Prepared for
Ampol Australia Petroleum Pty Ltd
ABN: 17000032128

Kurnell Terminal SSD-5544 MOD-7

Appendix L - Traffic and Transport Impact Assessment

12 May 2025

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Client: Ampol Australia Petroleum Pty Ltd

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Executive summary

The Kurnell Terminal ('the Site') is located on the southern side of Botany Bay, in Kurnell, New South Wales (NSW). In 2012, Ampol Refineries (NSW) Pty Ltd (Ampol) announced that the oil refinery and fuel terminal would be converted to a finished product terminal (the 'approved project'), ceasing refinery operations in 2014.

Development consent was received to complete the approved project under State Significant Development (SSD) application reference 5544 (SSD-5544). Ampol has modified SSD-5544 six times to complete the conversion and demolition works.

Ampol intends to consolidate operational infrastructure, remove redundant assets, and undertake remediation and grading. Completion of these works (the 'proposed modification', MOD-7) would continue the safe, viable, and reliable operation of the Kurnell Terminal, whilst preparing the land for future uses. The location within the Site that these works would occur is referred to as the 'Project Area.'

A Modification Report has been prepared to support the application for these changes to SSD-5544. This *Technical Report – Traffic and Transport Impact Assessment,* is one of a number of technical documents that forms part of the Modification Report.

Existing environment

The Project Area (the area within which the proposed modification will take place) is located in the Sutherland Shire LGA, on the Kurnell Peninsula in Sydney, NSW. The closest residential area to the Project Area is Kurnell, which is located adjacent to the north and northwest of the Site. The Site is located 17 km from Sydney Central Business District (CBD), and Cronulla residential areas are located 5 km to the southwest.

Road access is provided by Captain Cook Drive, which is the only road providing access to the Kurnell peninsula and links to the broader arterial road network including Taren Point Road and Port Hacking Road.

While traffic surveys were not specifically conducted for the proposed modification, existing traffic data from surveys carried out in March 2024 for a separate development on the Site were used. These surveys captured turning movements at key intersections along Captain Cook Drive, including Captain Cook Drive/ Elouera Road and Captain Cook Drive/ Sir Joseph Banks Drive. The existing data provides a reliable basis for understanding current traffic conditions and informs the assessment for the proposed modification.

While intersection modelling for the proposed modification was not undertaken, previous intersection modelling was carried out for the nearby Breen Resource Recovery project which is currently under assessment. Modelling of Captain Cook Drive indicated that intersection performance is likely to currently be achieving a Level of Service of C. As such, there is understood to be existing operational capacity at local intersections.

Impact assessment

Works are planned to commence in August 2025 and would continue for about 12 months for infrastructure removal scopes and up to five years for remediation works.

This proposed modification is expected to generate up to 136 heavy vehicle movements and 200 light vehicle movements per day during peak construction periods, with light vehicles expected to arrive prior to the identified AM peak (8-9am) and the identified PM peak (4:30-5:30pm).

The total number of heavy vehicles (HVs) movements arriving and leaving the Site at any time would be 14 per hour. When compared to the lowest volumes travelling through the surveyed intersections (Captain Cook Drive/ Joseph Banks Drive AM), which has a total of 706 vehicles, an increase in 14 HVs movements would equate to an increase of about 2%. This increase is not expected to have any impacts on the operation of the local road network, as it will not reduce the overall intersection performance of the local road network below acceptable levels.

Previous projects on the Site have successfully utilised Oversize and Overmass (OSOM) vehicles, demonstrating that the existing road network is suitable for accommodating such vehicles. Consequently, an OSOM assessment was not deemed necessary for this report. Future requirements for OSOM vehicle access would be managed through a Traffic Control Plan (TCP) developed as part of the Construction Traffic Management Plan (CTMP) during subsequent project stages.

No impacts on access, parking, or other transport modes, such as active transport and public transport have been identified.

Once the proposed modification is complete, the Site would continue to operate as described in the approval documentation for the approved project and would be consistent with the development consent for SSD-5544. Accordingly, no additional assessments were required for the operational phase, as the modification works align with the existing development consent.

Cumulative impact assessment

Projects in development locally have been assessed to identify potential overlap in project timelines and access arrangements that may together result in a cumulative impact on the road network. Projects in development in Kurnell would use Captain Cook Drive as the only access route to and from the peninsula. In the case that there is to be an overlap in construction scheduling and traffic impact is anticipated, consultation would be undertaken with Transport for NSW, Sutherland Shire Council, and other regional project proponents to understand interaction of the proposed modification with the projects along Captain Cook Drive and relevant intersections.

Mitigation

The assessment carried out in this technical report has identified the need for some revisions to existing environmental safeguards and management measures for the approved project.

A Traffic Management Plan would be developed for the construction phase, to address safe access and egress to the public road network. This plan would include detail on the coordination of offsite heavy vehicle movements and transportation of any OSOM vehicles to the Site, including routes, any impacts on road closures, temporary parking removal, and permit requirements.

These management and mitigation measures would minimise the potential for adverse impacts arising from the proposed works on the surrounding environment.

1.0 Introduction

1.1 Overview

The Kurnell Terminal ('the Site') is located on the southern side of Botany Bay, in Kurnell, New South Wales (NSW) (Figure 1-1). In 2012, Ampol Refineries (NSW) Pty Ltd (Ampol) announced that the oil refinery and fuel terminal would be converted to a finished product terminal (the 'approved project'), ceasing refinery operations in 2014.

Development consent was received to complete the approved project under State Significant Development (SSD) application reference 5544 (SSD-5544). Ampol has modified SSD-5544 six times to complete the conversion and demolition works.

Currently, the operational infrastructure is primarily located in the northern part of the Site (Zones 1 and 1A, as shown in Figure 1-1). Other parts of Ampol's landholdings at Kurnell include largely vacant areas of previously developed land (Zones 2 and 3) and areas of undeveloped land containing extensive native vegetation (Zones 4 and 5).

Ampol intends to consolidate operational infrastructure, remove redundant assets, and undertake remediation and grading. Completion of these works (the 'proposed modification', MOD-7) would continue the safe, viable, and reliable operation of the Kurnell Terminal, whilst preparing the land for future uses. The location within the Site that these works would occur is referred to as the 'Project Area.'

A Modification Report has been prepared to support a modification application to SSD-5544. This *Technical Report – Traffic and Transport Impact Assessment* is one of a number of technical documents that forms part of the Modification Report. In line with the requirements of Section 4.55 of the *Environmental Planning & Assessment Act 1979* (EP&A Act), the Modification Report provides the information required by Section 100 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation).

