

Appendix A

Existing Conditions

Existing conditions

Arterial road network

A detailed overview of the existing declared road network anticipated to be utilised by the project traffic is provided in the following tables. Site inspections which were conducted on:

- Wednesday 15th and Thursday 16th September 2021.
- Thursday 8 and Friday 9 September 2022
- Wednesday 7 and Thursday 8 February 2024
- Wednesday 19 February 2025

Prince Street / Woodside-Beach Road



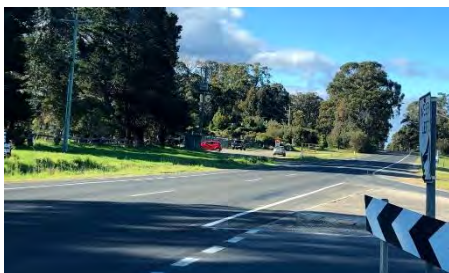
Princes Street – looking westbound



Princes Street – looking eastbound



Princes Street at its intersection with South Gippsland Highway



Existing conditions

Responsible Authority: DoT

Classification: Arterial – Class

Traffic Volume AADT (one-way): 209 trips (between South Gippsland Highway to Cherry Tree Road)

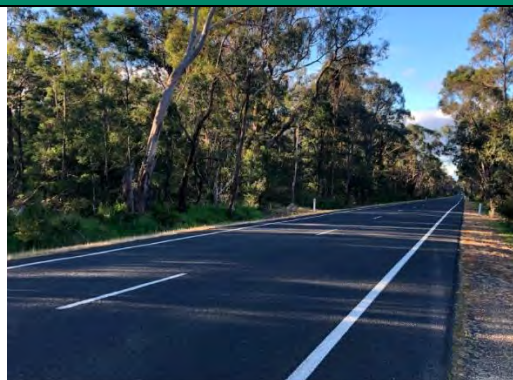
Location: Traralgon

Existing conditions overview: This dual carriageway has a 7.3m width with 1.5m gravel shoulders. Signs for OD6 route were also observed on the road. Restricted sight distance was observed when turning southbound and northbound onto Gippsland Highway due to road crests and curves. Appropriate line markings and signage are provided along the length of the road.

Project usage

Woodside Beach Road provides direct access to the construction staging nodes. This road also connects with Balloong Road and Reeves Beach Road which provide access to the shore crossing site.

South Gippsland Highway



South Gippsland Highway – looking northbound

South Gippsland Highway – looking northbound

Existing conditions

Responsible Authority: DoT

Classification: Arterial

Traffic Volume – AADT (one-way): 808 trips (near Sale-Seaspray Road)

Location: between Woodside and Longford

Existing conditions overview: The South Gippsland Highway runs along the east side of the study area and connects Sale and Longford townships with the townships south of the study area including Woodside. The highway provides access to several adjacent logging tree plantations. The carriageway width is approximately 8m and small shoulders of 0.5 – 1m in width are present along the length of the road. Appropriate signage and line marking are present along the length of the road. Good road surface was observed at several locations along the road length. Sight distances are generally good. Pedestrian signs were observed near its intersection with Carrarjung-Woodside Road.

Project usage

This major route intersects with key roads and access tracks located in the east and southeast part of the study area.

Rosedale-Longford Road



Rosedale-Longford Road – looking westbound

Rosedale-Longford Road – looking eastbound

Existing conditions

Responsible Authority: DoT

Classification: Arterial

Traffic Volumes – AADT (one-way): Approximately 600 vehicles

Location: between Rosedale and Longford

Existing conditions overview: Rosedale-Longford Road serves as part of the primary route connecting the north-west to the study area. It has full approval for B-Doubles and no restrictions. The carriageway varies in width ranging between 6.25m to 8m and has shoulders at some sections. There are priority-controlled intersections at both ends; intersection with Princes

Highway in Rosedale and at intersection with South Gippsland Highway in Longford. Appropriate signage and line marking are present along the length of the road. Good road surface was observed at several locations along the road length.

Project usage

Rosedale-Longford Road is expected to be utilised by the project traffic as it provides a key connection along the primary access route from the north-west of the study area.

Hyland Highway



Hyland Highway – looking eastbound



Hyland Highway – looking eastbound



Hyland Highway – looking south eastbound



Hyland Highway – looking south eastbound

Existing conditions

Responsible Authority: DoT

Classification: Arterial

Traffic Volumes – AADT (one-way): Vary from between 805 (near Grange Ridge Road) to 2,100 (near Bartons Lane) trips

Location: between Traralgon and Willung South

Existing conditions overview: Hyland Highway serves as a major route connecting Loy Yang, northwest of the study area with Yarram, southwest of the study area that intersects with key roads in the study area, including Carrajung-Woodside Road and Gormandale-Stradbroke Road. Numerous logging trucks were also observed on this road during the site inspection as this road provides access to adjacent tree plantations. The carriageway varies in width ranging between 6.25m to 8m. The highway is generally narrower from Gormandale to Carrajung-Woodside Road with no shoulders and is bordered by heavy vegetation. These sections of the road also have numerous crests and curves along its length. The highway provides access to the Loy Yang power station facilities. A signalised intersection was observed near one of the first entrances to Loy Yang Power Station area. Appropriate signage and line marking are present along the length of the road. Good road surface was observed at several locations along the road length, however some sections south of Willung seem to have a rougher road surface which can be felt while driving. The posted speed limit decreases to 80km/hr in the vicinity of intersections. School bus signs were also observed along the road.

Project usage

Hyland Highway is expected to be utilised by the project traffic as it provides a key connection with key roads in the study area.

Tramway Road



Tramway Road – looking northbound



Tramway Road – looking southbound

Existing conditions

Responsible Authority: DoT

Classification: Arterial

Traffic Volume – AADT (one-way): 4,200 trips (Princes Highway on-ramp and Firmins Lane)

Location: Traralgon

Existing conditions overview: Tramway Road connects with the Princes Highway and has a traffic flow of approximately 8,400 vehicles per day. Sight distances from and to the highway off-ramp to the roundabout intersection with Firmins Lane are restricted due a crest located approximately 400m from the roundabout. The carriageway varies in width ranging between 8m to 11m. Appropriate signage and line marking are present along the length of the road. Road surface was overall to be observed in good condition, with however some potholes and rough carriageway surfacing observed near the roundabout i with Firmins Lane. Several B-Doubles, semi-trailers, logging trucks were observed along this road, notably at its roundabout with Firmins Lane. Speed limit decreases to 80km/hr in the vicinity of the roundabout.

Project usage

It is expected that construction traffic originating from north-west would be utilising the Princes Highway off-ramp and Tramway Road to reach Hyland Highway and other key roads providing access to construction laydown areas along the transmission alignment.

Firmins Lane



Firmins Lane – looking eastbound



Firmins Lane – looking eastbound

Existing conditions

Responsible Authority: DoT

Classification: Arterial

Traffic Volume – AADT (one-way): 2,800 trips (near Tramway Road to Hazelwood Road)

Location: Hazelwood North

Existing conditions overview: . Appropriate signage and line marking are present along the length of Firmins Lane. The road has a width of approximately 7-8m with small shoulders present only along some sections of the road. School bus signs were observed near its roundabout with Tramway Road.

Project usage

Firmins Lane links Tramway Road with Hazelwood Road and is expected to be utilised by construction traffic originating from north-west which would access the study area via Princes Highway off-ramp before travelling towards construction access points along the proposed transmission line.

Hazelwood Road



Hazelwood Road – looking northbound



Hazelwood Road – looking southbound

Existing conditions

Responsible Authority: DoT

Classification: Arterial

Traffic Volume – AADT (one-way): 4,200 trips (between Sanders Road and Firmins Lane)

Location: Hazelwood North

Existing conditions overview: The road reserve typically provides a sealed pavement width of approximately 7.5 metres along its length. A short right turn lane is provided at the intersection with Sanders Road. Appropriate signage and line markings are provided along the road.

Project usage

Hazelwood Road is expected to be utilised by construction traffic originating from north-west which would access the study area via Princes Highway off-ramp before travelling east via Tramway Road, Firmins Lane, Hazelwood Road and Mattingley Hill Road and then joining Hyland Highway.

Sanders Road / Mattingley Hill Road



Sanders Road – looking eastbound



Sanders Road – looking eastbound

Existing conditions

Responsible Authority: DoT

Classification: Arterial

Traffic Volume – AADT (one-way): 2,400 trips (between Hazelwood Road to Hyland Highway)

Location: Hazelwood North/Loy Yang

Existing conditions overview: the road reserve provides a sealed pavement width from 6.5m to 8m approximately along its length. Some sections of the road have no shoulders. Appropriate line markings and signage are provided along the length of the road.

Project usage

Sanders Road / Mattingley Hill Road is expected to be utilised by construction traffic originating from north-west which would access the study area via Princes Highway off-ramp before travelling east and southeast towards the proposed transmission line.

Carrajung-Woodside Road



Carrajung-Woodside Road – looking southbound



Carrajung-Woodside Road – looking southbound

Existing conditions

Responsible Authority: DoT

Classification: Arterial

Traffic Volume AADT (one-way): 135 trips (Between Hyland Highway to South Gippsland Highway)

Location: Carrajung South – Woodside North

Existing conditions overview: paved width of approximately 6.3m. No shoulders are provided along the length of the road. Road surface is generally good and some of the road surface seem to have been recently upgraded along some sections of the road. The road is bordered by trees and vegetation and sight distances are limited at times due to crests and the curve of the road including at the intersection with South Gippsland Highway. School bus signs were observed along the length of the road.

Project usage

Carrajung-Woodside Road is considered a secondary road that may be utilised by the project traffic such as workforce from the north-west of the study area.

Local road network

A detailed overview of the existing local road network anticipated to be utilised by the project traffic is provided in the following tables. Site inspections which were conducted on:

- Wednesday 15th and Thursday 16th September 2021.
- Thursday 8 and Friday 9 September 2022
- Wednesday 7 and Thursday 8 February 2024
- Wednesday 19 February 2025

Flynns-Creek Road



Flynns-Creek Road – looking southbound



Flynns-Creek Road – looking southbound

Existing conditions

Responsible Authority: Latrobe City Council

Classification: Local – Access

Traffic Volume AADT (one-way): 107 trips

Location: Flynn – Flynns Creek

Existing conditions overview: Road seems to have been recently upgraded as road surface looks like it was recently repaved. There is no line markings along the road. The road is wider from Flynn before becoming narrowing for a couple of kilometres then widening when getting closer to Hyland Highway in Flynns Creek. School bus stops signs were observed along the length of the road. While some sections had gravel shoulders, the majority of the road had no shoulders. A heavy vehicle was observed on this road during the site inspection. There is also a level crossing approximately 200m south of Princes Highway with active controls. Sight distances were generally good except at the intersection with Hyland Highway when turning east due to overgrown vegetation.

Project usage

Flynns-Creek Road is expected to be utilised by the project traffic including workforce and to transport bulk materials to and from north-west of study area.

Dewars Road



Dewars Road – looking eastbound

Existing conditions

Responsible Authority: Wellington City Council

Classification: Local - Access B

Traffic Volume AADT (one-way): 20 trips

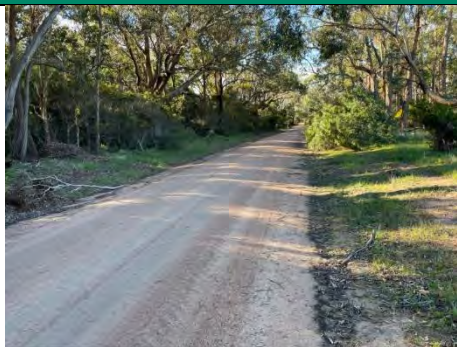
Location: Woodside

Existing conditions overview: this gravel road mainly provides local access to farmland. Road surface is sandier along some sections of the road. Generally good sight distances though there was some overgrown vegetation observed to be impacting sight distances. A crest was observed when turning northbound from Dewars Road onto South Gippsland Highway, restricting sight distances.

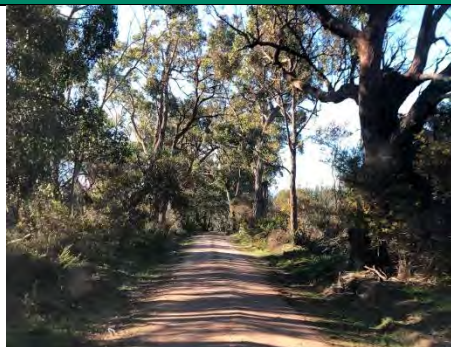
Project usage

Construction project accessing access tracks is expected to utilise Dewars Road before turning onto Maryland Road to access construction tracks located off Stringy Bark Lane.

Maryland Road



Maryland Road – looking northbound



Maryland Road – looking northbound

Existing conditions

Responsible Authority: Wellington City Council

Classification: Local

Traffic Volume AADT (one-way): 20 trips

Location: Woodside

Existing conditions overview: This is a gravel road with an approximate width of 4m. Road surface is generally good with generally good sight distances. Vegetation was seen encroaching onto the road at certain locations along the road length. There were no line markings or signs observed along the length of the road.

Project usage

Maryland Road is expected to be utilised by the construction project accessing access tracks located off Stringy Bark Lane.

Stringy Bark Lane



Stringy Bark Lane – looking southbound

Existing conditions

Responsible Authority: Wellington City Council

Classification: Local - Access C

Traffic Volume AADT (one-way): 20 trips

Location: Woodside

Existing conditions overview: This gravel road provides access to farmland and has a road width of approximately 4.7m. Road surface was uneven and sunk shoulders were observed on some sections of the road. Sight distances are good.

Project usage

An access track to the transmission line is proposed to be built on Stringy Bark Lane and will be utilised by the construction project.

Lyons Road



Lyons Road – looking eastbound

Existing conditions

Responsible Authority: Wellington City Council

Classification: Local - Access C

Traffic Volume AADT (one-way): 20 trips

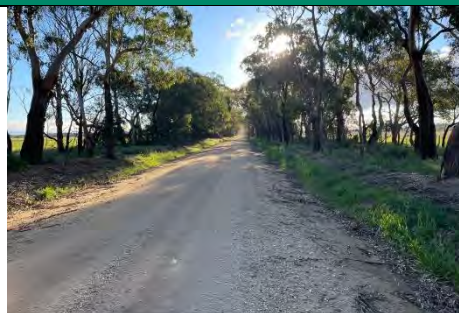
Location: Woodside

Existing conditions overview: This is a gravel road with an approximate width of 4m which is expected to be utilised to provide access to the pipeline right of way. Potholes were observed near the road intersection with Stringy Bark Lane. Sight distances are generally good.

Project usage

An access track to the transmission line is proposed to be built on Lyons Road which will be utilised by the construction project.

Four Mile Creek Road



Four Mile Creek Road – looking eastbound



Four Mile Creek Road – eastbound

Existing conditions

Responsible Authority: Wellington City Council

Classification: Local - Access B

Traffic Volume AADT (one-way): 20 trips

Location: Woodside

Existing conditions overview: this gravel road mainly provides local access to farmland. A warning sign to drive carefully is provided near the road intersection with South Gippsland Highway due to the gravel road surface. A school bus was seen to be parked near the intersection. Sight distance is restricted when turning southbound onto South Gippsland Highway due to a crest.

Project usage

Four Mile Creek Road provides access to the ON1 and its adjoining construction laydown area and is expected to be utilised by both heavy and light vehicles during construction.

Giffard West Road



Giffard West Road – looking westbound



Giffard West Road – looking eastbound

Existing conditions

Responsible Authority: Wellington City Council

Classification: Local

Traffic Volume AADT (one-way): 20 trips

Location: Giffard West

Existing conditions overview: This sealed road provides local access to farmland and tree plantations. It is anticipated to be used to access a few of the primary access tracks to staging nodes for construction of the transmission line. The road surface seem to be fair with minimal/no shoulders. Sight distances at the intersection with South Gippsland Highway are slightly restricted due to the vegetation and presence of a crest near the intersection.

Project usage

Giffard West Road is expected to be utilised by the project traffic to access a few of the primary access roads to staging nodes located along the proposed transmission line.

Balloong Road



Balloong Road – looking northbound



Balloong Road – looking northbound

Existing conditions

Responsible Authority: Wellington City Council

Classification: Local - Access A

Traffic Volume AADT (one-way): 145 trips

Location: Woodside

Existing conditions overview: The road surface seems to have recently been upgraded and is in very good condition. No line markings were observed on the road surface. Sight distances are limited when looking/turning onto Woodside Beach Road.

Project usage

Balloong Road is expected to be utilised by the project traffic to access the shore crossing site located off Reeves Beach Road.

Reeves Beach Road



Reeves Beach Road – looking eastbound



Reeves Beach Road – looking westbound

Existing conditions

Responsible Authority: Wellington City Council

Classification: Local - Access B

Traffic Volume AADT (one-way): 20 trips

Location: Woodside

Existing conditions overview: The shore crossing laydown area is proposed to be accessed via this road, located close to the 90 Mile Beach reserve. The road width varies from 3.8 – 5.2m, no shoulders are provided along the length of the road. The road is paved from Balloong Road before becoming gravel. Near both proposed entry points to the laydown area, sight distances were found to be restricted as outlined below:

- From the easternmost proposed entry, a crest restricts sight distances when looking eastbound onto Reeves Beach Road.
- From the westernmost proposed entry, sight distance was found to be constricted on both directions due to a crest when northbound and curve when southbound onto Reeves Beach Road.

Some pedestrians were observed on the road near the beach reserve during the site inspection. Sight distances from the road intersection with Balloong Road are good.

Project usage

This road will provide access to the shore crossing site located southeast of the project area and is expected to be utilised by both construction heavy vehicles and light vehicles for access to the shore crossing site.

Summary of recorded crashes in the last five years

Direct access roads

Crashes no.	Date	Time	Vehicles involved	Crash type	Speed limit	Severity
1	2017-01-23	Day	2 LV	Vehicle strikes another vehicle while emerging from driveway	80 km/hr	Other injury accident
2	2014-11-06	Dusk/Dawn	1 LV	Right off carriageway into object/parked vehicle	100 km/hr	Serious injury accident
3	2017-04-12	Day	1 LV	Off right bend into object/parked vehicle	100 km/hr	Serious injury accident
4	2015-09-01	Dusk/Dawn	2 LV	Right through	100 km/hr	Other injury accident
5	2016-01-11	Day	1 LV	Off left bend into object/parked vehicle	60 km/hr	Other injury accident
6	2016-01-20	Day	1 LV	Off right bend into object/parked vehicle	60 km/hr	Other injury accident
7	2017-11-23	Dusk/Dawn	1 LV	Right off carriageway into object/parked vehicle	100 km/hr	Other injury accident
8	2017-02-13	Day	1 LV	Out of control (overtaking)	100 km/hr	Other injury accident
9	2018-11-07	Day	1 LV	Right off carriageway into object/parked vehicle	100 km/hr	Serious injury accident
10	2018-09-28	Dark No street lights	1 LV	Off right bend into object/parked vehicle	100 km/hr	Fatal accident
11	2015-11-11	Day	1 LV	Off left bend into object/parked vehicle	100 km/hr	Serious injury accident
12	2015-08-17	Day	1 LV	Left off carriageway into object/parked vehicle	100 km/hr	Fatal accident
13	2018-01-30	Day	1 LV	Left off carriageway into object/parked vehicle	75 km/hr	Other injury accident
14	2016-10-22	Dusk/Dawn	1 LV	Off right bend into object/parked vehicle	100 km/hr	Serious injury accident
15	2017-09-21	Day	1 LV	Off carriageway on right bend	100 km/hr	Other injury accident
16	2016-02-22	Day	1 LV	Off right bend into object/parked vehicle	100 km/hr	Other injury accident
17	2017-05-02	Day	1 LV	Off left bend into object/parked vehicle	100 km/hr	Fatal accident
18	2016-01-03	Day	1 LV	Off right bend into object/parked vehicle	100 km/hr	Other injury accident
19	2016-12-08	Day	1 LV	Off left bend into object/parked vehicle	100 km/hr	Other injury accident
20	2018-05-18	Day	1 HV	Off carriageway to right	100 km/hr	Other injury accident

Wider access roads

Crashes no.	Date	Time	Vehicles involved	Crash type	Speed limit	Severity
21	2016-11-20	Day	1 LV	Off right bend into object/parked vehicle	100 km/hr	Fatal accident
22	2018-10-01	Dark No streetlights	1 LV	Struck animal	100 km/hr	Serious injury accident
23	2015-03-21	Day	1 LV	Off carriageway on right bend	100 km/hr	Serious injury accident
24	2019-03-01	Day	1 LV	Cross traffic (intersections only)	100 km/hr	Serious injury accident
25	2016-04-28	Dusk/Dawn	1 LV	Off left bend into object/parked vehicle	100 km/hr	Serious injury accident
26	2017-07-02	Day	1 LV and 1 motorcycle	Right near (intersections only)	80 km/hr	Serious injury accident
27	2018-07-28	Day	2 LV	Head on (not overtaking)	80 km/hr	Other injury accident
28	2017-11-20	Day	2 LV	Other adjacent (intersections only)	100 km/hr	Serious injury accident
29	2015-01-25	Dark No streetlights	1 LV	Off right bend into object/parked vehicle	100 km/hr	Other injury accident
30	2016-05-23	Day	1 LV	Off right bend into object/parked vehicle	100 km/hr	Serious injury accident
31	2016-09-09	Dark No streetlights	1 LV	Off right bend into object/parked vehicle	100 km/hr	Other injury accident
32	2018-12-21	Day	1 LV	Off right bend into object/parked vehicle	100 km/hr	Serious injury accident
33	2014-07-27	Dark No streetlights	1 LV	Right off carriageway into object/parked vehicle	100 km/hr	Serious injury accident
34	2016-12-16	Day	1 LV	Off right bend into object/parked vehicle	100 km/hr	Serious injury accident
35	2016-04-07	Dusk/Dawn	2 LV	Rear end (vehicles in same lane)	100 km/hr	Other injury accident
36	2018-08-12	Day	1 LV	Off left bend into object/parked vehicle	100 km/hr	Other injury accident
37	2017-11-13	Dusk/Dawn	4 LV	Rear end (vehicles in same lane)	80 km/hr	Other injury accident
38	2019-02-06	Day	1 LV	Out of control on carriageway (on straight)	100 km/hr	Other injury accident
39	2016-01-15	Day	2 LV	Two right turning (intersections only)	80 km/hr	Other injury accident
40	2016-05-25	Day	1 LV and 1 cyclists	Right near (intersections only)	80 km/hr	Other injury accident

