



# Traffic Impact Statement

## Yellow Pinch Water Treatment Plant

Prepared for:



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# 1. Introduction

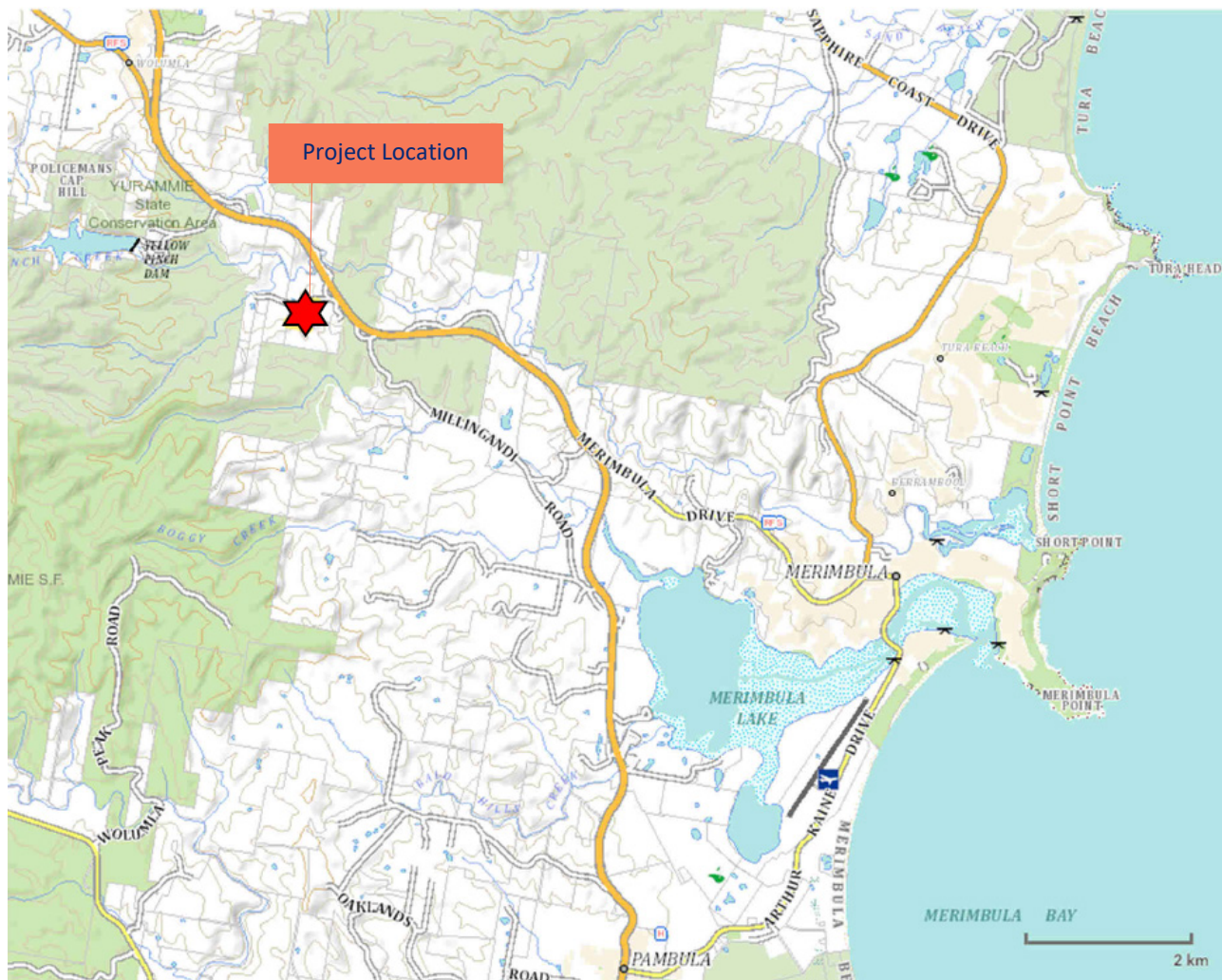
## 1.1. Overview

Bega Valley Shire Council (Council) as the relevant water authority for Bega Valley Shire is planning to develop a new Water Treatment Plant (WTP) to supply potable water to towns, villages and rural properties connected to the Bega – Tathra Water Supply System.

The Bega – Tathra Water Supply System is owned and operated by Council. It services the areas of Bega, North Bega, Tarraganda, Kalaru, Tathra, Tathra River Estate and Mogareeka.

## 1.2. Site Location

The Site is a single lot known as Lot 882 DP789858 at 43 Red Gum Rd, YELLOW PINCH with an area of ~8.02ha. As the Figure below shows, the Site (red star) is located just to the west of the Princes Highway near Yellow Pinch Dam. This is ~8km north-west of Merimbula and ~3.5km south-east of the village of Wolumla. It is located near South East Forest National Park & Yurammie State Conservation Area to the west and Bournda Nature Reserve/National Park to the east.