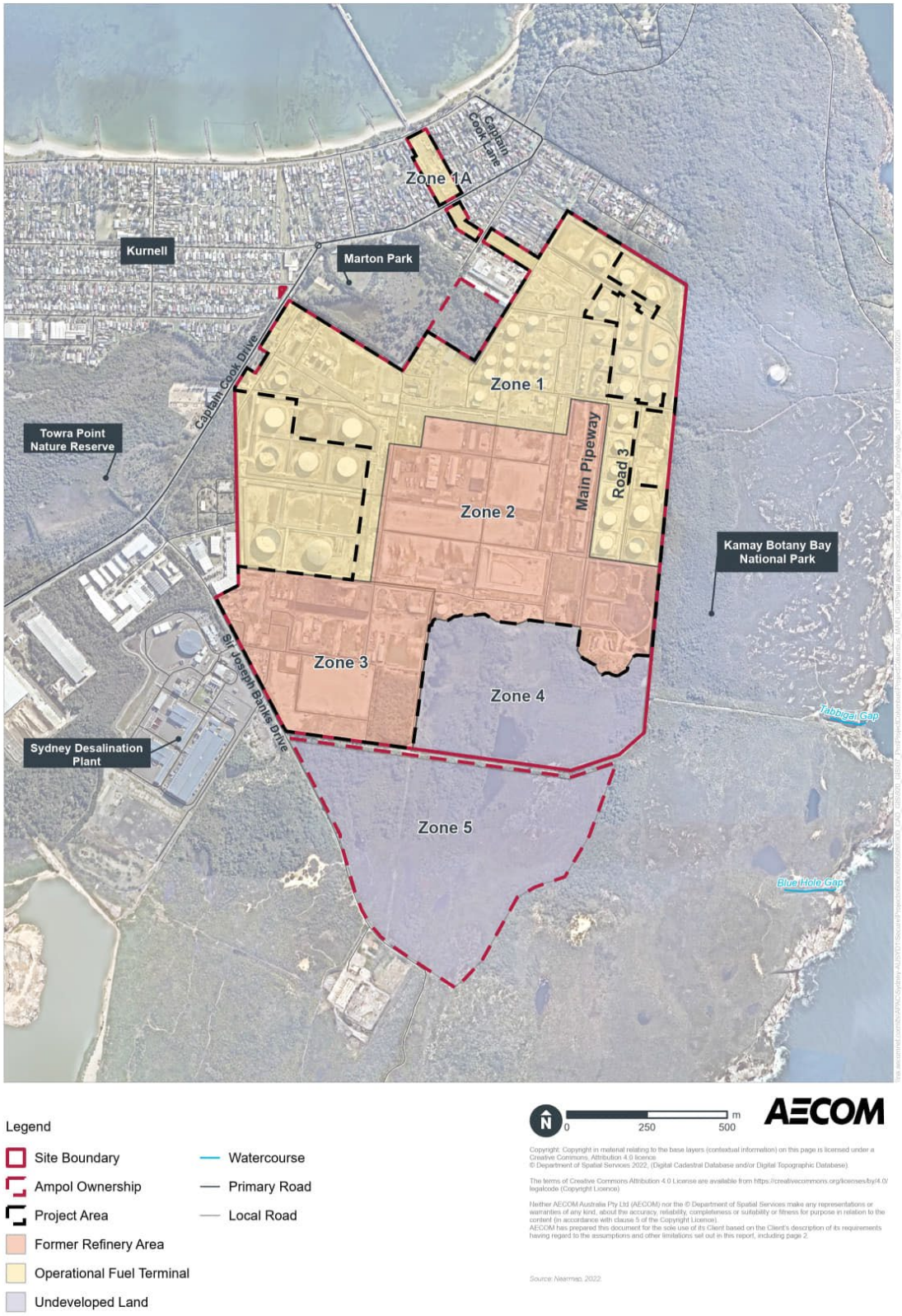

Figure 1-1 Ampol Kurnell Terminal (the Site)

1.2 Purpose of this report

This *Technical Report – Traffic and Transport Impact Assessment* is one of a number of technical documents that forms part of the Modification Report. The purpose of this report is to understand potential impacts of the proposed modification upon the surrounding road network.

1.3 Report structure

This report structure is as follows:

- **Section 1.0** provides an introduction to the proposed modification and Report
- **Section 2.0** describes the proposed modification and the anticipated construction activities and associated construction peak volumes as a result of the proposed modification
- **Section 3.0** established the existing transport context in the vicinity of the Project Area, including consideration of the existing road network, public transport, and active transport network
- **Section 4.0** provides an assessment of the potential impacts of the construction-related traffic on the study area, including consideration of proposed heavy vehicle access, construction routes and construction worker movements
- **Section 5.0** presents the cumulative impacts of the proposed modification and other nearby projects
- **Section 6.0** describes the management measures identified to mitigate potential impacts.

2.0 Proposed modification

2.1 Key elements of the proposed modification

To support the continued safe, viable, and reliable operation of the Site and to facilitate the future use of the Site, the proposed modification works involve:

- **Stage 1 – Preparation works**: Preparing the Project Area for proposed modification works
- **Stage 2 – Removal, relocation and/or augmentation of infrastructure**, including:
  - Relocation and/ or augmentation of firewater systems (FWS) and oily water sewer (OWS) systems and construction of new operational facilities, including replacement warehouses
  - Decommissioning and removal of non-operational assets, redundant structures and electrical assets
- **Stage 3 – Remediation**: Addressing legacy ground contamination, including asbestos-contaminated soil (ACS)
- **Stage 4 – Grading**: Landforming the Project Area following removal of infrastructure and ground remediation activities and preparing Zones 2 and 3 for future use
- **Stage 5 – Demobilisation**: Demobilisation of construction and remediation equipment.

These stages may occur sequentially or concurrently, depending on site requirements.

A summary of project elements requiring modification and how they relate to the approved project is provided in Table 2-1. The proposed modification works would be undertaken within the Project Area shown on Figure 2-1. All activities would adhere to the Kurnell Terminal permit to work system to ensure compliance with environmental and safety protocols.

Table 2-1 Modified project summary table

Stage	Element	Approved project	Modified project
Stage 1	Project Area	Project Area delineation	• Prepare the Project Area for the proposed modification works required under Stages 2, 3 and 4 and exclude other parts of the Site from proposed modification works.
Stage 2	Oily water sewer (OWS)	Maintain location in Zones 2 and 3	• Divert surface water runoff from potentially contaminated areas in Zone 2 to Zone 1 via new OWS interception pits/ lines until Stage 3 remediation is complete. • Divert potential leachate from ACS containment cell in Zone 2 to Zone 1 OWS system. • Remove all redundant OWS infrastructure.
	Fire-water systems (FWS)	Maintain location in Zone 2 and 3	• Augment or remove FWS infrastructure from Zones 2 and 3. • If removed from Zone 2, augment existing FWS in Zone 1 with a new firewater tank and pipework to service the terminal infrastructure. • Locate the new firewater tank and pumphouse within the FWS Relocation Area (specific siting selected during detailed design).
	Electrical assets	Maintain location in Zone 2 and 3	• Remove redundant electrical assets in Zones 2 and 3, including five substations.

Stage	Element	Approved project	Modified project
	Structures	Maintain location in Zone 2 and 3	• Demolish remaining structures in Zones 2 and 3. • Construct new 'fit for purpose' warehouse and Oil Spill Equipment Storeroom within Zone 1. • Construct new storage shed in Zone 1A.
Stage 3	Remediation	Removal of ACS from pipeways and either containment onsite or offsite disposal	• Remediate land in Zones 2 and 3 as necessary. • Remediate land in Zone 1 where infrastructure is relocated and/ or augmented as necessary. • Conduct remediation to a commercial/ industrial land use under the ASC NEPM (2013).
Stage 4	OWS	Maintain location in Zones 2 and 3	• Disconnect and remove remaining underground OWS lines from Zones 2 and 3, except for lines connecting to the ACS Containment Cell. • Install a new pump adjacent to the ACS Containment Cell. Two site options have been identified (specific siting selected during detailed design).
Stage 4	Grading	Grading following demolition of structures and removal of infrastructure across the Site and relevant Project Areas	• Construct new onsite detention (OSD) basins in Zone 3 to attenuate runoff and maintain pre-construction surface water flow rates. • Grade Zone 2 following Stage 2 and Stage 3 activities to manage stormwater and prepare for future land uses. • Grade Zones 1 and 3 as necessary.
Stage 5	Demobilisation	Demobilisation of construction equipment.	• Demobilisation of construction equipment.

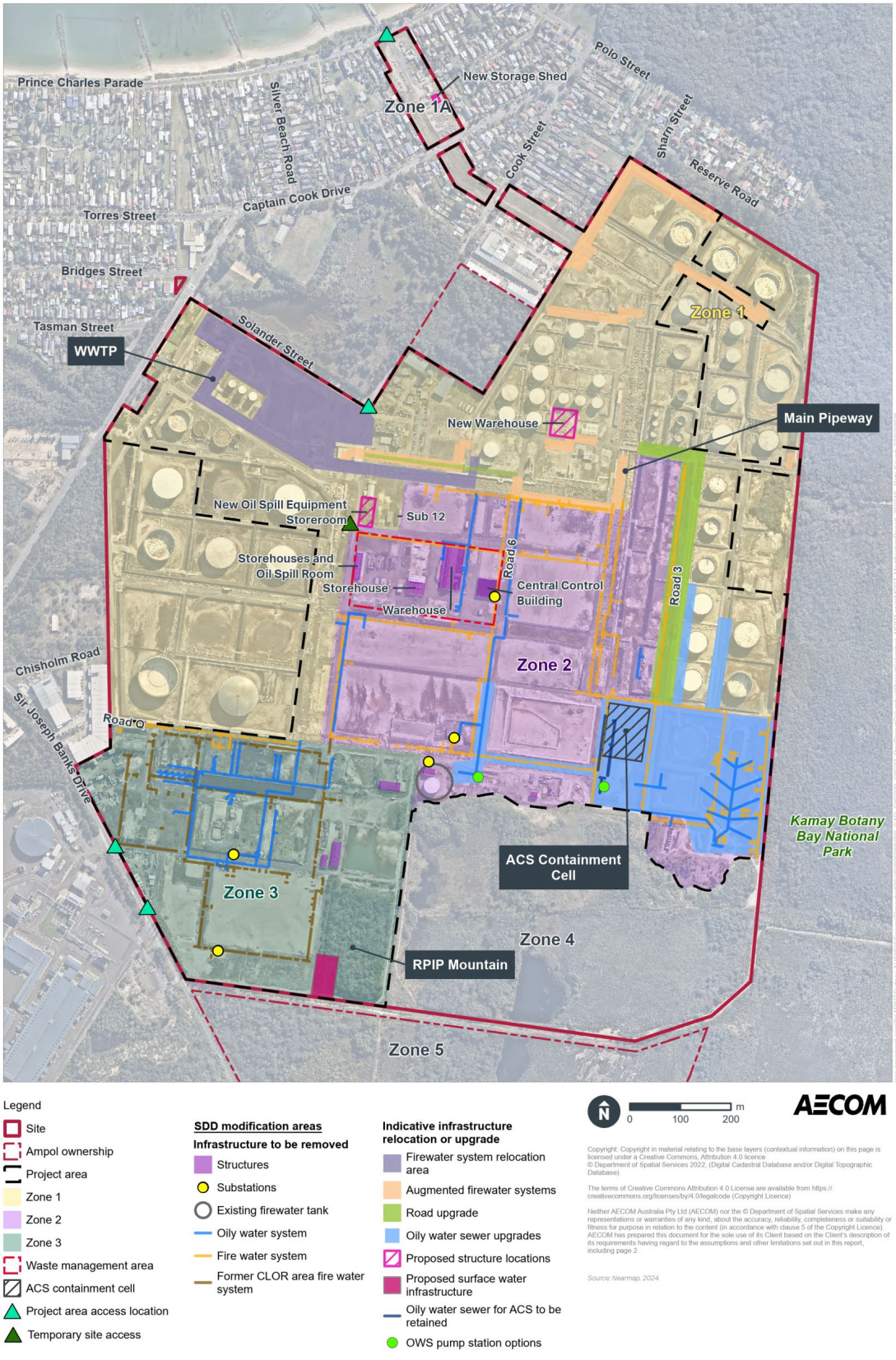

Figure 2-1 The proposed modification

Once the modification works are complete, the Site would continue to operate as described in the approval documentation for the approved project and would be consistent with the development consent for SSD-5544.

