Traffic & Transportation Direction

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# Mangoplah BESS

## Mangoplah NSW

### Traffic Impact Assessment

October 2025

Reference: 1187 rep 251010 final

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### Traffic Impact Assessment

Prepared for: NGH Pty Ltd

Status: Draft report

Date: 10 October 2025

Reference: 1187 rep 251010 final

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**Contact**

Website: www.amberorg.com.au E: info@amberorg.com.au Phone: 1800 022 363

# Executive Summary

Amber Organisation Pty Ltd has been engaged by NGH Consulting Pty Ltd (NGH) to prepare a Traffic Impact Assessment of the proposed Mangoplah Battery Energy Storage System (BESS) (the Project). The Project is being developed by Mangoplah BESS Pty Ltd (The Applicant).

This report supports a State Significant Development (SSD) Development Consent application under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (SSD- 77527735), as an appendix to the Environmental Impact Statement (EIS) for the Project.

The Project includes the construction, operation and decommissioning of a BESS and associated infrastructure with a targeted electricity generation capacity of up to 100MW/400MWh (4 hours).

The Project Area is located approximately 3.1 kilometres east of Mangoplah and approximately 30.6 kilometres south of the regional city of Wagga Wagga. Access to the site is proposed from a connection on the east side of Holbrook Road via an approximately 3.1 kilometre private road.

Traffic generated by the Project can be separated by construction, operation and decommissioning stages. The peak traffic generating potential is during construction which generates trips associated with the workforce accessing the Project Area and the delivery of materials and plant. During operation the Project is expected to generate up to eight vehicle movements per day associated with two maintenance personnel accessing the Project Area with some deliveries. Decommissioning is anticipated to generate a similar level of traffic to the construction stage.

The construction period is expected to commence in 2027 and take 12 to 15 months, with the peak construction period expected to take three months. A construction workforce of up to 60 personnel would be on-site during the peak construction phase and would primarily be drawn from Wagga Wagga.

It is anticipated that during peak construction the Project could generate up to 120 light and 64 heavy vehicle trips per day. Construction of the BESS is expected to generate approximately 64 total vehicle trips per hour in the morning and evening peak hours during the peak construction period, which would reduce to 22 vehicle trips per peak hour during the average construction periods.

In order to determine the traffic impact generated during the construction of the Project, a mid-block assessment has been undertaken for the operation of Holbrook Road. The assessment also included review of the cumulative traffic on the road network generated by other major projects in the surrounding area. Overall, the assessment shows that the construction traffic is expected to have a minimal impact on the operation of the road network and the Level of Service remains acceptable. Accordingly, it is concluded that the road network is able to accommodate the traffic generated by the development during the construction period.

Amber has undertaken an assessment of the expected access routes for construction traffic to the site which identified that Basic Left Turn and Basic Right Turn treatments should be provided at the site access onto Holbrook Road. The proposed turn treatments are designed to allow for simultaneous B-Double vehicle movements. Furthermore, the access point has adequate sight distance to allow vehicles to safely enter the Regional Road network.

The Port of Melbourne and the Port of Geelong have been identified as where the BESS plant will be imported. The access route utilises roads that are designated for B-Double vehicles as outlined within the National Heavy Vehicle Regulator (NHVR) Restricted Access Vehicle Map.

Two access routes for the oversize/overmass (OSOM) vehicle transporting the largest BESS component (the HV transformer) have been identified from Port of Melbourne and the Port of

Geelong. The Route Assessment has identified that the site can be accessed with suitable traffic management measures without permanent road upgrade works aside from at the site access to Holbrook Road. The Route Assessment is provided within Appendix A of this document.

Once on-site, a suitable private all weather road is to be provided to safely and appropriately accommodate the mix of heavy vehicle traffic and OSOM vehicle traffic expected.

In order to mitigate the impacts of the Project during construction a Traffic Management Plan would be prepared which outlines a range of traffic management measures in order to ensure the construction traffic would have a minimal impact to the capacity and safety of the surrounding road network. The Traffic Management Plan would be prepared post-approval and prior to the construction of the Project.

Based on the assessment, it is concluded that the road network is able to accommodate the expected vehicle types and traffic volumes during the construction, operation, and decommissioning phases of the Project subject to the proposed site access upgrades and traffic management measures. Further, the site access location has been suitably designed to allow vehicles to safely enter and exit the Project Area

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# Definitions

| Term | Definition |
|---|---|
| **Project** | A Battery Energy Storage System (BESS) as described within the EIS to which this Application applies. |
| **Project Area** | Boundary shown on Figure 1 to which the Application applies (unless otherwise stipulated). |
| **Applicant** | Mangoplah BESS Pty Ltd |
| **Application** | Application for Development Consent under Part 4.7 of the EP&A Act; and Determination under Part 9 of the EPBC Act. |

# 1. Introduction

Amber Organisation Pty Ltd has been engaged by NGH Consulting Pty Ltd (NGH) to prepare a Traffic Impact Assessment of the proposed Mangoplah BESS for Mangoplah BESS Pty Ltd (the Applicant).

The Project includes the construction, operation and decommissioning of a Battery Energy Storage System (BESS) and associated infrastructure with a targeted storage capacity of up to 100MW / 400MWh (4 hours).

The Project Area is located on the east side of Holbrook Road, approximately 3.1 kilometres east of Mangoplah and 30.6 kilometres south of Wagga Wagga within the Wagga Wagga Local Government Area (LGA). Figure 1 shows the proposed layout of the site in relation to the road network, access locations and existing infrastructure.

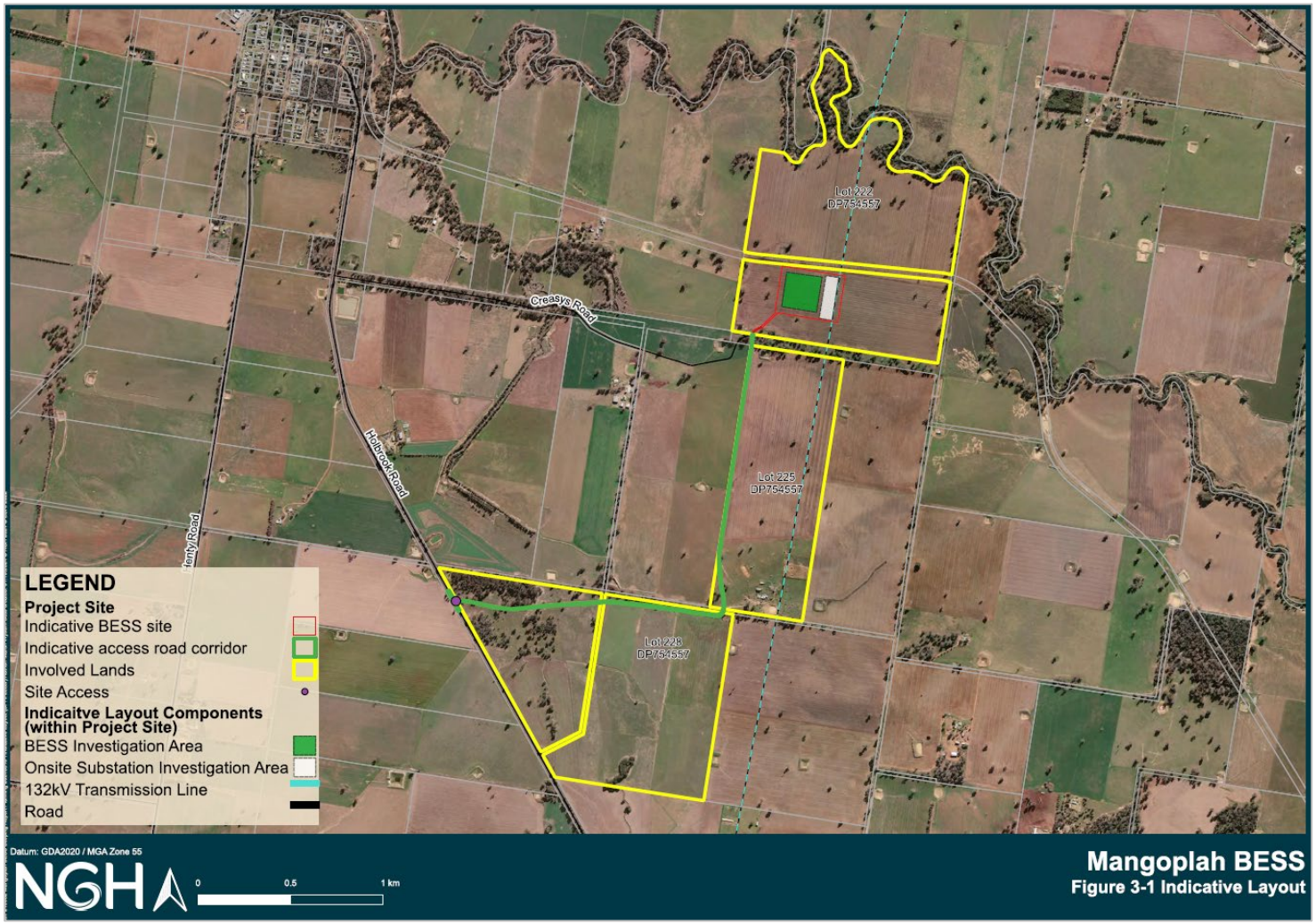
The Project area would be accessed via an existing crossover from Holbrook Road with internal access tracks connecting to the Project Area. The location of the BESS is within Lot 222 DP754557 and areas of Lots 225 DP754557 and 228 DP754557 would be required to facilitate transport movements between Holbrook Road and the BESS site.

Construction is expected to commence in 2027 and take approximately 12 to 15 months, with the peak construction period expected to take three months. A maximum workforce of 60 people would be on-site during peak construction periods with the workforce expected to be primarily located in Wagga Wagga.

Project plant is expected to be delivered from Port of Melbourne and the Port of Geelong. More general construction materials and equipment will be sourced from within Wagga Wagga or the surrounding area.

The impacts and proposed mitigation for traffic generated by the proposed construction, operation and decommissioning phases of the Project are addressed in this report in accordance with relevant regulatory requirements and guidelines.

**Figure 1: Site Layout**




*Source: NGH*

## 1.1 Environmental Assessment Requirements

This report supports a State Significant Development (SSD) Development Consent application under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (SSD-77527735), as an appendix to the Environmental Impact Statement (EIS) for the Project. NSW Department of Planning, Housing and Infrastructure have issued Secretary's Environmental Assessment Requirements (SEARs) for the Project, with the traffic and transport matters listed within Table 1 along with the relevant response to each matter.

**Table 1: Traffic and Transport SEARs and Responses**

| SEARs | Response |
|---|---|
| An assessment of the peak and average traffic generation, including over-dimensional vehicles and construction worker transportation. | The assessment presented within Section 4 indicates the road network is expected to continue to operate with acceptable conditions during peak and average construction periods.<br>The highest level of traffic is expected to be generated during the peak construction period when staff arrive and depart the site at the start and end of the day. A mid-block assessment at the Site access on Holbrook Road indicates the road network is able to accommodate the Project traffic and would continue to operate with a good level of service.<br>During the middle of the day the traffic movements are expected to be predominantly associated with heavy vehicles with approximately six vehicles per hour. This increase in traffic can be readily accommodated on the road network given the existing low traffic volumes and the road network would operate with less vehicles than during the peak hour.<br>It is anticipated that three high-risk oversize/overmass vehicles would access the site during construction. The vehicles would travel outside of the peak periods and would be able to be accommodated on the road network with minimal impacts as identified within Section 6. Suitable road management strategies would also be adopted as part of specific permits that would be applied for prior to construction. |
| An assessment of the likely transport impacts to the site access route(s) including for over-dimension vehicles, site access point(s), any Crown land, particularly in relation to the capacity and condition of the roads, road safety and intersection performance. | The Applicant has advised that the transformer could be delivered from Port of Melbourne or Port of Geelong, Victoria, and as such is to be utilised as the origin point for the largest OSOM vehicles. In order to determine whether any civil works are required to accommodate the OSOM vehicle on the road network a route assessment has been undertaken and is provided in Appendix A. The assessment identified that the vehicle can be access the site with suitable traffic management measures without permanent road upgrade works aside from at the site access to Holbrook Road. Further information on OSOM vehicles is provided in Section 6.<br>The site access arrangements are assessed within Section 7. The access has been designed for heavy vehicle movement and provides suitable sight distance in accordance with the Austroads Guide, subject to minor pruning of roadside vegetation which is proposed to occur prior to the commencement of the construction phase of the Project.<br>The haulage route for heavy vehicles arriving from Port of Melbourne or the Port of Geelong is assessed within Section 5. The access route for B-Doubles utilises roads that are designated for B-Double vehicles as outlined within the NHVR Restricted Access Vehicle Map.<br>A review of the existing road safety data and casualty crash history is provided within Section 2.6 which indicates that the road network near the proposed site access is operating in a relatively safe manner. |

| SEARs | Response |
|---|---|
| A cumulative impact assessment of traffic from nearby developments (including mining operations). | The assessment presented within Section 4.2.5 provides a review of the cumulative impacts of the Project along with other major Projects within the surrounding area. The assessment identifies some projects are expected to generate additional vehicle movements within Wagga Wagga. These vehicle movements would be distributed on the surrounding road network and are expected to have a minimal cumulative impact on the operation of the local road network.<br>The review also indicates that the surrounding project will not have a cumulative impact at the site access location. Accordingly, there are not expected to be any cumulative traffic impacts with surrounding projects. |
| Provide details of measures to mitigate and / or manage potential impacts including a schedule of all required road upgrades (including resulting from heavy vehicle and over mass / over dimensional traffic haulage routes), road maintenance contributions and any other traffic control measures, and clear figures of proposed road upgrades (including the site access point). | A Traffic Management Plan (TMP) is to be developed prior to construction of the Project which should include the recommendations provided within this document. The adoption of the mitigation measures outlined within the TMP would ensure construction traffic has a minimal impact on the capacity and safety of the surrounding road network.<br>In addition to the traffic management measures, it is proposed to provide minor road upgrades as part of the Project which are to be constructed prior to construction commencing. A schedule of the road upgrades is provided in Section 9.1. |

This Traffic Impact Assessment has also been prepared in response to the Agency Advice provided by Transport for New South Wales (TfNSW). Responses to each of the comments provided within the Agency Advice are outlined within Appendix B.

## 1.2 Road/Rail Authority Consultation

This Traffic Impact Assessment has been undertaken in consultation with Transport for NSW (TfNSW), V/Line and Wagga Wagga City Council with a summary provided in Table 2.

**Table 2: Road Authority Consultation**

| Road Authority | Method | Correspondence |
|---|---|---|
| **Transport for NSW** | Email | Advised to utilise growth rate of 1.5% per annum for traffic forecasts. Otherwise referred to the Agency Advice previously issued. |
| **Wagga Wagga City Council** | Email and Phone | Feedback on any road safety issues and nearby projects was sought via email and phone. Council staff advised via email that they would provide detail on any additional school bus routes once they receive feedback from TfNSW, as well as providing traffic count survey results for Holbrook Road. They also advised they would provide feedback on any planned works. |
| **V/Line** | Phone | Sought feedback via phone on the transport management arrangements for OSOM loads at the level crossing identified on the proposed OSOM route to site.<br>V/line advised that requirements would be outlined on receipt of a formal National Heavy Vehicle Register (NHVR) permit application. |

## 1.3 Purpose of Document

This Traffic Impact Assessment has been prepared to assess the construction, operational and decommissioning traffic impacts, and the access arrangements of the Project. The assessment responds to the SEARs and details how road impacts of the Project traffic, particularly from heavy vehicle use and oversize and overmass vehicles, would be avoided or managed using road-use management strategies.

More specifically, the report addresses the following key matters:

- Details of both light and heavy vehicle traffic volumes and proposed transport routes;
- An assessment of the potential traffic impacts of the Project on road network function and safety;
- An assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the Project;
- Details of measures to mitigate and/or manage potential impacts, including construction traffic control, road dilapidation surveys and measures to control dust generated by traffic volumes; and
- Details of access roads and how these connect to the existing road network and ongoing operational maintenance.

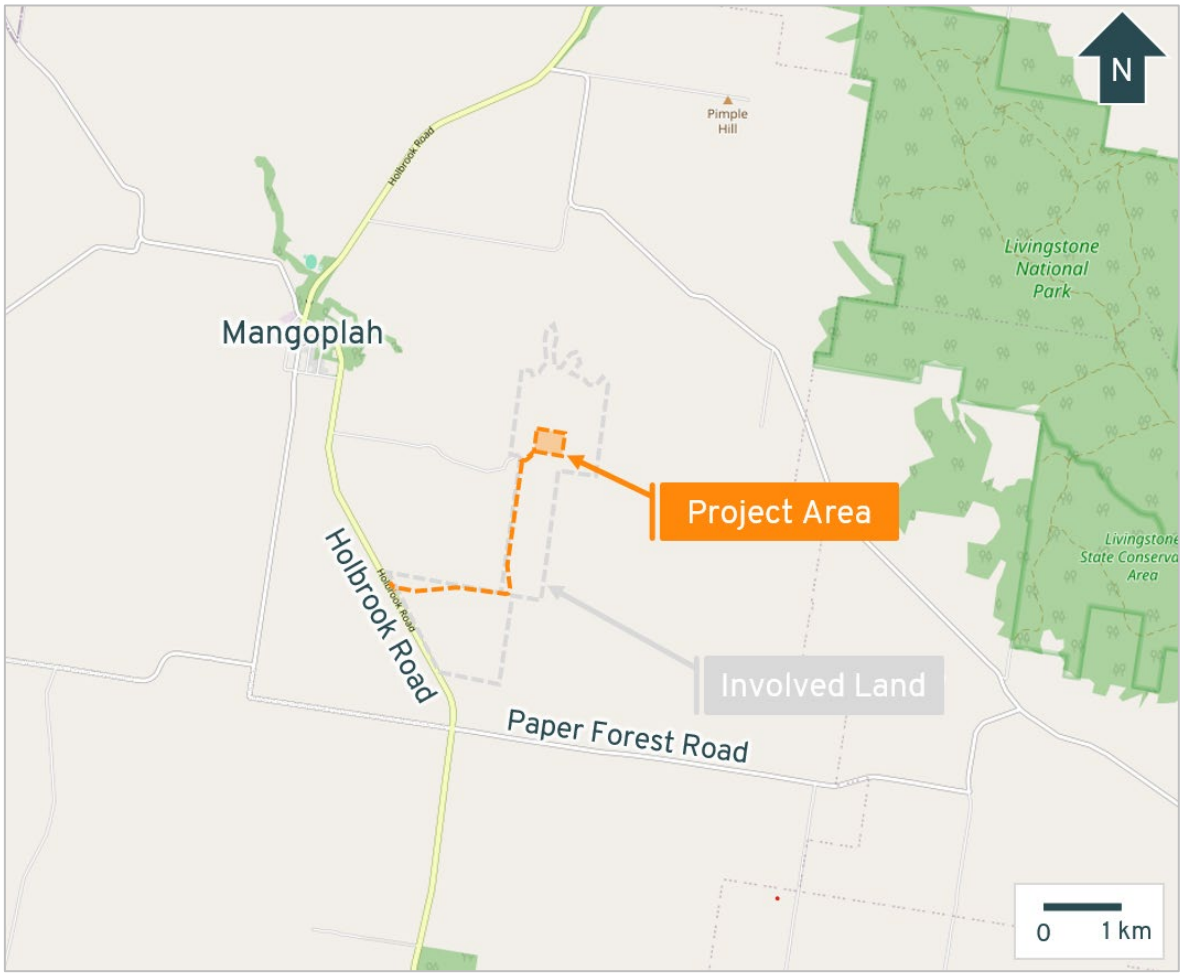
The traffic assessment has been undertaken in accordance with the *TfNSW Guide to Traffic Impact Assessments* and relevant Austroads Guidelines.

# 2. Existing Conditions

## 2.1 Site Location

The Project Area is located at 4178 Holbrook Road Mangoplah, approximately 31 kilometres south of Wagga Wagga. Figure 2 shows the location of the Project area in relation to the involved land and surrounding transport network.

**Figure 2: Site Location**




*Source: OpenStreetMap*

The site and surrounding area are zoned *RU1 - Primary Production* and are primarily occupied by agricultural or vegetated land. The site, including the site access road, has an area of approximately 13.1 hectares and is currently used for agricultural purposes.

Figure 3 provides an aerial photograph of the site and the surrounding area.

**Figure 3: Aerial Photograph**


*Source: SIX Maps*

## 2.2 Road Network

**Holbrook Road** is classified as a regional road and runs in a general north-south alignment between Red Hill Road in the north to its continuation as Holbrook Wagga Road in the south. It has a sealed carriageway width of approximately 6.6 metres which accommodates one lane of vehicle traffic in each direction. A posted speed limit of 100km/hr applies near the site.

## 2.3 Traffic Volumes

### 2.3.1 Holbrook Road

Amber commissioned a tube count on Holbrook Road at the proposed site access to determine the existing road environment. The tube count was undertaken from Saturday 1 March 2025 to Saturday 8 March 2025. The survey results are provided in Appendix C with a summary presented in Table 3.

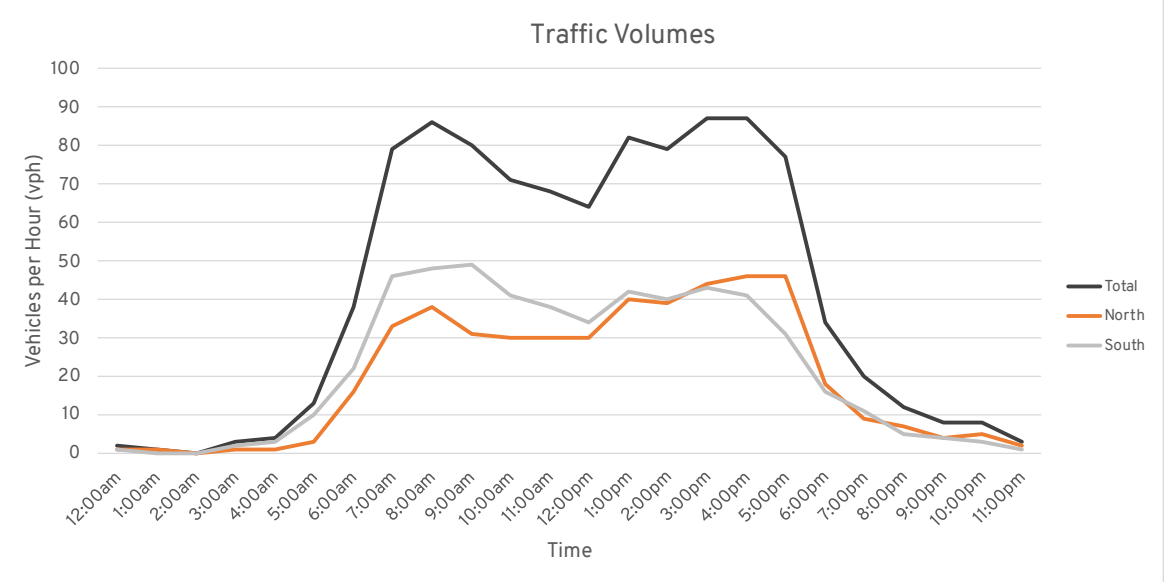
**Table 3: Holbrook Road Traffic Volumes – Proposed Site Access**

| | Weekday Traffic (vpd) | Weekday AM Peak - 8:00 (vph) | Weekday PM Peak - 16:00 (vph) | 85th Percentile Speed | Heavy Vehicle Percentage |
|---|---|---|---|---|---|
| **Northbound** | 475 | 38 | 46 | 110.4 km/hr | 25.2% |
| **Southbound** | 531 | 48 | 41 | 107.1 km/hr | |
| **Both Directions** | 1,006 | 86 | 87 | 108.9 km/hr | |

The survey data indicates Holbrook Road currently experiences a relatively low level of daily traffic in the order of 1,006 vehicles per day which is split relatively evenly between northbound and southbound vehicles. The 85th percentile speed is marginally higher than the posted speed limit and the road accommodates approximately 25% heavy vehicle traffic. The results are also consistent with the survey results provided by Council for Holbrook Road.

The average Monday to Friday hourly traffic volumes are shown graphically in Figure 4.

**Figure 4: Average Week Day Traffic Volumes on Holbrook Road at Site Access**




The figure shows that the traffic volumes along the highway with a relatively consistent volume of traffic between 7:00am and 5:00pm on weekdays. There are marginally more vehicles travelling south over north in the morning, and the reverse applies to the afternoon.

Overall, the data indicates Holbrook Road currently accommodates a relatively low level of traffic for its road classification and is able to accommodate an increase in vehicle traffic.

## 2.4 Public Transport

No public transport services are provided within the vicinity of the Project Area.

Two school bus services are provided along Holbrook Road within the vicinity of the site as outlined in Table 4.

**Table 4: Bus Services**

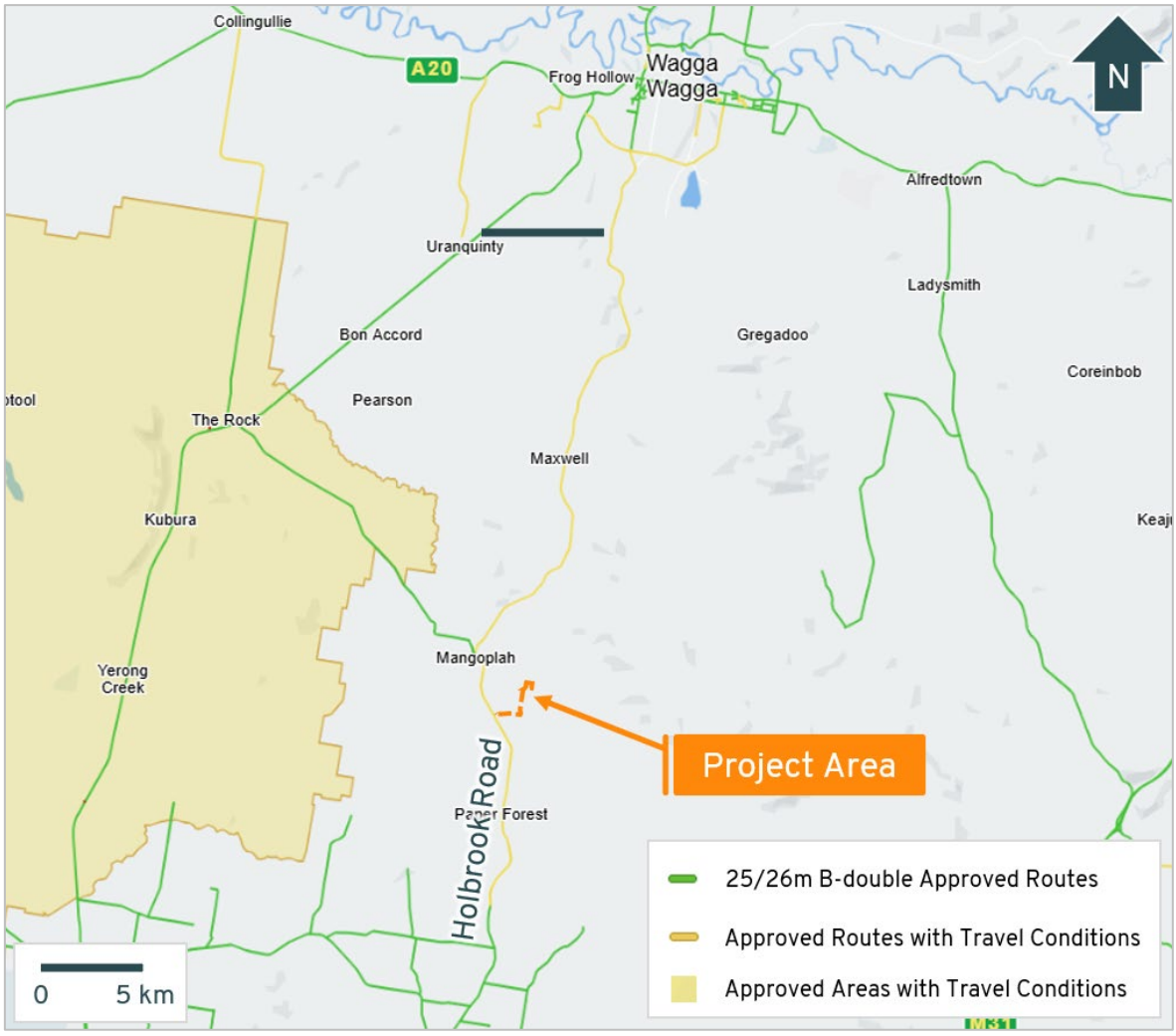
| Route No. | Route Name | Services | Schedule / Details |
|---|---|---|---|
| **S149** | The Riverina Anglican College to Mangoplah | One service is provided each day. | Services travel along Holbrook Road and pass the site access at approximately 5:00pm in the northbound direction. |
| **S147** | Mangoplah to Forest Hill Primary | One service is provided each day. | Services travel along Holbrook Road and pass the site access at approximately 7:10am in the southbound direction. |

## 2.5 Restricted Vehicle Access

### 2.5.1 B-Doubles

The NHVR Restricted Access Vehicle Map for the surrounding area is provided within Figure 5. The green lines indicate approved B-Double routes while the yellow lines represent approved routes with travel conditions.

**Figure 5: NHVR 26m B-Double Network Approved Roads**




*Source: NHVR 26m B-Double Network Approved Roads*

The figure shows that Holbrook Road is an approved route which is subject to the following travel condition:

> *Travel is only permitted where the destination of the driver lies within the length of road that is between the Greater Hume Local Government Area boundary and the intersection with Red Hill Road, or, in the event of a declared emergency - travel is permitted in conjunction with a detour route that is organized by the road authority.*

The surrounding State Road network are B-Double approved routes. Accordingly, the site has access to the B-Double approved road network via Holbrook Road.

### 2.5.2 Class 1 OSOM Vehicles

The NHVR Oversize Overmass (OSOM) Load Carrying Vehicles Network map for the surrounding area is provided within Figure 6. The map shows approved routes for eligible vehicles operating under the Multi-State Class 1 Load Carrying Vehicles Mass and Mass Exemption Notices.