**Figure 1-1 – Project Location (as per Planning Proposal)**

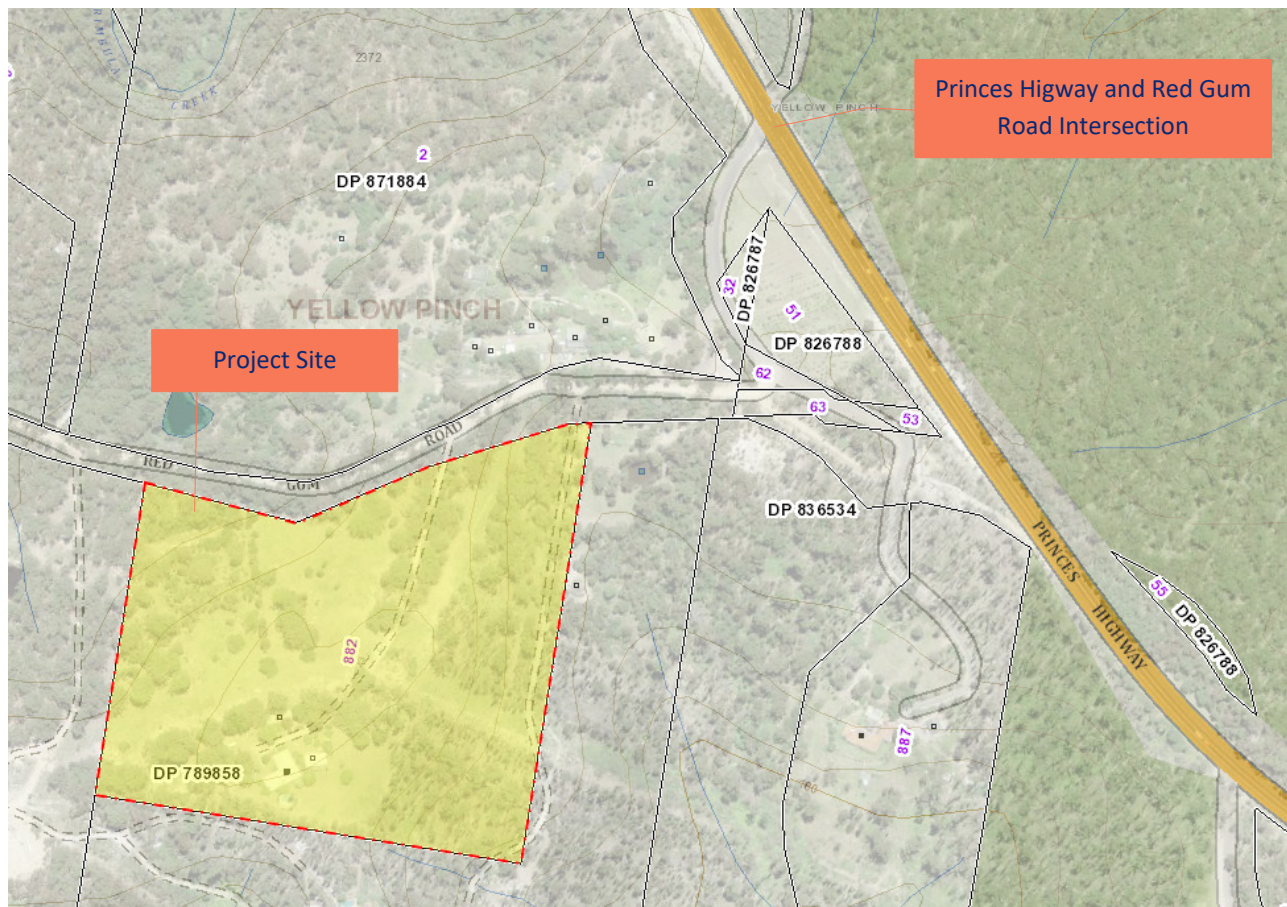


### 1.3. Surrounding Landuse

This Proposal seeks to amend Bega Valley Local Environmental Plan 2013 ('LEP') for the Site to change the key planning control(s) to enable a Water Treatment Plant (WTP) to be constructed & operated on the Site. This seeks to build on the recommendations of Council's Water & Sewer Strategy 2022-2025 ('Water & Sewer Strategy').

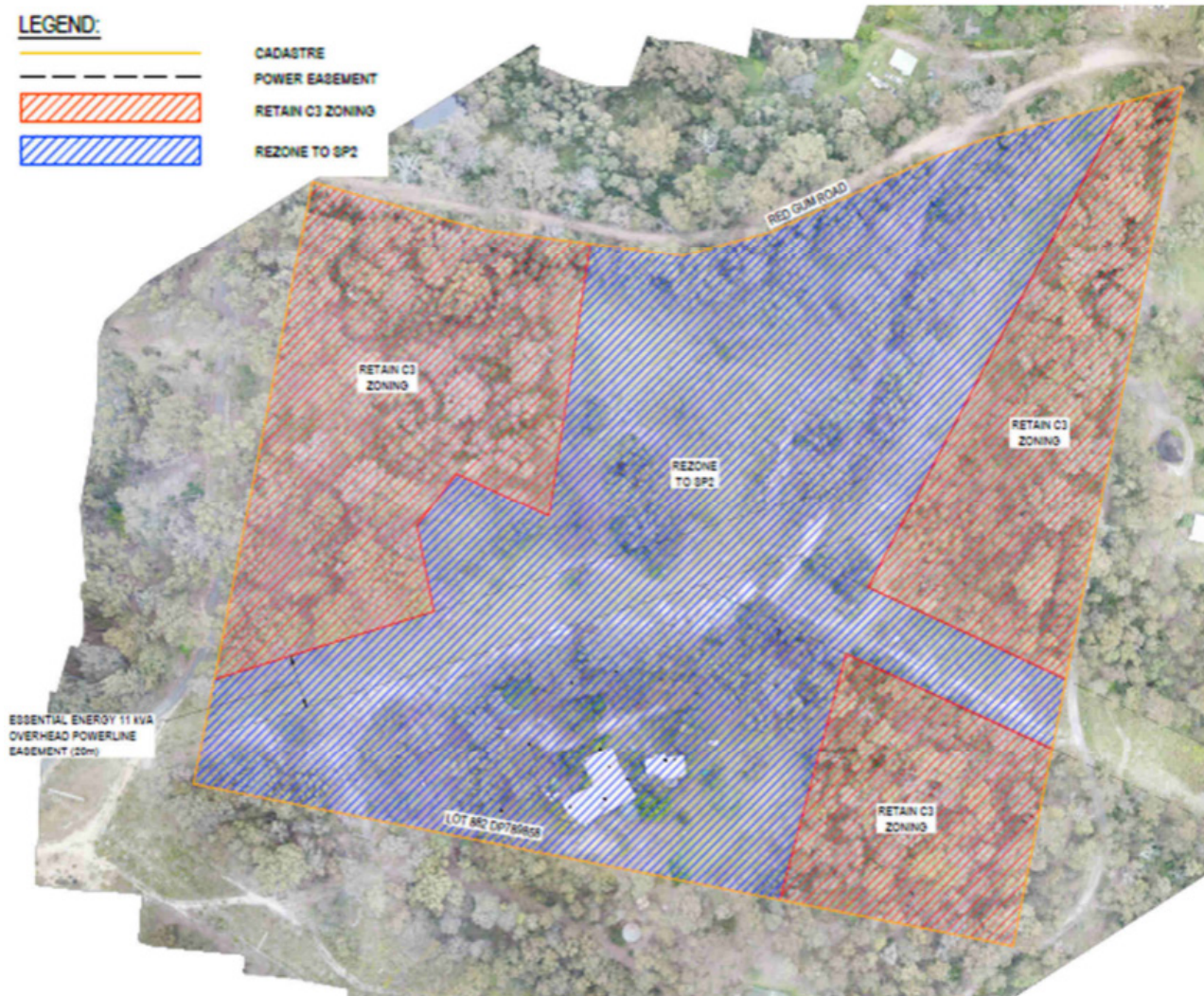
This may include (subject to NSW Government approval) changes to the relevant planning control(s) in the LEP to facilitate a WTP on the Site including, but not limited to land use zoning (currently Zone C3 Environmental Management).