Crashes no.	Date	Time	Vehicles involved	Crash type	Speed limit	Severity
41	2014-12-22	Day	1 HV	Out of control on carriageway (on straight)	80 km/hr	Other injury accident
42	2018-07-27	Day	2 LV	Right through	80 km/hr	Other injury accident
43	2017-05-12	Day	2 LV	U turn	100 km/hr	Other injury accident
44	2019-03-25	Day	1 LV	Off end of road/t-intersection.	100 km/hr	Fatal accident
45	2017-03-28	Day	3 LV	Right through	100 km/hr	Other injury accident
46	2018-06-11	Day	3 LV	Right through	100 km/hr	Serious injury accident
47	2017-10-20	Day	1 motorcycle	Struck animal	100 km/hr	Serious injury accident
48	2015-11-10	Day	1 LV and 1 cyclists	Rear end (vehicles in same lane)	100 km/hr	Other injury accident
49	2017-01-11	Dusk/Dawn	1 LV	Off carriageway on left bend	60 km/hr	Serious injury accident
50	2018-09-27	Dark No street lights	1 motorcycle	Struck animal	100 km/hr	Serious injury accident
51	2017-04-30	Day	1 LV and 1 motorcycle	Right far (intersections only)	100 km/hr	Serious injury accident
52	2017-12-08	Day	1 LV and 2 cyclists	Other same direction-manoeuvres not included in dcas 130-137	100 km/hr	Serious injury accident
53	2019-01-13	Day	1 HV	Off right bend into object/parked vehicle	100 km/hr	Serious injury accident
54	2015-02-18	Day	3 LV	Cross traffic(intersections only)	60 km/hr	Other injury accident
55	2017-12-25	Day	2 LV	Cross traffic(intersections only)	60 km/hr	Other injury accident
56	2019-04-11	Day	1 LV and 1 cyclists	Cross traffic(intersections only)	80 km/hr	Other injury accident
57	2017-11-21	Day	1 LV	Off left bend into object/parked vehicle	100 km/hr	Other injury accident
58	2016-01-18	Dark No street lights	1 LV	Off left bend into object/parked vehicle	Not known	Other injury accident
59	2017-12-26	Day	2 motorcycles	Rear end(vehicles in same lane)	100 km/hr	Other injury accident
60	2016-04-19	Dark No street lights	1 LV	Off right bend into object/parked vehicle	100 km/hr	Serious injury accident
61	2018-05-19	Day	1 LV	Off carriageway on right bend	100 km/hr	Serious injury accident

Crashes no.	Date	Time	Vehicles involved	Crash type	Speed limit	Severity
62	2014-11-11	Dark No street lights	1 LV	Off carriageway to left	100 km/hr	Fatal accident
63	2015-05-19	Dusk/Dawn	1 LV	Off carriageway on right bend	100 km/hr	Other injury accident
64	2014-11-25	Dark No street lights	1 LV	Struck animal	100 km/hr	Other injury accident
65	2014-08-16	Dark No street lights	2 LV	Struck animal	100 km/hr	Other injury accident
66	2014-08-27	Day	1 LV	Out of control on carriageway (on straight)	100 km/hr	Other injury accident
67	2018-11-28	Dark No street lights	1 LV and 1 pedestrian	Ped playing/lying/working/standing on carriageway.	100 km/hr	Fatal accident

Appendix B

Star of the South –
Preliminary Site Access
and Vehicle Route
Assessment (WSP, 2025)



MEMO

TO: Star of the South Offshore Wind Farm
FROM: WSP Traffic Team
SUBJECT: **STAR OF THE SOUTH - Preliminary Site Access and Vehicle Route Assessment**
OUR REF: PS119484-WSP-MEL-TDP-MEM-006
PREPARED BY: [REDACTED]
REVIEWED BY: [REDACTED]
REVISION: 0
DATE: 20 February 2025

1. INTRODUCTION

To inform the preparation of the traffic impact assessment study being prepared by Star of the South, WSP have been engaged to undertake a preliminary site access and vehicle route assessment with respect to the construction and operations of the onshore transmission system between the proposed shore crossing at Reeves Beach and the proposed VicGrid connection hub in Giffard being constructed by others.

For the purpose of the preliminary site access and vehicle route assessment the onshore transmission system includes:

- Cable easement and construction corridor 29.6 km long, as shown in Figure 1.
- 40m wide cable easement and 60m wide construction corridor.
- 8 underground cable circuits installed in conduits with thermally stable backfill (TSB).
- Shore crossing at Reeves Beach.
- Access to the construction corridor, temporary laydown and batch plants required for construction.

However, excluded are:

- The onshore substation and any infrastructure at the VicGrid connection hub.
- Access to the onshore substation and any infrastructure at the VicGrid connection hub.

In undertaking this assessment, consideration has been given to the following factors:

- Vehicles requiring access to the construction corridor.
- The Department of Transport and Planning (DTP) heavy vehicle road network (HVRN) providing connection to/from the wider onshore transmission system and within the specific construction corridor.
- Indicative vehicle origin and destination requirements.

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- Primarily and alternative routes to and from the onshore transmission system.
- The proposed cable easement and the location of access nodes to each of the staging areas within the construction corridor.
- Potential points of restrictions (restricted height clearance structures, load limited bridges etc) as identified based on DTP HVRN data within the road network directly surrounding the cable easement and construction corridor.
- Proposed road network connections/arrangements for each of the access/staging nodes.
- Locations of bulk materials and the surrounding road network that may facilitate access.
- Key points where the cable easement is to cross the road network.
- Indicative arterial road network traffic volumes based on available DTP data.
- Vehicle volumes to/from staging nodes.

It is noted that the purpose of the following memo is to provide initial high-level input and guidance with respect to possible traffic movements and routes around the onshore transmission system.

All considerations and outputs as presented are based on a number of high-level assumptions and the master design envelope available at the time of preparation. Assessment has also been undertaken on a desktop basis only at this stage. It is therefore considered that the outputs as presented may ultimately be superseded based on further design refinement, changes in construction methodologies, or contractor inputs.

PRELIMINARY ASSESSMENT



2. GLOSSARY OF ABBREVIATIONS/TERMS

Throughout this memo, several abbreviations have been used, therefore the following abbreviations list is provided for ease of reading:

- DTP Department of Transport and Planning
- HVRN Heavy Vehicle Road Network
- PBS Performance Based Standards
- OSOM Oversize and Overmass
- SPV Special Purpose Vehicle
- OD Over Dimensional
- Trip Comprising both an inbound and outbound vehicle movement. On this basis, each trip therefore comprises 2 vehicle movements.
- TSB Thermally Stable Backfill

PRELIMINARY ASSESSMENT

3. GENERAL CONSTRUCTION PHILOSOPHY

CONSTRUCTION APPROACH AND SUPPORTING INFRASTRUCTURE

Construction of the onshore transmission system is planned to be executed in stages defined by work task, with multiple crews working simultaneously in parallel across the entire alignment. Works are expected to involve clearing land, establishment of temporary infrastructure, construction of cable trenches and installation of cable. Utilisation of multiple crews working in parallel also permits programming optimisation as separate portions of the alignment can be completed as required due to construction constraints such as weather and interfacing crew progress.

Site accessibility and coordination of work crews across the alignment are key challenges for the project's construction. To address these specific challenges, the following supporting infrastructure is expected to be utilised.

- **Staging nodes:**

Staging nodes are strategically positioned worksites, evenly distributed along the construction corridor length. These sites are intended to offer adaptable construction functionality. As a base, staging nodes are expected to serve as key areas for workforce mobilisation, central hubs for managing equipment and materials logistics, and designated emergency muster points. These sites hold importance as they are sited at main access points to the construction corridor, and their locations have been planned to enhance construction efficiency and site accessibility. Temporary laydown areas are also found nearby these areas, in which most laydown areas are typically located to correlate with a staging node. These can be found nearby to vehicle access tracks leading to staging node areas.

- **TSB batch plants:**

TSB may be used in cable trench construction. TSB batch plant sites would be placed at distributed intervals along the transmission alignment. Batching plant facilities are expected to be mobile and would progressively relocate as the active trenching front advances through different areas.

- **Transmission construction corridor:**

The transmission construction corridor will span the length of the alignment and facilitate the activities required for the construction of the onshore transmission system. Work fronts are expected to progress daily during land clearing, haul road construction and trenching, and segmentally during cable installation and commissioning activities. Key components of construction infrastructure within the construction corridor include haul roads and temporary laydown areas.

Haul roads are expected to span the length of the construction corridor, running parallel with cable trenches and connecting adjacent staging nodes. The haul roads are intended to provide construction vehicles and plant direct access to active work fronts during each stage of works. The roads are expected to enable the removal of spoil during excavation, permit delivery of materials including trench consumables and enable continued accessibility for interfacing crews.

- **Temporary access tracks:**

Access to the work sites is expected to require construction of new temporary access track. Temporary access tracks are expected to be required to provide access to staging nodes, TSB batch plants, and the construction corridor.

KEY CONSTRUCTION PHILOSOPHY ASSUMPTIONS AND CONSIDERATIONS

In construction of the onshore transmission system along the proposed alignment, it is understood that the following construction details (relevant to the preliminary site access and vehicle routes assessment) may apply:

- Access to the construction corridor is assumed to be provided via a combination of newly constructed temporary access tracks, and specific existing public and private tracks. Where possible, to avoid the need for the creation of new access tracks, existing public roads and private tracks including plantation tracks would be utilised subject to onsite review and suitability assessment for projected vehicle movements.
- Access and egress may also be achieved via nominated intersecting roads and tracks. It is assumed that these points will provide continuity of access to the construction corridor. In the event an intermediate access point is deemed inaccessible (due to approval constraints or construction related activities such as HDD works), it is assumed that alternate intermediate access will be constructed and utilised.
- Access will be maintained along the construction corridor via the haul roads throughout the construction programme, permitting work crews to access any portion of the alignment as the phases of work progress.
- During construction, it is envisaged that at most four (4) construction nodes would be under development at any point in time. Subsequently, consideration should be given to this with the assessment of any potential traffic volume impacts on the overall road network. In addition to this up to three (3) TSB batching plants sites may also be simultaneously active at any point in time. Usage and demand may fluctuate across the project to meet the demands of the various construction activities and work crews.
- It is assumed that construction will be undertaken as a linear build along the proposed alignment.
- It is expected that there will be variance in the bulk material requirements from node to node with respect to the quantity of materials required to be brought in/out. Subsequently it is considered that a possible worst-case scenario (with respect to bulk materials vehicle movements) would possibly exist at a rate less than 100% the potential generation of vehicle trips.

These assumptions/considerations have subsequently been factored into the following preliminary route access and associated traffic volume assessment.



4. GENERAL CONSTRUCTION PROCESS

The following is a high-level breakdown of the general construction activities for the onshore transmission system.

- **Site establishment**
 - Clearing, access track construction, temporary staging node/laydown and batch plant construction, installation of environmental controls, temporary facility erection, dewatering, dust suppression etc.
- **Trenching and conduit installation**
 - Excavation of trenches and joint bays
 - Conduit installation in trenches
 - Backfill over conduit with TSB and soils
- **Crossing installation**
 - Shore crossing
 - Onshore trenchless crossings
- **Cable installation, jointing and testing**
 - Cable drums hauled to joint bays. Cable pulled through conduits between each joint bay
 - Cable system jointing
 - Joint bays backfilled
 - System is tested and commissioned
- **Reinstatement**
 - Temporary roading and facilities removed (as required) and area reinstated / revegetated.

PRELIMINARY ASSESSMENT

5. VEHICLES REQUIRING SITE ACCESS

VEHICLE TYPES

To inform the assessment of vehicle access routes for onshore transmission system construction, the following information has been assumed with respect to the varying activities over the construction phases and vehicles that are anticipated to be utilised.

It is noted that the following vehicle list as shown in Table 1 is prepared on conceptual information available at the time of preparing this memo and may change subject to design refinement, changes in construction methodologies.

*Table 1 Anticipated Vehicle Types**

ITEM	ACTIVITY	CONSTRUCTION USE	VEHICLE TYPE
1	Construction Equipment** Mobilisation/Demobilisation	All of works	— Conventional Trucking, — Low loaders
2	Workforce Mobilisation/Demobilisation**	All of works	— Buses, private vehicles
3	Cable drum delivery and handling	Cable Installation	— Low Loader
4	Trench consumables – Conduit, racks, Tapes and covers	Civils	— Conventional Trucking***
5	Water, delivery and handling	Material batching, Workforce, dust suppression	— Conventional Trucking***
6	Backload/disposal of water - waste / Contaminated	Trench dewatering, Shore crossings	— Conventional Trucking**
7	Backload/Disposal of Waste/Rubbish	All of works	— Conventional Trucking***
8	Delivery and handling of Bulk Materials – Roding	Site establishment and Civils	— Conventional Trucking***
9	Delivery and handling of Raw Bulk Materials – TSB/Concrete (Aggregates, cement)	Civils	— Conventional Trucking*** — Special Purpose Vehicles (e.g. concrete trucks)
10	Delivery of TSB and Concrete	Civils	— Special Purpose Vehicles (e.g. concrete trucks)
11	Delivery of Concrete	Civils	— Special Purpose Vehicles (e.g. concrete trucks)

ITEM	ACTIVITY	CONSTRUCTION USE	VEHICLE TYPE
12	Disposal of Bulk Material Waste – Excavated materials	All of works	— Conventional Trucking***
13	Batch Plant Equipment Mobilisation/Demobilisation	Site establishment and Civils	— Conventional Trucking*** — Some oversize loads

* Additional information relating to construction vehicles is included as an attachment in Appendix A to this memo. This includes vehicles that are assumed contained within the construction corridor but do not typically impact the road network other than mobilisation & demobilisation.

** Vehicles relating to the mobilisation and demobilisation of the workforce are generally considered to be standard vehicles for which roads are designed to accommodate and as there is no need for special consideration to be given to these movements with respect to the route required to be used. It is also considered that these movements will generally be undertaken at the start and end of the project and as such will primarily comprise standalone movements. As such, these movements are considered to occur outside the typically daily movements that will be generated by the construction of the cable alignment.

*** Where conventional trucking is referenced, the assumption has been made that this relates to vehicles either up to the size and weight load allowable for a B-Double, or truck and dog trailer combinations covered under DTP Performance Based Standards Level 1 (50.5tonne maximum operating mass, length no greater than 20m).

DTP CLASSIFICATION OF SITE VEHICLES

The Department of Transport Heavy Vehicle Road Network provides guidance on what roads can be used by specific vehicles based on factors such as vehicle dimensions and operating mass. It is this network that has been considered with respect to determining potential vehicle access routes and subsequently the following classification (Table 2) has been undertaken with respect to anticipated site vehicles.

Table 2 DTP Vehicle Classification

VEHICLE TYPE/USE		ASSUMED DTP CLASSIFICATION
Conventional Trucking – B-Double		B-Double
Conventional Trucking – Truck and Dog Trailer*		Performance Based Standards (PBS) Level 1
Low Loader (Cable Drum)		Oversize and Overmass (OSOM)
Construction Vehicles	Concreting	Special Purpose Vehicle (SPV)
	Excavation/ Drilling/ Scrapping/ Grading	Special Purpose Vehicle (SPV) Oversize and Overmass (OSOM)
	Crane	4 & 5 Axle All Terrain Mobile Crane
	Hauling	B-Double or PBS Level 1
	Hauling (Low Loader)	Oversize and Overmass (OSOM)



With reference to the above, it is therefore considered that review of the following DTP Heavy Vehicle Road networks are most applicable for determining preliminary vehicle access routes to and from the proposed cable alignment and construction areas:

- B-Double Network
- Performance Based Standards (PBS) Level 1 Network
- Oversize and Overmass (OSOM) Network
- 40 tonne Special Purpose Vehicle (SPV) Network
- 4 & 5 Axle All Terrain Mobile Crane Network
- Over Dimensional (OD) Route Network

Further details regarding these routes can be obtained from the DTP/VicRoads website.

PRELIMINARY ASSESSMENT

6. ORIGIN AND DESTINATION INPUTS

In conjunction with the preceding inputs relating to potential vehicle requirements, information has also been provided with respect to the origins and destinations of each of these vehicle movements. This information is summarised in Table 3.

Table 3 *Vehicle Origin and Destination Inputs*

ITEM	VEHICLE ACTIVITY	ORIGIN	DESTINATION
1	Cable Drums	Melbourne (Port)	Cable Staging Nodes
2	Trench Consumables	Melbourne	Cable Staging Nodes
3	Water - Potable/Fresh	TBD*	Shore Crossing, Cable Staging Nodes
4	Water - Waste / Contaminated	Shore Crossing, ONS Locations, Cable Alignment	TBD*
5	Disposal of Waste/ Rubbish	Shore Crossing, ONS Locations, Cable Alignment	TBD*
6	Raw Bulk Materials - Roading	Bulk Materials Sourcing Locations	Cable Staging Nodes
7	Raw Bulk Materials - TSB	Bulk Materials Sourcing Locations	Cable Staging Nodes
8	TSB	TSB Batch Plants	Trenches
9	Bulk Material Waste Disposal	Shore Crossing, ONS Locations, Cable Alignment	TBD*
10	Batch Plant Equipment	Local / Melbourne	Batch Plant locations
11	Construction Equipment	Local / Melbourne	Cable Staging Nodes
12	Workforce Mobilisation/ Demobilisation	Local / Melbourne	Local / Melbourne

* Further input required with respect to these origin/destination inputs.

7. DTP HEAVY VEHICLES ROAD NETWORK

In conjunction with the arterial road network (Figure 1 below and Appendix B), in order to provide initial guidance and direction with respect to the road network available for use both in accessing the subject precinct as well as in accommodating site specific vehicle movements (construction, bulk materials, contractor, etc) around the area, consideration has been given to the DTP HVRN.

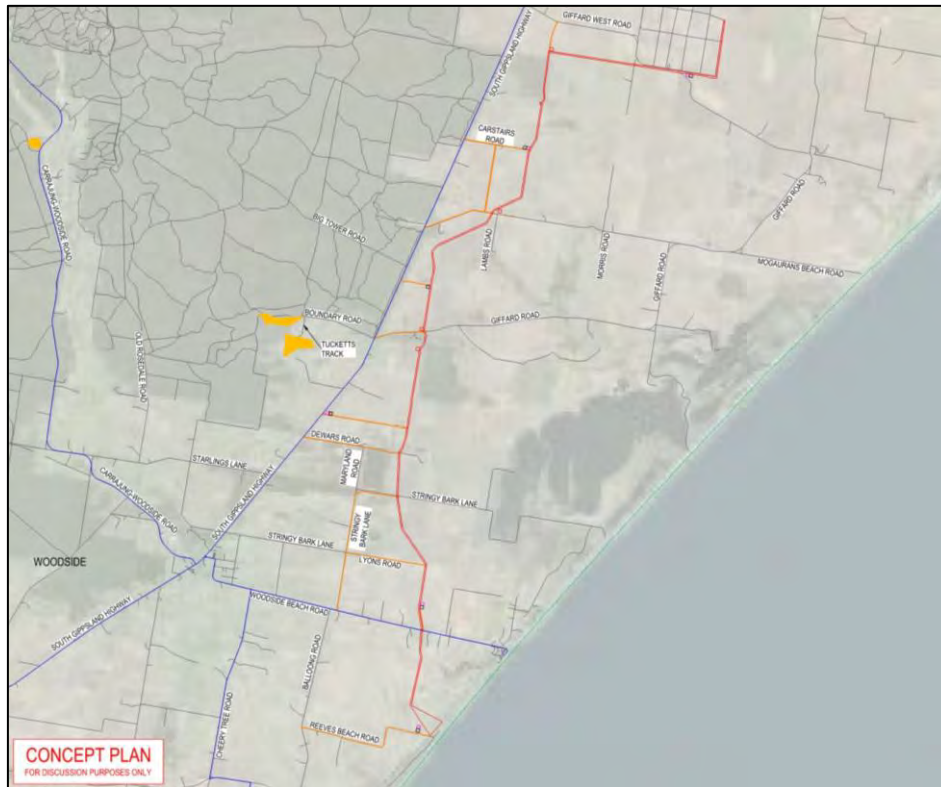


Figure 1 DTP Arterial Road Network

This network specifies roads which have been identified as being suitable for use by specific vehicle types and sizes and subsequently acts as a point of guidance for developing a high-level route assessment for project generated vehicle movements.

As noted prior, it is considered that the following DTP HVRN's will be most applicable with respect to the anticipated movements to and from the cable alignment and construction areas:

- B-Double Network
- Performance Based Standards (PBS) Level 1 Network
- Oversize and Overmass (OSOM) Network
- 40 tonne Special Purpose Vehicle (SPV) Network
- 4 & 5 Axle All Terrain Mobile Crane Network
- Over Dimensional (OD) Route Network

These networks have subsequently been reviewed within the context of the DTP arterial road network for both local movements around the cable alignment/staging nodes and for larger scale vehicle movements between the wider precinct and Melbourne ports.

LOCAL VEHICLE MOVEMENTS AND CONNECTIVITY

With reference to the preceding identified heavy vehicle requirements, Figure 2 to Figure 7 following present the areas covered by each of these varying road network within proximity of the subject site. These diagrams are also included within Appendix B to this memo.