In line with Figure 2-1, relocated equipment would operate in their new locations.

2.2 Construction timeline and equipment

Works are planned to commence in August 2025 and would continue for about 12 months for infrastructure removal scopes and up to four years for remediation works in accordance with the schedule in Table 2-2.

In line with Condition C18 of SSD-5544, construction works would comply with following hours:

- Monday to Sunday – 7am to 10pm.

High noise generating construction works, including works within the Eastern Right of Way (Zone 1A), would be confined to less sensitive times of the day and not undertaken on Sundays, public holidays, or outside of the hours 7am and 6pm Monday to Saturday (in line with Condition C19).

Construction works outside of the work hours identified above would only be undertaken in the following circumstances (in line with Condition C20):

- Works that are inaudible at nearest sensitive land receivers
- Works that are consistent with Ampol's existing maintenance procedures and are in accordance with the existing Environmental Protection Licence (No. 837) (EPL)
- Works agreed to in writing by the Environment Protection Authority (EPA) or the Department of Planning, Housing, and Infrastructure (DPHI)
- For the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons
- Where it is required in an emergency to avoid the loss of lives, property and/ or to prevent environmental harm.

Table 2-2 Proposed modification program.

Stage	Timeframe
Stage 1 – Preparation works	August 2025
Stage 2 – Removal and/or relocation of infrastructure[1]	August 2025 – August 2026
Stage 3 – Remediation	August 2025 – July 2029
Stage 4 – Grading	Zone 2: August 2026 – December 2026 Zone 3: up to July 2029
Stage 5 – Demobilisation	September 2026 (for all works except remediation)
[1] Construction in Zone 1A expected to last 3 months.	

Plant and equipment that would be used to deliver the modification works is shown in Table 2-3.

Table 2-3 Indicative plant and equipment

Plant/ equipment	Maximum number required per day (all stages except Stage 3)	Maximum number required per day (Stage 3)
Front end loader	6	6
20 t excavator	6	6
Dump truck	6	6
Grader (up to 7 m blade)	-	4
Large crane (60 t)	4	-
Elevated work platform	6	-
Franna crane (30 t)	6	-
Cement truck	6	-
Bobcat	6	2
Water cart	6	6
Concrete crusher	2	-
Telehandler	6	-
Truck and dog (offsite disposal)	6	6
Truck and dog (imported fill)	-	12
Generator	2	2
Biopiling blower	-	8

The breakdown of heavy vehicles and light vehicles (construction personnel) required during construction are set out in Table 2-4.

Table 2-4 Workforce and plant requirements for construction

Description		Daily movements (return trips)	Peak hour trips[1] (return trips)
Heavy vehicles	Construction vehicles (cranes, semi-trailers, etc.)	10	0
	Truck and Dog (offsite disposal and imported fill)	120	12
	Equipment/ material delivery vehicles	6	2
	Subtotal	***136***	***14***
Private vehicles	Construction personnel[2]	200	100
	TOTAL	**336**	**114**
Heavy vehicle proportion		40%	12%

[1] Assumptions:
- Conservatively, it has been assumed that all personnel would arrive at the Site during the AM Peak Hour and depart during the PM Peak Hour
- Personnel would utilise their own private vehicle with no use of car-pooling or public transport
- Heavy vehicle movements would be evenly distributed throughout the hours of operation (10-hour workdays)
- Heavy vehicles would arrive and depart in the same hour

Description	Daily movements (return trips)	Peak hour trips[1] (return trips)
• All plant delivery vehicles are assumed to occur on the same day in order to produce a 'worst-case' scenario. [2] Max number of construction staff.		

During the three-month construction period in Zone 1A, the number of heavy vehicles accessing the Site would remain the same, but about three construction vehicles (cranes, semi-trailers, etc.), six truck and dog (offsite disposal and imported fill), and three equipment/ material delivery vehicles return trips would be expected to access Zone 1A. Vehicles to be used for this work will be selected to ensure suitability on the local road network and will not be Oversize and Overmass Vehicles (OSOM).

2.2.1 Access points

Primary Site access would be provided via the existing access point on Solander Street. The entrance for Zone 2 would be to the south of the existing terminal gatehouse at the boundary of Zones 1 and 2. The entrance for Zone 3 would be at the existing secondary Site access point off Sir Josephs Banks Drive. Zone 1A would be accessed primarily via the existing access point on Prince Charles Parade, with an additional secondary access point on Captain Cook Drive. Heavy vehicles currently access Prince Charles Parade via Silver Beach Road, which are both capable of accommodating heavy vehicle movements.

2.2.2 Haulage routes

The main access to the Site, illustrated in Figure 2-2, is via the Captain Cook Drive/ Solander Street intersection. This is the proposed route for all vehicle movements generated by the proposed modification. A secondary access point would be located off Sir Joseph Banks Drive, which would facilitate an alternate access point for heavy vehicles in situations where the primary access point is unavailable.

It is anticipated that any construction materials and equipment would be delivered by ship, via Botany Bay, or by road, via the A1 Princes Highway and either Taren Point Road or Port Hacking Road. It is expected that these roads have sufficient capacity to accommodate construction traffic. As such, for the purposes of this assessment, the identified haulage routes would commence from the intersection of The Boulevarde/ Taren Point Road/ Port Hacking Road.

