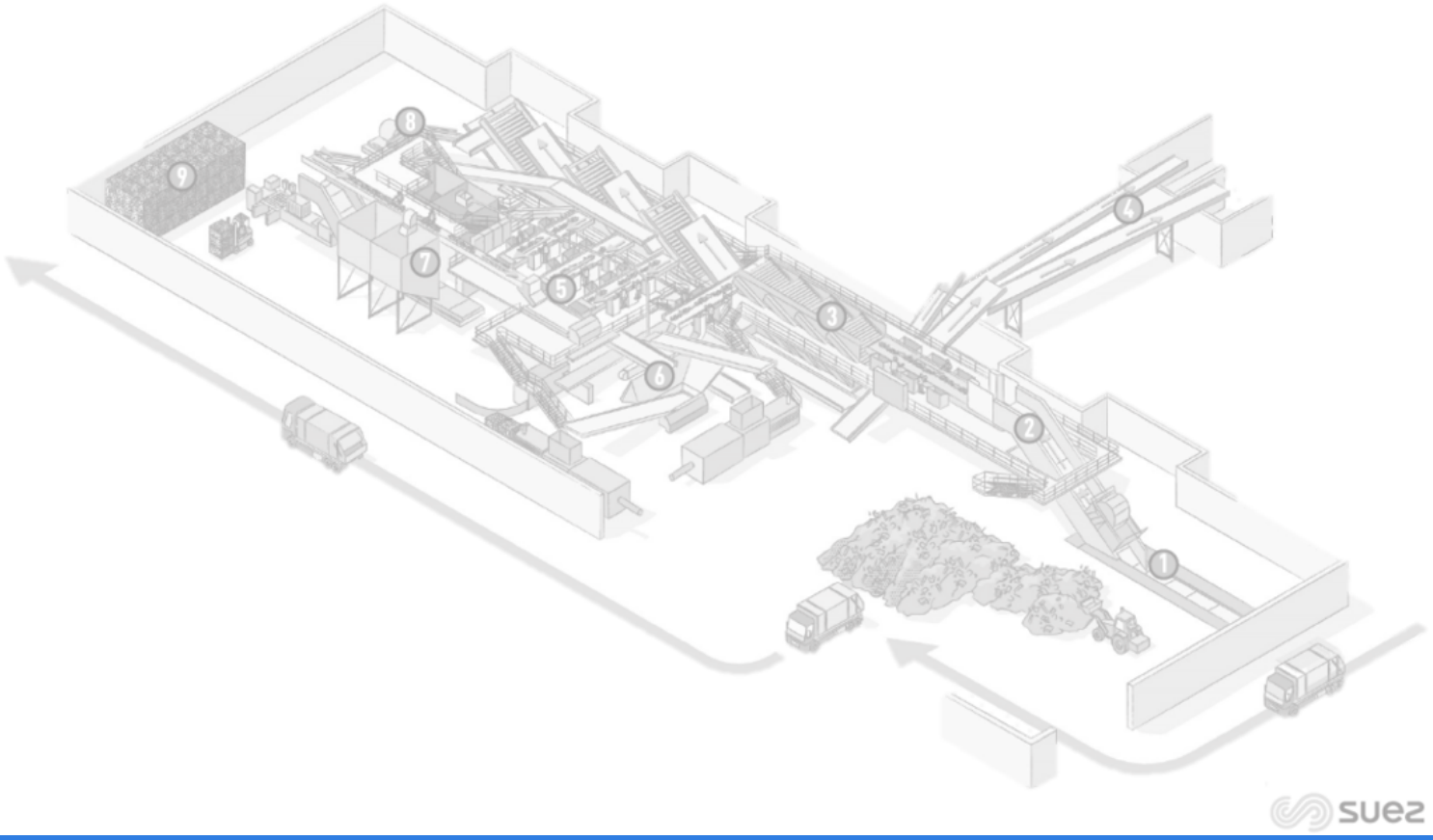
Chullora Materials Recycling Facility

Environmental Impact Statement (SSD-10401)

Appendix J Traffic Impact Assessment



SUEZ Materials Recycling Facility
Traffic Impact Assessment

Prepared for:

Arcadis

31 July 2020

The Transport Planning Partnership

SUEZ Materials Recycling Facility
Traffic Impact Assessment

Client: Arcadis

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Version	Date	Prepared by	Reviewed by	Approved by	Signature
V01	03/04/20	Charbel Hanna, Santi Botross	Santi Botross	Jason Rudd	
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Executive Summary

SUEZ Recycling & Recovery Pty Ltd (SUEZ - the Applicant) are seeking to establish a state-of-the art Resource Recovery Park located at 21 Muir Road (Lot 2 DP1227526), Chullora in Sydney (the Chullora RRP). The Applicant are proposing to develop and operate the first phase of the Chullora RRP as a Materials Recycling Facility (MRF) (the Proposal) to process co-mingled and source separated recyclables from municipal sources and dry commercial and industrial (C&I) waste; with a material processing capacity of up to 172,000 tonnes per annum (tpa).

The Proposal would be considered State Significant Development (SSD) under Clause 23 (waste and resource management facilities) of Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011.* Accordingly, an Environmental Impact Statement (EIS) has been prepared to support the SSD Application for the Proposal. This traffic impact assessment has been prepared by The Transport Planning Partnership Pty Ltd (TTPP) to support the preparation of the EIS and assess the Proposal's impact on the surrounding traffic and transport networks.

Proposal Overview

SUEZ is seeking to establish the state-of the art Chullora RRP located at 21 Muir Road, Chullora in Sydney. The Applicant are proposing to develop and operate the first phase of the Chullora RRP as a MRF. The Proposal would comprise the construction and operation of a MRF with a material handling capacity of up to 172,000 tpa. Waste streams that would be processed at the MRF would comprise dry recyclables from municipal and C&I sources, including:

- Co-mingled material collected from municipal and C&I sources
- Source separated paper and cardboard
- Mixed plastics.

Purpose of this Assessment

This traffic impact assessment has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) as they relate to traffic and transport, including:

- Details of traffic types and volumes likely to be generated during construction and operation, including a description of haul routes
- An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model
- Plans of the proposed layout of the internal road and pedestrian network and parking on site in accordance with the relevant Australian Standards and Council's DCP
- Plans demonstrating how all vehicles associated with construction and operation awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network
- Swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site for both heavy and light vehicles.

Findings of Traffic Impact Assessment

SIDRA Intersection modelling results show that the Proposal would generate a minor impact on the performance of nearby intersections. The operational level of service, average delay and average queue length on the intersection approaches would change marginally resulting in a negligible impact on performance and safety in the surrounding road network.

Traffic impacts generated during the construction phase of the Proposal have also been assessed. Construction works would be undertaken over a duration of 6 months, starting in mid-2021. The works would be expected to generate an average of 1-2 vehicle trips per hour during the busiest period of the works, which would have minimal impact on the local road network.

Overall, the Proposal would not be expected to cause an adverse impact on the local transport network with respect to road safety and network capacity.

Abbreviations

ADG	Australian dangerous Goods
ARI	Average Recurrent Interval
ATC	Automatic tube counts
CBD	Central Business District
DCP	Development Control Plan
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
HRV	Heavy Rigid Vehicle (12.5m in length)
LEP	Local Environmental Plan
LGA	Local Government Area
LoS	Level of Service
MRF	Materials Recycling Facility
MRV	Medium Rigid Vehicle (8.8m length)
pcu	Passenger car unit
RMS	Roads and Maritime Services
RRP	Chullora Resource Recovery Park
SEARs	Secretary's Environmental Assessment Requirements
SSD	State Significant Development
tpa	Tonnes per annum
TfNSW	Transport for NSW
TTPP	The Transport Planning Partnership Pty Ltd

1 Introduction

SUEZ Recycling & Recovery Pty Ltd (SUEZ – the Applicant) are seeking to establish the state-of-the art Chullora Resource Recovery Park (Chullora RRP) located at 21 Muir Road (Lot 2 DP1227526), Chullora in Sydney. The Applicant are proposing to design build and operate the first phase of the Chullora RRP as a Materials Recycling Facility (MRF) (the Proposal) to process co-mingled recyclable municipal solid waste (MSW) and dry commercial and industrial (C&I) waste; with a material processing capacity of up to 172,000 tonnes per annum (tpa).

The Proposal would be considered State Significant Development (SSD) under Clause 23 (waste and resource management facilities) of Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011 being a recycling facility that handles more than 100,000 tonnes of waste per year. Accordingly, an Environmental Impact Statement (EIS) has been prepared to support the SSD Application for the Proposal. This traffic impact assessment has been prepared by TTPP to support the preparation of the EIS and assess the Proposal's impact on the surrounding road network.

1.1 Proposal Overview

SUEZ is seeking to establish a state-of-the-art Resource Recovery Park (RRP) located at 21 Muir Road (Lot 2 DP1227526), Chullora in Sydney; shown in Figure 1.1. The Applicant are proposing to develop and operate the first phase of the Chullora RRP as a MRF (the Proposal).

The Proposal would comprise the construction and operation of a MRF with a material handling capacity of up to 172,000 tpa. General operational activities are proposed to occur concurrently with the MRF across the broader Chullora RRP, including truck parking, container storage and other ancillary activities as required. The Proposal is shown in Figure 1.2. Waste streams that would be processed at the MRF would all comprise dry recyclables from municipal and C&I sources, including:

- Co-mingled material collected from municipal and C&I sources
- Source separated paper and cardboard for bailing
- External mixed plastics for secondary processing.

The total input at any year would not exceed 172,000 tpa, with the exact throughput from each source varying subject to the market conditions at that year and different Council's recycling collection regimes.

The key construction components of the Proposal would include:

- Provision of parking and queuing spaces for trucks
- External works such installation of inbound and outbound weighbridges
- Construction of an enclosed 10,000 m2 MRF shed, which would be approximately 125 m and 80 m and 15 m in height
- Construction of ancillary infrastructure such as fire safety infrastructure (fire sprinkler tanks, pumps and valve room) and site services infrastructure (electrical, water, sewer, gas and telecommunication services)
- Installation of landscaping and signage.

The key operational components of the Proposal would include:

- Operation of a MRF 24 hours per day, seven days per week (including processing and waste delivery and collection)
- MRF staff would be engaged across two eight-hour shifts, namely 5:00am - 1:00pm and 1:30pm - 8:30pm with a half hour break between shift times. Skeleton staff would be on-site between 9pm-5am.
- At the Proposal site, there would be 45 full-time equivalent (FTE) staff employed by the MRF. Generally, there would be 25 staff on-site during the morning shift and 20 staff during the afternoon shift.
- Processing of up to 172,000 tpa of co-mingled and source separated materials from C&I and municipal sources
- Product storage including:
    - Up to 700 tonnes or 1.5 days' worth of incoming waste in the receival area of the MRF
    - Up to 1,400 tonnes in bales of outgoing products held in the product storage area
- A water management system including water tanks and sprinkler systems

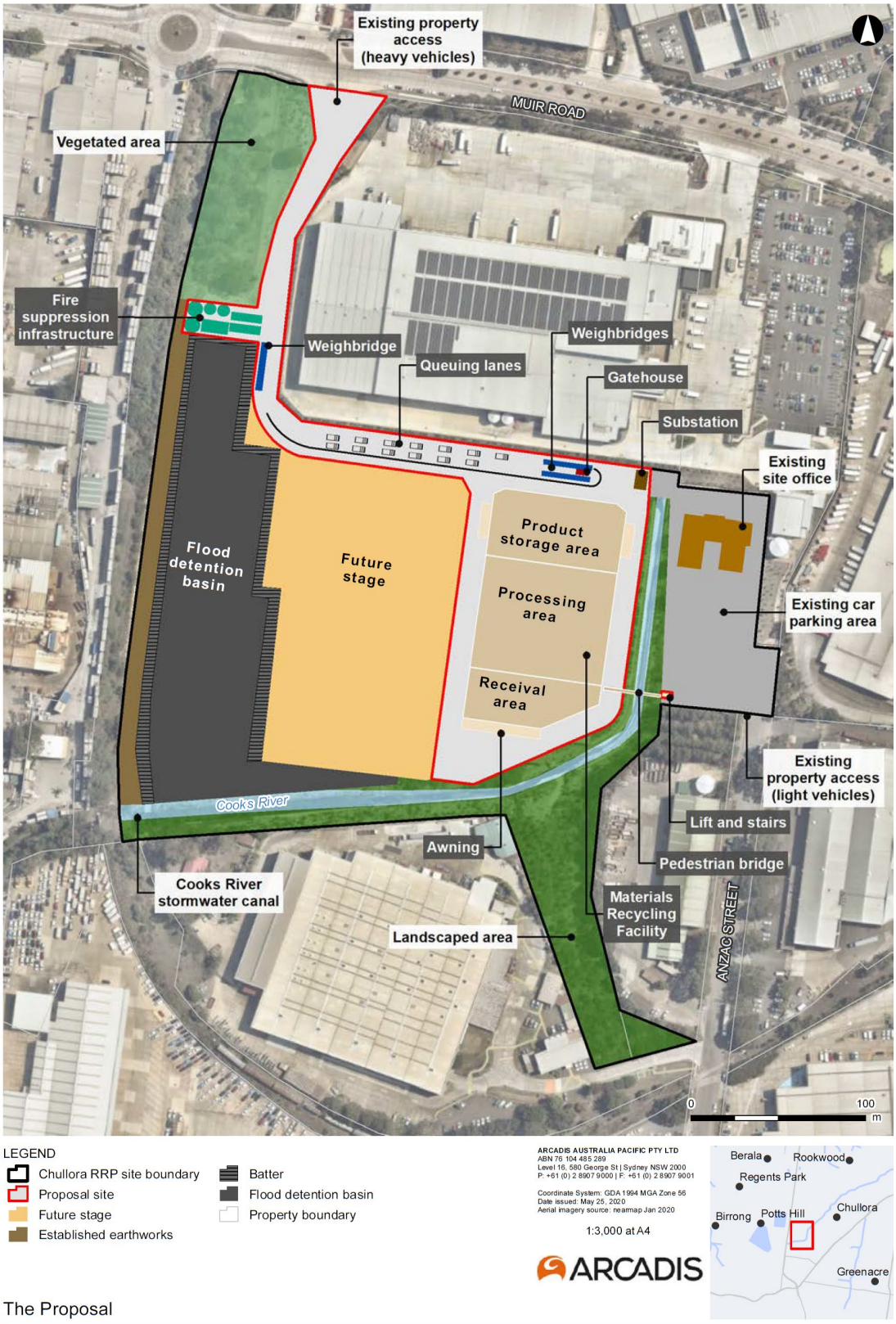
The gross floor area (GFA) of the MRF would be 9,886.2 m^2, comprising the following areas:

- Receival area – 1,951.5 m^2
- Processing area – 4,954.4 m^2
- Product storage area – 2,980.3 m^2
- Office and amenities (mezzanine) – 199.0 m^2.

Figure 1.1: Chullora Resource Recovery Park

Source: Arcadis

Figure 1.2: The Proposal



The Proposal

Source: Arcadis

1.2 Site Location

The Chullora RRP site boundary including the Proposal site, shown in Figure 1.2 comprises one parcel of land being 21 Muir Road, Chullora (Lot 2 in DP 1227526). The Proposal site is located in the Canterbury-Bankstown Local Government Area (LGA) and is approximately 6.8 hectares (ha) in size and is located approximately 18 kilometres (km) west of Sydney Central Business District (CBD) and 10 km east of Parramatta CBD.

The Proposal site is bounded by Muir Road to the north, Anzac Street to the east and existing industrial development further east and to the south. A disused freight railway line forms the site's boundary to the west. The Proposal site is located within the Chullora Technology Park, and surrounded by a range of industrial developments including PFD Storage Warehouse, Tip Top Bakery, News Limited, Fairfax, Volkswagen Distribution Centre, Bluescope Steel and Veolia transfer station. Directly to the west of the Proposal site is a narrow strip of land owned by the State Railway Authority, which formed part of the former railway through this area. A number of other businesses are located further to the west, including a service station, fitness centre and a range of other industrial warehouse (refer to Figure 1.3).

The Chullora RRP site currently has two vehicular access points. The access point for heavy vehicles is via Muir Road, west of the roundabout at Muir Road/Dasea Street. A secondary access point for light vehicles is provided from Anzac Street. The Proposal site would utilise these existing access points. Primary access to the Proposal site from the north will remain via Muir Road from both directions, and egress is via left turn only. There are four major intersections along Muir Road including linkages to Rookwood Road (Metroad 6) and the Hume Highway:

- Two-lane roundabout at the intersection of Muir Road and Dasea Street
- Signalised intersection at Muir Road and Worth Street
- Signalised intersection at Muir Road and Rookwood Road
- Signalised intersection at Muir Road and Hume Highway.

Figure 1.3: Surrounding Land Uses

Source: Arcadis

1.3 Site History

In 1996 the Waste Recycling and Processing Service of NSW took ownership of the Chullora RRP site and neighbouring site to the north (now occupied by the PFD storage warehouse). WSN Environmental Solutions, a State-owned corporation, operated the site in 1997 until 2011 when they were acquired by SITA Australia Pty Ltd (now SUEZ). From this time SUEZ, operated the previous Chullora RRC site which included a Transfer Station, MRF, Garden Organics platform and glass processing shed. In 2016, Frasers Property acquired both the Chullora RRP site and the site to the north, leasing the previous Chullora RRC back to SUEZ for ongoing use as a waste facility.

In 2017, the MRF component of the previous Chullora RRC, was subject to a fire and subsequently demolished, along with the former glass processing building and other waste infrastructure. At this time the site was subdivided with the northern portion developed as the PFD storage warehouse. Since demolition of the previous Chullora RRC, the Proposal site has been used for storage of residential waste bins, maintenance and parking of waste trucks, a heavy vehicle workshop, 5000 L diesel tank and wash bay to support truck maintenance activities.

In 2020 a development application (DA) was lodged with Canterbury Bankstown City Council to establish flood mitigation works across the Chullora RRP. These works comprise:

- Raising the majority of the Chullora RRP site above the 1 in 100-year Average Recurrent Interval (ARI) event
- Installing a flood storage basin across the western portion of the Chullora RRP site.

The Proposal site retains a number of other Council development consents for a range of waste management activities, including approval for the operation of a MRF.

1.4 Purpose of this Report

This traffic impact assessment supports the EIS for the Proposal and has been prepared as part of an SSD Application for which approval is sought under Part 4, Division 4.7 of the EP&A Act.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) (SSD 10401) for the Proposal, issued by NSW Department of Planning, industry and Environment (DPIE) on 20 December 2019.

Table 1.1 provides a summary of the relevant SEARs which relate to traffic and transport, and where these have been addressed in this report.

Table 1.1: SEARs Requirements and Relevant Report Sections

Traffic and Transport	Addressed in
Details of all traffic types and volumes likely to be generated during construction and operation, including a description of haul routes. Traffic flows are to be shown diagrammatically to a level of detail sufficient for easy interpretation.	Chapter 4 (Operation) and Chapter 7 (Construction)
An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model. This is to include the identification and consideration of approved and/or proposed developments in the vicinity.	Chapter 4
Detailed plans of the proposed layout of the internal road and pedestrian network and parking on site in accordance with the relevant Australian Standards and Council's DCP.	Chapter 5 and Chapter 6
Plans of any proposed road upgrades, infrastructure works or new roads required for the development.	Section 4.8
Plans demonstrating how all vehicles associated with construction and operation awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network.	Section 6.2
Swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site for both heavy and light vehicles.	Appendix B

Further to the above, TfNSW and Canterbury-Bankstown City Council (Council) require further details on specific requirements relating to their authority. These requirements are discussed throughout the report as indicated in Table 1.2.

Table 1.2: Agency Requirements and Relevant Report Sections

Traffic and Transport	Addressed in
TfNSW	
1. Daily and peak traffic movements likely to be generated by the proposed development including the impact on nearby intersections and the need/associated funding for upgrading or road improvement works (if required). The key intersections to be examined / modelled (in a network model in SIDRA) include: • Rookwood Road/Muir Road • Hume Highway/Muir Road • Site access/Muir Road	Chapter 4
2. Details of the proposed accesses and the parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian Standards (i.e.; turn paths, sight distance requirements, aisle widths, etc.)	Chapter 5 and Chapter 6
3. Proposed number of car parking spaces and compliance with the appropriate parking codes	Chapter 5
4. Detail of service vehicle movements (including vehicle type and likely arrival and departure times).	Section 4.2 and Chapter 6
5. Assess the implications of the proposed development for non-car travel modes (including public transport use, walking and cycling); the potential for	Section 8.1

Traffic and Transport	Addressed in
implementing a location-specific sustainable travel plan (e.g.; Green Travel Plan, 'Travelsmart' or other travel behaviour change initiative); and the provision of facilities to increase the non-car mode share for travel to and from the site. This will entail an assessment of the accessibility of the development site by public and active transport.	
6. Assessment of the likely toxicity levels of loads transported on arterial and local roads to / from the site and, consequently, the preparation of an incident management strategy for crashes involving such loads, if relevant.	Not Applicable. The Proposal would only transport dry recyclable waste to and from site and thus would not be transporting any materials classified as dangerous or toxic under the Australian dangerous Goods (ADG) Code (National Transport Commission, 2018).
7. TfNSW will require in due course the provision of a traffic management plan for all demolition/construction activities, detailing vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measures.	Chapter 5 (Preliminary demolition and construction details) and Chapter 8 (mitigation measures)
Council	
It is important to ensure that the proposed significant increase in capacity can be adequately serviced by existing or potential road infrastructure, flood works and any other infrastructure required to service the increased intensity.	Chapter 4
A detailed traffic management plan be required including the type of vehicles being utilising, with the tare and gross vehicle mass determined. This information is then to be incorporated into equivalent axle impact report of the receiving road network. Given the amount of material entering and leaving the site it is not considered that a simplistic summation of the number of "trucks" is sufficient, as axle loads can vary greatly dependent on the type of truck and trailer configuration adopted.	Section 8.1 and Chapter 4 of the EIS (The EIS includes a description of the average tare weight of each truck type, provided by the Proponent)
The Heavy Vehicle routes shall be determined and approved by the relevant authority for accessing the site.	Chapter 4 (Operation) and Chapter 7 (Construction)
The internal circulation, operation of the site, access to weigh bridges, proposed and existing, needs to be defined	Section 6.1

2 Assessment Approach

This section outlines the traffic assessment approach and methodology for the Proposal.

2.1 Assessment Methodology

Baseline Conditions

In order to determine the traffic impacts associated with the Proposal, a review of existing road network and transport network has been undertaken which form the baseline data to compare with future conditions.

In obtaining baseline traffic data an inspection of the surrounding road network was carried out by TTPP staff, a desktop review of nearby transport infrastructure and services was completed, weekday peak hourly traffic turning movements were surveyed at nearby intersections and daily traffic flows were captured along key surrounding roads.

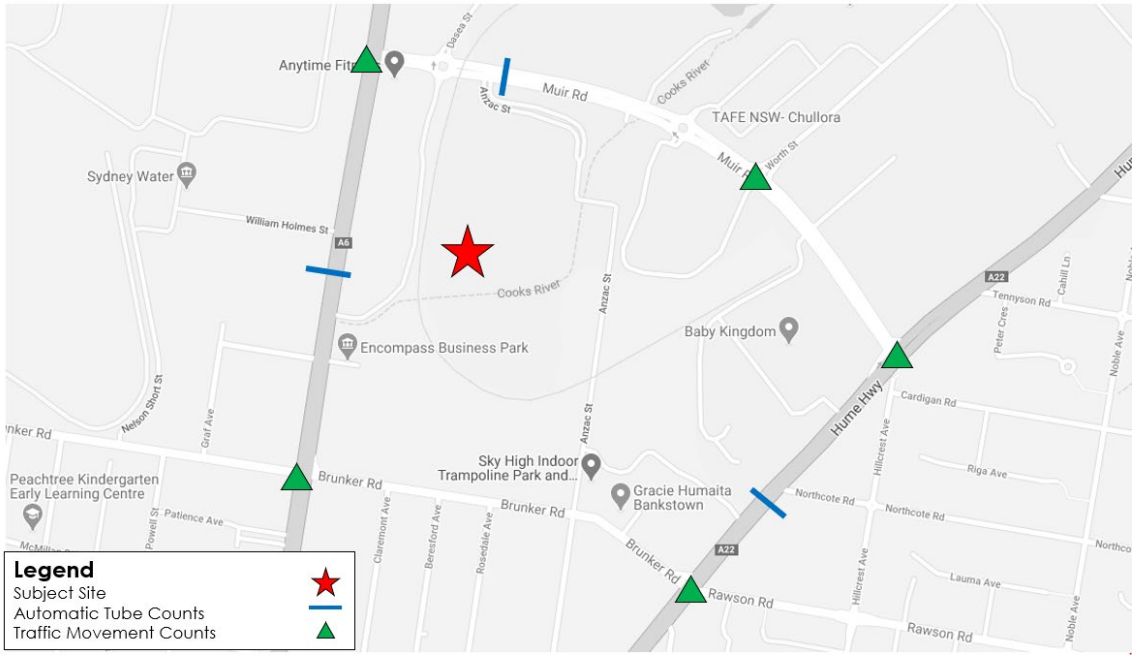
Traffic turning movement surveys were undertaken on Thursday 5 December 2019 during the weekday AM and PM road network periods at nearby key intersections, including:

- Hume Highway / Muir Road
- Hume Highway / Brunker Road / Rawson Road
- Rookwood Road / Brunker Road
- Rookwood Road / Muir Road
- Muir Road / Worth Street.

