

C4.6 Landscape and visual

C4.6.1 Overshadowing impacts

Issue description

Submitters raised concerns regarding overshadowing impacts from the Parramatta Road West and Parramatta Road East civil sites.

Response

The layout of the Parramatta Road West and Parramatta Road East civil sites is indicative and would be confirmed during detailed design.

Existing buildings at both sites are likely to create some overshadowing impacts on adjacent properties during periods of the day. There may be temporary overshadowing impacts to nearby properties such as impacts associated with the multi-level site offices at the Parramatta Road East civil site. However the orientation of the sites is such that potential overshadowing impacts to adjacent residential properties are likely to be of limited duration.

Compared to the approved project described in the EIS, it is likely that the proposed modification would result in reduced overshadowing impacts given the removal of the large acoustic shed previously proposed at the Parramatta Road West site.

C4.7 Social and economic

C4.7.1 Amenity impacts

Issue description

Submitters raised concerns regarding amenity impacts around the Parramatta Road West and Parramatta Road East civil sites.

Response

The Parramatta Road West and Parramatta Road East civil sites would be used in accordance with condition C19 and other conditions of the project approval. The sites would be used for parking and other works that do not exceed the 'noise affected' NMLs as identified in the ICNG. The sites would be used to support civil and tunnelling construction activities at other project construction sites, primarily within the Haberfield and Ashfield area. No tunnelling, tunnel spoil stockpiling and handling or tunnel spoil haulage would occur at these sites. The level of socio-economic impacts directly associated with the Parramatta Road West and Parramatta Road East civil sites identified in the EIS including amenity impacts would therefore be reduced or remain generally consistent for the proposed modification.

The construction night lighting assessment in section 6.4.6 of the Modification report identified moderate night light impacts to residential receivers around the Parramatta Road West and Parramatta Road East civil sites. Lighting would be contained by site hoarding along the construction site boundary which would minimise light spill onto adjoining residential properties.

In accordance with condition of approval E122, the project must be constructed with the objective of minimising light spillage to residential properties. All lighting associated with the construction and operation of the project must be consistent with the requirements of *Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting* and relevant Australian Standards in the series *AS/NZ 1158 – Lighting for Roads and Public Spaces*. Notwithstanding, the mitigation measures must be provided to manage any residual night lighting impacts to protect properties adjoining or adjacent to the project, in consultation with affected landowners.

Potential construction noise impacts are discussed in **section C4.4.1** and potential construction air quality impacts are discussed in **section C4.3.1**.

C5 Removal of the Darley Road site and extension of the duration of tunnelling impacts

Four submitters have raised issues regarding the removal of the Darley Road site and the associated extension of the duration of tunnelling impacts for the proposed modification.

C5.1 Extended duration of tunnelling and associated impacts

C5.1.1 Increased duration of tunnelling

Issue description

Submitters raised concern regarding the increased duration of tunnelling as a result of the removal of the Darley Road site and the extension of impacts associated with tunnelling.

Response

Roads and Maritime has further optimised the construction site arrangements assessed in the EIS, and SPIR to reduce community impacts and to decrease the overall number of construction sites required for Stage 1 of the project, including the removal of the Darley Road tunnelling site. This is the result of the progression of construction design and planning since the assessment contained in the EIS and SPIR and a review of the concept design for the approved project.

The removal of the Darley Road civil and tunnel site from the project would ensure that potential noise, air quality, traffic and other impacts associated with tunnelling and spoil haulage are avoided in this area. In addition, potential ground-borne noise and vibration impacts associated with the proposed construction of a temporary access tunnel at this location would also be avoided.

The approved project involved the removal and transportation of around 550,300 cubic metres of tunnel spoil from the Darley Road civil and tunnel site as described in section 23.3.2 of the EIS. Given that the length of the mainline tunnel would not change for the proposed modification, this spoil volume would be required to be removed from other tunnelling sites as outlined in **Table C-3**.

Table C-3 Comparison of indicative spoil volumes for the proposed modification

Tunnelling site	Spoil volumes (cubic metres) - EIS	Spoil volumes (cubic metres) – proposed modification
Northcote Street civil and tunnel site	n/a	566,300
Wattle Street civil and tunnel site	311,500	311,500
Parramatta Road West civil site	520,000	n/a
Darley Road civil and tunnel site	550,300	n/a
Pymont Bridge Road tunnel site ¹	854,500	1,190,400
Campbell Road civil and tunnel site	755,000	942,900

The overall intensity (rate) of spoil removal at approved tunnelling sites is not expected to change, however the additional spoil to be removed at the other tunnelling sites as a result of the removal of Darley Road would require the extension of the tunnelling component of the overall construction program by around six months.

This would result in an increase in the duration of traffic, air quality, noise and other impacts directly associated with tunnelling at these locations as described in section 6.5 of the Modification report. These impacts were assessed in the following sections of the EIS:

- Chapter 8 (Traffic and transport) and Appendix H (Technical working paper: Traffic and transport) of the EIS
- Chapter 9 (Air quality) and Appendix I (Technical working paper: Air quality) of the EIS
- Chapter 10 (Noise and vibration) and Appendix J (Technical working paper: Noise and vibration) of the EIS.

The intensity of these potential impacts as described in the EIS would not change for the proposed modification but the impacts would extend over a longer duration. Potential impacts would be managed in accordance with the environmental management measures for the project as summarised in Part E of the SPIR and relevant conditions of approval for the project including condition C4 which requires the preparation of:

- Traffic and Transport and Access CEMP Sub-plan
- Noise and Vibration CEMP Sub-plan
- Air Quality CEMP Sub-plan.

Relevant conditions of approval and other management measures for the management of impacts associated with tunnelling and spoil haulage are discussed throughout this report including **in section C2.1.1** (noise and vibration) **section C2.2.1** (air quality) and **section C3.1.3** (spoil haulage).

To manage potential construction fatigue and amenity impacts at Haberfield and Ashfield associated with the project, condition of E88 requires that at receiver noise mitigation in the form of at-property treatment must be offered to the land owner for habitable living spaces, or other mitigation or management measures as agreed by the occupier, to residential properties identified in Appendix E of the conditions of approval. Appendix E applies to receivers that would be impacted by high noise generating works associated with the project that have also been subject to noise impacts from the M4 East project.

C5.2 Land use

C5.2.1 Future land use

Issue description

Submitters raised concern regarding the future use of land acquired at Darley Road given the proposed modification would remove planned project infrastructure at this site. Submitters were concerned that the property would be used for land banking.

Response

A future land use has not been nominated for the Darley Road site. Future land use would be in determined by Roads and Maritime in accordance with the relevant zoning and policy controls applicable at that time.