The following figures provide an overview of the project site, *Figure 1-2 – Project Site (as per Planning Proposal)* and the draft proposed zoning, *Figure 1-3 – Proposed zoning (as per Planning Proposal)*.



**Figure 1-2 – Project Site (as per Planning Proposal)**





**Figure 1-3 – Proposed zoning (as per Planning Proposal)**

Some of the adjacent lots are large lot residential 'bush blocks'. The nearest dwelling on adjacent land is located to the south, greater than 50m from the southern boundary of the Site. Other dwellings are located more significant distances to the west of the Site. To the north of the Site is the 'Potoroo Palace' animal sanctuary and café.

National Parks & nature reserves surround the area but are generally buffered by the 'bush-blocks'.

## 1.4. Purpose of the Assessment

The purpose of this report is to assess the likely traffic and transport impacts associated with the proposed construction and operation of the Yellow Pinch WTP and respond to the advice received from Transport for NSW, outlined below:

- *The maximum traffic during the construction phase in any peak am and pm times (including any oversized vehicles that may require a temporary modification of the intersection to Princes Highway)*
- *The maximum traffic during operation in any peak am and pm times (which is minimal as it is largely automated)*
- *A turn warrant assessment on the existing intersection on Princes Highway configuration, an assessment of pre-traffic before development and an assessment once development starts and if the intersection is sufficient (especially the right-hand turn).*