Also, automatic tube counts (ATCs) were undertaken on Hume Highway, Muir Road and Rookwood Road to capture traffic flows across a 24-hour, seven-day period.

The various survey locations are shown in Figure 2.1.

Figure 2.1: Survey Locations



Assessment of Traffic Impacts

The operation of the key intersections nearby the Proposal site have been assessed using SIDRA Network version 8.0, a computer-based modelling package which assesses intersection performance under prevailing traffic conditions.

SIDRA calculates intersection performance as a level of service (LoS). SIDRA provides analysis of the operating conditions which can be compared to the performance criteria set out in Table 3.1 (refer to Section 3.4).

Under the *State Environmental Planning Policy (Infrastructure) 2007*, the Proposal site is considered a 'traffic-generating development'. Hence, it is a requirement to assess the impact of traffic associated with the future operation of the Proposal site.

The, then, Roads and Maritime Services' *'Guide to Traffic Generating Developments'* (2002) (the Guide) is used as a tool in determining the future traffic generation rates for different developments types and land uses. The guide states that "…*peak traffic generation period for industrial land use is generally determined by three key factors: employee density, travel mode and peak period travel distribution."* The guide also recognises that peak period traffic generation of industrial land uses differs depending on the specific industrial development type.

The Guide contains traffic generation rates for four industrial development types, namely, factories, warehouses and business parks. Of these development types, factories and warehouses are most similar to that of the Proposal. The traffic generation rates for factories and warehouses are summarised in Table 4.1 (refer to Section 4.1).

Site-generated traffic has been projected by SUEZ for the proposed 172,000 tpa to be processed at the MRF. Traffic volume estimates consider the type of materials being transported, the size and load capacity of transportation vehicles and timing of material deliveries and collections at the Proposal site. Site-generated traffic is added to future scenarios to determine the impact of the Proposal.

Background traffic growth has been adopted in future modelling scenarios based on the Sydney Strategic Traffic Forecasting Model (STFM) growth plots obtained from Transport for NSW (TfNSW). The STFM growth plots provide growth rates (per cent per annum growth) from 2016 to 2026 and are based on approved developments in Sydney. STFM growth plots have been used to increase background traffic flows for SIDRA modelling of future scenarios for the Proposal.

The AM and PM road network peak periods have been modelled in the following scenarios:

- Scenario 0 - Existing conditions ("Base case");
- Scenario 1 - Future conditions with background traffic growth up to the year 2022 (Proposal opening year) (i.e. no site-generated traffic);
- Scenario 2 – Future conditions with background traffic growth up to the year 2022 plus site-generated traffic;
- Scenario 3 – Future conditions with background traffic growth up to the year 2032 (Proposal opening year plus 10 years) (i.e. no site-generated traffic); and
- Scenario 4 - Future conditions with background traffic growth up to the year 2032 plus site-generated traffic.

The operational capacity of key main roads has also been reviewed in-line with Roads and Maritime Services' "*Guide to Traffic Generating Developments*" (2002). The operational capacity of a road is the number of vehicles that a road can physically accommodate. It is generally accepted that on a two-way divided road, the operational capacity can be as high as 1,900 passenger car units (pcu) per hour per lane (refer to Figure 3.3 in Section 3.3).

Within the vicinity of the Proposal site operational capacity has been assessed along Hume Highway, Rookwood Road and Muir Road.

To assess operational capacity, the number of light vehicles and heavy vehicles have been converted to a uniform unit of measure; passenger car units (pcu). To convert the volume of heavy vehicles into pcu, a multiplication factor has been applied based on the type of vehicle recorded by the traffic tube counts. These factors are specified in Figure 3.4 (refer to Section 3.3).

Analysis of On-site Parking Provision

An assessment of the parking demand generated by the Proposal has been undertaken in-line with the direction of the *State Environmental Planning Policy (State and Regional Development)* 2011 and *Bankstown Development Control Plan* (DCP) 2015. In Council's DCP, parking rates for the development type closest in nature to the Proposal (i.e. industrial uses) has been used to estimate the future parking demand associated with the MRF.

Parking provision for the Proposal site development type has also been estimated using a 'first principles' approach. The first principles method of calculation considers parking demand based on the number of employees at the Proposal site rather than floor area. This method generates a more realistic and practical off-street parking provision for staff and visitors associated with the Proposal site which does not categorically fit the class of an industrial development as stipulated in Council's DCP.

Analysis of the site access and circulation route on-site for delivery and collection vehicles has been undertaken to determine whether vehicles proposed to access the site can adequately manoeuvre through the Proposal site and carry-out material unloading and loading activities. Furthermore, a review of on-site vehicle storage (referred to as stacking capacity) has been completed to determine whether the Proposal site can sufficiently accommodate delivery and collection vehicles during the site's peak operation.

A preliminary review of the traffic impacts associated with the construction phase of the Proposal has been prepared in this report. It assesses the staging and duration of demolition and construction activities, the vehicle volumes and vehicle haulage routes to/from the Proposal site.

Mitigation measures have been proposed for managing the identified traffic impacts associated with the Proposal. This involves the preparation of Traffic Management Plans during operation and construction phases of the Proposal, implementation of temporary traffic controls and employee training and inductions.

2.2 Report Structure

The remainder of the report is set out as follows:

- Chapter 3 discusses the existing conditions including a description of the local road, transport, pedestrian and cycling networks
- Chapter 4 examines the operational traffic generation and its impact
- Chapter 5 assesses the proposed on-site parking provision during operation
- Chapter 6 reviews the site access and circulation arrangements
- Chapter 7 assesses the construction traffic generation and its impact
- Chapter 8 presents the mitigation measures for operation and construction phases
- Chapter 9 summarises and concludes the findings of the assessment.

2.3 References

In preparing this report, reference has been made to the following:

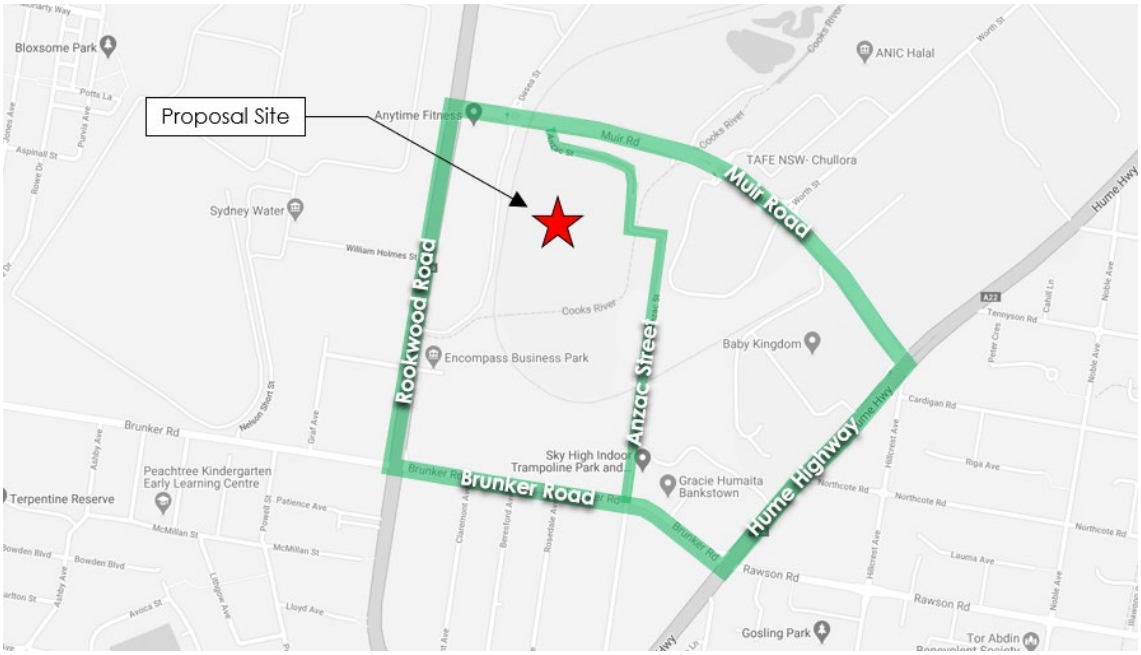
- An inspection of the site and its surrounds
- *Bankstown Local Environmental Plan 2015*
- *Bankstown Development Control Plan 2015*
- TfNSW (formerly Roads and Maritime Services) *Guide to Traffic Generating Developments*, 2002
- Plans for the proposed development as prepared by Arcadis
- Swept path assessments undertaken by TTPP, and
- Other documents and data as referenced in this report.

3 Existing Conditions

3.1 Surrounding Road Network

The road network adjacent the Proposal site is shown in Figure 3.1 with a description of each road provided thereafter.

Figure 3.1: Local Road Network



Basemap Source: Google Maps, accessed online 13/03/2020

Hume Highway (A22)

Hume Highway (A22) is classified as a state road which runs in a north-south direction to the east of the Proposal site. Within the vicinity of the site, Hume Highway is a six-lane road divided by a 4 m wide raised median. There are three traffic lanes in each direction with a width of approximately 3.3 m wide. The road has a posted speed limit of 70 km/hr. The Hume Highway functions as a clearway at all times within the vicinity of the site.

Rookwood Road (Metroad 6)

Rookwood Road is a state road which has a north-south configuration and is located to the west of the Proposal site. Rookwood Road is a six-lane road with three lanes in each direction. Opposing traffic flows are separated by a 4 m wide raised median. Traffic lanes are approximately 3 m in width. The speed limit on Rookwood Road is 80 km/hr.

Muir Road

Muir Road is a local road which runs in an east-west direction and forms the northern boundary to the Chullora RRP site. Muir road is a four-lane road with two lanes per direction (one through lane and one parking lane) with opposing flows separated by an 8 m wide raised median. The posted speed limit on Muir Road is 60 km/hr.

Brunker Road

Brunker Road is a state road with an east-west alignment towards the south of the Proposal site. Brunker Road is a four-lane road with 3 m wide travel lanes in each direction. The posted speed limit along Brunker Road is 60 km/hr.

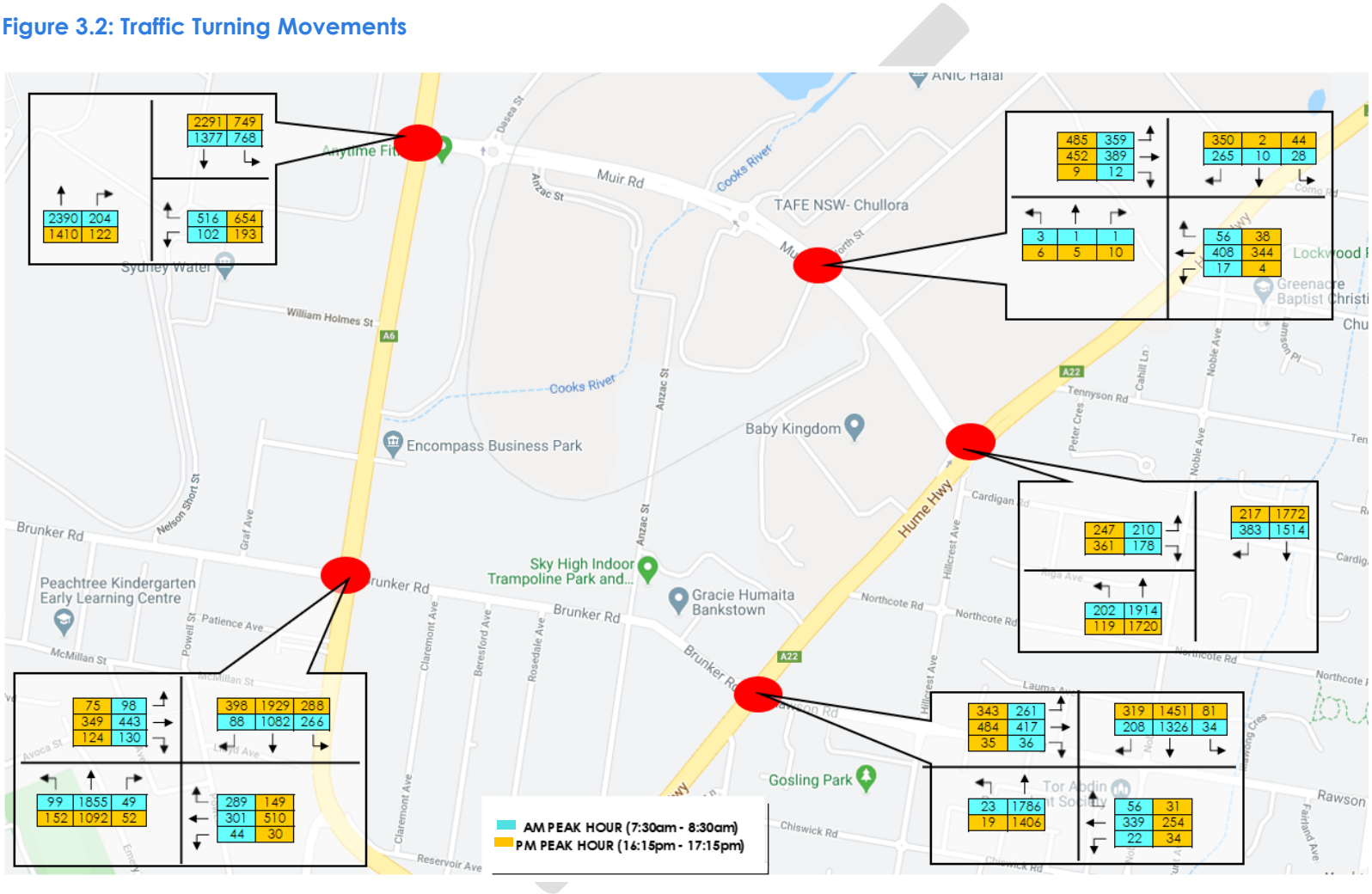
Anzac Street

Anzac Street is both a local and private "NO THROUGH" road which runs in a north-south direction along the eastern boundary of the site. The road connects with Muir Road in the north and Brunker Road in the south and is primarily used to access the Chullora General Industrial area. The road is an undivided two-way street with kerbside parking on both sides. The speed limit on Anzac Street is 50 km/hr.

3.2 Traffic Volumes

Using traffic turning movement counts and ATC data captured during traffic surveys described in Section 2.1, peak traffic flows have been identified as shown in Figure 3.2. Morning (AM) peak traffic volumes are indicated in blue while afternoon (PM) peak traffic volumes are represented in orange.

Figure 3.2: Traffic Turning Movements



3.3 Roadway Capacity

To determine the operational capacity for urban roads, Roads and Maritime Services' "*Guide to Traffic Generating Developments*" (2002), typical mid-block capacities have been applied to the surrounding road network as shown in Figure 3.3. The operational capacity of a road is the number of vehicles that a road can physically accommodate. It is generally accepted that on a two-way divided road, the operational capacity can be as high as 1,900 passenger car units (pcu) per hour per lane.

Figure 3.3: Operational Capacity for Urban Roads

Table 4.3
Typical mid-block capacities for urban roads with interrupted flow

Type of Road	One-Way Mid-block Lane Capacity (pcu/hr)	
Median or inner lane:	Divided Road	1,000
	Undivided Road	900
Outer or kerb lane:	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided:	Occasional Parked Cars	1,500
	Clearway Conditions	1,800
4 lane divided:	Clearway Conditions	1,900

Source: Guide to Traffic Generating Developments (2002)

Within the vicinity of the Proposal site, Hume Highway and Rookwood Road are two-way divided urban roads with three lanes in each direction under clearway conditions. Muir Road is a two-way divided urban road with two lanes in each direction (one through lane and one parking lane). In December 2019, traffic movements across a 24-hour, seven-day period were captured on these roads.

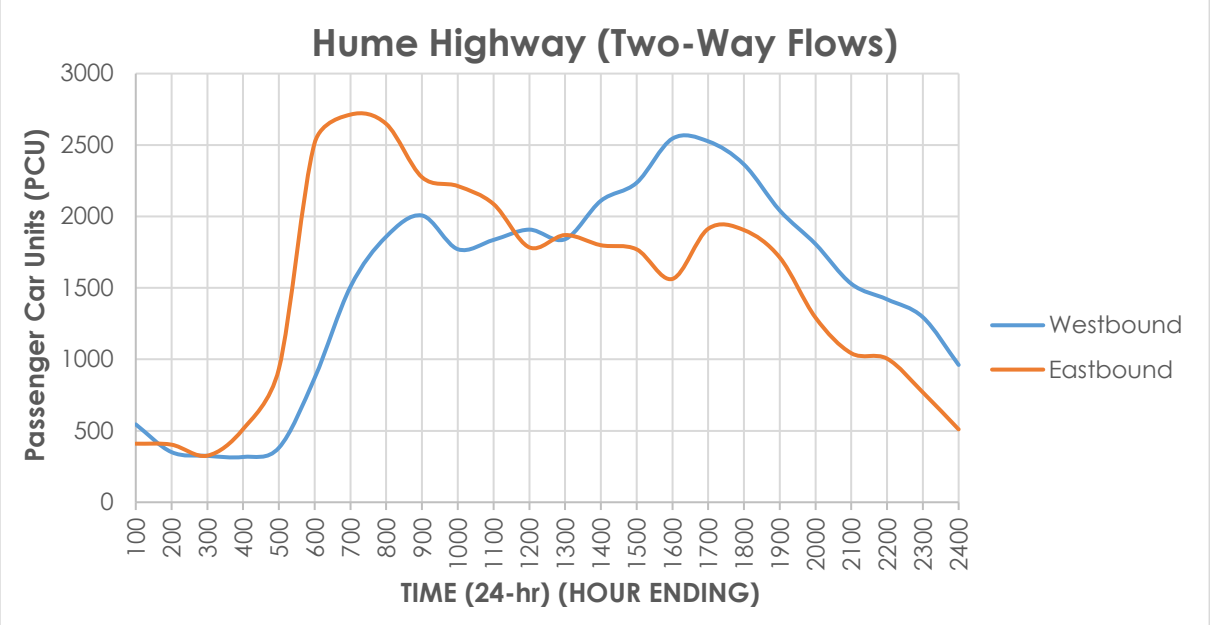
In order to assess the operational capacity of these roads, the number of light vehicles and heavy vehicles were converted to a uniform unit of measure; passenger car units (pcu). To convert the volume of heavy vehicles into pcu, a multiplication factor has been applied based on the type of vehicle recorded by the traffic tube counts. These factors are specified in Figure 3.4.

Figure 3.4: Passenger Car Unit Equivalencies

Vehicle type	PCU factor
Passenger car	1.0
Light commercial vehicle (LCV)	1.0
Rigid heavy	2.0
Bus	2.0
Articulated heavy	4.0

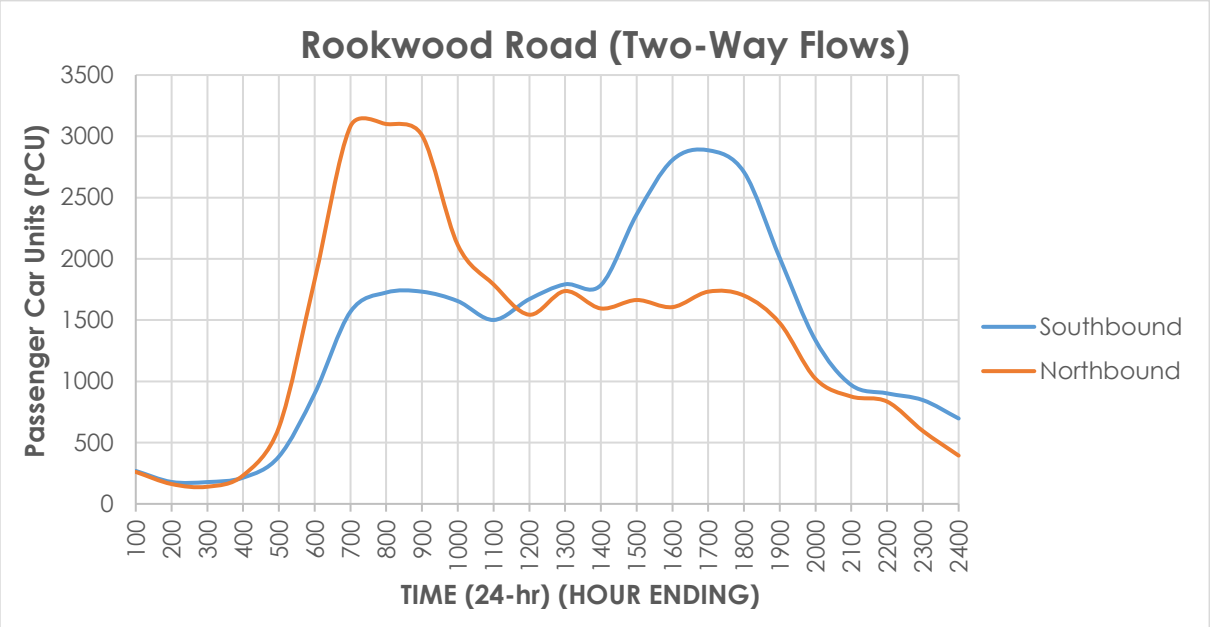
As such, the average daily flows on Hume Highway, Rookwood Road and Muir Road have been determined, as illustrated in Figure 3.5, Figure 3.6 and Figure 3.7 respectively. The raw traffic data is provided in Appendix A.

Figure 3.5: Hume Highway Traffic Flow



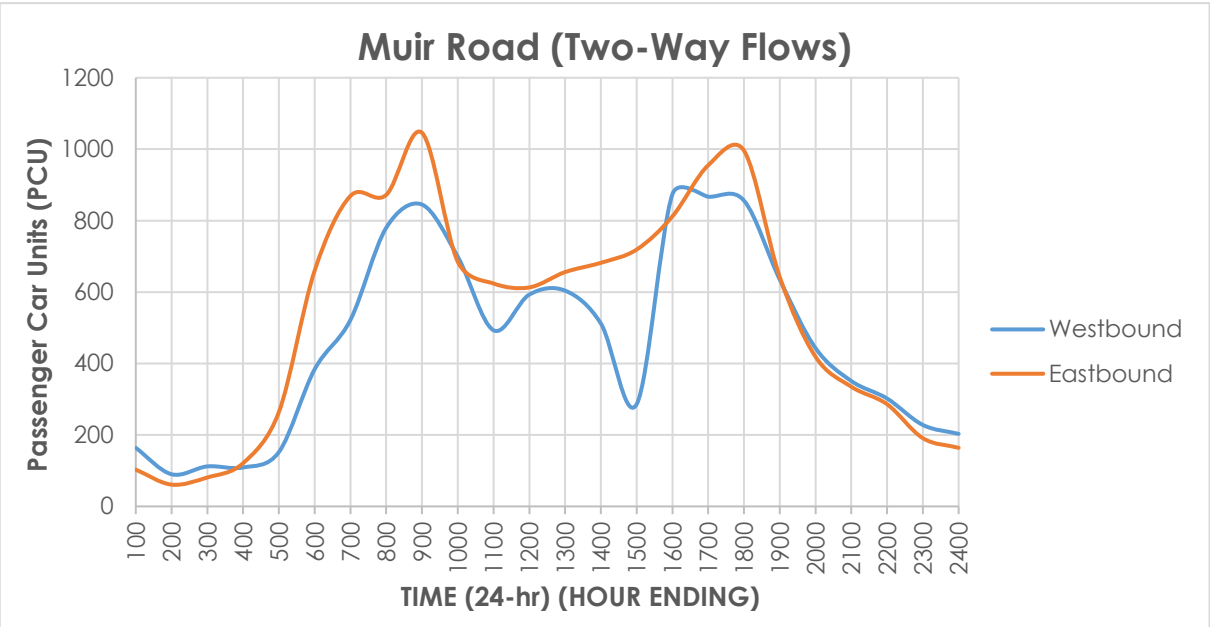
As shown in Figure 3.5, the maximum pcu per hour on the Hume Highway is approximately 2,700 in the eastbound direction (citybound) between 7:00am - 8:00am. The Hume Highway provides three traffic lanes in each direction which is equivalent to approximately 900 vehicles per lane which is close to the typical capacity of 900 – 1000 vehicles per lane (Figure 3.3).

