Appendix C

Cumulative impact assessment methodology

WestConnex

Roads and Maritime Services

WestConnex M4-M5 Link

Cumulative impact assessment methodology

August 2017

Client: Roads and Maritime Services

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1 Assessment methodology

1.1 Introduction

The Secretary of the NSW Department of Planning and Environment (DP&E) has issued a set of environmental assessment requirements for the project. These are referred to as Secretary's Environmental Assessment Requirements (SEARs). **Table 1-1** sets out these requirements and the desired performance outcomes that relate to the cumulative impacts associated with the project, and identifies where they have been addressed in this environmental impact statement (EIS).

Table 1-1 SEARs – cumulative impacts

Desired performance outcome	SEARs	Where addressed in the EIS
2. Environmental Impact Statement The project is described in sufficient detail to enable clear understanding that the project has been developed through an iterative process of impact identification and assessment and project refinement to avoid, minimise or offset impacts so that the project, on balance, has the least adverse environmental, social and economic impact, including its cumulative impacts.	1. The EIS must include, but not necessarily be limited to, the following: (o) an assessment of the cumulative impacts of the project taking into account other stages of WestConnex, the proposed Western Harbour Tunnel, projects that have been approved but where construction has not commenced, projects that have commenced construction, and projects that have recently been completed;	This document outlines the methodology for the cumulative impact assessment for the project. Cumulative impacts are assessed in detail in the relevant technical working papers and appendices, including **Appendix H** (Traffic and transport), **Appendix I** (Air quality), **Appendix J** (Noise and vibration), **Appendix K** (Human health risk assessment), **Appendix O** (Landscape and visual impact), **Appendix P** (Social and economic), **Appendix Q** (Surface water and flooding), **Appendix S** (Biodiversity), **Appendix T** (Groundwater), **Appendix U** (Non-Aboriginal heritage), **Appendix V** (Aboriginal heritage) and **Appendix W** (Detailed greenhouse gas calculations) of the EIS.
3. Assessment of Key Issues Key issue impacts are assessed objectively and thoroughly to provide confidence that the project will be constructed and operated within acceptable levels of impact.	2. For each key issue the Proponent must: (c) identify, describe and quantify (if possible) the impacts associated with the issue, including the likelihood and consequence of the impact (comprehensive risk assessment), and the cumulative impacts of: (i) concurrent project construction activities; and (ii) proposed and approved projects (where information is available at the time of writing)	The environmental risk analysis for the project is outlined in **Chapter 28** (Environmental risk analysis) of the EIS. A description of concurrent project activities is provided in **Chapter 26** (Cumulative impacts) of the EIS. A list of projects included in the cumulative assessment is provided in **Table 1-3**.
1. Transport and Traffic Network connectivity, safety and efficiency of the transport system in	1. The Proponent must assess construction transport and traffic (vehicle, pedestrian and cyclists) impacts, including, but not necessarily limited to:	Cumulative construction traffic and transport impacts are discussed in **Chapter 26** (Cumulative impacts) and in **Appendix H** (Technical working

Desired performance outcome	SEARs	Where addressed in the EIS
the vicinity of the project are managed to minimise impacts. The safety of transport system customers is maintained. Impacts on network capacity and the level of service are effectively managed. Works are compatible with existing infrastructure and future transport corridors.	(g) the cumulative traffic impacts of other key infrastructure projects preparing for or commencing construction, including but not limited to other stages of WestConnex.	paper: Traffic and transport) of the EIS.
2. Air Quality The project is designed, constructed and operated in a manner that minimises air quality impacts (including nuisance dust and odour) to minimise risks to human health and the environment to the greatest extent practicable.	2. The Proponent must ensure the AQIA also includes the following: (k) a cumulative assessment of the in tunnel, local and regional air quality due to the operation of and potential continuous travel through the M4 East and New M5 Motorways and surface roads.	Cumulative air quality impacts are discussed in **Chapter 9** (Air quality),Chapter **26** (Cumulative impacts) and in **Appendix I** (Technical working paper: Air quality) of the EIS.
3. Health and Safety The project avoids or minimises any adverse health impacts arising from the project. The project avoids, to the greatest extent possible, risk to public safety.	2. The assessment must: (d) include both incremental changes in exposure from existing background pollutant levels and the cumulative impacts of project specific and existing pollutant levels at the location of the receivers (including public open space areas); (f) include a cumulative human health impact assessment inclusive of in-tunnel, local and regional impacts due to the operation of and potential continuous travel through the M4 East and New M5 Motorways and surface roads.	Cumulative human health impacts are discussed in **Chapter 11** (Human health risk), **Chapter 26** (Cumulative impacts) and in **Appendix K** (Technical working paper: Human health risk assessment) of the EIS.
4. Noise and Vibration – Amenity Construction noise and vibration (including airborne noise, ground-borne noise and blasting) are effectively managed to minimise adverse impacts on acoustic amenity. Increases in noise emissions and vibration affecting nearby properties and other	2. An assessment of construction noise and vibration impacts which must address: (h) a cumulative noise and vibration assessment inclusive of impacts from the project (including concurrent project construction activities); and (i) a cumulative noise and vibration assessment of the impacts from the project and the construction of other key infrastructure projects including, but not limited to, the New M5 and M4 East.	Cumulative construction noise and vibration impacts are discussed in **Chapter 26** (Cumulative impacts) and in **Appendix J** (Technical working paper: Noise and vibration) of the EIS.