A summary of the allowances under each exemption within New South Wales is provided below:

- *Dimension: up to 5.0m wide, 5.0m high, 30.0m long and 7.5m rear overhang on approved (state owned) routes in NSW.*
- *Mass: up to 115.0 tonnes for rows of 8 tyres low loaders and up to 77.5 tonnes for rows of 4 tyres low loader combinations.*

Vehicles operating in the daytime and not exceeding 3.5m wide or 26m long generally do not require a pilot vehicle.

The green lines indicate approved Class 1 OSOM Vehicle routes. Accordingly, the site has access to the Class 1 OSOM approved road network via Hume Highway. Holbrook Road is unrated and would require approval from Wagga Wagga City Council and Greater Hume Council for Class 1 OSOM vehicles to operate along these roads.

**Figure 6: NHVR Class 1 Oversize Overmass Load Carrying Vehicles Network Approved Roads**


*Source: NHVR Restricted Access Vehicle Map*

## 2.5.3 Special Purpose Vehicles (SPVs)

Vehicles built for a purpose other than carrying goods such as a mobile crane, a concrete pump or drill rig are defined as Special Purpose Vehicles (SPVs).

The NSW Special Purpose Vehicle Network map provides details of the approved roads as well as conditions of access and travel restrictions for eligible SPVs operating under the:

- National Class 1 Special Purpose Vehicle Notice;
- NSW Class 1 4-Axle & 5-Axle All Terrain Mobile Crane Mass and Dimension Exemption Notice; or
- NSW Class 1 All Terrain Mobile Crane and Dolly Combination Mass and Dimension Exemption Notice.

Roads that are not approved on the map require an access permit from the National Heavy Vehicle Regulator or the relevant road manager. There are six SPV access networks for cranes travelling on approved State Roads in NSW:

- SPV Level 1: Cranes and SPVs up to 40 tonnes that comply with the Bridge Formula.
- SPV Level 2: Crane and dolly combinations up to 70 tonnes that comply with the Bridge Formula.
- SPV Level 3: 3-axle All Terrain Cranes up to 36 tonnes and 4-axle All Terrain Cranes up to 43 tonnes.
- SPV Level 4: 4-axle All Terrain Cranes up to 45.8 tonnes and 5-axle All Terrain Cranes up to 50 tonnes.
- SPV Level 4 / 12t per axle: 4-axle All Terrain Cranes up to 48 tonnes and 5-axle All Terrain Cranes up to 50 tonnes.
- SPV Level 6: 5-axle All Terrain Cranes up to 60 tonnes.

The approved routes for SPV Level 3 travelling within the surrounding area are identified within Figure 7. The yellow lines represent approved routes with travel conditions. The figure shows that Hume Highway is approved with travel conditions near the site for SPV Level 3 vehicles. The travel condition is as follows:

> *Vehicles exceeding 2.5 metres wide or 22 metres long are not permitted to travel between sunrise and sunset during public holiday periods (including 23 December in one year to 3 January of the following year inclusive).*

It should be noted that there are multiple restricted bridges on Hume Highway and Olympic Highway for SPV Level 4 and higher. Assessment on suitable transport routes for specific special purpose vehicles should be undertaken when required vehicles and vehicle origins are known.

**Figure 7: NHVR SPV Level 3 Network Approved Roads**


*Source: NHVR Restricted Vehicle Access Map*

## 2.6 Crash History

Amber has conducted a review of the TfNSW Centre for Road Safety Crash and Casualty Statistics database for all recorded crashes within the surrounding area of the Project. The crash database provides the location and severity of all injury and fatal crashes for the five-year period from 2019 to 2023. The search area included the following roads:

- Holbrook Road between Burke Street and Paper Forest Road;
- All associated intersections.

The results of the crash search are summarised in Table 5.

**Table 5: TfNSW Crash Statistics**

| Road | Location | Severity | Crash Type | Date and Time | Light and Weather Conditions |
|---|---|---|---|---|---|
| Holbrook Road | 290m North of Paper Forest Road | Fatal | Off road to the right on right bend | October 2021 (12:00 - 13:59) | Daylight (Fine) |
| Holbrook Road | 864m South of Tywong Street | Fatal | Off road to the right on right bend | November 2021 (20:00 - 21:59) | Darkness (Fine) |

The review shows that two fatal off road to the right on bend crashes occurred within the review period. One crash occurred 290 metres north of Paper Forest Road in October of 2021 while the other crash occurred 864 metres south of Tywong Street in November of 2021. The crashes are approximately 3.6 kilometres apart on Holbrook Road and are both approximately 1.5 kilometres north and south of the proposed access point (respectively) which is on a straight section of the road.

The crash type is not unexpected on single lane rural roads and does not appear to be reflective of a specific road safety issue at the proposed site access location given the isolated nature of the crashes.

# 3. Project Description

## 3.1 Proposed Works

The Project involves the development, construction, operation and decommissioning of a BESS of approximately 100MW/400MWh. The Project would consist of the following components:

- BESS including battery enclosures, inverters, transformers, switchgear and control room;
- On-site substation including transformer switch bays and switchgear housed in portable substation containers;
- Connection from the onsite substation to the existing overhead 132kv transmission line;
- Permanent office, operation and maintenance (O&M) buildings, hardstands and Project signage;
- Site access to the BESS from Holbrook Road, internal site access tracks and parking; and
- Stormwater management infrastructure, lighting, fencing and security.

## 3.2 Construction Information

The physical construction of the Project is expected to commence in 2027 and take 12 to 15 months, with the peak construction period expected to take three months. Construction activities would be undertaken during standard daytime construction hours, as follows:

- Monday to Friday: 7am – 6pm
- Saturday: 8am – 3pm
- No work on Sundays or public holidays.

Any construction outside of these normal working hours would only be undertaken with prior approval from relevant authorities and consultation with impacted road users. A construction workforce of up to 60 personnel would be on-site during the peak construction phase and would primarily be drawn from the nearby city of Wagga Wagga.

A Traffic Management Plan (TMP) would be prepared by the appointed contractor prior to construction commencing as outlined in Section 7.4.

# 4. Traffic Assessment

Traffic generated by the Project can be separated into three distinct stages: construction, operation and decommissioning. The peak traffic generating potential is during construction which generates trips associated with the workforce accessing the Project Area and the delivery of raw materials and plant. During operation the Project is expected to generate a lower amount of traffic associated with two full time maintenance personnel accessing the Project Area each day. Decommissioning is anticipated to generate a similar level of traffic to the construction stage.

The following provides an assessment of the potential traffic impacts of the Project on the road network function for each of the three stages.

## 4.1 Definitions

The following terminology is referenced throughout this section and within the remainder of the report.

**Table 6: Traffic Assessment Definitions**

| Terminology | Definition |
|---|---|
| **Vehicle Trip** | A trip is defined as a one-way vehicular movement from one point to another excluding the return journey. Therefore, a return trip to and from the site is counted as two trips. |
| **Vehicles per Day (vpd)** | The volume of traffic (number of trips) occurring within a 24-hour period. For traffic volumes associated with the Project, this value is generally an even number to reflect the return trip associated with each vehicle. |
| **Vehicles per Hour (vph)** | The volume of traffic (number of trips) occurring within a one-hour period. |
| **Heavy Vehicle** | A vehicle with a Gross Vehicle Mass (GVM) or Aggregate Trailer Mass (ATM) of more than 4.5 tonnes as defined in the Heavy Vehicle National Law (HVNL). |
| **General Access Vehicle (GAV)** | General Access Vehicles (GAV) don't require a permit or notice to access road networks; these vehicles have as-of-right access to the network unless signposted otherwise (e.g. a bridge tonnage restriction). |
| **Restricted Access Vehicle (RAV)** | Restricted Access Vehicles (RAV) include Class 1, 2 or 3 vehicles that operate under a notice or permit and vehicles operating under higher mass limits (HML) that have restrictions on the parts of the road network they can access. |
| **Oversize and/or Overmass (OSOM) Vehicle** | OSOM vehicles are defined as Class 1 vehicles under the Heavy Vehicle National Law. A vehicle or vehicle combination is considered to be OSOM if it exceeds any general access mass or dimension limits. |
| **High Risk Oversize/Overmass Vehicle (requiring escort)** | OSOM vehicles exceeding certain criteria for length, height, rear overhang, forward projection, width or total combination weight. These vehicles are subject to Transport Management Plans (TMPs) which provide a comprehensive planning and execution focus to ensure that these movements are carried out in a safe and responsible manner with reduced impact on other road users and road infrastructure. These vehicles also typically require pilot vehicle escort. |

## 4.2 Construction Phase

### 4.2.1 Standard Construction Traffic Generation

Construction traffic generated by the Project on a day-to-day basis can be broadly separated into the following categories as outlined in Table 7.

**Table 7: Standard Construction Traffic**

| Terminology | Definition |
|---|---|
| **Light Vehicles** | The use of light vehicles will be associated with transporting the workforce to/from the Project Area. A conservative vehicle occupancy of approximately 1 person per car has been adopted to calculate the light vehicle traffic generation to account for the absolute worst-case noting the workforce would be encouraged to carpool. |
| **Heavy Vehicles** | |
| **Rigid Trucks** | Rigid Trucks will be used to deliver raw materials and smaller plant and have a typical length between 8 and 13 metres. |
| **Truck and Dog** | Truck and Dog vehicles consist of a rigid truck towing either a dog trailer or a pig trailer and are not more than 19 metres in length. A dog trailer is a trailer with axles at either end of the trailer, a pig trailer has the axles centred on the trailer. These vehicles will be utilised to transport the majority of quarry materials to/from the site. |
| **Semitrailers** | Semitrailers will be used to transport larger equipment and materials. These vehicles consist of a truck and a single trailer with a total length of 19 metres. |
| **B-Doubles** | B-Doubles will also be used to transport larger plant. B-Doubles consist of a truck with two trailers and have a maximum length of 26 metres. |
| **Non High Risk OSOM (not requiring escort)** | Class 1 OSOM vehicles which can operate on the approved network outlined in Section 2.5.2 subject to travel conditions, as well as vehicles built for a purpose other than carrying goods such as a mobile crane, a concrete pump or drill rig which are defined as Special Purpose Vehicles (SPVs) and can also operate on the relevant approved networks subject to travel conditions. |

The peak hour for construction traffic will occur at the start and end of the day when workers drive to/from the Project Area. Most workers will typically arrive on-site between 6:00am and 7:00am and depart between 5:00pm and 7:00pm. Workers generally have staggered finish times which results in the evening peak hour being less pronounced, however for the purposes of this assessment it is conservatively assumed that the evening peak hour Project traffic is the same as the morning peak, and the evening peak hour occurs from 5:00pm to 6:00pm.

The construction traffic volumes for the Project have been provided by the Applicant. It is anticipated that during peak construction the Project would generate up to 120 light vehicle trips and 64 heavy vehicle trips per day. Table 8 summarises the forecast traffic volumes expected to be generated during the construction period of the Project.

**Table 8: Traffic Generation During Construction Period**

| Vehicle Type | | Average Construction Periods | | Peak Construction Period | |
|---|---|---|---|---|---|
| | | Vehicle Trips per Day (vpd) | Peak Hour Trips (vph) | Vehicle Trips per Day (vpd) | Peak Hour Trips (vph) |
| **Light Vehicles (LV)** | | 40 | 20 | 120 | 60 |
| | Rigid Trucks | 12 | 1 | 12 | 1 |
| | Truck and Dog | 16 | 1 | 24 | 2 |
| | Semitrailers | 4 | 0 | 8 | 1 |
| | B-Doubles | 4 | 0 | 8 | 0 |
| | SPV | 4 | 0 | 4 | 0 |
| | Non High Risk OSOM | 4 | 0 | 8 | 0 |
| | *HV Subtotal* | *44* | *2* | *64* | *4* |
| | **Total** | **84** | **22** | **184** | **64** |

Overall, the Project is expected to generate up to 64 vehicle trips per hour in the morning and evening peak hours during the peak construction period, which would reduce to 22 vehicle trips per hour during the average construction periods.

### 4.2.2 Non High Risk OSOM Vehicles

There is a mix of non-high risk OSOM vehicles required for the construction which would include vehicles and plant like:

- Excavators
- Mobile cranes
- Graders
- Telehandlers
- Drum / padfoot rollers
- Wheeled loader
- Dump truck
- Concrete pumps
- Compactors
- Pile driving rig
- Cable trenching and laying equipment

It is anticipated that the vehicles would comply with the Class 1 exemption notices and would be able to operate on the approved NSW Special Purpose Vehicle Network. The vehicles would access the site directly from Holbrook Road which is rated to accommodate complying vehicles.

Many of the vehicles listed above would not create daily trips in and out of the Project area. It is expected that there will be influxes of arrivals and departures from the site depending on the phase of the construction. Once arrived, they would remain until not required, before being removed from the site. The trips would be generated outside of peak site access hours.

Vehicle types and any necessary permits would be confirmed and obtained (as needed) once the construction methodology is determined.

### 4.2.3 High Risk OSOM Vehicles

In addition to the traffic volumes outlined in Table 8, high risk OSOM vehicles will also be required for the delivery of the largest plant and equipment. These vehicles would exceed the Class 1 mass and/or dimension requirements and are subject to separate permit applications and regulations, including use of a vehicle escort.

High risk OSOM vehicles will contribute the smallest percentage of vehicles accessing the Project Area during the construction period and are subject to the development of Transport Management Plans to manage each vehicle trip in a safe manner. The movement and impact of these vehicles, and the subsequent road upgrades required, are discussed within Section 6. The following assessment focuses on the impacts of the regular light and heavy vehicles outlined in Table 8 which generate the bulk of the traffic and represent the typical traffic impact of the Project on a day-to-day basis.

### 4.2.4 Traffic Distribution

It is anticipated that the majority of the workforce for the construction of the Project would be located in Wagga Wagga as well as range of other towns to the south of the site including Holbrook. Materials and equipment will generally be sourced from within Wagga Wagga or the surrounding area where practicable, with all larger plant expected to be delivered from Port of Melbourne or the Port of Geelong.

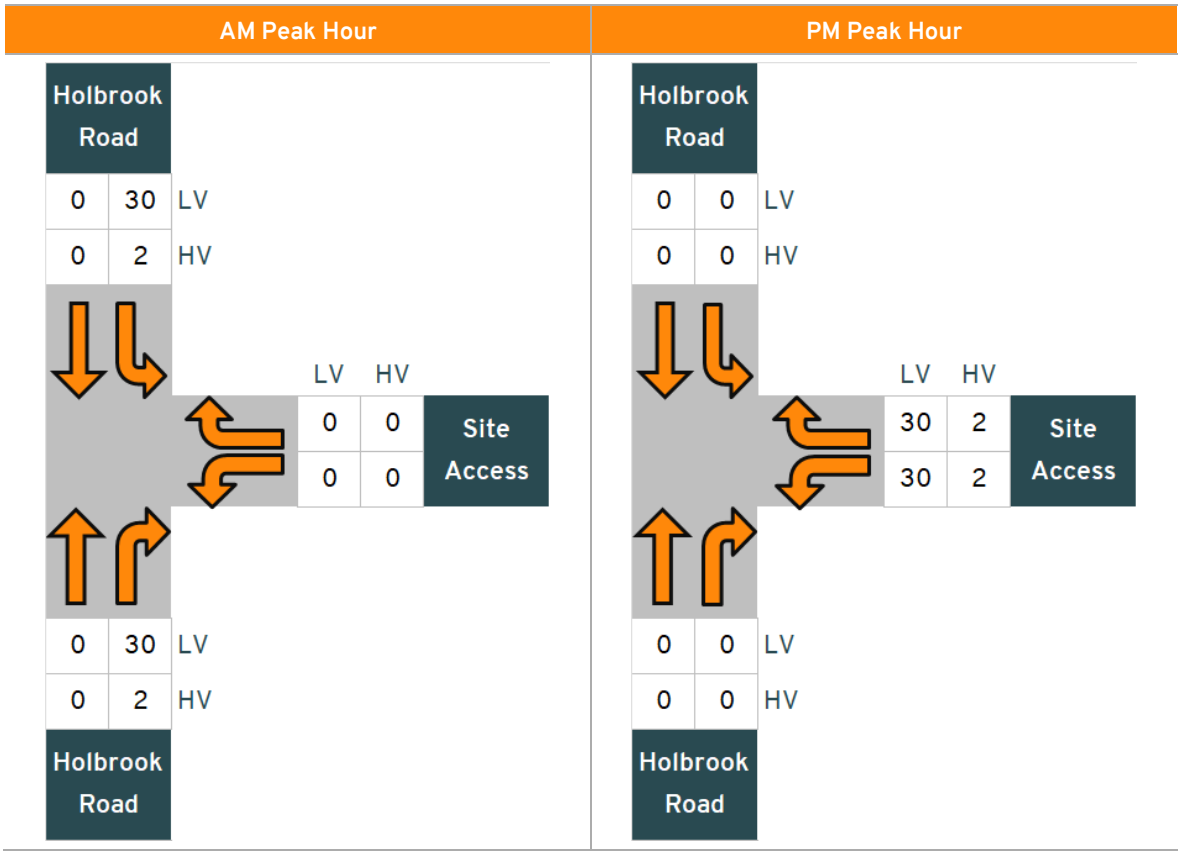
During the morning peak all vehicle trips would be toward the site and in the evening peak all vehicle trips would be away from the site. The majority of heavy vehicle trips would be distributed throughout the day and would be split evenly between inbound and outbound trips.

Accordingly, the following distribution for the AM peak hour has been adopted:

- **Light vehicles:** 50% from the north, 50% from the south;
- **Heavy Vehicles delivering materials:** 80% from the north, 20% from the south; and
- **Heavy Vehicles delivering plant and large project components:** 100% from the south.

Based on the traffic distribution above the estimated vehicle trips generated by the site during the peak hours are shown in Figure 8.

**Figure 8: Expected Peak Hour Project Traffic Volumes During Peak Construction**




## 4.2.5 Cumulative Traffic Impacts

The primary traffic impact of the BESS is generated during construction which is anticipated to start in mid-2027 and take approximately 12 to 15 months. A summary of the major projects that are proposed in the surrounding area are identified in Table 9.

**Table 9: Assessment of Cumulative Impacts of Nearby Developments**

| Project | Description | Potential Vehicle Conflict |
|---|---|---|
| **Wagga Wagga Lithium Ion Battery Recycling Facility (Exhibition)** | Installation of an enclosed battery recycling machine within the industrial building. Installation of a LPG tank. Installation of an evaporative water-cooling tower and 3 exhaust chimneys. Fit out of existing office complex. Located approximately 31km northeast of the Project Area. | There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Wagga Wagga. |

| Project | Description | Potential Vehicle Conflict |
|---|---|---|
| **HumeLink (Approved)** | Development of new transmission lines between the existing substations at Wagga Wagga and Bannaby and the proposed Maragle substation, and a new substation at Gugaa. Wagga Wagga substation located approximately 23km northeast of Project Area. | Construction on the Wagga Wagga Substation is expected to continue through to the end of 2026. There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Wagga Wagga. |
| **Inland Rail – Albury to Illabo - Bomen Yard Clearances (Approved)** | Enhancement works to structures and sections of track along 185 kilometres of existing operational standard gauge rail from the Victorian/New South Wales border to Illabo in regional NSW. The rail line is west of the Project area generally alongside Olympic Highway. | This section of Inland Rail planned to be operational by 2027. There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Wagga Wagga. |
| **Project EnergyConnect (Approved)** | Development of a new transmission line connecting Buronga Substation and Wagga Wagga Substation, and construction of the new Dinawan Substation (170 km west of Wagga Wagga). Wagga Wagga substation located approximately 23km northeast of Project Area. | Original determination granted 9/22 however ongoing modifications recently approved in 9/24. There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Wagga Wagga. |
| **Gregadoo Solar Farm (Approved)** | Development of a 47 megawatt solar farm and associated infrastructure. Modification to include a 200MW BESS onsite. Located approximately 23km northeast of the Project Area. | Construction planned to commence in 2025. There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Wagga Wagga. |
| **Livingstone Solar Farm** | Development of a 600 MW solar farm with battery storage and associated infrastructure. Located approximately 21km northeast of the Project Area. | There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Wagga Wagga. |
| **Uranquity Compressor Station (Prepare Mod Report)** | Construction and operation of a compressor station at Uranquinty. Located approximately 23km northwest of the Project Area. | There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Wagga Wagga. |
| **Morven Solar Farm (Prepare EIS)** | Development of an 125 MW solar farm with battery storage and associated infrastructure, located approximately 45km southwest of the Project Area. | There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Wagga Wagga, however the project would predominately use Olympic Highway and not interface with this Project. |

| Project | Description | Potential Vehicle Conflict |
|---|---|---|
| **Culcairn Solar Farm (Under construction)** | 350 megawatt solar farm with energy storage and associated infrastructure, located approximately 45km southwest of the Project Area. | There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Wagga Wagga, however the project would predominately use Olympic Highway and not interface with this Project. |
| **Jindera BESS (Prepare EIS)** | Construction, operation and decommissioning of a Battery Energy Storage System (BESS) with a capacity of 250 megawatts (MW) / 500 megawatt hours (MWh), as well as associated infrastructure, located approximately 68km southwest of the Project Area. | There is potential for construction of both projects to overlap. Unlikely that project traffic of these two projects will interact. |
| **Wagga North BESS (Development Application – Special Activation Precinct)** | Construction, operation and decommissioning of a Battery Energy Storage System (BESS) with a capacity of 120 megawatts (MW) / 480 megawatt hours (MWh), as well as associated infrastructure, located within the Special Activation Precinct approximately 44km northeast of the Project Area. | Construction planned to commence in 2026. There is potential for construction of both projects to overlap. The traffic generated from both projects may interact within the town of Wagga Wagga. |

The above assessment indicates that a number of projects are expected to generate additional vehicle traffic within and around Wagga Wagga. The vehicles would be distributed on the surrounding road network and are expected to have a minimal cumulative impact on the operation of the road network.

The review indicates that none of the assessed projects are expected to utilise Holbrook Road as part of their designated routes for construction traffic. Accordingly, any cumulative traffic impacts with surrounding projects are expected to be minimal.

### 4.2.6 Traffic Assessment

All traffic travelling to/from the Project Area would travel via Holbrook Road. An assessment of the mid-block operation of the road has been carried out to determine the ability of the road network to accommodate the traffic expected to be generated during the peak construction period.

An important consideration in determining the impact of a development proposal on the road system is to assess the effect on traffic efficiency, the objective of which is to maintain the existing level of service. Level of Service is defined within the *Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis* as:

> *'... a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of factors*

*such as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety.'*

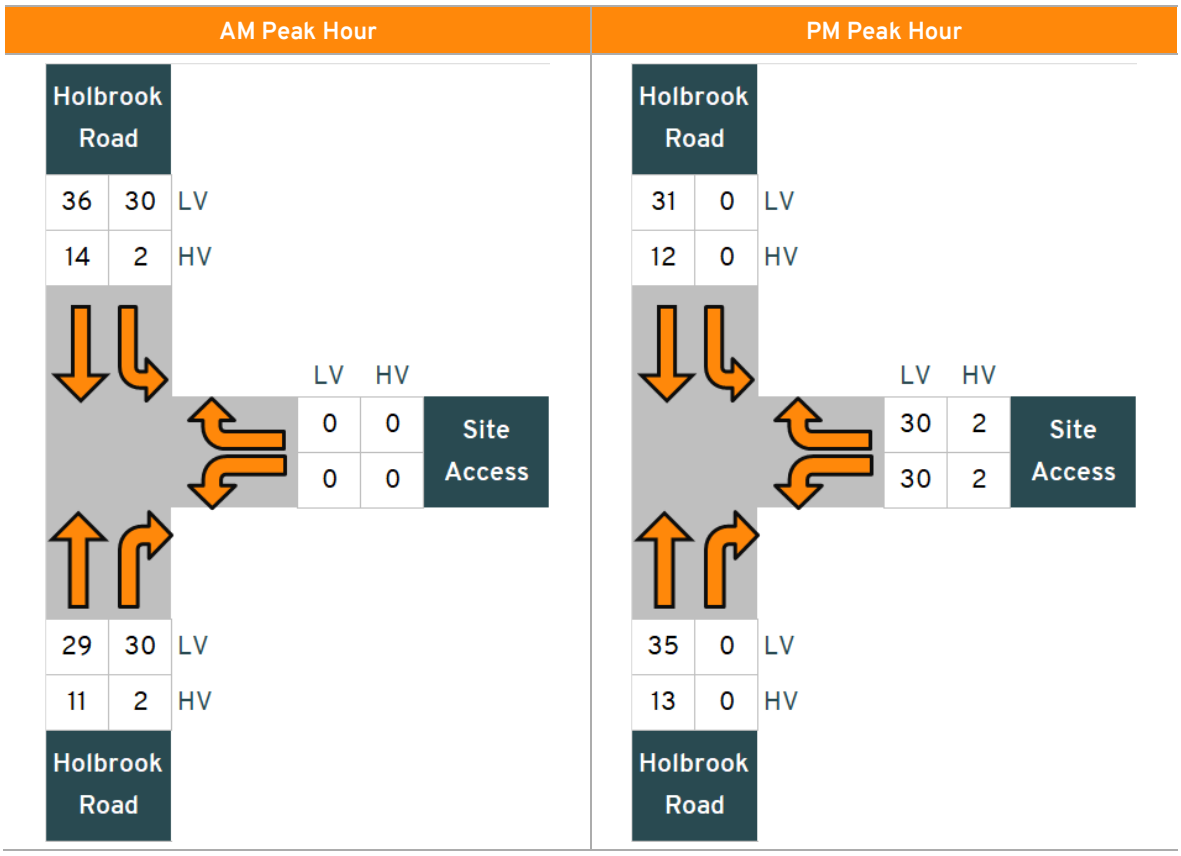
Levels of Service (LoS) are designated from A to F from best (free flow conditions) to worst (forced flow with stop start operation, long queues and delays). Table 4.5 of the RTA Guide sets out two-way hourly road capacities for two-lane roads for different levels of service and based on different terrain types.

The expected traffic volumes along Holbrook Road have been determined for the morning peak hour (6:00-7:00am) and evening peak hour (5:00pm-6:00pm) during the peak construction period. The traffic volumes utilised for the assessment are the total volumes for the following:

- Existing surveyed traffic volumes presented within Appendix C and Section 2.2 adjusted by an estimated 1.5% compounded annual growth rate over 3 years to reflect the end of the construction period in 2028; and
- The peak construction project traffic volumes presented within Figure 8.

The resulting total traffic volumes used for the assessment are provided in Figure 9.

**Figure 9: Peak Construction Traffic Volumes**




The traffic volumes accommodated on Holbrook Road during the peak hours are shown within Table 10, which is been based on the surveyed traffic volumes presented within Section 2.3.1 (existing volumes) and the anticipated traffic volumes of the proposal presented within Figure 9 (expected volumes).

**Table 10: Expected Peak Hour Traffic Volumes During Construction**

| Road | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|
| | Existing Volume | Expected Volume | LOS | Existing Volume | Expected Volume | LOS |
| Holbrook Road | 86 | 154 | A | 87 | 155 | A |

Therefore, during the peak hours of construction Holbrook Road would accommodate approximately 155 vehicles per hour during peak construction which is well within the capacity of the road network, and the road is expected to continue to operate with a good level of service (LoS A) based on Table 4.5 of the RTA Guide.

During the middle of the day the traffic movements are expected to be predominantly associated with heavy vehicles with approximately six vehicle movements per hour. This increase in traffic would be within the daily variation of traffic volumes on Holbrook Road and can be readily accommodated on the road network.

Accordingly, the road network is able to readily accommodate the traffic generated by the development during the construction and operational periods.

## 4.3 Operational Phase

During operation, the BESS is expected to generate a minimal level of traffic associated with maintenance and operation services. The BESS is expected to be operated by two maintenance personnel and occasional deliveries resulting in a traffic generation of up to eight vehicle movements per day which would result in a negligible change to the traffic environment. There would also be occasional heavy vehicles delivering to the site but only as required for maintenance.

## 4.4 Decommissioning Phase

At the end of the operational life of the Project all above ground infrastructure would be dismantled and removed from the Project Area. Internal roads, if not required for ongoing farming purposes or fire access, would be removed and the site reinstated as close as possible to its original state.

Traffic generation during decommissioning would be similar to traffic generation during the average construction period. A comprehensive Traffic Management Plan would be prepared prior to the decommissioning phase in conjunction with the relevant road authorities. This would aim to ensure adequate road safety and road network operations are maintained.

## 4.5 Summary

The Project is expected to generate the highest level of traffic during the peak construction period. The assessment presented above indicates that the road network is able to accommodate the Project traffic during the peak construction period. The assessment also included a review of the cumulative traffic generated by other major Projects within the surrounding area.

During construction the vehicle trips throughout the middle of the day are expected to be predominantly associated with heavy vehicles with approximately six vehicles per hour. This increase in traffic would be within the daily variation of traffic volumes on the road network and can be readily accommodated.

It is anticipated that high risk OSOM vehicles would access the site during the construction phase. The vehicles would be unloaded and kept to their smallest practicable dimensions when departing the site. The vehicles will travel under escort outside of the peak periods and would be able to be accommodated on the road network subject to the road upgrades and mitigation measures discussed in Section 9 which would be confirmed as part of specific permits that would be applied for prior to construction.

During operation the increase in traffic of up to eight vehicle movements per day would result in a negligible change to the traffic environment.

Accordingly, the road network is able to readily accommodate the traffic generated by the Project during the construction, operation, and decommissioning periods.