C5.3 Construction water treatment plants

C5.3.1 Increased discharge volumes

Submitters noted that discharges from the other construction water treatment plants would increase by around 15 per cent as a result of the removal of the construction water treatment plant from the Darley Road site.

Response

As described in section 6.5.6 of the Modification report, the removal of tunnelling activities at the Parramatta Road West civil site and the Darley Road site would result in changes to construction wastewater discharges at the Northcote Street civil and tunnel site and Pymont Bridge Road civil and tunnel site. Additional infrastructure to pump wastewater would not be required as a result of this change.

At the Pymont Bridge Road civil and tunnel site, construction wastewater discharges would increase to around 1,400 kilolitres per day. This is approximately a 15% increase from the daily discharge volume described in the EIS.

This discharge would be predominantly associated with tunnel groundwater ingress which would be treated at the construction water treatment to be located at the Pymont Bridge Road civil and tunnel site. Given the increase in discharge volume is minor from that described in the EIS and considering the receiving environment is the tidally influenced concrete channel of Johnstons Creek, the potential for scour and erosion to occur is negligible.

Discharges from the Northcote civil and tunnel site would be approximately 1,100 kilolitres per day which is similar to the discharge volumes from the Parramatta Road West civil and tunnel site in the EIS. These discharge volumes from the construction water treatment plant are considered minor in the context of the overall Dobroyd Canal catchment and concrete channel receiving environment of the canal. As a result the potential for scour and erosion to occur at this location is also considered to be negligible.

As the impacts for the modification would be of a comparable type and magnitude to the EIS, it is considered that the environmental management measures related to resource use and waste as outlined in Part E of the SPIR would be sufficient to manage potential impacts.

C6 Operational water treatment plant at the St Peters interchange

Four submitters have raised issues regarding the relocation of the operational water treatment plant at the St Peters interchange for the proposed modification.

C6.1 Operational water treatment plant design

C6.1.1 Detail regarding the operational water treatment plant

Issue description

Submitters raised concerns and queries regarding the design of the proposed operational water treatment plant at St Peters interchange including:

- *Query regarding what extent of the mainline tunnels the operational water treatment plant would service*
- *Query regarding whether the operational water treatment plant has adequate capacity to treat flows*
- *There is a lack of detail regarding discharge quantities and the nature of the plant*
- *Concern regarding potential discharge to the stormwater network*
- *There is a lack of detail regarding integration with the existing proposed St Peters interchange stormwater and drainage network*
- *There is a lack of detail regarding disposal of contaminated wastewater including specific disposal sites*
- *Concern that three options are presented in the Modification report without sufficient detail*
- *The Modification report does not detail that consultation has been carried out with Sydney Water*
- *Query whether the operational treatment plant can treat water to recycled water use standards*
- *Query whether the New M5 drainage infrastructure is adequate to cater for additional flows.*

Response

The overall design, capacity and discharge rate of the water treatment plant would remain similar to the approved water treatment plant to be located at Darley Road (as detailed in section 2.4.2 of Appendix Q (Surface water and flooding) of the EIS). The water treatment plant would treat surplus groundwater collected primarily within the M4-M5 Link mainline tunnels. The EIS identified that primary sedimentation is likely to be the most appropriate groundwater treatment process and this would be confirmed during detailed design.

The operational water treatment plant would discharge on average around 23 litres per second of treated flow. This discharge rate has been calculated based on the design requirement for the tunnels to restrict operational groundwater inflows into each tunnel to no greater than one litre per second across any given kilometre as required by condition E190.

As described in section 5.1.5 of Appendix E (Surface water and flooding report) of the Modification report, the treated tunnel discharge rate (around 23 litres per second) would be minor compared to flow rates and velocities from intermittent stormwater discharges at the outlet (likely to be greater than 1,000 litres per second).

For the proposed modification, three options would be considered for the discharge of treated wastewater from the mainline tunnel drainage system:

- Option 1: Wastewater would be pumped to the water treatment plant at the Campbell Road motorway operations complex. Treated water would discharge to the stormwater basin and/or drainage network within the St Peters interchange site being constructed by the New M5 project. This drainage network would then discharge to Alexandra Canal
- Option 2: Wastewater would be pumped to the water treatment plant at the Campbell Road motorway operations complex. Treated water would be discharged to the existing drainage network and then to Alexandra Canal
- Option 3: Wastewater would be discharged to Sydney Water's sewage system in accordance with a Trade Waste Agreement.

The strategy for treated tunnel discharges would be confirmed during detailed design and supported by hydrological and hydraulic modelling to assess the capacity of the New M5 drainage network to accept the additional flows. Where the above options for discharge of treated tunnel water are not feasible or an alternative discharge option is identified during detailed design, further assessment would need to be carried out.

In accordance with condition of approval E187, the operational water treatment plant discharge criteria must comply with the Australian and New Zealand Environment Conservation Council (ANZECC) (2000) 95 per cent species protection level and a 99 per cent protection level for contaminants that bioaccumulate unless other discharge criteria are agreed in consultation with relevant stakeholders including EPA, DPI Water and Sydney Water. Discharge criteria for iron during operation must comply with the ANZECC (2000) recreational water quality criteria. Discharge water quality would be monitored at the operational water treatment plant discharge point.

Consultation with Sydney Water was undertaken for the proposed modification as described in section 5.4.3 of the Modification report. Sydney Water reviewed the Modification report during the public exhibition period and noted that it had no comment on the proposed modification.

As described in section 6.6.4 of the Modification report, potentially contaminated runoff at the operational water treatment plant (eg wash bay or a bunded chemical storage area without a roof) would be captured and disposed to sewer via a Trade Waste Agreement or removed by a liquid waste contractor and disposed of offsite at a licensed facility. Specific disposal sites would be identified by the contractor and are subject to change throughout the construction period depending on commercial factors and the availability of disposal sites to receive potentially contaminated runoff.

C6.2 Flooding and drainage

C6.2.1 Flooding and drainage impacts

Issue description

Submitters raised concerns regarding flooding and drainage impacts associated with the proposed operational water treatment plant at St Peters interchange including:

- *Flooding and drainage impacts during storm events.*

Response

As described in section 6.6.4 of the Modification report, the operational water treatment plant is sited outside the probable maximum flood extent for mainstream flooding and is not located within an existing major overland flow path.

The New M5 project is providing the construction site platform within the St Peters interchange. When the operational water treatment plant area is handed over to the M4-M5 Link contractor, the contractor will refine the construction site platform (if appropriate) to manage local overland flows. During detailed design the site drainage system would be designed to manage overland flows and provide adequate flood protection to project infrastructure.

Therefore, construction of the operational water treatment plant is considered to pose a negligible risk of flooding impacts on adjacent properties.