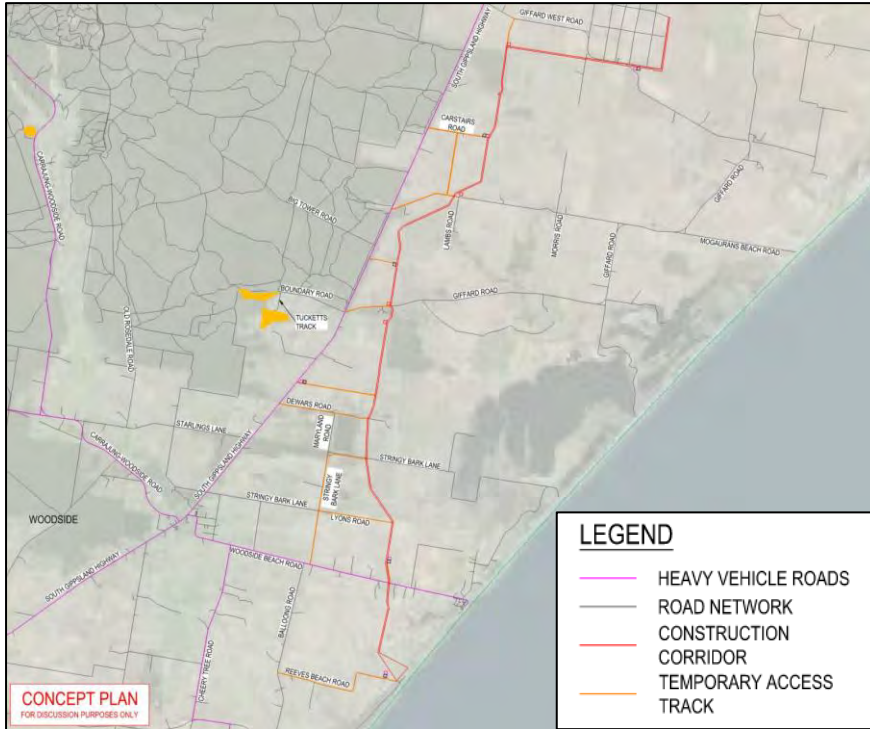


Figure 2 *B-Double Network*

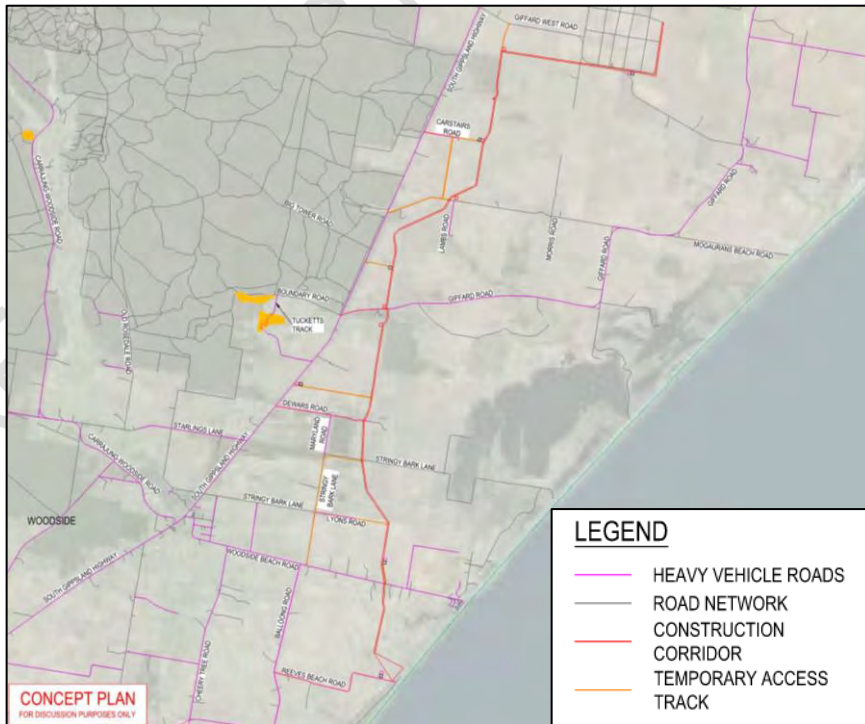


Figure 3 *Performance Based Standards (PBS) Level 1 Network*

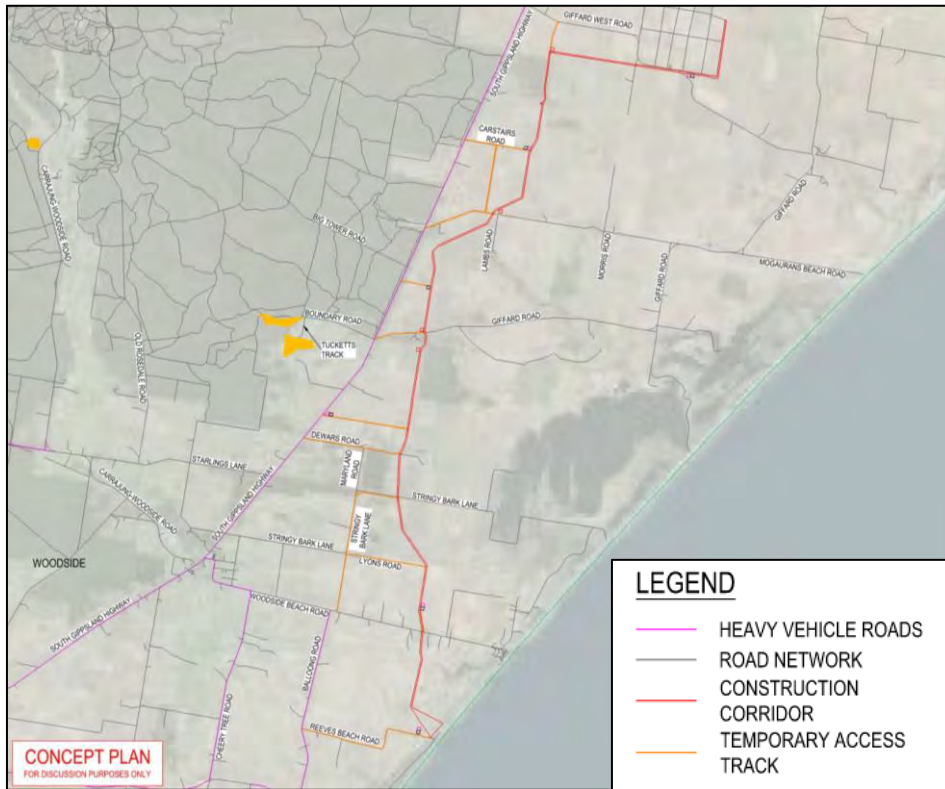


Figure 4 Oversize and Overmass (OSOM) Network

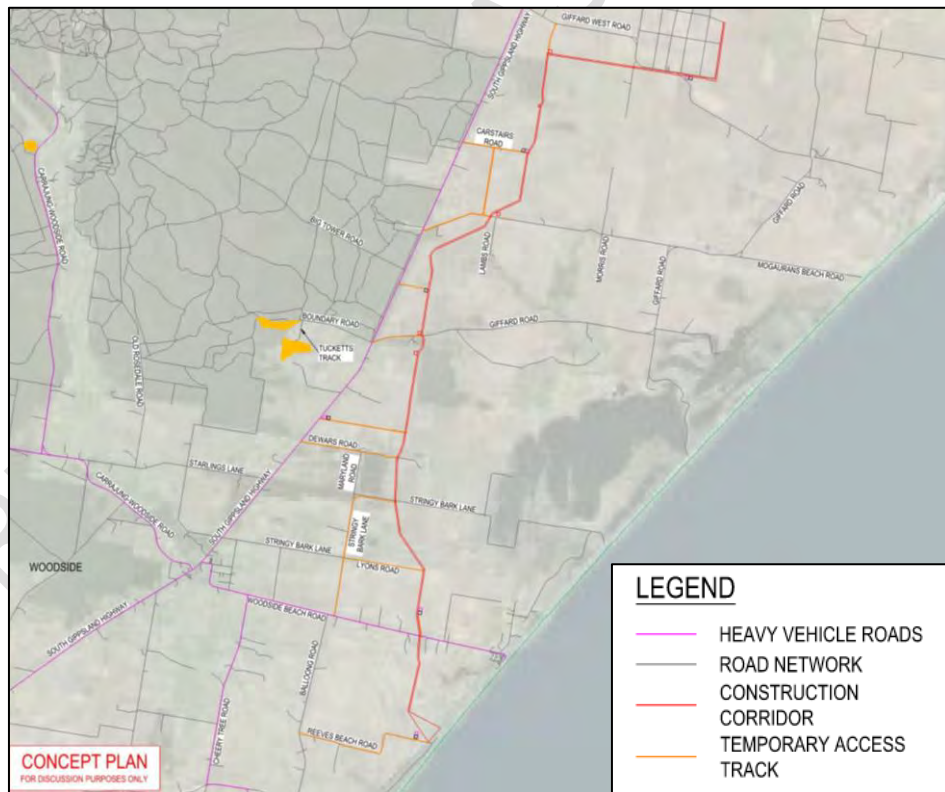


Figure 5 40 Tonne Special Purpose Vehicle (SPV) Network

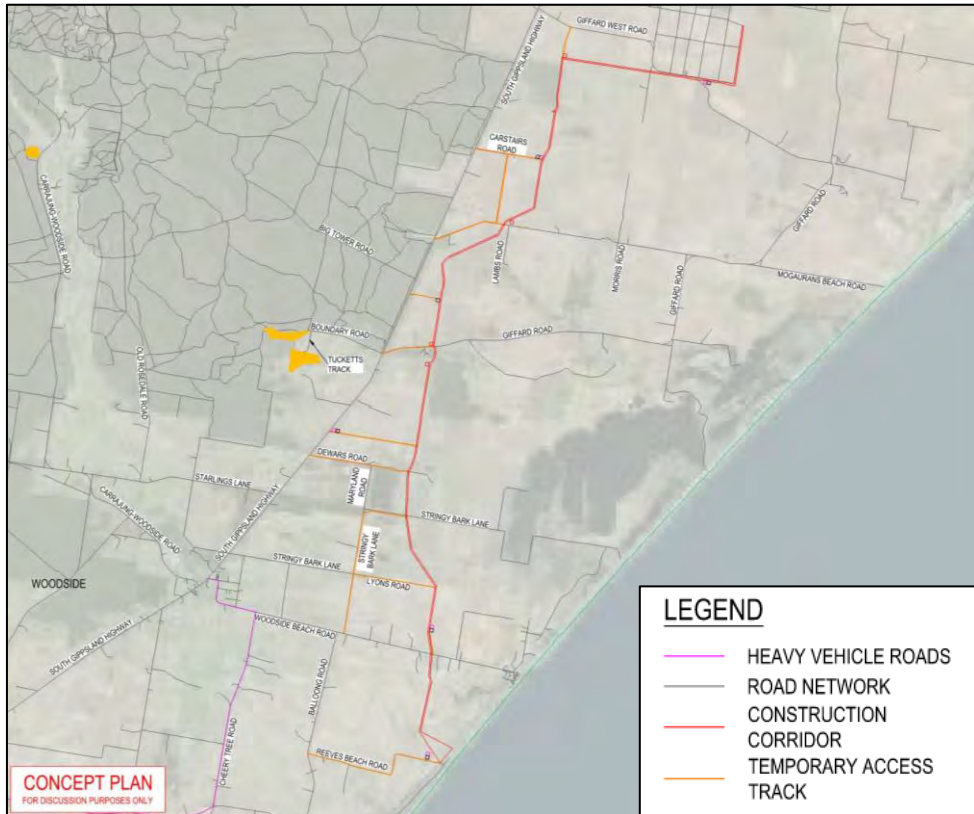


Figure 6 4 & 5 Axle All Terrain Mobile Crane Network

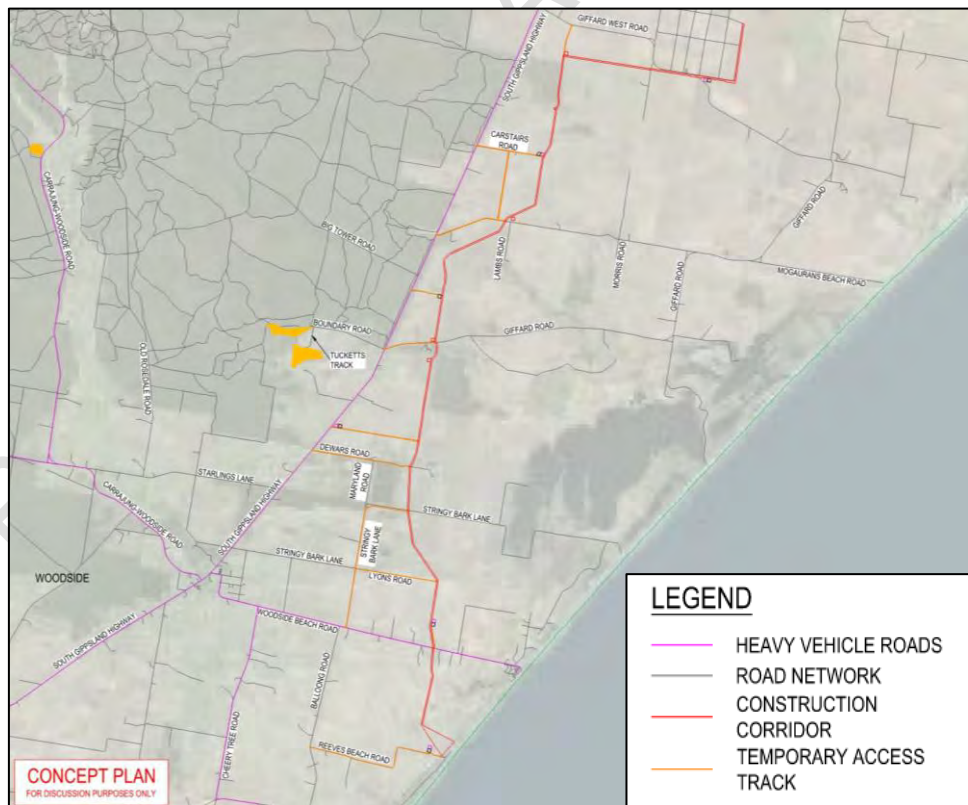


Figure 7 Over Dimensional (OD) Route Network

REGIONAL VEHICLE MOVEMENTS AND CONNECTIVITY

In addition to localised movements around the area where the onshore transmission system is to be constructed, consideration has also been given to potential vehicle routes to/from the construction corridor from Melbourne where some of the larger machinery and materials, including cable drums, have assumed to be transported from.

Based on the DTP HVRN, two (2) possible road networks have been identified that can potentially provide access from Melbourne to the construction corridor. These potential access options are:

- via the Princes Highway; or
- via the South Gippsland Highway.

With regard to these two (2) access options, it is noted that there are some slight reductions in travel distances via utilisation of the Princes Highway option with a further benefit being that this option also largely avoids going directly through regional town centres. It is noted that the South Gippsland Highway alignment does at points require vehicle movements to undertake turns at intersections in regional towns (e.g. Leongatha) and as such may present restrictions to large vehicle movements.

On this basis, it is considered that at this point in time and based on the information available, the Princes Highway provides better opportunity to act as the primary access route to the precinct, with the South Gippsland Highway acting as an alternative if site constraints require.

KEY ACCESS ROAD AND HVRN ALIGNMENTS

With respect to the heavy vehicle networks presented above, the following summary as shown in Table 4 has been prepared presenting which key roads within the area have been identified as being capable of supporting specific heavy vehicle movements.

Table 4 DTP Permitted Access Routes

ROAD	B-DOUBLE	PBS LEVEL 1	OSOM	40T SPV	ALL TERRAIN MOBILE CRANE	OD ROUTE
Monash Way	✓	✓	✓	✓	✓	✓*
Princes Highway	✓	✓	✓	✓	✓	✓*
South Gippsland Highway	✓	✓	✓	✓	✓	✗
Hyland Highway	✓	✓	✓*	✓	✓	✗
Carrajung-Woodside Road	✓	✓	✗	✓	✓	✗
Woodside Beach Road	✓	✓	✓*	✓*	✓	✓*

*Part of road only.

A map of the locations of these DTP permitted access routes can be found below in Figure 8.

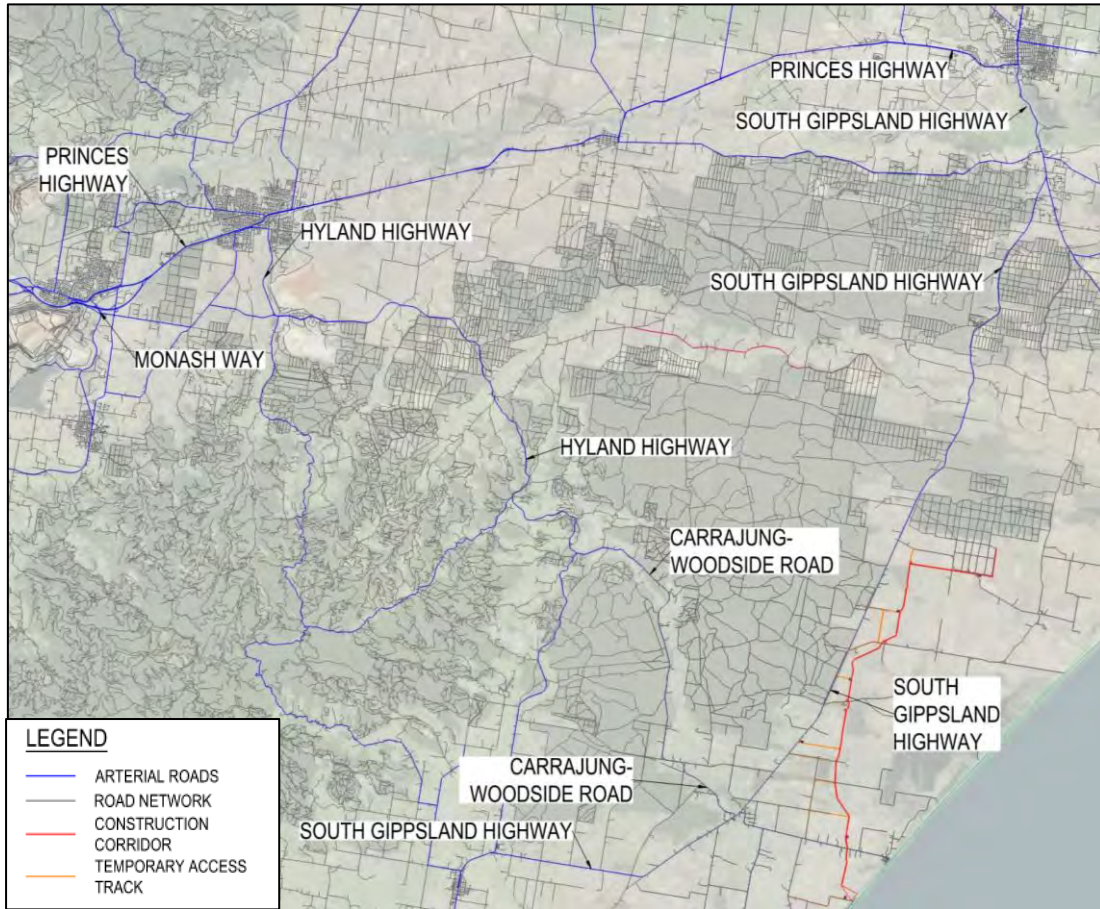


Figure 8 DTP Permitted Access Routes

RESTRICTED STRUCTURES

In addition to providing defined routes for vehicles of varying sizes and uses, the DTP HVRN data also provides information with regards to potential structures (bridges/water crossings, overpasses/underpasses, etc) that may act as a restriction to specific vehicle movements.

This data has subsequently been reviewed in the context of the local road network within proximity of the cable alignment (east of Morwell, north of Woodside, southwest of Sale) with a number of potential structures subsequently being identified for further review and investigation.

A summary of these structures and locations are presented in Table 5. Additional information is also included in Appendix C. In addition to this, Figure 9 and Figure 10 have been prepared showing the locations of these structures relative to the overall and dedicated cable alignment.