Desired performance outcome	SEARs	Where addressed in the EIS
sensitive receivers during operation of the project are effectively managed to protect the amenity and well-being of the community.		
7. Urban Design The project design complements the visual amenity, character and quality of the surrounding environment. The project contributes to the accessibility and connectivity of communities.	(f) evaluate the visual impacts and urban design aspects of the proposal and its components (such as the ventilation outlets and interchanges) on surrounding areas, taking into consideration the urban and landscape design of the M4 East and New M5 Motorways and WestConnex Urban Design Corridor Framework;	Cumulative landscape character and visual impacts are discussed in **Chapter 26** (Cumulative impacts) and in **Appendix O** (Technical working paper: Landscape and visual impact) of the EIS.
9. Socio-economic, Land Use and Property The project minimises adverse social and economic impacts and capitalises on opportunities potentially available to affected communities. The project minimises impacts to property and business and achieves appropriate integration with adjoining land uses, including maintenance of appropriate access to properties and community facilities, and minimisation of displacement of existing land use activities, dwellings and infrastructure.	1. The Proponent must assess social and economic impacts (of all phases of the project) in accordance with the current guidelines (including cumulative ongoing impacts of the proposal).	Cumulative social and economic impacts are discussed in **Chapter 26** (Cumulative impacts) and in **Appendix P** (Technical working paper: Social and economic) of the EIS.
14. Heritage The design, construction and operation of the project facilitates, to the greatest extent possible, the long term protection, conservation and management of the heritage significance of items of environmental heritage and Aboriginal objects and places. The design, construction and operation of the project avoids or minimises impacts, to the	1. The Proponent must identify and assess any direct and/or indirect impacts (including cumulative impacts) to the heritage significance of listed heritage items	Cumulative non-Aboriginal and Aboriginal heritage impacts are discussed in **Chapter 26** (Cumulative impacts) and in **Appendix U** (Technical working paper: Non-Aboriginal heritage) and **Appendix V** (Technical working paper: Aboriginal heritage) of the EIS.

Desired performance outcome	SEARs	Where addressed in the EIS
greatest extent possible, on the heritage significance of environmental heritage and Aboriginal objects and places.		

There are currently no NSW or Australian Government guidelines on undertaking cumulative impact assessments. Therefore, the cumulative impact assessment in this EIS is based on the broad requirements set out in the SEARs for the project.

This section includes a description of how projects were initially identified for consideration by explaining the screening criteria applied in determining whether the projects should be assessed for cumulative impacts. It also includes summary tables of the projects that were excluded from the assessment and the projects included as well as an overview of the type of assessment undertaken for the relevant cumulative impacts. A summary of the assessment of cumulative impacts is provided in **Chapter 26** (Cumulative impacts) of the EIS.

1.1.1 Identification of other projects

An initial list of projects for potential inclusion in the cumulative impact assessment was identified from the following sources:

- Previous WestConnex projects (with information sourced from the previous EIS documents and post-approval management plans (where available))
- Rozelle Rail Yards Site Management Works Review of Environmental Factors (Roads and Maritime 2016) and Submissions Report (Roads and Maritime 2017)
- Known NSW Roads and Maritime Services (Roads and Maritime) and other transport infrastructure projects in proximity to the project, including proposed projects that interface with the project
- Consultation with government agencies (including DP&E)
- A review of the DP&E's Major Projects website
- A review of council and other government agency websites (such as UrbanGrowth NSW, Transport for NSW and Sydney Water)
- State media releases relating to major projects (since the planning process for the project commenced).

Only projects considered to be of ‘material’ scale in the vicinity of the M4-M5 Link were included on the list of projects to be screened. The materiality threshold for this cumulative impact assessment is defined as projects listed on the DP&E's Major Projects website as State significant development, State significant infrastructure and known project proposals of a relevant scale or resultant impact that involve activities that could result in a cumulative impact, including proposed projects that interface with the project.

These projects were classified according to their status, ie whether the project is:

- Recently completed
- Under construction, and/or likely to be under construction at the time that the M4-M5 Link construction commences
- Approved, but construction has yet to commence

- Under statutory environmental impact assessment (such as a Review of Environmental Factors or an EIS)

- A future strategic government project that has yet to be subject to statutory environmental impact assessment but interfaces with the M4-M5 Link project. This refers to related Roads and Maritime projects and projects that at minimum have a Business Case or strategy/plan document published in the public domain.

The list of projects identified can be broadly categorised as:

- **The WestConnex program of works**: This category includes the approved WestConnex projects of King Georges Road Interchange Upgrade and M4 Widening (completed construction and open to traffic) and the M4 East and New M5 (currently under construction).