Figure 3.6: Rookwood Road Traffic Flow



For Rookwood Road, Figure 3.6 shows that the maximum pcu per hour is approximately 3,100 in the northbound direction (citybound) between 7:00am - 8:00am. As Rookwood Road provides three lanes in each direction, this corresponds to approximately 1,033 vehicles per lane which is marginally above the typical capacity of 900-1000 vehicles per lane.

Figure 3.7: Muir Road Traffic Flow



Muir Road generally provides one traffic lane and one parking lane in each direction. Adopting that Muir Road operates as one traffic lane in each direction, the typical mid-block capacity would be approximately 1,000 pcu per lane. From Figure 3.7, the maximum pcu per hour on Muir Road is approximately 1,050 in the eastbound direction between 8:00am - 9:00am which is marginally above the typical capacity for an inner lane on a divided road.

3.4 Intersection Modelling Criteria

The existing operation of the intersections nearby the Proposal site have been assessed using SIDRA Network version 8.0, a computer-based modelling package which assesses intersection performance under prevailing traffic conditions.

SIDRA calculates intersection performance as a level of service (LoS). SIDRA provides analysis of the operating conditions which can be compared to the performance criteria set out in Table 3.1.

Table 3.1: Level of Service Criteria for Intersection Operation

Level of Service	Average Delay (seconds per vehicle)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	Less than 14	good operation	good operation
B	15 to 28	good with acceptable delays and spare capacity	acceptable delays and spare capacity
C	29 to 42	satisfactory	satisfactory, but accident study required
D	43 to 56	operating near capacity	near capacity and accident study required
E	57 to 70	at capacity, at signals, incidents will cause excessive delays, roundabouts require other control mode	at capacity, requires other control mode
F	Greater than 71	unsatisfactory with excessive queuing	unsatisfactory with excessive queuing; requires other control mode

Source: Roads and Maritime Guide to Traffic Generating Developments, 2002

3.5 Intersection Modelling Results

The operational level of service for key nearby intersections during the AM and PM road network peak periods are summarised Table 3.2.

Table 3.2: Existing Intersection Operation

Intersection	AM PEAK		PM PEAK	
	Average Delay	Level of Service	Average Delay	Level of Service
Hume Highway / Brunker Road	62s	E	59s	E
Hume Highway / Muir Road	13s	A	20s	B
Muir Road / Worth Street	23s	B	23s	B
Rookwood Road / Muir Road	22s	B	37s	C
Rookwood Road / Brunker Road	82s	F	173s	F

Signalised intersections along Muir Road currently operate at an acceptable level of service C or better while signalised intersections at Brunker Road operate at a poor level of service E or F in both peak periods.

Traffic modelling analysis results of the future road network operation in the opening year of the Proposal and opening year plus 10 years are provided in Section 4.4.

3.6 Vehicle Access and On-site Parking

Vehicle access to the Proposal site is provided via Muir Road for heavy vehicles and Anzac Street for light vehicles. Ingress and egress movements via Muir Road are separated by a raised median. The width of the access driveway is approximately 50 m. Historically, this access point has been used by heavy vehicles serving the site.

Anzac Street (via Brunker Road) provides access to a car park serving the Proposal site. Anzac Street does not provide a publicly accessible through connection between Muir Road and Brunker Road.

Light vehicles accessing the SUEZ office located within the Proposal site, currently utilise the existing car park which comprises 70 car parking spaces.

An aerial photograph of the car park is given in Figure 3.8.

Figure 3.8: Existing Car Park

Source: Nearmap, photograph dated 28/02/2020

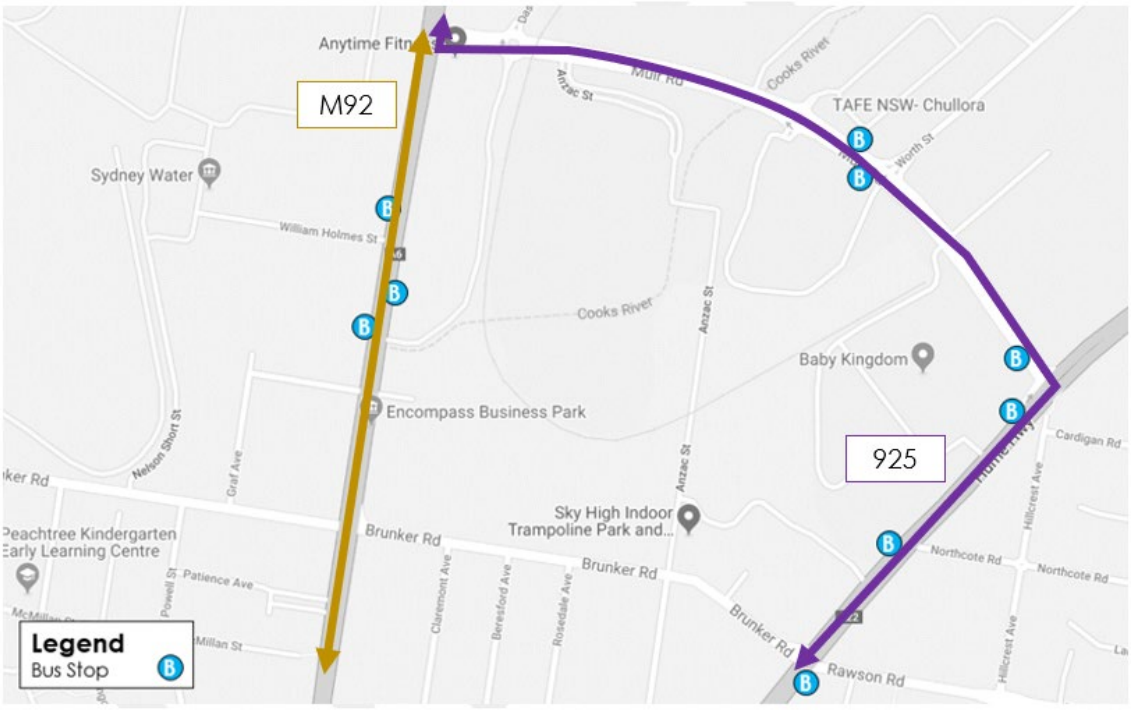
3.7 Public Transport

The Proposal site is well served by bus services in peak and off-peak periods. The closest railway station is Birrong, located approximately 1.5 km west of the Proposal site.

Bus stops are provided along Rookwood Road, Hume Highway and Muir Road as shown in Figure 3.9. Existing bus routes M92 and 925 provide connectivity to key transport interchanges including Parramatta, Lidcombe, Bankstown and Sutherland.

A summary of bus routes and service frequency in the vicinity of the Proposal site is provided in Table 3.3.

Figure 3.9: Nearby Bus Stops



Base Map Source: Google Maps, date accessed 02/03/2020

Table 3.3: Bus Routes

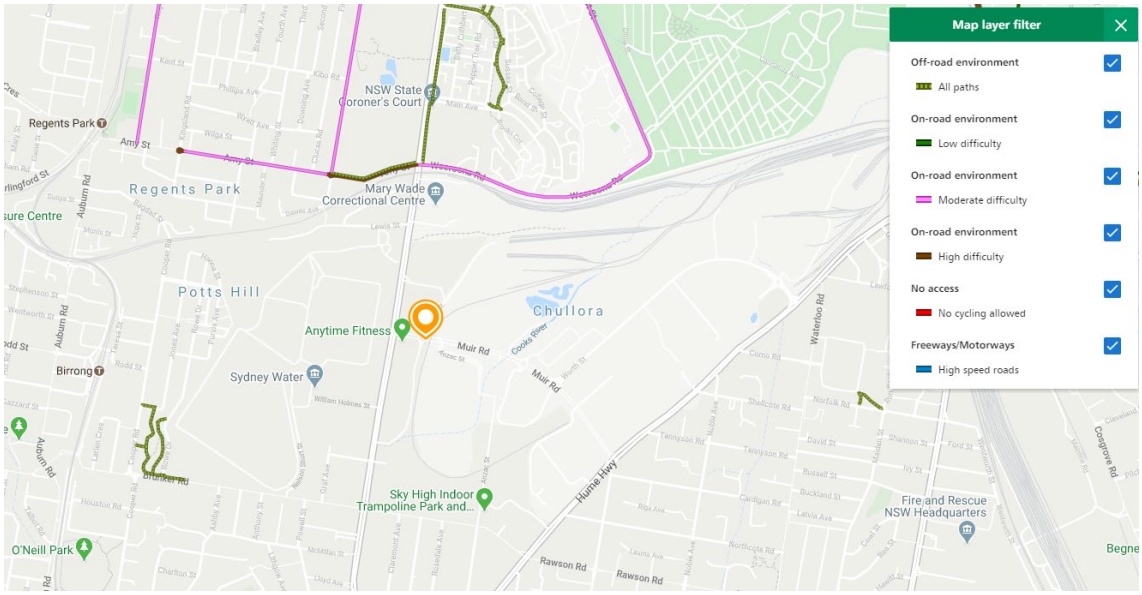
Route No.	Description	Weekday Service Frequency		Weekend Service Frequency
		Peak	Off-Peak	
925	Lidcombe to East Hills via Bankstown	Every 30 mins, between 6:50am - 9:20am and 4:20pm - 9:00pm	Every one hour, between 9:20am - 4:20pm	Every one hour
M92	Sutherland to Parramatta	Every 10 mins	Every 15 mins	Every 20 mins

3.8 Pedestrian and Cyclist Facilities

Pedestrian footpaths are provided alongside all roads within the vicinity of the Proposal site. Kerb ramps and marked foot crossings are located on most legs of nearby signalised intersections.

Cycling in the vicinity of the Proposal site is generally not observed. The nearest cycling route is located north of the site along Weeroona Road as shown Figure 3.10.

Figure 3.10: Nearby Bus Stops



4 Operational Traffic Impact Assessment

4.1 Design Rate

Under the State Environmental Planning Policy (Infrastructure) 2007, the Proposal site is considered a 'traffic-generating development'. Hence, it is a requirement to assess the impact of traffic associated with the future operation of the Proposal site.

The, then, Roads and Maritime Services' 'Guide to Traffic Generating Developments' (2002) (the Guide) is used as a tool in determining the future traffic generation rates for different developments types and land uses. The guide states that "…*peak traffic generation period for industrial land use is generally determined by three key factors: employee density, travel mode and peak period travel distribution."* The Guide also recognises that peak period traffic generation of industrial land uses differs depending on the specific industrial development type.

The Guide contains traffic generation rates for four industrial development types, namely, factories, warehouses and business parks. Of these development types, factories and warehouses are most similar to that of the proposed development. The traffic generation rates for factories and warehouses are summarised in Table 4.1.

Table 4.1: Roads and Maritime Traffic Distribution Rates – Factories and Warehouses

Development Type	Traffic Generation Rate	
	Peak Hour Vehicle Trips	Daily Vehicle Trips
Factories	1 per 100 m^2 of GFA	5 per 100 m^2 of GFA
Warehouses	0.5 per 100 m^2 of GFA	4 per 100 m^2 of GFA

The traffic generation rates as per the Guide are based on the GFA of the development. However, vehicle movements associated with the Proposal site are not directly impacted by changes in the GFA; rather it is influenced by the amount of waste throughput. Hence, application of Roads and Maritime's traffic generation rates are not considered to be appropriate.

4.2 Traffic Generation

Site-generated traffic estimates during typical operation and peak operation are given in Table 4.2 and Table 4.3, respectively.

A summary of heavy vehicle movements generated by the proposed development across a 24-hour period for both typical day and peak day operation are provided in Table 4.4.

Table 4.2: Typical Day Operational Traffic Generation

Vehicle Type	AM Peak Hour		PM Peak Hour	
	Delivery Vehicle Movements	Collection Vehicle Movements	Delivery Vehicle Movements	Collection Vehicle Movements
MRV	3	0	2	0
HRV	0	2	0	1
Semi-Trailer	2	0	1	0
Truck and Dog	0	0	0	0
Total Movements	**10**	**4**	**6**	**2**

Table 4.3: Peak Day Operational Traffic Generation

Vehicle Type	AM Peak Hour Generation		PM Peak Hour Generation	
	Delivery Vehicle Movements	Collection Vehicle Movements	Delivery Vehicle Movements	Collection Vehicle Movements
MRV	4	0	3	1
HRV	0	2	0	1
Semi-Trailer	2	0	1	0
Truck and Dog	0	0	0	0
Total Movements	**12**	**4**	**8**	**2**

Table 4.4: Vehicle Movements per hour

Hour Starting	Typical Day Vehicle Movements	Peak Day Vehicle Movements
0:00	6	8
1:00	6	10
2:00	6	8
3:00	8	12
4:00 [a]	**16**	**22**
5:00	14	16
6:00	16	18
7:00 [b]	**14**	**16**
8:00	8	10
9:00	16	18
10:00	14	16
11:00	8	10
12:00 [c]	**14**	**18**
13:00	12	16
14:00	8	10
15:00	10	12
16:00 [d]	**8**	**10**
17:00	8	10
18:00	6	8
19:00	4	6
20:00	4	4
21:00	4	6
22:00	0	0
23:00	0	0
Total	210	264

Notes:
a – Site AM operational peak hour
b – Local road network AM peak hour
c – Site PM operational peak hour
d – Local road network PM peak hour

As is presented in Table 4.4, 264 two-way vehicle trips per day are estimated to be generated by the Proposal during peak operation. The Proposal's peak operational period would be expected to occur between 4:00-5:00am and 12:00pm-1:00pm.

Peak day operational traffic flows have been modelled using SIDRA software to assess the 'worst case' scenario that is likely to be generated by the proposal.

4.3 Traffic Distribution

Contracts with material suppliers have not yet been established. In light of this, it is expected that delivery/ collection trucks would generally have origins and destinations throughout Sydney.

With the M4 Motorway and M5 Motorway located north and south of the Proposal site (respectively) and the Hume Highway and Rookwood Road located in the east and west (respectively), the Proposal site is surrounded by a network of arterial and regional roads which are well connected.

Therefore, it is assumed that site-generated traffic travelling to/from the Proposal site would be distributed evenly from all directions as follows:

To Proposal Site (Figure 4.1):

- 50% of vehicles approach the site from the Hume Highway (25% approach from the north and 25% approach from the south),
- 50% of vehicles approach the site from Rookwood Road (25% approach from the north and 25% approach from the south).

Away from Proposal Site (Figure 4.2):

- 100% turn left out of the site onto Muir Road (egress movement at site access is restricted to left-turn out only)
- 50% of vehicles undertake a U-turn at Muir Road- Dasea Street roundabout and travel eastbound towards Hume Highway (25% travel northbound and 25% travel southbound on Hume Highway)
- 50% continue westbound towards Rookwood Road (25% travel northbound and 25% travel southbound on Rookwood Road).

Figure 4.1 Inbound Traffic Distribution

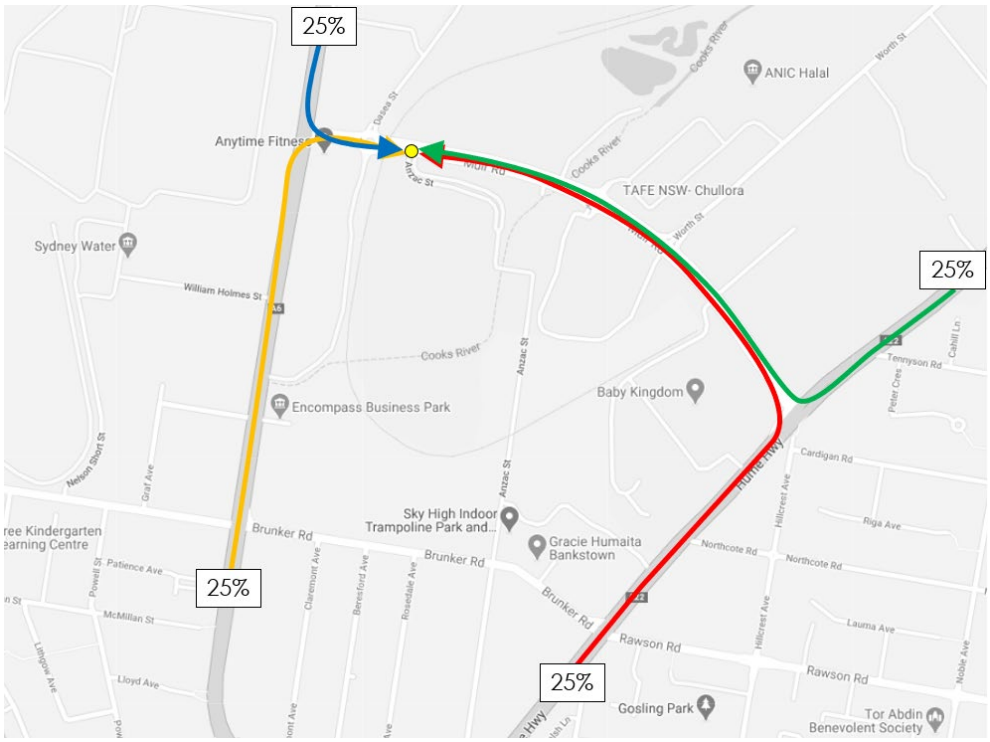
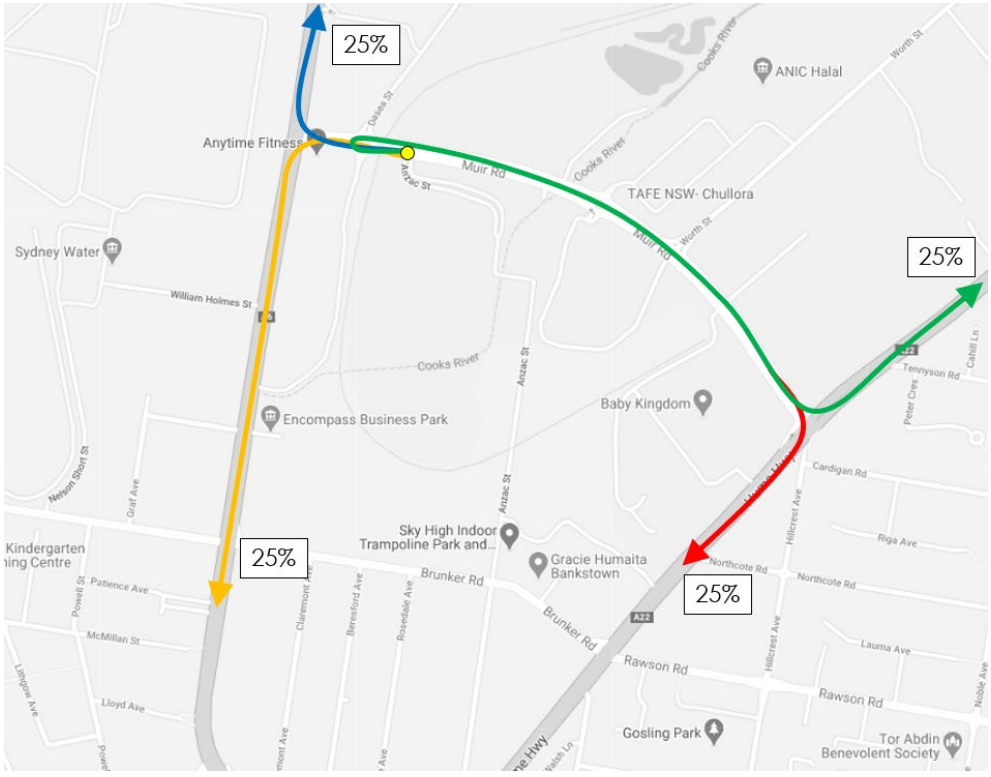


Figure 4.2: Outbound Traffic Distribution



4.4 Background Traffic Growth

Background traffic growth has been adopted based on the Sydney Strategic Traffic Forecasting Model (STFM) growth plots obtained from TfNSW. The STFM growth plots provide growth rates (per cent per annum growth) from 2016 to 2026 and are based on approved developments in Sydney. STFM growth plots have been used to increase background traffic flows for SIDRA modelling of future scenarios for the proposal.

4.5 Operational Traffic Impact

Modelling of existing and future conditions have been assessed as follows:

- Scenario 0 - Existing conditions ("Base case");
- Scenario 1 - Future conditions with background traffic growth up to the year 2022 (Proposal opening year) (i.e. no site-generated traffic);
- Scenario 2 – Future conditions with background traffic growth up to the year 2022 plus site-generated traffic;
- Scenario 3 – Future conditions with background traffic growth up to the year 2032 (Proposal opening year plus 10 years) (i.e. no site-generated traffic); and
- Scenario 4 - Future conditions with background traffic growth up to the year 2032 plus site-generated traffic.

Table 4.5 and Table 4.6 provide a summary of the road network performance during AM and PM road network peak periods, respectively.

It is noted that light vehicle trips generated by employees would occur at the start and end of each shift (i.e. 5:00am-1:00pm and 1:30pm-8:30pm, and skeleton staff between 9pm-5am). The start and end of shift times occur outside of the road network AM and PM peak periods. Therefore, traffic modelling scenarios of the road network peak periods assessed herein consider site-generated trips related to the movement of material only.

Table 4.5: Modelling Results – AM Peak

Intersection	Scenario 0 (Existing Conditions)		Scenario 1 (2022 Conditions – No Proposal)		Scenario 2 (2022 Conditions – With Proposal)		Scenario 3 (2032 Conditions – No Proposal)		Scenario 4 (2032 Conditions – With Proposal)	
	Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS
Hume Highway / Brunker Road	62	E	67	E	67	E	93	F	93	F
Hume Highway / Muir Road	13	A	13	A	13	A	18	B	18	B
Muir Road / Worth Street	23	B	23	B	23	B	23	B	23	B
Rookwood Road / Muir Road	22	B	23	B	24	B	32	C	33	C
Rookwood Road / Brunker Road	82	F	92	F	93	F	151	F	152	F

Table 4.6: Modelling Results – PM Peak

Intersection	Scenario 0 (Existing Conditions)		Scenario 1 (2022 Conditions – No Proposal)		Scenario 2 (2022 Conditions – With Proposal)		Scenario 3 (2032 Conditions – No Proposal)		Scenario 4 (2032 Conditions – With Proposal)	
	Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS	Ave Delay	LOS
Hume Highway / Brunker Road	59	E	60	E	60	E	69	E	69	E
Hume Highway / Muir Road	20	B	20	B	20	B	23	B	23	B
Muir Road / Worth Street	23	B	23	B	23	B	26	B	26	B
Rookwood Road / Muir Road	37	C	43	D	43	D	82	F	82	F
Rookwood Road / Brunker Road	173	F	188	F	187	F	253	F	254	F

By comparing future scenarios of background traffic growth alone (Scenarios 1 and 3) and background traffic growth with site-generated traffic (Scenarios 2 and 4), it can be seen that the Proposal would cause an additional 0-1 second to intersection average delay. This would have an unnoticeable effect on intersection operation, and thus, the Proposal would have an insignificant impact on surrounding road network performance.

Furthermore, almost all intersections currently operating at an acceptable LoS A to C continue to operate as such across future scenarios with the exception of Rookwood Road-Muir Road. In the PM peak period, this intersection's level of service would reduce from LoS C to LoS D in 2022 and LoS F in 2032 as discussed herein.

Between existing conditions (Scenario 0) and future year 2022 (Scenario 1), the intersection average delay would increase by six seconds as a result of background traffic growth (from 37 seconds to 43 seconds). This is a marginal change to the intersection operation which would have a negligible impact on the network.

Further to this, it is noted that as per the, then, Roads and Maritime's Level of Service Criteria in Table 3.1, an average delay of 43 seconds is on the border between Los C and LoS D. Therefore, the intersection would operate very similarly to LoS C and would be considered an acceptable level of service by Roads and Maritime's standards. When site-generated traffic is added to the network (Scenario 2), there would be no change to the intersection average delay indicating that any impact cause by the Proposal site would be negligible.