C6.3 Water quality

C6.3.1 Impacts to Alexandra Canal

Issue description

Submitters raised concerns about the impacts of discharge from the operational water treatment plant to Alexandra Canal including:

- *Water quality impacts to Alexandra Canal*
- *Impacts to existing contaminated sediments within Alexandra Canal.*

Submitters were also concerned that water quality impacts would not be monitored.

Response

Potential water quality impacts

As described in section 6.6.4 of the Modification report, the treated tunnel discharge rate (around 23 litres per second) from the operational water treatment plant would be minor compared to flow rates and velocities from intermittent stormwater discharges at the outlet (likely to be greater than 1,000 litres per second) and compared to the overall flow rates in the Alexandra Canal.

The water quality assessment carried out for the project (refer to Appendix E (Surface water and flooding report) of the Modification report) determined that:

- Treated discharges would result in a negligible impact on water quality within Alexandra Canal
- The number of constituents that currently exceeds the NSW Water Quality Objectives for aquatic ecosystems in marine / estuarine waters within Alexandra Canal (ie copper, lead, zinc, nitrogen and phosphorus) would remain the same as described in the EIS.

In accordance with condition of approval E187, 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 that bioaccumulate unless other discharge criteria are agreed in consultation with relevant stakeholders including EPA, DPI Water and Sydney Water. Discharge criteria for iron during operation must comply with the ANZECC (2000) recreational water quality criteria.

Potential disturbance of contaminated sediments

Increases in concentrated flow and velocities have the potential to disturb existing contaminated sediments within Alexandra Canal. The disturbance of contaminated sediments could affect local water quality. Contaminated sediments within Alexandra Canal are regulated by a Remediation Order issued by the NSW EPA which aims to prevent the disturbance of these sediments.

As described above, the treated tunnel discharge rate (around 23 litres per second) would be minor compared to flow rates and velocities from intermittent stormwater discharges at the outlet (likely to be greater than 1,000 litres per second) and compared to the overall flow rates in the Alexandra Canal. It is therefore considered that it is unlikely that discharge from the operational water treatment plant would disturb contaminated sediments in the Alexandra Canal.

Providing appropriate dissipation / scour protection is in place at the existing outlet to cater for stormwater flows, the newly introduced continuous flow is unlikely to increase the risk of scour occurring during dry conditions. The suitability of the existing dissipation / scour protection to cater for the additional flow during design storm conditions would be confirmed during detailed design and supported by drainage modelling. The following environmental management measures as summarised in Part E of the SPIR are relevant to the management of potential sedimentation or scouring:

- New discharge outlets will be designed with appropriate energy dissipation and scour protection measures as required to minimise the potential for sediment disturbance and resuspension in the receiving waters. Outlet design and energy dissipation/scour protection measures will be informed by drainage modelling
- Existing drainage outlets that will be subject to increased inflow from the project will be assessed. If necessary, energy dissipation or scour protection will be added to prevent sediment disturbance and resuspension in receiving waters.

Monitoring of water quality impacts

Conditions of approval D8 and D9 outline the operational monitoring programs that must be prepared in consultation with relevant authorities to compare actual operational performance against predicted performance, including a Surface Water Quality Plan and Monitoring Program. The Surface Water Quality Plan and Monitoring Program will be prepared in consultation with EPA, NSW Department of Primary Industries – Water, Sydney Water, NSW Office of Environment and Heritage (OEH) and relevant councils.

Discharge from the operational water treatment plant would be monitored according to this plan and in accordance with an EPL for the operation of the project. Monitoring is likely to be carried out at the discharge outlet prior to discharge flows entering the stormwater system and Alexandra Canal.

C6.4 Urban design and landscaping

C6.4.1 Impact to proposed open space

Issue description

Submitters raised concerns regarding the impact of the water treatment plant on proposed open space at St Peters interchange.

Response

As described in section 6.6.5 of the Modification report, the proposed modification would require an increase to the operational footprint of the Campbell Road motorway operations complex towards the south east to allow for the relocation of the operational water treatment plant from Darley Road. The increase in footprint for the Campbell Road motorway operations complex would be around 0.2 hectares.

The increase in footprint of the motorway operations complex would have only a minimal impact on the total area of proposed open space on the southern side of Campbell Road at the St Peters interchange that is being delivered as part of the New M5 project. The increase in footprint would also have a small impact on the proposed landscaping area for the St Peters interchange to be provided in this location. The proposed modification would not compromise the functional area and layout of the active open space as proposed in the draft New M5 Urban Design and Landscape Plan (UDLP) for this area.

The final design of the open space on the southern side of Campbell Road at the St Peters interchange that is being delivered as part of the New M5 project is subject to ongoing consultation between Roads and Maritime and the City of Sydney Council in accordance with Condition B62 (b) of the New M5 project approval.

C6.5 Traffic and transport

C6.5.1 Construction traffic impacts

Issue description

Submitters raised concerns regarding traffic impacts associated with the construction of the operational water treatment plant at St Peters Interchange.

Response

As described in section 6.6.1 of the Modification report, the relocation of the permanent water treatment plant from Darley Road to the Campbell Road motorway operation complex at St Peters interchange is likely to result in a negligible change in impact on traffic and transport users during construction compared to the impact assessment in the EIS, as no change in daily or peak hour construction traffic volumes are forecast (refer to Table 4-1 of Appendix B (Traffic and transport report) of the Modification report).

C6.6 Operational impacts

C6.6.1 Operational air quality, noise and human health impacts

Issue description

Submitters raised concerns regarding operational impacts associated with the water treatment plant, including potential air quality, human health and noise impacts.

Response

As described in section 6.6.3 of the Modification report, the water treatment plant at the Campbell Road motorway operations complex has been modelled at a sound power level of 90 dBA. This is the maximum sound power level that results in compliance with the criteria at all residential receivers. The nearest sensitive receivers are located around 120 metres to the north on Barwon Park Road and there will be future recreational users of the nearby proposed open space area to be delivered by the New M5 project.

The water treatment plant would include specific equipment designed to achieve compliance with the relevant criteria for noise output. The equipment and sound power levels modelled for the water treatment plant are indicative only and may be subject to change during the detailed design phase of the project. It is envisaged that the mechanical plant noise sources associated with the fixed facilities would be controllable by common engineering methods that may consist of:

- Judicious location selection
- Noise barriers
- Silencers
- Acoustically lined ductwork
- Acoustic louvres.

The measures would be confirmed in the Operational Noise and Vibration Review which would be prepared in accordance with condition of approval E92.

Mechanical equipment selected would be subject to review and assessed for compliance with the established design criteria at the detailed design stage of the project. Specific mitigation measures would be determined at this point, taking account of cumulative noise emissions from relevant fixed facility noise sources at Campbell Road motorway operations complex. The operation of the water treatment plant would not involve emissions that would potentially impact air quality or human health for nearby sensitive receivers.