- **Related Roads and Maritime projects**: This category includes other Roads and Maritime projects that may interact with, be constructed, or operate within the vicinity of the M4-M5 Link project, such as the proposed future Sydney Gateway, Western Harbour Tunnel and Beaches Link and F6 Extension projects. As these projects are in the early planning stages, only limited information is available to inform a cumulative impact assessment in this EIS. As such, a cumulative impact assessment has only been undertaken for key issues such as traffic, noise and vibration, air quality and human health risk

- **Other transport infrastructure projects**: This category includes public transport infrastructure such as light rail, metro and rapid transit projects such as the Sydney Metro City and Southwest, the Sydney central business district (CBD) and South East Light Rail and proposed on-street rapid transit along Parramatta Road between Burwood and the Sydney CBD

- **Other projects or strategic developments**: This category primarily includes urban development, other infrastructure and active transport projects. A number of the urban development projects are strategic in nature (ie are conceptual or in the early stages of planning), with limited detail available on specific impacts or timing of the various components. This includes, for example, The Bays Precinct transformation and the Parramatta Road corridor urban transformation, which are both in the early stages of strategic assessment, land use planning and consultation. These strategic developments do have population growth and changes in land use associated with them, which are linked to traffic movements on roads within or in proximity to the project.

Land use projections for these and other strategic development projects such as around Green Square and Mascot have been included in the WestConnex Road Traffic Model (WRTM) version 2.3, which has informed the traffic modelling for the M4-M5 Link project, including the consideration of cumulative traffic and transport impacts.

A description of these projects is included in **Table 1-3**.

1.1.2 Screening criteria

Following the identification of potentially relevant projects (refer to **Chapter 26** (Cumulative impacts)) the following criteria were applied to determine whether each project or strategic development should be included in the cumulative impact assessment or not.

- **Spatial relevance:** A project was considered to be spatially relevant where that project overlapped or was adjacent or proximal to the M4-M5 Link project footprint

    - A project was considered to be adjacent to the M4-M5 Link project where it was within 500 metres of the M4-M5 Link project footprint

    - A project was considered to be proximal to the M4-M5 Link project where it was within two kilometres of construction sites or within 10 kilometres of the M4-M5 Link project footprint

- **Temporal relevance:** A project was considered to be temporally relevant where the expected timing of the construction or operation of a project would be concurrent (ie overlap) with the timing of the construction or operation of the M4-M5 Link project

- **Publicly available information:** Projects under consideration must have publicly-available information (at the time of preparing this EIS), with an adequate level of detail. If a potential future project was known, but there was insufficient public data available to allow a qualitative assessment of the potential cumulative impacts, it was not able to be included in the cumulative impact assessment.

All of the above criteria were applied in determining whether a project would be included in the cumulative impact assessment. However, exceptions were made for strategic transport infrastructure or master plan projects that did not meet all the criteria. They were still included in the cumulative impact assessment due to their inclusion in the WRTM version 2.3, and therefore the operational traffic modelling for the project. These projects include the Western Sydney Airport and the Central to Eveleigh Urban Transformation and Transport Program.

1.2 Project screening

Based on the application of the screening criteria discussed in **section 1.1.2**, **Table 1-2** provides a list of projects that were considered, but not assessed in the cumulative impact assessment including the justification for why they were not included. **Table 1-3** provides a description of the projects included in the cumulative impact assessment.

Table 1-2 Projects considered but not assessed in the cumulative impact assessment

Project name	Brief project description	Information source	Potential interaction with the M4-M5 Link	Justification for exclusion
King Street Gateway	King Street Gateway is a future strategic government project at the intersection of the Princes Highway, King Street and Sydney Park Road at Newtown. The project works are aimed at protecting the amenity of King Street and may include: · Refining treatments to and rationalisation of road space · Limiting through-traffic · Improving pedestrian safety and access to Sydney Park. Roads and Maritime is committed to working with City of Sydney and Inner West councils to develop and implement the concept for the King Street Gateway. When finalised, the King Street Gateway concept is aimed at delivering improvements along the Princes Highway, and may also include potential amendments to restrict some turning movements at the intersection of May Street and Mitchell Road, to minimise the use of local roads and further protect the amenity of King Street.	WestConnex New M5 Submissions and Preferred Infrastructure Report (AECOM 2016).	· Overlaps with the M4-M5 Link mainline tunnel footprint · Potential construction time period overlap with the M4-M5 Link project (however the program is unknown at this stage) · Traffic implications on the road network around the M4-M5 Link.	· Design of the project in early stages · Insufficient public information available · Impacts and the timing of the project are not yet known.
Alexandria to Moore Park Connectivity Upgrade	Roads and Maritime is investigating key intersection improvements to reduce travel time, improve connectivity and support urban renewal on the southern outskirts of the Sydney CBD. The Alexandria to Moore Park connectivity upgrade includes improvements at critical intersections and pinch points in the inner city suburbs of Alexandria, Waterloo and Moore	· Alexandria to Moore Park Connectivity Upgrade - Project Updates (Roads and Maritime December 2016 and June 2017) · Alexandria to Moore Park Connectivity	The project footprint at the Euston Road intersection with Maddox Street is in proximity (less than one kilometre) from the M4-M5 Link footprint at the St Peters interchange and directly connects to the WestConnex New M5	· Design of the project in early stages · Insufficient public information available · Impacts and the timing of the project are not yet known.