Table 5 *Restricted Structures*

ITEM	RESTRICTION TYPE	LOCATION
1	Load Limit – Bridge	— South Gippsland Hwy – Bruthen Creek Bridge
2	Load Limit – Bridge	— South Gippsland Hwy – Morris’s Creek Bridge
3	Load Limit – Bridge	— South Gippsland Hwy – Warrigal Creek Bridge
4	Load Limit – Bridge	— South Gippsland Hwy – Monkey Creek Bridge
5	Load Limit – Bridge	— South Gippsland Hwy – Un-named crossing approximately 250m north of Stradbroke
6	Load Limit – Bridge	— South Gippsland Hwy –Merrimans Creek Bridge
7	Height Clearance – Overhead lines and low mounted sign.	— Princes Hwy - 100m west of South Gippsland Hwy
8	Load Limit – Bridge	— Princes Hwy – Thomson River Bridge
9	Load Limit – Bridge	— Princes Hwy – Central Gippsland Number 2 Drain (Nambrok Creek) Bridge
10	Load Limit – Bridge	— Princes Hwy – Blind Joes Creek Bridge
11	Height Clearance – Low mounted sign	— Princes Hwy - 100m west of Franklin Street
12	Height Clearance – Underpass	— Shakespeare St railway underpass.
13	Load Limit – Bridge	— Hyland Hwy – Traralgon Creek Bridge
14	Load Limit – Bridge	— Hyland Hwy – Flynns Creek Bridge
15	Height Clearance – Underpass	— Princes Hwy – Tramway Road underpass
16	Height Clearance – Underpass	— Princes Highway – Monash Way underpass

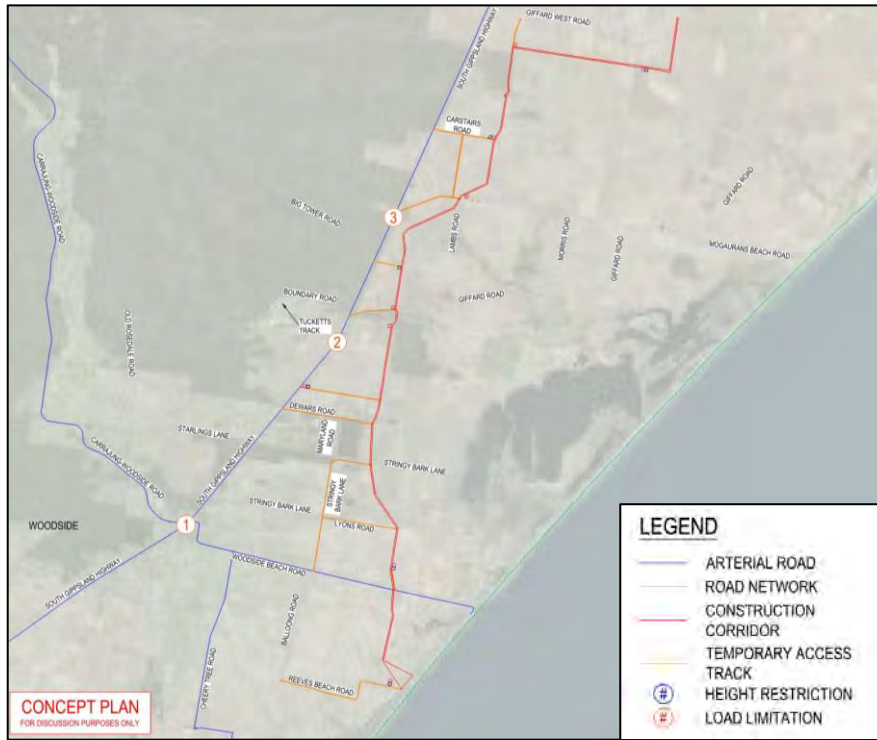


Figure 9 Restricted Structure Locations – Dedicated Alignment

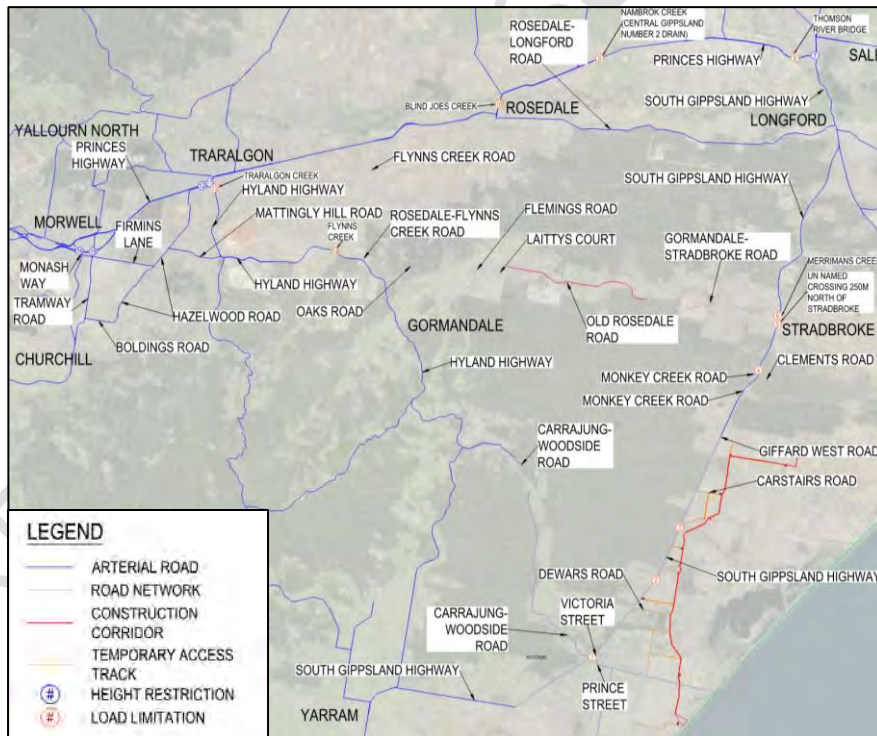


Figure 10 Restricted Structure Locations – Entire Alignment

These restrictions have subsequently been taken into consideration with the identification of potential vehicle access routes around the construction corridor.

As a general note, these restrictions may not apply to all vehicles and subsequently further onsite investigation may be warranted to confirm any constraints that these structures may potentially pose to anticipated vehicle movements.

ACCESS NODES / SITE STAGING

The proposed construction corridor, extending for a length of approximately 29km from the shore crossing at Reeves Beach through to the connection point at the Giffard Connection Hub (being constructed by others) comprises of 6 access/staging nodes distributed along its length. Staging nodes have been initially distributed based on assumed manageable construction distances and accessibility. The nodes are nominally distributed at 4-6km intervals. If long sections of the alignment exist without intersecting an existing public or private access track, or there are known constraints evident, new access tracks have been tentatively identified.

A staging node is a primary access point where access to a section of the construction corridor is achieved during construction. These locations are assumed to be co-located with temporary laydown areas and in some cases, batch plants. It must be noted that additional access to the work front will be provided by a combination of newly constructed access tracks and via primary access tracks. Primary access tracks are key public and private tracks which intersect the works that are planned to be utilised for construction. For simplicity at this stage of the concept development we have limited assessment to the node locations and just the primary access routes. It is noted that in addition to the primary access routes, access tracks in the area may make each node accessible via several additional routes.

A summary of the location and access arrangements for each of these nodes is noted in Table 6 and below. These node locations are also included in Appendix D.

Table 6 *Staging Nodes and Access Locations*

STAGING NODE	PRIMARY ACCESS FROM KEY ROAD NETWORK
1	— Reeves Beach Road via Balloong Road and Woodside Beach Road connection to South Gippsland Highway.
2	— Woodside Beach Road connected to the South Gippsland Highway. — Secondary access via Lyons Road and Stringy Bark Road.
3	— Direct access from South Gippsland Highway via creation of a new access track situated approximately 500m north of Dewars Road.
4	— Direct access from South Gippsland Highway via creation of a new access track situated approximately 500m south of Big Tower Road.
5	— Carstairs Road connection to South Gippsland Highway
6	— Giffard West Road connection to South Gippsland Highway.



Figure 11 Construction Corridor Staging Nodes

Along with providing staging points, the access nodes also accommodate other uses. A summary of these are noted in Table 7.

Table 7 Staging Nodes and Uses

STAGING NODE	NODE FEATURE
1	<ul style="list-style-type: none"> — Shore Crossing Site and Laydowns — Temporary Batch Plant — Cable System Laydown
2	<ul style="list-style-type: none"> — Temporary Batch Plant — Cable System Laydown
3	<ul style="list-style-type: none"> — Temporary Batch Plant — Cable System Laydown
4	<ul style="list-style-type: none"> — Cable System Laydown
5	<ul style="list-style-type: none"> — Temporary Batch Plant — Cable System Laydown
6	<ul style="list-style-type: none"> — Temporary Batch Plant — Cable System Laydown

8. BULK MATERIAL SOURCE LOCATIONS AND ROAD NETWORK

A high-level bulk materials assessment of the region has been undertaken in order to determine possible locations where necessary materials might be sourced. It is understood that further investigation and refinement of these locations is currently being undertaken however at this point in time a number of possible sourcing locations have been identified as noted in Figure 12 below and in Appendix E.

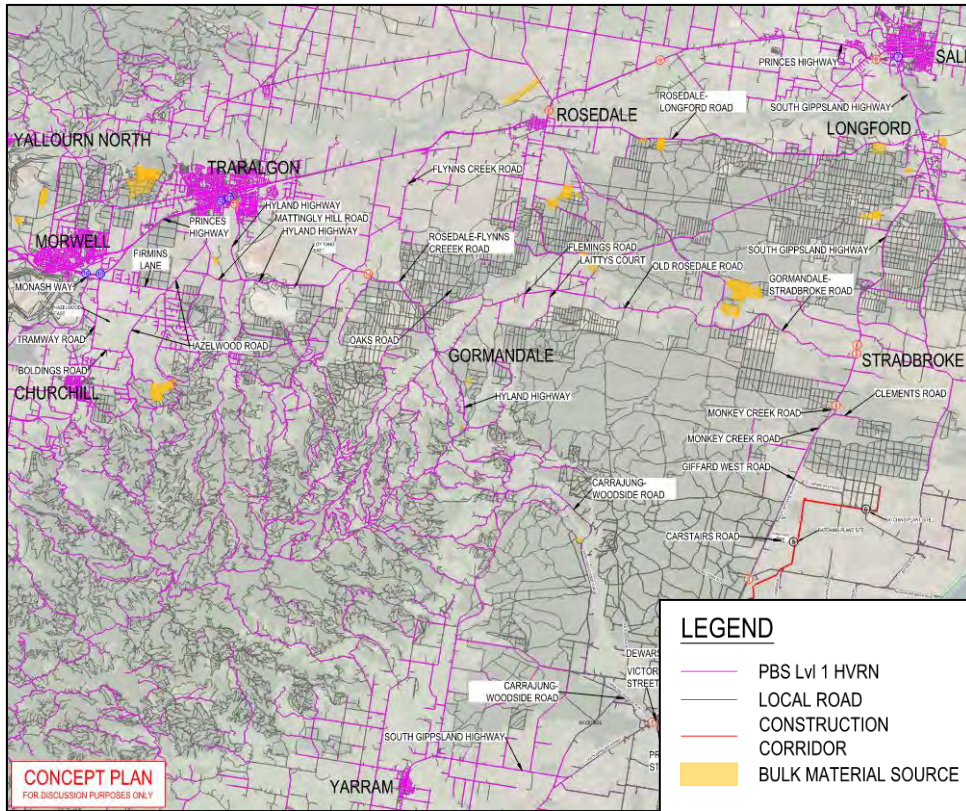


Figure 12 Bulk Materials Locations and Access Routes

It is assumed that all movements to and from the bulk material sourcing locations will be undertaken via conventional ‘truck and dog trailer’ haulage vehicles. As such, use of the PBS Level 1 heavy vehicle network is generally considered most applicable for accommodation of these movements.

9. PRIMARY VEHICLE ACCESS ROUTES

With regards to the preceding considerations, preliminary vehicle access routes have been prepared in order to provide connection between the staging nodes of the cable alignment, bulk materials sourcing locations, the local surrounding area, and Melbourne ports.

In identifying these vehicle access routes, consideration has been given to the following:

- Looking to avoid vehicles travelling directly through regional town centres where possible.
- Generally aligning with the approved routes as noted within the DTP heavy vehicle road networks.
- Limiting points where the routes may be impacted by potential height or weight restricted structures.
- Ensuring connection is provided to each of the staging nodes of the cable alignment.
- Ensuring connectivity can be facilitated between bulk materials sourcing locations and the cable alignment.

Subsequently, preliminary vehicle access routes have been prepared both for the anticipated port to site movements and for the movements within the local area surrounding the onshore transmission system. Both of these options are shown in Figure 13 and Figure 14 below and are also attached in Appendix F.

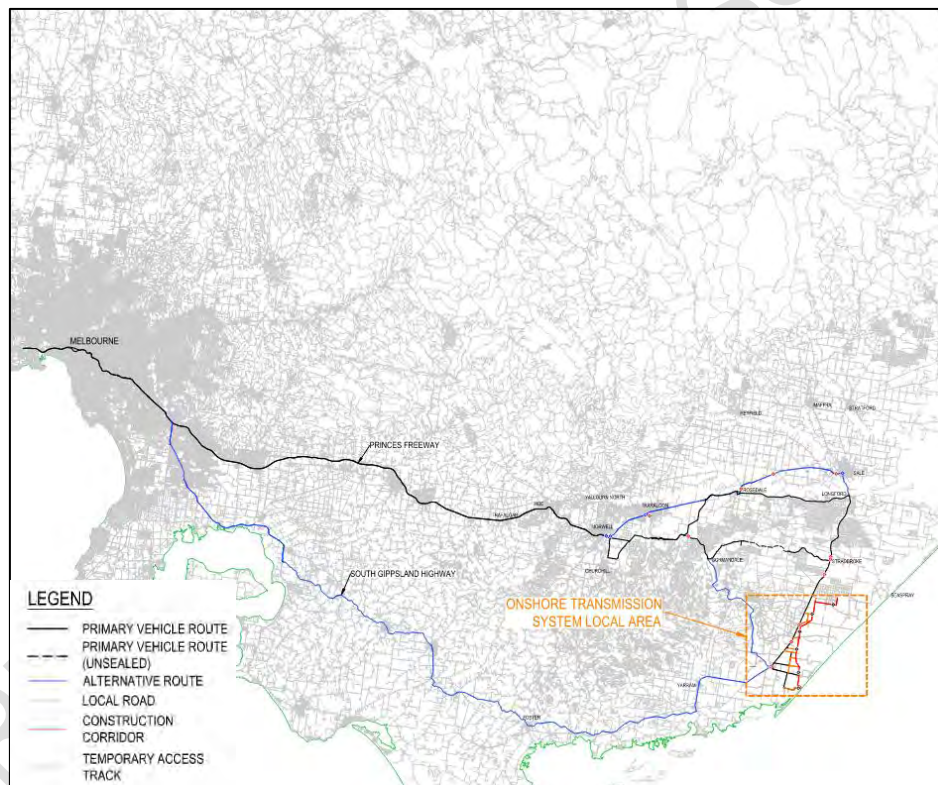


Figure 13 Melbourne to Onshore Transmission System Vehicle Access Routes

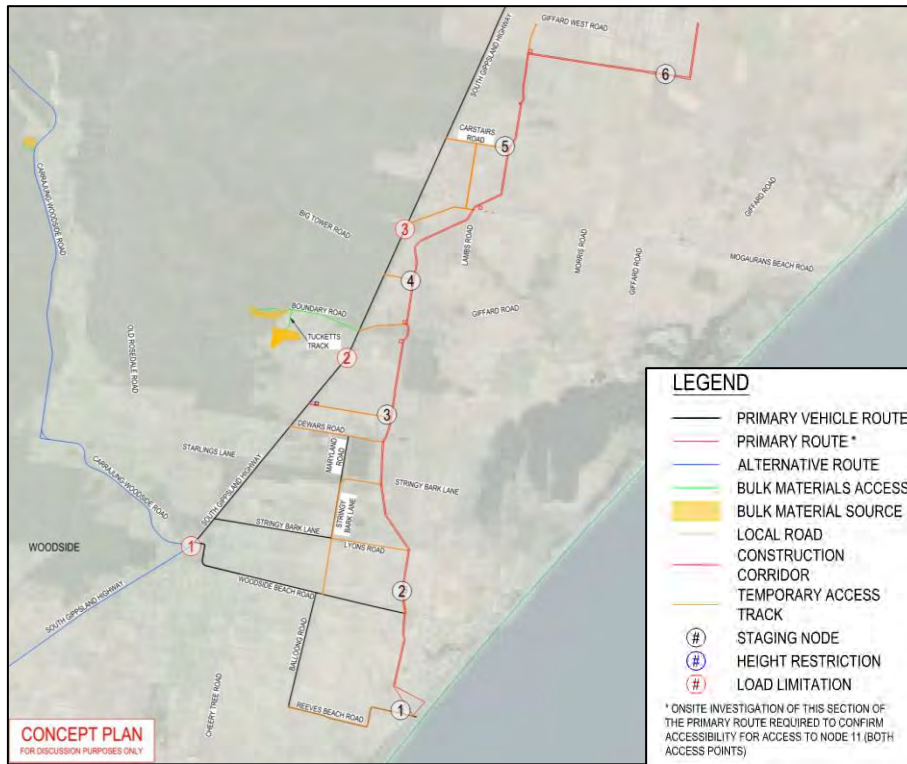


Figure 14 Construction Corridor Vehicle Access Routes

As a summary of the preceding figures, in travelling to the site from Melbourne, it is recommended that vehicles utilise the Princes Freeway as a primary route. Once they have reached Morwell, two options are available:

- Hyland Highway and Gormandale-Stradbroke Road.
- Flynns Creek Road and Rosedale-Longford Road.

It is recommended that vehicles wishing to avoid unsealed road should utilise the Flynns Creek Road and Rosedale-Longford Road access route, as Gormandale-Stradbroke Road contains a section of unsealed road which may be unsuitable for vehicles larger than a B-Double.

The identified preliminary vehicle access routes will both see vehicles travel to and from the works area of nodes 1 – 6 via South Gippsland Highway and adjoining local connections.

The following table illustrates the preferred access routes for different vehicle types.

Table 8 Preferred Primary Access Routes

ROAD	B-DOUBLE	PBS LEVEL 1	OSOM	40T SPV	ALL TERRAIN MOBILE CRANE	OD ROUTE
Hyland Highway and Gormandale-Stradbroke Road	✓	✗	✗	✗	✗	✗
Flynns Creek Road and Rosedale-Longford Road	✓	✓	✓	✓	✓	✓



Alternative routes, as presented in blue in Figure 13, are likely to not address some of the considerations mentioned above when determining a primary route, however, still pose as alternative routes if required. These alternative routes are:

- South Gippsland Highway via Yarram and Woodside.
- Princes Highway and South Gippsland Highway via Morwell/ Traralgon, and Longford/Sale.
- Highland Highway and Carrajung-Woodside Road.

As noted earlier however, the above identified primary and alternative vehicle routes are preliminary only, based on a number of high-level assumptions and concept information available at the time of preparation. It is therefore considered that the outputs as presented may ultimately be superseded based on further design refinement, changes in construction methodologies.

PRELIMINARY ASSESSMENT

10. TRAFFIC VOLUMES

In addition to the identification of vehicle access routes for the site, high level consideration has also been given to the potential traffic volumes and movements at each of the staging nodes accesses. To inform the further studies to be undertaken, the following information is subsequently provided with respect to existing traffic volumes along key roads, and the estimated number of movements at each of the staging nodes.

INDICATIVE ARTERIAL ROAD NETWORK TRAFFIC VOLUMES

Traffic volumes for key arterial roads that are to be utilised as part of the primary road network have been sourced from DTP. These volumes are as follows:

Table 9 DTP Arterial Road Traffic Volumes

ROAD	SECTION	TWO-WAY AVERAGE DAILY TRAFFIC	
		ALL VEHICLES	TRUCKS
Princes Highway	Morwell to Traralgon	32,000	2,500
	Through Traralgon	25,000 – 34,000	2,900 – 4,300
	Traralgon (Stammers Road) to Rosedale	13000	1900
	Rosedale to Sale	13000	1100
South Gippsland Highway	Longford (Longford-Loch Sport Road to Seaspray Road)	6000	880
	Rosedale-Longford Road to Longford-Loch Sport Road	6600	800
	Longford (Rosedale-Longford Road) to Sale (Princes Highway)	7100	690
Rosedale-Longford Road	Rosedale to Longford	1200	210
Hyland Highway	Traralgon to Mattingly Hill Road	5300	520
	Mattingly Hill Road to Loy Yang Power Station	4100	420
	Loy Yang Power Station to Grand Ridge Road	2800	310
	Grand Ridge Road to Carrajung-Woodside Road	1600	180
Mattingly Hill Road	Hazlewood Road to Hyland Highway	4500	530
Hazlewood Road	Mattingly Hill Road to Firmins Lane	8200	690

ROAD	SECTION	TWO-WAY AVERAGE DAILY TRAFFIC	
		ALL VEHICLES	TRUCKS
Firmins Lane	Tramway Road to Hazlewood Road	5300	640
Carrajung-Woodside Road	Hyland Highway to South Gippsland Highway	260	20
Woodside Beach Road	South Gippsland Highway to Cherry Tree Road	420	50
	Cherry Tree Road to Woodside Beach	300	50

These volumes are high level only, based on available data and are to be used for indicative analysis of traffic volumes on the wider road network only. Should detailed impacts analysis be required than it is suggested that traffic volume counts are undertaken in the required areas.

TRAFFIC DISTRIBUTIONS AND ASSUMPTIONS

In distributing traffic, the assumption has been made that typically all heavy vehicle movements will follow the primary vehicle route identified whilst smaller vehicle movements as generated by the workforce (light vehicle) may utilise both the primary and alternate access routes and will typically travel between site nodes and surrounding regional towns.

Overall, it is considered that there will be some variations in the distributions and travel paths between site workforce, bulk materials, and other construction material requirements (cable etc). Further discussion on the assumptions and distributions in relation to each of these categories is subsequently provided as follows.

In calculating the number of trips that may be required to convey the required quantity of materials, the following assumptions have been made with respect to the capacities of the various heavy vehicles being considered for use:

Table 10 Heavy vehicles considered for use

VEHICLE TYPE	VEHICLE CLASSIFICATION	VEHICLE VOLUME CAPACITY
26m B-Double	B-Double	80 m ³
Truck and Dog	PBS Lv11	30 m ³
Large Concrete Truck	SPV	9 m ³
Water Truck	SPV	0.02 ML
Low Loader	OSOM	Load Specific

With respect to the above, in undertaking the following assessment, all outputs presented are based on the estimated number of trips generated, with each trip comprising both and inbound and outbound movement. Outputs are also presented with respect to the number of trips estimated to be generated on a monthly basis. It should also be noted that if there is any change to the size or type of vehicles used, then the number of vehicle trips generated is also likely to change.

WORKFORCE / LIGHT VEHICLE TRIPS

With regards to the distribution of workforce traffic (light vehicle movements) movements, it has been assumed that these will largely be generated from the surrounding regional towns. Based on this, consideration has therefore been given to the size of each regional centre, with respect to the percentage of the workforce that they may supply.

Overall, it is anticipated that the project may generate a workforce comprising in the order of 500 – 600 full time employees at any given time. It is noted that this workforce would be distributed across up to 4 nodes at any one time, with this distribution allowed for in the following workforce calculations. A summary of these workforce estimations are provided in Appendix G to this assessment. The assumption has been made with these movements that each worker would arrive and depart via the use of their own private vehicle, and that no ride sharing is to be undertaken at this stage. On this basis, it has been estimated that each node may experience between 4,700 – 6,200 monthly workforce generated vehicle trips. This has been based on information provided relating to anticipated workforce requirements and durations.