# 5. Heavy Vehicle Route Assessment

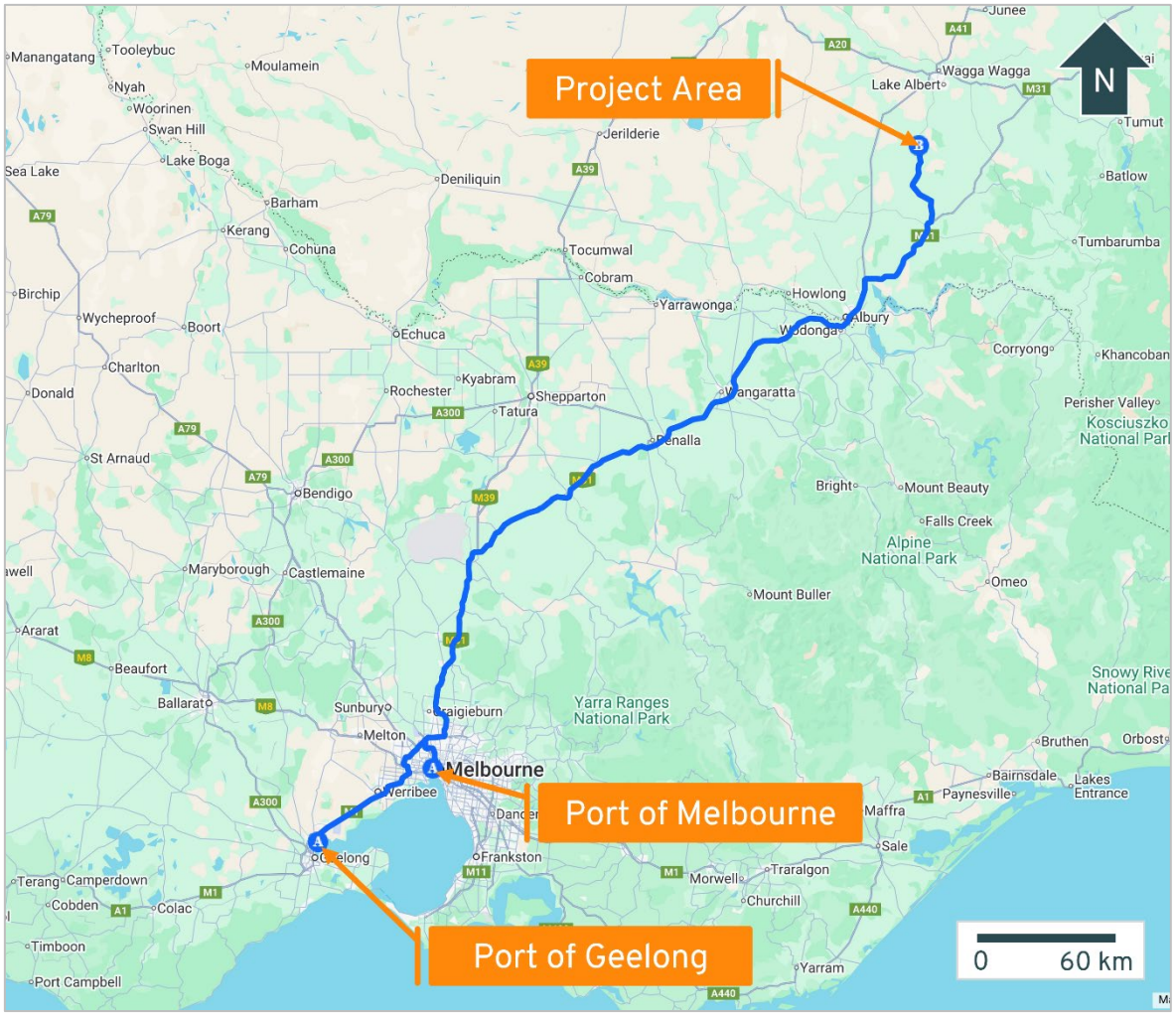
All specialist plant and BESS components are expected to be delivered from the Port of Melbourne or the Port of Geelong, Victoria. The following provides a review of the proposed access routes for heavy vehicles (excluding high risk OSOM vehicles) travelling from each port.

## 5.1 General Access Vehicles

All heavy vehicle Project traffic up to and including semitrailers would be classified as General Access Vehicles (GAV) which have as-of-right access to the road network unless signposted otherwise. These vehicles would travel along a direct route between Port of Melbourne and Port of Geelong to the Project Area.

The proposed access routes from Port of Melbourne to the site and Port of Geelong to the site measure approximately 427 kilometres and 483 kilometres, respectively, and are outlined in Figure 10.

**Figure 10: General Access Vehicle Route from Port of Melbourne and Port of Geelong to Site**




*Source: NHVR Route Planner – Route ID: 2MCYD-9 v3 (Melbourne) and 2NN0Q-5 v1 (Geelong),*

## 5.2 B-Double Access Route

The proposed access routes for 26m B-Doubles travelling from Port of Melbourne to the Project Area and Port of Geelong to the Project Area is the same as the GAV routes proposed above. All roads are approved for 26 metre B-Double access in the NHVR Network Map as shown in the summary provided in Table 11.

**Table 11: B-Double Vehicle Route - Access Roads from Port of Melbourne and Port of Geelong**

| Road Name | State | Jurisdiction | B-Double Approved |
|---|---|---|---|
| **Port of Melbourne** | | | |
| **Docklands Highway / Footscray Road** | Victoria | DTP | Approved |
| **City Link (M2)** | | | |
| **Tullamarine Freeway (M2)** | | | |
| **Port of Geelong** | | | |
| Madden Avenue | Victoria | City of Greater Geelong | Approved |
| Seabeach Parade | | DTP | |
| St Georges Road | | | |
| Princess Highway (A10) | | | |
| Princess Freeway (M1) | | | |
| **Port of Melbourne and Port of Geelong** | | | |
| **Western Ring Road (M80)** | Victoria | DTP | Approved |
| **Hume Freeway (M31)** | | | |
| **Hume Highway (M31)** | NSW | TfNSW | |
| **Holbrook Wagga Road** | | TfNSW & Greater Hume Shire Council | |
| **Holbrook Road** | | TfNSW & Wagga Wagga City Council | Approved with Conditions |

The travel conditions for B-Doubles vehicles on Holbrook Road stipulate that travel is only permitted where the destination of the driver

> *lies within the length of road that is between the Greater Hume Local Government Area boundary and the intersection with Red Hill Road, or, in the event of a declared emergency - travel is permitted in conjunction with a detour route that is organized by the road authority.*

Accordingly, B-Double vehicles have access to the Project Area on the State and Regional road network.

## 5.3 Mitigation Measures

A TMP is to be developed which is recommended to include the following measures to minimise the impact of construction traffic:

- Neighbours of the Project are to be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.
- Heavy vehicles should avoid travel during peak bus operating times to limit the interaction of larger vehicles and vulnerable road users. School buses operate along Holbrook Road as outlined in Section 2.4 and will be detailed within the TMP.

Therefore, it is concluded that the road network is suitable to accommodate the future light and heavy vehicle traffic volumes generated by the Project.

# 6. High Risk OSOM Vehicles

OSOM vehicles will be required to deliver larger plant to the site such as the sub-station transformer and earthmoving equipment. These vehicles are expected to exceed the Class 1 mass and/or dimension requirements and would be classified as high risk OSOM vehicles. These vehicles are subject to Transport Management Plans (TMPs) which provide a comprehensive planning and execution focus to ensure that vehicle movements are carried out in a safe and responsible manner with reduced impact on other road users and road infrastructure. High Risk OSOM vehicles also typically require pilot vehicle escort.

The Applicant has advised that three high risk OSOM vehicles would be required to access the site during the construction period. The vehicles would be unloaded and kept to their smallest practicable dimensions when departing the site to avoid classification as OSOM where possible.

High risk OSOM vehicles will travel outside of the peak periods and would be subject to the mitigation measures discussed throughout this section which would be confirmed as part of specific permits that would be applied for prior to construction.

## 6.1 Load and Vehicle Configurations

The three high risk OSOM vehicles are outlined as follows:

- One vehicle to transport the main transformer. The delivery is assumed from Port of Melbourne or Port of Geelong, which would result in one high risk OSOM vehicles accessing the site loaded and departing the site unloaded during construction and decommissioning.
- Two vehicles to transport the modular buildings resulting in two vehicles being classed as oversize in one direction only for both construction and decommissioning. The modular buildings would be delivered from Port of Melbourne or Port of Geelong and is expected to utilise the same access route as the transformer.

These OSOM vehicles will travel outside of the peak periods and would be subject to the road upgrades and mitigation measures discussed throughout this section which would be confirmed as part of specific permits that would be applied for prior to construction.

The following provides a review of the proposed access route for the transformer vehicle which is the largest transport vehicle configuration proposed.

## 6.2 Transformer Vehicle

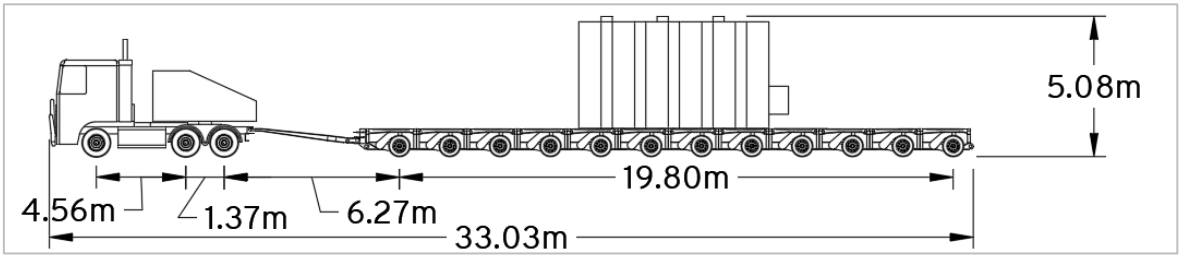
The largest component to be delivered to the site is expected to be the 120MVA transformer. The Applicant has provided information regarding the expected specifications of the transformer which are outlined in Table 12.

**Table 12: Estimated Transformer Specifications**

| Length | Width | Height | Mass | Trailer Specifications |
|---|---|---|---|---|
| 7.5m | 2.75m | 4.0m | 136 tonnes | 12x8 Platform Trailer |

An OSOM vehicle configuration has been identified for the expected transformer model. The vehicle used for the assessment is shown within Figure 11 and is based on feedback from a transport company which confirmed that the vehicle specification would be suitable for the weight and size of the transformer.

**Figure 11: OSOM Vehicle**




*Source: RJA*

## 6.3 Access Route

The Applicant has advised that the transformer delivery will be to the Port of Geelong or Port of Melbourne. It is expected that the access routes from the two origins will utilise the same access route once on the Metropolitan Ring Road in Melbourne.

In order to determine whether any civil works are required to accommodate the OSOM vehicle on the road network a route assessment has been undertaken by Amber and is attached in Appendix A. The OSOM vehicle would be provided with escort and pilot vehicles in accordance with relevant authority requirements.

The access routes, along with the five identified truck rest areas that could be used along the routes, are shown in Figure 12[1]. It is noted that additional rest stop areas may also be available along the access routes. A total of 30 points of interest for further assessment were identified as part of the assessment of the two access routes. The points of interest have been assessed in further detail, along with the site access, with the full assessment provided within Appendix A.

[1] The NHVR route IDs for Port of Melbourne and Port of Geelong access routes are 1D5OT-0 and 2N3IB-5, respectively.

**Figure 12: OSOM Route**


*Source: Google Maps - Link, NHVR Route ID: 1D5OT-0 and 2N3IB-5*

## 6.3.1 Port of Melbourne OSOM Access Route

The proposed OSOM route between Port of Melbourne and the site has a total length of 441 kilometres. The route would utilise the following roads to access the site as outlined in Table 13.

**Table 13: OSOM Route – Access Roads from Port of Melbourne**

| Road Name | State | Jurisdiction |
|---|---|---|
| **Docklands Highway** | Victoria | DTP |
| **Moreland Street** | | DTP / Maribyrnong City Council |
| **Somerville Road** | | DTP |
| **Fairbairn Road** | | |
| **Boundary Road** | | |
| **Metropolitan Ring Road (M80)** | | |
| **Hume Freeway (M31)** | | |

| Road Name | State | Jurisdiction |
|---|---|---|
| **Hume Freeway (M31)** | New South Wales | TfNSW |
| **Holbrook Wagga Road** | | Greater Hume Shire Council |
| **Holbrook Road** | | Wagga Wagga City Council |

### 6.3.2 Port of Geelong OSOM Access Route

The proposed OSOM route between Port of Geelong and the site has a total length of 491 kilometres. The route would utilise the following roads to access the site as outlined in Table 14.

**Table 14: OSOM Route – Access Roads from Port of Geelong**

| Road Name | State | Jurisdiction |
|---|---|---|
| **Madden Avenue** | Victoria | City of Greater Geelong |
| **St Georges Road** | | DTP |
| **Princes Freeway West** | | |
| **Werribee Street North** | | |
| **Cottrell Street** | | |
| **Ballan Road** | | |
| **Bolton Road** | | |
| **Heaths Road** | | |
| **Derrimut Road** | | |
| **Princes Highway** | | |
| **Princes Freeway** | | |
| **Metropolitan Ring Road (M80)** | | |
| **Hume Freeway (M31)** | | |
| **Hume Freeway (M31)** | New South Wales | TfNSW |
| **Holbrook Wagga Road** | | Greater Hume Shire Council |
| **Holbrook Road** | | Wagga Wagga City Council |

### 6.3.3 Summary

The assessment of the access routes for the respective ports identified that the vehicle is able to access the site with suitable traffic management measures. A review of the key constraints along the route is provided in Section 6.4 with an overview of the proposed treatments and/or management measures at each point of interest in Section 6.5.

## 6.4 Bridge and Rail Infrastructure

A desktop assessment of bridge and rail infrastructure has been undertaken to determine interfacing locations with the proposed OSOM route.

### 6.4.1 Bridges and Overpasses

A detailed review of the load limits on all bridges and structures along the route will be undertaken as part of the permit process for the OSOM vehicles, however it is noted that the route predominantly utilises major highways from Port of Melbourne and Port of Geelong. The State Roads along the route have been utilised for other renewable energy projects in the area, and is planned to be used by the Hume Link project for larger transformers. Moreover, no restricted structures have been identified based on the NHVR Oversize Overmass Load Carrying Vehicles Network maps. Accordingly, it is expected that the vehicle loading will be within the allowable limit for all bridges, culverts and other structures on the State Road network.

### 6.4.2 Underpasses

An assessment of the height clearances along the Port of Melbourne and Port of Geelong OSOM routes was undertaken to confirm the suitability for a total vehicle combination load height of approximately 5.1 metres.

The assessment showed that the minimum required clearance of 5.1 metres is provided along the entire route. The overpass with the lowest clearance along the route is Princess Freeway at Little River Road, with the listed minimum clearance at this location is 5.1 metres in the eastbound direction as per available Victorian Department of Transport and Planning open data. It is noted that the route detours through Werribee in Victoria to avoid the Farm Road overpass which has a height clearance of 4.8 metres.

Accordingly, the available height clearance along the proposed route is appropriate to accommodate the required OSOM vehicles.

### 6.4.3 Railway Level Crossings

One railway level crossing in Victoria has been identified along the OSOM routes as outlined in Table 15, which includes summarised advice from the relevant rail authority for the crossing.

**Table 15: Railway Level Crossing Assessment**

| Railway Crossing Location | Rail Authority | Authority Advice |
|---|---|---|
| St Georges Road, Norlane VIC.<br>(impacts Port of Geelong route only) | V/Line | ODL Permit from DTP is required. |

## 6.5 Summary

The route assessment prepared for the High-Risk OSOM vehicle (Appendix A) determines whether minor road works are required in order to allow the vehicles to successfully access the site from Port of Melbourne or Port of Geelong with a summary provided in Table 16.

The site access requires upgrading to a Basic Right and Basic Left (BAR/BAL) turn treatment to accommodate increased traffic which is detailed in Section 7. Escorts and spotters will be required at all locations to control traffic and ensure the vehicle and load are clear of infrastructure but no other road upgrades are required to enable safe access to site.

**Table 16: Road Works Schedule - OSOM Vehicles**

| Origin | Pinch Point / Sheet | Location | Works Required |
|---|---|---|---|
| **Geelong Metropolitan Area** | | | |
| Geelong | 01 | Madden Avenue / Seabeach Parade (Bayside Road) (North Shore, Vic) | No road upgrades required |
| Geelong | 02 | Seabeach Parade (Bayside Road)/ St Georges Road (Norlane, VIC) | No road upgrades required |
| Geelong | 03 | St Georges Road / Station Street (Norlane, VIC) | No road upgrades required |
| Geelong | 04 | St Georges Road / Princes Highway (Corio, VIC) | No road upgrades required |
| **Wyndham City Council Area** | | | |
| Geelong | 05 | Princess Highway / Werribee Main Road (Werribee, VIC) | No road upgrades required |
| Geelong | 06 | Princess Highway / Werribee Street North (Werribee, VIC) | No road upgrades required |
| Geelong | 07 | Werribee Street North / Cottrell Street (Werribee, VIC) | No road upgrades required |
| Geelong | 08 | Cottrell Street / Ballan Road (Werribee, VIC) | No road upgrades required |
| Geelong | 09 | Ballan Road / McGrath Road (Wyndham Vale, VIC) | No road upgrades required |
| Geelong | 10 | Ballan Road / Bolton Road (Werribee, VIC) | No road upgrades required |
| Geelong | 11 | Bolton Road / McGrath Road (Wyndham Vale, VIC) | No road upgrades required |
| Geelong | 12 | Heaths Road / Rowes Road (Wyndham Vale, VIC) | No road upgrades required |
| Geelong | 13 | Heaths Road / Greaves Street North (Wyndham Vale, VIC) | No road upgrades required |
| Geelong | 14 | Heaths Road / Shaws Road (Werribee, VIC) | No road upgrades required |
| Geelong | 15 | Heaths Road / Purchas Street (Werribee, VIC) | No road upgrades required |
| Geelong | 16 | Heaths Road / Marina Street (Werribee, VIC) | No road upgrades required |
| Geelong | 17 | Heaths Road / Thames Boulevard (Werribee, VIC) | No road upgrades required |

| Origin | Pinch Point / Sheet | Location | Works Required |
|---|---|---|---|
| Geelong | 18 | Heaths Road / Tarneit Road (Werribee, VIC) | No road upgrades required |
| Geelong | 19 | Heaths Road / Derrimut Road (Hoppers Crossing, VIC) | No road upgrades required |
| Geelong | 20 | Derrimut Road / Princess Highway (Werribee, VIC) | No road upgrades required |
| **Melbourne Metropolitan Area** | | | |
| Melbourne | 01 | Apple Dock Road / Footscray Road (Docklands Highway) (West Melbourne, VIC) | No road upgrades required |
| Melbourne | 02 | Footscray Road (Docklands Highway) / Moreland Street (West Melbourne, VIC) | No road upgrades required |
| Melbourne | 03 | Whitehall Street (Docklands Highway) / Somerville Road (Footscray, VIC) | No road upgrades required |
| Melbourne | 04 | Somerville Road / Geelong Road (Princes Highway) (Kingsville, VIC) | No road upgrades required |
| Melbourne | 05 | Somerville Road / Fairbairn Road (Sunshine West, VIC) | No road upgrades required |
| Melbourne | 06 | Fairbairn Road / Boundary Road (Laverton North, VIC) | No road upgrades required |
| Melbourne | 07 | Boundary Road / Western Ring Road On-Ramp (Derrimut, VIC) | No road upgrades required |
| **NSW Regional Area** | | | |
| Geelong or Melbourne | 08 | Hume Highway (off-ramp) / Holbrook Wagga Road (Holbrook, NSW) | No road upgrades required. |
| Geelong or Melbourne | 09 | Holbrook Wagga Road (Holbrook, NSW) | No road upgrades required. |
| Geelong or Melbourne | 10 | Holbrook Road / Site Access (Mangoplah, NSW) | BAR/BAL Turn Treatment at site access as proposed. |

Accordingly, it is concluded that the proposed routes are suitable for use by OSOM vehicles associated with the Project with permits to be applied for as part of the TMP. It is recommended that any OSOM movements be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.

# 7. Site Access

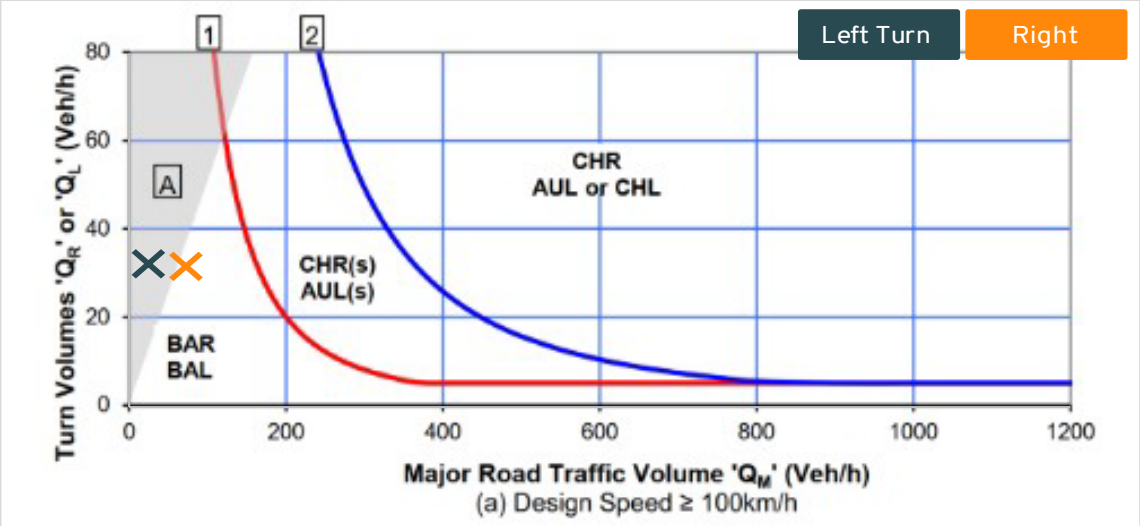
## 7.1 Turn Treatments

*Austroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings* specifies the turning treatments required at intersections. An assessment has been undertaken for the site access from Holbrook Road in order to ensure vehicles are able to safely leave the Regional Road network. To confirm that a worst case scenario is tested, the construction peak hour and road network peak hour have both been assessed.

### 7.1.1 Construction Peak Hour Assessment

The expected traffic volumes, as per Section 4.2.6, have been used to assess the turn treatment requirement for the site access. Figure 3.25 of the guide specifies the required turn treatments on the major road at unsignalised intersections and is provided below in Figure 13 for a design speed of 100km/hr or greater.

**Figure 13: Figure 3.25 of Austroads Guide to Traffic Management Part 6 for Construction Peak Hour**




The requirement to provide turn facilities at the intersection is primarily generated during the morning peak hour when the workforce access the site, which occurs from 6:00am to 7:00am. Table 17 identifies the required turning treatments based on the expected traffic volumes at the intersection (Figure 9) and the associated volumes have been plotted within Figure 13.

**Table 17: Turning Volumes for Construction Peak Hour Turn Treatment Calculations**

| Turning Treatment | Traffic Volume (vph) | | Requirement |
|---|---|---|---|
| | Turn Volume | Major Road | |
| **Right Turn** | 32 | 72 | BAR |
| **Left Turn** | 32 | 23 | BAL |

Therefore, the intersection would require a Basic Right Turn (BAR) and Basic Left Turn (BAL) treatment to meet the requirements of the Austroads Guide.

### 7.1.2 Road Network Peak Hour Assessment

In order to confirm the suitability of the turn treatment, an assessment has been undertaken of a scenario during the road network peak. The road network peak hour occurred at the hour starting 8:00am during the most recent traffic volume survey. A turn treatment assessment has been undertaken using this road network peak hour traffic volume along with the peak construction traffic which is a very conservative assessment noting that staff will likely already be on-site at 8:00am.

Table 18 identifies the required turning treatments based on the expected traffic volumes at the intersection, and the associated volumes have been plotted within Figure 14.

**Figure 14: Figure 3.25 of Austroads Guide to Traffic Management Part 6 for Road Network Peak Hour**

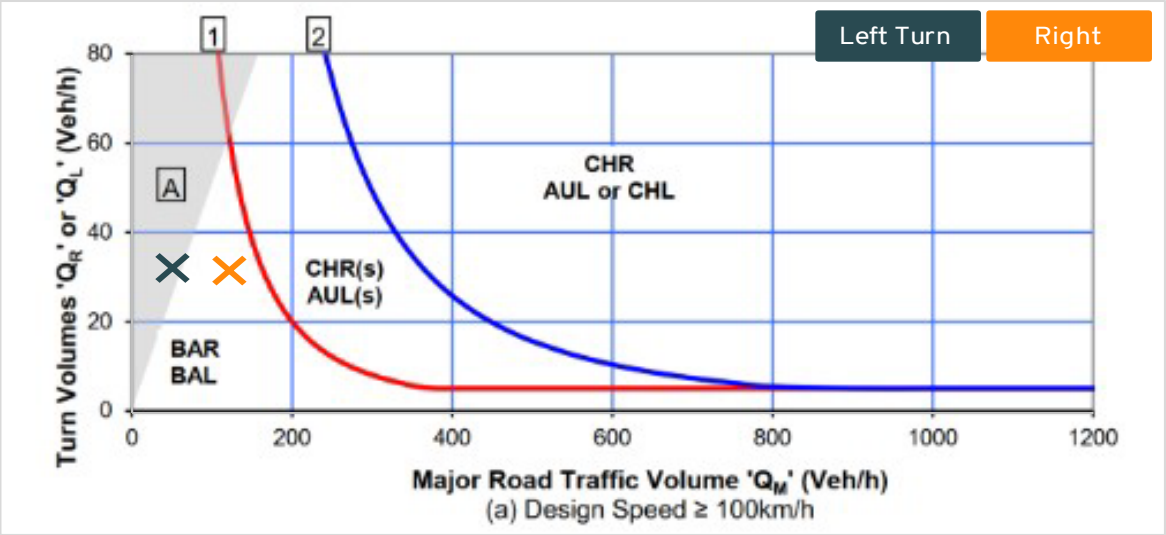



**Table 18: Turning Volumes for Road Network Peak Hour Turn Treatment Calculations**

| Turning Treatment | Traffic Volume (vph) | | Requirement |
|---|---|---|---|
| | Turn Volume | Major Road | |
| **Right Turn** | 32 | 122 | BAR |
| **Left Turn** | 32 | 50 | BAL |

The assessment of the road network peak hour scenario shows that the intersection would still generate a requirement for a BAL and a BAR treatment. Accordingly, the provision of a BAL and a BAR treatment at the intersection is considered suitable.

## 7.2 Design

The layout of the site and the proposed access location is shown within Figure 1 with a strategic design presented in Appendix D.

A swept path assessment has also been undertaken to confirm the site access can accommodate heavy vehicles using the Autodesk Vehicle Tracking software. The assessment is provided in Appendix D and demonstrates the access has been suitably designed to cater for the Project traffic expected to access the site as follows:

- 26 metre B-Doubles from both directions; and

- High risk OSOM Vehicles from the south.

The site access has been designed to ensure that simultaneous movements can occur with B-Double vehicles accessing and egressing the site at the same time.

Accordingly, it is concluded that the site access has been suitably designed and is able to accommodate the vehicles expected to access the site.

## 7.3 Sight Distance

*Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* specifies the Safe Intersection Sight Distance (SISD) as the minimum sight distance which should be provided along the major road at any intersection. Table 3.1 of the guide specifies the SISD required for various design speeds. Given Holbrook Road has a speed limit of 100km/hr a design speed of 110km/hr has been adopted which requires an SISD of 300 metres based on a reaction time of 2.5 seconds.

The available sight distance at the intersection exceeds the requirements of the Austroads Guide given the relatively flat and straight alignment of the road network. Images of the available sight distance are provided in Figure 15 and shown in plan in Appendix E

Accordingly, vehicles are expected to be able to safely enter the Regional Road network at the intersection.

**Figure 15: Sight Distance Assessment**

| Holbrook Road / Site Access |
| --- |
| **Facing North** |
|  |

| Facing South |
| --- |
|  |

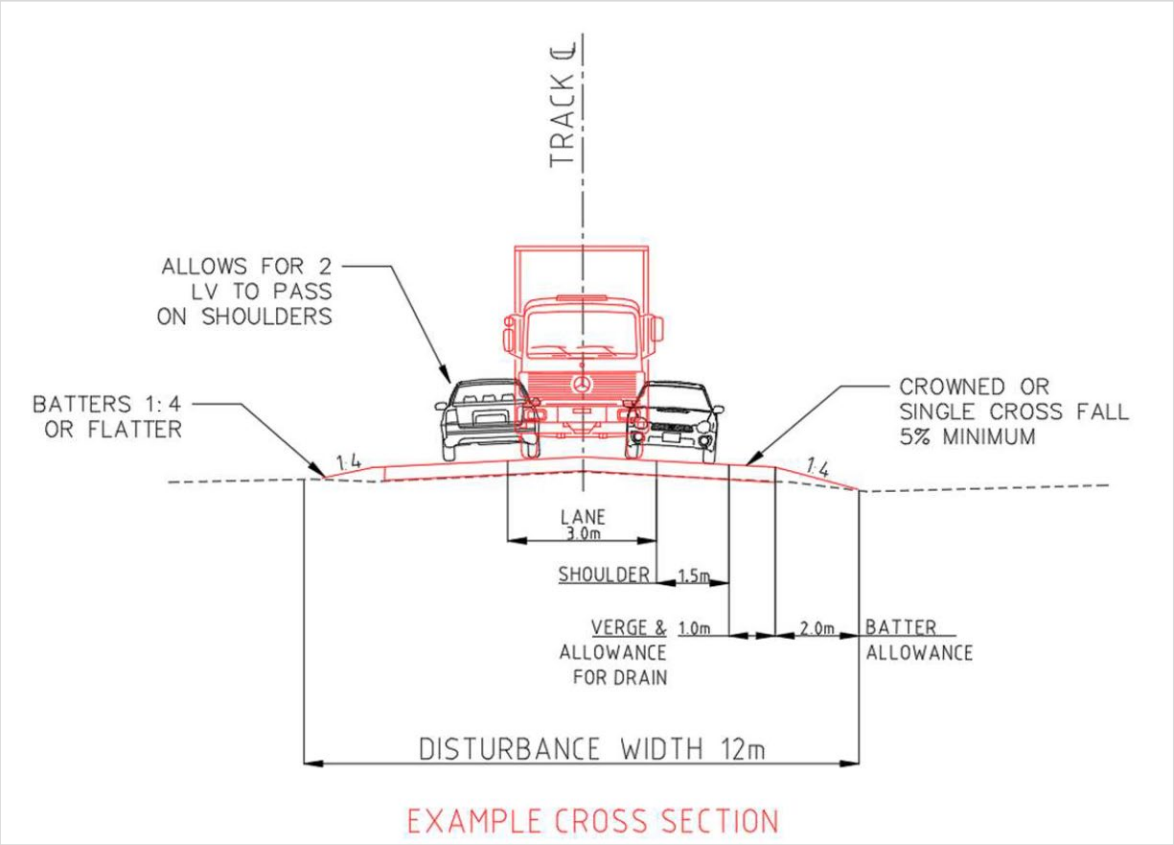
## 7.4 Internal Access

The BESS would be accessed via an existing internal track approximately 3km in length, which is located on private and crown land. This track is currently utilised for agricultural purposes and would be upgraded to provide for an all-weather road to accommodate the mix of heavy vehicle traffic and OSOM vehicle traffic expected.