Project name	Brief project description	Information source	Potential interaction with the M4-M5 Link	Justification for exclusion
	Park and can be divided into three areas: · Euston Road (at Maddox Street) at Alexandria to McEvoy Street (at Young Street) at Waterloo · McEvoy Street (at Young Street) to Lachlan Street and South Dowling Street at Waterloo · Anzac Parade, Alison Road and Dacey Avenue at Moore Park. A concept design and review of environmental factors (REF) is due to be displayed for community and stakeholder feedback in the second half of 2017.	Upgrade - Questions and Answers (Roads and Maritime June 2017) · Alexandria to Moore Park Connectivity Upgrade - Community Consultation Report (Roads and Maritime April 2017) · Roads and Maritime website: http://www.rms.nsw.gov.au/projects/sydney-inner/alexandria-moore-park-connectivity-upgrade/index.html.	project at this intersection.	
Parramatta Road Bus Rapid Transit and future Light Rail	Parramatta Road is identified in State policy documents (detailed in **Chapter 4** (Project development and alternatives)) as one of Sydney's key growth corridors to investigate for a rapid transit system, either bus or light rail. The Parramatta Road Corridor on-street rapid transit route, from Burwood train station to the Sydney CBD, would service the five precincts of Burwood-Concord, Kings Bay, Taverners Hill, Leichhardt and Camperdown. It is expected that public transport journeys would become faster and more reliable through the operation of higher-frequency and capacity services, additional on-road transit priority and the provision of high-quality and accessible transit 'superstops'. The *Parramatta Road Corridor Urban*	· State Infrastructure Strategy (Infrastructure NSW 2014) · Sydney's Bus Future - Simpler, faster, better bus services (Transport for NSW December 2013) · Parramatta Road Corridor Urban Transformation Strategy (UrbanGrowth NSW 2016) · Parramatta Road Corridor Urban Transformation Implementation Plan 2016-2023	The M4-M5 Link will provide reductions in traffic along sections of Parramatta road thereby enabling public transport improvements on this corridor. One of the proposed bus rapid superstops is planned for Parramatta Road at the intersection with Pyrmont Bridge Road, which is adjacent to the M4-M5 Link Pyrmont Bridge Road tunnel site. Changes to traffic conditions as a result of a new rapid transit system	· Design of the project in early stages · Insufficient public information available · Impacts and the timing of the project are not yet known.

Project name	Brief project description	Information source	Potential interaction with the M4-M5 Link	Justification for exclusion
	Transformation Strategy (UrbanGrowth NSW 2016) describes a rapid bus solution from Burwood to the Sydney CBD in its 2016–2023 implementation plan. Local councils and state agencies would have a role in implementing the Strategy.	(UrbanGrowth NSW 2016).	would also potentially impact on communities impacted by the M4-M5 Link project. There is a potential for construction periods to overlap.	
Sydney Metro West	The NSW Government has announced a new metro railway line linking the Parramatta and Sydney CBDs, and communities along the way. The proponent for the project is Transport for NSW. The new railway line is expected to be built largely underground and operational after 2025. The metro line would service four key precincts including Parramatta, Sydney Olympic Park, The Bays Precinct and the Sydney CBD. Sydney Metro West would work together with the existing T1 Western Line to service the growing needs of Western Sydney, by doubling the rail capacity of the Parramatta to Sydney corridor. The project is in the early planning stages with a preferred alignment to be announced in late 2018.	· Sydney Metro West - Project Overview (Transport for NSW 2017) (https://www.sydneymetro.info/west/project-overview).	The project is in spatial proximity to the M4-M5 Link around The Bays Precinct.	· Design of the project in early stages · Insufficient public information available · Impacts and the timing of the project are not yet known.
Inner West Greenway	The Inner West Greenway is an open space/active and mixed transport corridor, connecting the Parramatta River at Iron Cove with the Cooks River in the south at Earlwood. It follows the Inner West light rail corridor and provides connections to Leichhardt, Haberfield, Summer Hill, Petersham, Lewisham, Dulwich Hill, Hurlstone Park and Earlwood.	· GreenWay Missing Links Report (GreenWay Missing Links Working Group October 2015) (http://www.greenway.org.au/).	Spatial overlap above the M4-M5 Link mainline tunnel alignment at Haberfield and Leichhardt near Hawthorne Canal and also adjacent to the Darley Road civil and tunnel site.	· Design of the missing links of the project in early stages · Insufficient public information available · Impacts and the timing of the missing links of the project are not yet