With respect to estimating the distributions of light vehicle movements the population of key surrounding catchments as follows:

- Traralgon and Morwell – North-west of cable alignment – Approximately 39,000 people.
- Sale and Longford– North-east of cable alignment – Approximately 15,000 people.
- Yarram and Woodside – South-west of cable alignment – 2,500 people.

On the basis of the above populations for the nearby regional centres, it is considered that the following distribution of workforce would generally apply.

- Traralgon and Morwell – North-west of cable alignment – 69%
- Sale and Longford– North-east of cable alignment – 27%
- Yarram and Woodside – South-west of cable alignment – 4%

It is noted that the above distributions are for purposes of traffic generation calculations only and are not intended to be interpreted as being an indication of local employment projections.

To further refine this assumption of workforce distributions, consideration has also been given to the proximity of the staging nodes to these regional centres. This has been applied to anticipated distribution values in the form of a weighting factor at each node. Taking this into consideration, the assumed distributions of workforce vehicle movements for each of the nodes is as follows:

Table 11 Workforce (Light Vehicle) Traffic Volumes and Distributions

ACCESS NODE	ESTIMATED PEAK MONTHLY VEHICLE TRIPS	DISTRIBUTION OF TRAFFIC		
		Morwell/Traralgon	Longford/Sale	Yarram/Woodside
1	6,120	53%	26%	21%
2	4,712	53%	27%	20%
3	4,712	53%	30%	17%
4	4,712	53%	33%	14%

ACCESS NODE	ESTIMATED PEAK MONTHLY VEHICLE TRIPS	DISTRIBUTION OF TRAFFIC		
		Morwell/Traralgon	Longford/Sale	Yarram/Woodside
5	4,712	50%	40%	10%
6	4,712	46%	46%	8%

BULK MATERIALS TRIPS

Bulk materials are anticipated to be sourced from a number of locations within the area surrounding the construction corridor. As noted prior, it is anticipated that the movement of these materials will primarily be undertaken by a mixture of vehicle classified as either PBS level 1 (Truck and Dog Trailer) or SPV (construction vehicles i.e. cement or water trucks).

At the current stage of project planning, the exact quantities of bulk materials required at each of the nodes is yet to be fully quantified as this is reliant on further detailed site investigations. The resultant quantities required along each node and section of cable will be a factor of individual site and soil conditions and the resultant volumes of bulk materials that need to be transport to and from the node.

With this in mind, consideration has conservatively been given the estimated maximum quantity values for the purposes of determining the potential number of vehicle trips required.

Based on this provided quantities information (a summary of which is included in Appendix H), it has been estimated that in the order of 120,100 vehicle trips may be generated for the project with these movements distributed across each of the identified laydown nodes. It is understood that all nodes will generate traffic during the course of the project delivery, and subsequently for the purposes of this assessment, it has been considered that these volumes would generally be evenly distributed across each of the nodes, with some variation allowed for depending on the uses occurring at each node.

With respect to these subsequent trip estimations, Table 12 following has been prepared presenting the maximum anticipated trips that may be generated for each node.

For assessment purposes, it is considered that the estimated trips would all occur within a single month for each node, thereby indicating a peak monthly generation rate, however it is understood that delivery timeframes at nodes may vary and subsequently in operation monthly volumes may be less than those presented.

Table 12 Bulk Materials Minimum/Maximum Traffic Volumes

ACCESS NODE	ESTIMATED PEAK MONTHLY VEHICLE TRIPS
1	12,576
2	12,262
3	12,262
4	9,538
5	12,262
6	12,262

In terms of the distribution of these movements, with specific sites for various materials yet to be determined, this has been assessed based on giving consideration to the number of sites in a particular direction (NE, NW,



SE, SW) and the average distance of these sites to the access node, compared to distance to sites in other directions. On this basis, Table 13 following has been prepared presenting the estimated worst case scenario monthly trips from Table 12, the distribution of vehicle types, and the directional distribution of bulk materials movements.

Table 13 Bulk Materials Traffic Volumes and Distributions

ACCESS NODE	ESTIMATED PEAK MONTHLY VEHICLE TRIPS	VEHICLE TYPE		DISTRIBUTIONS			
		PBS Lvl 1	SPV	North-East	North-West	South-East	South-West
1	12,576	50%	50%	62%	38%	0%	0%
2	12,262	50%	50%	62%	38%	0%	0%
3	12,262	50%	50%	62%	38%	0%	0%
4	9,538	41%	59%	7%	4%	0%	89%
5	12,262	50%	50%	16%	7%	0%	77%
6	12,262	50%	50%	31%	9%	0%	60%

OTHER MATERIALS TRIPS

In addition to the bulk materials, there will also be a number of trips generated through the delivery of other materials associated with the construction of the onshore transmission system. It is anticipated that these materials will primarily come from outside the local surrounding region and will therefore be largely facilitated via the primary heavy vehicle access route that has been identified.

Based on the information provided (a summary of which is provided in Appendix I), it is anticipated that each node may facilitate in the order of 200 - 300 monthly trips, with these movements primarily being undertaken by B-Double or OSOM classified vehicles. On this basis, Table 15 has been prepared, showing anticipated monthly trips, distribution of vehicle types, and the directional distribution of movements.

Table 14 Other Materials Traffic Volumes and Distributions

ACCESS NODE	ESTIMATED PEAK MONTHLY VEHICLE TRIPS	VEHICLE TYPE		DISTRIBUTION OF TRAFFIC FROM ACCESS NODE ONTO PRIMARY ACCESS ROAD	
		B-Double	OSOM	Left	Right
1	220	66%	34%	0%	100%
2	220	66%	34%	0%	100%
3	220	66%	34%	0%	100%
4	220	66%	34%	0%	100%
5	220	66%	34%	0%	100%
6	220	66%	34%	0%	100%

TRAFFIC VOLUMES AT STAGING NODE ACCESSES

To inform the undertaking of further traffic analysis at each of the site access/staging nodes, Table 15 has subsequently been prepared summarising the estimated daily movements at each access node, and the potential directional distribution of these movements with respect to the preceding analysis and assumptions that have been presented. It has also been assumed that the overall inbound/outbound split for movements will be 50/50.

Table 15 Staging Nodes Traffic Volumes and Distributions

ACCESS NODE	ESTIMATED PEAK MONTHLY VEHICLE TRIPS				DISTRIBUTION OF TRAFFIC FROM ACCESS NODE ONTO PRIMARY ACCESS ROAD	
	Workforce	Bulk Materials	Other Materials	Total	Left	Right
1	6,120	12,576	220	18,916	49%	51%
2	4,712	12,262	220	17,194	47%	53%
3	4,712	12,262	220	17,194	46%	54%
4	4,712	9,538	220	14,470	83%	17%
5	4,712	12,262	220	17,194	76%	24%
6	4,712	12,262	220	17,194	64%	36%

OPERATIONAL TRAFFIC CONSIDERATIONS

Once operational, a few staff movements will be generated on a daily basis. With regards to these movements, the following estimations of full-time staff requirements have been provided:

- Transmission System Operations – 1-2 Full-time employees
- Management and Administration – 1-2 Full-time employees

Further additional movements may also be generated should any repairs or maintenance be required, however this would only be on an as needs basis and it is assumed a team of 5 could typically manage this. Subsequently, it is estimated that typical daily operations of the site may generate in the order of between 2 – 4 full time employees with allowance for a further 5 employees for repairs if needed. Assuming that they all drive to and from the site separately, it is therefore estimated that the site could generate in the order of 2 - 9 daily vehicle trips.



11. SUMMARY

The preceding memo has been prepared to provide preliminary inputs with respect to possible vehicle routes to and from the onshore transmission system and to inform the undertaking of further traffic studies.

In providing these inputs and associated plans, consideration has been given to:

- The anticipated vehicles requiring access to and from the site, and the alignment of these vehicles with DTP heavy vehicle classifications.
- Heavy vehicle road networks within the area surrounding the cable alignment and how this can be used to convey the anticipated construction vehicles.
- Indicative vehicle origin/destination requirements, the sourcing locations for bulk materials, and the delivery of a road network that can facilitate these requirements.
- Indicative arterial road network traffic volumes based on available DTP data.
- Vehicle volumes to/from staging nodes.

It is noted that these findings are considered preliminary and are subject to further on-site investigation, confirmation of exact design vehicle access requirements, and the preparation of swept path analysis if required.

Should you have any queries, or wish to discuss the above outcomes further, please do not hesitate to contact the undersigned.

Yours sincerely,

WSP Australia Pty Ltd

PRELIMINARY ASSESSMENT



APPENDIX A INDICATIVE CONSTRUCTION VEHICLE LIST

PRELIMINARY ASSESSMENT



ITEM	ACTIVITY	PLANT	SIZE (GROSS)	TYPE	CAPACITY
1	DRILLING	Vehicle Mounted Rotary Drilling Rig - Geotechnical	3t	Vehicle	20t
2	DRILLING	HDD Rig (Offshore)	32t	Trailer	100t
3	DRILLING	HDD, Rig (Onshore)	24t	crawler	45t
4	SCRAPING	Wheel Tractor-Scraper	39.9t	Cat 623	14.4 cu.m
5	SCRAPING	Wheel Tractor-Scraper	54.1t	Cat 637	18.3 cu.m
6	GRADING	Motor Grader	18.4t	Cat 12	3.7m cut
7	GRADING	Motor Grader	33.7t	Cat 18	5.5m cut
8	GRADING	Motor Grader	73.3t	Cat 24	7.3m cut
9	ROAD PLANT	Asphalt Paver	-	Cat AP500	6.50m cut
10	ROAD PLANT	Cold Planer	33.3t	Cat PM620	2.01m cut
11	ROAD PLANT	Road Reclaimer	28.4t	Cat RM500	2.43m cut
12	COMPACTION	Padfoot Roller	12.4t	Cat CS533	2.13m wide
13	COMPACTION	Padfoot Roller	18.75t	Cat CS78B	2.13m wide
14	COMPACTION	Roller	12.4t	Cat CS533	2.13m wide
15	COMPACTION	Roller	18.7	Cat CS78B	2.13m wide
16	COMPACTION	Road Roller	8.0t	Cat CB7	1.500m wide
17	COMPACTION	Multi Tyred Roller	8.63t	CATCW34	2.09m wide
18	DOZING	Dozer	22.0t	Cat D6	5.7 cu.m
19	DOZING	Dozer	39.4t	Cat D8	8.6 cu.m
20	DOZING	Dozer	70.17t	Cat D10	18.5 cu.m
21	EXCAVATION	Mini Excavator	1.95t	Cat 302	-
22	EXCAVATION	Mini Excavator	9.6t	Cat 310	-
23	EXCAVATION	Excavator	20.5	Cat 320	-
24	EXCAVATION	Excavator	29.0t	Cat 330	-
25	EXCAVATION	Excavator	86.3t	Cat 390	-
26	EXCAVATION	Wheeled Excavator	16.9t	Cat M318	-
27	EXCAVATION	Vaccume Truck (HydroVac)	-	ISUZU 6x4	10000 l
28	TRENCHING	Chain Trencher	150t	T 1675 EVO	0.76-1.83m wide cut
29	TRENCHING	Rock Saw	40t	T 1075	-

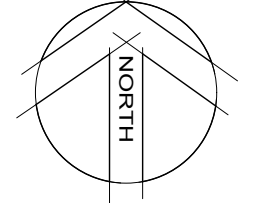
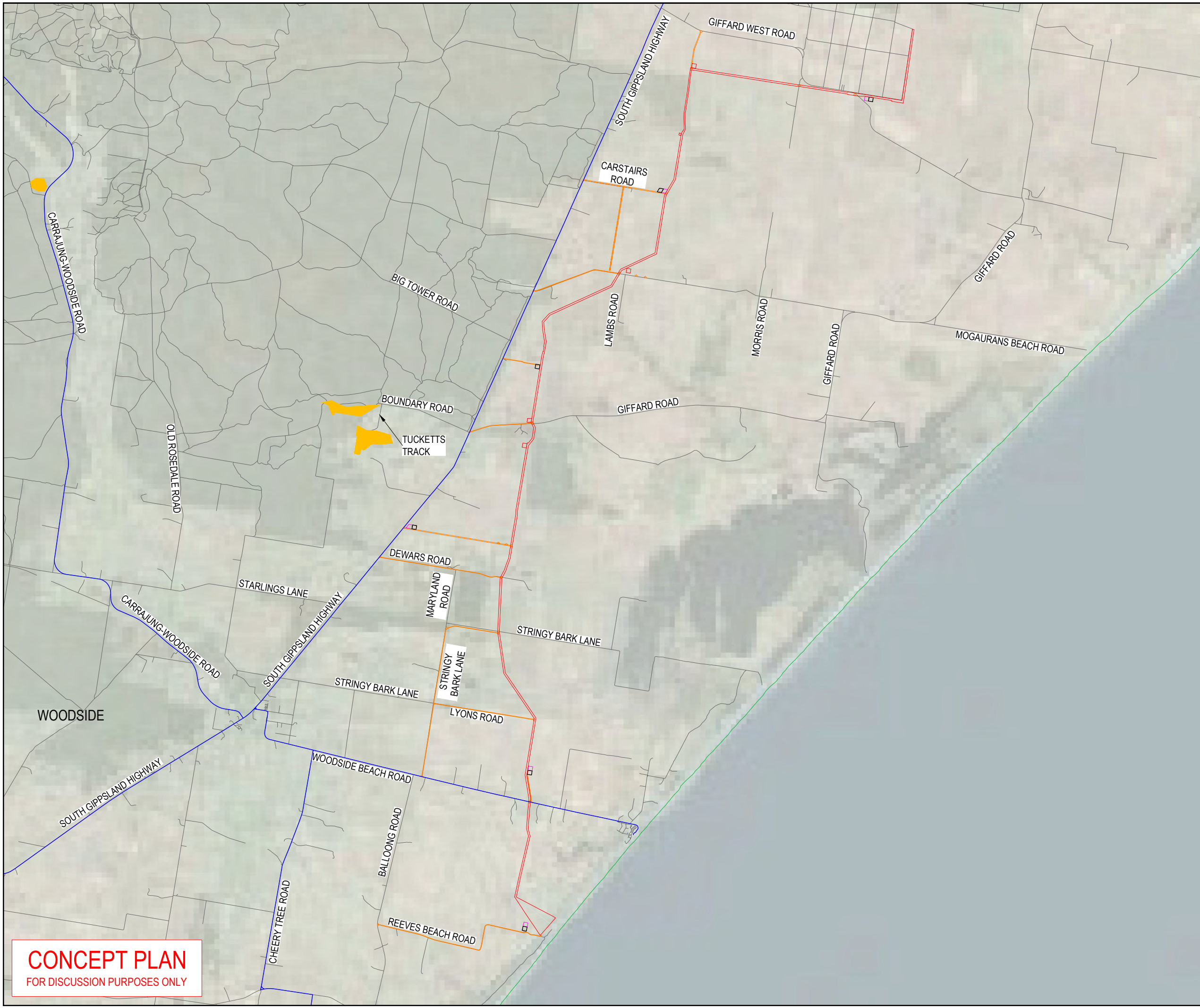
ITEM	ACTIVITY	PLANT	SIZE (GROSS)	TYPE	CAPACITY
30	MATERIAL HANDLING	Telehandler	11.3t	MXT1740	4t, 13.5m reach
31	MATERIAL HANDLING	Forklift	-	Hyster GDP90VX6	9t load
32	MATERIAL HANDLING	Forklift	-	Hyster B18 XM-12	18t load
33	MATERIAL HANDLING	Reach Stacker - Container Handler	-	Hyster RS45-31CH	45t load
34	MATERIAL HANDLING	Backhoe loader	8.4t	Cat 428	-
35	MATERIAL HANDLING	Backhoe loader	9.6t	Cat 444	-
36	MATERIAL HANDLING	Wheeled Loader	7.13t	Cat 910	-
37	MATERIAL HANDLING	Wheeled Loader	12.0t	Cat 924	-
38	MATERIAL HANDLING	Wheeled Loader	35.5t	Cat 982	-
39	MATERIAL HANDLING	Skid Steer Loader	2.65t	Cat 226	-
40	CONCRETING/TSB	Concrete Truck - Small	23t	-	6.0 cu.m
41	CONCRETING/TSB	Concrete Truck - Large	32t	-	8.6 cu.m
42	REINSTATEMENT	Tractor - Large Towing/Ripping - Tracked/Articulated - 200hp+	-	JD 8R 230	-
43	REINSTATEMENT	Tractor - Medium - Seeding/Sowing - 80-150hp	-	JD 6155	-
44	REINSTATEMENT	Tractor - Fencing/ towing/slashing/spraying - 20-100hp	-	JD 6100E	-
45	CRANE	Franna (Pickup and Carry Crane)	-	Terex	25t
46	CRANE	All Terrain Crane	-	Liebherr LTM1060	60t
47	CRANE	All Terrain Crane	-	Grove	300t
48	WORKFORCE MOVEMENT	Crew Bus (People Mover) - 4WD	-	-	12 pax
49	WORKFORCE MOVEMENT	Crew Bus (Mini) - 4WD	-	-	20-25pax
50	WORKFORCE MOVEMENT	Crew Bus (Coach) - Road	-	-	50+ Pax
51	WORKFORCE MOVEMENT	Ute	2t	Hilux	2-5pax
52	WORKFORCE MOVEMENT	Wagon, Van	3t	Landcruiser, Hiace	2-5 pax
53	HAULING	Articulated Truck (Off-road)	24t	Cat 725	15 cu.m
54	HAULING	Articulated Truck (Off-road)	41t	Cat 745	25 cu.m
55	HAULING	Off-Highway Tipper (Off-road)	47.2t	Cat 772	31.2 cu.m

ITEM	ACTIVITY	PLANT	SIZE (GROSS)	TYPE	CAPACITY
56	HAULING	Water Cart (Off-road)	47.2t	Cat 772	18000 l
57	HAULING	Water Cart	15t	ISUZU	7000 l
58	HAULING	Fuel Truck	25t	HINO	14,000
59	HAULING	HIAB Truck (Crane Truck)	-	-	12t tray
60	HAULING	Prime Mover	-	-	Upto 250t
61	HAULING	Bulk Tipper - Truck	-	-	10t
62	HAULING	Bulk Tipper - Large (Truck and Dog)	-	-	20t
63	HAULING	Bulk Tipper - Large (Truck and Dog, Multi Axle)	-	-	42.5t
64	HAULING	Low Loader Trailer	-	Trailer	35-55t
65	HAULING	Low Loader Trailer with Goosneck	-	Trailer	-
66	HAULING	Platform Trailers	-	Trailer	200t
67	HAULING	Extendable Trailer	-	Trailer	44m
68	HAULING	Beam Set Trailer (Block Truck)	-	Trailer	400t
69	HAULING	B Double	-	Trailer	-
70	HAULING	A Double	-	Trailer	-
71	HAULING	Fuel Browser Trailer - 1000L	-	Trailer	-
72	HAULING	Fibre Spoolers	-	Trailer	-
73	HAULING	Fencing Trailers	-	Trailer	-
74	HAULING	Custom Cable Drum Trailer	80t	Trailer	50t Cable Drums
75	COMMISSIONING	HV Cable Resonant Test Equipment (e.g. variable reactor)	40ft	Trailer	-



APPENDIX B DTP HEAVY VEHICLE NETWORK DIAGRAMS

PRELIMINARY ASSESSMENT



LEGEND

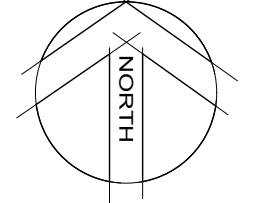
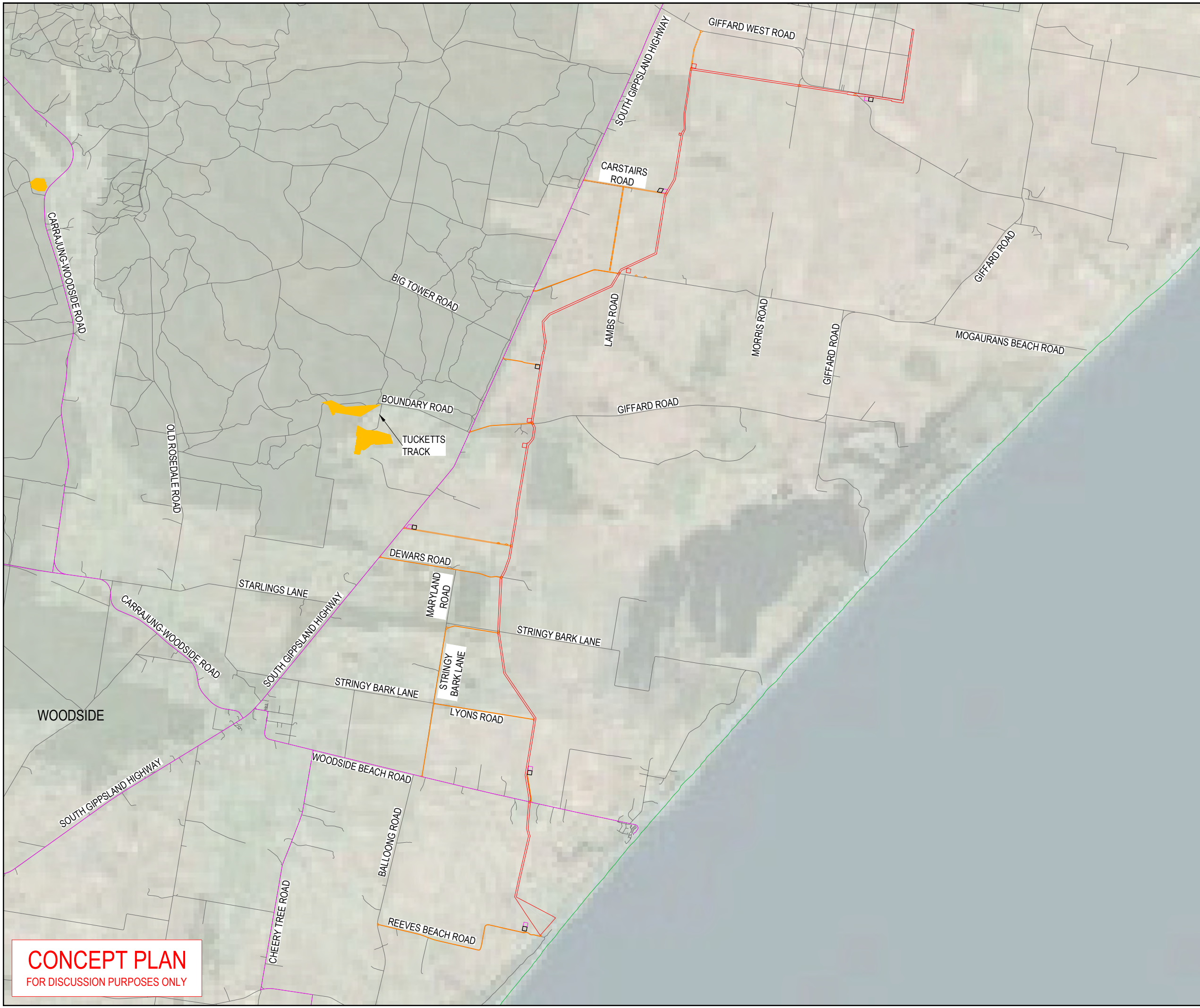
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- CONSTRUCTION CORRIDOR
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PS11848 SK038