The road is proposed to have a typical width of 3.0 metres with 1.5 metres wide shoulders on both sides, along with 1.0 metre wide verges. The width will allow for vehicles to safely pass on the internal road.

An extract showing a typical cross-section is provided in Figure 16.

**Figure 16: Typical Cross-Section – Internal Access Road**




*Source: Technical Memo, Fyfe*

# 8. Traffic Management Plan

It is recommended that a TMP be prepared prior to commencement of construction of the development. The TMP should be prepared and implemented in accordance with Australian Standard 1742.3 and the Work Health and Safety Regulation 2017. The TMP would provide additional information regarding the traffic volumes and distribution of construction vehicles that is not available at this time including:

- Road transport volumes, distribution and vehicle types broken down into:
  - Hours and days of construction.
  - Schedules for phasing/staging of the Project.
- The origin, destination and routes for:
  - Employee and contractor light vehicles.
  - Heavy vehicle traffic.
  - Oversize/overmass vehicles.
- A map of the primary haulage routes highlighting critical locations.
- An induction process for vehicle operators and regular toolbox meetings.
- A complaint resolution and disciplinary procedure.
- Local climatic conditions that may impact road safety of employees throughout all project phases (e.g. fog, wet and significant dry, dusty weather).

The following provides recommended measures that should be adopted within the TMP to minimise the impact of construction traffic along the road network.

## 8.1 Information and Communication

The implementation of a community information and awareness program would assist in managing the traffic impacts. Prior to construction commencing and during the construction period, a program of consultation shall be initiated to ensure local residents are aware of construction traffic accessing the Project. This program may include elements of the following as appropriate to the phase of works:

- Press releases in local newspapers.
- Specific emails, newsletters and individual letter drops to neighbouring residents along the access route to the Project.
- Provision of a website providing details of the status of works and contact details for complaints or enquiries.
- Provide key contact personnel and contact details, including out of hours contact information to residents, schools, public activities and business operating alongside the local route.
- Neighbours of the BESS would be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.

## 8.2 Signage

If deemed necessary, specific warning signs advising of the changed traffic operations and heavy vehicles are to be appropriately located on approaches to and from the transport routes on Council roads. These should warn existing road users of changed traffic conditions. The use of day warning notices where signs are activated on a specific day to warn local road users of construction activities may also be applied.

## 8.3 On-Site Mitigation Measures

On-site mitigation measures targeted at safety and reducing the impact of on-site transport would include:

- On-site speed restrictions.
- Appropriate dust suppression measures.
- Maintenance program for on-site access tracks to ensure safe access.
- Loading and unloading is proposed to occur within the work area. No street or roads would be used for material storage at any time.
- Sufficient car parking is to be provided on-site to ensure vehicles do not park on the surrounding road network.
- All car parking and loading areas to be designed in accordance with the relevant Australian Standard (2890 series) and Council requirements.

## 8.4 Driver Protocols

Management of vehicular access to and from the site is essential in order to maintain the safety of the general public as well as the workforce. A Driver Code of Conduct is to be implemented as a measure to maintain safety within and around the site:

- All vehicles would enter and exit the site in a forward direction.
- Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users.
- Safety initiatives for impacts to residential areas and/or school bus zones.
- Utilisation of only the designated transport routes.
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities.
- All permits for working within the road reserve must be received from the relevant authority prior to works commencing.

The above recommendations will ensure the construction traffic would have a minimal impact to the capacity and safety of the surrounding road network. The TMP would be prepared in conjunction with consultation with TfNSW and Wagga Wagga City Council.

# 9. Mitigation Measure Summary

The assessment has identified a number of traffic management measures that are to be implemented during construction and recommended to be included in the TMP. The key measures are summarised below:

- Prior to construction, a pre-condition survey of the Holbrook Road at the site access should be undertaken in consultation with TfNSW and Wagga Wagga City Council. During construction the sections of the road network utilised by the proposal are to be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the BESS would be rectified. At the end of construction, a post-condition survey would be undertaken to ensure the road network is left in a condition equivalent to that at the start of construction.
- Neighbours of the BESS are to be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.
- Heavy vehicles should avoid travel during peak bus operating times to limit the interaction of larger vehicles and vulnerable road users. Buses operate along Holbrook Road as outlined in Section 2.4.
- It is recommended that any OSOM vehicle trips be timed so they do not coincide with other OSOM vehicles within the surrounding area to limit the impact to the road network, which can be undertaken as part of the permit application.

## 9.1 Schedule of Road Upgrades

In addition to the above traffic management measures, it is proposed to provide road upgrades as part of the Project which are to be constructed prior to construction commencing. A schedule of the road upgrades is provided below:

- Construction of BAR/BAL at site access as shown described in in Section 7.1 and shown in Appendix D.

The inclusion of the proposed upgrades are suitable to accommodate the future traffic volumes to and from the project.

# 10. Conclusion

Amber Organisation has assessed the traffic impacts of the proposed Mangoplah BESS. The BESS is proposed to have a capacity of up to 100MW/400MWh.

The Project Area is located on the eastern side of Holbrook Road, approximately 3.1 kilometres east of Mangoplah and 30.6 kilometres south of Wagga Wagga. Access to the site is proposed via a new access road connecting Holbrook Road with the site.

The construction period is expected to commence in 2027 and take 12 to 15 months, with the peak construction period expected to take three months. A construction workforce of up to 60 personnel would be on-site during the peak construction phase and would primarily be drawn from the nearby city of Wagga Wagga.

Plant is expected to be delivered from the Port of Melbourne or Port of Geelong, and the largest OSOM BESS component are also to be transported from Port of Melbourne or Port of Geelong. General construction materials and equipment will be sourced from within Wagga Wagga or the surrounding area where practicable.

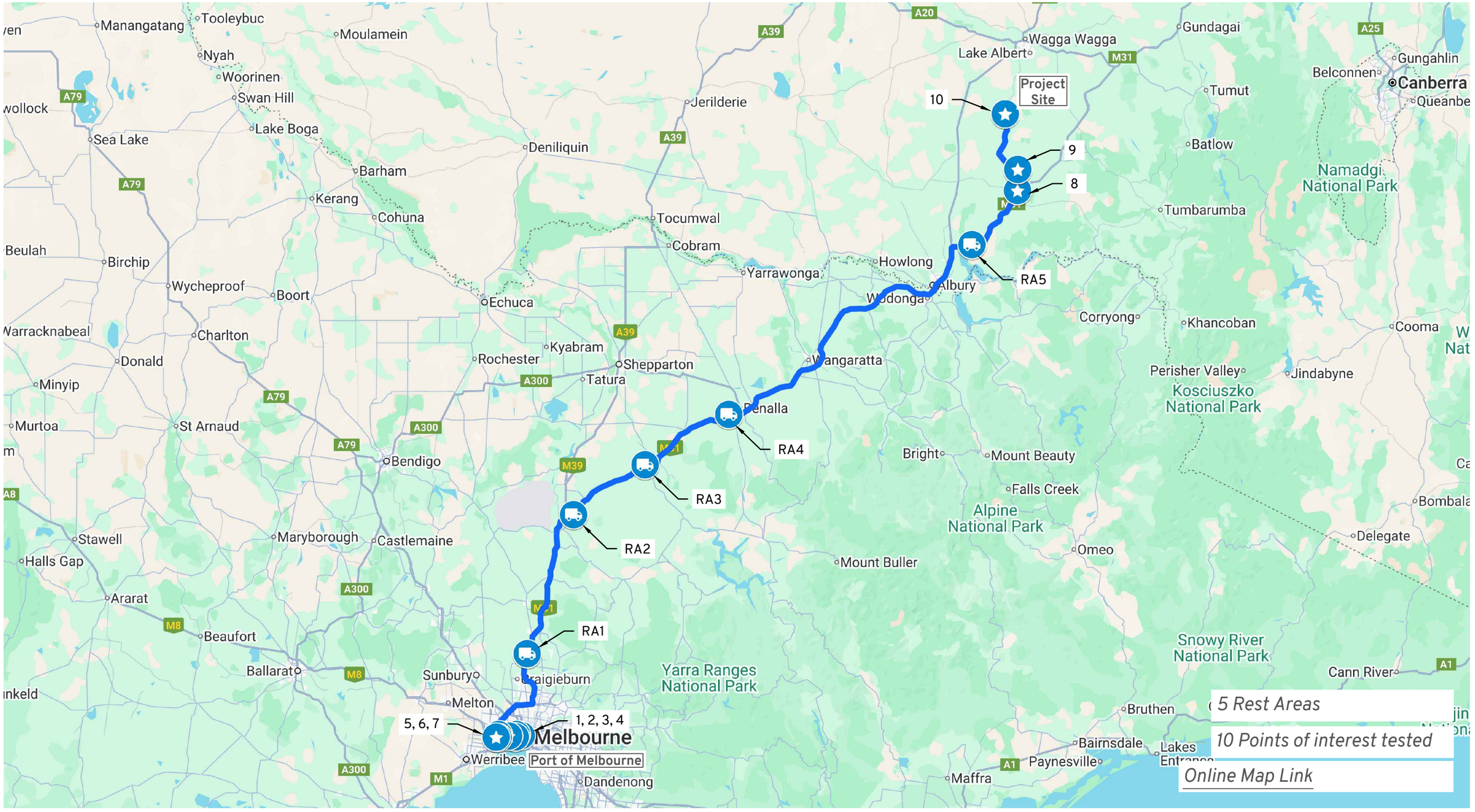
The above assessment determined the following:

- The site is expected to generate up to 184 vehicle trips per day during the peak construction period, including 64 heavy vehicle trips.
- The road network is able to accommodate the traffic generated by the development during the construction, operation and decommissioning stages.
- The B-Double access route utilises roads that are designated within the TfNSW and Victorian Restricted Access Vehicle Map.
- The preferred access route for the largest OSOM vehicle travelling from Port of Melbourne or Port of Geelong has been identified within a Route Assessment. The route assessment shows that the largest vehicle are able to access the site with suitable traffic management measures. The Route Assessment is provided within Appendix A of this document.
- The site access on Holbrook Road is designed to accommodate the Project traffic and is provided with adequate sight distance to allow vehicles to safely enter the road network.
- In order to mitigate the impacts of the development during construction a TMP would be prepared which should include the recommendations provided within this document.

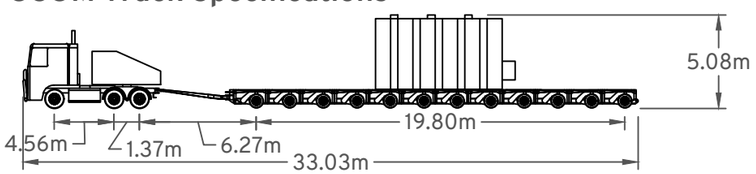
Accordingly, based on the assessment above, it is concluded that the proposed access arrangements for the BESS are suitable to accommodate the expected construction vehicle types and traffic volumes during the construction and operation phase of the Project.

# Appendix A

## OSOM Vehicle Route Assessment




## OSOM Truck Specifications




12 x 8 Platform Trailer

| | m |
|---|---|
| *Overall Length* | *: 33.03* |
| *Trailer Width* | *: 4.20* |
| *Load Length* | *: 7.50* |
| *Load Width* | *: 2.75* |
| *Load Height* | *: 4.00* |
| *Lock to Lock* | *: 6.0s* |

*OSOM Configuration calibrated against similar OSOM configurations and is based on information available at the time of assessment*

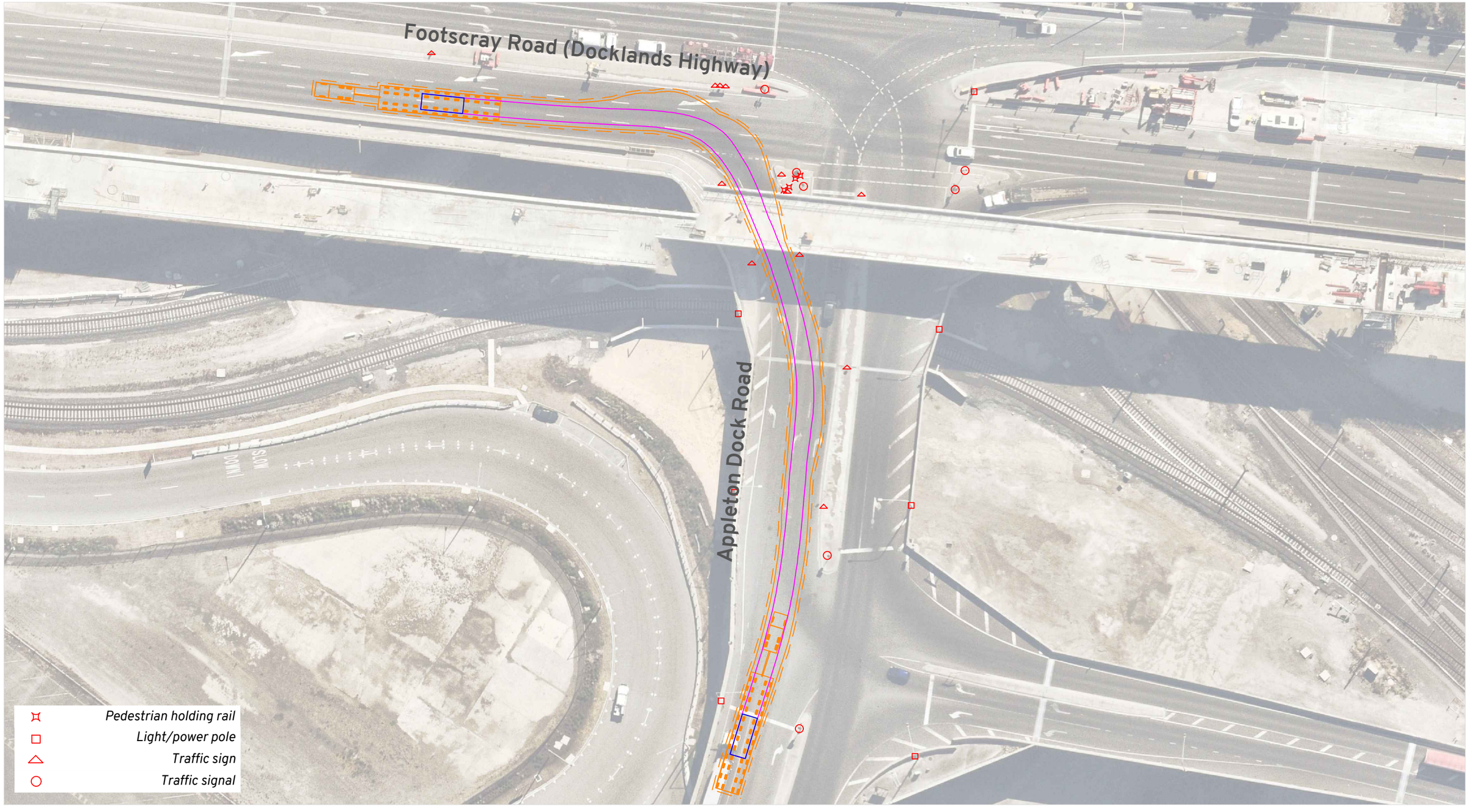
# Overall Route Summary and OSOM Details

Mangoplah BESS

Overall Route Summary and OSOM Details

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM01
SCALE at A3: NTS

Amber i




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Footscray Road availability subject to demobilisation of roadworks occupation. Review of assessment to be undertaken at completion of roadworks.

**Location:**
West Melbourne VIC 3003
*Online Map Link*

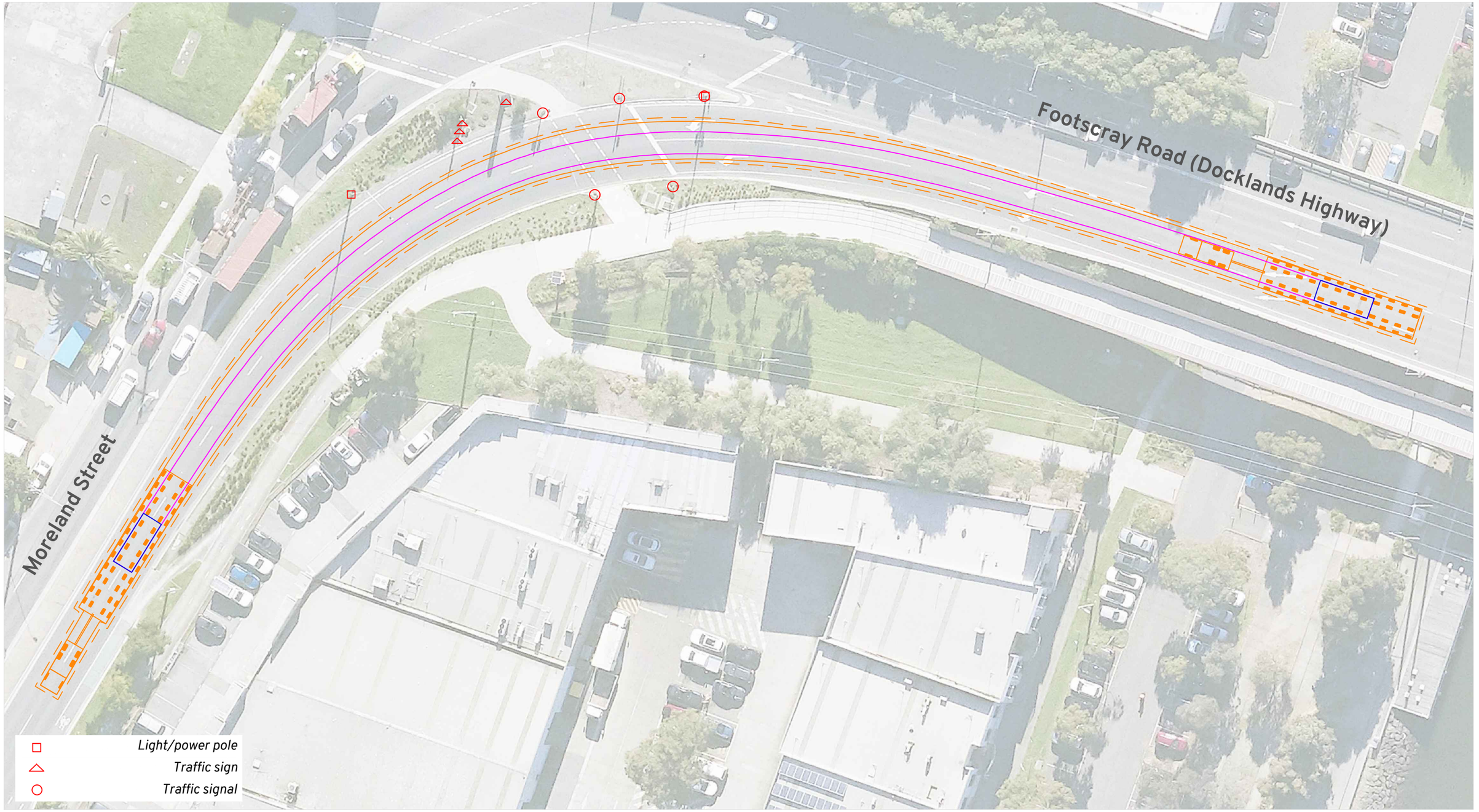
# OSOM Route Assessment - Port Of Melbourne

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM01
SCALE at A3: 1:750

Amber 01




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Footscray VIC 3011
*Online Map Link*

# OSOM Route Assessment - Port Of Melbourne

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM01
SCALE at A3: 1:500

Amber 02


Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

Ensure parking spaces on Somerville Road are vacant prior to transit.

**Location:**
Footscray VIC 3011
*Online Map Link*

# OSOM Route Assessment - Port Of Melbourne

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM01
SCALE at A3: 1:500

Amber


Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

Ensure parking spaces on Somerville Road are vacant prior to transit.

**Location:**
Kingsville VIC 3012
*Online Map Link*

# OSOM Route Assessment - Port Of Melbourne

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM01
SCALE at A3: 1:1000

Amber


Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Sunshine West VIC 3020
*Online Map Link*

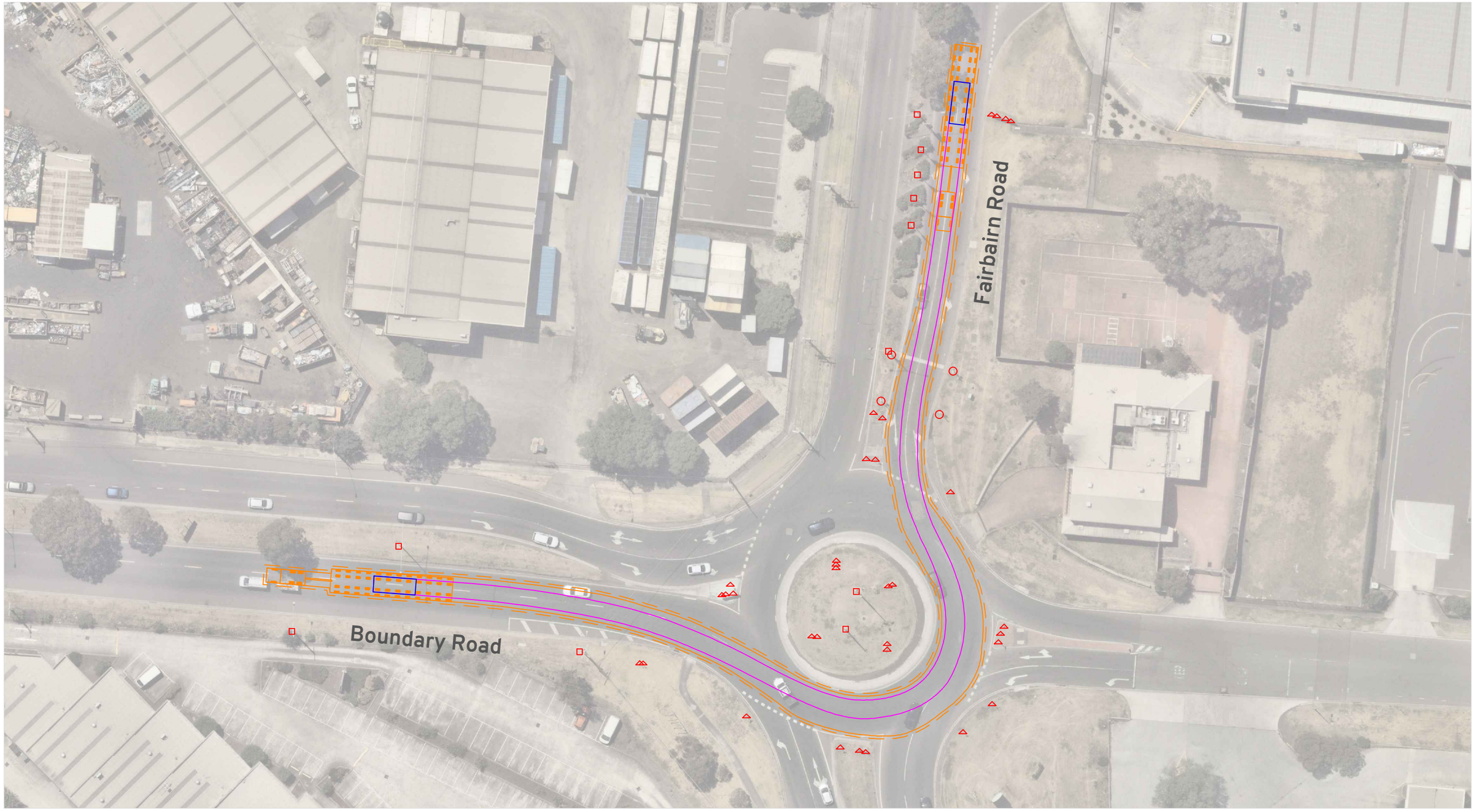
# OSOM Route Assessment - Port Of Melbourne

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM01
SCALE at A3: 1:500

Amber




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Laverton North VIC 3026
*Online Map Link*

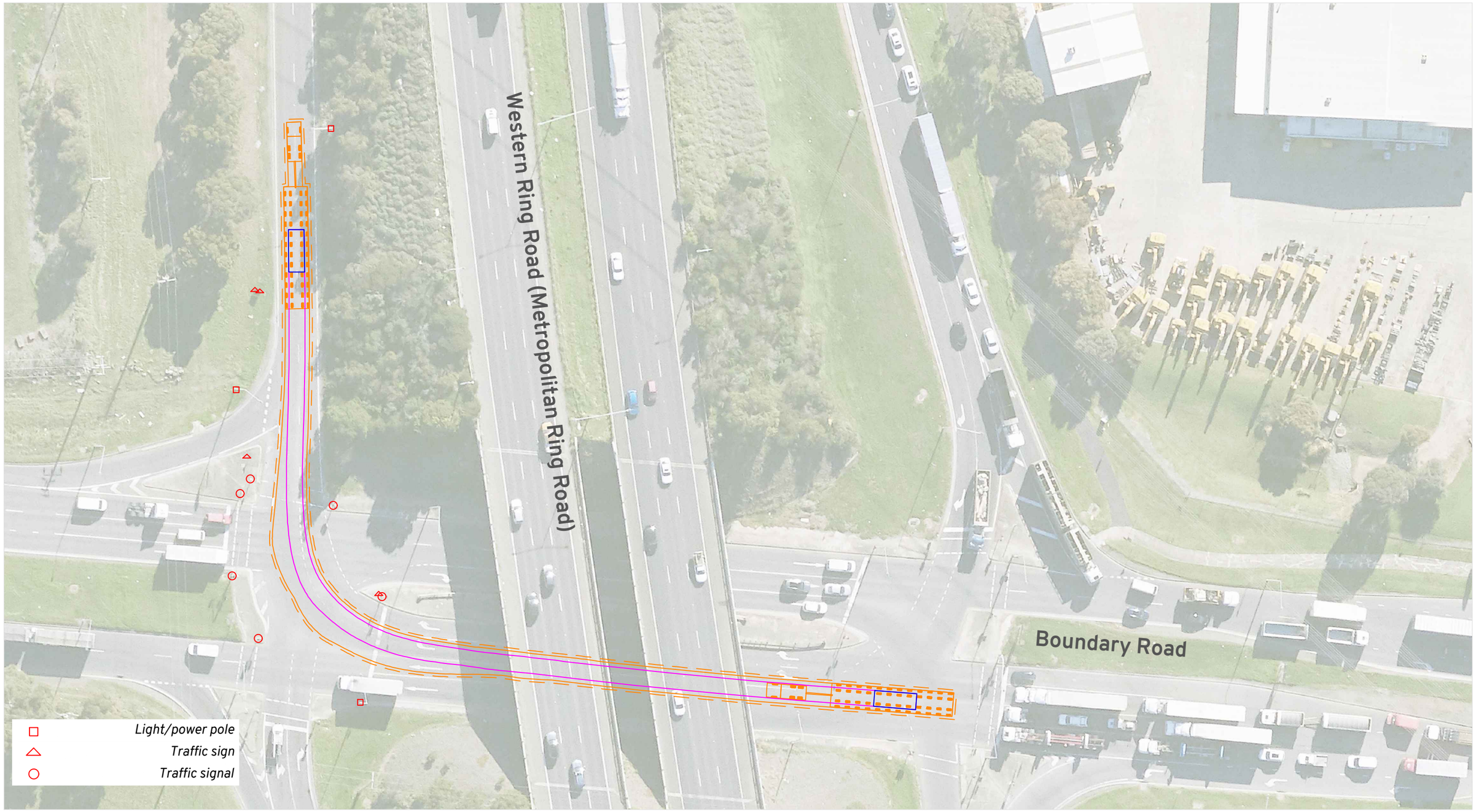
# OSOM Route Assessment - Port Of Melbourne

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM01
SCALE at A3: 1:750

Amber




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Derrimut VIC 3030
*Online Map Link*