## 2. Existing Conditions

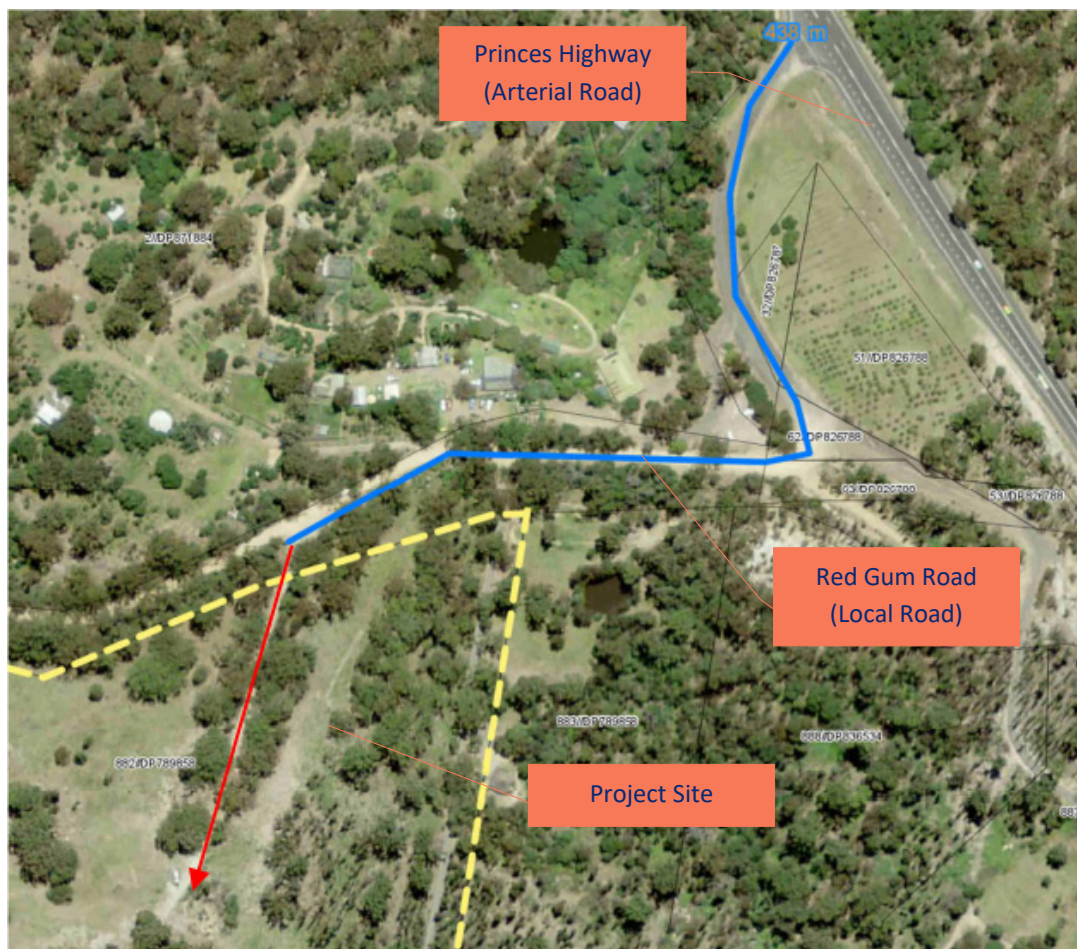
### 2.1. Existing Road Network

#### 2.1.1. Road Hierarchy

Functional road classification involves the relative balance of the mobility and access functions.

Transport for NSW defines four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility, to high accessibility and low mobility. These road classes are:

- **ARTERIAL ROADS** – generally controlled by Transport for NSW, typically with no limit inflow and designed to carry vehicles long distances between regional centres.
- **SUB-ARTERIAL ROADS** – can be managed by either Transport for NSW or the local council. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their purpose is to carry through traffic between specific areas in a subregion, or provide connectivity from arterial road routes (regional links).
- **COLLECTOR ROADS** – provide connectivity between local roads and the arterial road network and typically carry between 2,000 and 10,000 vehicles per day.
- **LOCAL ROADS** – provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.



**Figure 2-1 Network Hierarchy (Princes Highway and Red Gum Road)**



A summary of the key roads analysed in this study is provided below.

### 2.1.2. Princes Highway

The Princes Highway (refer to *Figure 2-2* below) is a state/arterial road that extends from Sydney via Melbourne to Adelaide through the states of New South Wales, Victoria and South Australia.



**Figure 2-2 Princes Highway looking south to Red Gum Road**

The key features of the Princes Highway within proximity of the subject site are outlined in Table 2-1 below:

**Table 2-1 Princes Highway Features**

Feature	Description
Carriageway	Undivided carriageway with a single travel lane in each direction. Approximately 14.m sealed width comprising 3.5m travel lanes, 1.0m wide centreline and 3.0m shoulders.
Speed Limit	100km/h
Pedestrian Facilities	No dedicated facilities - unrestricted
Bicycle Facilities	No dedicated facilities - unrestricted
Public Transport	Potoroo Palace (Yellow Pinch Stop ID 254812 & Stop ID 254813) Public Bus Routes: <ul style="list-style-type: none"> <li>- 890 Bega to Eden via Wolumla &amp; Merimbula</li> </ul> School Bus Routes <ul style="list-style-type: none"> <li>- S313 Wolumla to Eden Schools via Merimbula</li> <li>- S315 Pambula Schools to Bega Kerrisons Lane via Merimbula &amp; Wolumla</li> <li>- S316 Merimbula to Wolumla via Bega Schools (return)</li> </ul> Sapphire Coast Bus Line stops on the Princes Highway.
Parking	No dedicated facilities - unrestricted

### 2.1.3. Red Gum Road

The Site is accessed from Red Gum Road which connects to the Princes Highway (classified road). The photos below show that the connection to the Princes Highway is a sealed intersection with good sightlines in both directions. There is a dedicated left (Auxilliary Left Turn AUL) and right-hand turn (Channelised Right Turn CHR) lanes from the highway providing access/egress to Red Gum Road. This was likely constructed to service 'Potoroo Palace' – a Tranquil Park for Australian Wildlife on Red Gum Road.

Further down Red Gum Road it changes to gravel/unsealed and turns off to the driveway to this property. The existing driveway to the project site off Red Gum Road is located about 400m from the Princes Highway.



**Figure 2-3 Red Gum Road**

The key features of Red Gum Road within proximity of the subject site are outlined in Table 2-1 below:

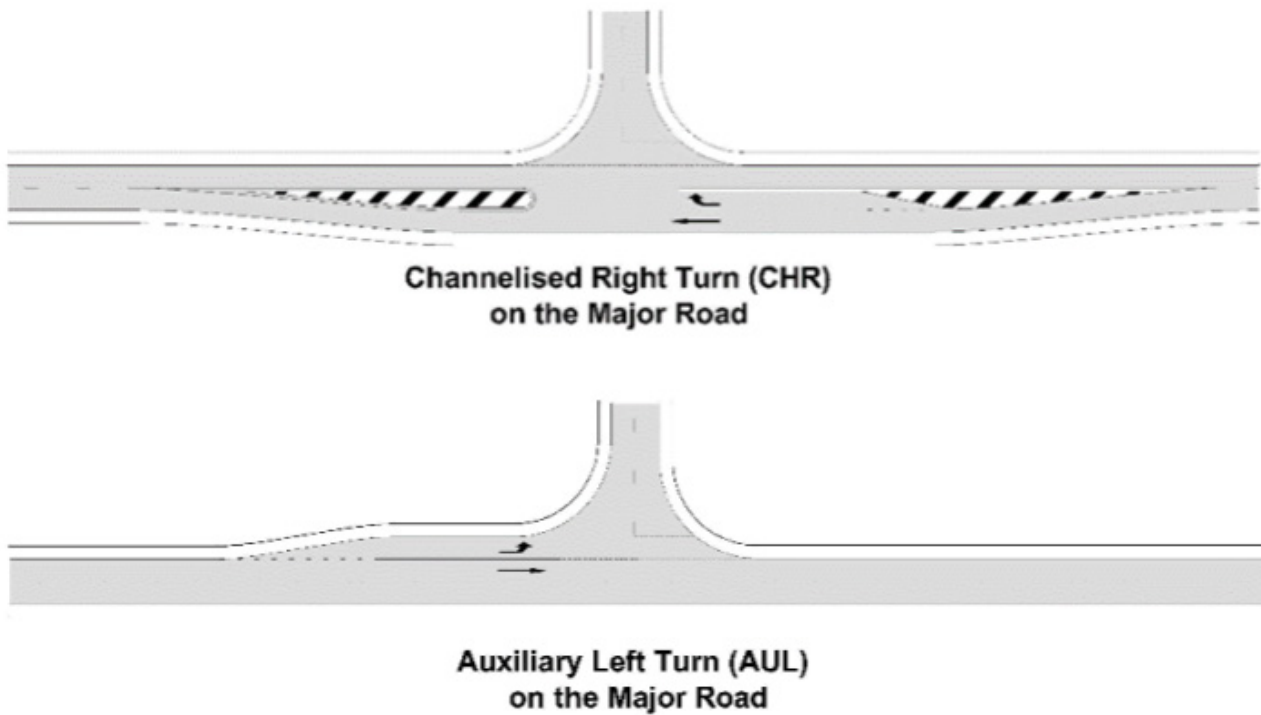
**Table 2-2 Red Gum Road Features**

Feature	Description
Carriageway	Undivided carriageway no linemarking. Approximately 70.m seal width enabling two-way movement.
Speed Limit	50km/h
Pedestrian Facilities	No dedicated facilities - unrestricted
Bicycle Facilities	No dedicated facilities - unrestricted
Public Transport	No dedicated facilities - unrestricted
Parking	No dedicated facilities - unrestricted



### 2.1.4. Existing Intersection Arrangement

The existing intersection arrangement at Princes Highway and Red Gum Road consists of the following:



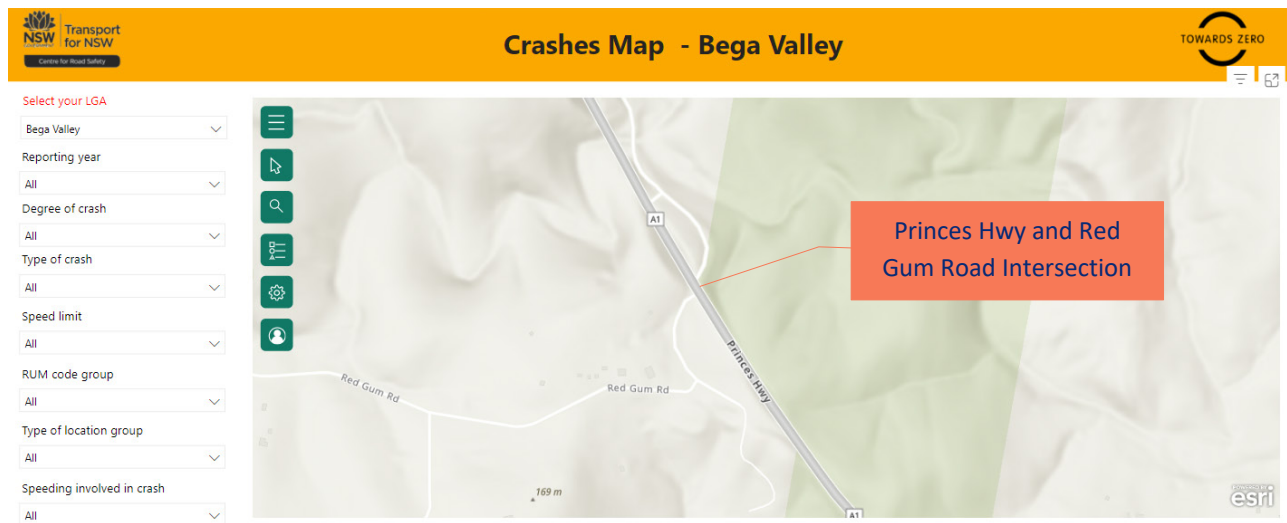
**Figure 2-4 Prices Highway and Red Gum Road Intersection**



### 2.1.5. Crash Data

The below crash analysis has been undertaken utilising the Transport for NSW Centre for Road Safety Interactive Crash Maps

<https://www.transport.nsw.gov.au/roadsafety/statistics/interactive-crash-statistics/lga-view-crashes-map>



There have been no crashes recorded at the intersection of Princes Highway and Red Gum Road intersection or in the general proximity to the project area.

### 2.1.6. Sight Distance

Please refer the Attachment A – Sight Distance

### 2.1.7. Turning Paths

Please refer the Attachment B – Turning Paths

### 2.1.8. Existing Conditions

The existing conditions of the Princes Highway and Red Gum Road intersections are generally very good with no visible pavement defects.

The intersection treatments consist of auxiliary turn lanes for the right turn (CHR) and left turn (AUL) into Red Gum Road, providing sheltered movements for turning vehicles.

There are 3.5m trough lanes, 3.5m turn lanes, a 1.0m wide centreline treatment and 3.0m wide sealed shoulders, providing a typical and easily interpreted intersection arrangement.