ARTERIAL ROAD NETWORK
C.H. 22.01.2025



CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY



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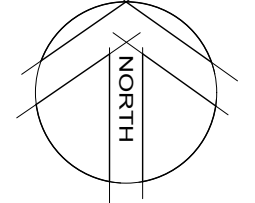
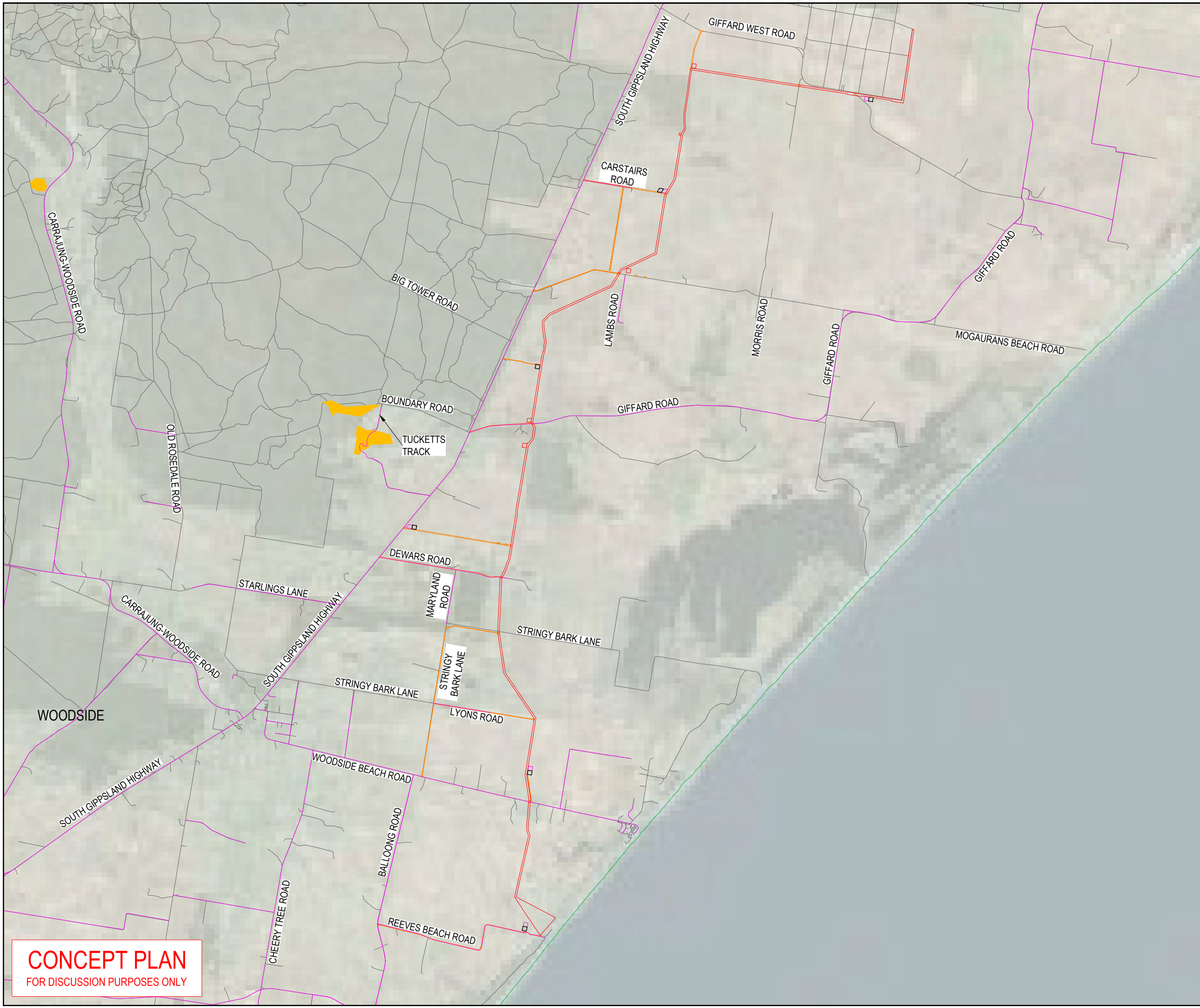
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FOR DISCUSSION PURPOSES ONLY

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B-DOUBLE ROAD NETWORK
C.H. 22.01.2025



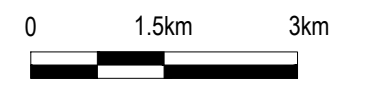


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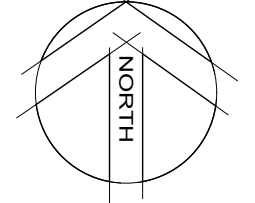
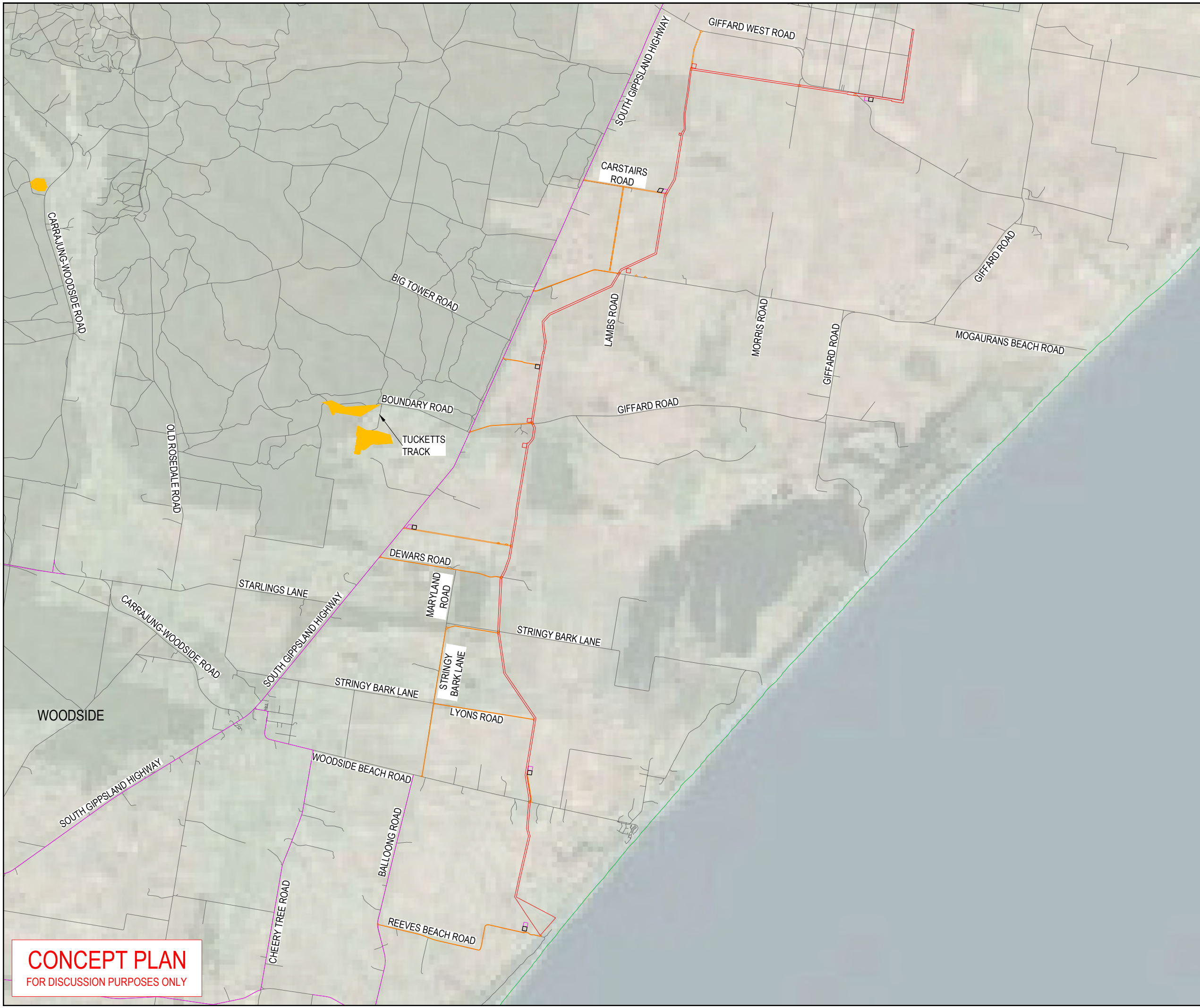
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PBS LEVEL 1 ROAD NETWORK
C.H. 22.01.2025



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FOR DISCUSSION PURPOSES ONLY



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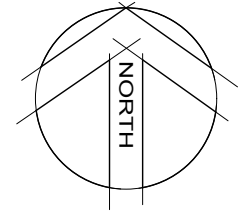
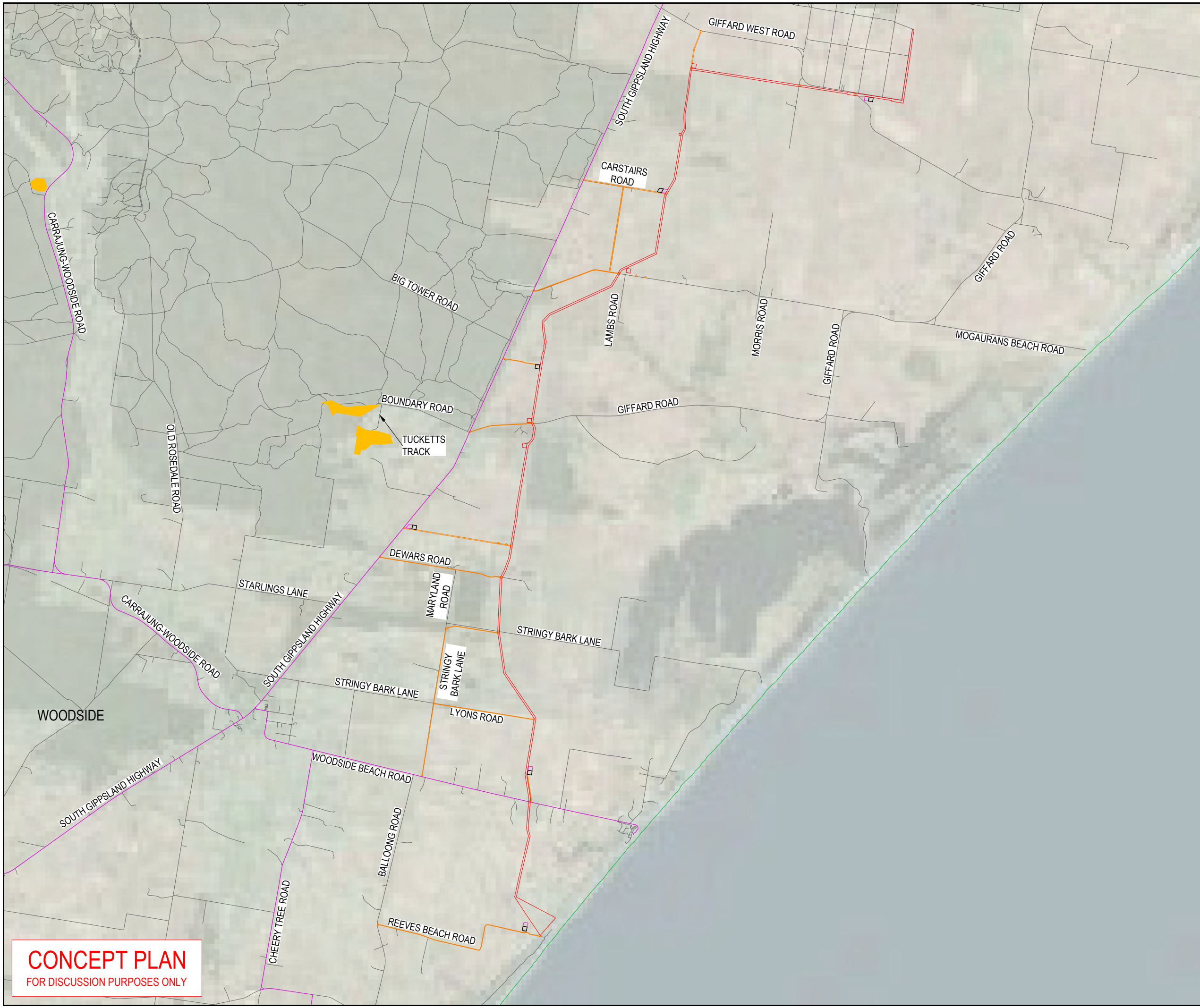
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- CONSTRUCTION CORRIDOR
- TEMPORARY ACCESS TRACK

CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

PS11848 SK041

OSOM ROAD NETWORK
C.H. 22.01.2025





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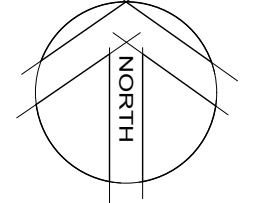
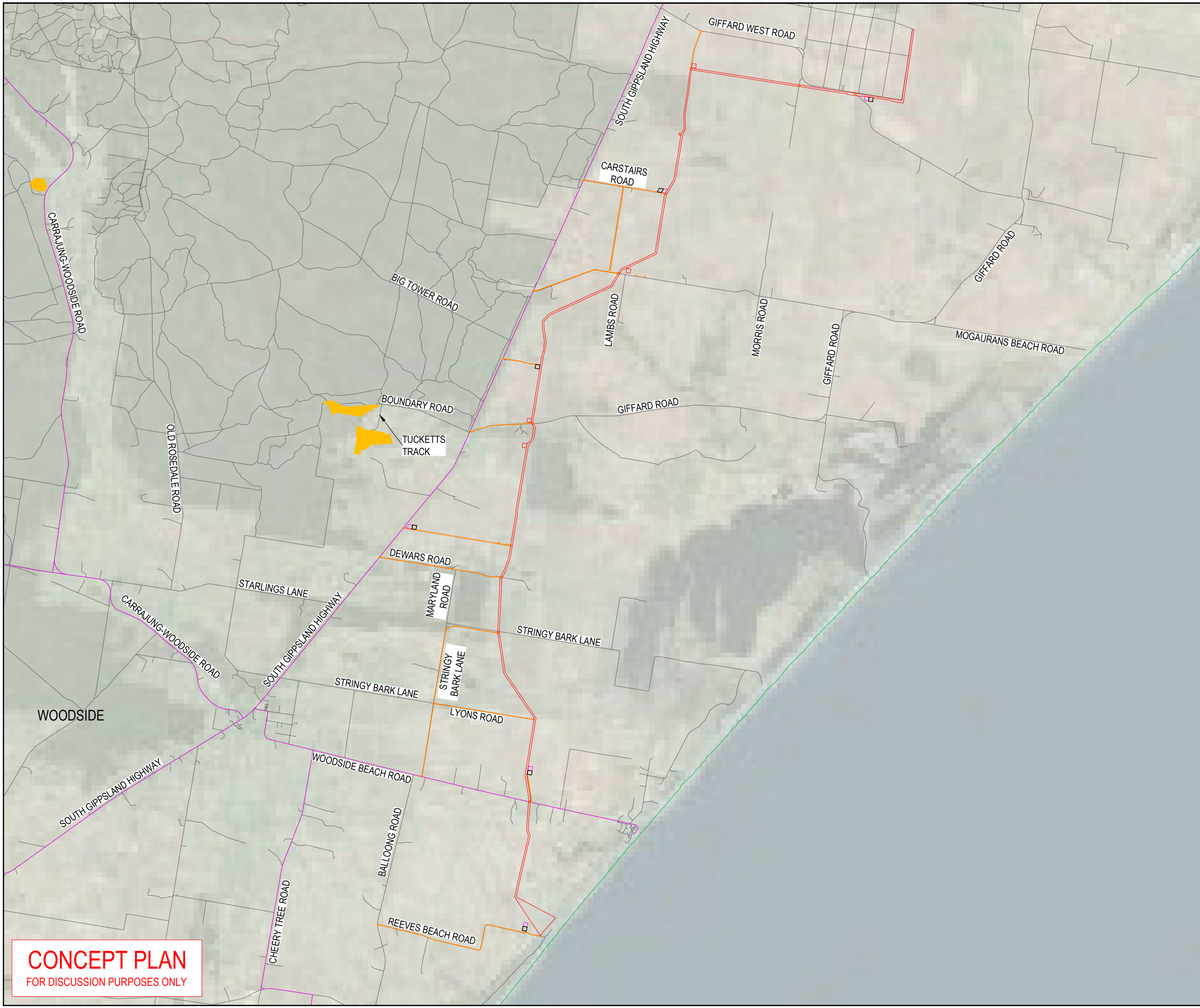
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PS11848 SK042

40T SPV ROAD NETWORK
C.H. 22.01.2025



CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY



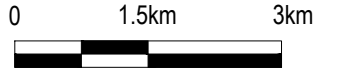
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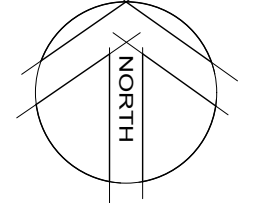
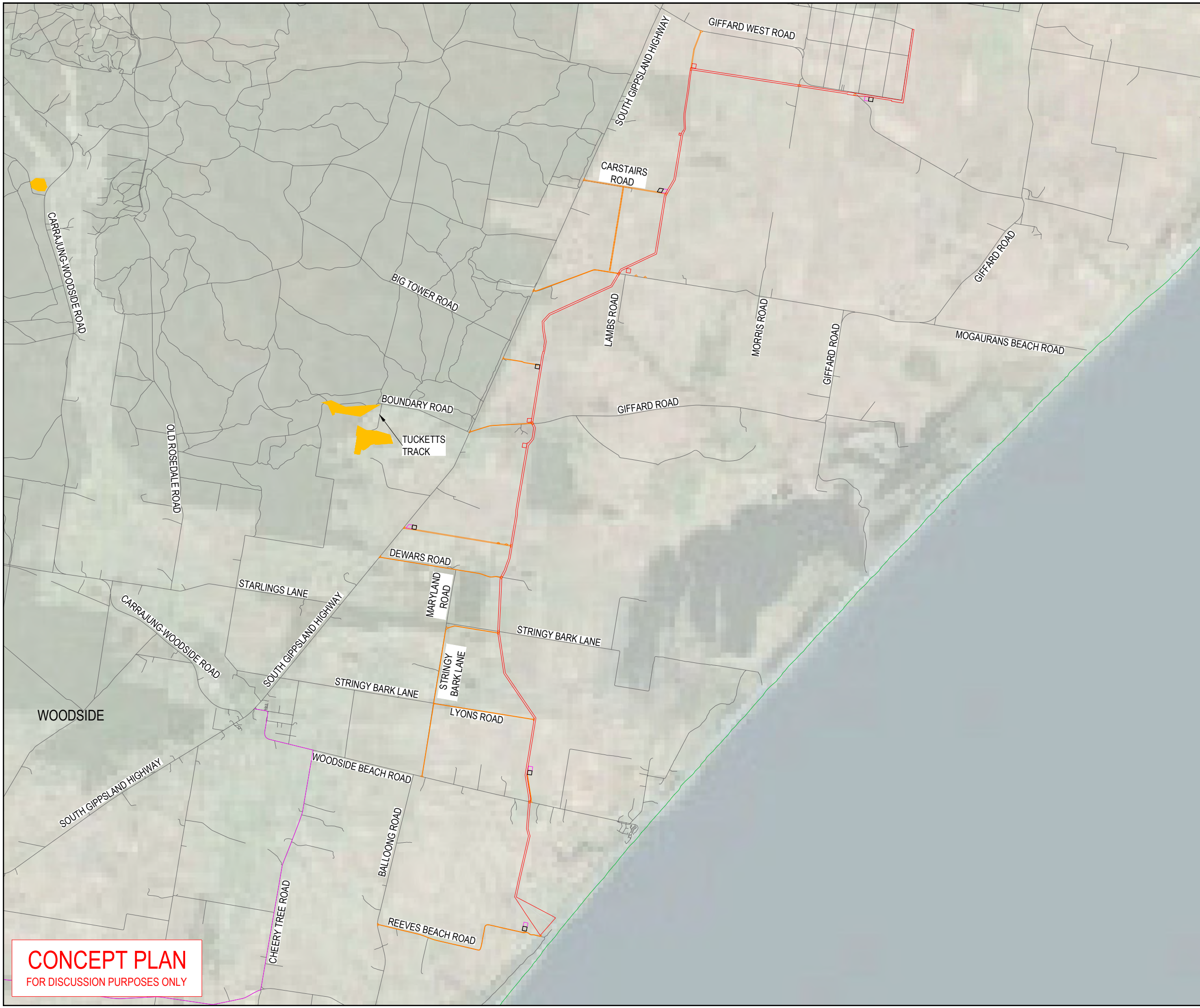
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CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

PS11848 SK043

ALL TERRAIN CRANE ROAD NETWORK
C.H. 22.01.2025





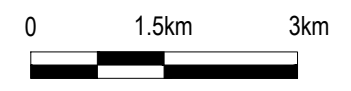
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- CONSTRUCTION CORRIDOR
- TEMPORARY ACCESS TRACK

CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

PS11848 SK044

OD ROAD NETWORK
C.H. 22.01.2025






APPENDIX C RESTRICTED STRUCTURES LOCATIONS AND
ADDITIONAL INFORMATION


PRELIMINARY ASSESSMENT

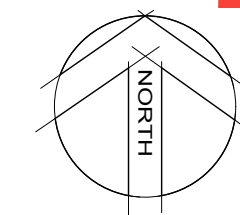
Further to the initial comments provided, further investigations (aerial imagery and street view) have been undertaken with respect to each of the identified structures which may provide some form of impedance to vehicle movements within the area surrounding the proposed cable alignment.