C7 Conditions of approval and environmental management measures

Five submitters have raised issues regarding conditions of approval and environmental management measures.

C7.1 Conditions of approval

C7.1.1 Construction site options at Haberfield and Ashfield

Issue description

Submitters questioned whether the EIS or conditions of approval allowed for the operation of five construction sites at Haberfield/Ashfield. Submitters objected to the amendment and/or removal of Conditions C19, C20, and C21 of the project approval.

Response

The EIS for the project described and assessed 12 construction ancillary facilities. Part D of the SPIR described and assessed an additional construction ancillary facility, White Bay civil site (C11). Section 6.5.1 of the EIS stated that the number, location and layout of construction ancillary facilities would be finalised as part of detailed construction planning for the project.

Within the Haberfield and Ashfield area the EIS described and assessed two options for construction ancillary facilities (Option A and Option B as described in **Table C-4**).

Table C-4 Possible construction ancillary facility combinations at Haberfield and Ashfield assessed in the EIS

Option A	Option B
Wattle Street civil and tunnel site (C1a)	Parramatta Road West civil and tunnel site (C1b)
Haberfield civil and tunnel site (C2a)	Haberfield civil site (C2b)
Northcote Street civil site (C3a)	Parramatta Road East civil site (C3b)

Section C6.1.3 of the SPIR clarified that the appointed design and construction 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.

Condition of approval C19 provides that only one of 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' NMLs as identified in the ICNG. The Parramatta Road West and Parramatta Road East civil sites would be used for parking and other works that do not exceed the 'noise affected' NMLs for the proposed modification, which is consistent with the intent of condition of approval C19.

Construction design and planning has progressed since the assessment contained in the EIS and SPIR and a review of the concept design for the approved project has occurred. As a result, following ongoing construction design and planning, the proponent has further optimised the construction site arrangements assessed in the EIS and SPIR to reduce community impacts and to decrease the overall number of construction sites required for Stage 1 of the project.

The proponent proposes to:

- Remove the Darley Road civil and tunnel site (C4) from the project
- Proceed with Option A for the construction ancillary facilities proposed at Haberfield and Ashfield but with changes to some activities at a number of the construction ancillary facilities which arise from the removal of the Darley Road civil and tunnel site and the use of the Northcote Street site for tunnelling.

The proposed changes are summarised in **Table C-5**.

Table C-5 Change to construction ancillary facilities at Haberfield, Ashfield and Leichhardt

EIS and SPIR	Proposed modification
Wattle Street civil and tunnel site (C1a)	No change
Haberfield civil site (C2a/C2b) ¹	No change
Northcote Street civil site (C3a)	Northcote Street civil and tunnel site. Includes tunnelling, spoil handling and spoil haulage from this site
Parramatta Road West civil and tunnel site (C1b)	Parramatta Road West civil site ² Inclusion of a temporary pedestrian walkway above Parramatta Road to link to the Parramatta Road East civil site.
Parramatta Road East civil site (C3b)	Parramatta Road East civil site ² Inclusion of a temporary pedestrian walkway above Parramatta Road to link to the Parramatta Road West civil site.
Darley Road civil and tunnel site (C4)	Removal of site

Notes

1. The use and footprint of this site was amended in sections B11.6.8 and C6.1.3 of the SPIR to be as per the arrangement for the Haberfield civil site (C2b).
2. Condition C19 allowed use of the site for parking and other works that do not exceed the 'noise affected' Noise Management Levels as identified in the ICNG.

It is proposed in Chapter 7 (Conditions of approval) of the Modification report that:

- Condition C19 is to be amended as follows:

~~The Parramatta Road West and Parramatta Road East civil sites are to be~~ 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.

The proponent is proposing to use the Parramatta Road West and Parramatta Road East civil sites for parking and other works that do not exceed the 'Noise affected' Noise Management Levels as identified in the ICNG, which is consistent with the intent of condition of approval C19.

- Conditions of approval C20 and C21 are to be deleted as Option B is no longer proposed.

The Modification report provides an environmental assessment of the changes to the arrangement of construction sites at Haberfield and Ashfield, including environmental management measures and conditions of approval.

C7.1.2 Suggested additional conditions of approval

Issue description

Submitters suggested additional conditions of approval to manage potential construction impacts associated with the proposed modification, including:

- Confirmation that the Utilities Coordinator and Acoustic Advisor and other measures for the approved project would apply for the proposed modification
- Restrictions on operating times for the Parramatta Road West and Parramatta Road East civil sites including:
 - Restriction of 24/7 operation
 - Specific restrictions on the weekend
 - Restrictions on using the sites outside of business hours for activities involving heavy vehicles
 - Restriction on the use of the workshop at the Parramatta Road West civil site.
- Restriction on spoil haulage vehicle movements from the Northcote Street civil and tunnel site from 10pm until 6am
- Restriction on all spoil haulage vehicle movements through Haberfield and Ashfield from 10pm until 6am
- Requirement for all spoil haulage vehicles to travel via the new M4 East tunnel for all feasible construction sites
- Remove the option to use surface roads for spoil haulage Route B.

Response

The existing conditions of approval for the project would apply to the proposed modification, as modified by the DPE if applicable.

The Parramatta Road West and Parramatta Road East civil sites would be used as civil sites in accordance with condition of approval C19 for parking and other works that do not exceed the 'noise affected' NMLs as identified in the Interim Construction Noise Guideline (NSW DECC, 2009) (ICNG).

The sites would be used for site offices, light and heavy vehicle car parking, shuttle bus services, workshop and storage of equipment, materials and construction machinery. Both sites would operate 24 hours a day, 7 days a week in accordance with the conditions of the project approval.

The Parramatta Road West and Parramatta Road East civil sites would be used 24 hours a day, seven days a week to support civil and tunnelling construction activities at other project construction sites, primarily within the Haberfield and Ashfield area. No tunnelling, tunnel spoil stockpiling and handling or tunnel spoil haulage would occur at these sites.

Consistent with recommendations in the M4-M5 Link EIS and SPIR, a CNVIS will be prepared based on the finalised construction methodology and will include consideration of the indicative revised layout and use of the site, including the location of specific items of plant. The CNVIS will include details of how the noise emissions from the sites will be managed to achieve compliance with the applicable noise management levels as required by condition of approval C19. Where non-compliances are predicted within the CNVIS, the contractor will explore at source noise mitigation options that may include, but are not limited to:

- Site perimeter hoarding
- Localised enclosures around noise sources
- Judicious selection of fixed plant and equipment
- Optimisation of site layout to maximise localised shielding by on-site buildings

- Positioning driveways away from sensitive receivers
- If necessary, limiting noise intensive activities during sensitive periods.