Project name	Brief project description	Information source	Potential interaction with the M4-M5 Link	Justification for exclusion
	Funding has been allocated to continue developing the corridor, to complete the missing links (eg between the Leichhardt North light rail stop and Hawthorne Canal and from Marion Street to Parramatta Road). The Greenway trail is expected to be completed by 2020.		Potential for construction of the missing links in and around the project footprint to occur at the same time as construction for the M4-M5 Link.	known.
The Green Grid	The primary aim of the Green Grid is to conserve, improve and expand Sydney's strategic network of open spaces. Connecting town centres integrating public transport and connecting the residents, workers and visitors of Sydney with a diversity of open space, sports facilities and recreational experiences.	· The Green Grid – Creating Sydney's open space network (NSW Government Architect's Office) · A Plan for Growing Sydney (NSW Government 2014).	It is possible that the Green Grid project may spatially overlap with some parts of the M4-M5 Link footprint. The 'central region' of the Green Grid includes the area at Alexandria Canal, which is close to the St Peters interchange.	· Design of the project in early stages · Insufficient public information available · Impacts and the timing of the project are not yet known.
Johnstons Creek naturalisation	Sydney Water is investigating opportunities to naturalise a 600 metre section of Johnstons Creek at Bicentennial Park, Annandale, as it is in need of repair. This work would help maintain the stormwater system and protect the local environment. The work would involve replacing the concrete walls with natural looking banks made of rocks and native plants. A concept design for the project was released in December 2016. There is no indicative timing for this work.	· Waterway rehabilitation - Johnstons Creek - Community Update (Sydney Water November 2016) · Johnstons Creek Parklands Master Plan (City of Sydney 2013) · Early Concept Designs (Sydney Water December 2016).	The naturalisation project does not interact directly with the M4-M5 project footprint but at its closest point is within 500 metres of the project footprint at the intersection of The Crescent and City West Link.	· Design of the project in early stages · Insufficient public information available · Impacts and the timing of the project are not yet known.
Lilyfield Road Regional Bike Route	Inner West Council is proposing a new cycleway that would be separated from Lilyfield Road traffic lanes. This will make it safer for	· Leichhardt Municipal Council – 2016 Leichhardt Bike Plan	Spatial overlap along Lilyfield Road and Victoria Road near the Rozelle	· Design of the project in early stages · Insufficient public

Project name	Brief project description	Information source	Potential interaction with the M4-M5 Link	Justification for exclusion
Separated Cycleway	pedestrians and cyclists and improve connections to local areas, while promoting the use of active and public transport. This project aims to: · Improve local bike routes · Improve accessibility for our community · Make the roads more bike friendly and safe · Encourage local residents to cycle · Promote health and wellbeing. The project is currently under review following community consultation. Draft concept plans are currently being prepared and will be placed on public exhibition.	(GTA Consultants on behalf of Leichhardt Municipal Council October 2015) · Making it safer and easier to ride a bike - Lilyfield Road, Lilyfield (Factsheet Inner West Council).	Rail Yards.	information available · Impacts and the timing of the project are not yet known.
Superyacht Marina	Redevelopment of the Sydney Superyacht Marina at Rozelle to create a commercial marine hub, providing berthing for a range of vessels, commercial space supporting marine uses, a yacht club and associated restaurants and café.	http://superyachtmarina.com.au/.	Proximal to the Rozelle Rail Yards.	· Design of the project in early stages · Insufficient public information available · Impacts and the timing of the project are not yet known.
CBD Metro	The CBD Metro comprises a seven kilometre underground railway within twin tunnels, each about six metres in diameter. It would traverse the Inner West local government area (LGA). It was designed to enable a future extension to Westmead from Central Station and extensions to the northwest from Rozelle. New stations were proposed at Central, Town Hall Square, Martin Place, Barangaroo–Wynyard, Pyrmont and Rozelle, with infrastructure at White Bay for a future station. Two alternatives for the eastern entrance at	Sydney Metro - Annual Report (NSW Government 2009).	Spatial overlap at Rozelle where a new station and stabling facility were proposed. The station would be located beneath Victoria Road, near the corner of Darling Road and in proximity to the proposed Iron Cove Link.	· Temporal relevance not determined · Although the design has considered the protected corridor, there is currently no government commitment to proceed.

Project name	Brief project description	Information source	Potential interaction with the M4-M5 Link	Justification for exclusion
	Pyrmont Station were designed. A stabling facility and maintenance depot was also proposed at the Rozelle Rail Yards. While the project corridor was approved in 2010, the NSW Government announced in February 2010 that the project did not form part of the strategic transport plan for Sydney and would consequently not be constructed. The corridor remains a preserved corridor under the State Environmental Planning Policy (Infrastructure) 2007.			
Cooks Cove precinct redevelopment – Stage 1: Southern Precinct	The Cooks Cove precinct is located at Arncliffe, about 10 kilometres south of the Sydney CBD in close proximity to Sydney Airport and Port Botany. It is bordered by Marsh Street to the north and west and Cooks River to the east. The proposed redevelopment of the Southern Precinct would involve: · Relocation of the Kogarah Golf Course and golf club · Creation of new cycling and pedestrian corridors · Creation of new pocket parks and enhancements to existing parks · Improvements to existing wetlands and creation of additional habitat · Remediation of contaminated land · Upgrades to operational infrastructure within the state heritage listed Arncliffe Market Gardens. Results of submission are expected mid-2017.	· Cooks Cove – Planning Report (NSW Government November 2016) http://www.cookcovepre cinct.com.au/ · Cooks Cove – Indicative Development Proposal – Kogarah Golf Course Relocation (John Boyd Properties April 2016).	Spatial – the Cooks Cove Southern Precinct is located around three kilometres from the St Peters interchange.	· Design of the project in early stages · Insufficient public information available · Impacts and the timing of the project are not yet known.