In terms of load limited structures, the high-level review has not indicated the presence of any load limitation signage however further onsite review of these structures is suggested to confirm suitability for any potential site movements.

With respect to height clearance structures, the following table has subsequently been prepared based on available information.

ITEM	RESTRICTION	LOCATION
7	<ul style="list-style-type: none"> — Princes Hwy - 100m west of South Gippsland Hwy — Potential low clearance to overhead lines and low mounted sign 	
11	<ul style="list-style-type: none"> — Princes Hwy - 100m west of Franklin Street — Potential low clearance to low mounted sign 	

ITEM	RESTRICTION	LOCATION
12	<ul style="list-style-type: none"> — Shakespeare St railway underpass. — Signed low clearance of 3.7m 	
15	<ul style="list-style-type: none"> — Princes Hwy – Tramway Road underpass — Potential low clearance to overpass (not signed). 	
16	<ul style="list-style-type: none"> — Princes Highway – Monash Way underpass — Potential low clearance to overpass (not signed). 	



LEGEND

- ARTERIAL ROAD
- ROAD NETWORK
- CONSTRUCTION CORRIDOR
- TEMPORARY ACCESS TRACK
- Ⓜ HEIGHT RESTRICTION
- Ⓝ LOAD LIMITATION

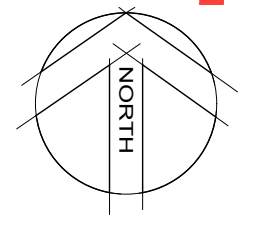


CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

PS11848 SK045

RESTRICTED STRUCTURE
LOCATIONS
C.H. 20.02.2025





LEGEND

- ARTERIAL ROAD
- ROAD NETWORK
- CABLE ALIGNMENT
- CABLE ACCESS ROAD
- HEIGHT RESTRICTION
- LOAD LIMITATION



CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

PS11848 SK046

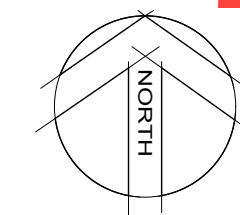
RESTRICTED STRUCTURE
LOCATIONS
C.H. 20.02.2025





APPENDIX D CABLE ALIGNMENT STAGING NODES

PRELIMINARY ASSESSMENT



LEGEND

- ARTERIAL ROAD
- ROAD NETWORK
- CONSTRUCTION CORRIDOR
- TEMPORARY ACCESS TRACK
- Ⓜ STAGING NODE



CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

PS11848 SK047

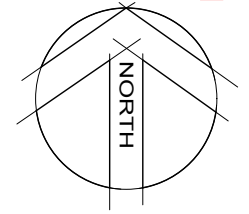
SITE STAGING ACCESS NODE
LOCATIONS
C.H. 06.02.2025









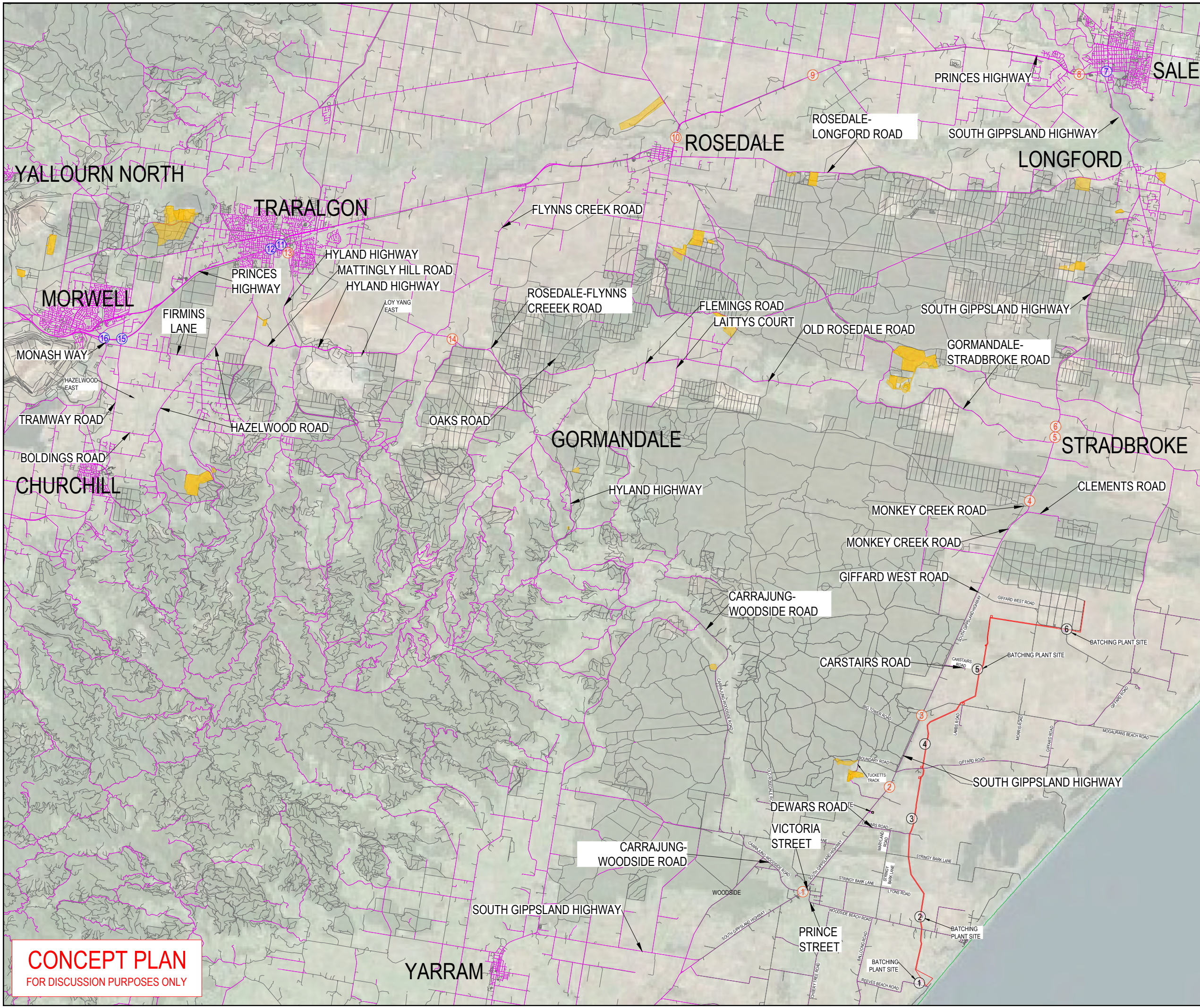
APPENDIX E BULK MATERIALS SOURCING LOCATIONS

PRELIMINARY ASSESSMENT



LEGEND

-  PBS Lvl 1 HVRN
-  LOCAL ROAD
-  CONSTRUCTION CORRIDOR
-  BULK MATERIAL SOURCE



CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

PS11848 SK052

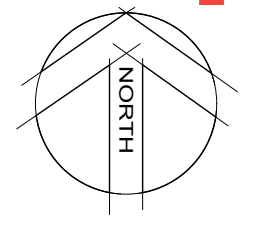
BULK MATERIAL SOURCING
LOCATIONS
C.H. 07.02.2025





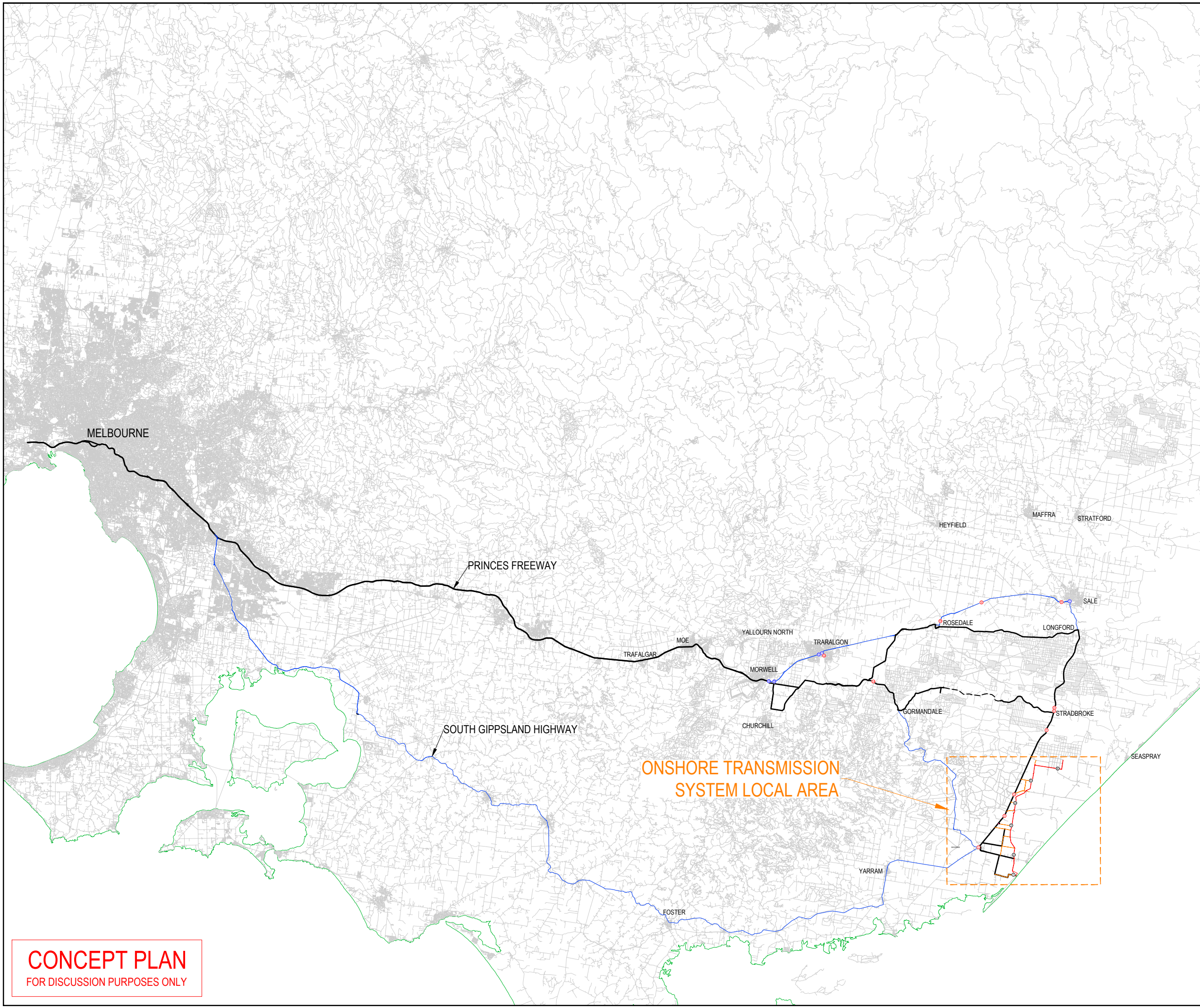
APPENDIX F PRELIMINARY VEHICLE ACCESS ROUTE
DIAGRAMS

PRELIMINARY ASSESSMENT



LEGEND

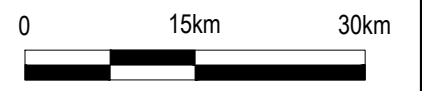
- PRIMARY VEHICLE ROUTE
- PRIMARY VEHICLE ROUTE (UNSEALED)
- ALTERNATIVE ROUTE
- LOCAL ROAD
- CONSTRUCTION CORRIDOR
- TEMPORARY ACCESS TRACK

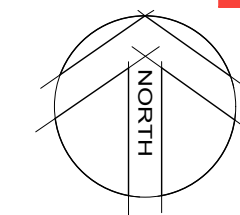


CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

PS11848 SK049

MELBOURNE TO CABLE
PRECINCT VEHICLE ACCESS
ROUTES
C.H. 10.02.2025

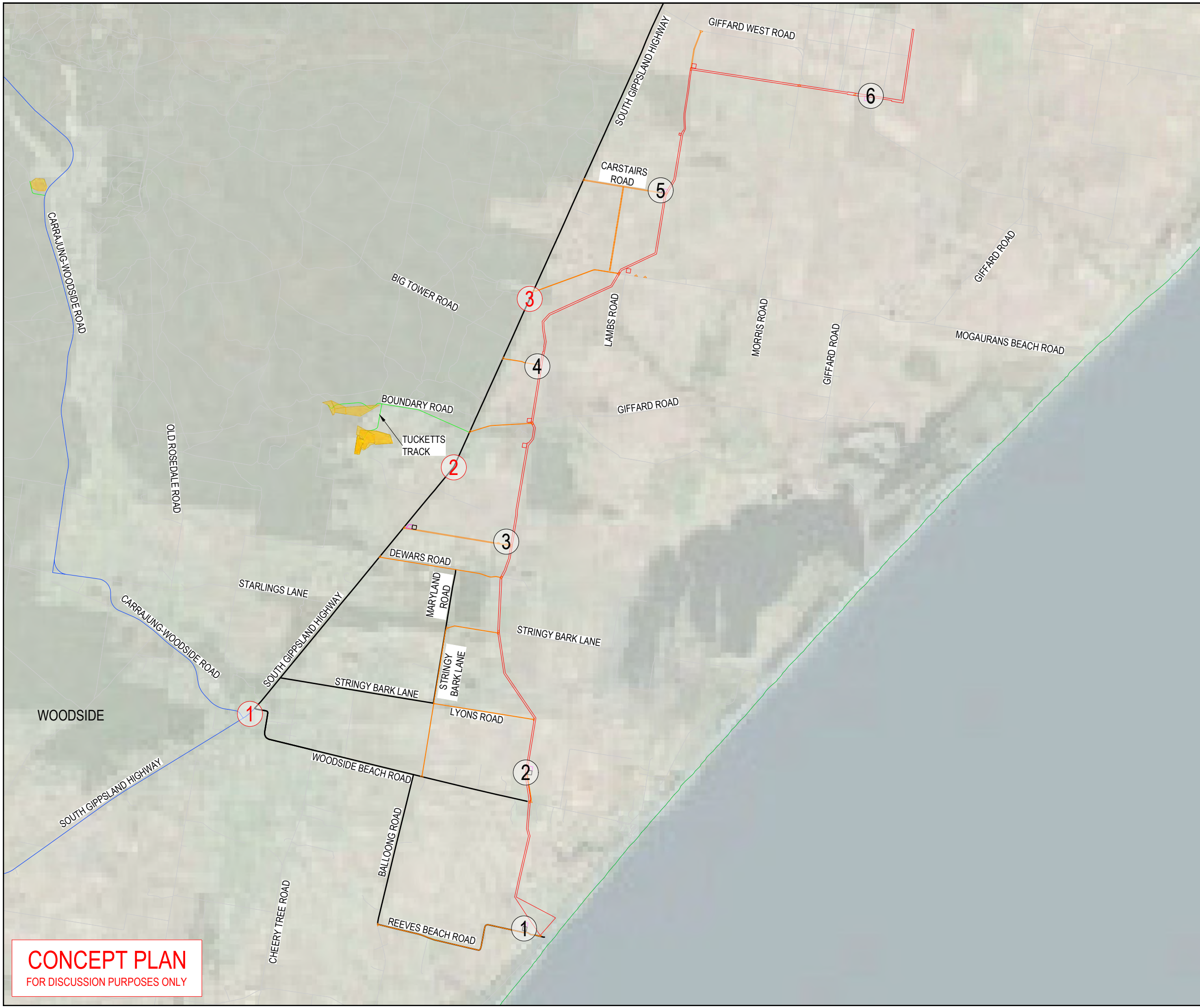




LEGEND

- PRIMARY VEHICLE ROUTE
- PRIMARY ROUTE *
- ALTERNATIVE ROUTE
- BULK MATERIALS ACCESS
- BULK MATERIAL SOURCE
- LOCAL ROAD
- CONSTRUCTION CORRIDOR
- TEMPORARY ACCESS TRACK
- STAGING NODE
- HEIGHT RESTRICTION
- LOAD LIMITATION

* ONSITE INVESTIGATION OF THIS SECTION OF THE PRIMARY ROUTE REQUIRED TO CONFIRM ACCESSIBILITY FOR ACCESS TO NODE 11 (BOTH ACCESS POINTS)



CONCEPT PLAN
FOR DISCUSSION PURPOSES ONLY

PS11848 SK050

PRIMARY VEHICLE ACCESS
ROUTE PROXIMATE TO THE
CABLE ALIGNMENT
C.H. 10.02.2025





APPENDIX G PROVIDED WORKFORCE ESTIMATIONS

PRELIMINARY ASSESSMENT



Source: SOTS - Onshore Transmission – Construction Materials Estimate – 160125.xlsx (Workforce Estimates)

PACKAGE	SCOPE TITLE	CONSTRUCTION	
		Management	Technicians
		FTE Estimate	FTE Estimate
Onshore UGC	Vegetation Clearance & Site Establishment	5	48
Onshore UGC	Ancillary Civils (batching plants)	3	30
Onshore UGC	Ancillary Civils (roading, access tracks construction)	6	60
Onshore UGC	Ancillary Civils (roading, access tracks maintenance)	2	4
Onshore UGC	Decommissioning sites (Roads and LD/BP)	7	60
Onshore UGC	Ancillary Civils (Security and Traffic)	2	19
Onshore UGC	"Excavation, Conduit Installation/backfilling/restoration, Haulage Revegetation	9	80
Onshore UGC	Joint bay/ancillary pit manufacture and construction	8	56
Onshore UGC	Cable Pulling	8	36
Onshore UGC	Jointing	9	48
Onshore UGC	HDD	2	7
Onshore UGC	Commissioning	3	30
Onshore UGC	Landfall construction - HDD Construction, Site Prep, Clean up	5	35
Onshore UGC	Landfall Marine Crew	2	12

PRELIMINARY ASSESSMENT



Appendix H

PROVIDED SUMMARY OF BULK MATERIALS
QUANTITIES

PRELIMINARY ASSESSMENT



Source: SOTS - Onshore Transmission – Construction Materials Estimate – 160125.xlsx (Bulk Material Qty - Report Table)

ACTIVITY	MOVEMENT	UNIT	VOLUME	NOTES
Materials to manufacture Thermally Stable Backfill (TSB)	Imported	m3	685,000	Transport from bulk material source to batch plant locations. Delivery is ongoing during construction of the onshore transmission system. Materials include crushed river gravel, coarse sand, fly ash and cement.
Materials for access tracks to cable alignment construction	Imported	m3	85,000	Transport from bulk material source to access track locations in each node during construction of the access road. Materials include gravels & other pavement
Materials for laydown and batch plant area construction	Imported	m3	125,000	Transport from bulk material source to laydown and batch plant locations in each node during construction of the laydown and batch plant areas. Materials primarily gravels
Materials for joint bay backfill	Imported	m3	55,000	Transport from bulk material source to joint bay locations. Material is thermal stands.
Water for construction	Imported	ML	140.5	Used in the construction of access tracks, laydown and batch plant areas, landfall and to manufacture TSB Mix. Transport form source to these locations within the construction corridor
Water for workforce amenities	Imported	ML	20.5	Transport from source to laydown locations
Water for vehicle washing (weeds and seeds)	Imported	ML	13.0	Transport from source to laydown locations
Water for revegetation	Imported	ML	52.0	Transport from source to any part of the construction corridor
TSB mix	Internal	m3	470,000	Transport from batch plant locations to trench.
Drill cuttings and spoil at landfall	Export	m3	26,000	Transport from landfall location to disposal location. Disposed progressively during construction.
Spoil from trenching and joint bays	Export	m3	525,000	Transport from trench and joint bay locations to disposal location. Disposed progressively during construction. Re-use of trench material for backfill assumed, only material displaced by TSB and joint bays disposed of.
Material disposed from access tracks to cable alignment	Export	m3	85,000	Transport from access track locations to disposal location. Disposed during demobilisation. Materials include gravels & another pavement
Material disposed from laydown and batch plant areas	Export	m3	125,000	Transport from laydown and batch plant location to disposal location. Disposed during demobilisation. Materials primarily gravels



GENERAL ASSUMPTIONS:

- Re-use of trench material for backfill assumed, only trench material displaced by TSB and joint bays disposed of.
- Excavations associated with winning materials for temporary roading, pads, TSB and Concrete ingredients not considered.
- Excavations associated with installing temporary tracks, drainage trenchless crossings, road upgrades etc. not considered.
- Material imports and disposal volumes associated with haul roads within the alignment not included.
- All water assumed imported.
- Excavations associated with shore crossing bore construction not considered. Only the volume of drill cuttings from the bore have been considered.
- Trench battering, over excavations not considered in estimates
- Current volume estimates are based on a 2D model and do not accurately consider complexities of terrain, crossfalls etc. and associated construction impacts. An allowance of 10% has been included in maximum figures relating to length to provide an estimate of material requirements due to terrain
- Trench excavation volumes are based on variable widths and depths. Trench quantities are based on the envelope of electrical concepts and native Thermal Resistivity (TR) assumptions.
- Volume estimates do not consider other geotechnical information, information about contamination etc.
- All crossings assumed open trenched i.e. waterways, roads, pipelines, transmission line