Between future years 2022 (Scenario 1) and 2032 (Scenario 3), the intersection level of service would reduce from LoS D to Los F with an additional 39 seconds to intersection average delay. This suggests that future traffic growth alone would cause the intersection to operate at over-capacity by 2032. When site-generated traffic is added to the network in 2032 (Scenario 4), there would be no change to the intersection average delay indicating that any impact cause by Proposal site would be also negligible.

Having consideration for background traffic growth in the area, the Proposal would generate a negligible impact on the road network performance as modelled in the scenarios above.

Separate to this Proposal, it is expected that TfNSW would review the road network operation in future years to manage the impact of background traffic growth on the wider road network.

4.6 Turning Lane Storage Capacity

Site-generated traffic would result in additional vehicles turning left and right at the intersections of Rookwood Road-Muir Road and Hume Highway-Muir Road. Hence, an analysis of storage capacity for turning lanes into Muir Road has been undertaken to identify any impact to the through movement on Rookwood Road and Hume Highway.

Queue length diagrams are illustrated for the modelled scenarios as follows:

Rookwood Road – Muir Road

- AM Peak:
    - Existing conditions (Scenario 0), 2022 Conditions No Proposal (Scenario 1) and 2022 Conditions With Proposal (Scenario 2) cases in Figure 4.3.
    - 2032 Conditions No Proposal (Scenario 3) and 2032 Conditions With Proposal (Scenario 4) cases in Figure 4.4.
- PM Peak:
    - Existing conditions (Scenario 0), 2022 Conditions No Proposal (Scenario 1) and 2022 Conditions With Proposal (Scenario 2) cases in Figure 4.5.
    - 2032 Conditions No Proposal (Scenario 3) and 2032 Conditions With Proposal (Scenario 4) cases in Figure 4.6.

Hume Highway – Muir Road

- AM Peak:
    - Existing conditions (Scenario 0), 2022 Conditions No Proposal (Scenario 1) and 2022 Conditions With Proposal (Scenario 2) cases in Figure 4.7.
    - 2032 Conditions No Proposal (Scenario 3) and 2032 Conditions With Proposal (Scenario 4) cases in Figure 4.8.
- PM Peak:
    - Existing conditions, 2022 no development and 2022 with development scenarios in Figure 4.9.
    - 2032 Conditions No Proposal (Scenario 3) and 2032 Conditions With Proposal (Scenario 4) cases in Figure 4.10.

Figure 4.3: Rookwood Road-Muir Road AM Queue Lengths (Existing & Future 2022)

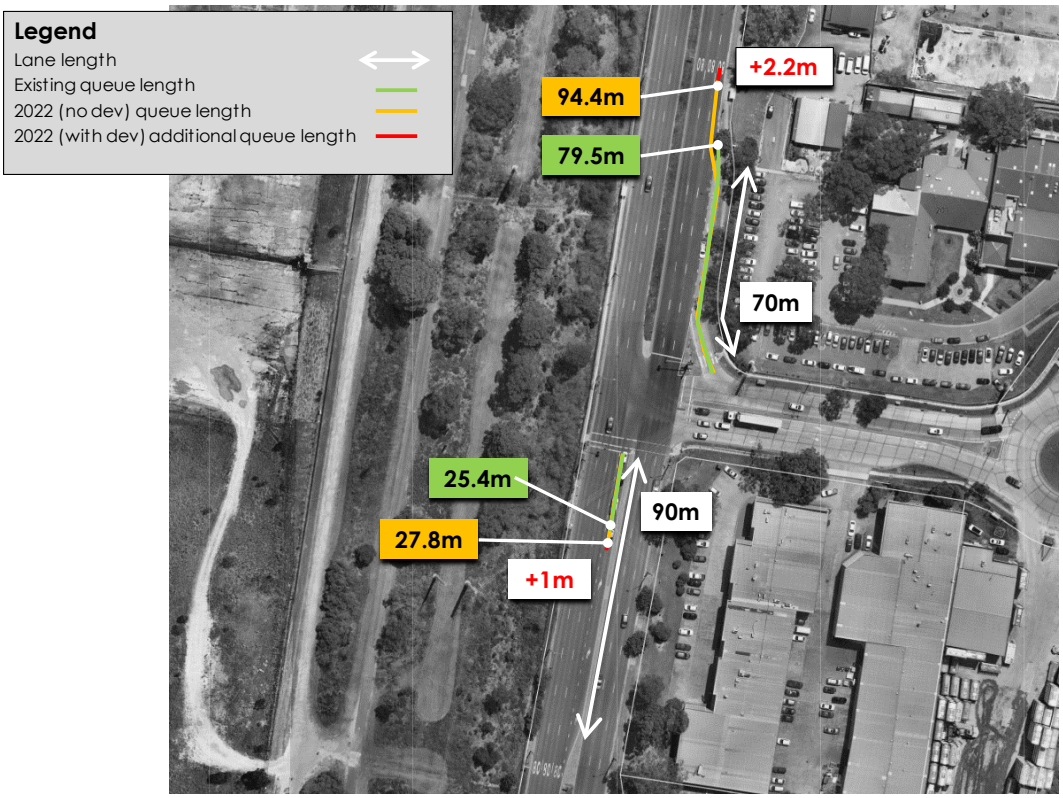


Figure 4.4: Rookwood Road-Muir Road AM Queue Lengths (Future 2032)

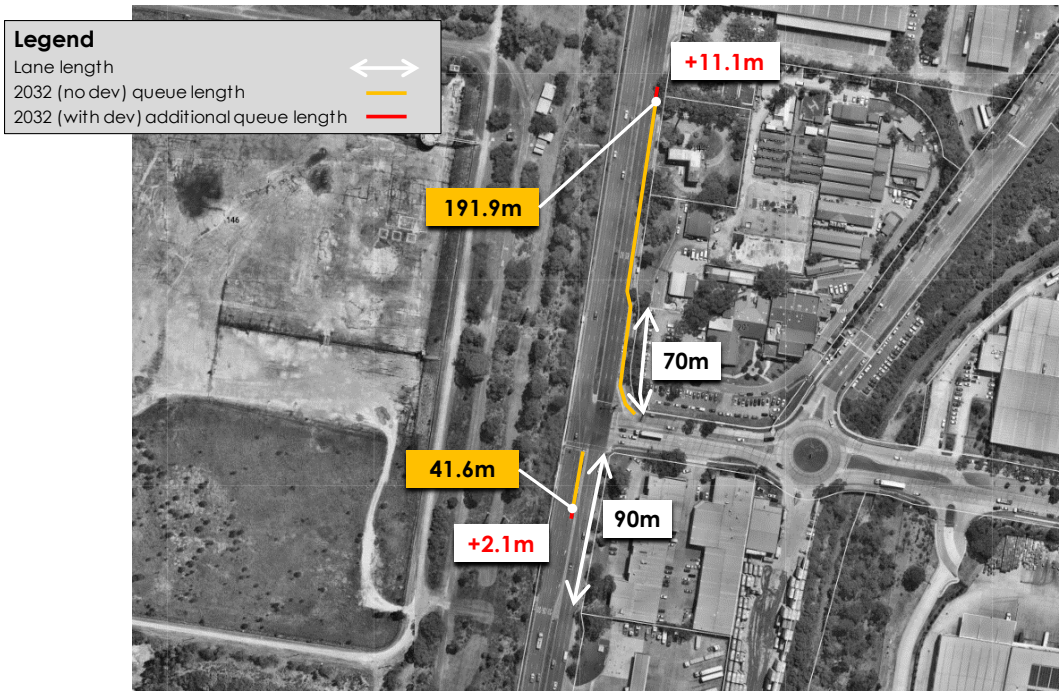


Figure 4.5: Rookwood Road-Muir Road PM Queue Lengths (Existing & Future 2022)

Figure 4.6: Rookwood Road-Muir Road PM Queue Lengths (Future 2032)

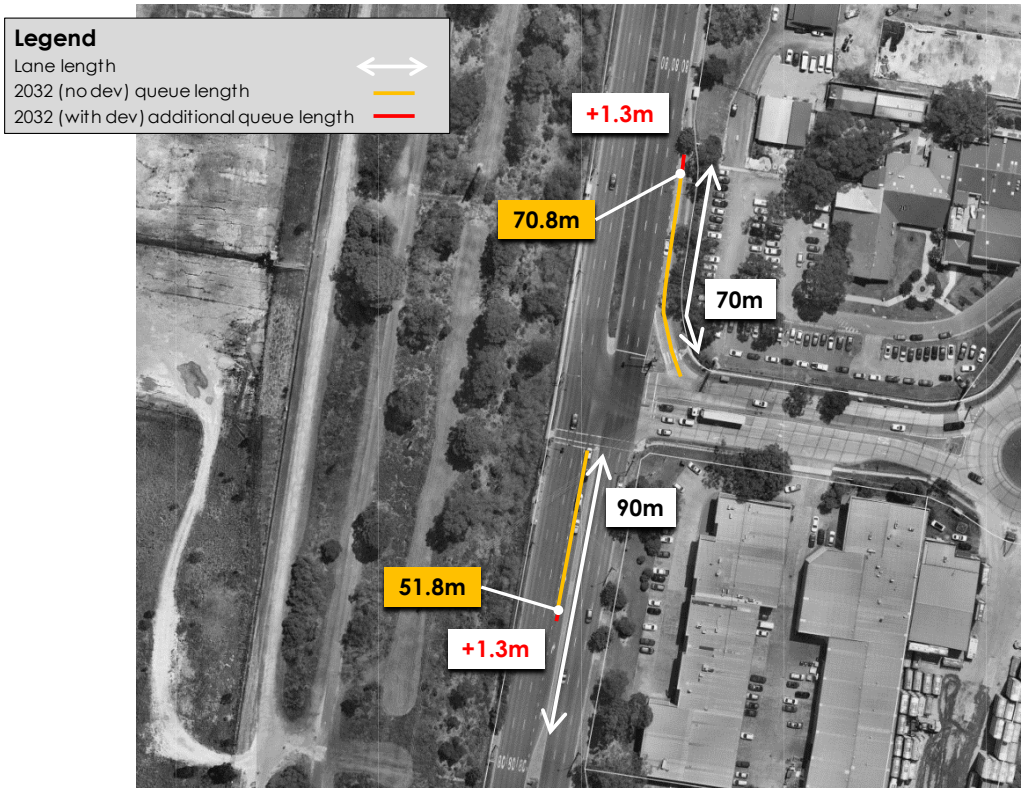


Figure 4.7: Hume Highway-Muir Road AM Queue Lengths (Existing & Future 2022)

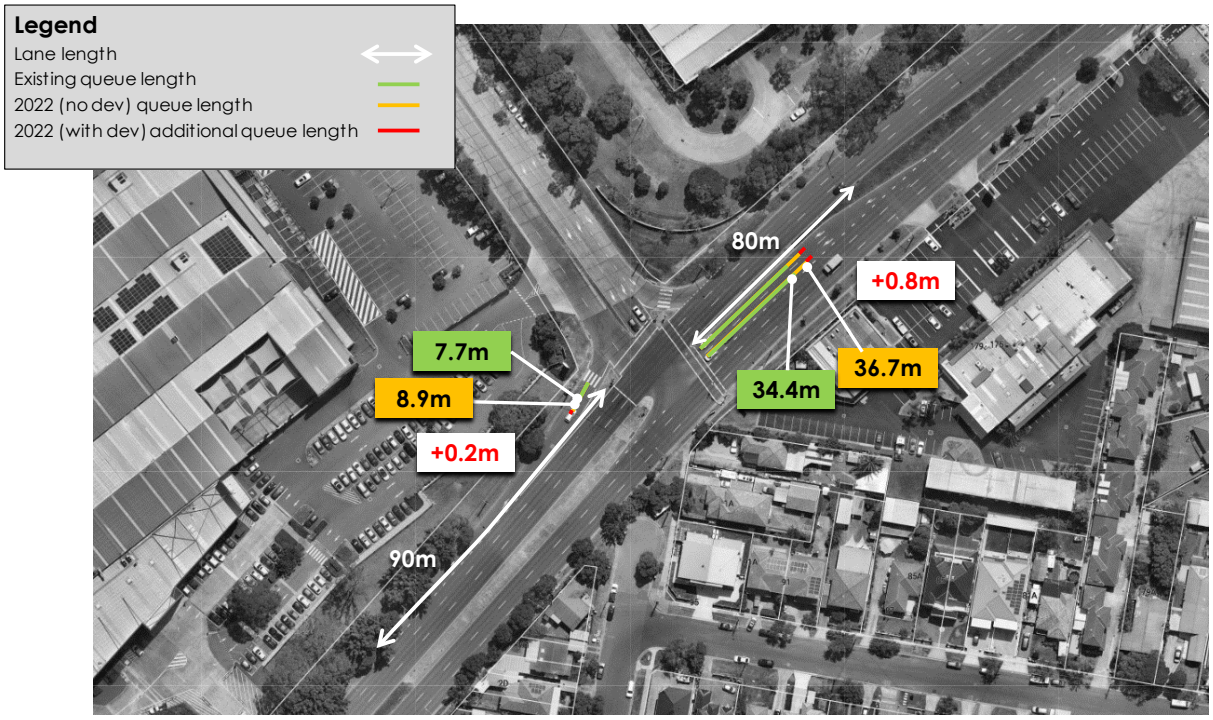


Figure 4.8: Hume Highway-Muir Road AM Queue Lengths (Future 2032)

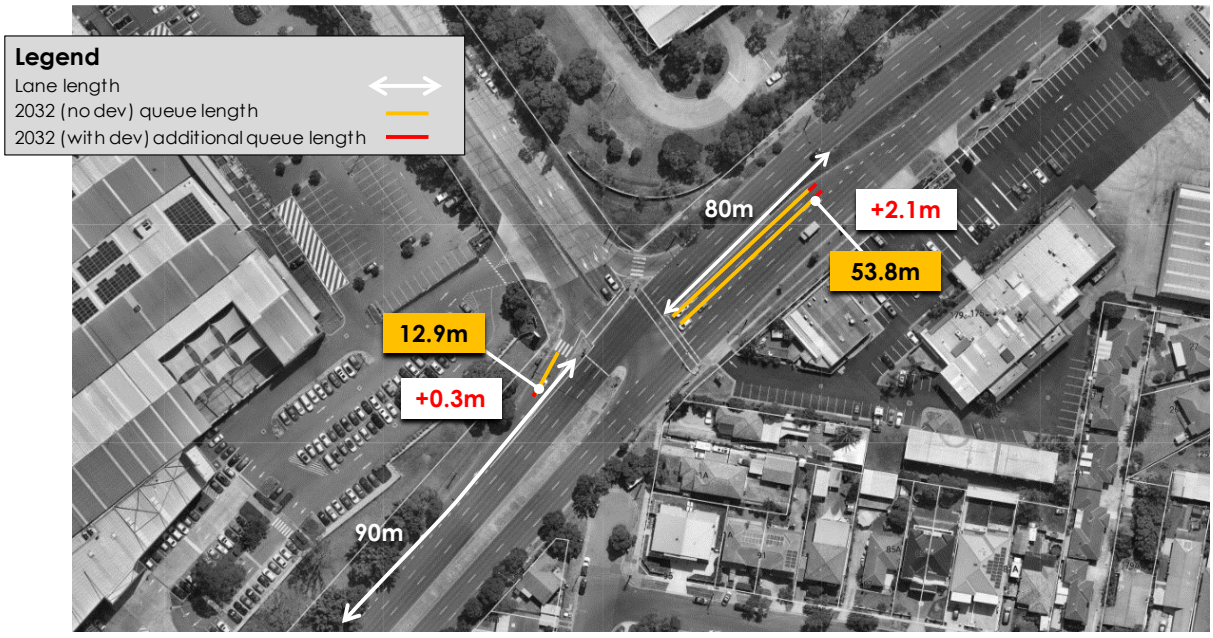


Figure 4.9: Hume Highway-Muir Road PM Queue Lengths (Existing & Future 2022)

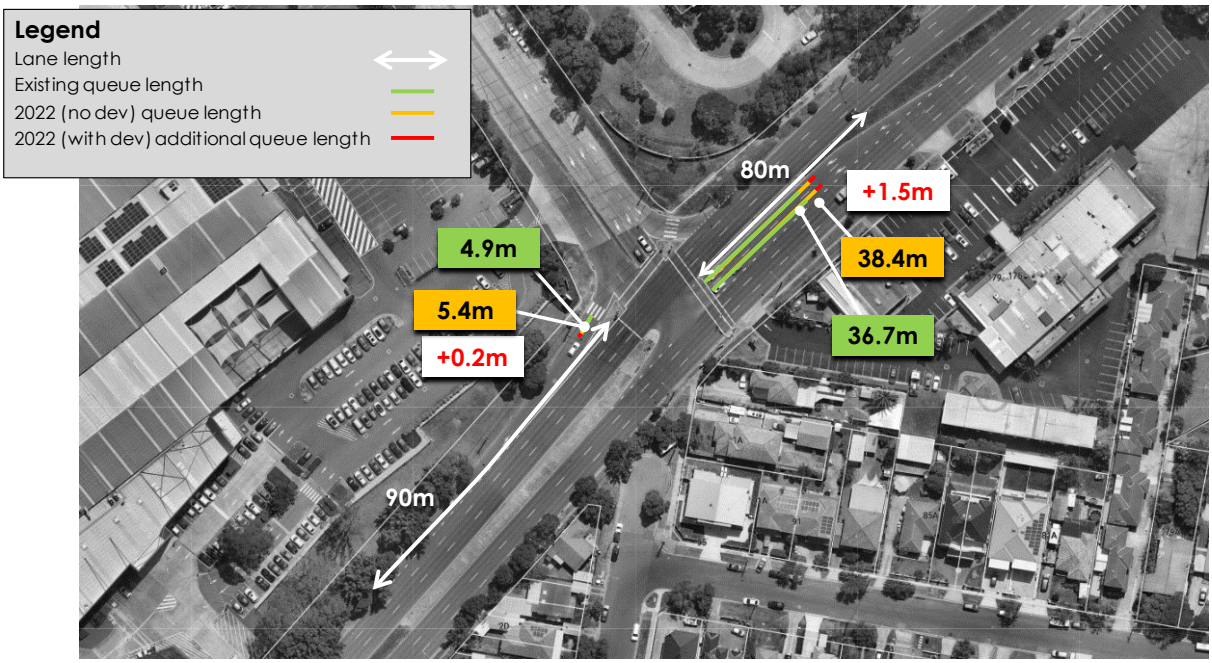
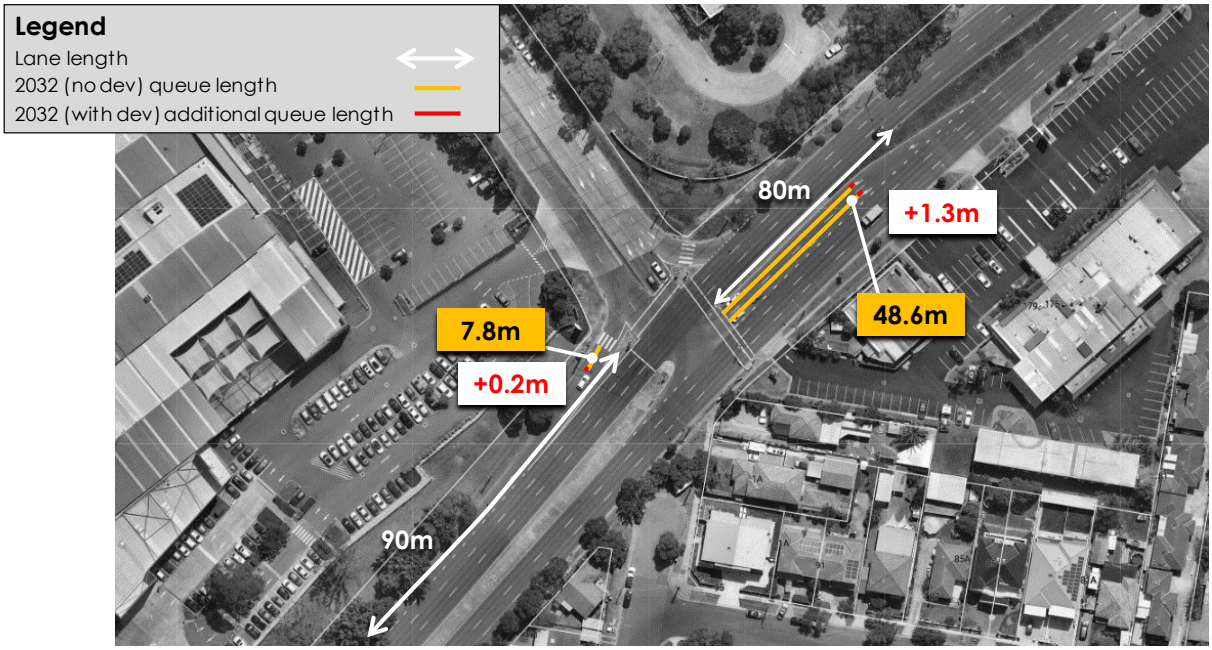


Figure 4.10: Hume Highway-Muir Road PM Queue Lengths (Future 2032)



In the modelled future scenarios, the Proposal is expected to result in minimal additional queue length to left-turn and right-turn movements on nearby major roads. In almost all future scenarios site-generated traffic would contribute between 0.2 m – 2.2 m additional queuing distance to each turn movement which is less than one car length.

The exception to this is in Scenario 4 (2032 Conditions With Proposal) for the left-turn movement from Rookwood Road to Muir Road in the AM peak period. In this scenario, there would be an additional queue length of 11.1 m (between 1 – 2 car lengths) as shown in Figure 4.4. Notwithstanding this, an additional 1-2 car lengths to the queue is minor and would not result in an adverse impact to the intersection operation.

It is noted that for the left-turn movement from Rookwood Road to Muir Road in the AM peak period the queue length overflows from the short lane of 70 m. Under existing conditions, the queue length is 79.5 m. For future background traffic growth scenarios in 2022 and 2032 (Scenario 1 and Scenario 3, respectively), the queue length can be up to 192 m as shown in Figure 4.3 and Figure 4.4. However, in all future scenarios the site-generated traffic would contribute less than two car lengths to the left-turn queue distance.

In comparison to the impact generated by background traffic growth, the Proposal would have a minor contribution to queue distances at surrounding intersections.

4.7 Site Access Queuing

Traffic movements into and out of the site access driveway on Muir Road are currently nil. Table 4.7 indicates the number of additional peak hourly vehicle movements (trucks) the Proposal would generate at the site access.

Table 4.7: Site Access Vehicle Movements

Truck Movement	AM Peak Hour	PM Peak Hour
Muir Road, left-in	6	4
Muir Road, left-out	4	2
Muir Road, right-in	6	4
Total Movements	**16**	**10**

SIDRA traffic modelling analysis of the site access indicates that the addition of the abovementioned vehicles would have a minor impact on queues into and out of the site. The Proposal is expected to generate queue lengths of less than one vehicle at the site access for all turning movements.

4.8 Roadway Capacity and Safety

As mentioned in Section 3.3, both the Hume Highway and Muir Road carry traffic flows less than the threshold limit as specified in Figure 3.3. The Proposal is estimated to generate less than an additional 20 pcu. In the future cases, Hume Highway would continue to operate with an acceptable roadway capacity that is less than the typical capacity.

Traffic flows on Rookwood Road and Muir Road currently operate close to the typical capacity. Notwithstanding this, the Proposal would generate less than an additional 20 pcu. Given that there is variability in traffic flows across weekdays, it is expected that such a marginal increase would not create any noticeable impacts on the capacity of the roadway.

Given that there would be no discernible effect to the operational capacity, safety would not be expected to reduce across the surrounding road network in the future.

As identified throughout this Chapter, traffic impacts due to the Proposal site operation are assessed to be minor. Also, the existing road infrastructure has capacity to absorb such minor impacts to the road network. On this basis, road upgrades, infrastructure works or new roads would not be required for the development.

5 Operational Parking Assessment

5.1 Car Parking Provision

The *State Environmental Planning Policy (State and Regional Development) 2011*, Part 2, Clause 11 stipulates that Council's development control plans do not apply to state significant developments. However, having due regard to the objectives and guidelines as set by Council for industrial developments, the provision for car parking of the proposed development has been assessed in accordance with the *Bankstown Development Control Plan 2015 (Bankstown DCP)*.