Table 1-3 Projects included in the cumulative impact assessment

Project name	Brief project description	Status	Spatial relevance[1]	Temporal relevance[2]	Relevant technical issues
WestConnex program of works					
King Georges Road Interchange Upgrade	Upgrade of the King Georges Road Interchange between the M5 West Motorway and the M5 East Motorway at Beverly Hills, in preparation for the New M5 project. Construction commenced in July 2015 and the road was opened to traffic in December 2016.	Recently completed.	Proximal – the road alignment is within 10 kilometres of the St Peters interchange.	Operational overlap and within the WestConnex program of works.	· Traffic and transport.
M4 Widening	Widening of around eight kilometres of the existing M4 Motorway from Parramatta to Homebush from three to four lanes in each direction. Construction commenced in March 2015 and the road was opened to traffic in July 2017.	Recently completed.	Proximal – the road widening is within 10 kilometres of the Wattle Street interchange at Haberfield.	Operational overlap and within the WestConnex program of works.	· Traffic and transport.
M4 East	Extending the M4 Motorway in twin tunnels between Homebush and Haberfield via Concord, with three lanes in each direction. Construction commenced in March 2016. The project is expected to be completed and open to traffic in 2019. Includes provision for the future connection to M4-M5 Link at Haberfield.	Under construction.	Overlaps – the project overlaps with the M4-M5 Link project footprint at the Wattle Street interchange, Wattle Street civil and tunnel site, Haberfield civil and tunnel site (including the Parramatta Road ventilation facility) and the Northcote Street civil site.	Construction overlap may be up to 12 months. Operation overlap. This project is also within the WestConnex program of works.	· All key issues for the EIS.
New M5	Duplication of the M5 East from King Georges Road in Beverly Hills with tunnels from Kingsgrove to a new interchange at St Peters. The St Peters interchange allows for connections to the proposed future Sydney Gateway project and an underground connection to the M4-M5 Link. The New M5 tunnels also include provision for a future	Under construction.	Overlaps – the project overlaps with the M4-M5 Link project footprint at the St Peters interchange and the Campbell Road civil and tunnel site.	Construction is expected to overlap for around 24 months. Operation overlap. This project is also within the	· All key issues for the EIS.

Project name	Brief project description	Status	Spatial relevance[1]	Temporal relevance[2]	Relevant technical issues
	connection to the proposed future F6 Extension. Local streets and intersections around the St Peters interchange are also being upgraded to ensure safe and efficient connections for the New M5. Construction commenced in July 2016. The project is expected to be completed and open to traffic in 2020.			WestConnex program of works.	
Related Roads and Maritime projects					
Sydney Gateway	A high-capacity connection between the St Peters interchange (under construction as part of the New M5 project) and the Sydney Airport and Port Botany precinct. The project is undergoing concept development and would be subject to separate planning approval. For the purposes of this cumulative impact assessment, the Sydney Gateway project is conservatively assumed to be operational by 2023.	Future strategic government project.	Adjacent – the road alignment would connect to the St Peters interchange (the rail component of the Sydney Gateway project has not been considered).	For the purposes of this EIS, both projects are being assessed as being under construction concurrently for at least some of the time.	· Traffic and transport · Noise and vibration · Air quality · Human health risk.
Western Harbour Tunnel and Beaches Link	**Western Harbour Tunnel** Tunnels connecting to the M4-M5 Link at the Rozelle interchange, crossing underneath Sydney Harbour between the Birchgrove and Waverton areas, and connection with the Warringah Freeway at North Sydney. **Beaches Link** Tunnels connecting to the Warringah Freeway, crossing underneath Middle Harbour and connecting with the Burnt Bridge Creek Deviation at Balgowlah and Wakehurst Parkway at Seaforth. It would also involve the duplication of the Wakehurst Parkway between Seaforth	Future strategic government project.	Overlaps – the Western Harbour Tunnel construction and operational footprint overlaps with the M4-M5 Link footprint at the Rozelle interchange including surface works and infrastructure within the Rozelle Rail Yards.	For the purposes of this EIS, both projects are being assessed as being under construction concurrently for at least some of the time.	· Traffic and transport · Noise and vibration · Air quality · Human health risk · Social and economic.

Project name	Brief project description	Status	Spatial relevance[1]	Temporal relevance[2]	Relevant technical issues
	and Frenchs Forest. This project is undergoing concept development and would be subject to separate planning approval. For the purposes of this cumulative impact assessment, the Western Harbour Tunnel component is conservatively assumed to be operational by 2023, but construction may continue after the expected opening year of the M4-M5 Link project. For the purposes of this cumulative impact assessment, the Beaches Link component is conservatively assumed to be operational by 2033.				
F6 Extension	A proposed future motorway link between the New M5 at Arncliffe and the existing M1 Princes Highway at Loftus, generally along the alignment known as the F6 corridor. This project is subject to separate environmental assessment and approval. For the purposes of this cumulative impact assessment, the F6 Extension is conservatively assumed to be operational by 2033.	Future strategic government project.	Proximal – the road alignment is within around five kilometres of the St Peters interchange.	Operational overlap.	· Traffic and transport · Noise and vibration · Air quality · Human health risk · Social and economic.
Other transport projects					
Sydney Metro City and Southwest	The project comprises two stages: Stage 1: Chatswood to Sydenham Stage 2: Sydenham to Bankstown. The metro line would be around 16 kilometres long (of which around 15 kilometres is located in underground rail tunnels) and includes seven new stations and 11 replacement stations (superseding heavy rail between Sydenham and Bankstown). Key features of Stage 1 relevant to the M4-M5 Link project include:	Stage 1 was approved in January 2017. Stage 2 under assessment.	Overlaps – the Sydney Metro Rail runnels overlap with the M4-M5 Link Motorway tunnels in the Newtown area north of the St Peters interchange. A construction compound for the metro project at Sydney Steel Road (the Marrickville dive site) is less than one kilometre from the St Peters interchange.	Construction and operational overlap.	· Traffic and transport · Noise and vibration · Air quality · Human health risk · Social and economic · Groundwater.