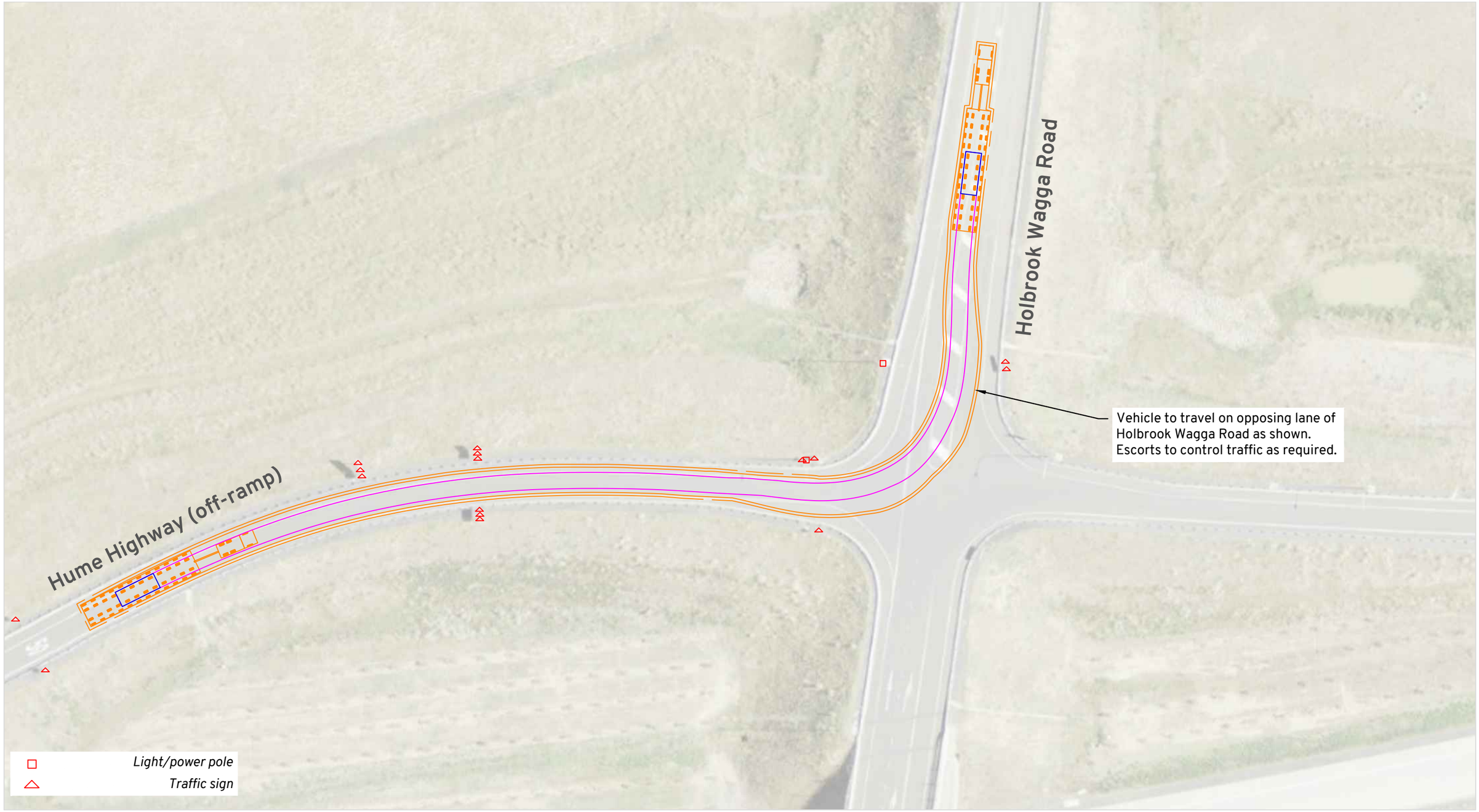
# OSOM Route Assessment - Port Of Melbourne

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM01
SCALE at A3: 1:750

Amber




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts to control traffic to enable use of opposing traffic lane as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Holbrook NSW 2644
*Online Map Link*

# OSOM Route Assessment - Port of Melbourne

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:750

Amber 08


Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

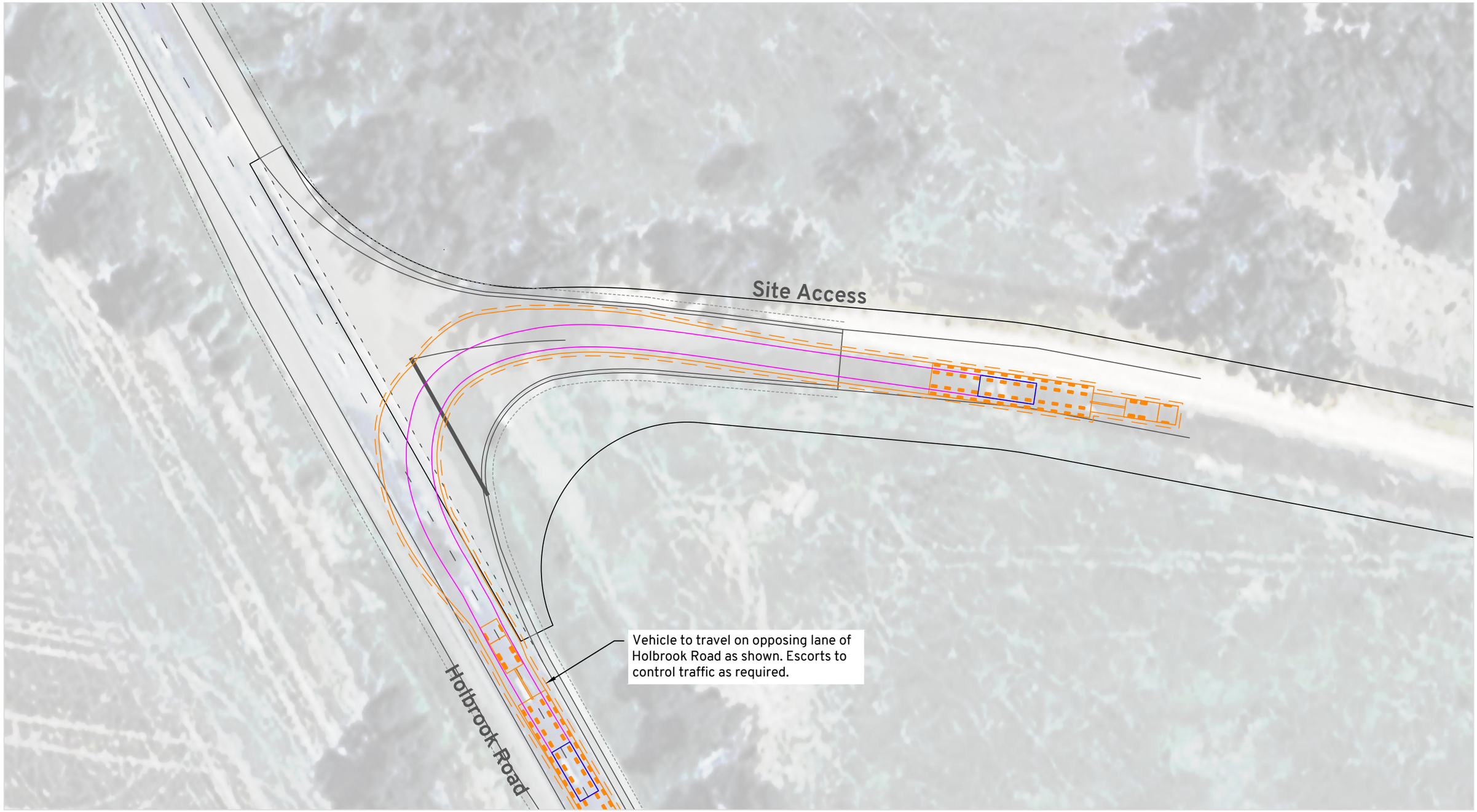
**Notes:**
Escorts to control traffic to enable use of opposing traffic lane as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Holbrook NSW 2644
*Online Map Link*

OSOM Route Assessment - Port of Melbourne
Mangoplah BESS
Swept Path Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:750

Amber




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts to control traffic to enable use of opposing traffic lane as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

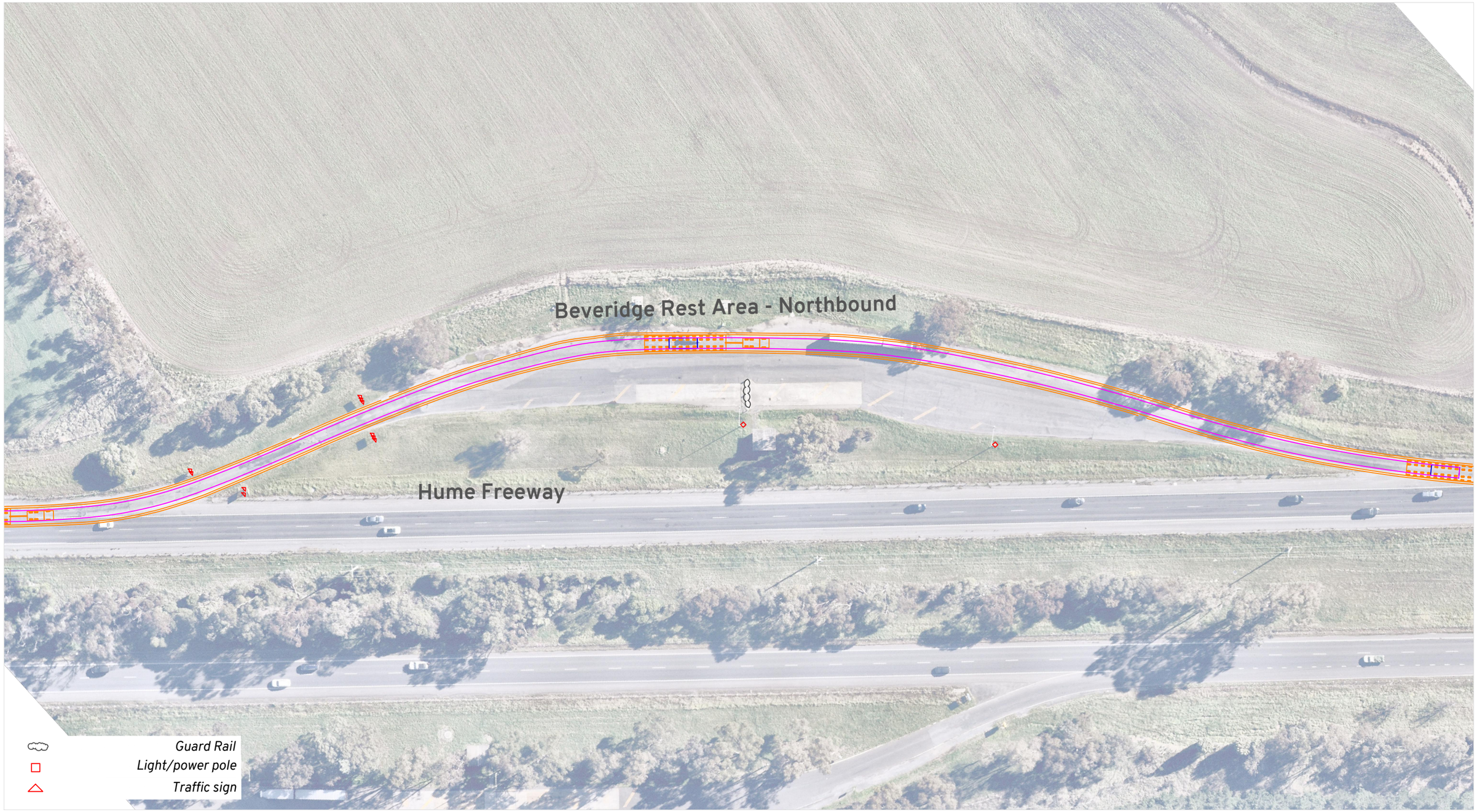
**Location:**
Mangoplah NSW 2652
*Online Map Link*

# OSOM Route Assessment - Port of Melbourne

Mangoplah BESS
Swept Path Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:500

Amber




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts to control traffic to enable use of multiple traffic lanes as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Beveridge VIC 3753
*Online Map Link*

OSOM Route Assessment - Port of Melbourne
Mangoplah BESS
Swept Path Assessment - Rest Area 1

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:1000

Amber R1


Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Mangalore VIC 3663
*Online Map Link*

# OSOM Route Assessment - Port of Melbourne

Mangoplah BESS

Swept Path Assessment - Rest Area 2

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:1000

Amber R2A


Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Mangalore VIC 3663
*Online Map Link*

# OSOM Route Assessment - Port of Melbourne

Mangoplah BESS

Swept Path Assessment - Rest Area 2

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:1000

Amber R2B


Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Mangalore VIC 3663
*Online Map Link*

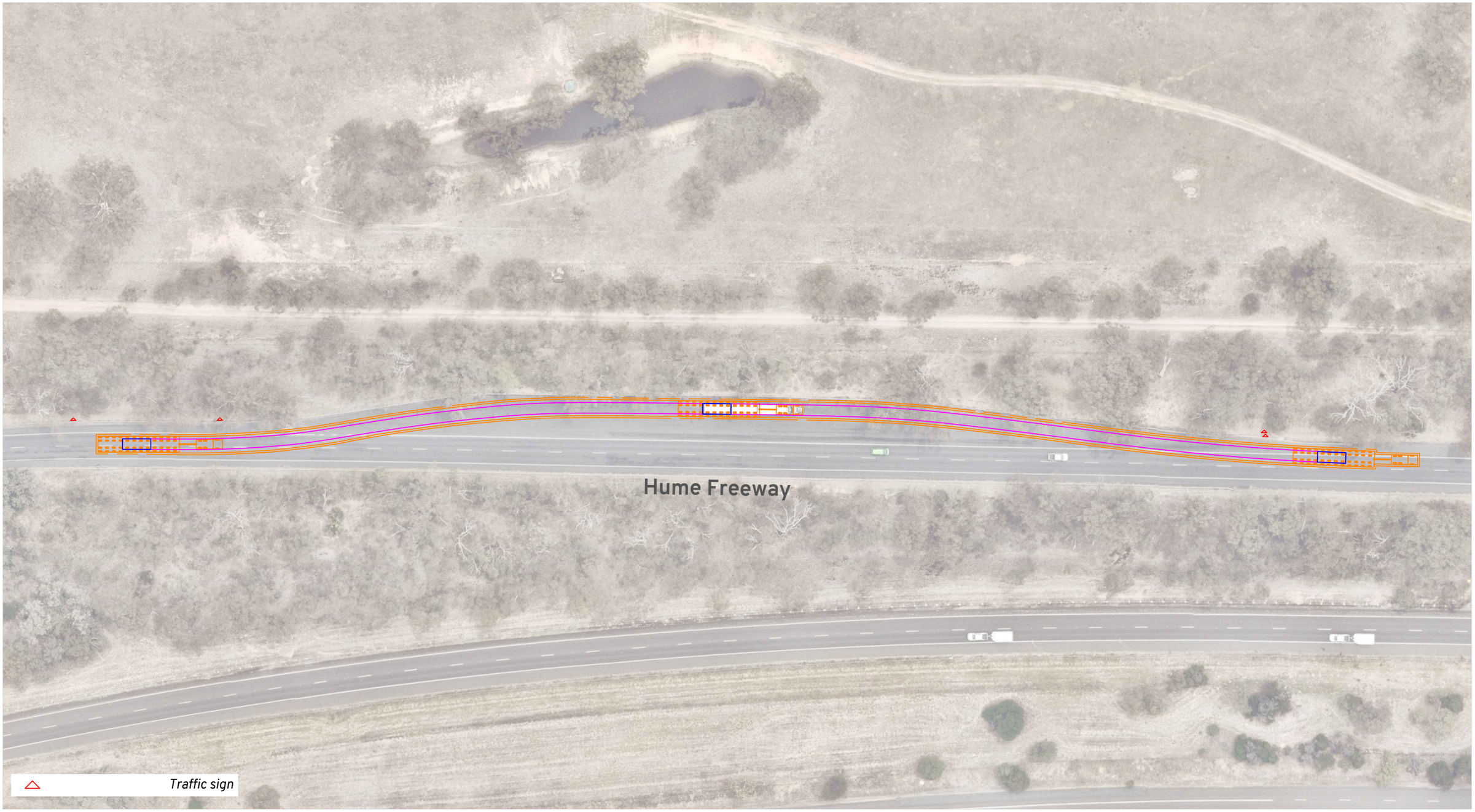
# OSOM Route Assessment - Port of Melbourne

Mangoplah BESS

Swept Path Assessment - Rest Area 2

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:1000

Amber R2C




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts to control traffic to enable use of multiple traffic lanes as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Euroa VIC 3666
*Online Map Link*

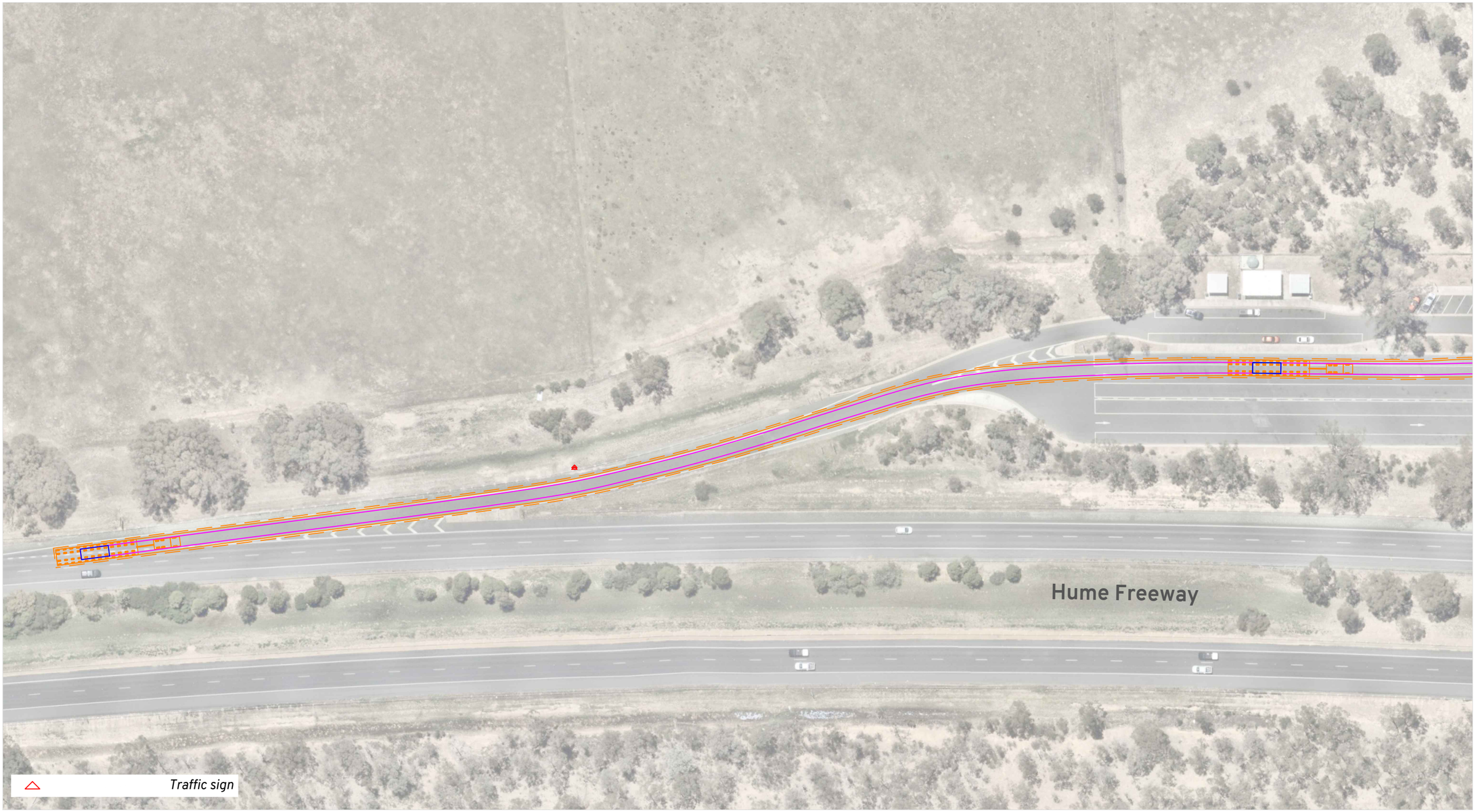
# OSOM Route Assessment - Port of Melbourne

Mangoplah BESS

Swept Path Assessment - Rest Area 3

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:1000

Amber R3




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

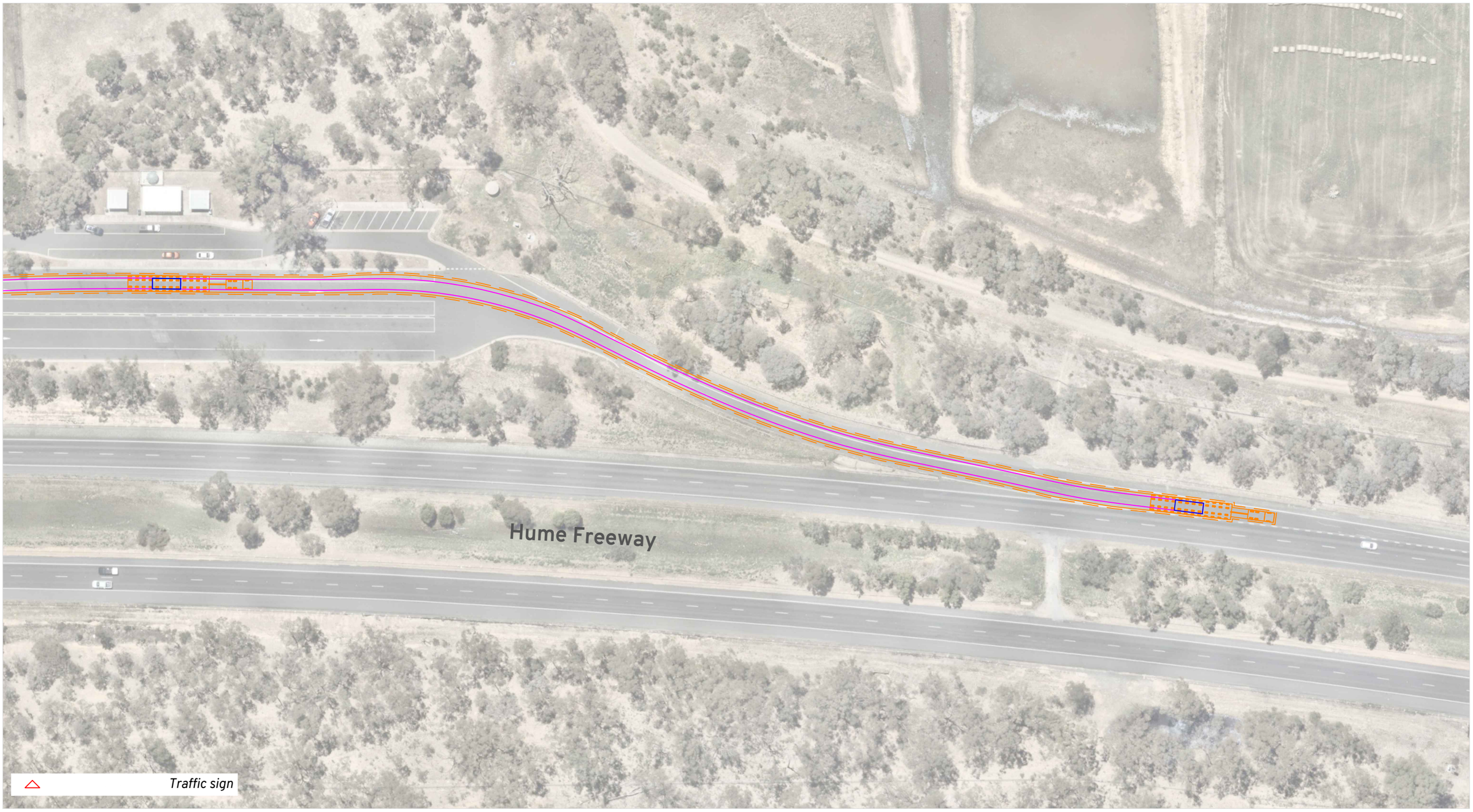
**Notes:**
Escorts to control traffic to enable use of multiple traffic lanes as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Benalla VIC 3672
*Online Map Link*

OSOM Route Assessment - Port of Melbourne
Mangoplah BESS
Swept Path Assessment - Rest Area 4

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:1000

Amber R4A




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts to control traffic to enable use of multiple traffic lanes as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Benalla VIC 3672
*Online Map Link*

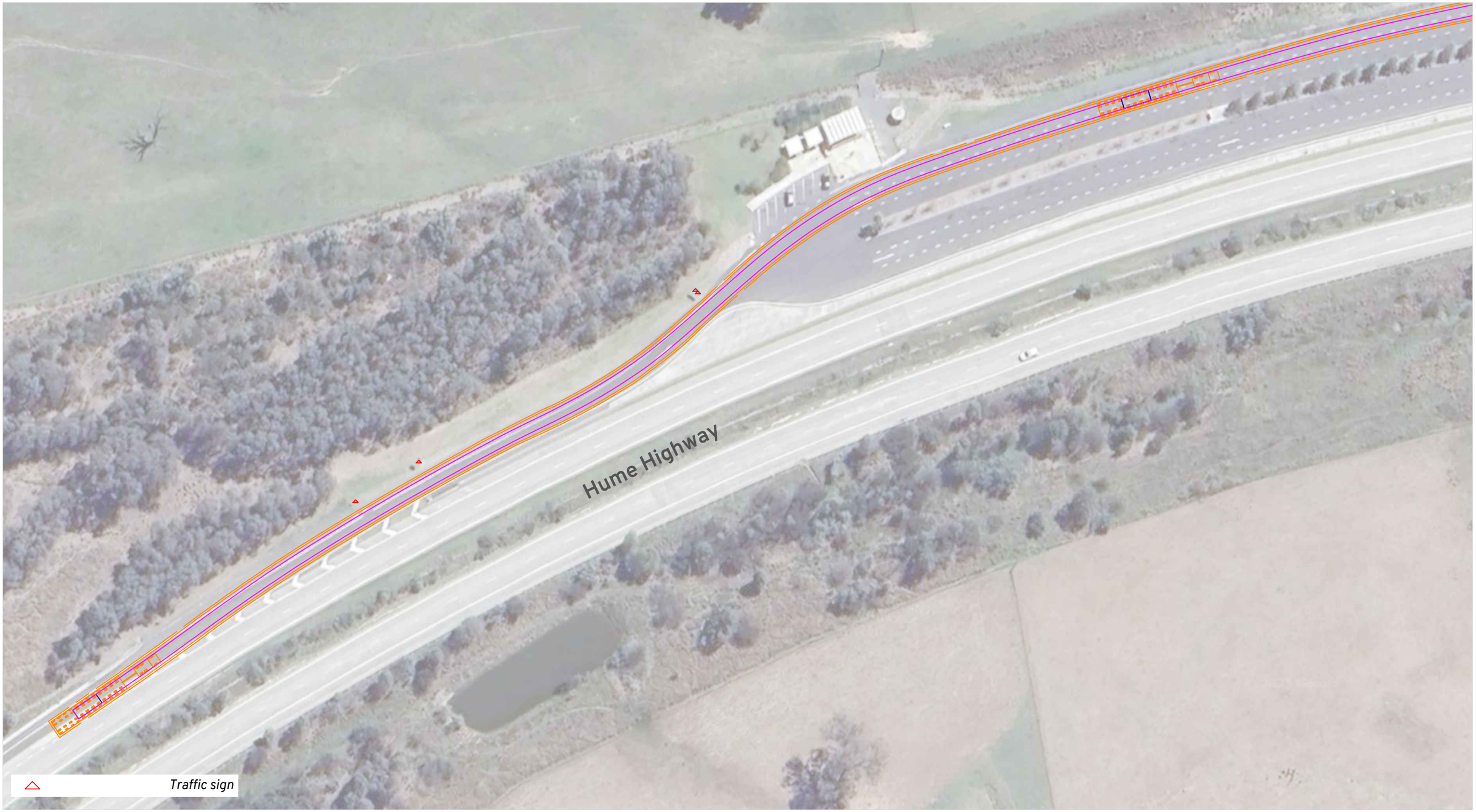
# OSOM Route Assessment - Port of Melbourne

Mangoplah BESS

Swept Path Assessment - Rest Area 4

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:1000

Amber R4B




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Mullengandra NSW 2644
*Online Map Link*

# OSOM Route Assessment - Port of Melbourne

Mangoplah BESS

Swept Path Assessment - Rest Area 5

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:1000

Amber R5A


Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts to control traffic as required.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Mullengandra NSW 2644
*Online Map Link*

# OSOM Route Assessment - Port of Melbourne

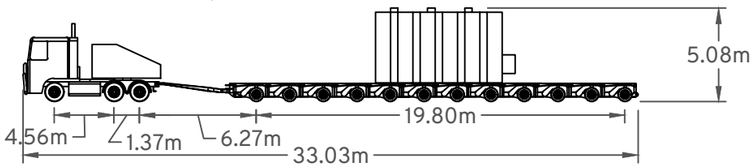
Mangoplah BESS

Swept Path Assessment - Rest Area 5

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:1000

Amber R5B

## OSOM Truck Specifications




12 x 8 Platform Trailer

| | m |
|---|---|
| *Overall Length* | *: 33.03* |
| *Trailer Width* | *: 4.20* |
| *Load Length* | *: 7.50* |
| *Load Width* | *: 2.75* |
| *Load Height* | *: 4.00* |
| *Lock to Lock* | *: 6.0s* |

*OSOM Configuration calibrated against similar OSOM configurations and is based on information available at the time of assessment*