The Bankstown DCP does not stipulate parking rates for material recycling facilities exclusively but does specify rates for industries/ light industries. As such, parking provisions have been assessed in-line with these rates.

- ***Industries and light industries*** *including vehicle body repair workshops and vehicle repair stations:* ***1 car space per 100 m² of gross floor area.***
  - *Note 1: Where a retailing component is involved, provided this does not exceed 15% of the gross floor area (covering the retail component only) 1 car space per 100 m² of gross floor area is to be provided.*
  - *Note 2: Where an office component is involved, provided this does not exceed 20% of the total gross floor area, 1 car space per 100 m² of gross floor area is to be provided. Any additional office space will be assessed at a rate of 1 car space per 40 m² of gross floor area.*
  - *Note 3: When calculating the parking requirements for factories and factory units, Council may exclude a mezzanine level used solely for storage purposes provided:*
    - *The floor of the mezzanine level is a light–weight floor;*
    - *The mezzanine level is enclosed on one or more sides with a handrail as opposed to walls; and*
    - *The floor-to-ceiling height of the mezzanine level does not exceed 3 m.*

To estimate parking provision according to an industrial development as per the Bankstown DCP, floor area at the Proposal site which would be used for material receival, processing and product storage has been categorised as an "industrial" space while office and amenities are categorised as "office" space.

Based on the above mentioned rates, the Proposal site would generate a parking requirement as summarised in Table 5.1.

Table 5.1: Car Parking Requirement

Development Type	Use	GFA (m²)	Parking Provision	Parking Provision
Industries	Industrial	9,687.2	1 car space per 100 m² of GFA.	97
	Office	199.0	Note 2: 1 car space per 100 m² of GFA is to be provided. Any additional office space will be assessed at a rate of 1 car space per 40 m² of GFA.	2.5 (rounded to 3)
	Total			**100**

By applying the parking rate for industrial developments to the Proposal site generates a need for 100 car parking spaces. In comparison to the number of staff to be employed at the MRF (45 employees), and the continued use of the existing site office (20 employees), provision of 100 car parking spaces would be excessive.

A more appropriate method of estimating parking demand likely to be generated by the Proposal would be by using a 'first principles' approach. First principles uses a parking rate based on the number of employees at the facility rather than floor area.

Based on 45 employees at the MRF (20-25 staff per shift) and 20 employees as part of the continued use of the existing site office, the maximum number of staff on-site at any one time would not exceed 65 persons. The parking demand generated by 65 persons would not exceed the 70 car parking spaces currently provided on-site.

The maximum number of employees on-site under typical daily operation would be in the order of 45 staff which would generate a parking demand of no more than 45 car parking spaces. The likelihood of all 65 staff members attending the Proposal site at one time would be on the rare occasion, such as an all-staff meeting or workshop, in which case all employee parking would be adequately accommodated on-site by the 70 existing parking spaces.

Employees would be engaged across two shift periods (5:00am – 1:00pm and 1:30pm - 8:30pm) which would be separated by a half hour break in the middle of the day. This break would ensure that the overlap between staff ending the morning shift and those commencing the afternoon shift would be avoided. However, as a worst-case contingency, if the 20 afternoon shift-workers were to overlap with 25 morning shift-workers there would be ample on-site parking spaces to accommodate the parking demand.

It is noted that skeleton staff would be on-site between 9pm-5am, which would not overlap with the two main employee shifts as mentioned above. The 30-minute break with employee shifts on either side would ensure there is minimal overlap between staff

ending their shift with those beginning their shift. Nonetheless, any potential overlap would be accommodated on-site.

There would be five visitor car parking spaces remaining on-site which would satisfactorily support the MRF which is a development type with a low rate of visitation.

5.2 Parking Layout

The Australian Standard for off-street car parking (AS2890.1:2004) requires car parking spaces for employee parking to be provided as Class 1A parking spaces for employee parking. Class 1A car parking spaces are to have the following minimum dimensions:

- Parking aisle width of 5.8 m
- Bay width of 2.4 m; and
- Bay length of 5.4m, or 4.8m where parking is to a low kerb which allows 600 mm overhang (the area behind the parking space must be unobstructed, cannot be another parking space and must not be a footway).

Off-street car parking at the Proposal site is provided as 90-degree angle parking with a minimum aisle width of 5.8 m, and parking space dimensions of 2.5 m wide and 5.6 m long. Some spaces are provided as having a length of 4.8m, however, the minimum requirements for vehicle overhang have been satisfied.

Therefore, the on-site car park for the Proposal is designed in accordance with AS2890.1:2004.

5.3 Bicycle Parking

The DCP states that bicycle parking should be provided either on-site or close to the development as identified in Australian Standard 2890.3 – Bicycle Parking Facilities. For bicycle parking provision rates, reference is made to the Austroads Guide to Traffic Management Part 11 Table 2C 6: Bicycle Parking Provisions.

For light industrial land uses, the recommended staff bicycle parking provision is 1 space per 1,000m^2 GFA. Applying this rate to a GFA of 9,886m^2, the allocation of bicycle parking would be approximately ten staff spaces of Class 1 or 2.

According to AS2890.3:2015, workplace bicycle parking is to be provided in-line with Class B requirements; namely, a secure room or structure protected from the weather where the bicycle frame and wheels can be locked.

Bicycle racks accommodating 10 bicycles would be provided undercover and close to the site office access.

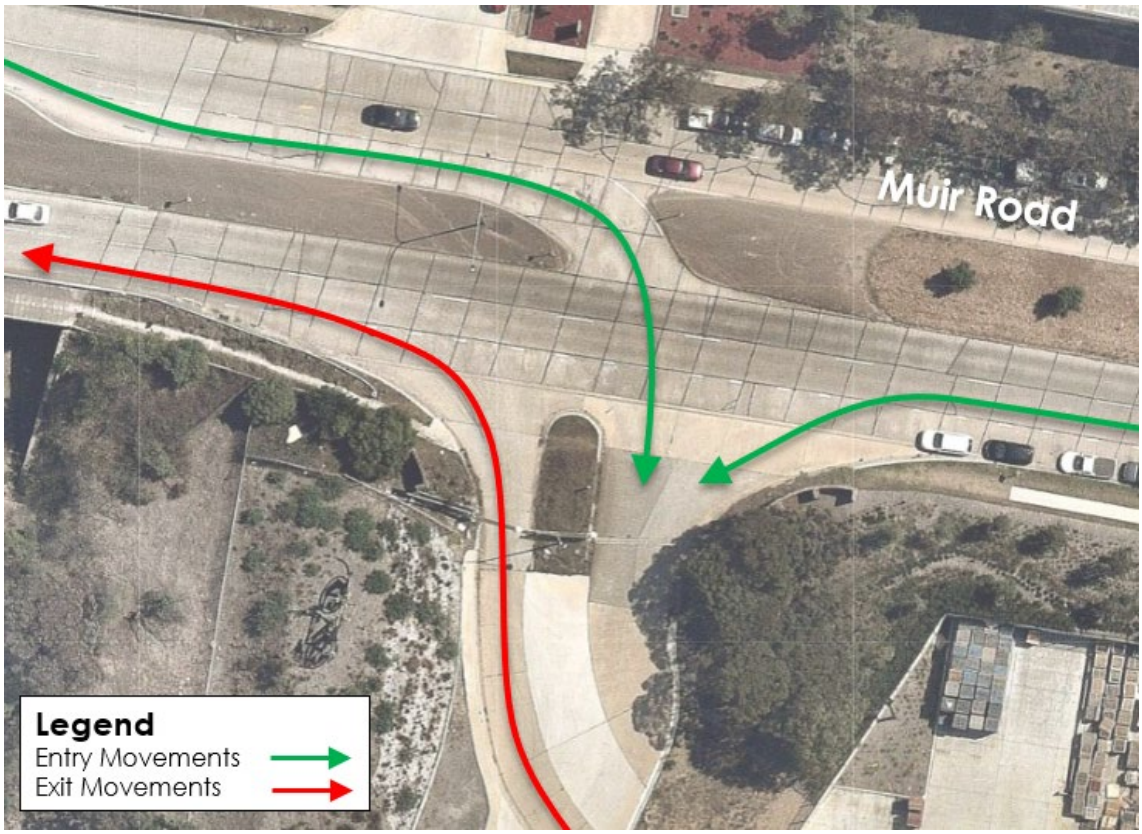
6 Operational Access and Circulation

6.1 Heavy Vehicle Access and Circulation

Access to the Proposal site for heavy vehicles would be via Muir Road. A separated two-way driveway is located off Muir Road which measures approximate 50 m in width. Light vehicles would access the Proposal site through the on-site car park. The car park is located at the south-eastern corner of the site and is accessed via Anzac Street.

Heavy vehicles would access the Proposal site by turning left or right into the site. A dedicated short lane with a length of 50 m is located opposite the ingress driveway to accommodate the right-turn for vehicles. The egress movement from the Proposal site is restricted to a left-turn only due to the raised central median along Muir Road as shown in Figure 6.1.

Figure 6.1: Heavy Vehicle Turning Movements at Proposal Site Access



Base Map Source: Nearmap, photograph dated 22/01/20

Vehicles leaving site would be able to travel in the westbound direction by undertaking a U-turn at the roundabout intersection of Muir Road-Dasea Street. The roundabouts on Muir Road are designed as a pair such that sites fronting Muir Road can be restricted to left-in left-out movements yet have the ability to travel both east and west using one of the roundabouts to perform a U-turn. Therefore, site-generate vehicle U-turn movements would be in-line the function of the roundabout. A swept path analysis shown that a 25m B-double truck is able to perform a U-turn movement at this roundabout is contained in Appendix B.

All movements in/out of the Proposal site would occur in a forward direction only. Reversing into and out of the Proposal site would not be permitted under any circumstance, nor would it be required by heavy vehicles. The width of the internal circulation road would be 11 m and can accommodate one-way circulation through the site. The general traffic circulation flow through the site will be in a clockwise direction.

Heavy vehicles would carry-out the following key steps when circulating through the Proposal site:

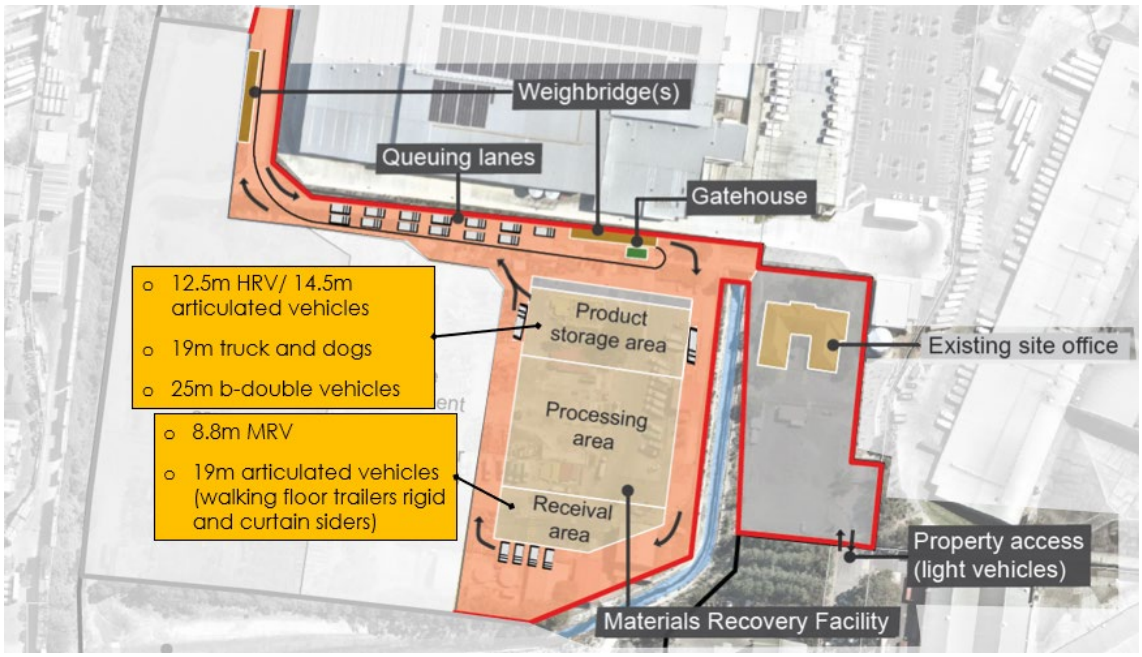
- Material delivery vehicles:
    - Weigh-in via the weighbridge;
    - Travel to the product receival area, reverse and tip waste within the receival hall, and;
    - Exit the site via the outbound weighbridge.
- Product collection vehicles
    - Weigh-in via the weighbridge;
    - Park-up alongside the product storage area to be side-loaded, or enter the product storage area to be loaded
    - Exit the site via the outbound weighbridge.

The types of vehicles accessing the Proposal site will include:

- Material delivery vehicles to visit receival area:
    - 8.8m medium rigid vehicles
    - 19m articulated semi-trailer (walking floor trailers and curtain siders)
- Product collection vehicles to visit product storage area:
    - 12.5m heavy rigid vehicles / 14.5m articulated semi-trailer
    - 19m truck and dogs
    - 25m b-double vehicles.

An indicative site layout and vehicle circulation plan is shown in Figure 6.2.

Figure 6.2: Site Layout and Circulation



Source: Chullora Materials Recovery Facility Scoping Report, prepared by Arcadis, dated 21 November 2019

Vehicle circulation routes within the site would occur in a forward direction. Trucks would be required to reverse a short distance of around 20 m into the receival area in order to tip waste.

Heavy vehicle routes throughout the Proposal site would be separated from light vehicles and pedestrian movements.

Driver sight distances on all approaches at the intersection of Muir Road and Anzac Street are adequate. SUEZ intends to formalise the car park access via ANZAC Street as part of the Proposal (including installation of fencing and signage).

A swept path analysis of heavy vehicle turning on-site indicates that trucks can sufficiently undertake the required movements to access the respective areas. The swept path plans are provided in Appendix B.

6.2 On-site Vehicle Stacking

A stacking capacity analysis has been undertaken to determine whether all heavy vehicles accessing the site during peak operation can be fully accommodated on-site at the same time. The stacking capacity analysis is a factor of the number of stacking spaces available on-site and the turnaround time on-site per vehicle. The stacking capacity analysis is detailed herein.

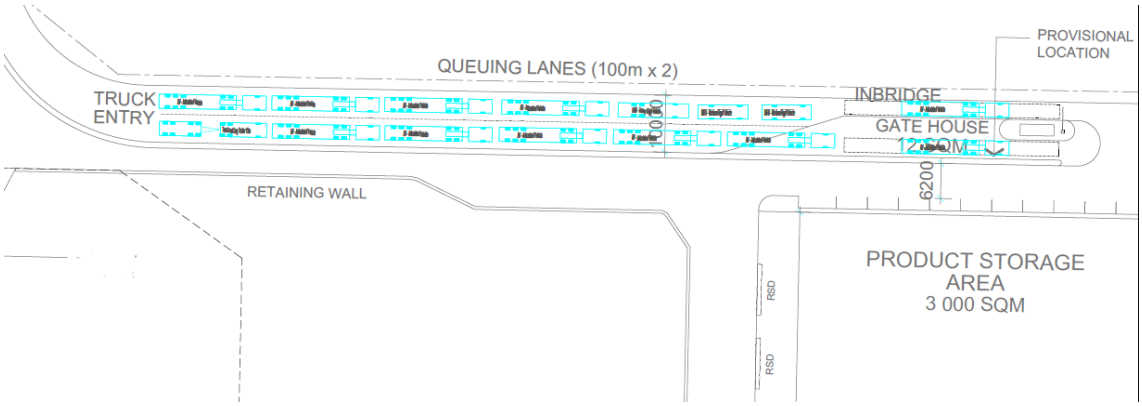
Available Stacking Space

The length of the internal roadway measured between Muir Road and the inbound weighbridges is approximately 300 m. Immediately west of the inbound weighbridges are two queuing lanes measuring 100 m in distance which can stack two heavy vehicles side-by-side.

As shown in Figure 6.3, up to 15 heavy vehicles can stack across both lanes including the weighbridges. The 15 stacking spaces provide for a vehicle mix of rigid vehicles and articulated vehicles, and is based on the split of vehicle types which will access the site during the Proposal site's operational peak period. The approximate split of vehicles and stacking spaces will be as follows:

- 18% Medium Rigid Vehicles (MRV) = 2 stacking spaces
- 9% Heavy Rigid Vehicles (HRV) = 1 stacking space
- 64% 19m semi-trailer = 11 stacking spaces
- 9% 19m truck and dog = 1 stacking space.

Figure 6.3: On-Site Stacking Provision



Vehicle Turnaround Time

The turnaround time is the duration one vehicle requires to complete all on-site activities. A breakdown of the time spent per activity whilst on-site has been summarised in Table 6.1 and Table 6.2 for delivery and collection vehicles respectively.

Table 6.1: Waste Delivery Times

Activity	MRV	Semi-Trailer
Truck weigh-in	1 min	1 min
Travel to receival area	1-3 min	1-3 min
Vehicle unloading	20 min	20 min
Travel to outbound weighbridge, truck weigh-out and site exit	4 min	4 min
Total Time	**18 min**	**28 min**

Table 6.2: Product Collection Times

Activity	HRV	Truck and Dog	B-double
Truck weigh-in	1 min	1 min	1 min
Travel to product storage area	1-3 min	1-3 min	1-3 min
Vehicle loading	20 min	20 min	30 min
Travel to outbound weighbridge, truck weigh-out and site exit	4 min	4 min	4 min
Total Time	**28 min**	**28 min**	**38 min**

Based on the above, a truck would spend an average of 25 minutes on-site between entry and exit. This estimate excludes B-double vehicles as these trucks will access the site outside the Proposal site operational peak period (i.e. at night time). At such times, B-double vehicles would not be required to queue to enter the Proposal site.

Applying a rate of 25 minutes, each stacking space could accommodate 2.4 vehicles in one hour (60 minutes / 25 minutes). Therefore, in one hour, there would be a turnover of 36 vehicles (2.4 vehicles x 15 spaces).

As discussed in Section 4.2, the MRF operation would generate 22 two-way truck movements during the site's peak activity. This considers delivery vehicles as well as

collection vehicles. Since a single truck generates one inbound movement and one outbound movement, the 22 two-way vehicle movements equate to 11 trucks.

The availability of stacking space on approach to the inbound weighbridges within the Proposal site would be able to sufficiently store the 11 trucks expected to arrive during the site's peak hour. Hence, queuing of heavy vehicles would be entirely accommodated and managed on-site.

6.3 Pedestrian Access

All vehicle and pedestrian routes within the site would be separated, and signposted and/or delineated as such. Pedestrian access to the receival area and product storage area would be restricted to site personnel in charge of supervising the operation.

As a rule-of-thumb, Personal Protective Equipment (PPE) must be worn by all persons when onsite. All persons on site are required to wear high visibility clothing to enhance discernibility of pedestrians during day and night conditions.

The number of pedestrian movements throughout the site would be low and generally limited to the start/end of work shifts and during lunch hours. Therefore, interaction between vehicles and pedestrians across the site would be infrequent.

At the site access off Muir Road, it is proposed to provide a pedestrian refuge area between the ingress and egress driveway. This would facilitate pedestrians walking across the wide access driveway. The pedestrian refuge would be provided within the existing grass refuge area.

To the west of the site access driveway on Muir Road is a bus stop where there is a discontinued footpath. The Proponent would negotiate with Council regarding provision of the footpath extension to the bus stop.

6.4 On-street Parking Near Site Access

Near the site access driveway off Muir Road, on-street parking is permitted towards the east. To the west of the access driveway is signposted as No Stopping. As shown in recent aerial photography, sometimes vehicles parked on-street can be located close to and within the access driveway. As raised by Bankstown-Canterbury Council during early project consultation, this may present an issue for site accessibility in the future. Therefore, it is proposed to install signage at this location, subject to Traffic Committee endorsement, to restrict parking a suitable distance away from the access driveway.

7 Construction Phase

7.1 Construction Activities

Construction of the Proposal would include the following activities:

- Stage 1a: Construction of MRF and installation of fixed plant and equipment
- Stage 1b: Installation of ancillary facilities
- Stage 1c: Commissioning and demobilisation.

7.2 Staging and Duration

The staging and duration of construction phases would be as per Table 7.1.

Table 7.1: Construction Staging and Traffic Generation

Staging	Month	Daily Heavy Vehicles	Daily Heavy Vehicle Movements
Stage 1a	Jun – Nov	8	16
Stage 1b	Oct – Nov	5	10
Stage 1c	Nov - Dec	3	6

As can be seen from Table 7.1, Stage 1a would generate the greatest number of vehicles per day. It is anticipated that there would be 8 heavy vehicles per day required for construction of the MRF which equates to 16 vehicle movements (two-way).

Based on an 11-hour work day, there would be an average of 1-2 vehicle movements per hour during the peak phase of construction.

7.3 Work Hours

Construction activities are proposed to be undertaken as follows:

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 1pm
- Sunday and public holiday: No construction works.

7.4 Construction Staff Parking

The construction phase is estimated to require approximately 30 personnel on-site at any one time. Operation of the site office would be in effect; therefore, construction personnel would be able to use the existing off-street car park at the Proposal site. For any number of construction personnel required above this, off-street parking will be provided on-site in the form of hardstand area.

Commuting by public transport, and active transport for those residing nearby, would be encouraged amongst construction workers. Existing bus routes close by to the Proposal site provide services to key transport interchanges including Parramatta, Lidcombe, Bankstown and Sutherland which cover a wide area of residential suburbs in Western and South Sydney.

Site sheds and amenities will be provided within the work site. This would allow construction workers to drop off and store their tools, allowing them to use public transport and active transport to travel to and from the site.

7.5 Construction Vehicles and Equipment

Heavy vehicles likely to be required during the construction phase include:

- 8.8m medium rigid vehicles (MRV)
- 12.5m heavy rigid vehicles (HRV).

Construction equipment is anticipated to include:

- Forklifts
- Cherry pickers and mobile cranes
- Hand held tools.

All construction vehicle turning movements would be accommodated within the work site. Also, storage of construction equipment would be fully contained within the work site.

7.6 Construction Vehicle Routes

Construction vehicles generally have origins and destinations throughout Sydney, with an extensive network of roads made available for such trips.

All heavy vehicles would enter and exit the site via the existing access on Muir Road. Construction vehicles travelling from the Hume Highway would turn left into the Proposal site from Muir Road. Vehicles travelling from Rookwood Road would turn right into the site using the dedicated right-turn lane at the access driveway.

Vehicles would leave the site via a left-turn onto Muir Road and either proceed westbound to Rookwood Road or complete a u-turn at the existing roundabout just west of the site access before travelling eastbound towards the Hume Highway.

7.7 Construction Traffic Impact

The traffic generation during construction phase would be less than that during the peak operation. As assessed in Section 4.4, site-generated traffic during peak operation would be expected to have minimal impact on the surrounding road network.

Therefore, any impact due to construction vehicles during the road network peak periods is also expected to be minimal and would have no noticeable impact on the local road network.

7.8 Pedestrian and Cyclist Access

Pedestrian and cyclist access along Muir Road frontage of the site will be maintained at all times during construction of the proposed development.

7.9 Public Transport

The proposed construction activities would not adversely impact existing public transport services.

7.10 Emergency Vehicles

No special provisions for emergency service vehicles are required as part of the proposed construction works. Emergency vehicle access shall be maintained at all times.

8 Mitigation Measures

As assessed within this report, traffic generated by the Proposal is not expected to compromise the safety or function of the surrounding road network. Rookwood Road, Muir Road and the Hume Highway are well equipped to withstand the traffic demand of the Proposal site. Notwithstanding this, the following measures are proposed to mitigate any traffic impact.

8.1 Operational Mitigation Measures

An Operational Traffic Management Plan (OTMP) will be prepared to mitigate potential operational traffic impacts. The OTMP will address the specific traffic control requirements during the operational phase of the Proposal. The Plan will assess the provision of traffic control measures, including:

- Site signage
- Enforcement of speed limits
- Site-internal pedestrian routes
- Site induction for staff and visitors
- Contracts outlining site traffic rules and traffic management requirements.

The OTMP will contain an **Employee Transport Plan** which will encapsulate a strategy for managing travel demand while embracing sustainable transport principles. In its simplest form, the Employee Transport Plan will encourage use of transport modes with a low environmental impact such as public transport, carpooling, walking and cycling.