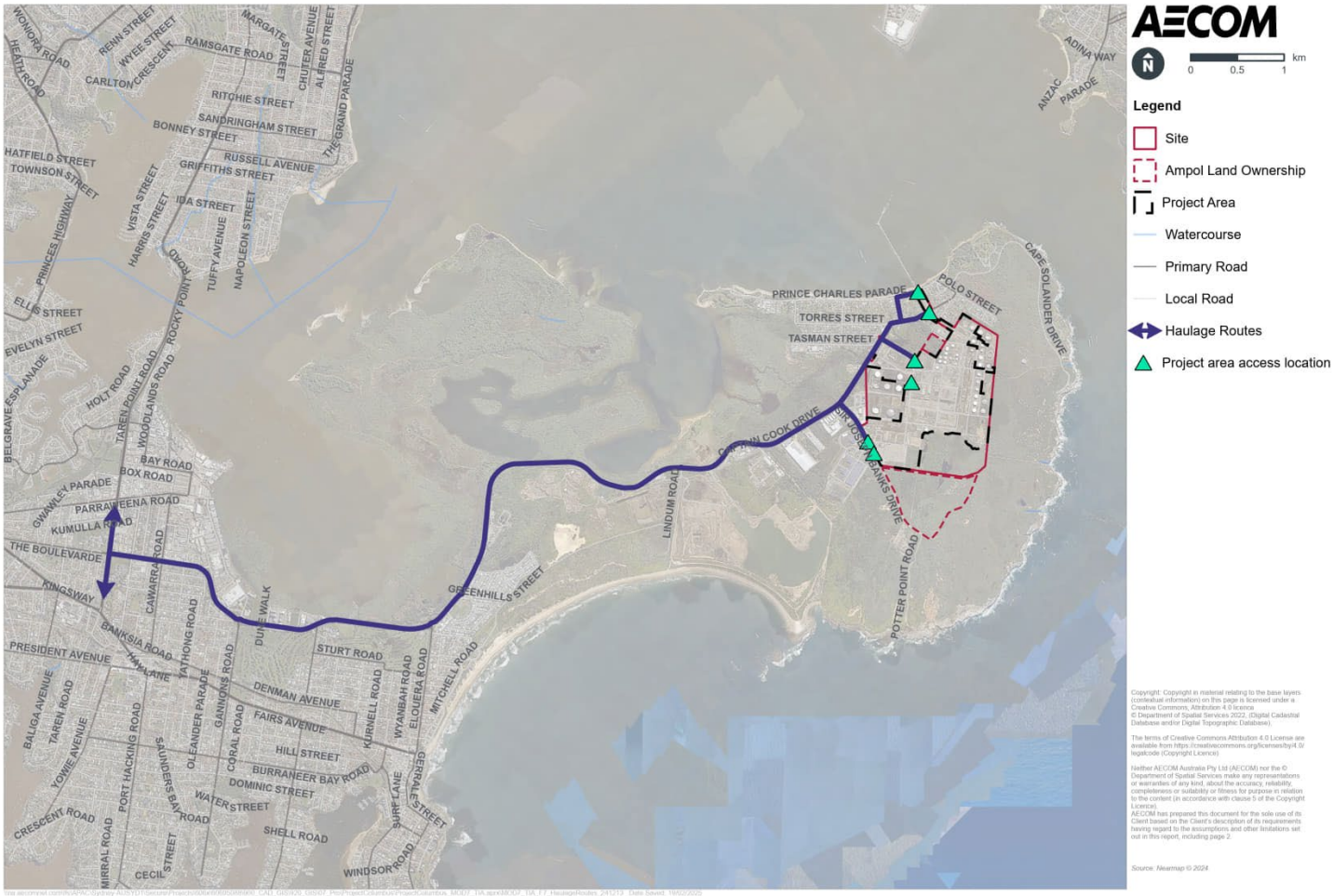

Figure 2-2 Haulage Routes

3.0 Assessment methodology

This assessment approach has been developed in accordance with relevant guidelines to prepare a qualitative assessment of the potential impacts related to the proposed modification.

3.1 Assessment methodology

3.1.1 Overview

The approach for this Traffic and Transport Impact Assessment includes:

- A review of the construction traffic generation forecast of the proposed modification, and potential impacts from OSOM vehicles accessing the Project Area
- A qualitative assessment of potential transport and traffic impacts of the proposed modification including:
  - Road networks
  - Access and parking
  - Road safety
  - Public transport
  - Active transport
- A qualitative assessment of potential cumulative traffic and transport impacts to the surrounding road network
- Identifying mitigation measures for managing the potential impacts.

3.1.2 Data sources and assumptions

Data Sources

The following data/ information sources were used to inform this assessment:

- A desktop assessment of the Project Area and surrounds based on available aerial photography
- Traffic volumes obtained from traffic count surveys commissioned in March 2024
- Construction information for the proposed modification supplied by Ampol including construction traffic numbers, access arrangements, staging of construction works and workforce numbers
- Site layout plans
- Other documents and data as referenced in this report.

Assumptions

The assessment of the traffic, transport and access impacts was based on the following assumptions:

- The majority of traffic would access the Site, as per the haulage routes, via the Captain Cook Drive/ Solander Street intersection
- The Site would continue to operate as previously approved, with minimal changes in terms of operational vehicle traffic movements, beyond a small number of additional trips to access the proposed storage shed in Zone 1A. Given this negligible increase, traffic volumes in the study area during the operational scenario are expected to remain consistent with the forecast traffic levels, without the proposed modification. These minor changes are not expected to impact the performance of the road network in the study area. Consequently, an operational traffic assessment is not required.

3.2 Study area

For the purposes of this report, a study area was identified that included the local road network and all transport facilities in the vicinity of the Site, including public transport and active transport. The study area predominantly encompasses the primary and secondary access points to the Site, Solander Street and Sir Jospeh Banks Drive respectively, as well as the main access road to Kurnell, Captain Cook Drive. As described in Section 2.2.2, it is anticipated that any construction materials and equipment would be delivered by ship, via Botany Bay, or by road, via the A1 Princes Highway and either The Boulevarde or Port Hacking Road, or via Rocky Point Road and Taren Point Road.

An extended haulage route was identified from the intersection with The Boulevarde/ Taren Point Road/ Port Hacking Road. This was done to consider the connection between the Project Area and the wider classified road network, so as facilitate wider freight movements to the north and south of the Sutherland Shire local area. The extent of this study area is shown in Figure 3-1.

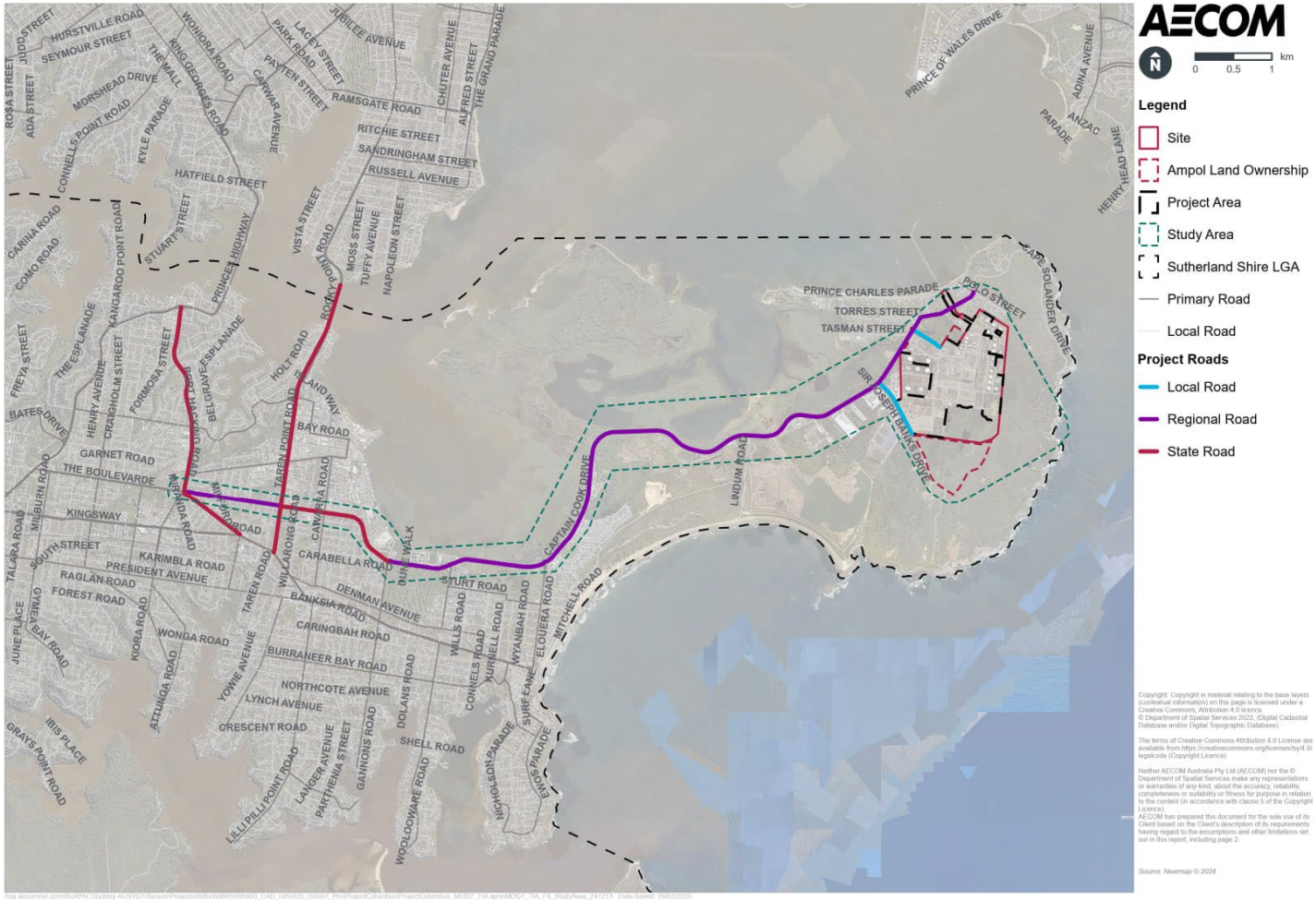

Figure 3-1 Study area

4.0 Existing conditions

4.1 The regional context

The Site is located in the Sutherland Shire LGA, on the Kurnell Peninsula in Sydney, NSW. The closest residential area to the Site is Kurnell, which is located adjacent to the north and north west of the Site. The Site is located 17 km from Sydney Central Business District (CBD); Cronulla residential areas are located 5 km to the south west. Road access is provided by Captain Cook Drive, linking the Site to broader arterial road network, including Taren Point Road and Port Hacking Road.

The Site is bounded by the Kamay Botany Bay National Park to the south and east, Captain Cook Drive to the north west, and Sir Joseph Banks Drive to the south west. The northern Site boundary is bordered by Solander Street, a small southern section of Cook Street, light industry, residential dwellings off the eastern side of Cook Street, and undeveloped land on the southern side of Reserve Road. The Eastern Right of Way (Zone 1A) is bounded by Prince Charles Parade to the north, and residential dwellings along Prince Charles Parade, Captain Cook Drive, and Cook Street along the east and west.