Project name	Brief project description	Status	Spatial relevance[1]	Temporal relevance[2]	Relevant technical issues
	A dive structure (about 400 metres in length) and tunnel portal north of Sydenham Station and south of Bedwin Road, Marrickville – referred to as the Marrickville dive site in this EIS A services facility (for traction power supply and an operational water treatment plant) adjacent to the dive structure. Early works on Stage 1 would start in 2017. Testing and commissioning of the project would be completed by late 2024. Services on Stage 1 of Sydney Metro City and Southwest are expected to start in 2024.				
CBD and South East Light Rail – Rozelle maintenance depot	The CBD and South East Light Rail includes 20 light rail stops, a pedestrian zone on George Street (between Hunter and Bathurst streets), around 12 substations to provide power for the light rail vehicles, a light rail vehicle stabling facility in Randwick and a maintenance depot at Rozelle. Preparatory work for the depot, adjacent to Lilyfield Road and Catherine Street, began in April 2016 with site establishment and demolition work. When complete, the new facility would be used by light rail drivers as well as maintenance facility operators to repair and service light rail vehicles. Works are scheduled to finish by Q1-2018.	Under construction.	Adjacent – The Rozelle maintenance depot is immediately west of the Rozelle Rail Yards.	Construction and operational overlap.	· Traffic and transport · Noise and vibration · Flooding and drainage · Aboriginal heritage · Non-Aboriginal heritage · Biodiversity · Visual amenity.
Other projects and strategic developments					
Rozelle Rail Yards Site Management	Roads and Maritime would be responsible for removing existing rail and rail related infrastructure from the Rozelle Rail Yards and	Under construction.	Overlaps – the site management works at the Rozelle Rail Yards overlap	Operation overlap.	· Contamination · Flooding and

Project name	Brief project description	Status	Spatial relevance[1]	Temporal relevance[2]	Relevant technical issues
Works	managing existing issues at the site such as waste and noxious weeds. Works are expected to commence in the second half of 2017 and take up to 12 months to complete.		with the M4-M5 Link footprint at the Rozelle interchange, but the site management works will be completed prior to M4-M5 Link works commencing.		drainage · Visual amenity · Biodiversity · Aboriginal heritage · Non-Aboriginal heritage · Noise and vibration · Air quality.
Parramatta Road Corridor Urban Transformation Strategy	The strategy is the NSW Government's 30 year plan setting out how the Parramatta Road Corridor will grow and bring new life to local communities living and working along the corridor. The corridor spans 20 kilometres from Granville to Camperdown and includes eight identified urban renewal precincts including the Taverners Hill, Leichhardt and Camperdown precincts. The Strategy identifies the 'Camperdown Triangle' at the intersection of Parramatta Road, Pyrmont Bridge Road and Mallett Street as a potential biomedical hub. One of the key actions for the Camperdown Precinct is to prioritise land use for biotechnology and employment uses that support the growth of the nearby institutions, such as RPA Hospital and Sydney University Plans for the Camperdown Precinct also include reinforcing active transport over private vehicle movements and improving high-capacity public transport connections along Parramatta Road to the Sydney CBD. The Strategy identifies a public transport 'super stop' at the intersection of Pyrmont Bridge Road and Parramatta Road.	Future strategic government project.	Overlaps – the Pyrmont Bridge Road civil and tunnel site for the project occupies part of the 'Camperdown triangle' identified in the Strategy.	Operational overlap.	· Traffic and transport · Land use · Social and economic · Visual amenity.

Project name	Brief project description	Status	Spatial relevance[1]	Temporal relevance[2]	Relevant technical issues
Bays Precinct Transformation Plan	*The Bays Precinct Urban Transformation Plan* (UrbanGrowth NSW 2015) establishes the strategy for how The Bays Precinct would be developed over 20 years for residential, employment, entertainment and open space uses. The Bays Precinct, located about two kilometres west of the Sydney CBD, encompasses the areas surrounding Blackwattle Bay, Rozelle Bay and White Bay. The Bays Precinct comprises eight precincts, including the former Rozelle Rail Yards, White Bay Power Station, White Bay, and Rozelle Bay and Bays Waterways. The Transformation Plan offers the opportunity to transform 95 hectares of largely government-owned, harbour-front land and 94 hectares of waterways for the economic, cultural and social benefit of Sydney and the state. The vision for the Rozelle Rail Yards, as outlined in the Plan, was superseded by the NSW Government announcement in July 2016 that the site would be used for the M4-M5 Link. Preliminary investigation and consultation is underway for the development of the White Bay Power Station site, led by UrbanGrowth NSW. This site is identified as a high priority development site.	Future strategic government project.	Adjacent – M4-M5 Link activities such as surface road improvements at Victoria Road and Anzac Bridge approach as well as development on part of the former Rozelle Rail Yards (for the Rozelle interchange) would be immediately adjacent to the White Bay Power Station site. Overlaps – the M4-M5 Link intends to use the Rozelle Rail Yards, which is an identified precinct in the Plan – it is expected that use of this site would be complementary to the Plan as far as possible. The M4-M5 Link also intends to discharge treated water into Rozelle Bay.	Operational overlap.	· Traffic and transport · Land use · Social and economic · Visual amenity.
Western Sydney Airport	The Australian Government has announced that Badgerys Creek will be the site for the Western Sydney Airport. The Government is committed to ongoing investment in the western Sydney region, where the new airport will be a major generator of	Approved.	Although the footprint of the proposed airport is not spatially relevant to the M4-M5 Link, this project has been included by exception).	Operational overlap.	· Traffic and transport · Air quality · Noise and vibration · Human health risk.