The surrounding roadside consists of flat traversible open space, smooth cut slopes and safety barrier has been provided to protect steep/high embankments.

The linemarking and delineation are in good conditions, consisting of longitudinal and transverse lineamarking with associated retroreflective raised pavement markers, guide posts and barrier mounted reflectors. Red Gum Road has a hold line with associated Give Way signage.

The signage at the intersection includes a TASAC (tourism) sign for the nature animal sanctuary and a fingerboard for “Red Gum Road”

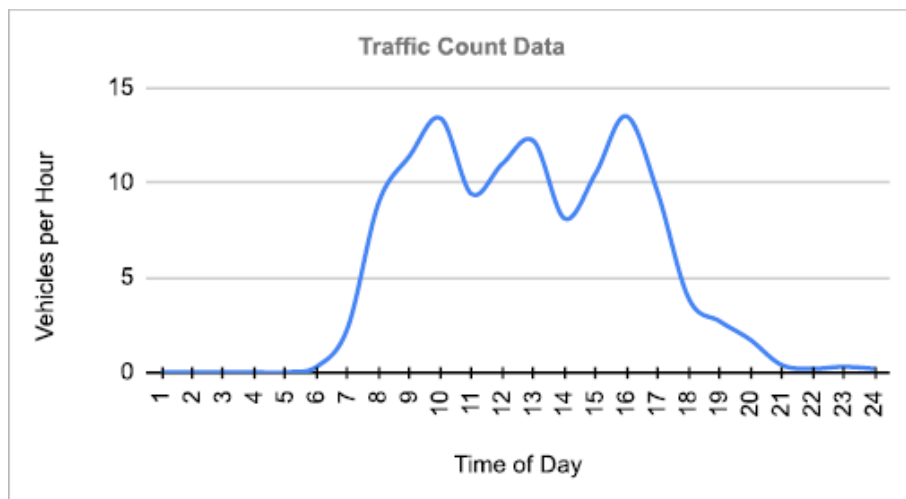
The advance signage prior to the intersection includes TASAC (400m) and advance fingerboard for “Red Gum Road” (~150-200m).

### 2.1.9. Traffic Data

The Princes Highway traffic volumes adopted for this assessment have been extracted and extrapolated from the traffic volume data outline within the Princes Highway Corridor Strategy (2016), Table 5-5 Corridor Planning Section 17 Wolumla – 50m south Coral Park Road (AADT = 5792 and, 9.4% HV). When applying the average growth rate of 0.5% as per Figure 5-11 therein, the AADT as at 2023 is 5998.

Peak hour traffic is typically 10–15 percent of daily traffic. For a conservative assessment, it has been assumed the higher rate (15 percent) be applied to determine the potential the peak hour traffic on the Princes Highway. This is expected to be in the order of 900 (bi-directional) vehicles per hour.

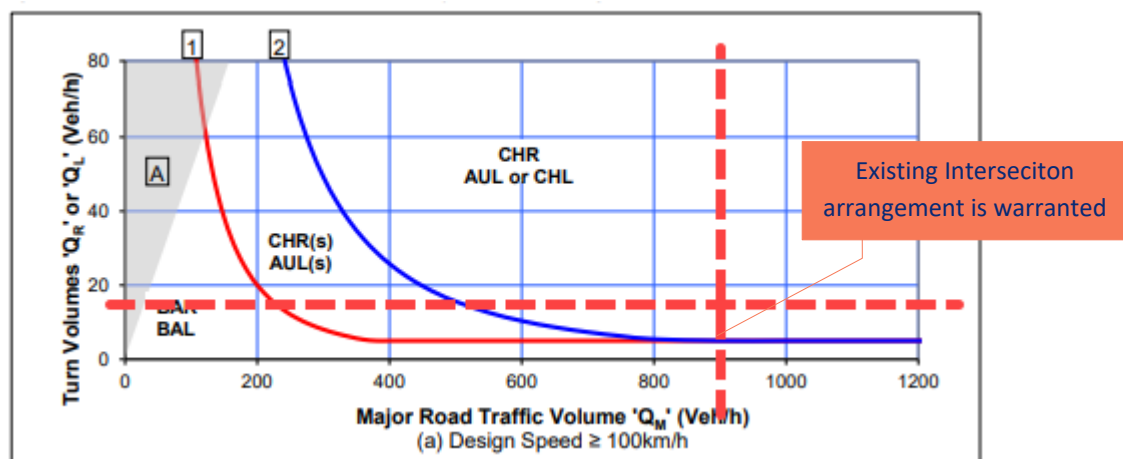
Traffic counts (including classification and speed survey) were captured for Red Gum Road between the Princes Highway and Pootaroo Palace access during the period of 16<sup>th</sup> November 2023 to 29<sup>th</sup> November 2023. The combined ADT = 117, 7.11% HV with peak vehicles per hour shown in Figure 1-1 below. For a conservative assessment, it has been assumed the peak turning movements into Red Gum Road is 15 vehicles per hour.



**Figure 2-5 Red Gum Road Vehicles per Hour (Nov 2023)**

### 2.1.10. Existing Intersection

Adopting Austroads Guide to Traffic Management Part 6: Intersection, Interchanges and Crossing Management Figure 3.25 Warrants for turn treatments on major roads at unsignalised intersections, informed by the traffic data above the warrants for turn treatments are provided below:



**Figure 2-6 Princes Highway and Red Gum Road Intersection Turn Warrants**

## 3. Project Impact

### 3.1. Traffic Generation

The following traffic generation has been provided by Bega Valley representatives and is founded on the figures evidenced by the Brogo WTP and Bega WTP, scaled accordingly.