The Plan will detail measures of encouraging modal shift away from single-occupant car use to more sustainable travel to work. Such measures may include:

- Providing service timetables and route maps for nearby bus services on noticeboards in the workplace where they will be visible to all employees (e.g. staff lunch room).
- Consideration of pre-loaded Opal cards or partially subsidised public transport travel for employees to influence travel patterns.
- Senior Management can help match employees living in the same area to travel together to/from work by carpooling.
- Implement a '10,000 steps per day initiative'. Employees who have achieved the 10,000 step goal over a set period could be rewarded.
- Provision of secure bike storage facilities and end-of-trip facilities for staff use.

8.2 Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) will be prepared to mitigate potential construction traffic impact. The CTMP will address the specific traffic control requirements during the construction phase of the Proposal. The plan will assess the provision of traffic control measures, including:

- Site signage and road signage
- Enforcement of speed limits for construction traffic
- Site-internal pedestrian routes
- Site induction for construction staff and visitors
- Contracts outlining site traffic rules and traffic management requirements
- Any road closures and associated traffic detour routes.

Site-specific traffic control plans (TCPs) will be prepared as part of the CTMP to outline how construction vehicle manoeuvres could be accommodated in and out of the work site.

Temporary traffic controls will be regularly inspected by the contractor to identify potential safety hazards to enable implementation of corrective solutions.

Daily inspections and maintenance of controls will be undertaken by the contractor and maintenance will be recorded.

The site supervisor will check all relevant traffic control management measures on-site prior to commencement of works each day.

The CTMP will detail how all workers and subcontractors engaged on-site will be required to undergo a site induction. The induction will include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, OH&S, driver protocols and emergency procedure.

Any workers required to undertake works or traffic control within the public domain shall be suitably trained and will be covered by adequate and appropriate insurances. All traffic control personnel will be required to hold RMS accreditation.

The CTMP will outline how construction vehicles will enter and exit the site via Muir Road in a forward direction, drivers of construction vehicles shall radio/call the site office on approach to the site to ensure access to the work site is available, and that all loading and unloading shall be undertaken within the work site during the approved work hours.

9 Summary and Conclusion

Based on the analysis and discussions presented within this report, the following summary and conclusions are made:

- SUEZ is seeking to establish a Resource Recovery Park in Chullora, and is proposing to develop and operate the first phase of the Chullora RRP as a MRF (the Proposal). The Proposal would comprise include construction and operation of a MRF with a material handling capacity of up to 172,000 tonnes per annum.
- Having regard to Council's DCP the proposed development generates a parking requirement of 100 car parking spaces. However, based on first principles, the proposed supply of 70 parking spaces would adequately accommodate the proposed 45 FTE employees at the MRF and 20 FTE as part of the continued use of the site office and the visitation.
- The proposed parking layout is consistent with the dimensional requirements as set out in the Australian Standard for off street car parking (AS2890.1:2004).
- On the peak day of operation, the Proposal site is expected to generate 264 two-way vehicles in a 24-hour period. During the site's busiest hour of operation, 22 two-way vehicle movements are estimated to be generated which is equivalent to 11 vehicles across 60 minutes.
- A comparison of the future peak road network performance in the opening year (2022) and opening year plus 10 years shows that the impact of site-generated traffic would be negligible.
- In comparison to the impact generated by background traffic growth, the Proposal would have a minor contribution to queue distances and average delay at surrounding intersections.
- Peak construction works are expected to generate 16 vehicle trips which is equivalent to 1-2 vehicle movements per hour based on an 11-hour work day. This is considered to be minimal and will have a negligible impact on the surrounding road network.
- Traffic impacts due to the Proposal site operation and construction phases have been assessed to be minor. Also, the existing road infrastructure has capacity to absorb such minor impacts to the road network. On this basis, road upgrades, infrastructure works or new roads would not be required for the development.

Appendix A

Traffic Survey Data

Time		Hume Highway N															Rawson Road															Hume Highway S															Brunker Road														
15 min		Left					Through					Right							Left					Through					Right							Left					Through					Right							Left					Through					Right						
Start	End	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Peds	TOT	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	U-turns Total	Peds	TOT	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Peds	TOT	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Peds	TOT
07:00	7:15	10	0	0	0	**10**	263	21	0	0	**284**	30	5	0	0	**35**	**0**	**329**	5	0	0	0	**5**	77	1	0	0	**78**	11	0	0	0	**11**	**0**	**1**	**94**	1	0	0	0	**1**	469	40	3	0	**512**	0	0	0	0	**0**	**0**	**513**	65	7	0	0	**72**	57	3	0	0	**60**	3	3	0	0	**6**	**0**	**138**
07:15	7:30	11	1	0	0	**12**	291	27	1	0	**319**	48	5	0	0	**53**	**0**	**384**	6	0	0	0	**6**	85	1	0	0	**86**	12	0	0	0	**12**	**0**	**2**	**104**	2	1	0	0	**3**	412	35	1	0	**448**	0	0	0	0	**0**	**0**	**451**	51	7	0	0	**58**	49	2	0	0	**51**	5	1	0	0	**6**	**1**	**115**
07:30	7:45	6	1	0	0	**7**	299	21	0	0	**320**	50	6	1	0	**57**	**0**	**384**	3	0	0	0	**3**	94	1	0	0	**95**	10	0	0	0	**10**	**0**	**1**	**108**	4	2	0	0	**6**	492	29	2	0	**523**	0	0	0	0	**0**	**1**	**529**	49	5	0	0	**54**	78	5	0	0	**83**	7	1	0	0	**8**	**0**	**145**
07:45	8:00	10	0	0	0	**10**	320	31	2	0	**353**	47	3	0	0	**50**	**0**	**413**	2	0	0	0	**2**	76	1	0	0	**77**	12	0	0	0	**12**	**0**	**0**	**91**	2	3	0	0	**5**	435	28	1	0	**464**	0	0	0	0	**0**	**0**	**469**	63	5	0	0	**68**	105	5	1	0	**111**	6	5	0	0	**11**	**0**	**190**
08:00	8:15	6	0	0	0	**6**	307	18	1	0	**326**	43	8	1	0	**52**	**0**	**384**	5	0	0	0	**5**	83	1	0	0	**84**	16	0	0	0	**16**	**0**	**0**	**105**	6	1	0	0	**7**	312	22	1	0	**335**	0	0	0	0	**0**	**0**	**342**	57	6	0	0	**63**	122	0	0	0	**122**	4	6	0	0	**10**	**0**	**195**
08:15	8:30	11	0	0	0	**11**	290	33	4	0	**327**	41	8	0	0	**49**	**0**	**387**	12	0	0	0	**12**	82	1	0	0	**83**	18	0	0	0	**18**	**0**	**0**	**113**	4	1	0	0	**5**	429	35	0	0	**464**	0	0	0	0	**0**	**0**	**469**	68	8	0	0	**76**	99	2	0	0	**101**	4	3	0	0	**7**	**0**	**184**
08:30	8:45	7	0	0	0	**7**	301	32	0	0	**333**	42	5	0	0	**47**	**0**	**387**	10	0	0	0	**10**	83	2	0	0	**85**	11	1	0	0	**12**	**0**	**1**	**107**	6	0	0	0	**6**	316	36	1	0	**353**	0	0	0	0	**0**	**0**	**359**	71	4	0	0	**75**	98	1	0	0	**99**	10	1	0	0	**11**	**0**	**185**
08:45	9:00	7	0	0	0	**7**	277	37	5	0	**319**	74	7	0	0	**81**	**0**	**407**	5	0	0	0	**5**	82	6	0	0	**88**	19	0	1	0	**20**	**0**	**0**	**113**	2	1	0	0	**3**	335	38	2	0	**375**	0	0	0	0	**0**	**0**	**378**	73	5	0	0	**78**	78	3	0	0	**81**	6	5	0	0	**11**	**0**	**170**
16:00	16:15	22	0	0	0	**22**	383	31	0	0	**414**	62	3	0	0	**65**	**0**	**501**	8	0	0	0	**8**	64	2	0	0	**66**	18	0	0	0	**18**	**0**	**1**	**92**	4	1	0	0	**5**	237	19	1	0	**257**	0	0	0	0	**0**	**0**	**262**	75	6	0	0	**81**	117	4	0	0	**121**	5	3	0	0	**8**	**0**	**210**
16:15	16:30	34	0	0	0	**34**	338	28	1	0	**367**	77	6	0	0	**83**	**0**	**484**	11	0	0	0	**11**	63	3	0	0	**66**	8	0	0	0	**8**	**0**	**0**	**85**	5	0	0	0	**5**	323	13	0	0	**336**	0	0	0	0	**0**	**0**	**341**	87	4	0	0	**91**	115	1	0	0	**116**	8	1	0	0	**9**	**0**	**216**
16:30	16:45	22	1	0	0	**23**	323	28	0	0	**351**	98	5	0	0	**103**	**0**	**477**	7	0	0	0	**7**	60	0	0	0	**60**	9	0	1	0	**10**	**0**	**1**	**77**	3	0	0	0	**3**	335	12	5	0	**352**	0	0	0	0	**0**	**0**	**355**	99	3	0	0	**102**	125	1	0	0	**126**	7	1	0	0	**8**	**0**	**236**
16:45	17:00	8	3	0	0	**11**	323	20	1	0	**344**	63	1	0	0	**64**	**0**	**419**	10	0	0	0	**10**	62	1	0	0	**63**	6	0	0	0	**6**	**0**	**1**	**79**	5	0	0	0	**5**	352	19	1	0	**372**	1	0	0	0	**1**	**1**	**378**	61	4	0	0	**65**	119	3	0	0	**122**	7	1	0	0	**8**	**0**	**195**
17:00	17:15	13	0	0	0	**13**	372	17	0	0	**389**	66	3	0	0	**69**	**0**	**471**	6	0	0	0	**6**	64	1	0	0	**65**	7	0	0	0	**7**	**0**	**0**	**78**	6	0	0	0	**6**	335	10	1	0	**346**	0	0	0	0	**0**	**0**	**352**	85	0	0	0	**85**	120	0	0	0	**120**	10	0	0	0	**10**	**1**	**215**
17:15	17:30	26	1	0	0	**27**	364	19	1	0	**384**	63	2	0	0	**65**	**0**	**476**	10	0	0	0	**10**	66	2	0	0	**68**	9	0	0	0	**9**	**0**	**0**	**87**	3	0	0	0	**3**	313	11	0	0	**324**	0	0	0	0	**0**	**1**	**327**	68	3	0	0	**71**	125	0	0	0	**125**	8	0	0	0	**8**	**0**	**204**
17:30	17:45	23	0	0	0	**23**	320	15	2	0	**337**	74	2	0	0	**76**	**0**	**436**	12	0	0	0	**12**	70	1	0	0	**71**	12	0	0	0	**12**	**0**	**1**	**95**	4	1	0	0	**5**	336	24	1	0	**361**	0	0	0	0	**0**	**2**	**366**	73	4	0	0	**77**	146	1	0	0	**147**	11	0	0	0	**11**	**2**	**235**
17:45	18:00	17	0	0	0	**17**	389	18	1	0	**408**	61	1	0	0	**62**	**0**	**487**	9	0	0	0	**9**	56	2	0	0	**58**	10	0	0	0	**10**	**0**	**0**	**77**	5	0	0	0	**5**	312	12	1	0	**325**	0	0	0	0	**0**	**0**	**330**	78	1	0	1	**79**	129	1	0	0	**130**	9	2	0	0	**11**	**0**	**220**
AM TOT		**68**	**2**	**0**	**0**	**70**	**2348**	**220**	**13**	**0**	**2581**	**375**	**47**	**2**	**0**	**424**	**0**	**3075**	**48**	**0**	**0**	**0**	**48**	**662**	**14**	**0**	**0**	**676**	**109**	**1**	**1**	**0**	**111**	**0**	**5**	**835**	**27**	**9**	**0**	**0**	**36**	**3200**	**263**	**11**	**0**	**3474**	**0**	**0**	**0**	**0**	**0**	**1**	**3510**	**497**	**47**	**0**	**0**	**544**	**686**	**21**	**1**	**0**	**708**	**45**	**25**	**0**	**0**	**70**	**1**	**1322**
PM TOT		**165**	**5**	**0**	**0**	**170**	**2812**	**176**	**6**	**0**	**2994**	**564**	**23**	**0**	**0**	**587**	**0**	**3751**	**73**	**0**	**0**	**0**	**73**	**505**	**12**	**0**	**0**	**517**	**79**	**0**	**1**	**0**	**80**	**0**	**4**	**670**	**35**	**2**	**0**	**0**	**37**	**2543**	**120**	**10**	**0**	**2673**	**1**	**0**	**0**	**0**	**1**	**4**	**2711**	**626**	**25**	**0**	**1**	**651**	**996**	**11**	**0**	**0**	**1007**	**65**	**8**	**0**	**0**	**73**	**3**	**1731**

0

PEAK HOUR		Hume Highway N															Rawson Road															Hume Highway S															Brunker Road														
		Left					Straight					Right					Peds	TOTAL	Left					Straight					Right					U-turns Total	Peds	TOTAL	Left					Straight					Right					Peds	TOTAL	Left					Straight					Right					Peds	TOTAL
		Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total			Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total				Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total			Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total		
07:30	8:30	33	1	0	0	34	1216	103	7	0	1326	181	25	2	0	208	0	1568	22	0	0	0	22	335	4	0	0	339	56	0	0	0	56	0	1	417	16	7	0	0	23	1668	114	4	0	1786	0	0	0	0	0	1	1809	237	24	0	0	261	404	12	1	0	417	21	15	0	0	36	0	714
16:15	17:15	77	4	0	0	81	1356	93	2	0	1451	304	15	0	0	319	0	1851	34	0	0	0	34	249	5	0	0	254	30	0	1	0	31	0	2	319	19	0	0	0	19	1345	54	7	0	1406	1	0	0	0	1	1	1426	332	11	0	0	343	479	5	0	0	484	32	3	0	0	35	1	862

Time		Hume Highway N															Hume Highway S															Muir Road														
15 min		Left					Through					Right					Left					Through					Right					Peds	TOT	Left					Through					Right					Peds	TOT
Start	End	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total			Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total		
07:00	7:15					0	269	21	0	0	290	69	6	0	0	75	49	9	1	0	59	491	37	1	0	529					0	0	588	42	6	0	0	48					0	43	6	0	1	49	1	97
07:15	7:30					0	343	28	0	0	371	75	8	0	0	83	32	10	0	0	42	439	32	3	0	474					0	0	516	36	5	0	0	41					0	39	1	1	0	41	1	82
07:30	7:45					0	355	26	1	0	382	89	4	0	0	93	30	4	1	0	35	517	29	1	0	547					0	0	582	48	3	0	0	51					0	25	2	0	0	27	0	78
07:45	8:00					0	359	32	1	0	392	92	4	0	0	96	46	7	0	0	53	462	27	1	0	490					0	0	543	48	6	0	0	54					0	45	5	1	0	51	2	105
08:00	8:15					0	351	32	4	0	387	77	1	0	0	78	43	8	1	0	52	397	24	0	0	421					0	0	473	46	3	0	0	49					0	49	2	0	0	51	5	100
08:15	8:30					0	321	31	1	0	353	112	3	1	0	116	55	7	0	0	62	421	35	0	0	456					0	0	518	52	4	0	0	56					0	38	10	1	0	49	2	105
08:30	8:45					0	355	34	1	0	390	83	1	0	0	84	35	6	1	0	42	412	39	0	0	451					0	0	493	32	6	0	0	38					0	35	6	0	0	41	3	80
08:45	9:00					0	312	30	3	0	345	101	5	0	0	106	44	8	0	0	52	372	39	3	0	414					0	0	466	45	4	0	0	49					0	40	10	1	0	51	1	100
16:00	16:15					0	448	29	0	0	477	71	3	0	0	74	32	3	1	0	36	280	20	0	0	300					0	0	336	57	2	0	0	59					0	122	5	0	0	127	4	186
16:15	16:30					0	431	33	0	0	464	61	3	0	0	64	27	7	0	0	34	402	9	0	0	411					0	0	445	53	2	0	0	55					0	90	5	1	0	96	1	151
16:30	16:45					0	434	28	0	0	462	34	3	0	0	37	27	3	2	0	32	390	13	4	0	407					0	0	439	64	1	0	1	65					0	93	3	0	0	96	1	161
16:45	17:00					0	385	22	0	0	407	61	2	0	0	63	16	8	0	0	24	438	15	2	0	455					0	1	479	53	4	0	0	57					0	62	5	1	0	68	2	125
17:00	17:15					0	423	16	0	0	439	48	5	0	0	53	24	4	1	0	29	440	7	0	0	447					0	2	476	68	1	0	0	69					0	98	3	0	0	101	4	170
17:15	17:30					0	424	19	0	0	443	58	2	0	0	60	25	5	0	0	30	373	10	0	0	383					0	0	413	52	1	0	0	53					0	87	5	1	0	93	3	146
17:30	17:45					0	376	16	2	0	394	51	3	0	0	54	13	6	1	0	20	401	20	0	0	421					0	0	441	65	1	0	0	66					0	93	2	0	0	95	0	161
17:45	18:00					0	446	17	0	0	463	49	0	0	0	49	23	6	0	0	29	384	8	1	1	393					0	2	422	45	5	0	0	50					0	72	2	1	0	75	2	125
AM TOT		0	0	0	0	0	2665	234	11	0	2910	698	32	1	0	731	334	59	4	0	397	3511	262	9	0	3782	0	0	0	0	0	0	4179	349	37	0	0	386	0	0	0	0	0	314	42	4	1	360	15	747
PM TOT		0	0	0	0	0	3367	180	2	0	3549	433	21	0	0	454	187	42	5	0	234	3108	102	7	1	3217	0	0	0	0	0	5	3451	457	17	0	1	474	0	0	0	0	0	717	30	4	0	751	17	1225

0

PEAK HOUR		Hume Highway N															Hume Highway S															Muir Road														
		Left					Straight					Right					Left					Straight					Right					Peds	TOTAL	Left					Straight					Right					Peds	TOTAL
		Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total			Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total		
07:30	8:30	0	0	0	0	0	1386	121	7	0	1514	370	12	1	0	383	174	26	2	0	202	1797	115	2	0	1914	0	0	0	0	0	0	2116	194	16	0	0	210	0	0	0	0	0	157	19	2	0	178	9	388
16:15	17:15	0	0	0	0	0	1673	99	0	0	1772	204	13	0	0	217	94	22	3	0	119	1670	44	6	0	1720	0	0	0	0	0	3	1839	238	8	0	1	246	0	0	0	0	0	343	16	2	0	361	8	607

Time		Worth Street N															Muir Road E															Worth Street S															Muir Road W														
15 min		Left					Through					Right							Left					Through					Right							Left					Through					Right							Left					Through					Right						
Start	End	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Peds	TOT	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Peds	TOT	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Peds	TOT	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Peds	TOT
07:00	7:15	10	4	0	1	**14**	0	2	0	0	**2**	35	6	0	0	**41**	**2**	**57**	2	0	0	0	**2**	83	6	1	0	**90**	11	9	0	0	**20**	**0**	**112**	0	0	0	0	**0**	1	0	0	0	**1**	3	0	0	0	**3**	**0**	**4**	61	9	0	0	**70**	63	8	0	0	**71**	1	2	0	0	**3**	**1**	**144**
07:15	7:30	2	1	0	0	**3**	0	2	0	0	**2**	58	10	0	0	**68**	**1**	**73**	0	1	0	0	**1**	89	10	0	0	**99**	18	4	0	0	**22**	**0**	**122**	1	0	0	0	**1**	0	0	0	0	**0**	2	0	0	0	**2**	**0**	**3**	70	11	0	0	**81**	76	6	1	0	**83**	2	1	0	0	**3**	**0**	**168**
07:30	7:45	6	1	0	0	**7**	2	1	0	0	**3**	59	8	0	0	**67**	**1**	**77**	3	0	0	0	**3**	96	4	1	0	**101**	7	4	0	0	**11**	**0**	**115**	2	0	0	0	**2**	0	0	0	0	**0**	1	0	0	0	**1**	**0**	**3**	81	15	0	0	**96**	67	7	0	0	**74**	1	2	0	0	**3**	**1**	**174**
07:45	8:00	5	1	0	0	**6**	0	1	0	0	**1**	66	4	0	0	**70**	**0**	**77**	4	2	0	0	**6**	103	5	0	0	**108**	16	4	0	0	**20**	**0**	**134**	1	0	0	0	**1**	1	0	0	0	**1**	0	0	0	0	**0**	**0**	**2**	82	11	1	1	**94**	101	6	1	0	**108**	2	1	0	0	**3**	**0**	**205**
08:00	8:15	2	2	0	0	**4**	2	3	0	0	**5**	56	9	1	0	**66**	**2**	**75**	2	0	0	0	**2**	81	3	1	0	**85**	6	4	0	0	**10**	**0**	**97**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**	**0**	79	12	3	0	**94**	101	3	0	0	**104**	0	2	0	0	**2**	**0**	**200**
08:15	8:30	5	6	0	0	**11**	0	1	0	0	**1**	58	4	0	0	**62**	**1**	**74**	2	4	0	0	**6**	108	5	1	0	**114**	12	3	0	0	**15**	**0**	**135**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**1**	**0**	66	8	1	1	**75**	96	6	1	0	**103**	2	2	0	0	**4**	**1**	**183**
08:30	8:45	9	3	0	0	**12**	0	4	0	0	**4**	64	11	0	0	**75**	**2**	**91**	4	1	0	0	**5**	76	7	1	0	**84**	8	2	0	0	**10**	**0**	**99**	1	0	0	0	**1**	0	0	0	0	**0**	3	0	0	0	**3**	**0**	**4**	66	13	0	0	**79**	65	7	0	0	**72**	2	3	0	0	**5**	**1**	**157**
08:45	9:00	6	1	0	0	**7**	0	2	0	0	**2**	53	14	1	0	**68**	**8**	**77**	2	3	0	0	**5**	106	7	0	0	**113**	13	4	0	0	**17**	**0**	**135**	1	0	0	0	**1**	0	0	0	0	**0**	4	0	0	0	**4**	**3**	**5**	79	10	0	0	**89**	90	9	1	0	**100**	2	0	0	0	**2**	**1**	**192**
09:00	16:15	13	4	0	0	**17**	2	0	0	0	**2**	77	10	0	0	**87**	**1**	**106**	2	0	0	0	**2**	91	5	1	0	**97**	8	1	0	0	**9**	**1**	**108**	10	0	0	0	**10**	1	0	0	0	**1**	7	0	0	0	**7**	**0**	**18**	95	11	0	0	**106**	125	3	0	0	**128**	1	0	0	0	**1**	**1**	**235**
16:15	16:30	5	2	0	0	**7**	0	0	0	0	**0**	73	10	0	0	**83**	**3**	**90**	0	1	0	0	**1**	84	4	0	0	**88**	6	4	0	0	**10**	**0**	**99**	2	0	0	0	**2**	1	0	0	0	**1**	2	0	0	0	**2**	**0**	**5**	96	8	0	0	**104**	105	4	1	0	**110**	0	3	0	0	**3**	**0**	**217**
16:30	16:45	14	3	0	0	**17**	0	0	0	0	**0**	60	11	1	0	**72**	**2**	**89**	0	1	0	0	**1**	65	1	2	0	**68**	2	3	0	0	**5**	**0**	**74**	3	0	0	0	**3**	2	0	0	0	**2**	2	0	0	0	**2**	**0**	**7**	89	6	0	0	**95**	124	6	0	1	**130**	3	0	0	0	**3**	**1**	**228**
16:45	17:00	9	1	0	0	**10**	0	0	0	0	**0**	95	8	0	0	**103**	**0**	**113**	3	0	0	0	**3**	78	6	0	0	**84**	4	3	0	0	**7**	**0**	**95**	1	0	0	0	**1**	1	0	0	0	**1**	0	0	0	0	**0**	**1**	**2**	105	11	0	0	**116**	101	6	1	0	**108**	1	0	0	0	**1**	**1**	**226**
17:00	17:15	12	2	0	0	**14**	1	0	0	0	**1**	86	4	0	0	**90**	**3**	**105**	1	0	0	0	**1**	73	8	1	0	**82**	8	5	0	0	**13**	**0**	**96**	1	0	0	0	**1**	1	0	0	0	**1**	4	0	0	0	**4**	**0**	**6**	120	14	0	0	**134**	112	5	0	0	**117**	3	2	0	0	**5**	**3**	**256**
17:15	17:30	9	1	0	0	**10**	1	0	0	0	**1**	73	5	0	0	**78**	**1**	**89**	0	0	0	0	**0**	80	8	0	1	**88**	7	4	0	0	**11**	**0**	**99**	1	0	0	0	**1**	1	0	0	0	**1**	5	0	0	0	**5**	**0**	**7**	120	13	0	0	**133**	100	4	1	0	**105**	1	1	0	0	**2**	**1**	**240**
17:30	17:45	10	0	0	0	**10**	0	0	0	0	**0**	72	7	0	0	**79**	**2**	**89**	0	0	0	0	**0**	83	5	1	0	**89**	4	3	0	0	**7**	**0**	**96**	3	0	0	0	**3**	2	0	0	0	**2**	1	0	0	0	**1**	**0**	**6**	90	12	0	0	**102**	115	7	0	0	**122**	0	1	0	0	**1**	**0**	**225**
17:45	18:00	6	0	0	0	**6**	0	0	0	0	**0**	74	13	0	0	**87**	**0**	**93**	0	1	0	0	**1**	64	1	0	0	**65**	3	1	0	0	**4**	**0**	**70**	1	0	0	0	**1**	0	0	0	0	**0**	3	0	0	0	**3**	**1**	**4**	110	9	0	0	**119**	89	9	1	0	**99**	0	0	0	0	**0**	**0**	**220**
AM TOT		**45**	**19**	**0**	**1**	**64**	**4**	**16**	**0**	**0**	**20**	**449**	**66**	**2**	**0**	**517**	**17**	**601**	**19**	**11**	**0**	**0**	**30**	**742**	**47**	**5**	**0**	**794**	**91**	**34**	**0**	**0**	**125**	**0**	**949**	**6**	**0**	**0**	**0**	**6**	**2**	**0**	**0**	**0**	**2**	**13**	**0**	**0**	**0**	**13**	**4**	**21**	**584**	**89**	**5**	**2**	**678**	**659**	**52**	**4**	**0**	**715**	**12**	**13**	**0**	**0**	**25**	**5**	**1423**
PM TOT		**78**	**13**	**0**	**0**	**91**	**4**	**0**	**0**	**0**	**4**	**610**	**68**	**1**	**0**	**679**	**12**	**774**	**6**	**3**	**0**	**0**	**9**	**618**	**38**	**5**	**1**	**661**	**42**	**24**	**0**	**0**	**66**	**1**	**737**	**22**	**0**	**0**	**0**	**22**	**9**	**0**	**0**	**0**	**9**	**24**	**0**	**0**	**0**	**24**	**2**	**55**	**825**	**84**	**0**	**0**	**909**	**871**	**44**	**4**	**1**	**919**	**9**	**7**	**0**	**0**	**16**	**7**	**1847**