There are a number of reserves in proximity of the Site. Marton Park, comprising a developed recreational park area and an undeveloped wetland area, is located adjacent to the northern boundary of the Site on the northern side of Solander Street. Captain Cook's Landing Place Park is located 500 m to the north of the Site, while Bonna Point Reserve is located 1.4 km north west of the Site. Towra Point Nature Reserve is a Ramsar wetland and located west of the Site, on the opposite side of Captain Cook Drive. Quibray Bay also includes Towra Point Aquatic Reserve which, whilst not part of Towra Point Nature Reserve or Ramsar wetland, forms a wider ecosystem with it. To the north of Kurnell is Botany Bay, a large bay with a diverse number of uses and habitats and where the Georges and Cooks Rivers meet before joining the Pacific Ocean. The location of the Site and its surrounds are shown in Figure 4-1.

4.2 Legislative and policy context

This section outlines the relevant legislative and policy context for this report.

4.2.1 Relevant Guidelines

The following guidelines were considered during the preparation of this Traffic and Transport Impact Assessment:

- *Guide to Traffic Management – Part 3: Traffic Studies and Analysis* (Austroads, 2020a)
- *Guide to Traffic Generating Developments Version 2.2* (RTA, 2002)
- *Technical Direction TDT2013/4a – Guide to Traffic Generating Developmen*ts (Roads and Maritime Services, 2013)
- *Guide to Traffic Management – Part 12: Integrated Transport Assessments for Developments* (Austroads, 2020b) and the complementary *Roads and Maritime Supplement to Austroads Guide* (RMS, 2017).

These guidelines provide an overview of available methods for undertaking transport studies and analysis, aspects of traffic generation considerations relating to developments as well as guidance on identifying, assessing and mitigating traffic impacts, which have been used to inform this assessment.

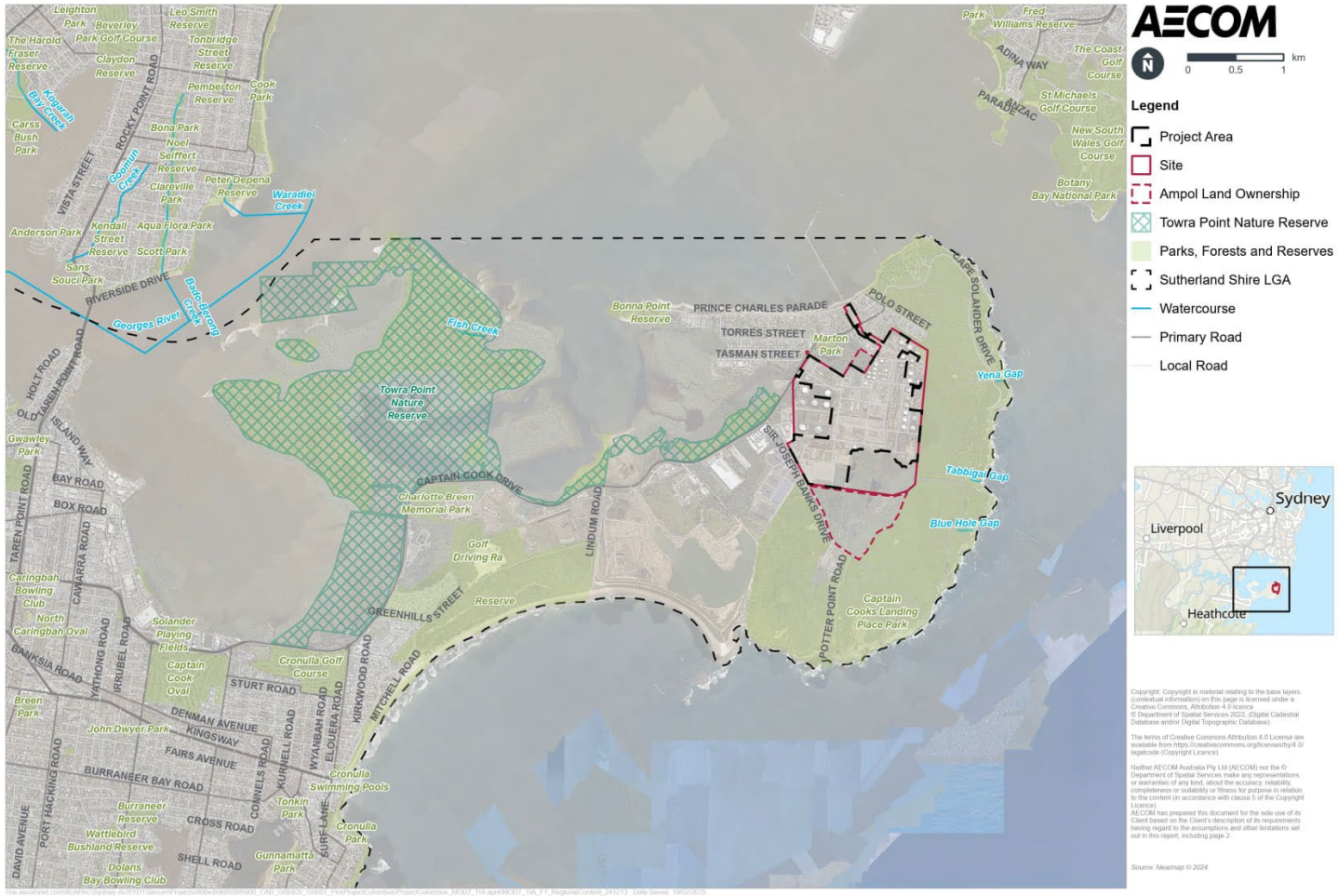

Figure 4-1 Regional Context

4.2.2 State planning context

The NSW Future Transport Strategy (Transport for NSW, 2022) is one of several that integrates and provides guidance on long term land use, transport planning, and the design, delivery, and management of transport in NSW. The NSW Future Transport Strategy helps shape:

- Supporting future transport strategies and plans
- Delivery and business plans
- Regulations and guidance.

In turn, this supports NSW transport policy, services, technology, and infrastructure.

4.2.3 Local planning context

Consideration was given to the following planning instruments in the preparation of this traffic and transport access impact assessment report:

- Sutherland Shire Local Environmental Plan (LEP) 2015
- Sutherland Shire Development Control Plan (DCP).

The LEP is a planning tool which sets out planning provisions, requirements, and considerations to ensure development is done appropriately. The DCP is designed to be used in conjunction with the LEP.

Under the LEP, the Project area is zoned as ‘E5 Heavy Industrial.’ The objectives of this zone classification are as follows:

- *To provide areas for industries that need to be separated from other land uses.*
- *To ensure the efficient and viable use of land for industrial uses.*
- *To minimise any adverse effect of industry on other land uses.*
- *To encourage employment opportunities.*

4.3 Road network

The road network in the immediate vicinity of the Site includes Captain Cook Drive, Solander Street, and Sir Joseph Banks Drive, which are all local/ regional roads managed by Sutherland Shire Council. Connecting to Captain Cook Drive is The Boulevarde, which is also a regional road and provides important east-west connectivity across the Sutherland Shire region. The nearest classified roads of note to this study are Taren Point Road and Port Hacking Road. Further information on these roads is provided below.

4.3.1 Captain Cook Drive

Captain Cook Drive is the main access road into Kurnell, travelling from east to west along the southern shoreline of Botany Bay. Captain Cook Drive begins west of the Project Area, at the junction of Taren Point Road and The Boulevard. Connections to Taren Point Road allow for access further north via Captain Cook Bridge, whilst connections through The Boulevard allows a direct connection to the A1 Princes Highway. To the west of Gannons Road, Captain Cook Drive is a state road, and to the east of Gannons Road, a regional road.

From Taren Point Road to Woolooware Road, there are two to three lanes in each direction; this drops down to one to two lanes in each direction at Greenhills Beach. Just left of Greenhills, it reduces to single carriageway in both directions for the majority of the remaining section of the road, except for some small sections of carriageway, mainly around the approaches to intersections, which have up to two lanes.

Parking is permitted along the final length of Captain Cook Drive, extending from a point roughly 250 m south of the intersection with Solander Street to its completion at the Sil. For the remainder of Captain Cook Drive, parking is not permitted, excluding a stretch of road between Taren Point Road and Endeavour Road, and a small segment less than 100 m in length just north of the intersection with Trinity Street.

Speed limits vary throughout the length of Captain Cook Drive, as shown in Figure 4-2.

4.3.2 The Boulevarde

The Boulevarde is a regional road that runs from the Taren Point Road/ Captain Cook Drive intersection in the east, to Toronto Parade in the west, providing a connection between the A1 Princes Highway and Captain Cook Drive. Between Captain Cook Drive and the A1 Princes Highway, The Boulevarde fluctuates from between two to three lanes in each direction, with a speed limit of 50 kilometres per hour (kmph), noting there are several school zones of 40 kmph.