Route continues on 1187 RA01A - Port of Melbourne: Sheet 8

*20 Points of interest tested*

*Online Map Link*

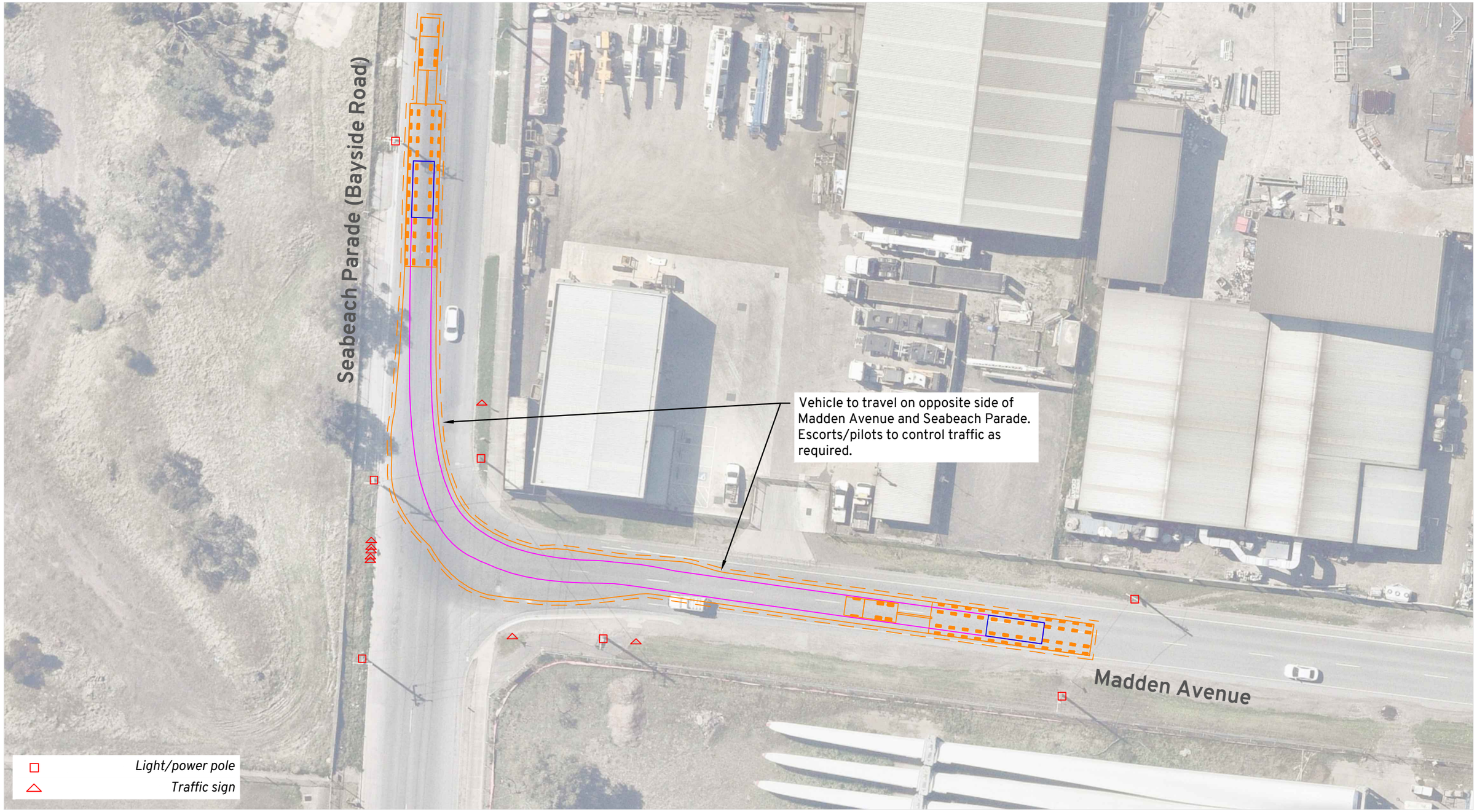
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Overall Route Summary and OSOM Details

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: NTS

Amber




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of opposing lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
North Shore VIC 3214
*Online Map Link*

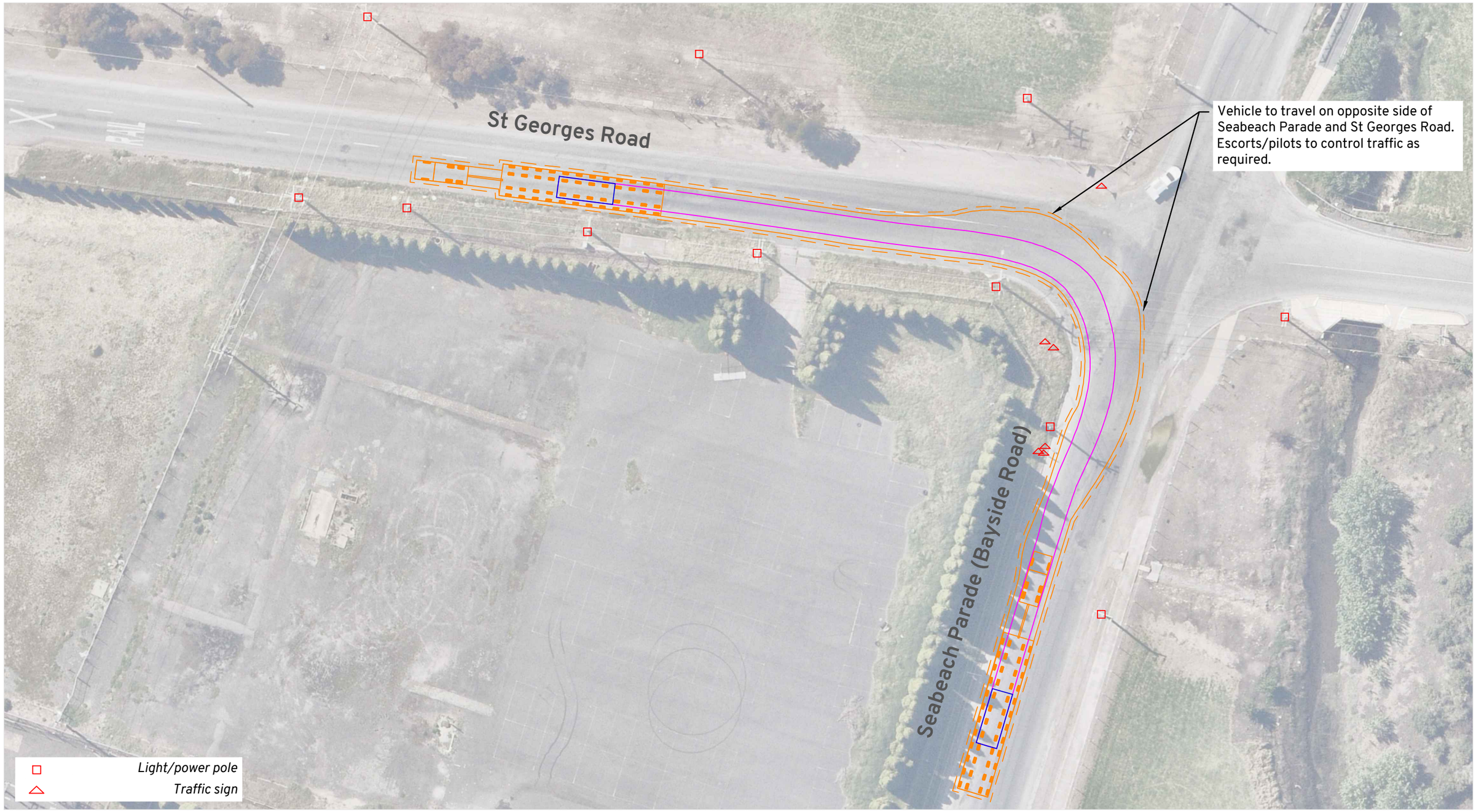
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:500

Amber 01




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of opposing traffic lane.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Norlane VIC 3214
*Online Map Link*

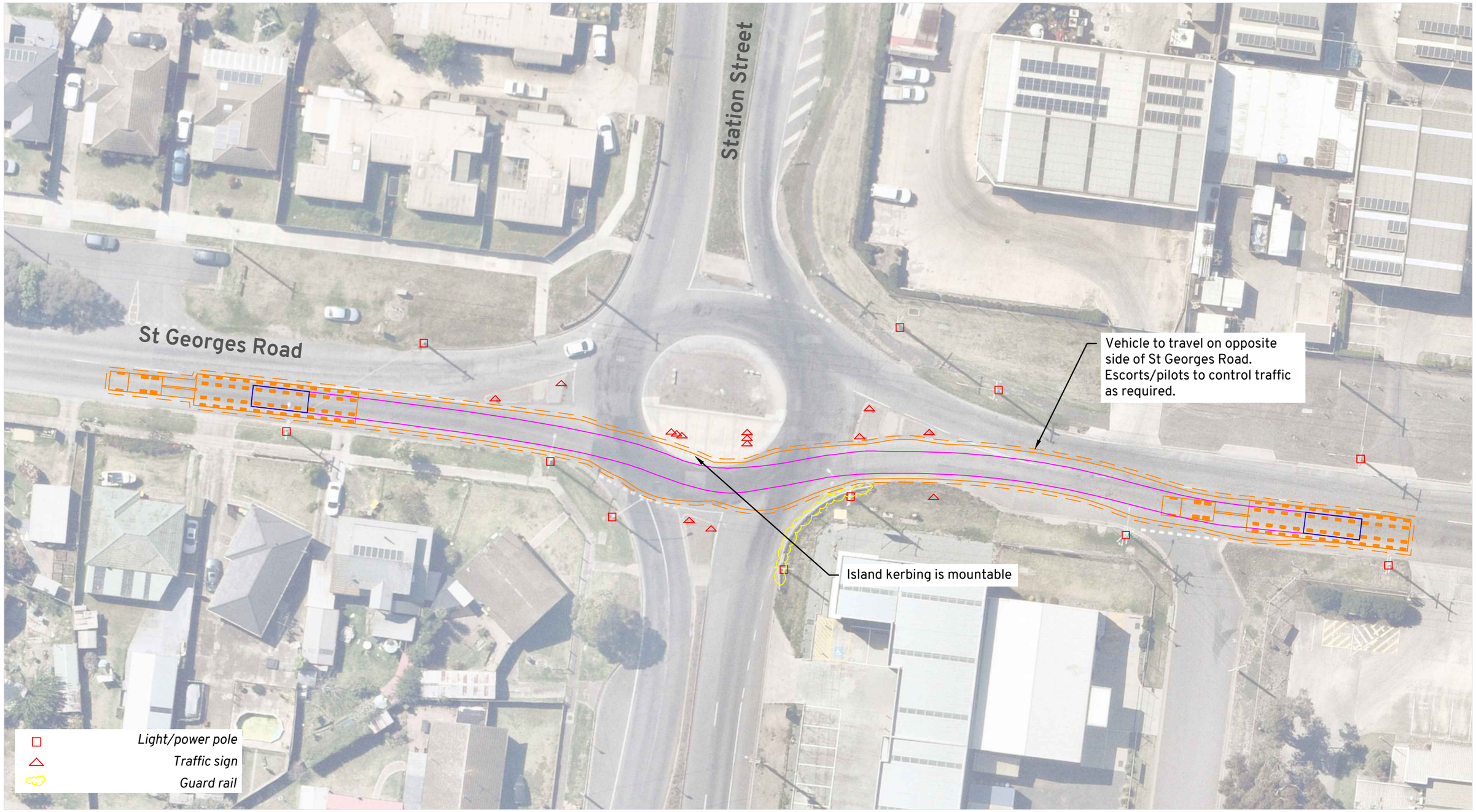
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:500

Amber 02




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of opposing traffic lane.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

Kerbing is mountable where shown.

**Location:**
Norlane VIC 3214
*Online Map Link*

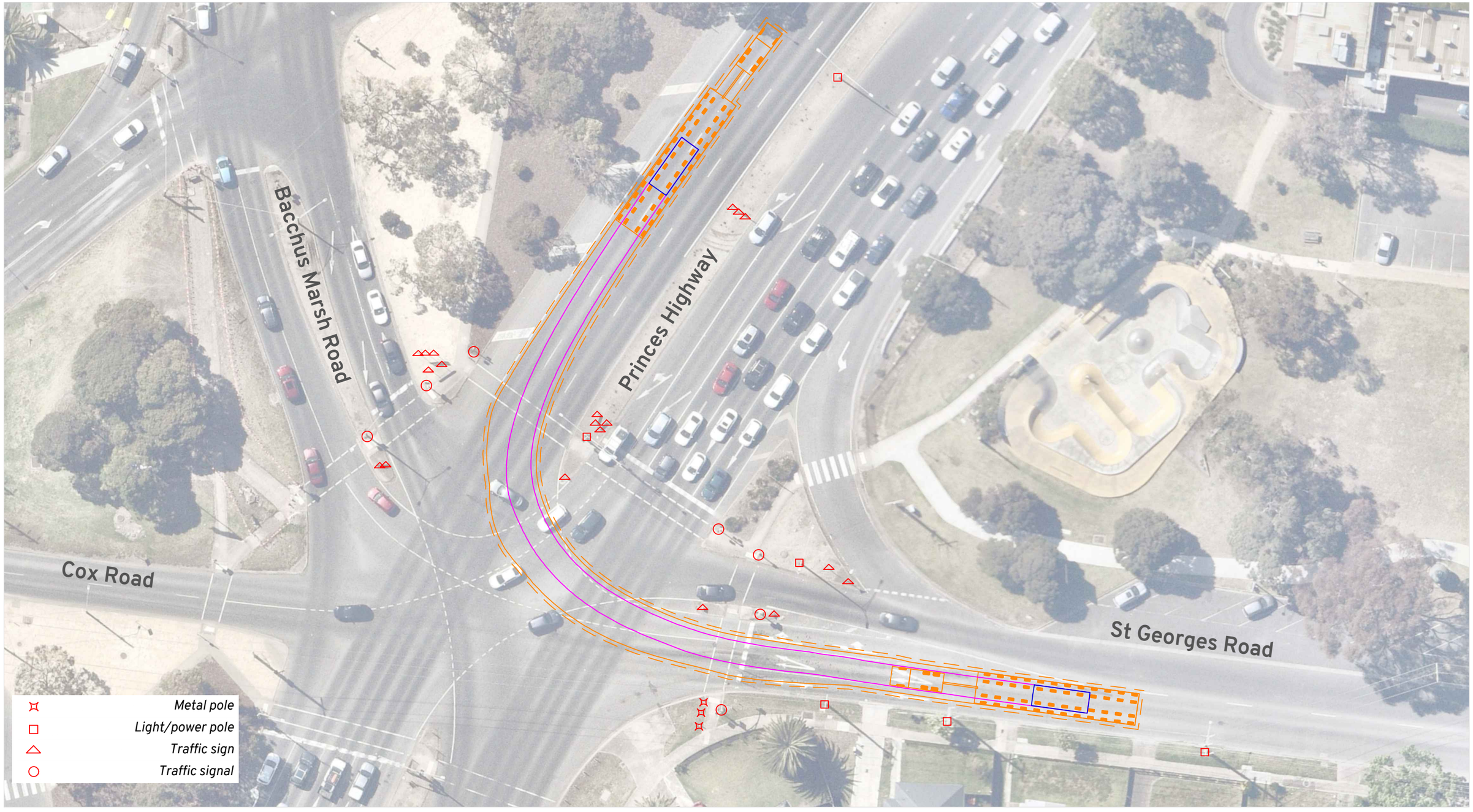
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:500

Amber 03




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Corio VIC 3214
*Online Map Link*

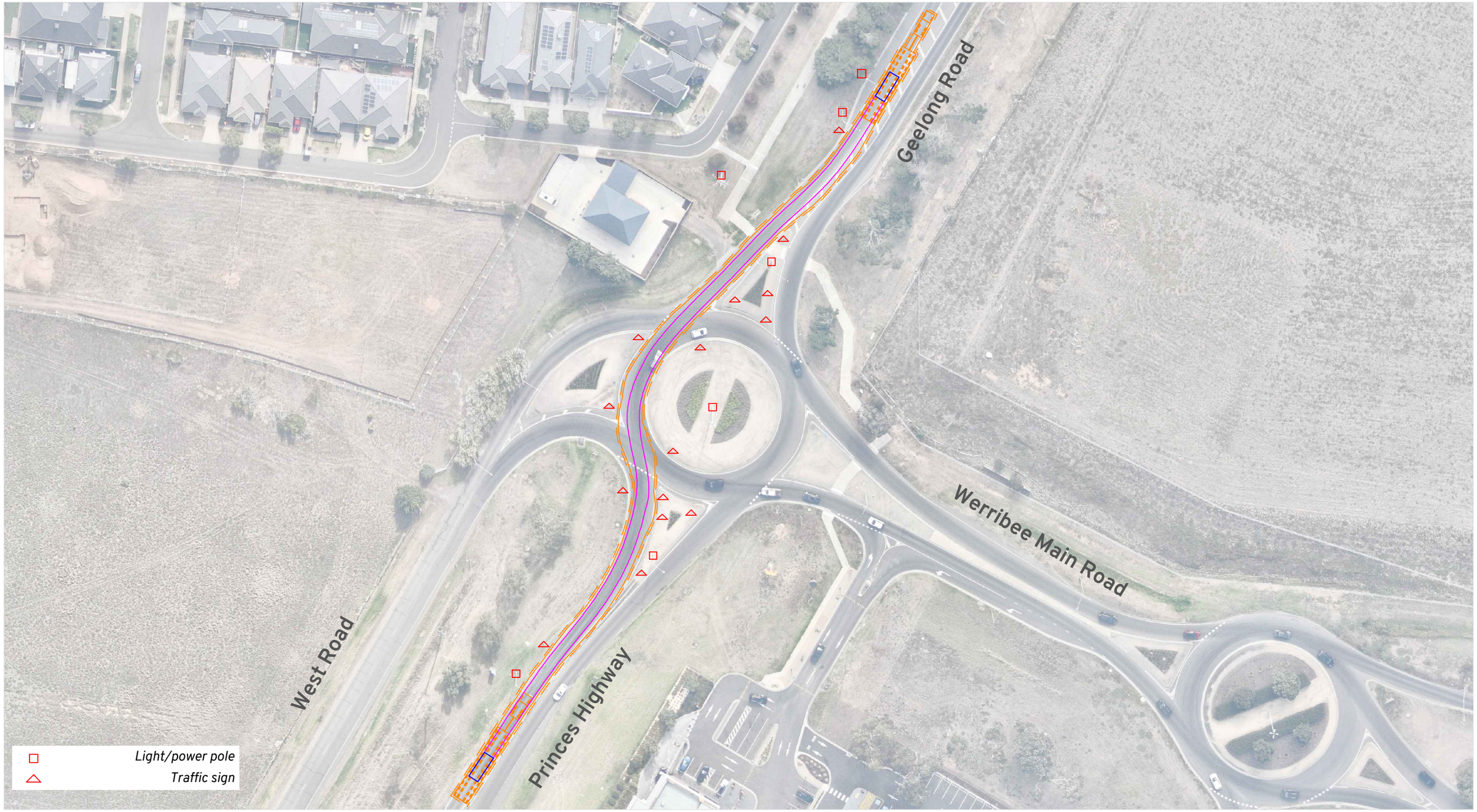
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:500

Amber 04




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**

Werribee VIC 3030

*Online Map Link*

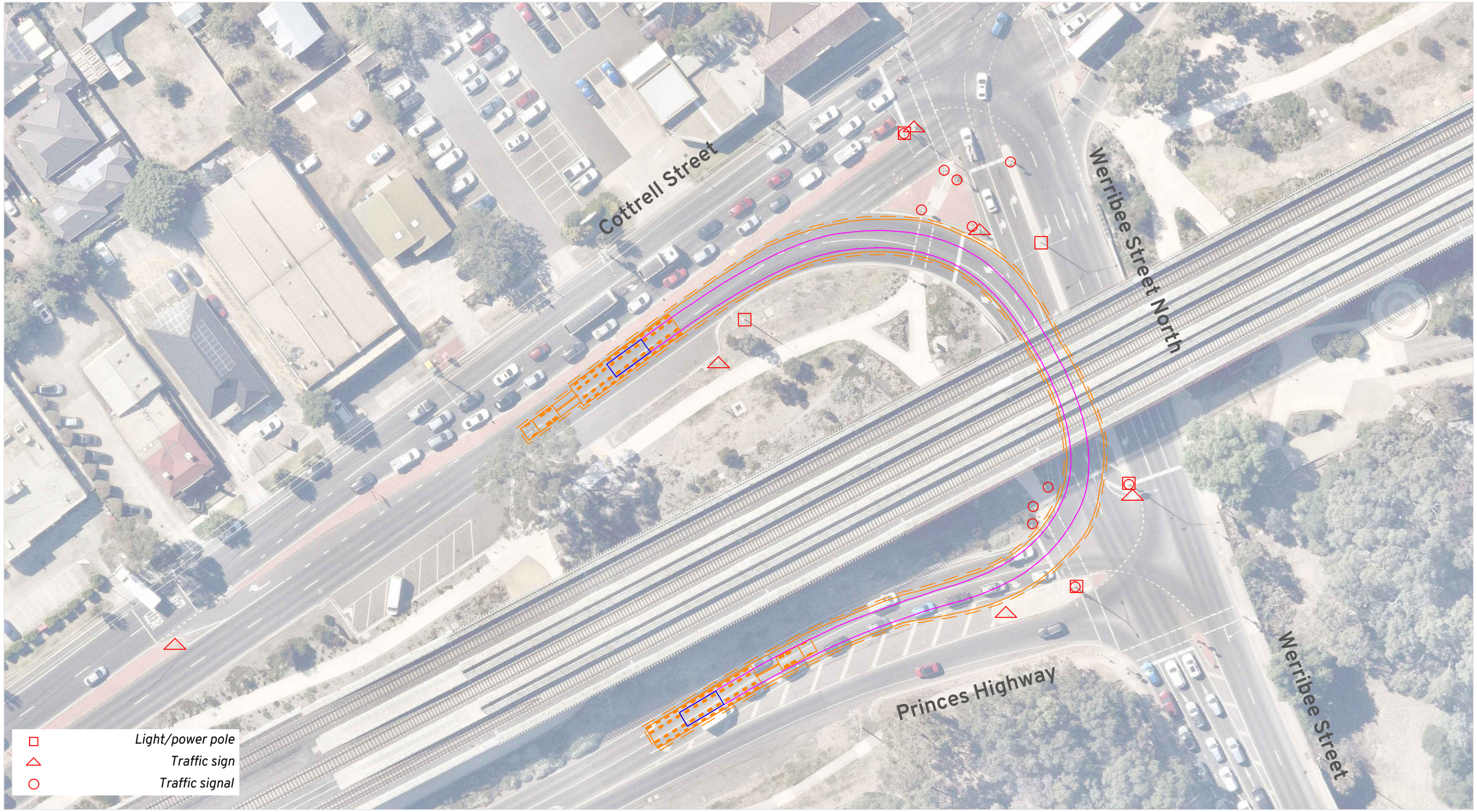
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:1000

Amber 05




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Werribee VIC 3030
*Online Map Link*

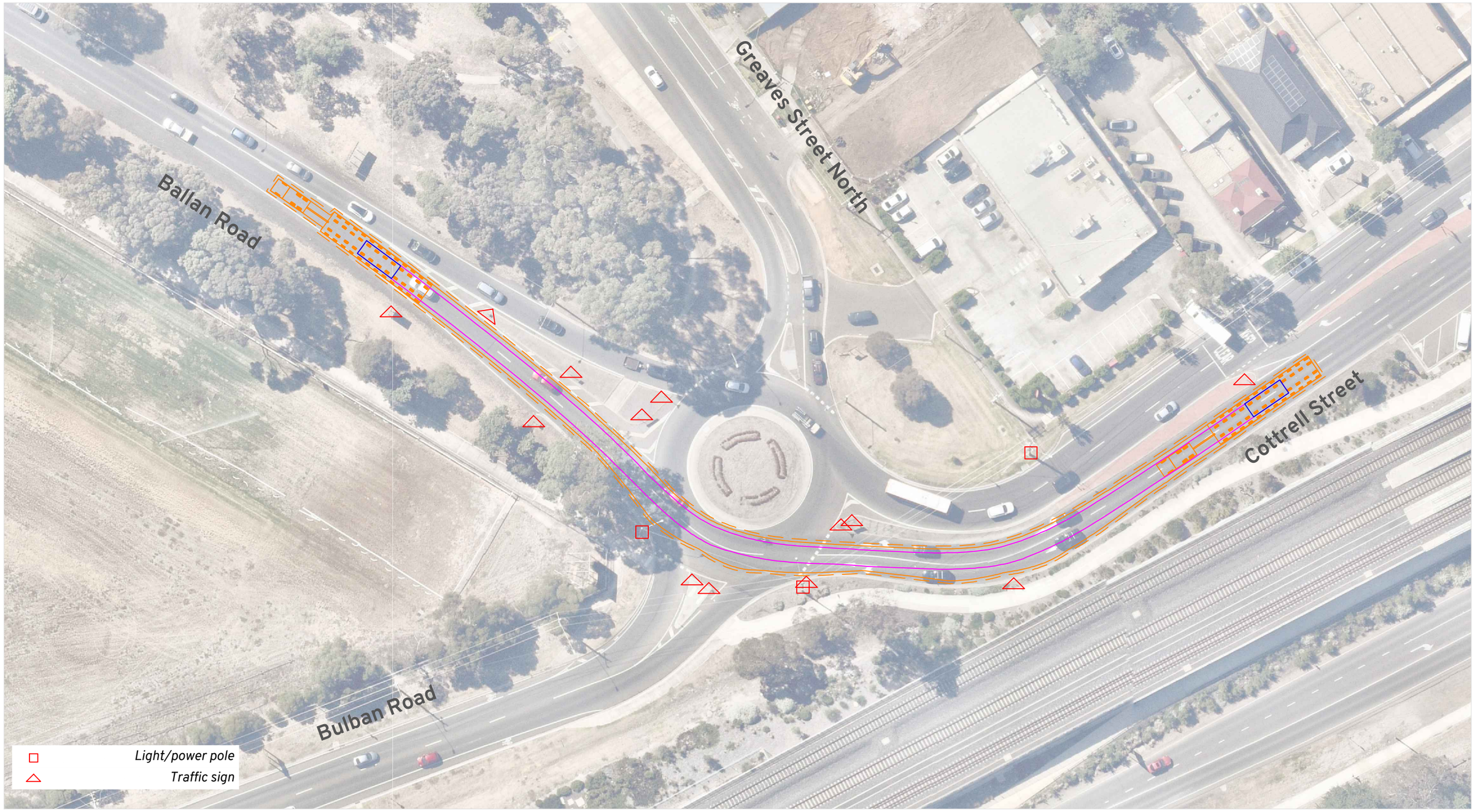
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 06-07




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**

Werribee VIC 3030

*Online Map Link*

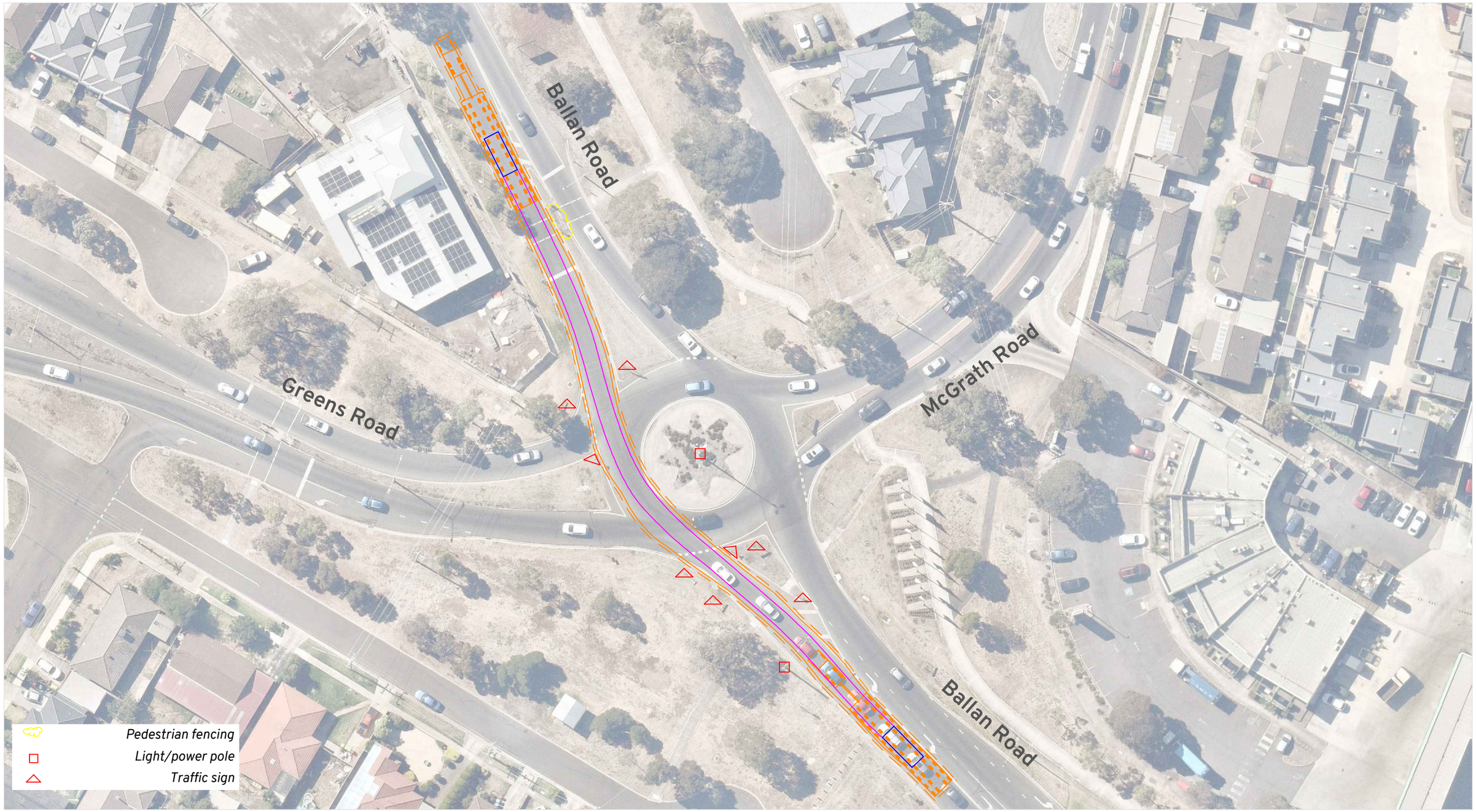
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 08