Spoil haulage routes are required to be operational 24 hours per day, seven days per week so that tunnelling activities can be carried out efficiently and so the duration of the overall tunnelling component of the program can be minimised. In accordance with condition of approval E49, spoil haulage movements associated with the construction of the project are not permitted to use local roads within one kilometre of construction works and construction ancillary facilities, unless approved by the Secretary.

The project approval includes a robust set of conditions to minimise potential construction impacts to local communities which apply to the approved project and would apply to the proposed modification. The conditions were prepared to address issues raised during the construction of other State Significant Infrastructure (SSI) and Critical State Significant Infrastructure (CSSI) projects including the M4 East and New M5, including measures relating to:

- The appointment of an independent Acoustics Advisor (condition of approval A24)
- The preparation of a utilities management strategy (condition of approval E140) and appointment of a utility coordination manager (condition of approval E141)
- Construction fatigue (condition of approval E88)
- Out of hours work and respite periods (conditions of approval E76-E78)
- Implementation of the noise insulation program within six months following the commencement of construction activities (condition of approval E89 and E90)
- Establishment of an Independent Property Impact Assessment Panel (condition of approval E109)
- Establishment of a Community Complaints Mediator (conditions of approval B13 to B16)
- The appointment of a Public Liaison Officer for construction ancillary facilities and for utility works (condition of approval B6)
- Clear identification of all construction spoil haulage vehicles (condition of approval A44)
- Restriction, management and real-time monitoring of the movement of spoil haulage vehicles (conditions of approval, E49, E51, E52 and E53)
- Provision of real time noise and vibration monitoring as part of the Noise and Vibration Monitoring Program (condition of approval C11).

Refer to **section C3** for a discussion of issues raised regarding the spoil haulage routes for the Northcote Street civil and tunnel site. Potential impacts associated with the spoil haulage routes, including traffic and road traffic noise impacts, are considered to be minor and restriction of the use of the routes is therefore not considered to be required. The use of the M4 East tunnels (once operational) would generally be preferred for Route B spoil haulage, subject to the location of available spoil disposal sites and traffic conditions.

The DPE will, on behalf of the NSW Minister for Planning, review the Modification report and this Response to submissions report for the proposed modification of the M4-M5 Link project. Once DPE has completed its assessment, an assessment report will be prepared for the Secretary of DPE.

The assessment report will be provided to the NSW Minister for Planning, who will then either approve the modification, with the addition, amendment or removal of any conditions considered appropriate, or refuse to give approval to the modification.

C7.2 Environmental management measures

C7.2.1 Adequacy of environmental management measures

Issue description

Submitters raised concerns that the environmental management measures identified in the Modification report are not adequate to manage the impacts associated with the proposed modification. Submitters requested additional measures to manage construction impacts for proposed modification, such as the requirement that the project clean nuisance dust deposition. Submitters also noted that measures implemented for other WestConnex projects are not effective and this would also be the case for the proposed modification.

Response

Chapter 6 (Environmental assessment) of the Modification report indicated that potential impacts for the following environmental issues would be effectively managed through the implementation of the approved environmental management measures for the project as summarised in Part E of the SPIR:

- Traffic and transport
- Noise and vibration
- Air quality
- Surface water and flooding
- Land use and property
- Groundwater
- Non-Aboriginal heritage
- Resource use and waste
- Social and economic.

Chapter 6 (Environmental assessment) indicated that for the following environmental aspects, new or revised environmental management measures would be required to manage potential impacts associated with the proposed modification:

- Urban design and visual amenity.

Details regarding the additional environmental management measure for urban design and visual amenity and the environmental management measures which would be deleted or amended as a result of the proposed modification are provided in Chapter 8 (Environmental management measures) of the Modification report.

Specific impacts associated with the construction of the M4 East and New M5 projects are beyond the scope of the proposed modification. The proponent and design and construction contractor(s) are required to comply with the conditions of approval for these projects (including implementation of measures outlined in the Construction Environmental Management Plan) and requirements of EPLs.

Notwithstanding, feedback from Sydney Motorway Corporation (SMC), contractors, DPE and other relevant government agencies, including NSW EPA, was sought on the M4 East and New M5 construction processes to identify lessons learnt from these projects during the preparation of the M4-M5 Link EIS. This feedback, together with issues raised by the community during the construction stages of those projects to date and during consultation for the M4-M5 Link, was considered in the preparation of the EIS including in the development of environmental management measures for the M4-M5 Link as amended in Part E of the M4-M5 Link SPIR, which would be implemented for the proposed modification.

The project approval includes a robust set of conditions to minimise potential construction impacts to local communities. The conditions were prepared to address issues raised during the construction of other SSI and CSSI projects including the M4 East and New M5 are outlined in **section C7.1.2**.

C8 Other issues

14 submitters have raised other issues regarding proposed modification.

C8.1 Consultation

C8.1.1 Consultation for the proposed modification

Issue description

Submitters raised concern that consultation for the proposed modification was inadequate, including:

- The public exhibition period (14 days) for the proposed modification was too short
- Consultation for Modification report prior to exhibition was inadequate.

Response

Consultation carried out during the preparation of the modification is summarised in section 5.4 of the Modification report.

Community notification for the proposed modification prior to the public exhibition of the Modification report included:

- Media releases to Sydney metro news organisations (28 June 2018)
- Letterbox drop of the M4-M5 Link Community Update Brochure to 60,000 households across the M4-M5 Link corridor (across a seven day period from 28 June 2018)
- Upload of the M4-M5 Link Community Update Brochure to the WestConnex website (live from 28 June 2018)
- M4-M5 Link Community Update Email to 4,571 registered stakeholders on the WestConnex database (29 June 2018).

Community engagement for the proposed modification prior to the public exhibition of the Modification report included:

- Meeting with the WestConnex Community Reference Group – Southern (12 June 2018)
- Meeting with the WestConnex Community Reference Group – Western (19 June 2018)
- Door knock of over 400 stakeholders in the Ashfield, Haberfield and Leichhardt area who could potentially be impacted by the proposed modification (29 June 2018)
- Meeting with the WestConnex Community Reference Group – Central (29 June 2018)
- Extraordinary WestConnex Community Reference Group Meeting (12 July 2018)
- Door knock of around 200 stakeholders along the proposed spoil haulage routes for the Northcote Street civil and tunnel site
- Meeting with the WestConnex Community Reference Group – Southern (11 September 2018).

Refer to Table 5-4 of the Modification report for further information.