4.3.3 Taren Point Road

Taren Point Road is a classified road that spans from Kingsway in the south, to Captain Cook Bridge in the north, intersecting with The Boulevarde and Captain Cook Drive. There are three lanes in both directions, and the speed varies between 70-80 kmph northbound, 60-70 kmph southbound, with one 40 kmph speed zone.

4.3.4 Port Hacking Road

Port Hacking Road is a classified road that originates in the south at the intersection of Kareena Road/ Kingsway. The road travels north west and then north after intersecting with The Boulevard, ending at its intersection with the A1 Princes Highway. The road has three lanes in both directions, with a 70 kmph speed limit northbound, and a 60 kmph speed limit southbound.

4.3.5 Sir Joseph Banks Drive

Sir Joseph Banks Drive is a local road that runs in alignment with the south west boundary of the Project Area, and intersects with Captain Cook Drive to the north and Potter Point Vehicle Trail in the south. A secondary access point is located roughly 500 m along Sir Joseph Banks Drive and provides direct access to the Site. The road has limited lane marking, though has sufficient width to accommodate two passing vehicles (10.3 m wide). Unrestricted parking is provided along Sir Joseph Banks Drive for roughly 200 m south of the intersection with Captain Cook Drive, beyond this point informal parking appears to occur along verges. The road has a posted speed limit of 60 kmph.

4.3.6 Solander Street

Solander Street is situated between the Site and Marton Park and is the primary access to the Kurnell Terminal. The road intersects with Captain Cook Drive, which provides access to the local road network, and Cook Street within the Site. The road has limited lane markings, though has sufficient width to accommodate two passing vehicles (8.5 m wide). The road has a posted speed limit of 25 kmph

4.3.7 Future road upgrades

No committed future road upgrades have been identified in the study area. However, it is noted that Sutherland Shire Council are currently assessing the Kurnell Planning Proposal, which includes a proposed upgrade of Captain Cook Drive to four lanes (two in each direction) between Elouera Road and Boat Harbour Drive. As this proposal has not been approved, it has not been considered in this impact assessment.

4.4 Existing network traffic volumes

4.4.1 Existing traffic demand

The Site is located in an area of coastal headland with limited development opportunities, and few trip attractors, including the Kurnell Terminal, the suburb of Kurnell, and several nature reserves and attractions.

While traffic surveys were not specifically conducted for the proposed modification, existing traffic data from surveys carried out in March 2024 for a separate development on the Site were used. These surveys captured turning movements at key intersections along Captain Cook Drive, including Captain Cook Drive/ Elouera Road and Captain Cook Drive/ Sir Joseph Banks Drive. The existing data provides a reliable basis for understanding current traffic conditions and informs this Traffic and Transport Impact Assessment effectively. These intersections are shown in Figure 4-3.

Figure 4-2 Captain Cook Drive speed limits

Figure 4-3 Location of surveyed intersections

4.4.2 Peak hour traffic volumes

Counts from both intersections, Captain Cook Drive/ Elouera Road and Captain Cook Drive/ Sir Joseph Banks Drive, show an overall external road network peak of 8-9 am and 4.30-5.30pm. Total traffic volumes travelling through the surveyed intersections are as follows:

- Captain Cook Drive/ Elouera Road
  - AM peak total volume = 2,056 vehicles
  - PM peak total volume = 2,247 vehicles
- Captain Cook Drive/ Sir Joseph Banks Drive
  - AM peak total volume = 699 vehicles
  - PM peak total volume = 752 vehicles.

4.5 Parking and access

4.5.1 Access

Captain Cook Drive is the primary route connecting the Kurnell Peninsula with the wider Sydney road network via:

- Taren Point Road – Connecting to the northern regions of Inner Sydney
- Port Hacking Road – Connecting to the M1 and western Sydney region.

4.5.2 Parking

Extensive parking is available onsite. On-street parking is not provided along the majority of Captain Cook Drive but does occur within the section immediately to the north and south of the entrance to Solander Street. Sir Josephs Banks Drive provides some on-street parking, as well as what appears to be some informal parking, particularly for commercial vehicles along the verges.

4.6 Road safety

Transport for NSW (TfNSW) provides interactive crash and casualty statistics by LGA through their Centre for Road Safety website. The crash and casualty statistics provide historical data on the crashes that occurred in an LGA. The Sutherland LGA crash and casualty statistics were reviewed to obtain a general understanding of the crash statistics near the Project Area, specifically on key routes which that construction vehicles would use to gain access to the Project Area. The latest statistics provided an overview of all crashes near the Project Area for the five-year period between 2018 and 2022. The location of these crashes on key routes to the Site is set out in Figure 4-4.

The review of the crash data indicates that multiple crashes have occurred near the Site and on the key access routes to the Site. A summary of the location, number, severity, and cause of these crashed is set out in Table 4-1.

In total, there were 56 crashes along Captain Cook Drive between 2018 and 2022, and 59% of these (33) occurred at intersections. As such, the road safety assessment has focused on fatal, serious, moderate, and minor crashes at intersections along the route, due to the distance covered along Captain Cook Drive.

Of all intersections on Captain Cook Drive, The Boulevard/ Taren Point Road/ Captain Cook Drive intersection experienced the highest number of crashes in the five-year period. Ten crashes occurred at this intersection in total, which equate to 18% of all crashes along Captain Cook Drive. Of the 10 crashes, five were serious in severity: with one caused by a vehicle changing lane, two being rear end crashes with vehicles travelling in the same direction, and two were vehicles colliding cross traffic. Four of the crashes were moderate in severity: with two being rear end crashes with vehicles travelling in the same direction, one concerned vehicles colliding cross traffic, and one concerning a lane sideswipe. One of the crashes was minor in severity, caused by vehicles colliding cross traffic. Overall, four crashes were caused by vehicles colliding rear end and four caused by vehicles colliding cross traffic.

Figure 4-4 Crash data

Table 4-1 List of crash severity along Captain Cook Drive

Intersection	Severity of crash	Number of crashes	Cause
The Boulevard/ Taren Point Road/ Captain Cook Drive	Serious	5	• One Lane Change • Two rear ends • Two cross traffic
	Moderate	4	• Two rear ends • One cross traffic • One side swipe
	Minor	1	• Cross traffic
Captain Cook Drive/ Willarong Road	Moderate	2	• One ped nearside • One right through
	Minor	2	• One rear end • One leaving parking
Captain Cook Drive/ Cawarra Road	Serious	1	• Rear end
	Moderate	1	• Rear end
	Minor	2	• One right through • One rear end
Captain Cook Drive/ Grenville Avenue	Serious	1	• Right through
Captain Cook Drive/ Endeavour Road	Serious	1	• Right near
Captain Cook Drive/ Gannons Road	Moderate	2	• One cross traffic • One rear end
	Minor	2	• One cross traffic • One rear end
Captain Cook Road/ Dune Walk	Minor	1	• Travelling in same direction
Captain Cook Drive/ Foreshore Boulevarde	Moderate	2	• Two rear ends
	Minor	1	• Rear end
Captain Cook Drive/ Woolooware Road	Minor	1	• Lane change
Captain Cook Drive/ Elouera Road	Moderate	2	• U turn • Off carriageway into object
Captain Cook Drive/ Trinity Street	Serious	1	• Right through
	Minor	1	• Lane change
Captain Cook Drive/ Lindum Road	Minor	1	• Lane change

4.7 Public transport

Public transport options in the vicinity of the Site are discussed below, and illustrated in Figure 4-5.

Figure 4-5 Public transport
(Note: Kamay Ferry Wharf is currently under construction but has not yet commenced operation)

4.7.1 Rail

The nearest railway station to the Site is Cronulla station, followed by Woolooware slightly further west. Cronulla station sits on the Eastern Suburbs and Illawarra Line, allowing rail access to Helensburgh in the south, up to Sydney CBD, and to Bondi Junction in the eastern suburbs.

4.7.2 Bus network

In terms of bus connections to Kurnell, the 987 service runs from Cronulla Station to Cape Solander Drive and Captain Cook Drive. The first service is at 6.17am and the last is 6.35pm, with roughly one service an hour. There are eight services on Saturdays and four services on Sundays and public holidays.

The 985 bus service from Cronulla to Miranda via Woolaware Bay runs along Captain Cook Drive between Gannon Road and Elouera Road. The service runs every hour throughout the day and every half an hour during weekday peak hours. There are 14 services on Saturdays and 12 services on Sundays and public holidays.

4.7.3 Ferry

There is currently no ferry service in Kurnell. However, the NSW Government is building ferry wharves to create a water connection between La Perouse and Kurnell. Construction is occurring at the time of this report being written and is expected to be complete in early 2025.

At this stage, the operations of the ferry service have not been determined.

4.8 Active transport

On Captain Cook Drive East of Gannons Road to Trinity Street, there is a cycle lane in the eastbound direction; in the westbound direction, there is a cycle lane and a shared path. From Trinity Street to Torres Street, there are cycle lanes in both directions.