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**

Wyndham Vale VIC 3024

*Online Map Link*

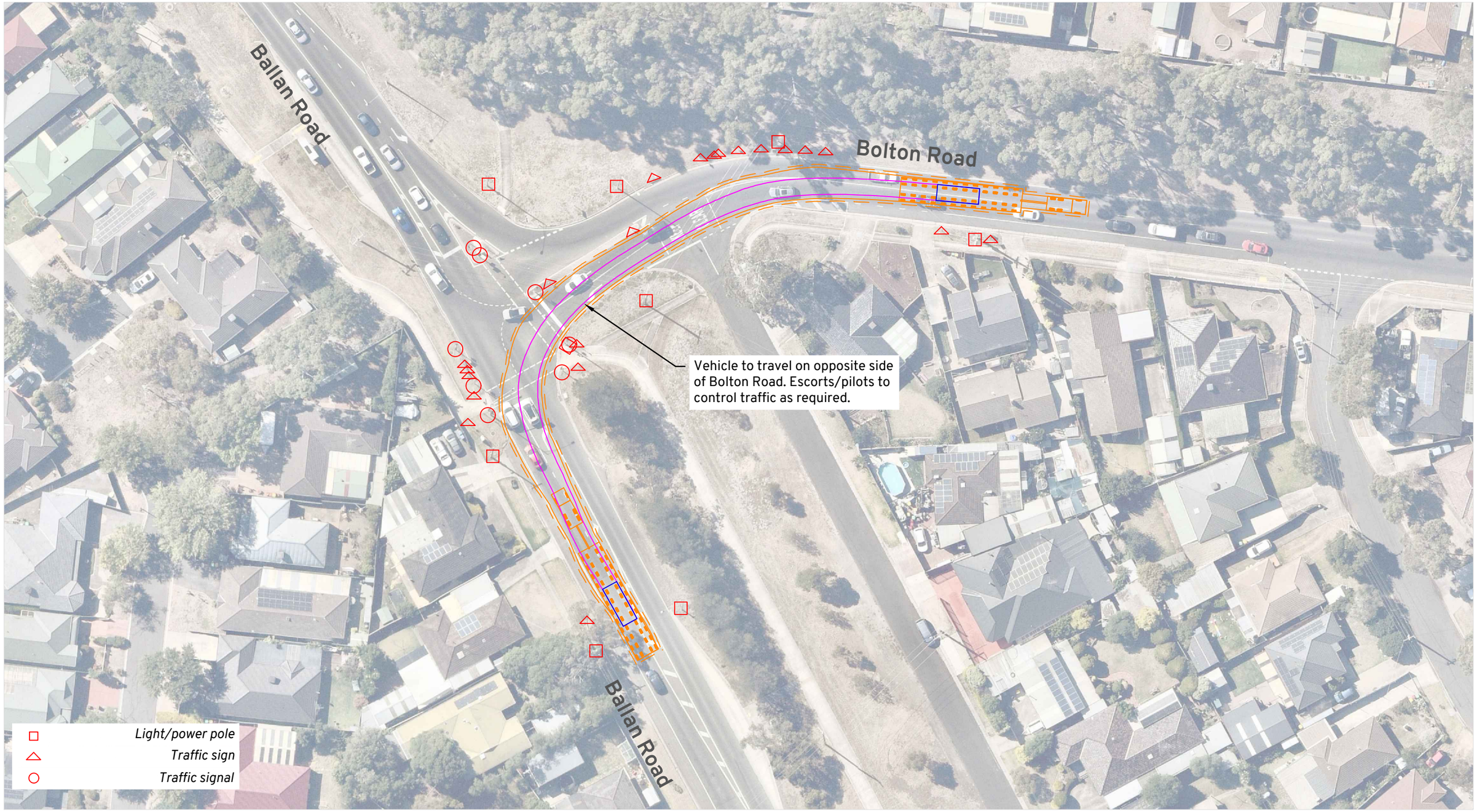
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 09




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of opposing traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**

Werribee VIC 3030

*Online Map Link*

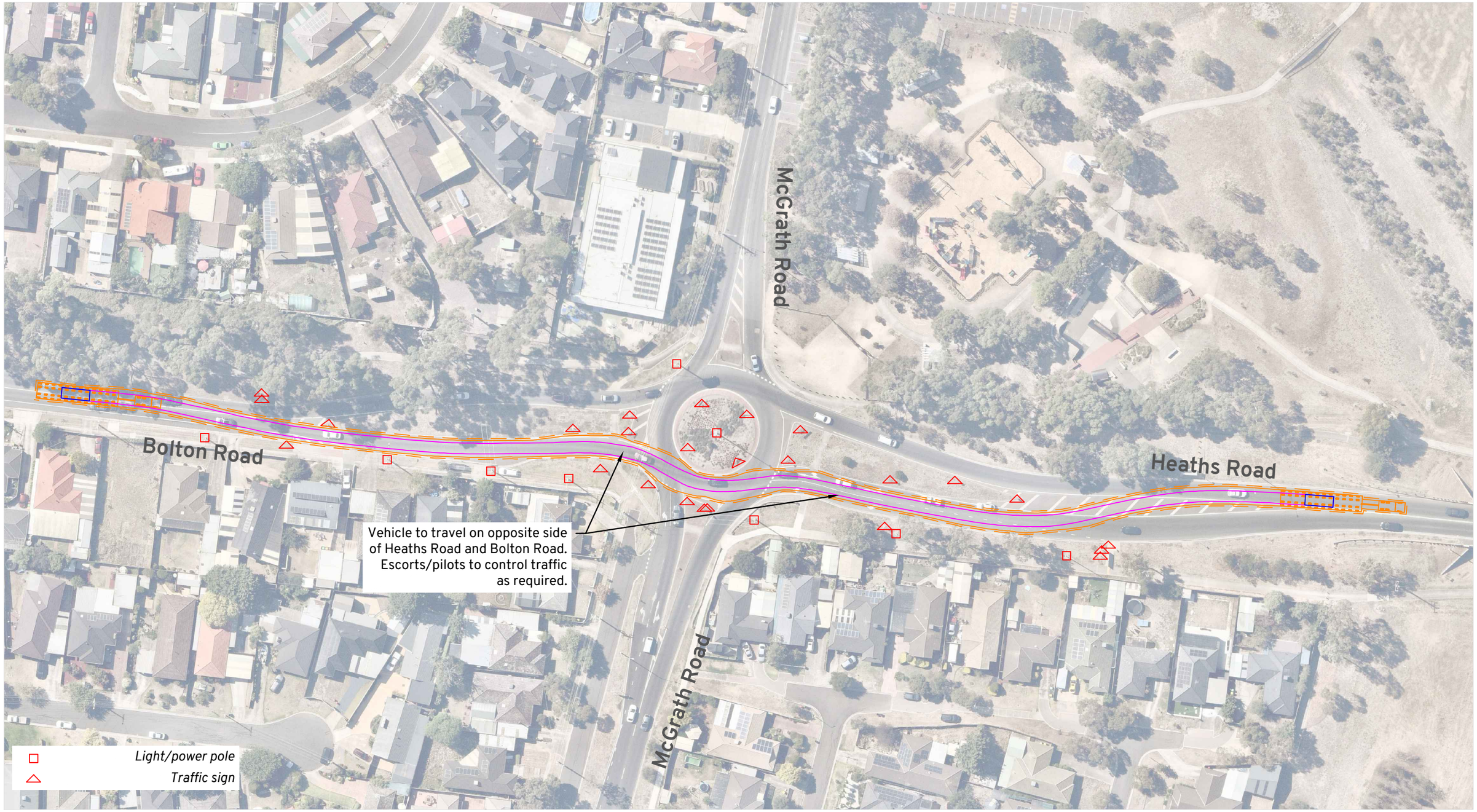
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 10




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of opposing traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**

Wyndham Vale VIC 3024

*Online Map Link*

# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 11


Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of opposing traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Wyndham Vale VIC 3024
*Online Map Link*

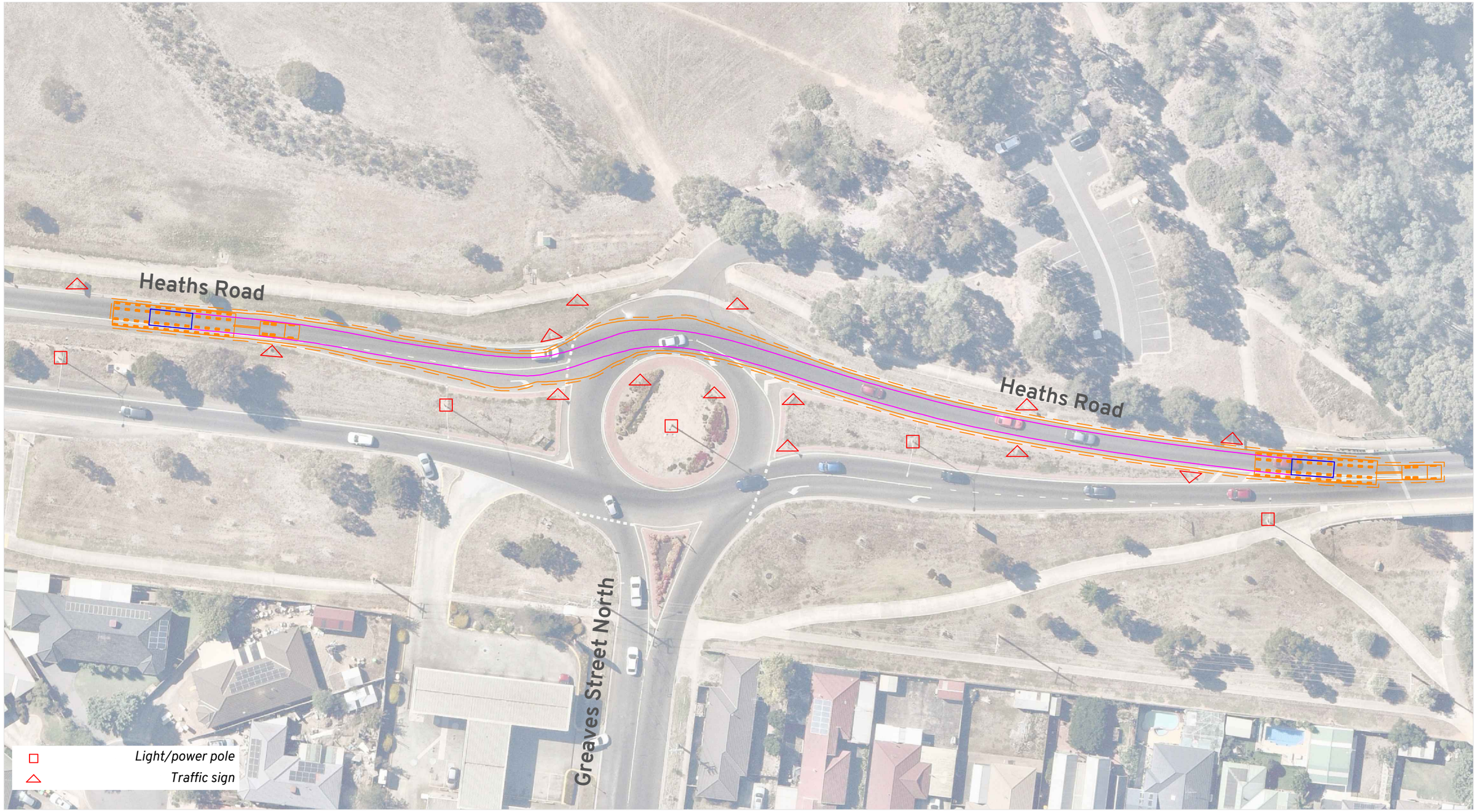
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 12




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**

Wyndham Vale VIC 3024

*Online Map Link*

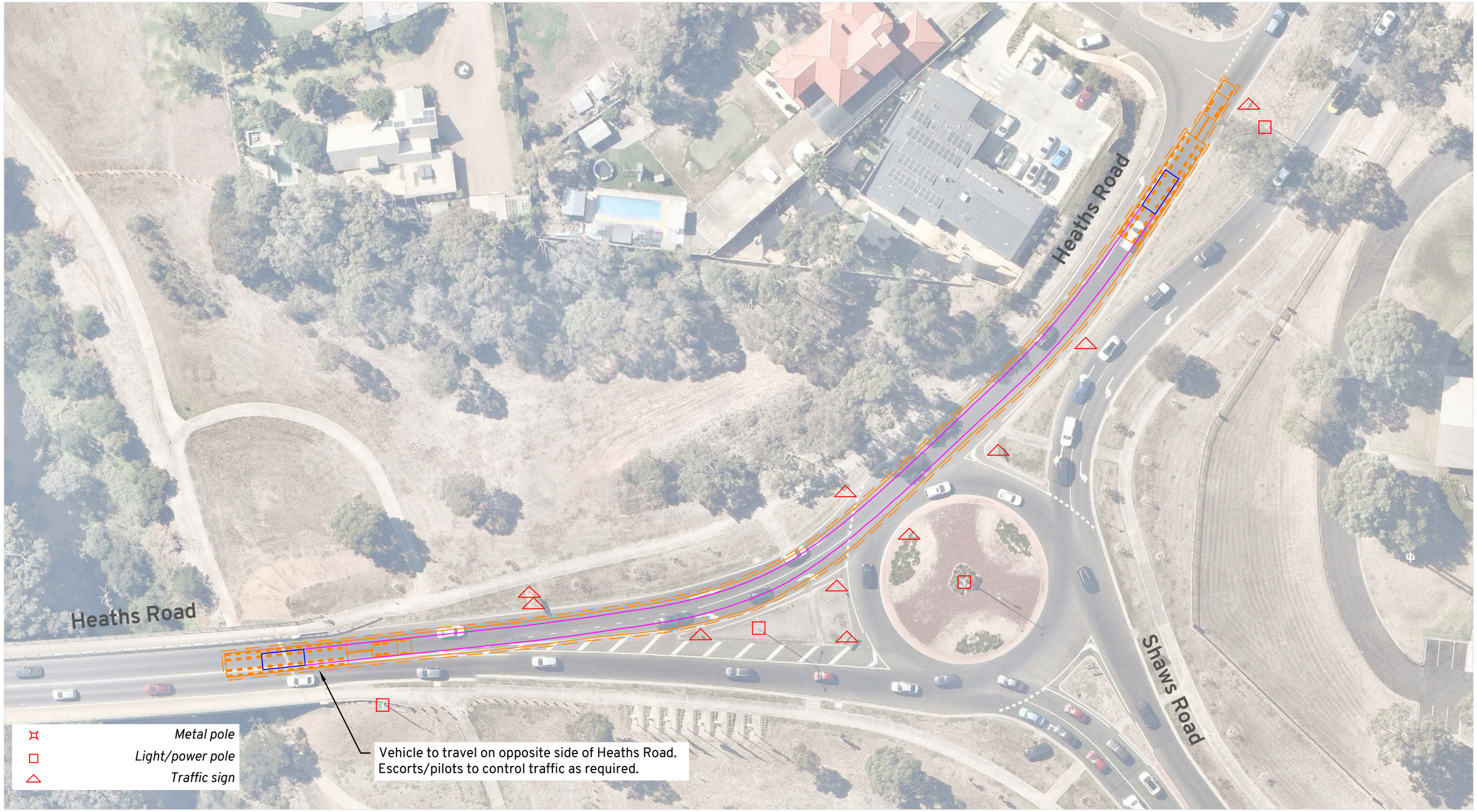
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 13




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple and opposing traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**

Werribee VIC 3030

*Online Map Link*

# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 14


Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**

Werribee VIC 3030

*Online Map Link*

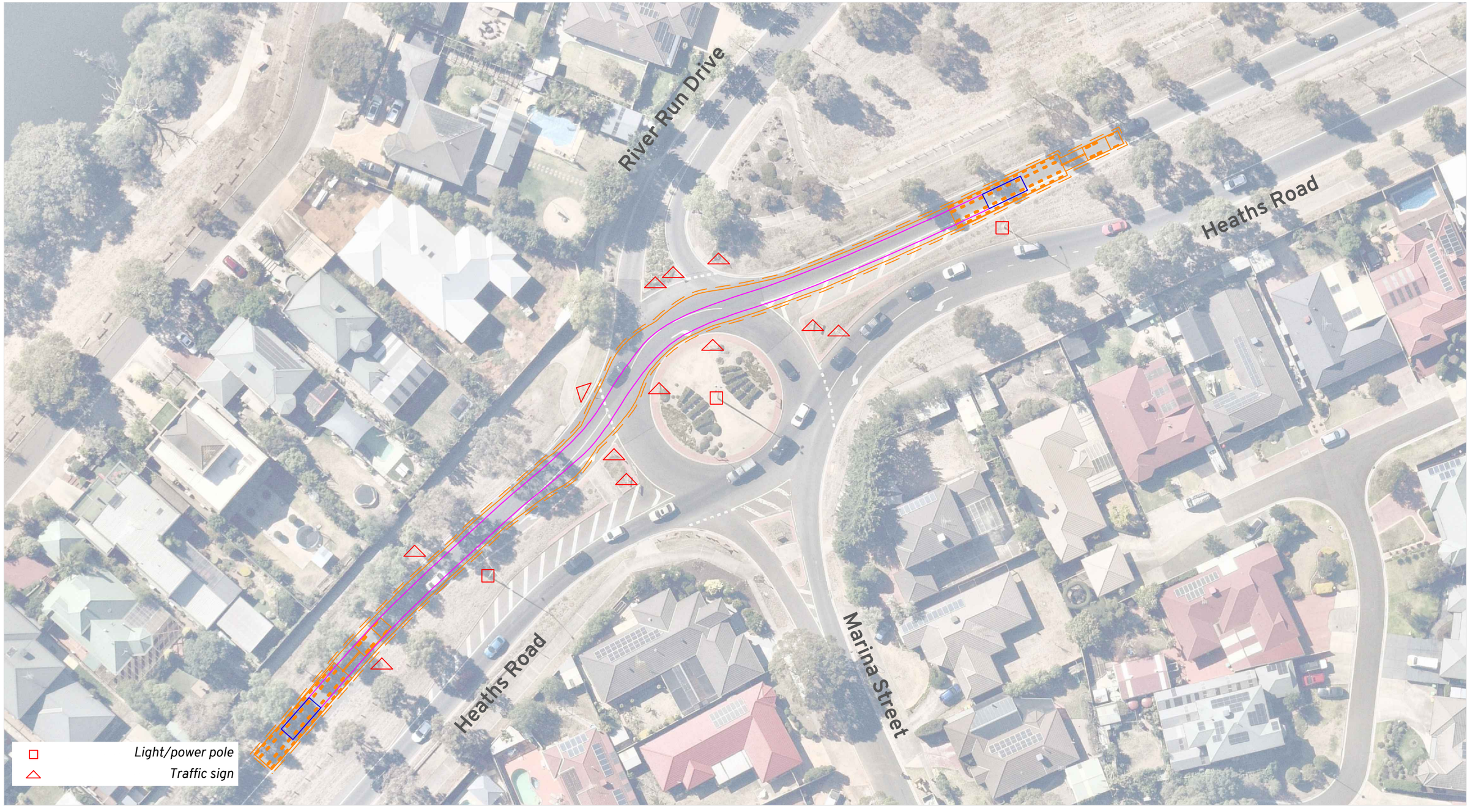
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 15




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Werribee VIC 3030
*Online Map Link*

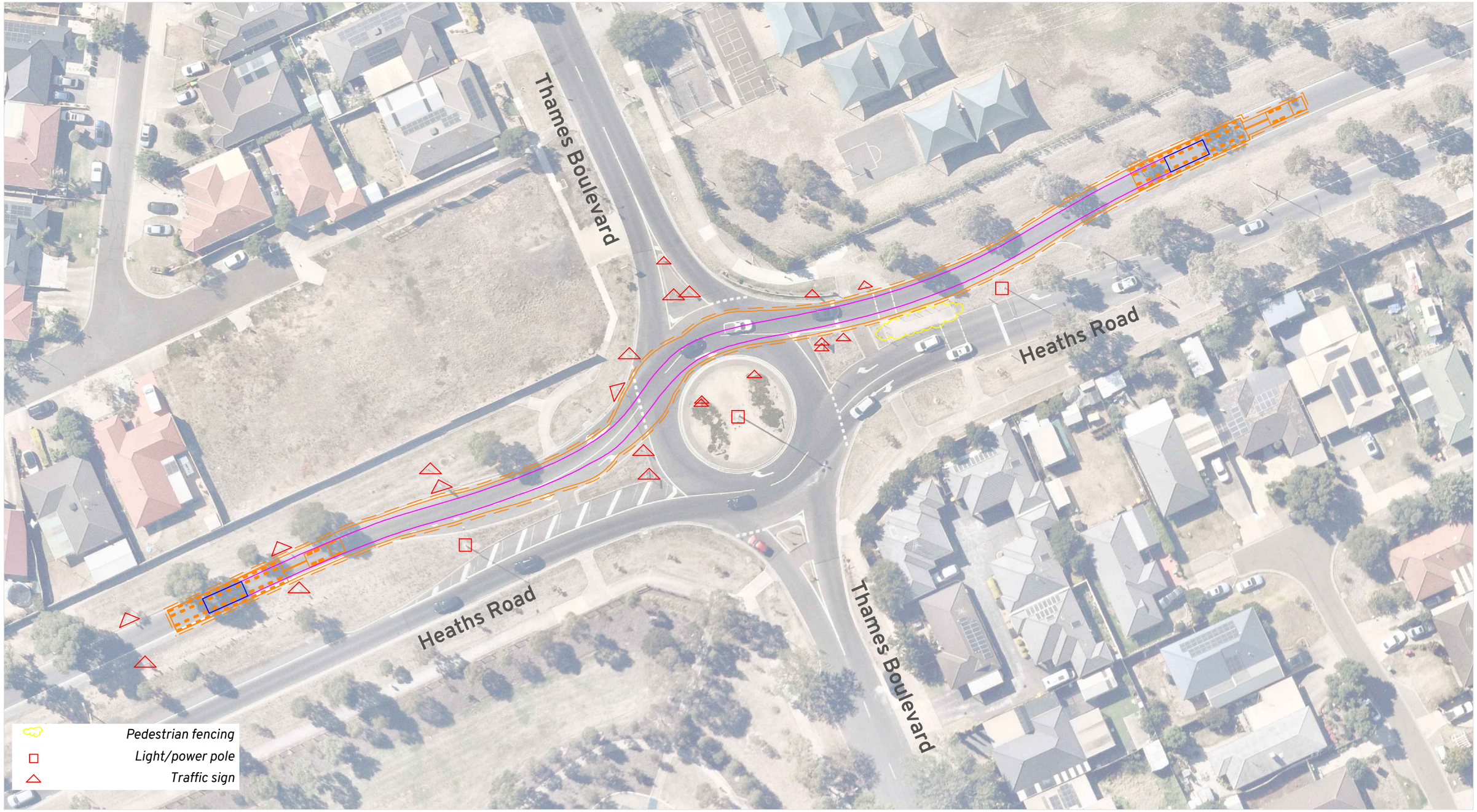
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 16




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Werribee VIC 3030
*Online Map Link*

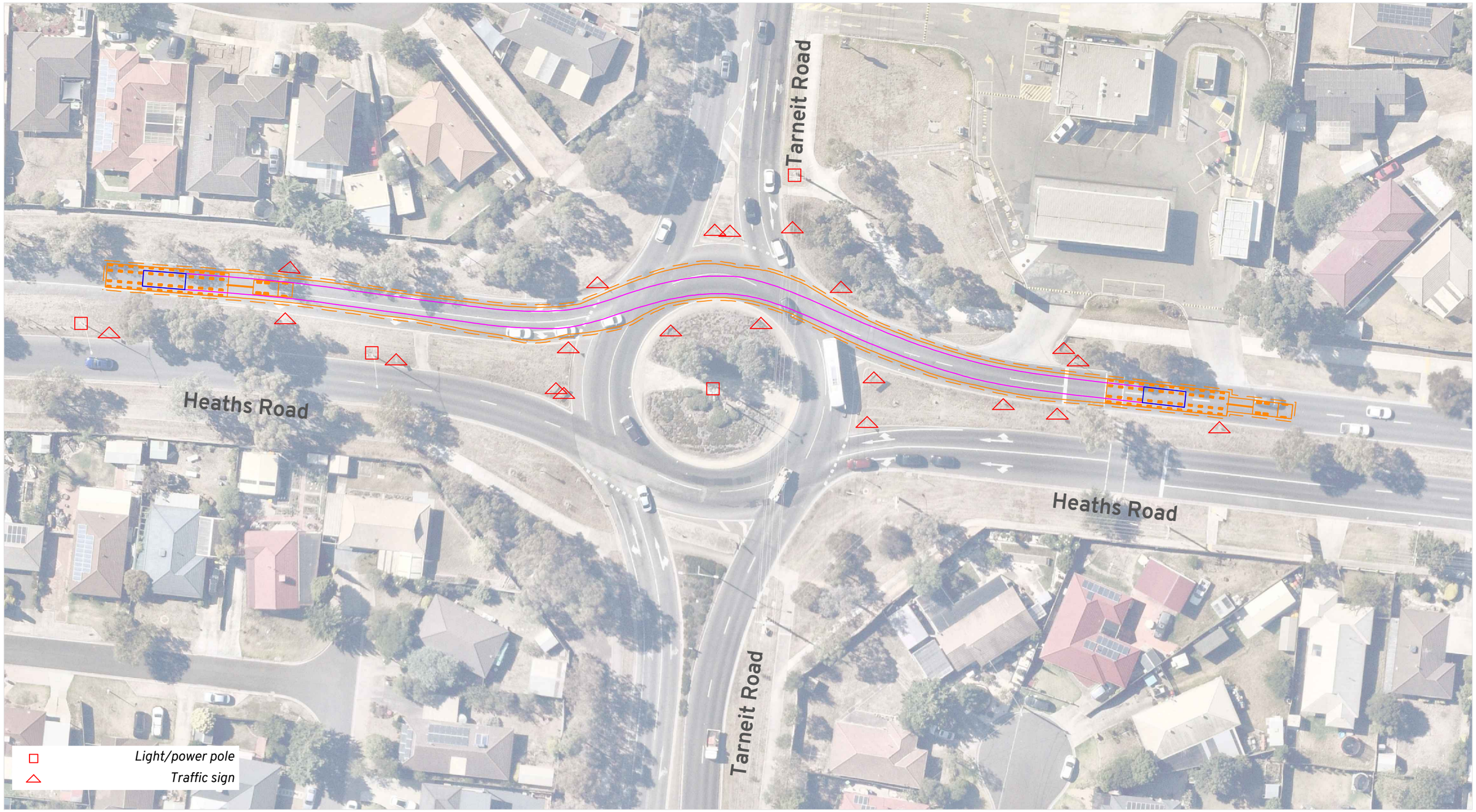
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 17




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**

Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.

Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**

Werribee VIC 3030

*Online Map Link*

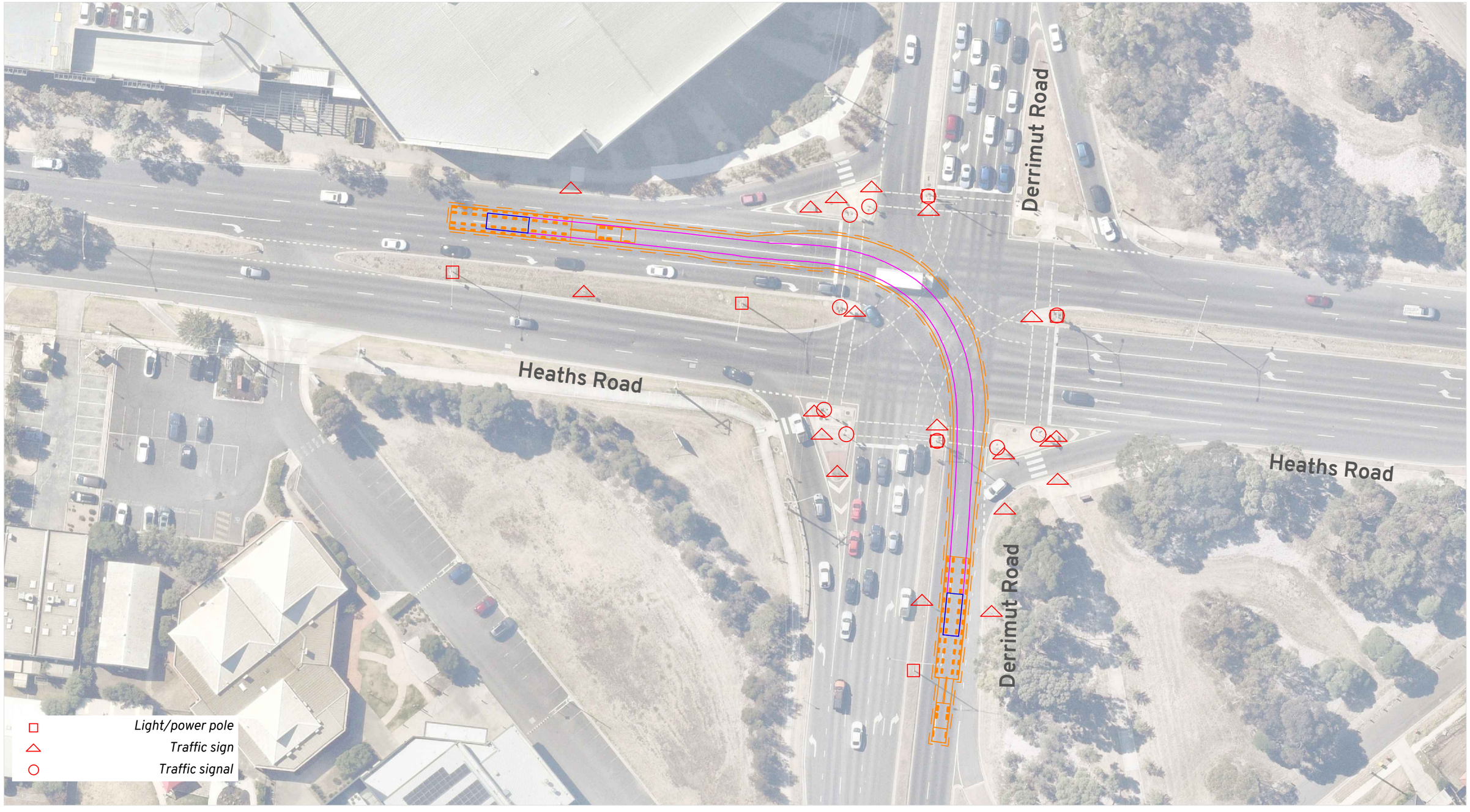
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 18




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Hoppers Crossing VIC 3029
*Online Map Link*

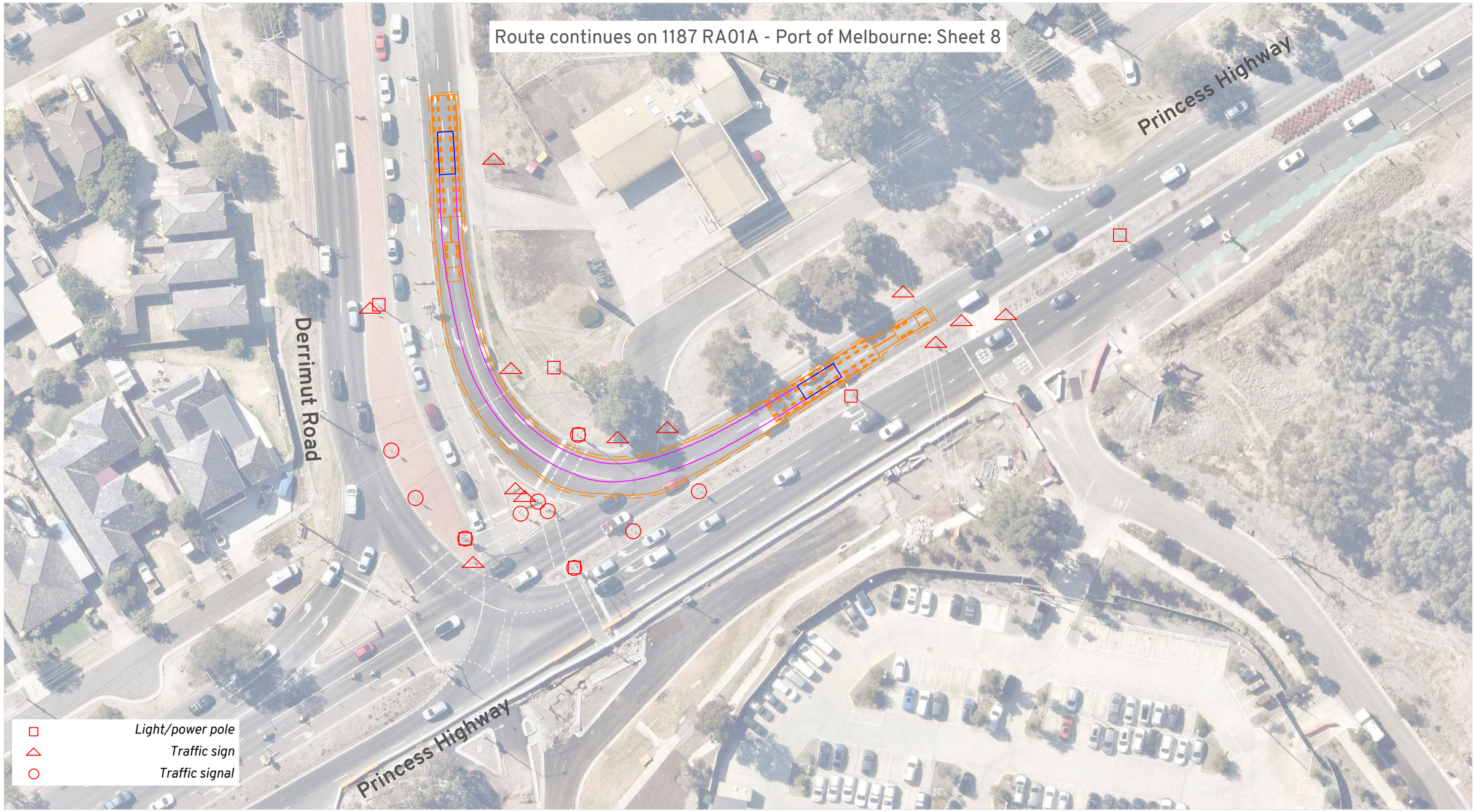
# OSOM Route Assessment - Port Of Geelong

Mangoplah BESS

Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 19




Vehicle Envelope

0.5m Clearance

Load Outlines

Load Path

**Notes:**
Escorts/pilots to control traffic as required and facilitate use of multiple traffic lanes.
Spotter(s) to assist to ensure vehicle and load are clear of infrastructure.

**Location:**
Werribee VIC 3030
*Online Map Link*

OSOM Route Assessment - Port Of Geelong
Mangoplah BESS
Swept Path Assessment

DRAWN: WC
DATE: 11/07/2025
DWG NO: 1187 RA01A - PoG
SCALE at A3: 1:750

Amber 20

# Appendix B

## Response to TfNSW Agency Advice

| TfNSW Comment | Response |
|---|---|
| Hours, days and periods of construction. | The proposed construction hours and project timeframe are provided within Section 3.2. |
| Schedule for phasing/staging of the project (including pre-construction, accommodation and ancillary infrastructure works) and identify the traffic volumes for each stage. | The traffic assessment in Section 4 details the known works associated with the peak construction period |
| Traffic volumes:<br>• Surveyed existing background traffic at key intersections with State Road network. Traffic surveys are required for each intersection with the State Road networks and are to be in accordance with Part 3 Austroads Guide to Traffic Management with raw data included.<br>• Project-related traffic volumes (measured as vehicle trips per hour and per day) for each stage, including pre-construction, construction, operation and decommissioning and identifying the peak period for traffic volumes.<br>Traffic volumes are to include a description of:<br>• Ratio of light vehicles to heavy vehicles<br>• Differentiation of Over Size/Over Mass (OSOM) that do or do not require an NHVR permit and proposed times of operation on the State road network.<br>• Peak times for existing traffic and project-related traffic.<br>• Transportation hours.<br>• Project-related traffic interaction with existing and projected background traffic with annual growth applied linearly. | Existing traffic captured in surveys provided in Section 2.3.1 with the data provided in Appendix C.<br>Project traffic presented in Section 4.2.1.<br>Section 4.2 shows different vehicle classifications using the road network, different impacts at differing peak times of day, factoring up of background traffic to proposed peak construction period, and traffic distribution. |
| The origin, destination and routes for:<br>• Employee and contractor light traffic.<br>• Heavy vehicle traffic.<br>• OSOM vehicle traffic.<br>• OSOM high risk loads.<br>• A description of all non-high risk OSOM vehicles and materials to be transported. The shortest and least trafficked route is to be given priority for movement of materials and machinery to minimise risk and impact to other motorists, so far as is reasonably practicable.<br>• The impact of generated traffic and measures employed to ensure efficiency and safety on the public road network during the project's construction, operation and decommissioning. This includes enforcement to managing traffic volumes, driver behaviour and access paths to the site.<br>• A turn warrant assessment for the worst-case scenario (i.e. peak project traffic volumes applied to the identified background traffic at the construction and background peak hour) in accordance with Part 6 of Austroads Guide to Traffic Management is to be undertaken at identified key intersections on project routes, project site access and site access points to access ancillary infrastructure. | Section 5 shows proposed heavy vehicles and Section 6.1 shows OSOM vehicles.<br>The traffic generation is shown in Section 4 and mitigation measures to ensure road efficiency and safety in Section 5.3 for heavy vehicles, Section 7.4 for measures to include in a future TMP and Section 9 for general mitigation measures.<br>Turn Treatment assessment has been completed for the peak construction period's peak hour (6:00-7:00am) and peak road network hour (8:00-9:00am) and is provided in Section 7.1. |

| TfNSW Comment | Response |
|---|---|
| The TIA is required to detail improvements to the road network, such as road widening and intersection treatments, to cater for and mitigate the impact of project-related traffic (including accommodation and ancillary infrastructure components) at key intersections with the State Road network. Strategic designs must be accompanied by safe intersection sight distance and swept path analysis using the largest heavy vehicle and high-risk OSOM passing through the intersection(s). | An overview of the required road upgrades is provided in Section 9.1.<br>The turn treatments and available sight distance at all locations comply with the requirements of the Austroads Guide as outlined in Section 7. |
| Local climate conditions that may affect road safety for vehicles used during construction, operation and decommissioning of the project (e.g. fog, wet weather, etc) | Recommendations have been provided for inclusion within the TMP which address the proposed operation measures during local climate events explained in Section 8.4. |
| A review of crash data along the identified transport route/s for the most recent 5-year reporting period and an assessment of road safety along the proposed transport route(s). | Refer Section 2.6 |
| Measures to be employed to ensure a high level of road safety for daily staff commutes between accommodation and the construction site, specifically addressing the impacts of unsafe driver behaviour and driver fatigue for all project stages and how measures employed will be enforced. | Recommendations will be made within the TMP. Driver Protocols explained in Section 8.4. |
| Details of emergency access/egress, including details of:<br>• The location of the emergency accesses.<br>• How the access will be managed (e.g. gates) to prevent the use of access by non-emergency related vehicle movements?<br>• Provision of sufficient storage at the throat of the access to allow emergency vehicle(s) to store within the access and not within the through lane or shoulder. | Measures to manage other risks (medical, fire etc) will be identified and part of future management plans.<br>No impacts would be expected to State Roads as a results of emergencies given the location of the site. |
| In relation to the EIS, TfNSW requires the identification of ancillary infrastructure, such as Electricity Transmission Lines that are crossing or near the state-classified road network or rail infrastructure within TfNSW remit. With respect to this matter the following information is required:<br>• The heights or depths (under boring) and the vertical and horizontal clearances (overhead) in accordance with Austroads.<br>• The method for construction of the transmission lines.<br>• Location of infrastructure and impacts (excavation or fill) relative to the road reserve, including demarcation of local and state-classified road reserves.<br>• Access required to construct and maintain the infrastructure. Access points or access tracks required for ETLs or other infrastructure will require the same level of assessment as the primary project access point.<br>• Strategic concept designs must be provided for each transmission line crossing the state-classified road network. | No connection works are proposed that cross State Roads. |

| TfNSW Comment | Response |
|---|---|
| If workforce accommodation is proposed, then the TIA is required to assess the pre-construction, construction schedule, staging, parallel construction activities and traffic generation until the workforce is fully accommodated at the camp. The traffic assessment requirements identified in this letter will apply to the workforce accommodation. | No workforce accommodation camps are proposed. |
| The route assessment is required for high risk OSOM (as defined on TfNSW website) required to deliver components to the project. The concept-level route analysis must include:<br>• Port or point of origin and must be for the entire route to the site access or intersections required to facilitate the high risk OSOM movements required for the project.<br>• Overall combination type, configuration, load and vehicle configuration.<br>• The laden dimensions and weight of the vehicle configuration and loads.<br>• The TIA is required to include details of all high risk OSOM loads and vehicle configurations for the project.<br>• The location of pull-over bays / rest areas along the high risk OSOM routes (including GPS coordinates) and demonstrate through swept paths that the high risk OSOMs can be physically accommodate all high risk OSOMs for the project (in terms of size, width and accessibility).<br>• Bridge Assessments for any at risk bridges on the classified road network due to dimensions and weight of OSOM vehicles.<br>• The design vehicle templates used in the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).<br>• Highlighting each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.<br>• Traffic mitigation measures or road works, modifications, or road upgrades to facilitate the movement of the high risk OSOM(s) associated with the project.<br>• Potential high level mitigation measures or commitments to mitigate known traffic, safety and impacts to road users along the high risk OSOM route (i.e. school bus routes, mining shift changes, TSRs, harvest periods and events).<br>• Identify and assess implications of any road and rail projects under construction during the indicative schedule for project related OSOM movements. | The route assessment of high risk OSOM vehicles and list of OSOM loads and vehicle configurations is within Section 6, which includes rest areas.<br>High level route assessment of one OSOM route for the largest BESS component has been completed and provided in Section 6. Detailed bridge assessments to be undertaken as part of the permit process.<br>Swept path analysis undertaken using AutoTrack software and is provided in Appendix A and Appendix D. Temporary measures are required such as signage relocation and hardstands, as indicated at each pinch point along the assessed route. |

# Appendix C

## Traffic Survey Data

# TRANS TRAFFIC SURVEY

trafficsurvey.com.au

T. 1300 82 88 82 - F. 1300 83 88 83 - E. traffic@trafficsurvey.com.au - W. www.trafficsurvey.com.au

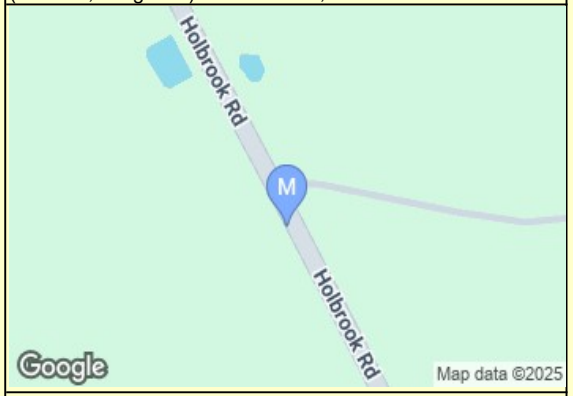
## AUTOMATIC COUNT SUMMARY

| | | | |
|---|---|---|---|
| **Street Name :** | Holbrook Rd | **Location :** | North of Paper Forest Rd |
| **Suburb :** | Mangoplah | **Start Date :** | 00:00 Sat 01/March/2025 |
| **Machine ID:** | ZT21XXBF | **Finish Date :** | 00:00 Sat 08/March/2025 |
| **Site ID:** | 3849 | **Speed Zone :** | 100 km/h |
| **Prepared By :** | Vo Son Binh | **Email:** | binh@trafficsurvey.com.au |

| GPS information | | Lat 35° 24' 15.12 South<br>Long 147° 15' 50.08 East | Direction of Travel | | |
|---|---|---|---|---|---|
| | | | **Both directions** | **Northbound** | **Southbound** |
| **Traffic Volume :** | | Weekdays Average | 1,006 | 475 | 531 |
| **(Vehicles/Day)** | | 7 Day Average | 982 | 465 | 517 |
| **Weekday** | **AM** | 08:00 | 86 | 38 | 48 |
| **Peak hour starts** | **PM** | 16:00 | 87 | 46 | 41 |
| **Speeds :** | | 85th Percentile | 108.9 | 110.4 | 107.1 |
| **(Km/Hr)** | | Average | 102.5 | 103.5 | 100.4 |
| **Classification % :** | | Light Vehicles up to 5.5m | 74.8% | 74.6% | 75.0% |

## Location

| | |
|---|---|
| **GPS Information** | Load Google Map (internet required) |
| (Latitude, Longitude) | -35.404201, 147.263911 |

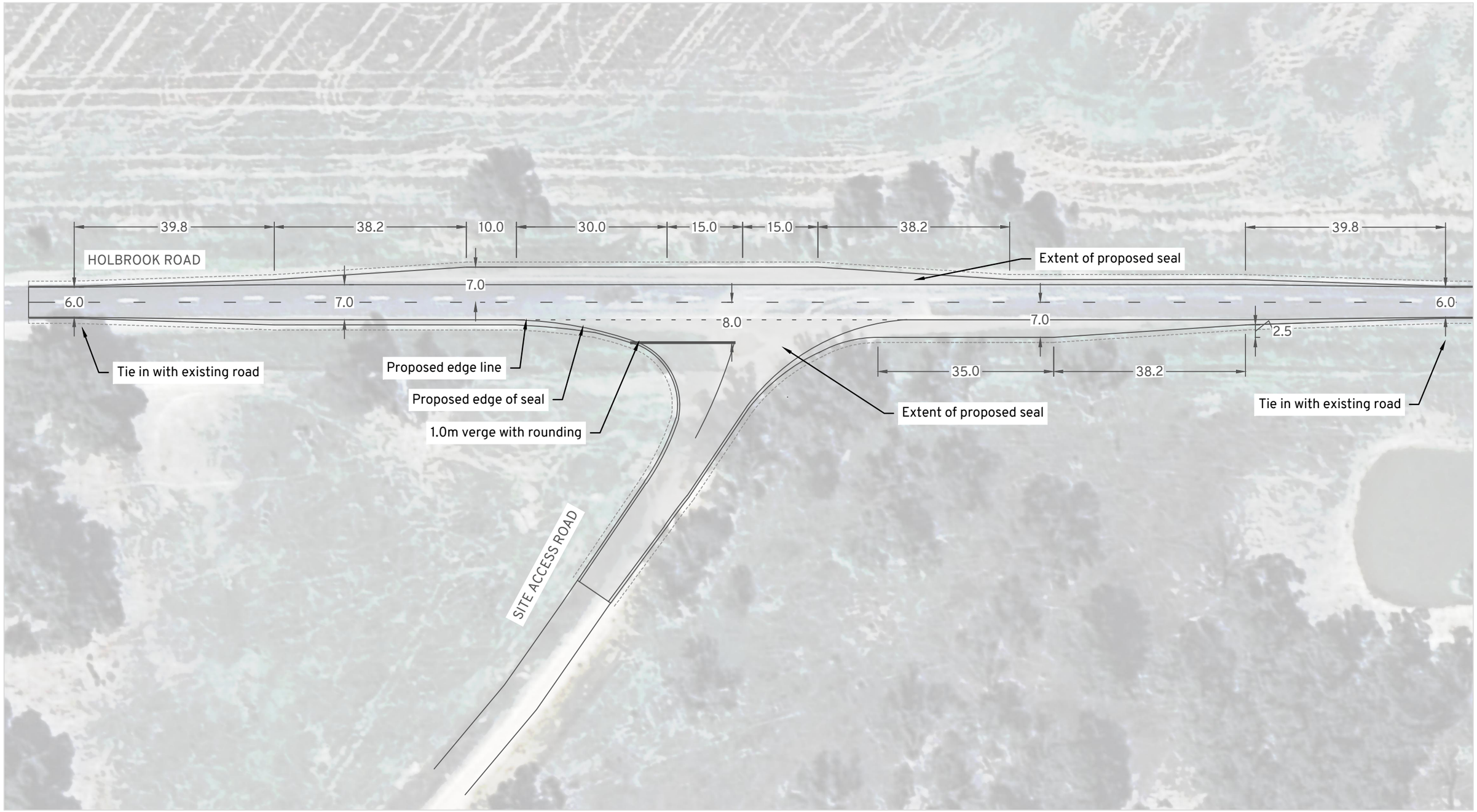



| | | |
|---|---|---|
| Speed Data | Speed Graph | Speed Bin |
| Volume Data | Volume Graph | Classification |

QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

# Appendix D

## Site Access Design and Swept Path Assessment




**The following design details have been adopted from Austroads Guide to Road Design Part 4A:**

Rural Basic Right-turn Treatment (BAR) - Part 4A Section 7.2.1.

1: Design speed of 110km/h.
2: Lane widths of 3.5m through intersection.
3: Formation/carriageway widening is 2.5m.
4: Taper lengths calculate to 38.2m.
5: Storage length is 30.0m for one 26.0m B-Double design vehicle.

Rural Basic Left-turn Treatment (BAL) - Part 4A Section 8.2.1.

1: Design speed of 110km/h.
2: Lane widths of 3.5m through intersection.
3: Formation/carriageway widening is 2.5m.
4: Taper length calculates to 38.2m.
5: Minimum length of parallel widened shoulder used from Table 8.1 is 35.0m.

# Site Access

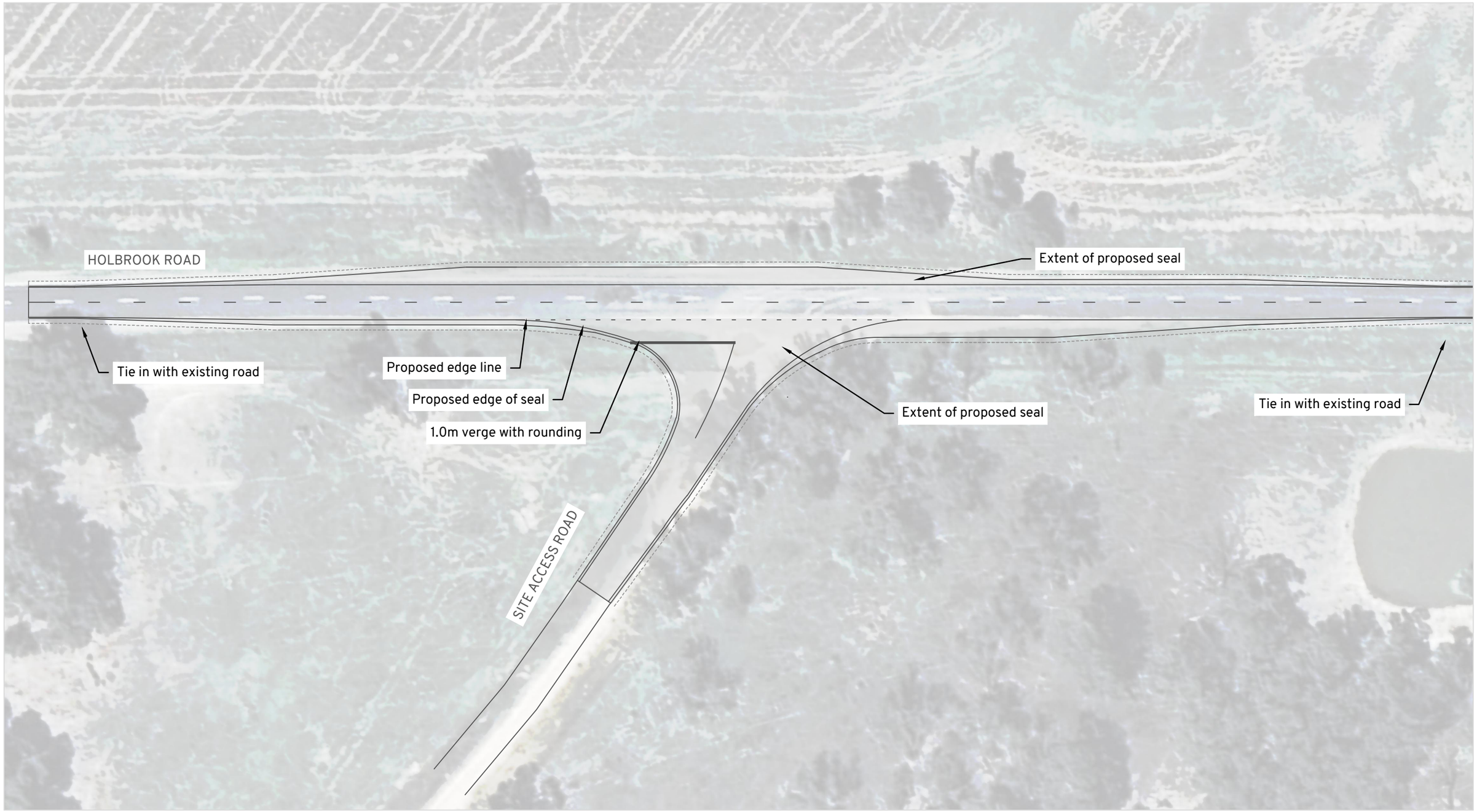
Mangoplah BESS

Strategic Design - BAR/BAL

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:750

Amber

SD-1




**The following design details have been adopted from Austroads Guide to Road Design Part 4A:**

Rural Basic Right-turn Treatment (BAR) - Part 4A Section 7.2.1.

1: Design speed of 110km/h.
2: Lane widths of 3.5m through intersection.
3: Formation/carriageway widening is 2.5m.
4: Taper lengths calculate to 38.2m.
5: Storage length is 30.0m for one 26.0m B-Double design vehicle.

Rural Basic Left-turn Treatment (BAL) - Part 4A Section 8.2.1.

1: Design speed of 110km/h.
2: Lane widths of 3.5m through intersection.
3: Formation/carriageway widening is 2.5m.
4: Taper length calculates to 38.2m.
5: Minimum length of parallel widened shoulder used from Table 8.1 is 35.0m.

# Site Access

Mangoplah BESS

Strategic Design - BAR/BAL

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:750

Amber

SD-2

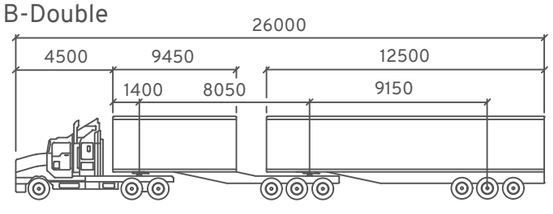

Vehicle Envelope

500mm Clearance

Reverse Manoevure

*Min. Design Speed 5km/h*

26.0m B-Double




| | mm |
|---|---|
| Tractor Width | : 2500 |
| Trailer Width | : 2500 |
| Tractor Track | : 2500 |
| Trailer Track | : 2500 |
| Lock to Lock | : 6.0s |
| Steering Angle | : 22.2 |
| Articulating Angle | 70.0 |

# Site Access

Mangoplah BESS

Strategic Design - BAR/BAL

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:750

Amber SD-3

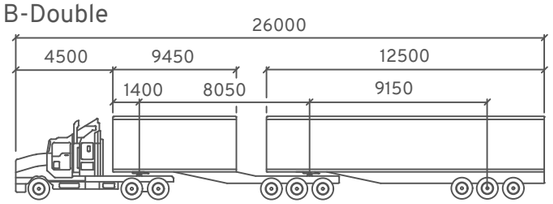

Vehicle Envelope

500mm Clearance

Reverse Manoevure

*Min. Design Speed 5km/h*

26.0m B-Double




| | mm |
|---|---|
| Tractor Width | : 2500 |
| Trailer Width | : 2500 |
| Tractor Track | : 2500 |
| Trailer Track | : 2500 |
| Lock to Lock | : 6.0s |
| Steering Angle | : 22.2 |
| Articulating Angle | 70.0 |

# Site Access

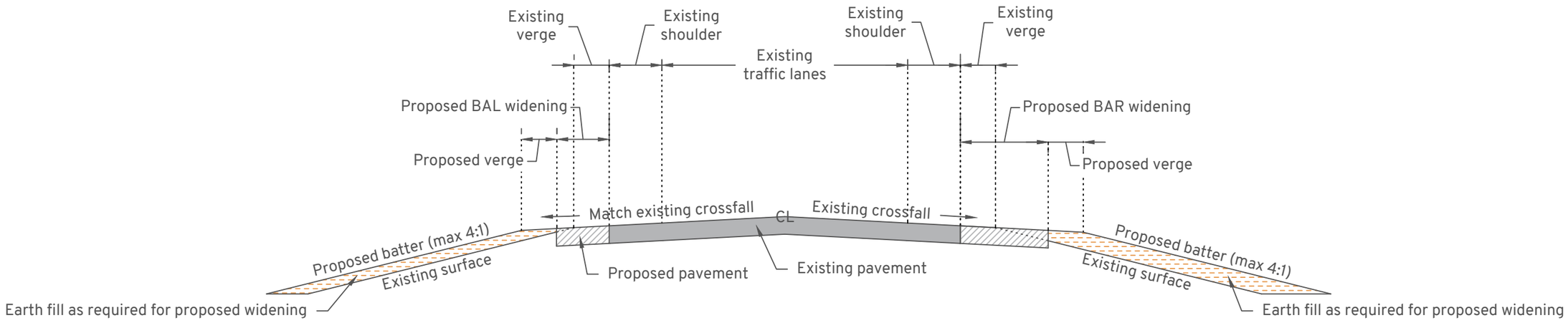
Mangoplah BESS

Strategic Design - BAR/BAL

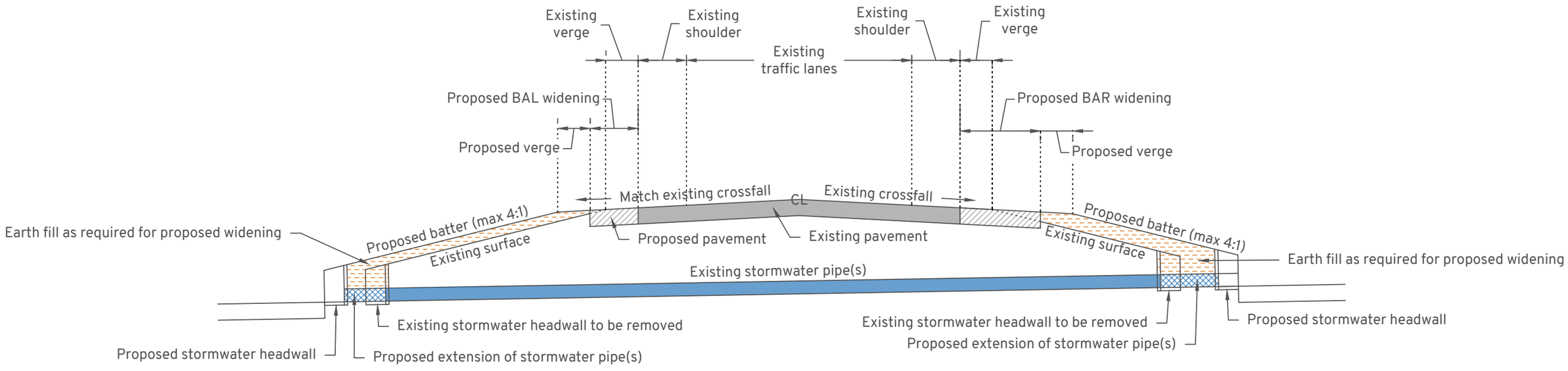
DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: 1:750

Amber

SD-4




Typical Cross Section




Typical Cross Section - Culvert

Mangoplah BESS

Strategic Designs - Typical Cross Sections

CONCEPT FOR DISCUSSION PURPOSES ONLY

DRAWN: TD/OM
DATE: 07/07/2025
DWG NO: 1187 SD01
SCALE at A3: NTS

Amber BL3-7

# Appendix E

## Sight Distance Assessment – Site Access / Holbrook Road


Sight Distance

Sight Line

OSOM Route Assessment - Port of Melbourne

Mangoplah BESS

Sight Distance Assessment

DRAWN: WC
DATE: 04/07/2025
DWG NO: 1187 RA01A - PoM02
SCALE at A3: NTS

Amber

SD-5