The makeup of the WestConnex Community Reference Groups includes:

- The WestConnex Community Reference Group – Western which covers the areas of Parramatta, Homebush, Strathfield, Concord, Ashfield and Haberfield
- The WestConnex Community Reference Group – Southern which covers the areas of Kingsgrove, Bexley North, Bardwell Park, Arncliffe, Tempe, Mascot, St Peters, Alexandria and Newtown

- The WestConnex Community Reference Group – Central which covers the areas of Leichhardt, Lilyfield, Rozelle, Balmain, Glebe, Annandale and Camperdown.

Each WestConnex Community Reference Group consists of five members of the community as well as representatives from relevant local councils, DPE and Roads and Maritime including the relevant project directors and community and stakeholder engagement representatives.

The consultation activities that occurred during the exhibition of the modification included:

- Provision of a 'Community Guide to the M4-M5 Link modification' factsheet to residents, businesses and other stakeholders that could be potentially impacted by the proposed modification. This factsheet was distributed at the commencement of the exhibition of the modification. It outlined how to make a submission and focused on the potential impacts related to the modification. It was issued to residents, businesses and other stakeholders located close to the Northcote Street civil and tunnel site and proposed haulage routes, the Parramatta Road West and Parramatta Road East civil sites and the Campbell Road motorway operations complex at St Peters where the relocated operational water treatment plant is proposed
- Doorknocking potentially impacted residents, businesses and other stakeholders to explain the proposed modification and gather any feedback
- Sending emails directly to registered stakeholders, including residents, landowners, stakeholders, businesses and community groups
- Providing webpage updates about the modification, which were published on www.westconnex.com.au and included information on how to make a submission.

C8.1.2 Adequacy of existing consultation measures

Issue description

Submitters raised concern that existing consultation practices and complaints management for the M4 East and M4-M5 Link projects are not adequate and that this would continue for the proposed modification.

Response

The conditions of approval for the project include a number of additional requirements for consultation that were not included for other WestConnex projects including:

- *B6: A Public Liaison Officer(s) must be appointed for construction ancillary facility(s) and for utility works to assist the public with questions and complaints they may have at any time during construction. The Public Liaison Officer(s) must be available at all times that works are occurring.*
- *B13: A Community Complaints Mediator that is independent of the design and construction personnel must be nominated by the Proponent, approved by the Secretary and engaged during all works associated with the project.*

C8.2 Level and quality of assessment

C8.2.1 Construction site layouts

Issue description

Submitters raised concern that the level of detail provided in construction site layouts was not adequate to provide an understanding of potential impacts and these layouts and the CEMP and SEMP are not being prepared in consultation with the community.

Response

The Modification report provides indicative construction site layouts, subject to detailed design. The Modification report provides sufficient detail about the construction sites to be able to adequately assess the environmental impact. While the construction site layouts are subject to further detailed design, the design must be consistent with the approval and environmental impacts identified in the EIS, SPIR and Modification report.

The final site layouts would be confirmed in the preparation of the SEMP and CEMP. Conditions of approval C4 and C22 require that relevant councils and other nominated NSW government agencies are consulted during the preparation of the CEMP Sub-plans and SEMP. The plans must then be approved by the Secretary.

The conditions of approval for the project do not include the requirement for community input in the preparation of the CEMP Sub-Plans or SEMP, consistent with the practice for other large infrastructure projects in NSW. However, once approved, the CEMP Sub-Plans and SEMP will be made available on the WestConnex website to be viewed by the community.

C8.2.2 Previous assessments

Issue description

Submitters raised concern regarding the reliance of the Modification report on studies completed for the M4-M5 Link and M4 East EIS and SPIR reports. Submitters suggested that this information is out of date and that actual impacts would be greater than the anticipated impacts in the modification report. Submitters suggested that the modification should have been assessed in greater detail as part of a separate EIS.

Response

The Modification report was prepared in accordance with the Environmental Assessment Requirements (EARs) developed for the modification which are detailed in Appendix A (Environmental Assessment Requirements) of the Modification report. The EARs were developed in consultation with DPE. The Modification report was informed by four technical reports that assessed specific impacts associated with the proposed modification which included:

- Appendix B (Traffic and transport report)
- Appendix C (Noise and vibration)
- Appendix D (Air quality report)
- Appendix E (Surface water and flooding report).

Chapter 6 (Environmental assessment) of the Modification report included a summary of the technical reports listed above and an assessment of other environmental impacts required by the EARs.

In some circumstances, baseline data from previous WestConnex component projects and the M4-M5 Link EIS or SPIR was used where it was determined that the data was appropriate to inform the assessment of the proposed modification. For example the use of noise monitoring data from the M4 East project provides an accurate representation of the existing noise environment in the respective areas prior to the commencement of construction works (which will not be a permanent component of the noise environment in these areas).

The approval pathway for the proposed modification is described in section 2.1 of the Modification report and was confirmed with DPE.

C8.2.3 Impacts associated with other construction facilities at Haberfield

Issue description

Submitters raised concerns that the Modification report does not assess impacts associated with the other construction ancillary facilities in Haberfield.

Response

The use of the Wattle Street civil and tunnel site and Haberfield civil site (as amended in the SPIR) would not change for the proposed modification. The impacts associated with these two sites have been assessed in the EIS and SPIR.

The Haberfield civil site would not be used to support tunnelling. The main purpose of the Haberfield civil site is to support fitout of a section of the Parramatta Road ventilation facility (which is being built by the M4 East project).

Underground tunnelling activities would be carried out at the Wattle Street civil and tunnel site. Surface activities at the site other than spoil haulage vehicle movements would be limited.

The Wattle Street civil and tunnel site and Haberfield civil site have been considered as part of the cumulative assessment of the use of the Northcote Street civil and tunnel site and Parramatta Road West and Parramatta Road East civil sites in the Modification report as follows:

- Construction traffic volumes from the Wattle Street civil and tunnel site and Haberfield civil site have been considered as part of the assessment of potential construction traffic impacts in Chapter 4 of Appendix B (Traffic and Transport report) of the Modification report
- Section 5.5 of Appendix C (Noise and vibration report) of the Modification report considers cumulative noise impacts associated with the operation of multiple construction ancillary facilities in proximity to each at Haberfield and Ashfield
- A preliminary assessment of parking provision for the construction ancillary facilities in the Haberfield and Ashfield area indicated that the proposed parking provision of around a total of 200 spaces would be able to meet the majority of the forecast construction workforce parking demand (refer to Appendix B (Traffic and Transport report) of the Modification report for further information).

C8.2.4 Impacts associated with the extended duration of tunnelling

Issue description

Submitters raised concern that the Modification report did not adequately assess impacts associated with increased tunnelling duration to other communities including impacts associated with the increased duration of spoil haulage from other tunnelling sites and that further management measures are required to manage these impacts.