Project name	Brief project description	Status	Spatial relevance[1]	Temporal relevance[2]	Relevant technical issues
	economic activity providing employment opportunities closer to where people in Western Sydney live. The airport will be a single runway, catering for 10 million passengers a year, five years after opening, with a second runway planned for 2050.				· Resource waste and waste minimisation.
Mascot Station Town Centre Precinct Masterplan	The Mascot Station Town Centre Precinct is a key centre in planning and urban development in the City of Bayside LGA and is nominated as a growth centre in state and local planning strategies. The scope includes transport measures, public open space and desirable built form outcomes. The Masterplan balances land uses by providing residential and employment uses that capitalise on accessibility to public transport and open space.	Future strategic government project.	Proximal – the Mascot town centre precinct is located around one kilometre from the St Peters interchange.	Operational overlap.	· Traffic and transport · Air quality · Noise and vibration · Human health risk.
Green Square Town Centre Project	Green Square Town Centre would rejuvenate former industrial precincts, with a vision for a vibrant place where people can live, work and enjoy both during the day and at night. It would include entertainment, cultural and community features and activities. The project would include community facilities including a library, plaza, open space and aquatic centre.	Under construction.	Proximal – the Green Square Town Centre urban development at the station on Bourke Street is around one kilometre from the St Peters interchange.	Operational overlap.	· Traffic · Air quality · Noise and vibration · Human health risk
Central to Eveleigh Urban Transformation and Transport Program	The transformation of Central to Eveleigh is through three projects that include five precincts of government land. Planning for these precincts would improve local links across the rail corridor, provide more open space, and create new community facilities and places for residents, visitors and workers to enjoy.	Future strategic government project.	Although the footprint of the precincts is not spatially relevant to the M4-M5 Link, this project has been included by exception.	Operational overlap.	· Traffic · Air quality · Noise and vibration · Human health risk.

Project name	Brief project description	Status	Spatial relevance[1]	Temporal relevance[2]	Relevant technical issues
	The program has the potential to make a contribution to meeting the future needs of Sydney residents and businesses through connecting Sydney's diverse and vibrant communities, strengthening the Global City and making a great place to live.				
Whites Creek naturalisation	Sydney Water is investigating the naturalisation of about 420 metres of Whites Creek about 200 metres west of its outlet at Rozelle Bay in Annandale. The purpose is to devise a restoration plan with a focus on developing naturalising solutions where possible. The early concept design for the naturalisation and/or rehabilitation of this section of Whites Creek involves the removal of deteriorated concrete banks and subsequent rehabilitation and naturalisation. The design and construction timelines for these works are not known. For the purpose of this cumulative impact assessment, it is assumed that works would be completed prior to construction of the M4-M5 Link commencing.	Concept design ready (December 2016).	Overlaps – the M4-M5 Link includes the proposed widening of Whites Creek near The Crescent, consistent with Sydney Water's plans for the portion of Whites Creek to the west. The M4-M5 Link also plans to discharge treated tunnel water into Rozelle Bay.	Operational and construction overlap.	· Flooding and drainage · Water quality · Biodiversity.
Sydney Airport Master Plan	The Master Plan outlines the strategic direction for the development of Sydney Airport over the next 20 years. It includes an assessment of the future needs of airlines and other airport users, a land use zoning plan, forecast changes in the number of airline passengers, flights and the volume of air freight, information about aircraft noise and the plans for dealing with any environmental issues associated with implementing the new master plan. The plan includes a number of projects to	Master Plan approved and some of the projects have commenced.	Proximal – Sydney Airport is within two kilometres of the St Peters interchange.	Construction and operational overlap.	· Traffic and transport · Air quality · Noise and vibration · Human health risk.

Project name	Brief project description	Status	Spatial relevance[1]	Temporal relevance[2]	Relevant technical issues
	significantly improve road traffic capacity in and around the airport over the short and long term. In particular, proposed works to the junctions around the Terminal 2/Terminal 3 precinct, proposed road works within the Terminal 1 precinct and the creation of public transport facilities in both precincts would result in improved traffic flows in and around the airport.				

Notes:

[1] Spatial relevance – overlap means part of the project footprint overlaps with the project footprint of the M4-M5 Link, adjacent means within 500 metres of the M4-M5 Link project footprint and proximal is within 10 kilometres of the M4-M5 Link project footprint.

[2] Temporal relevance – Construction: the construction phase of the project is concurrent with the construction phase of the M4-M5 Link. Operation: the operation phase of the project commences during the construction phase or operational phase of the M4-M5 Link

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