#### 3.1.1. Construction Traffic

During construction it is expected that the increased usage of the Princes Highway and Red Gum Road intersection will be:

- Light vehicles: between 4 to 12 vehicles per day.
- Heavy vehicles: up to 15 concrete truck deliveries in a day (maximum) and an average of 1 semi-trailer per day to deliver other materials or machinery, approaching from Pambula.
- No oversized vehicles are expected.

#### 3.1.2. Operational Traffic

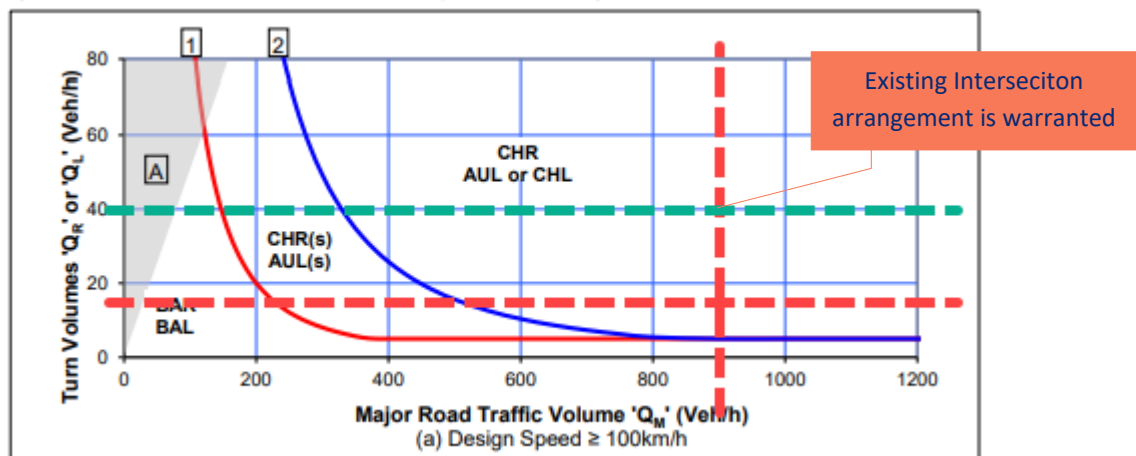
During operation (post construction) it is expected that the increased usage of the Princes Highway and Red Gum Road intersection will be:

- Light vehicles: between 2 to 5 vehicles per day.
- Heavy vehicles: 1 per month maximum (semi-trailer), approaching from Bega.
- No oversized vehicles are expected.

### 3.2. Traffic Impact Assessment

As demonstrated above, the existing intersection arrangement is warranted based on the existing traffic data. Noting the very limited increase in traffic that will be generated by the Yellow Pinch WTP in both the construction and operational phases. As demonstrated below, even if in the unlikely event that all the aforementioned vehicle movements (e.g. Construction Traffic LV=12 + HV 16 = 28) were to occur within the existing peak hours, the warranted intersection arrangement would not change.

Adopting Austroads Guide to Traffic Management Part 6: Intersection, Interchanges and Crossing Management Figure 3.25 Warrants for turn treatments on major roads at unsignalised intersections, informed by the additional traffic generation above the warrants for turn treatments are provided below:



**Figure 3-1 Princes Highway and Red Gum Road Intersection Turn Warrants**



## 4. Summary and Recommendations

### 4.1. Summary

In summary, the intersection between the Princes Highway and Red Gum Road in its existing form meets the warrants as outlined by *Part 6: Intersection, Interchanges and Crossing Management Figure 3.25 Warrants for turn treatments on major roads at unsignalised intersections*, when considering the current turning movements as well as the projected additional turning movements during construction and post-construction when facilitating Yellow Pinch Water Treatment Plant.

Also of note, a turning path assessment has been undertaken (refer to Attachment B – Turning Paths), demonstrating that the vehicles requiring access to Red Gum Road via the Princes Highway during construction and post-construction can successfully achieve the required manoeuvres within the existing form of the intersection.

Additionally, there is no record of any crashes occurring at the intersection within the current 5-year reporting period, as evidenced by the *Transport for NSW Centre for Road Safety Interactive Crash Maps*, further demonstrating that no substantive road safety concerns are currently present. However, upon undertaking safe intersection sight distance (SISD) checks (refer to Attachment A – Sight Distance), the sightline from the intersection to the south towards Pambula is obstructed by an existing vertical crest in the Princes Highway alignment. Although an existing network deficiency with no evidenced crash record, this isolated issue has informed the recommendations made within Section 4.2 below.

### 4.2. Recommendations

It is recommended that a temporary speed reduction be considered during the peak construction periods (e.g. concrete pouring) to increase the available time for drivers to observe, react and make sound judgments, and in the case of driver error, will reduce the required braking distances.

It is also recommended that consideration be given to providing portable Variable Message Sign (VMS) during construction and static signage post-construction to warn drivers of turning trucks.