Response

The Modification report was prepared in accordance with the EARs contained in Appendix A (Environmental Assessment Requirements) of the Modification report. The EARs were developed in consultation with DPE.

Potential impacts associated with the removal of the Darley Road civil and tunnel site from the project were assessed in section 6.5 of the Modification report. The removal of the Darley Road civil and tunnel site from the project would ensure that potential noise, air quality, traffic and other impacts associated with tunnelling are avoided in this area. In addition potential ground-borne noise and vibration impacts associated with the proposed construction of a temporary access tunnel at this location would also be avoided.

The approved project involved the removal and transportation of around 550,300 cubic metres of tunnel spoil from the Darley Road civil and tunnel site as described in section 23.3.2 of the EIS. Given that the length of the mainline tunnel would not change for the proposed modification, this spoil volume would be required to be removed from other tunnelling sites as outlined in **Table C-6**.

Table C-6 Comparison of indicative spoil volumes for the proposed modification

Tunnelling site	Spoil volumes (cubic metres) - EIS	Spoil volumes (cubic metres) – proposed modification
Northcote Street civil and tunnel site	n/a	566,300
Wattle Street civil and tunnel site	311,500	311,500
Parramatta Road West civil site	520,000	n/a
Darley Road civil and tunnel site	550,300	n/a
Pymont Bridge Road tunnel site ¹	854,500	1,190,400
Campbell Road civil and tunnel site	755,000	942,900

The overall intensity (rate) of spoil removal at approved tunnelling sites is not expected to change, however the additional spoil to be removed at the other tunnelling sites as a result of the removal of Darley Road would require the extension of the tunnelling component of the overall construction program by around six months.

This would result in an increase in the duration of traffic, air quality, noise and other impacts directly associated with tunnelling at these locations as described in section 6.5 of the Modification report. These impacts were assessed in the following sections of the EIS:

- Chapter 8 (Traffic and transport) and Appendix H (Technical working paper: Traffic and transport) of the EIS
- Chapter 9 (Air quality) and Appendix I (Technical working paper: Air quality) of the EIS
- Chapter 10 (Noise and vibration) and Appendix J (Technical working paper: Noise and vibration) of the EIS.

The intensity of these potential impacts as described in the EIS would not change for the proposed modification but the impacts would extend over a longer duration. Potential impacts would be managed in accordance with the environmental management measures for the project as summarised in Part E of the SPIR and relevant conditions of approval for the project including condition C4 which requires the preparation of:

- Traffic and Transport and Access CEMP Sub-plan
- Noise and Vibration CEMP Sub-plan
- Air Quality CEMP Sub-plan.

To manage potential construction fatigue and amenity impacts associated with the project, condition of E88 requires that at receiver noise mitigation in the form of at-property treatment must be offered to the land owner for habitable living spaces, or other mitigation or management measures as agreed by the occupier, to residential properties identified in Appendix E of the conditions of approval.

C8.2.5 Assessment of impacts associated with the G-loop

Issue description

Submitters suggested that the re-introduction of the G-loop should have been assessed as part of a separate modification.

Response

Potential environmental impacts associated with the G-loop are assessed throughout the Modification report including section 6.3 of the Modification report and throughout the technical reports as follows:

- Sections 4.4 and 4.7 of Appendix B (Traffic and transport report)
- Section 5.1 of Appendix C (Noise and vibration)
- Section 4.2 of Appendix D (Air quality report)
- Section 4.1 of Appendix E (Surface water and flooding report).

C8.2.6 Existing air quality environment

Issue description

Submitters raised concerns that predicted existing dust levels in the Modification report are not consistent with air quality monitoring undertaken in Haberfield/Ashfield including at Haberfield Public School, which show elevated particulate levels.

Response

The air quality assessment in Appendix D (Air quality report) of the Modification report does not attempt to identify existing background particulate levels at Haberfield and Ashfield associated with the M4 East project. The assessment is instead informed by background dust levels prior to M4 East construction works.

If new background air quality monitoring was used for the Haberfield/Ashfield area this would capture potential particulate levels associated with the M4 East construction works and therefore construction air quality impacts from the proposed modification would not adequately be identified.

The majority of the M4 East construction works would be completed prior to the commencement of dust generating works for the M4-M5 Link project. Refer to **section C1.3** for further information regarding potential air quality impacts at Haberfield and Ashfield.

C8.3 Out of scope

C8.3.1 M4-M5 Link project

Issue description

Submitters raised a number of concerns about the M4-M5 Link project which are not relevant to the proposed modification including concerns related to:

- *Project justification*
- *Business case*
- *Ventilation design*
- *Requests for property acquisition*
- *Funding and delivery of the project.*

Response

The proposed modification relates to Stage 1 of the approved project and is limited to the elements described in Chapter 4 (Proposed Modification) of the Modification report. The above concerns raised by submitters are not relevant to the modification and have been addressed in the M4-M5 Link EIS and SPIR.

C8.3.2 WestConnex program of works

Issue description

Submitters raised concerns regarding the broader WestConnex program of works including the business case, overall costs, strategic justification for the program of works and the sale of WestConnex.

Response

The proposed modification relates to Stage 1 of the approved project and is limited to the elements described in Chapter 4 (Proposed Modification) of the Modification report. The above concerns raised by submitters are not relevant to the modification.

Community concerns regarding the broader WestConnex program of works are addressed in the SPIR.

The NSW Government on 31 August 2018 announced that a 51 per cent stake in Sydney Motorway Corporation (SMC) had been awarded to Sydney Transport Partners. Further details regarding the transaction are available at: <https://www.treasury.nsw.gov.au/projects-initiatives/commercial-transactions/current-projects>.

C8.3.3 New M5 project

Issue description

Submitters raised concerns about the impact of other WestConnex projects works which were not relevant to the proposed modification, including changes to Camdenville Park and odour impacts from the former Alexandria Landfill for the New M5 project.

Response

The proposed modification relates to Stage 1 of the approved project and is limited to the elements described in Chapter 4 (Proposed Modification) of the Modification report. The above concerns raised by submitters relate to the New M5 project and are not relevant to the M4-M5 Link project and the modification.

C8.3.4 Other projects

Issue description

Submitters raised concerns about other projects which are not relevant to the proposed modification including the construction delays associated with the CBD and South East Light Rail.

Response

The proposed modification relates to Stage 1 of the approved project and is limited to the elements described in Chapter 4 (Proposed Modification) of the Modification report. The above concerns raised by submitters are not relevant to the modification.

A construction contractor for Stage 1 of the M4-M5 Link project was appointed in June 2018. The indicative construction programs for the Northcote Street civil and tunnel site and the Parramatta Road West and Parramatta Road East civil sites show construction continuing until Q1 2023 (refer Tables 4-4 and 4-6 of the Modification report).