0

PEAK HOUR		Worth Street N															Muir Road E															Worth Street S															Muir Road W														
		Left					Straight					Right							Left					Straight					Right							Left					Straight					Right							Left					Straight					Right						
		Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Peds	TOTAL	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Peds	TOTAL	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Peds	TOTAL	Lights	Heavies	Buses	Cyclist	Total	Lights	Heavies	Buses	Cyclist	Total	Peds	TOTAL
07:30	8:30	18	10	0	0	28	4	6	0	0	10	239	25	1	0	265	4	303	11	6	0	0	17	388	17	3	0	408	41	15	0	0	56	0	481	3	0	0	0	3	1	0	0	0	1	1	0	0	0	1	1	5	308	46	5	2	359	365	22	2	0	389	5	7	0	0	12	2	762
16:45	17:45	40	4	0	0	44	2	0	0	0	2	326	24	0	0	350	6	396	4	0	0	0	4	314	27	2	1	343	23	15	0	0	38	0	386	6	0	0	0	6	5	0	0	0	5	10	0	0	0	10	1	21	435	50	0	0	485	428	22	2	0	452	5	4	0	0	9	5	947

Time		Rookwood Road N																Brunker Road E															
15 min		Left					Through					Right					Peds	TOT	Left					Through					Right					Peds	TOT
Start	End	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total			Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total		
07:00	7:15	36	8	0	0	44	168	19	1	0	188	14	1	0	0	15	1	247	6	5	0	0	11	55	4	0	0	59	66	6	0	0	72	2	142
07:15	7:30	36	2	0	0	38	212	31	5	0	248	11	0	0	0	11	2	297	6	3	0	0	9	70	4	0	0	74	72	7	0	0	79	1	162
07:30	7:45	55	6	0	0	61	214	23	1	0	238	12	2	0	0	14	0	313	8	4	0	0	12	72	3	0	0	75	77	2	1	0	80	1	167
07:45	8:00	89	6	1	0	96	263	20	4	0	287	22	0	0	0	22	2	405	10	5	0	0	15	75	7	0	0	82	72	5	0	0	77	1	174
08:00	8:15	56	1	0	0	57	235	25	0	0	260	27	0	0	0	27	1	344	5	1	0	0	6	63	1	1	0	65	58	6	0	0	64	1	135
08:15	8:30	50	2	0	0	52	268	27	2	0	297	21	4	0	0	25	7	374	10	1	0	0	11	74	4	1	0	79	60	8	0	0	68	5	158
08:30	8:45	44	5	0	0	49	215	25	2	0	242	18	2	0	0	20	1	311	16	1	0	0	17	73	4	0	0	77	68	7	0	0	75	1	169
08:45	9:00	54	10	0	0	64	249	25	2	0	276	25	1	0	0	26	3	366	17	4	0	0	21	74	1	0	0	75	62	9	0	0	71	1	167
09:00	16:15	66	12	0	0	78	423	23	0	0	446	104	1	0	0	105	3	629	6	1	0	0	7	148	0	0	0	148	40	3	1	0	44	3	199
16:15	16:30	55	7	0	0	62	375	22	2	0	399	109	0	0	0	109	2	570	16	2	0	0	18	134	4	0	0	138	38	4	0	0	42	0	198
16:30	16:45	70	2	0	0	72	498	20	1	0	519	103	0	0	0	103	0	694	9	0	0	0	9	117	5	0	0	122	29	1	0	0	30	1	161
16:45	17:00	65	3	0	0	68	419	16	2	0	437	103	2	0	0	105	1	610	9	1	0	0	10	140	3	0	0	143	45	2	0	0	47	1	200
17:00	17:15	70	3	0	0	73	457	18	1	0	476	91	0	0	0	91	1	640	6	2	0	0	8	104	2	0	0	106	34	4	0	0	38	1	152
17:15	17:30	71	4	0	0	75	491	6	0	0	497	95	4	0	0	99	1	671	3	0	0	0	3	138	1	0	0	139	29	5	0	0	34	0	176
17:30	17:45	84	1	0	0	85	406	16	3	0	425	88	2	0	0	90	2	600	6	0	0	0	6	131	1	0	0	132	44	1	0	0	45	2	183
17:45	18:00	69	3	0	0	72	395	12	1	0	408	94	3	0	0	97	0	577	8	3	0	0	11	130	3	0	0	133	35	4	0	0	39	0	183
AM TOT		420	40	1	0	461	1824	195	17	0	2036	150	10	0	0	160	17	2657	78	24	0	0	102	556	28	2	0	586	535	50	1	0	586	13	1274
PM TOT		550	35	0	0	585	3464	133	10	0	3607	787	12	0	0	799	10	4991	63	9	0	0	72	1042	19	0	0	1061	294	24	1	0	319	8	1452

Time		Rookwood Road S																Brunker Road W															
15 min		Left					Through					Right					Peds	TOT	Left					Through					Right					Peds	TOT
Start	End	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total			Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total		
07:00	7:15	16	1	0	0	17	424	33	5	0	462	2	0	0	0	2	1	481	34	4	0	0	38	102	5	0	0	107	31	0	0	0	31	1	176
07:15	7:30	13	0	0	0	13	532	30	4	0	566	4	1	0	0	5	1	584	34	2	0	0	36	73	1	1	0	75	24	2	1	0	27	2	138
07:30	7:45	28	2	0	0	30	459	24	3	0	486	9	2	0	0	11	2	527	19	0	0	0	19	90	4	0	0	94	21	2	1	0	24	2	137
07:45	8:00	14	3	0	0	17	405	23	1	0	429	7	1	0	0	8	0	454	21	2	0	0	23	128	3	0	0	131	37	2	0	0	39	0	193
08:00	8:15	21	2	0	0	23	430	32	5	0	467	14	0	0	0	14	0	504	26	2	0	0	28	108	4	0	0	112	27	0	0	0	27	2	167
08:15	8:30	28	1	0	0	29	443	27	3	0	473	16	0	0	0	16	0	518	27	1	0	0	28	101	5	0	0	106	37	2	1	0	40	5	174
08:30	8:45	23	2	0	0	25	420	29	1	0	450	9	1	0	0	10	0	485	36	1	0	0	37	118	0	0	0	118	28	3	0	0	31	3	186
08:45	9:00	12	1	0	0	13	373	35	3	0	411	12	1	0	0	13	0	446	25	3	0	0	28	104	3	0	0	107	25	3	0	0	28	2	163
09:00	16:15	44	2	1	0	47	212	15	1	0	228	11	0	0	0	11	0	286	18	0	0	0	18	84	2	0	0	86	37	3	0	0	40	3	144
16:15	16:30	30	2	0	0	32	215	15	2	0	232	9	1	0	0	10	0	274	19	1	0	0	20	102	1	0	0	103	28	0	0	0	28	1	151
16:30	16:45	41	0	0	0	41	297	18	3	0	318	14	0	0	0	14	0	373	19	0	0	0	19	102	2	0	0	104	25	1	0	0	26	3	149
16:45	17:00	37	1	0	0	38	211	17	1	0	229	11	2	0	0	13	0	280	20	0	0	0	20	82	1	0	0	83	36	2	1	0	39	0	142
17:00	17:15	30	1	0	0	31	256	14	2	0	272	12	0	0	0	12	0	315	14	2	0	0	16	60	0	0	0	60	28	0	0	0	28	1	104
17:15	17:30	40	1	1	0	42	255	17	1	0	273	11	2	0	0	13	0	328	20	0	0	0	20	100	2	0	0	102	31	0	0	0	31	2	153
17:30	17:45	53	0	0	0	53	278	17	1	0	296	13	1	0	0	14	0	363	28	0	0	0	28	99	0	0	1	99	27	0	1	0	28	4	155
17:45	18:00	34	2	0	0	36	228	9	2	0	239	15	1	0	0	16	0	291	15	0	0	0	15	92	2	0	0	94	33	0	0	0	33	2	142
AM TOT		163	13	0	0	176	3486	233	25	0	3744	73	6	0	0	79	4	3999	222	15	0	0	237	824	25	1	0	850	230	14	3	0	247	17	1334
PM TOT		309	9	2	0	320	1952	122	13	0	2087	96	7	0	0	103	0	2510	153	3	0	0	156	721	10	0	1	731	245	6	2	0	253	16	1140

0

PEAK HOUR		Rookwood Road N																Brunker Road E															
		Left					Straight					Right					Peds	TOTAL	Left					Straight					Right					Peds	TOTAL
		Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total			Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total		
07:45	8:45	239	14	1	0	254	981	97	8	0	1086	88	6	0	0	94	11	1434	41	8	0	0	49	285	16	2	0	303	258	26	0	0	284	8	636
16:30	17:30	276	12	0	0	288	1865	60	4	0	1929	392	6	0	0	398	3	2615	27	3	0	0	30	499	11	0	0	510	137	12	0	0	149	3	689

PEAK HOUR		Rookwood Road S																Brunker Road W															
		Left					Straight					Right					Peds	TOTAL	Left					Straight					Right					Peds	TOTAL
		Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total			Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total	Lights	Heavie	Buses	Cyclist	Total		
07:45	8:45	86	8	0	0	94	1698	111	10	0	1819	46	2	0	0	48	0	1961	110	6	0	0	116	455	12	0	0	467	129	7	1	0	137	10	720
16:30	17:30	148	3	1	0	152	1019	66	7	0	1092	48	4	0	0	52	0	1296	73	2	0	0	75	344	5	0	0	349	120	3	1	0	124	6	548

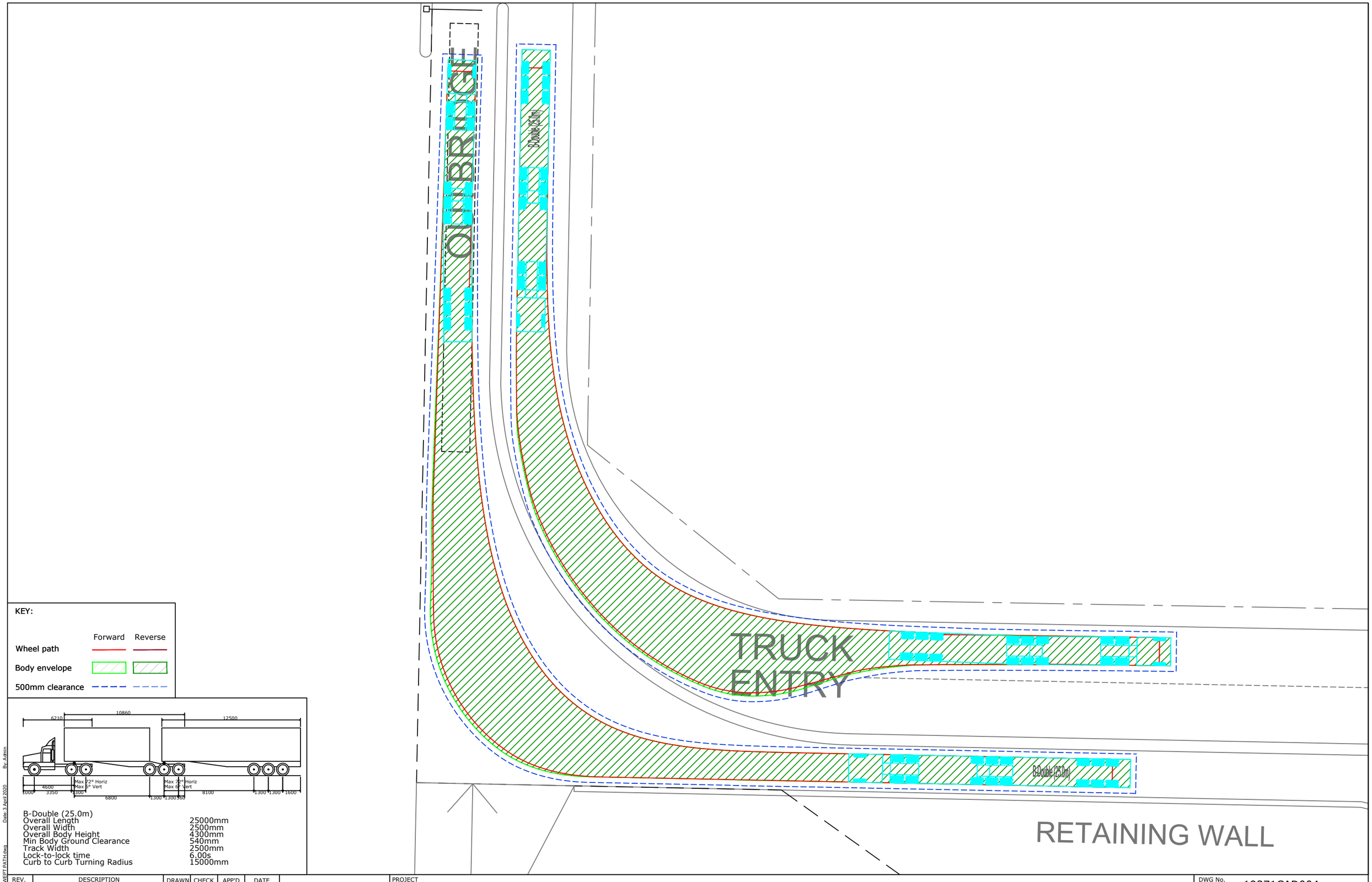
Time		Rookwood Road N																	Muir Road															Rookwood Road S															
15 min		Left					Through					Right					Peds	TOT	Left					Through					Right					Peds	TOT	Left					Through					Right					Peds	TOT
Start	End	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total			Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total			Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total		
07:00	7:15	136	20	0	0	**156**	228	24	3	0	**255**					**0**	**0**	**411**	8	5	0	0	**13**					**0**	86	10	1	0	**97**	**0**	**110**					**0**	558	44	5	0	**607**	23	3	0	0	**26**	**1**	**633**
07:15	7:30	154	18	1	0	**173**	247	30	4	0	**281**					**0**	**0**	**454**	11	4	0	0	**15**					**0**	111	16	0	0	**127**	**2**	**142**					**0**	628	38	4	0	**670**	42	2	0	0	**44**	**2**	**714**
07:30	7:45	147	22	0	0	**169**	316	17	1	0	**334**					**0**	**0**	**503**	22	9	0	0	**31**					**0**	138	10	1	0	**149**	**0**	**180**					**0**	597	25	3	0	**625**	40	4	0	0	**44**	**0**	**669**
07:45	8:00	193	17	2	0	**212**	336	27	5	0	**368**					**0**	**0**	**580**	23	6	0	0	**29**					**0**	114	15	0	0	**129**	**1**	**158**					**0**	526	29	2	0	**557**	40	1	0	0	**41**	**1**	**598**
08:00	8:15	181	11	3	0	**195**	318	16	1	0	**335**					**0**	**0**	**530**	20	8	0	0	**28**					**0**	110	7	1	0	**118**	**1**	**146**					**0**	545	40	5	0	**590**	60	6	0	0	**66**	**3**	**656**
08:15	8:30	176	15	1	1	**192**	307	31	2	0	**340**					**0**	**0**	**532**	11	3	0	0	**14**					**0**	109	13	1	0	**123**	**1**	**137**					**0**	585	30	3	0	**618**	51	2	0	0	**53**	**0**	**671**
08:30	8:45	148	16	1	0	**165**	279	22	2	0	**303**					**0**	**0**	**468**	20	7	0	0	**27**					**0**	132	17	1	0	**150**	**0**	**177**					**0**	558	29	2	0	**589**	44	8	0	0	**52**	**1**	**641**
08:45	9:00	166	21	0	0	**187**	297	34	1	0	**332**					**0**	**0**	**519**	21	8	0	0	**29**					**0**	125	22	1	0	**148**	**0**	**177**					**0**	496	41	3	0	**540**	39	5	0	0	**44**	**0**	**584**
16:00	16:15	154	16	0	0	**170**	506	28	0	0	**534**					**0**	**0**	**704**	50	7	0	0	**57**					**0**	132	9	2	0	**143**	**0**	**200**					**0**	329	16	2	0	**347**	30	9	0	0	**39**	**2**	**386**
16:15	16:30	157	17	1	0	**175**	508	21	2	0	**531**					**0**	**0**	**706**	56	6	0	0	**62**					**0**	161	11	1	0	**173**	**2**	**235**					**0**	287	18	2	0	**307**	29	3	0	0	**32**	**2**	**339**
16:30	16:45	179	10	0	0	**189**	555	20	1	0	**576**					**0**	**1**	**765**	41	3	0	0	**44**					**0**	133	9	3	0	**145**	**1**	**189**					**0**	366	17	3	0	**386**	30	1	0	0	**31**	**1**	**417**
16:45	17:00	165	15	1	0	**181**	553	16	2	0	**571**					**0**	**0**	**752**	46	5	0	0	**51**					**0**	150	12	0	0	**162**	**0**	**213**					**0**	346	15	1	0	**362**	26	4	0	0	**30**	**1**	**392**
17:00	17:15	169	14	1	0	**184**	552	16	1	0	**569**					**0**	**0**	**753**	62	2	0	0	**64**					**0**	167	9	1	0	**177**	**1**	**241**					**0**	312	13	2	0	**327**	21	6	0	0	**27**	**1**	**354**
17:15	17:30	183	12	0	0	**195**	567	8	0	0	**575**					**0**	**0**	**770**	31	3	0	0	**34**					**0**	157	13	0	0	**170**	**0**	**204**					**0**	313	21	1	0	**335**	29	5	0	0	**34**	**1**	**369**
17:30	17:45	190	15	0	0	**205**	535	18	3	0	**556**					**0**	**0**	**761**	38	4	0	0	**42**					**0**	161	9	1	0	**171**	**0**	**213**					**0**	360	13	2	0	**375**	10	5	0	0	**15**	**1**	**390**
17:45	18:00	170	15	2	0	**187**	513	11	1	0	**525**					**0**	**0**	**712**	40	4	0	0	**44**					**0**	126	8	0	0	**134**	**0**	**178**					**0**	339	10	2	0	**351**	29	6	0	0	**35**	**0**	**386**
AM TOT		**1301**	**140**	**8**	**1**	**1449**	**2328**	**201**	**19**	**0**	**2548**	**0**	**0**	**0**	**0**	**0**	**0**	**3997**	**136**	**50**	**0**	**0**	**186**	**0**	**0**	**0**	**0**	**0**	**925**	**110**	**6**	**0**	**1041**	**5**	**1227**	**0**	**0**	**0**	**0**	**0**	**4493**	**276**	**27**	**0**	**4796**	**339**	**31**	**0**	**0**	**370**	**8**	**5166**
PM TOT		**1367**	**114**	**5**	**0**	**1486**	**4289**	**138**	**10**	**0**	**4437**	**0**	**0**	**0**	**0**	**0**	**1**	**5923**	**364**	**34**	**0**	**0**	**398**	**0**	**0**	**0**	**0**	**0**	**1187**	**80**	**8**	**0**	**1275**	**4**	**1673**	**0**	**0**	**0**	**0**	**0**	**2652**	**123**	**15**	**0**	**2790**	**204**	**39**	**0**	**0**	**243**	**9**	**3033**

0

PEAK HOUR		Rookwood Road N																	Muir Road															Rookwood Road S															
		Left					Straight					Right					Peds	TOTAL	Left					Straight					Right					Peds	TOTAL	Left					Straight					Right					Peds	TOTAL
		Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total			Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total			Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total		
07:30	**8:30**	697	65	6	1	768	1277	91	9	0	1377	0	0	0	0	0	0	2145	76	26	0	0	102	0	0	0	0	0	471	45	3	0	519	3	621	0	0	0	0	0	2253	124	13	0	2390	191	13	0	0	204	4	2594
16:30	**17:30**	696	51	2	0	749	2227	60	4	0	2291	0	0	0	0	0	1	3040	180	13	0	0	193	0	0	0	0	0	607	43	4	0	654	2	847	0	0	0	0	0	1337	66	7	0	1410	106	16	0	0	122	4	1532

Appendix B

Vehicle Swept Paths



KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		

B-Double (25.0m)	
Overall Length	25000mm
Overall Width	2500mm
Overall Body Height	4300mm
Min Body Ground Clearance	540mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15000mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

ttpp transport planning

PROJECT: SUEZ CHULLORA

TITLE: 25m B-DOUBLE SWEPT PATH
ENTERING & EXITING WEIGHBRIDGE

DWG No. 19371CAD004
FIGURE 2

DATE STAMP 03 APRIL 2020

PROJECT No.	SCALE	REV.
19371	1:300 @A3	A

Filename: 19371CAD004-200403-SWEPT PATH.dwg Date: 3 April 2020 By: Admin

LOCATION

INBRIDGE

B-Double (25.0m)