On Torres Street, Captain Cook Drive east of Torres Street, and Cape Solander Drive cyclists are mixed with traffic on general road space. Along Prince Charles Parade lies a shared user path. Figure 4-6 illustrates the active transport context in relation to the Site.

Figure 4-6 Active transport

5.0 Construction impacts

This section of the report assesses the anticipated traffic and transport impact of the proposed modification during its construction stage.

5.1 Road network

5.1.1 Construction traffic demand

The traffic generated by the proposed modification would incorporate a mix of construction plant vehicles, delivery vehicles, and construction personnel movements. A summary of the construction vehicles and associated staff numbers that would be required during the works are summarised in Section 2.0 (Table 2-3 and Table 2-4).

As stated in Table 2-4, it has been assumed that construction personnel (light vehicles) would arrive at the Site in the AM and leave in the PM. During peak construction (2025), 200 workers would be employed at the Site, in addition to existing Ampol employees and contractors. For the purposes of this assessment, all workers have been assumed to arrive at the Project Area each day in their own individual private vehicles.

Typically, construction workers arrive at a construction site prior to the external road network AM peak, which has been calculated as 8-9am. Similarly, construction workers typically leave a construction site prior to the external road network peak hour (4:30-5:30pm). As such, it is anticipated that construction personnel numbers would not have an impact on the external road network.

As shown in Table 2-4, the total number of construction vehicle movements (heavy vehicles) per hour would be 14. It has been assumed that these vehicles would arrive and leave in the same hour. As such, this totals seven HVs arriving and 7 HVs leaving the Site per hour.

As the existing demand was obtained from 2024 surveys, growth rates must be applied to uplift the flows to reflect expected 2025 flows (the year of construction).

To understand background growth in the area, growth rates for two separate developments were obtained. The Kamay Ferry Wharves development, in which construction is underway and the Breen Resource Recovery Facility, currently under planning assessment, both applied a background growth rate of 1% per annum. As such, this assessment has also applied an annual background growth rate of 1%. Table 5-1 shows the uplift on the 2024 survey data, to 2025 – the peak year of construction:

Table 5-1 2024 traffic volumes uplifted to 2025

	Peak	2024 total volumes at each intersection	Uplift by 1% to 2025
Captain Cook Drive/ Elouera Road	AM	2,056	2,077
	PM	2,247	2,269
Captain Cook Drive/ Sir Joseph Banks Drive	AM	699	706
	PM	752	760

While intersection modelling for the proposed modification was not undertaken, previous intersection modelling was carried out for the nearby Breen Resource Recovery project which is currently under assessment. The existing data provides a reliable basis for understanding current traffic conditions and informs the assessment for the proposed modification. This found that, under a 2021 future baseline plus proposal scenario, that all intersections along Captain Cook Drive were expected to operate at a Level of Service (LOS) of C or better. This represents an acceptable level of operation and delay in terms of vehicle movements through each intersection.

These forecast traffic volumes align closely with the volumes surveyed in March 2024[1], indicating minimal changes to background traffic volumes, and as such it can be ascertained that intersection performance is likely to currently be achieving LOS of C. As such, there is understood to be existing operational capacity at these intersections.

As noted above, the total number of HVs arriving and leaving the Site would be 14 per hour. Compared to the lowest volumes travelling through the surveyed intersections (Captain Cook Drive/ Joseph Banks Drive AM: 706 vehicles), an increase in 14 HVs would equate to an increase of about 2%. As such, the increase in vehicle trips associated with this proposed modification is not expected to change the operational performance of the road network in the study area.

Additionally, a small number of vehicles (less than five) would be expected to be required to access Zone 1A as part of the construction works during peak hour. These vehicles would be expected to continue to travel along Captain Cook Drive, to access Zone 1A via the existing access point on Prince Charles Parade. Given the small scope of work required at this location in comparison to the overall work outlined under the proposed modification, which would occur over three months, no impact is expected on the performance of the local road network.

5.1.2 Oversize and Overmass vehicles

OSOM are vehicles whose overall dimensions or weight require special consideration when operated on the road network. OSOM vehicles are defined under the *Heavy Vehicle National Law.*

The proposed modification requires the use of up to four 60-tonne cranes per day, which would be classed as a Special Purpose Vehicle (level 1) which is considered a Class 1 OSOM vehicle. As such, their transport and arrivals would be planned during off-peak hours, as shown in Table 2-4. It is expected that these would only need to be delivered and removed from site once during the extent of work, this will be confirmed during the detailed design phase.

Previously approved modifications at the Site have utilised OSOM vehicles. For instance, the traffic and transport assessment prepared for SSD-5544 MOD 1 (Demolition Works) (URS, 2014) indicated the use of a mobile 130-tonne crane and an 80-tonne mobile crane, both of which would be classed as OSOM. As such, the road network accessing the study area is understood to be equipped to accommodate OSOM vehicles of similar class. Therefore, no OSOM assessment has been included in this report.

Heavy vehicles currently access Zone 1A via Silver Beach Road and Prince Charles Parade. Vehicles to be used for this work would be selected to ensure suitability on the local road network and would not be OSOM.

It is expected that any access for OSOM vehicles would be governed by a Traffic Control Plan (TCP), as part of the Construction Traffic Management Plan (CTMP) to be completed during the subsequent stages. Details of OSOM transit would be included in the TCP and/or the CTMP to maintain road safety for OSOM vehicle movements and other traffic. The CTMP shall also include additional requirements, approvals, and consultation required with the local Councils and other Government agencies, such as Transport for NSW, prior to the use of OSOM vehicles in order to request travel approval and receive appropriate permits.

5.2 Access and parking

As the proposed modification involves work which would be confined to the bounds of the Project Area, no impacts on existing property access for other properties has been identified as part of this assessment.

No ongoing impacts are anticipated on parking in the study area, as construction personnel are expected to park within the Site, where there is sufficient parking. There may be temporary impacts on parking along Captain Cook Drive, between Sir Joseph Banks Drive and Solander Streer, to accommodate the arrival of OSOM vehicles. However, these would be expected to be notified in advance under a TCP, and would occur outside of peak hours.

[1] Captain Cook Dr / Elouera Rd 2021 Forecast: AM Peak – 2150 movements, PM Peak – 2433 movements

5.3 Road safety

There is a risk of construction vehicles interacting with pedestrians, cyclists, and motorists on the road network surrounding the Site. Potential impacts on road safety for all users during construction would be mitigated through the implementation of a CTMP and other measures.

5.4 Public transport

Bus services in the vicinity of the Site are unlikely to be impacted during construction or operation. No changes to bus stop locations are anticipated as a result of the proposed modification.

5.5 Active transport

During construction, works would be carried out in a manner to maintain pedestrian and cyclist routes around the Site. Therefore, the proposed modification is not anticipated to impact the operation of existing cycling or walking facilities. Any potential active transport impacts during construction would be managed through the development of a CTMP.

6.0 Cumulative impacts

Cumulative impacts have the potential to occur when benefits or impacts from a project overlap or interact with those of other projects, potentially resulting in a larger overall effect (positive or negative) on the environment or local communities. Cumulative impacts may occur when projects are constructed or operated concurrently or consecutively.

Projects were reviewed against the following screening criteria for this cumulative impact assessment:

- Spatially relevant (i.e., the development or activity overlaps with, is adjacent to or within two kilometres of the Project Area)
- Scale (i.e., large-scale major development or infrastructure projects that have the potential to result in cumulative impacts with the proposed modification, as listed on the NSW Government Major Projects website and on the relevant council websites)
- Timing (i.e. the expected timing of its construction and/or operation overlaps or occurs consecutively to construction and/or operation of the proposed modification)
- Status (i.e., projects in development with sufficient publicly available information to inform this environmental impact statement and with an adequate level of detail to assess the potential cumulative impacts).

Projects identified as contributing to potential cumulative impacts have met these criteria and include:

- Kamay Ferry Wharves
- Kurnell Stormwater Separation Improvement Project
- Breen Resource Recovery Facility
- Woolooware to Kurnell Tower Replacement Project
- Kurnell Planning Proposal.

The location of these projects is shown on Figure 6-1.