C9 Support for the modification

Two submitters noted conditional support for components of the modification.

C9.1 Support for the proposed modification

Issue description

Some submitters provided conditional support for elements of the proposed modification including:

- *No tunnelling activities being carried out from the Parramatta Road West site*
- *The removal of the Darley Road site from the project.*

Response

The support for the proposed removal of the Darley Road site from the project and the proposed change in use of the Parramatta Road West site is noted.

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D Part D - Environmental management measures, conditions of approval and conclusion

D1 Environmental management measures and conditions of approval

No further changes are proposed to the environmental management measures and conditions of approval as outlined in Chapter 7 (Conditions of approval) and Chapter 8 (Management measures) of the Modification report.

D2 Conclusion and next steps

The NSW Department of Planning and Environment (DPE) will, on behalf of the NSW Minister for Planning, review the Modification report and this Response to submissions report for the proposed modification of the M4-M5 Link project. Once DPE has completed its assessment, an assessment report will be prepared for the Secretary of DPE.

The assessment report will be provided to the NSW Minister for Planning, who will then either approve the modification (with the addition, amendment or removal of any conditions considered appropriate) or refuse to give approval to the modification.

A copy of the final Response to submissions report will be made publicly available. The NSW Minister for Planning's determination and the Secretary's Environmental Assessment Report will be published on the DPE Major Projects website following determination.

D3 References

AECOM Australia Pty Ltd, WestConnex M4-M5 Link: Mainline tunnel – Modification report, prepared for Roads and Maritime Services, September 2018

AECOM Australia Pty Ltd, WestConnex M4-M5 Link: Environmental Impact Statement, prepared for NSW Roads and Maritime Services, August 2017

AECOM Australia Pty Ltd, WestConnex M4 East: Environmental Impact Statement, prepared for NSW Roads and Maritime Services, October 2015

AECOM Australia Pty Ltd, WestConnex New M5: Environmental Impact Statement, prepared for NSW Roads and Maritime Services, November 2015

AECOM Australia Pty Ltd, WestConnex M4-M5 Link: Submissions and preferred infrastructure report, prepared for NSW Roads and Maritime Services, January 2018

Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ 2000)

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

Department of Environment and Climate Change, *Road Noise Policy*, 2011

IAQM (2014). Guidance on the assessment of dust from demolition and construction. Institute of Air Quality Management, London, 2014

Renzo Tonin (2016) WestConnex M4 East CNVIS for the Northcote Tunnel Support Site

Roads and Maritime Services, *Construction Noise and Vibration Guideline*, 2016

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

Roads and Maritime Services, *Noise Mitigation Guideline*, 2015

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WestConnex M4-M5 Link

Mainline Tunnel modification

Response to submissions report

Appendix A

Submitter identification number reference table



Appendix A - Submitter identification number reference table

Issues raised in submissions from community groups, individual community members and other stakeholders have been grouped into common issues, which are described in this appendix. Submitters can locate the issues raised in their submission and the relevant section of the report where these have been addressed. Each submission author has been assigned a submitter identification number based on their submission form number assigned by the NSW Department of Planning and Environment (DP&E) on receipt of the submission. A submitter can access their submitter identification number by locating their submission on the NSW Major Projects website³.

Report section	Submitter identification numbers	Count
C1 Construction impacts at Haberfield and Ashfield		
C1.1 Extended duration of construction impacts	1, 4, 15, 16, 17, 18, 20, 21, 23, 26, 28, 29, 30	13
C1.2 Noise and vibration	1, 4, 13, 15, 16, 17, 18, 20, 21, 23, 26, 28, 29, 30	14
C1.3 Air quality	1, 14, 17, 18, 23, 24, 29	7
C1.4 Impacts from construction workers	1, 4, 9, 15, 20, 23, 24	7
C1.5 Compensation for impacts	1, 15, 16, 24, 27	5
C2 Northcote Street civil and tunnel site		
C2.1 Noise and vibration	15, 16, 20, 23, 24, 26	6
C2.2 Air quality	1, 14, 17, 18, 23, 24, 29	7
C2.3 Impacts from construction workers	1, 2, 9, 15, 16, 20, 23, 24	8
C2.4 Construction access tunnel	2, 20, 26, 29	4

³ <http://majorprojects.planning.nsw.gov.au/>

Report section	Submitter identification numbers	Count
C2.5 Land use	15, 16	2
C2.6 Social and economic	1, 15, 16, 30	4
C2.7 Urban design	23, 26	2
C3 Spoil haulage routes		
C3.1 Traffic and transport	5, 8, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 26, 27, 29, 30	17
C3.2 Noise and vibration	7, 13, 15, 16, 18, 19, 24, 26, 27, 28, 29, 30	12
C3.3 Air quality	27, 29, 30	3
C3.4 Land use	23, 26	2
C3.5 Social and economic	13, 23, 27, 29, 30	5
C3.6 Human health	7, 19, 24, 29	4
C4 Parramatta Road West and Parramatta Road East civil sites		
C4.1 Traffic and transport	6, 9, 10, 20, 22, 23, 24, 26, 29	9
C4.2 Pedestrian walkway	23, 26	2
C4.3 Noise and vibration	13, 24	2
C4.4 Air quality	23, 24, 29	3

Report section	Submitter identification numbers	Count
C4.5 Land use	24	1
C4.6 Landscape and visual	22	1
C4.7 Social and economic	24	1
C5 Removal of the Darley Road site		
C5.1 Extended duration of tunnelling and associated impacts	26, 29, 30	3
C5.2 Land use	20	1
C5.3 Construction water treatment plants	30	1
C6 Operational water treatment plant at the St Peters interchange		
C6.1 Operational water treatment plant design	20, 25, 29, 30	4
C6.2 Flooding and drainage	20, 25, 29, 30	4
C6.3 Water quality	20, 25, 29, 30	4
C6.4 Urban design and landscaping	29	1
C6.5 Traffic and transport	29	1
C6.6 Operational impacts	29	1

Report section	Submitter identification numbers	Count
C7 Conditions of approval and environmental management measures		
C7.1 Conditions of approval	18, 22, 26	3
C7.2 Environmental management measures	26, 29, 30	3
C8 Other issues		
C8.1 Consultation	1, 14, 15, 16, 21, 23, 26, 29, 30	9
C8.2 Level and quality of assessment	23, 26, 29, 30	4
8.3 Out of scope	3, 11, 14, 17, 20, 24, 26, 30	8
C9 Support for the modification		
C9.1 Support for the proposed modification	20, 29	2

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westconnex.com.au



info.westconnex@rms.nsw.gov.au



Customer feedback
Roads and Maritime
Locked Bag 928,
North Sydney NSW 2059