GATE HOUSE
12 SQM

6200

PRODUCT STORAGE
AREA

RSD

RSD

RSD

RSD

RSD

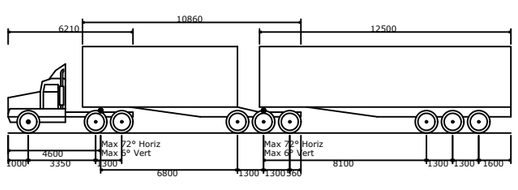
4400

1500

OPEN DRAINAG

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		



B-Double (25.0m)	
Overall Length	25000mm
Overall Width	2500mm
Overall Body Height	4300mm
Min Body Ground Clearance	540mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15000mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

ttpp transport planning

PROJECT: SUEZ CHULLORA

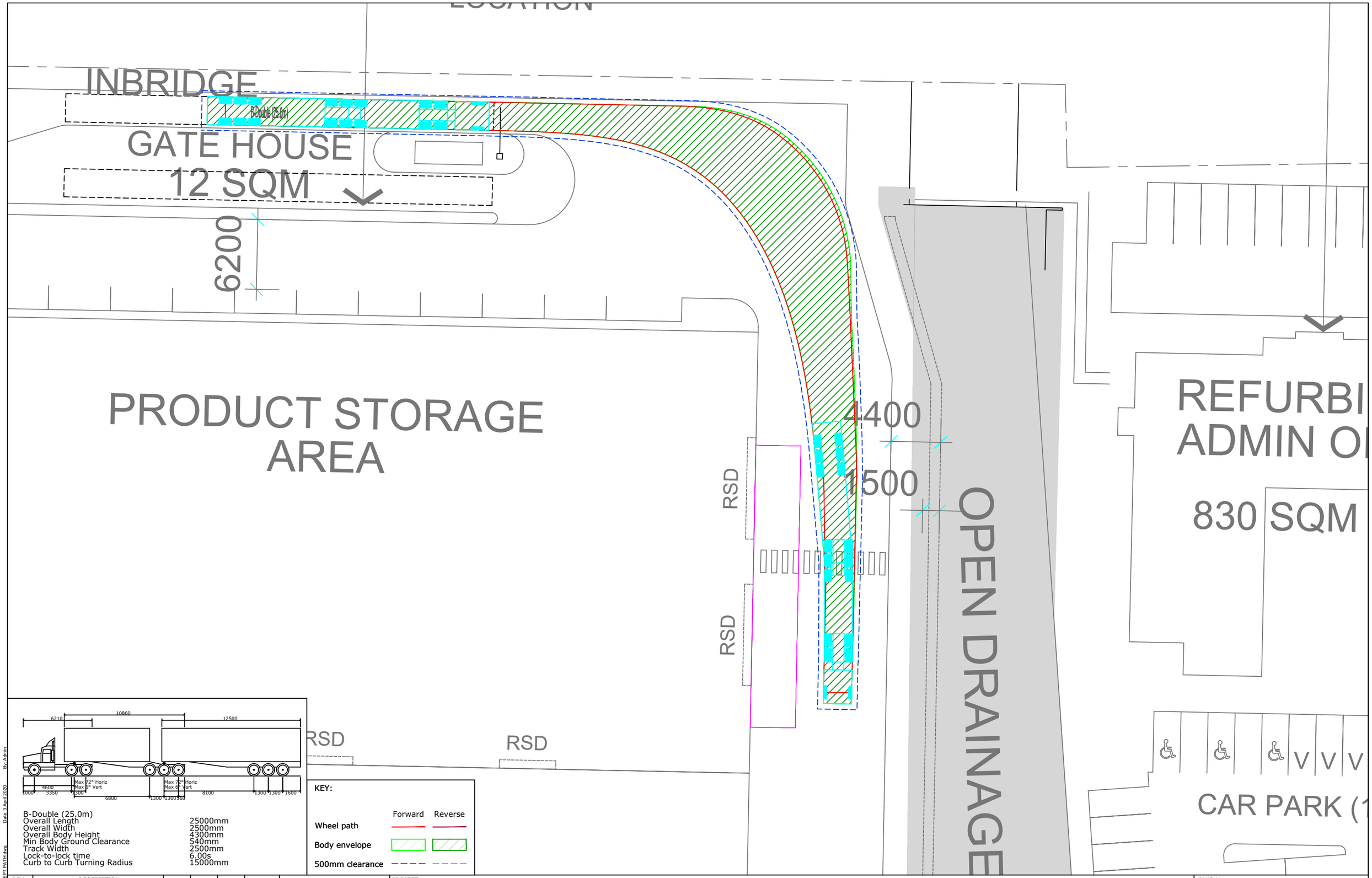
TITLE: 25m B-DOUBLE SWEPT PATH
ENTERING EAST LOADING BAY

DWG No. 19371CAD004
FIGURE 3

DATE STAMP: 03 APRIL 2020

PROJECT No. 19371 | SCALE 1:300 @A3 | REV. A

Filename: 19371CAD004-200403-SWEPT PATH.dwg Date: 3 April 2020 By: Admin



B-Double (25.0m)	
Overall Length	25000mm
Overall Width	2500mm
Overall Body Height	4300mm
Min Body Ground Clearance	540mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15000mm

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

ttpp transport planning

PROJECT: SUEZ CHULLORA

TITLE: 25m B-DOUBLE SWEPT PATH ENTERING

DWG No. 19371CAD004 FIGURE 4

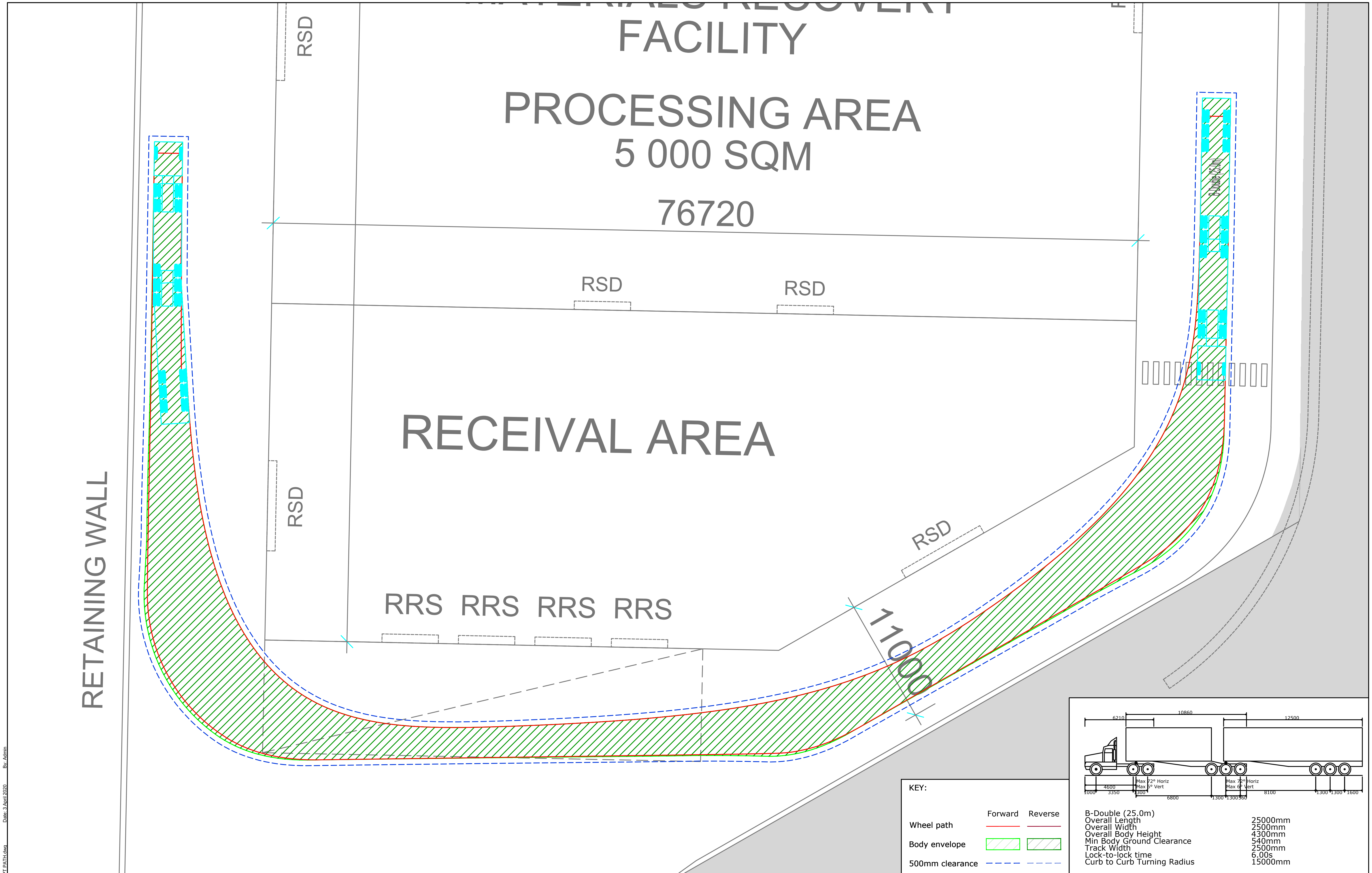
DATE STAMP 03 APRIL 2020

PROJECT No.	SCALE	REV.
19371	1:300 @A3	A

By: A.dmin

Date: 3 April 2020

Filename: 19371CAD004-200403-SWEPT PATH.dwg



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

ttpp transport planning

PROJECT: SUEZ CHULLORA

TITLE: 25m B-DOUBLE SWEPT PATH EXITING

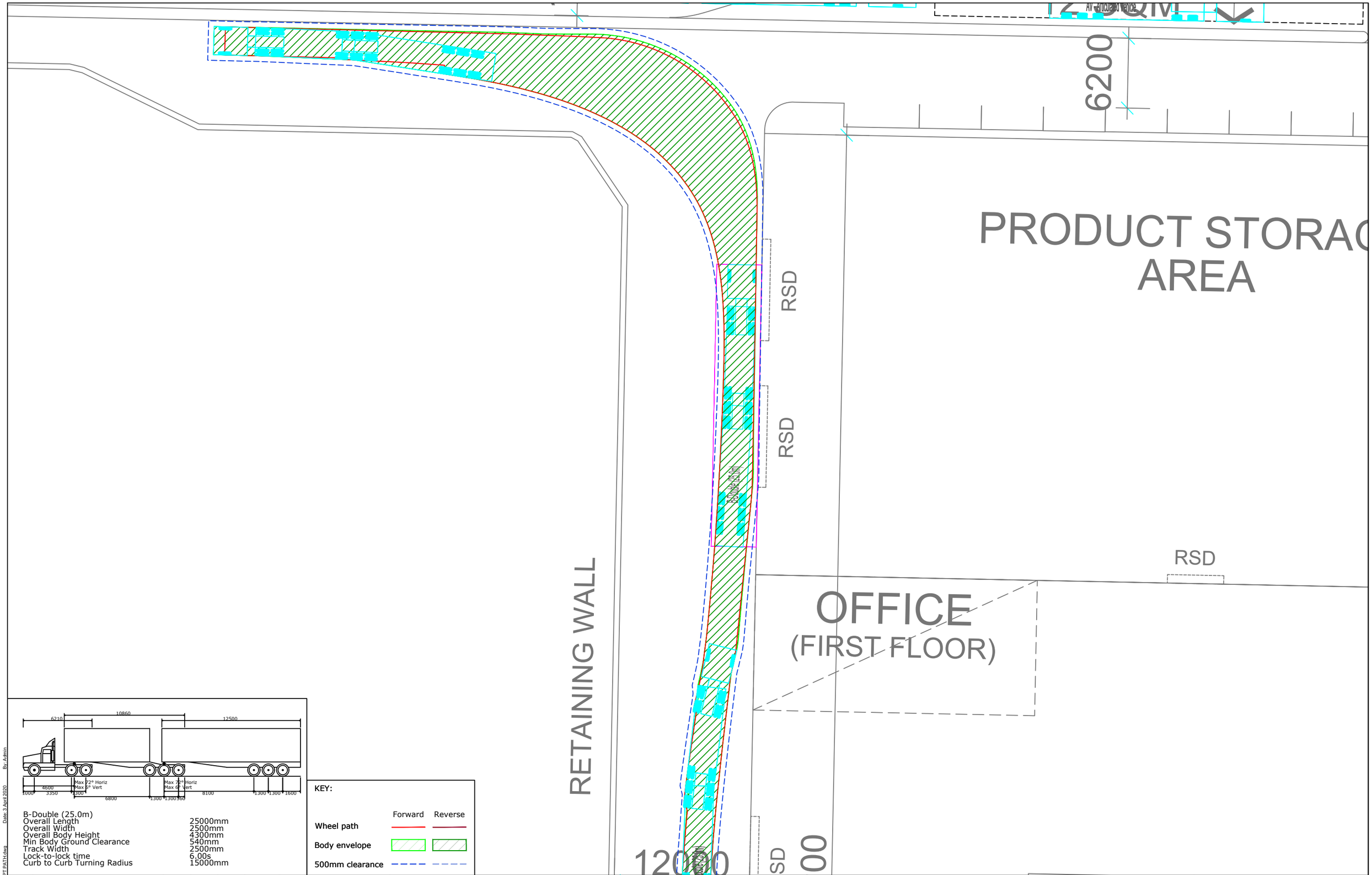
DWG No. 19371CAD004 FIGURE 5

DATE STAMP 03 APRIL 2020

PROJECT No. 19371

SCALE 1:300 @A3

REV. A



B-Double (25.0m)

Overall Length	25000mm
Overall Width	2500mm
Overall Body Height	4300mm
Min Body Ground Clearance	540mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15000mm

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

ttpp transport planning

PROJECT: SUEZ CHULLORA

TITLE: 25m B-DOUBLE SWEPT PATH
ENTERING WEST LOADING BAY

DWG No. 19371CAD004
FIGURE 6

DATE STAMP 03 APRIL 2020

PROJECT No.	SCALE	REV.
19371	1:300 @A3	A

Filename: 19371CAD004-200403-SWEPT PATH.dwg
Date: 3 April 2020
By: Admin

INBRIDGE

GATE HOUSE
12 SQM

10000

6200

G WALL

RSD

PRODUCT ST
AREA

RSD

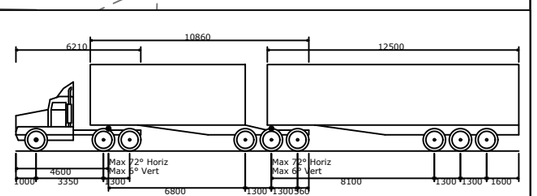
RETAINING WALL

RSD

OFFIC
(FIRST FLO

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		



B-Double (25.0m)

Overall Length	25000mm
Overall Width	2500mm
Overall Body Height	4300mm
Min Body Ground Clearance	540mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15000mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

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PROJECT: SUEZ CHULLORA

TITLE: 25m B-DOUBLE SWEPT PATH
EXITING

DWG No. 19371CAD004
FIGURE 7

DATE STAMP 03 APRIL 2020

PROJECT No.	SCALE	REV.
19371	1:300 @A3	A

Filename: 19371CAD004-200403-SWEPT PATH.dwg Date: 3 April 2020 By: Admin

VEHICLE ENTERING

VEHICLE EXITING

Truck and Dog Trailer 19m

HOUSE
QM

UCT STORAGE
AREA

4400

1500

10000

RSD

RSD

RSD

RSD

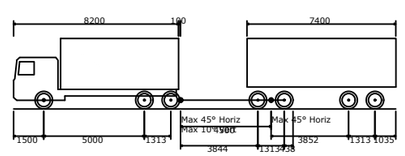
RSD

RETAINING WALL

OFFICE

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		



Truck and Dog Trailer 19m

Overall Length	19000mm
Overall Width	2500mm
Overall Body Height	3500mm
Min Body Ground Clearance	427mm
Track Width	2500mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

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PROJECT: SUEZ CHULLORA

TITLE: 19m TRUCK-AND-DOG SWEPT PATH

DWG No. 19371CAD004 FIGURE 8

DATE STAMP 03 APRIL 2020

PROJECT No.	SCALE	REV.
19371	1:300 @A3	A

Filename: 19371CAD004-200403-SWEPT PATH.dwg Date: 3 April 2020 By: Admin

VEHICLE ENTERING

RETAINING WALL

RECEIVAL AREA

RSD

RSD

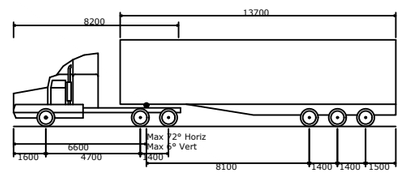
RRS RRS RRS RRS

11.00

UNDEVELOPABLE

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		



AV - Articulated Vehicle

Overall Length	19000mm
Overall Width	2500mm
Overall Body Height	4301mm
Min Body Ground Clearance	418mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

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PROJECT

SUEZ CHULLORA

TITLE

19m ARTICULATED VEHICLE SWEPT PATH
ENTERING RECEIVING AREA

DWG No. 19371CAD004
FIGURE 9

DATE STAMP 03 APRIL 2020

PROJECT No.	SCALE	REV.
19371	1:300 @A3	A

By: Admin
Date: 3 April 2020
Filename: 19371CAD004-200403-SWEPT PATH.dwg

VEHICLE ENTERING

RETAINING WALL

RECEIVAL AREA

RSD

RRS RRS RRS RRS

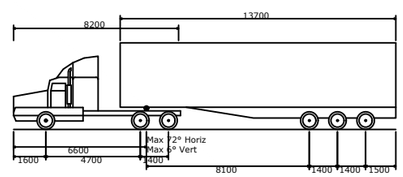
RSD

11000

UNDEVELOPABLE

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		



AV - Articulated Vehicle

Overall Length	19000mm
Overall Width	2500mm
Overall Body Height	4301mm
Min Body Ground Clearance	418mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

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PROJECT: SUEZ CHULLORA

TITLE: 19m ARTICULATED VEHICLE SWEPT PATH
EXITING RECEIVING AREA

DWG No. 19371CAD004
FIGURE 10

DATE STAMP: 03 APRIL 2020

PROJECT No.	SCALE	REV.
19371	1:300 @A3	A

Filename: 19371CAD004-200403-SWEPT PATH.dwg
Date: 3 April 2020
By: Admin

VEHICLE ENTERING

RETAINING WALL

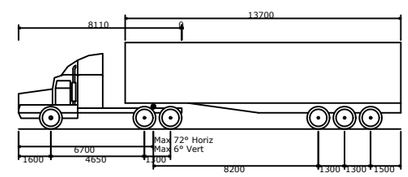
RECEIVAL AREA

RSD

RSD

RRS RRS RRS RRS

UNDEVELOPABLE



KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		

Prime mover and semi-trailer (19 m)

Overall Length	19000mm
Overall Width	2500mm
Overall Body Height	4300mm
Min Body Ground Clearance	540mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

ttpp transport planning

PROJECT

SUEZ CHULLORA

TITLE

19m ARTICULATED VEHICLE SWEPT PATH
ENTERING RECEIVING AREA

DWG No. 19371CAD004
FIGURE 11

DATE STAMP 03 APRIL 2020

PROJECT No.	SCALE	REV.
19371	1:300 @A3	A

By: Admin
Date: 3 April 2020
Filename: 19371CAD004-200403-SWEPT PATH.dwg

VEHICLE ENTERING

RETAINING WALL

RECEIVAL AREA

RSD

RRS RRS RRS RRS

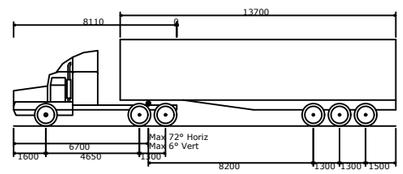
RSD

11000

UNDEVELOPABLE

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		



Prime mover and semi-trailer (19 m)

Overall Length	19000mm
Overall Width	2500mm
Overall Body Height	4300mm
Min Body Ground Clearance	540mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12500mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

ttpp transport planning

PROJECT

SUEZ CHULLORA

TITLE

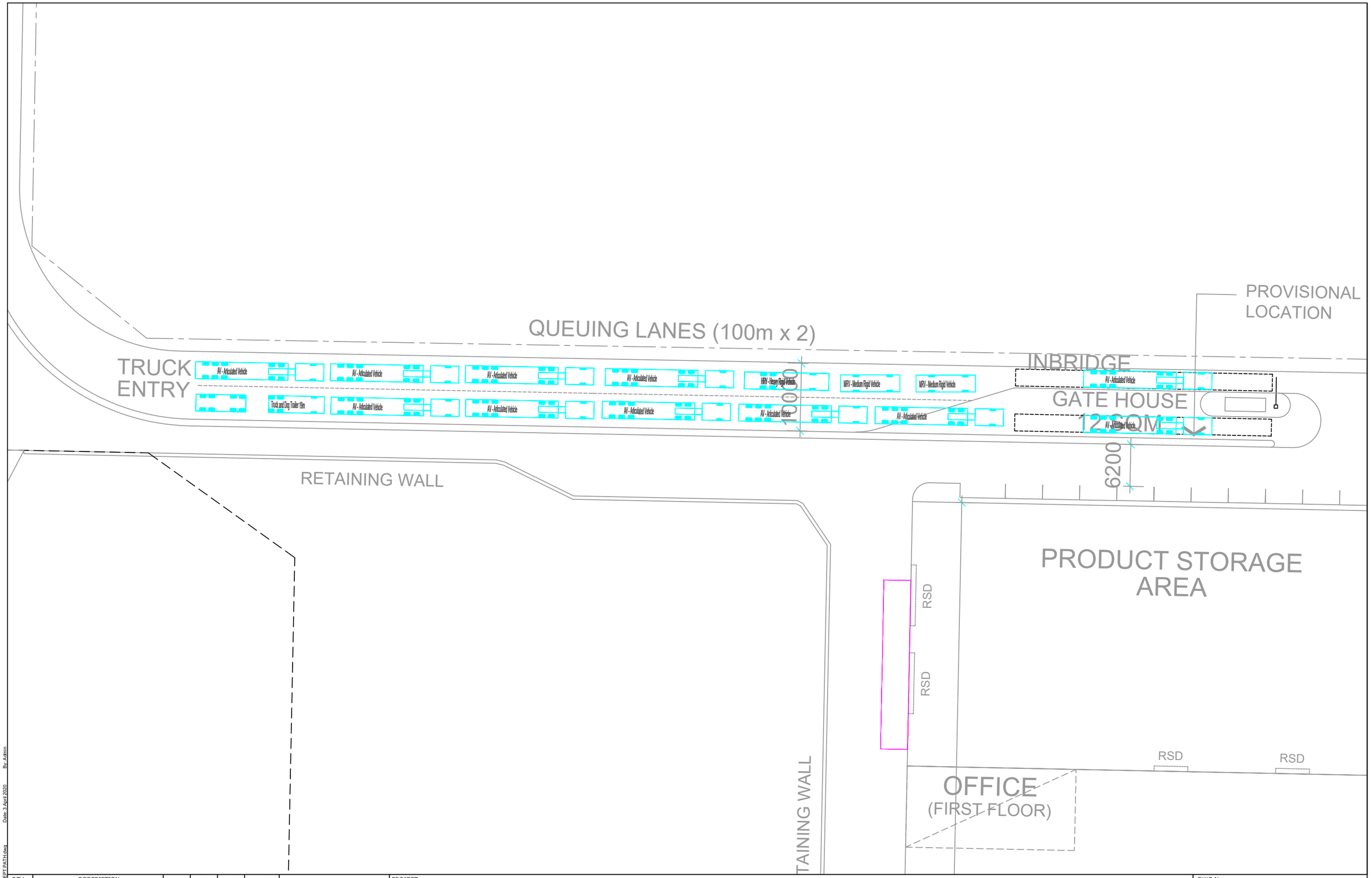
19m ARTICULATED VEHICLE SWEPT PATH
EXITING RECEIVING AREA

DWG No. 19371CAD004
FIGURE 12

DATE STAMP 03 APRIL 2020

PROJECT No.	SCALE	REV.
19371	1:300 @A3	A

Filename: 19371CAD004-200403-SWEPT PATH.dwg
Date: 3 April 2020
By: Admin



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	SB	JR	03/04/20

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PROJECT: SUEZ CHULLORA

TITLE: VEHICLE STACKING

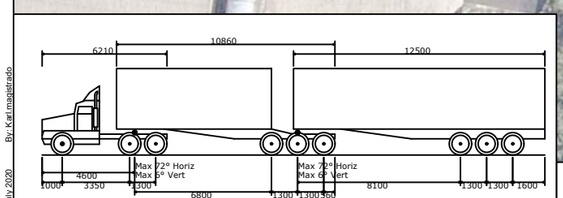
DWG No. 19371CAD004 FIGURE 13

DATE STAMP 03 APRIL 2020

PROJECT No.	SCALE	REV.
19371	1:500 @A3	A

Filename: 19371CAD004-200403-SWEPT PATH.dwg Date: 3 April 2020 By: Admin

MUIR ROAD



B-Double (25.0m)

Overall Length	25000mm
Overall Width	2500mm
Overall Body Height	4300mm
Min Body Ground Clearance	540mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15000mm

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
500mm clearance		

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	CH/SB	JR	23/07/20

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PROJECT

SUEZ CHULLORA

TITLE

SWEPT PATH ANALYSIS - MUIR ROAD
25m B-DOUBLE

DWG No. 19371CAD008
FIGURE 1

DATE STAMP 23 JULY 2020

PROJECT No. 19371 | SCALE 1:400 @ A3 | REV. A

By: K.el.magistrado
Date: 23 July 2020
Filename: 19371CAD008-200723-SWEPT PATH.dwg

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