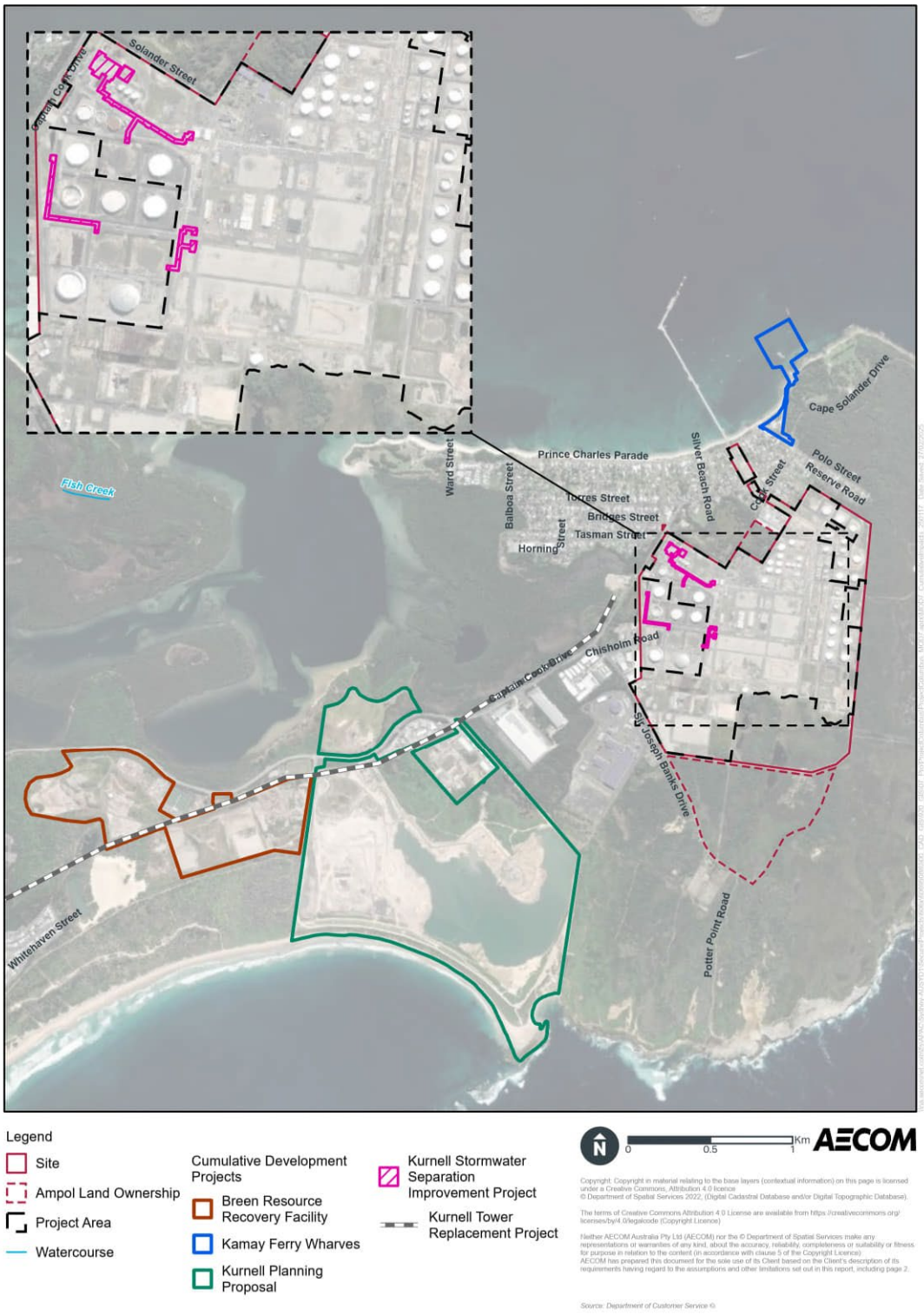

Figure 6-1 Cumulative development projects

Projects identified as considered relevant under the criteria set out above are shown in Table 6-1. No cumulative impacts are anticipated to arise; however, if there was to be an overlap in construction scheduling and resultant traffic impacts are anticipated, mitigation measures detailed in Section 7.0 would be implemented. This would be identified initially through the design and construction phase of the proposed modification and monitored by the construction project manager.

Table 6-1 Cumulative Impacts

Project	Approx distance to the Project	Cumulative Assessment
Kamay Ferry Wharves	350 m north	Both projects' construction traffic routes are likely to use Captain Cook Drive; however, construction for the project is scheduled to end in late 2024 and so no overlap in construction schedule expected. **No cumulative impact anticipated**
Breen Resource Recovery Facility	2 km west	Both projects' traffic routes would use Captain Cook Drive. Construction of Breen Resource Recovery Facility was set to start in November 2021 and end November 2025; however, the associated planning application has only recently been approved, and an updated project timeline has not been identified; as such, there may be an overlap with the proposed modification's construction peak in 2025. As project timelines outlined in the Breen Resource Recovery Facility EIS are out of date, it is unclear to what extent this may occur. Construction impacts for Breen Resource Recovery Facility were found to be 'negligible' on key routes, particularly Captain Cook Drive. If there was to be an overlap, mitigation measures detailed in Section 7.0 would be implemented. **Potential cumulative impact anticipated**
Woolooware to Kurnell Tower Replacement Project	120 m south west	Construction is to be staged over four years. Construction vehicles and partial road closures may potentially occur along Captain Cook Drive. Construction is expected to commence in September 2024, with commissioning by the end of 2028. During construction, up to six vehicles would be required at each site. If there was to be an overlap, mitigation measures detailed in Section 7.0 can be implemented. **No cumulative impacts anticipated**
Kurnell Planning Proposal	860 m south west	A Planning Proposal for this project has been submitted. Construction routes are likely to use Captain Cook Drive. There is a potential construction program overlap. However, once approved, construction would be completed in a phased manner in 10-20 years. As the construction is likely to be phased over a long period, it is unlikely that this would overlap with the proposed modification construction peak in 2026. If there was to be an overlap, mitigation measures detailed in Section 7.0 can be implemented. **Potential cumulative impacts anticipated**
Kurnell Stormwater Separation Improvement Project	Onsite	Construction is intended to complete by mid-2025, therefore no overlap in construction schedule is expected. **No cumulative impact anticipated**

7.0 Management of impacts

Environmental mitigation measures to manage potential Traffic and Transport impacts of the proposed modification are outlined in Table 7-1. Additional and/ or modified environmental safeguards and management measures to those presented in the approved SSD-5544 are shown in **bold**. Deleted measures, or parts of measures, have been ~~struck out~~. Where approved measures have been consolidated to reduce duplication, previously agreed text that has been brought into existing or new measures has been underlined.

Table 7-1 Management and mitigation measures – Traffic and transport

ID	Issue	Mitigation measure
I1	Traffic and transport	**Sutherland Shire Council and Kurnell residents would be informed of works that would significantly affect the road network at least two weeks prior to these activities occurring (or in line with regulatory requirements). Significant activities would include the MOD-7 works commencing, works to construct the new storage shed in Zone 1A commencing, and Oversize and Overmass (OSOM) movements along Captain Cook Drive.** ~~Local Authorities and Kurnell residents would be informed of any Project related work which would affect the road network.~~
I2	Traffic and transport	A **Construction** Traffic Management Plan **(CTMP)** would be developed for the construction~~/ demolition~~ phase. The Traffic Management Plan would comply with all relevant Regulations and By-Laws and in particular address safe access and egress to the public road network. The ~~Transport Management Plan~~ **CTMP** would include: • Hours of permitted vehicle activity • Designated routes for construction ~~and demolition~~ traffic and defined access points to the Site ~~and demolition works area~~ • Duration of works • Permitted ~~demolition~~ vehicle types • Designated areas within the Site and **MOD-7 Project Area** ~~demolition works area~~ for truck turning movements, parking, loading and unloading to allow heavy vehicles to enter and leave the Site and **MOD-7 Project Area** in a forward direction • Sequence for implementing traffic management measures should these be required • Procedures and/or principles for construction and demolition vehicle speed limits and the safe operation of construction and demolition vehicles • Coordination of off-site heavy vehicle movements from the ~~demolition works and ACS Modification works~~ **Site** to help ensure that heavy vehicle movements do not exceed ~~60~~ **136** movements per day~~.~~ • **Outline plan for the movement of OSOM vehicles accessing the Site, including routes, appropriate construction hours for deliveries, road closures, and permit requirements.**

References

Austroads (2020a). *Guide to Traffic Management – Part 3: Traffic Studies and Analysis.* (Online) Available at: https://austroads.com.au/publications/traffic-management/agtm03

Austroads (2020b). *Guide to Traffic Management – Part 12: Integrated Transport Assessments for Developments.* (Online) Available at: https://austroads.com.au/publications/traffic-management/agtm12

Roads and Maritime Services (2013). *Technical Direction TDT2013/4a – Guide to Traffic Generating Developments*. (Online) Available at: https://standards.transport.nsw.gov.au/_entity/annotation/0b980694-a835-ed11-9db1-000d3ae011f9

Roads and Maritime Services (2017). *Roads and Maritime Supplement to Austroads Guide.* (Online) Available at: https://standards.transport.nsw.gov.au/_entity/annotation/77d30275-b835-ed11-9db1-000d3ae011f9

RTA (2002). *Guide to Traffic Generating Developments Version 2.2*. (Online) Available at: https://www.transport.nsw.gov.au/system/files/media/documents/2022/guide-to-generating-traffic-developments.pdf

Transport for NSW (2022). Future Transport Strategy. (Online) Available at: https://www.future.transport.nsw.gov.au/sites/default/files/2022-09/Future_Transport_Strategy_2.pdf

Sutherland Shire Local Environmental Plan (LEP) 2015.

Sutherland Shire Development Control Plan (DCP).