**Variable Message Sign (VMS)**  
**(During Construction)**



**Trucks Crossing Or Entering (Symbolic)**  
**(Post-construction)**

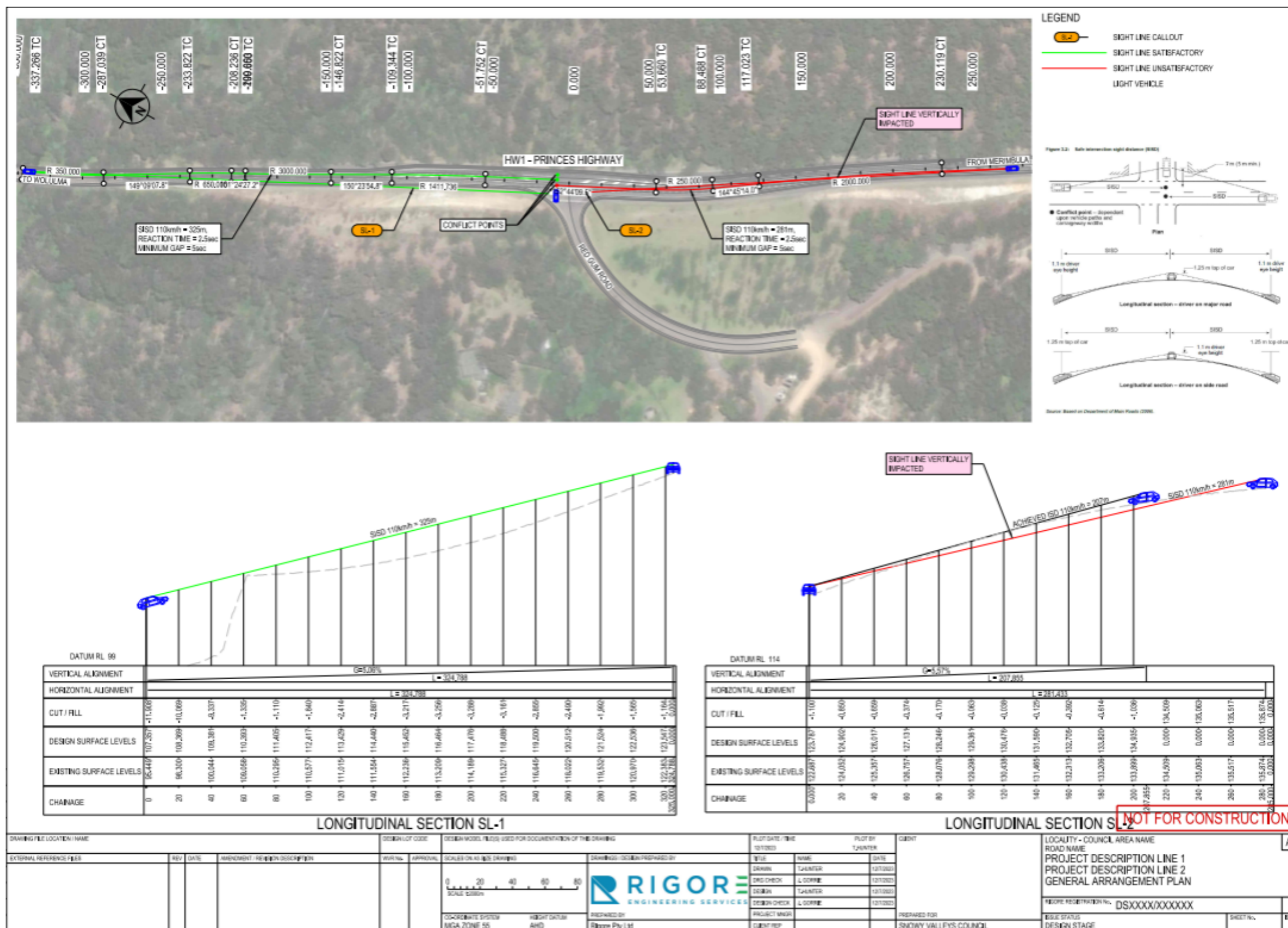
It is also recommended that bus stop warning signage be installed on the Princes Highway and that adequate provisions be made within the Construction Traffic Management Plan (TMP) and Traffic Guidance Scheme (TGS) to ensure the safety of the public using these services.



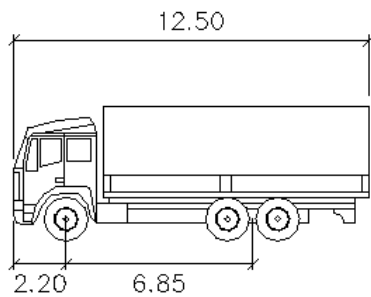
Figure 5: School Bus Stop Ahead sign - WS-213

**School Bus Signage**

# Attachment A – Sight Distance

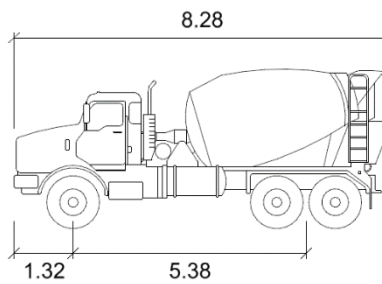


## Attachment B – Turning Paths



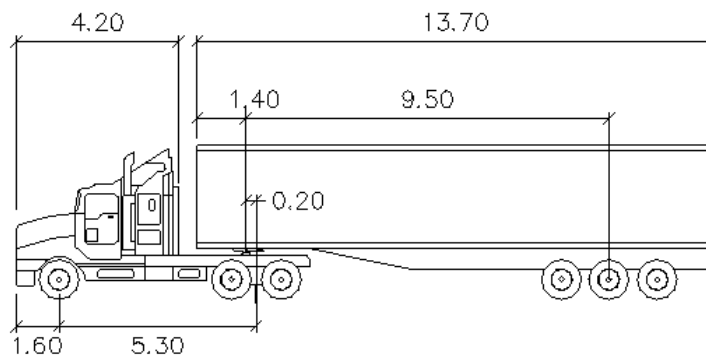
SU TRUCK

	metres
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6



Schwing Conventional Mixer

	metres
Width	: 2.44
Track	: 2.44
Lock to Lock Time	: 6.0
Steering Angle	: 35.4



PM S 19M

	metres		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		