APPENDIX I PROVIDED SUMMARY OF OTHER MATERIALS
QUANTITIES

PRELIMINARY ASSESSMENT



Source: SOTS - Onshore Transmission – Construction Materials Estimate – 160125.xlsx (Cable Materials)

ITEM	MATERIAL/ COMPONENT	BUNDLE SIZE	UNIT	BUNDLE NOTE	UNITS NEEDED PER METER PER CIRCUIT (M/UNITS)	QUANTITY OF MATERIAL NEEDED PER DAY PER CIRCUIT	QUANTITY OF BUNDLES NEEDED PER DAY PER CIRCUIT	QUANTITY OF BUNDLES NEEDED PER DAY	TOTAL QUANTITY OF BUNDLES NEEDED
								Onshore Transmission	Onshore Transmission
								Max	Max
1	225 OD PVC conduit	13	units	6m lengths. Each pallet contains 13 conduits. 1m (w) x 1m (h) x 6m (l)	3	60	5	9	9,108
2	32/63 OD PVC conduit	144	units	6m lengths. Each pallet contains 12x12 conduits (144). 1m (w) x 1m (h) x 6m (l)	2	40	0.3	1	548
3	Conduit spacers	36	units	Each pallet contains 36 spacers. (1.2 (w) x 1.2m (h) x 0.6m (l)	0.5	60	2	3	3,289
4	Polymeric cable cover	300	units	300 in pallet 1.2 (w) x 0.5 m (h) x 0.6m (l) (2m length, 300mm wide)	4	240	1	2	3,157
5	Warning tape	500	m		5	600	1	2	2,368

PRELIMINARY ASSESSMENT

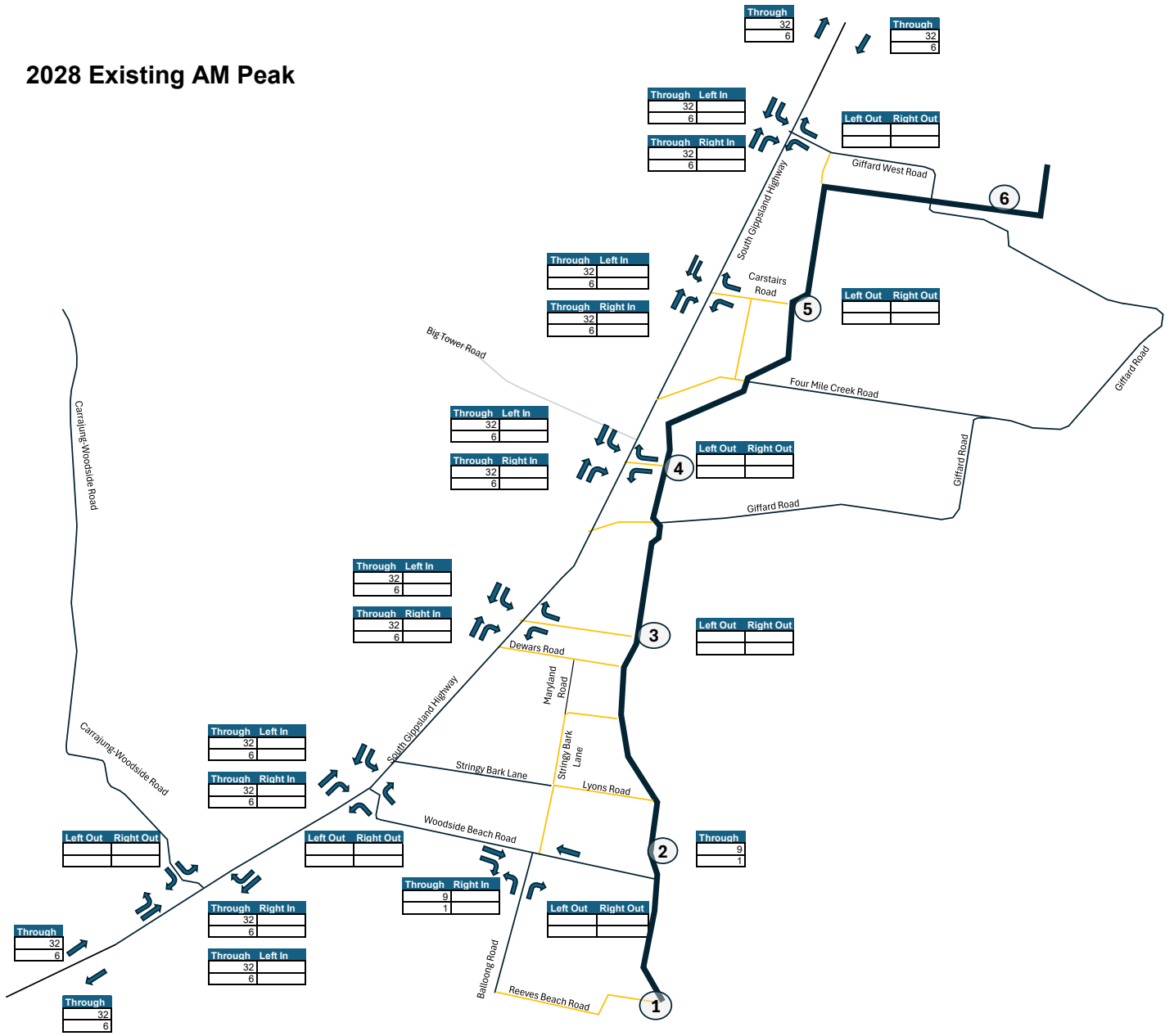


ITEM	MATERIAL/ COMPONENT	BUNDLE SIZE	UNIT	BUNDLE NOTE	QUANTITY OF BUNDLES NEEDED OVER 12 MONTH INSTALLATION DURATION	TOTAL QUANTITY OF BUNDLES NEEDED
					Onshore Transmission	Onshore Transmission
					Max	Max
6	HV cable	1000	m	1000m per HV cable per drum. Each drum 36-50 tonne (with cable) and 5m (h) x 2.4m (w).	711	710,400
7	Fibre optic cable	5000	m	5000m per cable per drum. Each drum 750kg and 1.2m (h) x 1.5 (w).	95	473,600
8	Link box pit	1	unit	Each link box pit is 1.2m (w) x 1.2 (l) x 0.6m (d)	237	236.8
9	Link box	1	unit	Each link box is 0.7m (w) x 0.7 (l) x 0.5m (d)	237	236.8
10	Bonding cables	750	m	750m of cable 1.2m (h) x 1.5 (w).	9	7104
11	Fibre optic splicing pit	1	unit	Each pit is 1.2m (w) x 1.2 (l) x 0.6m (d)	237	236.8
12	Concrete prefabricated joint bays	1	unit	Each joint bay is approx. 12m (l) x 3m (w) x 2m (h)	592	592
13	HV cable straight joints	1	unit	Comes in boxes 3m (l) x 0.5m (w) x 0.5m (h)	710	710

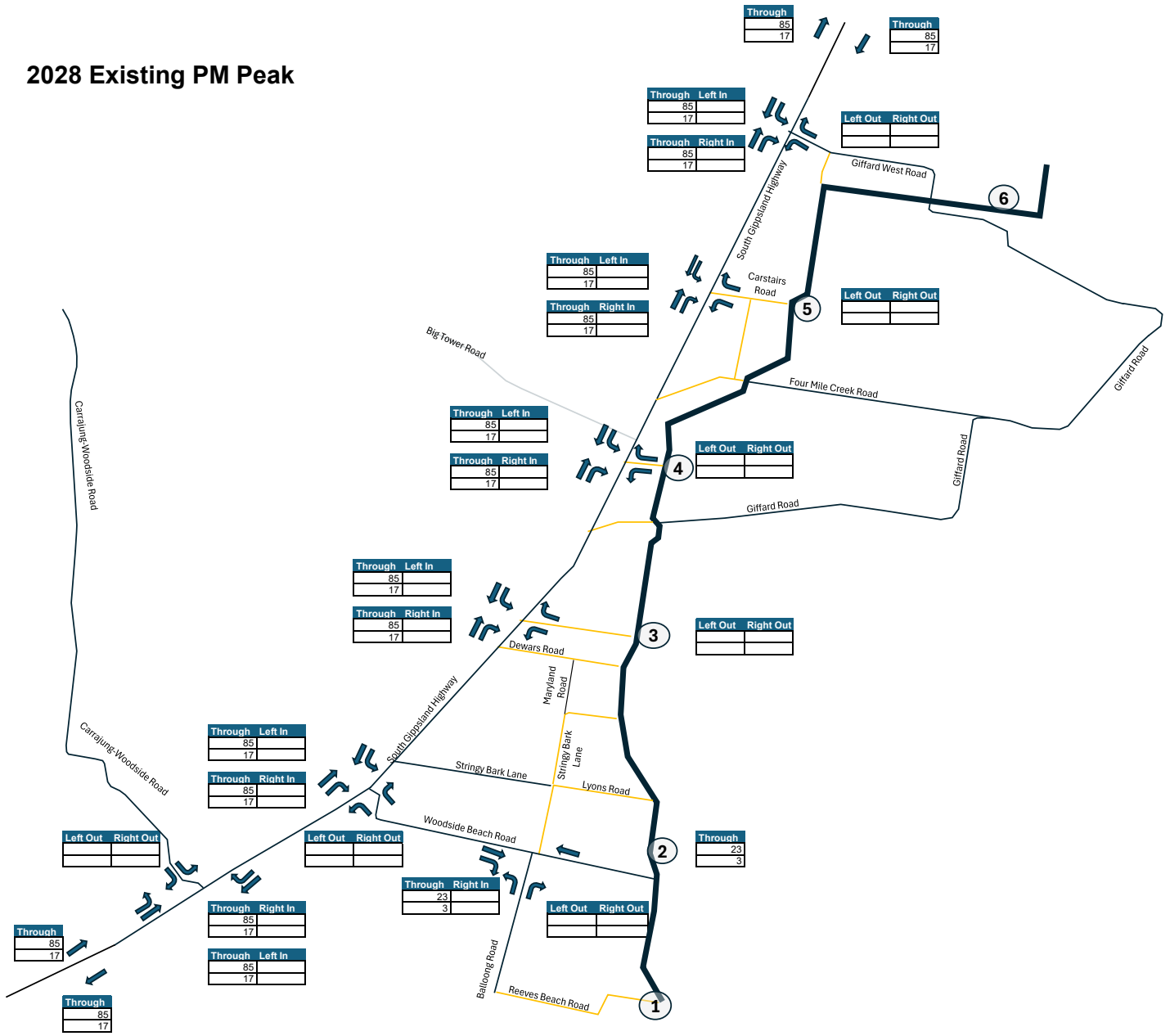
Appendix C

Traffic Flow Diagrams

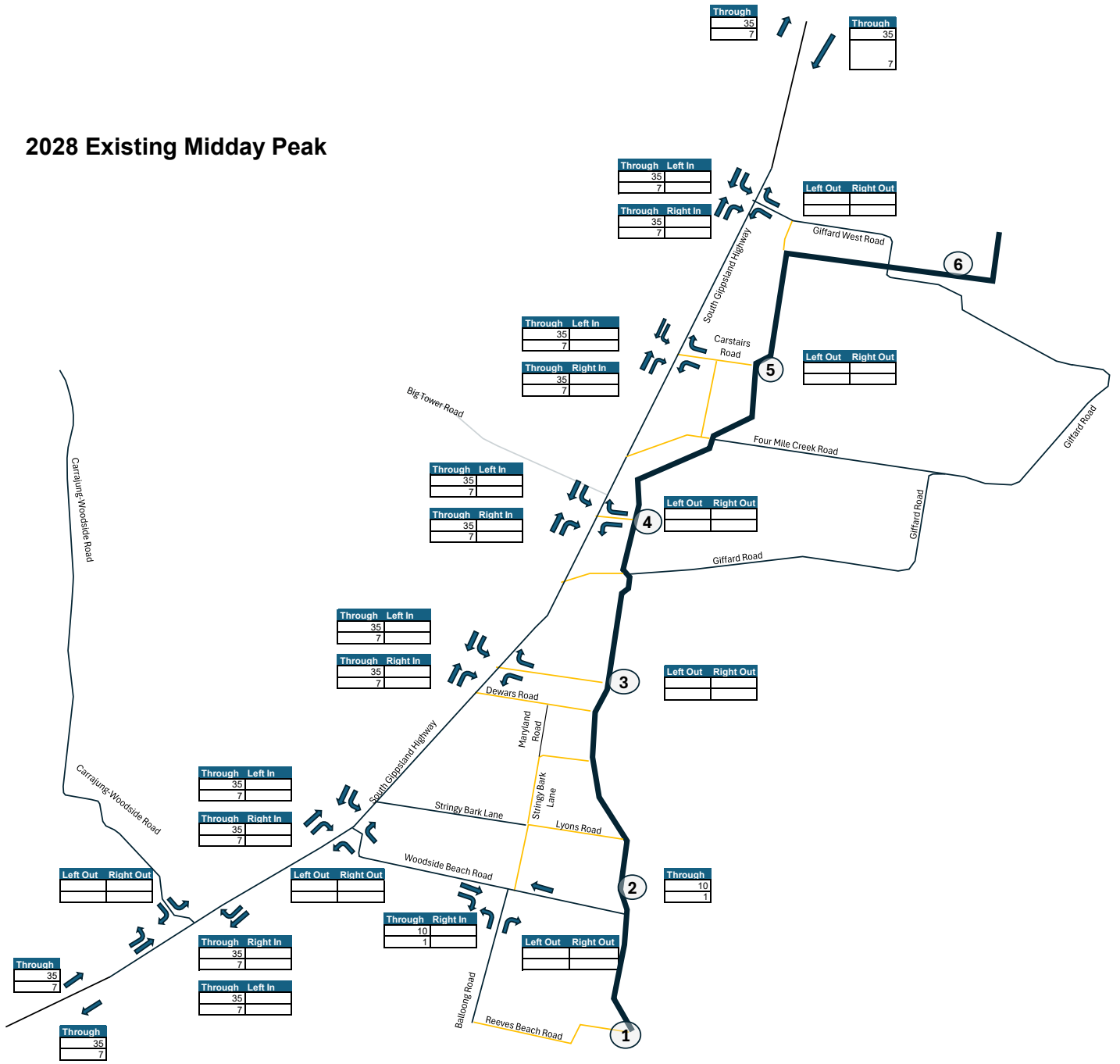
2028 Existing AM Peak



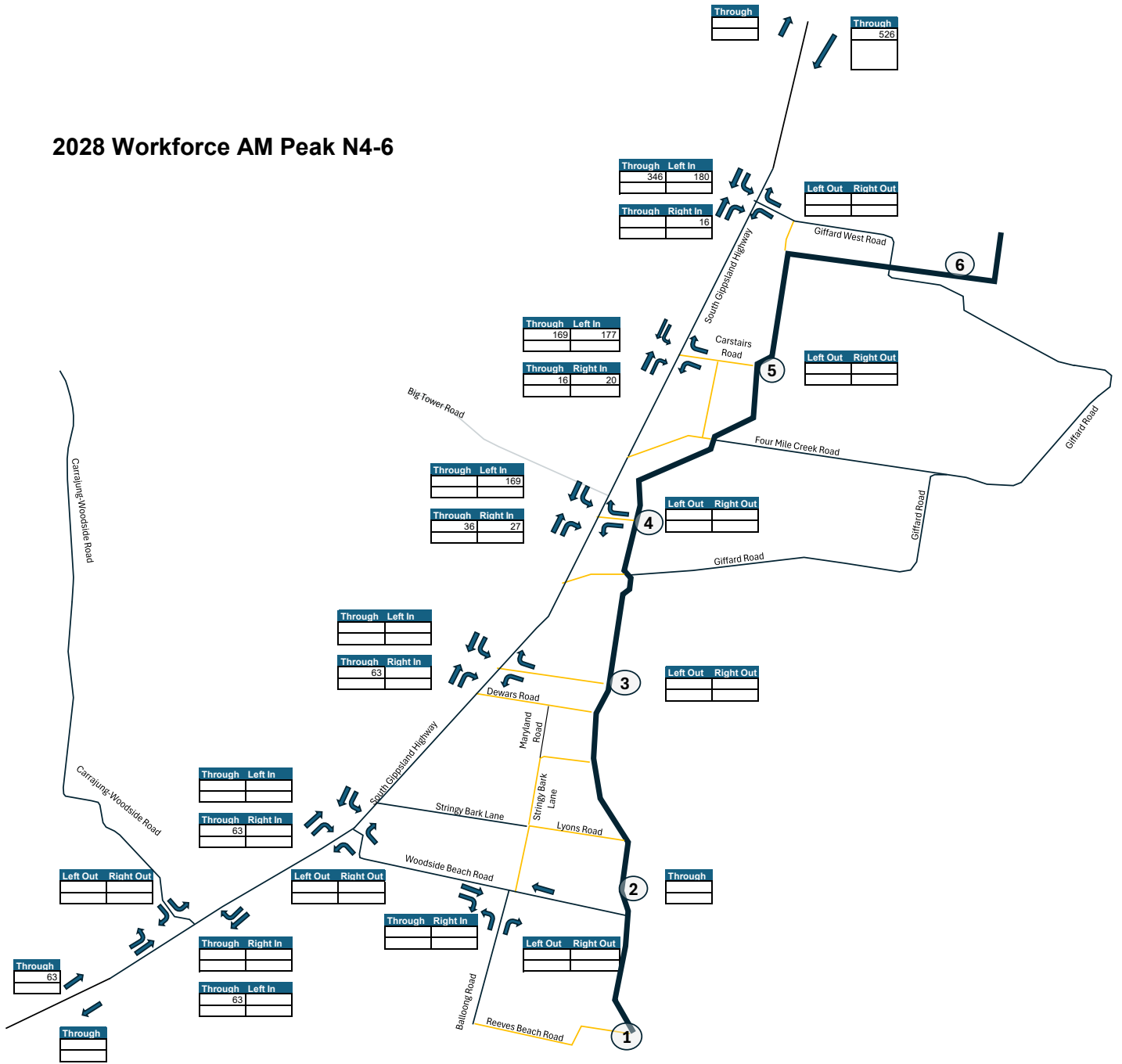
2028 Existing PM Peak



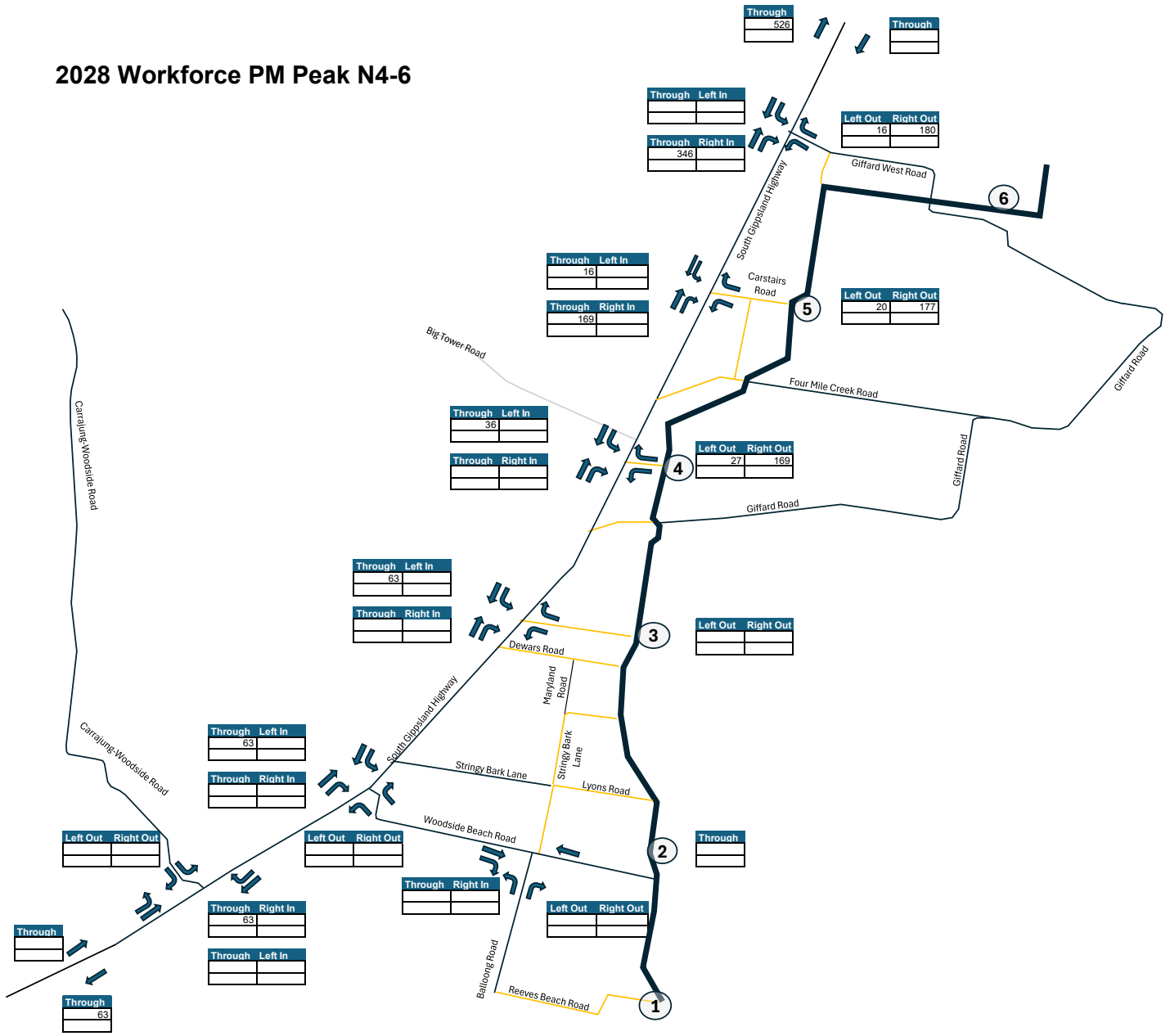
2028 Existing Middyay Peak



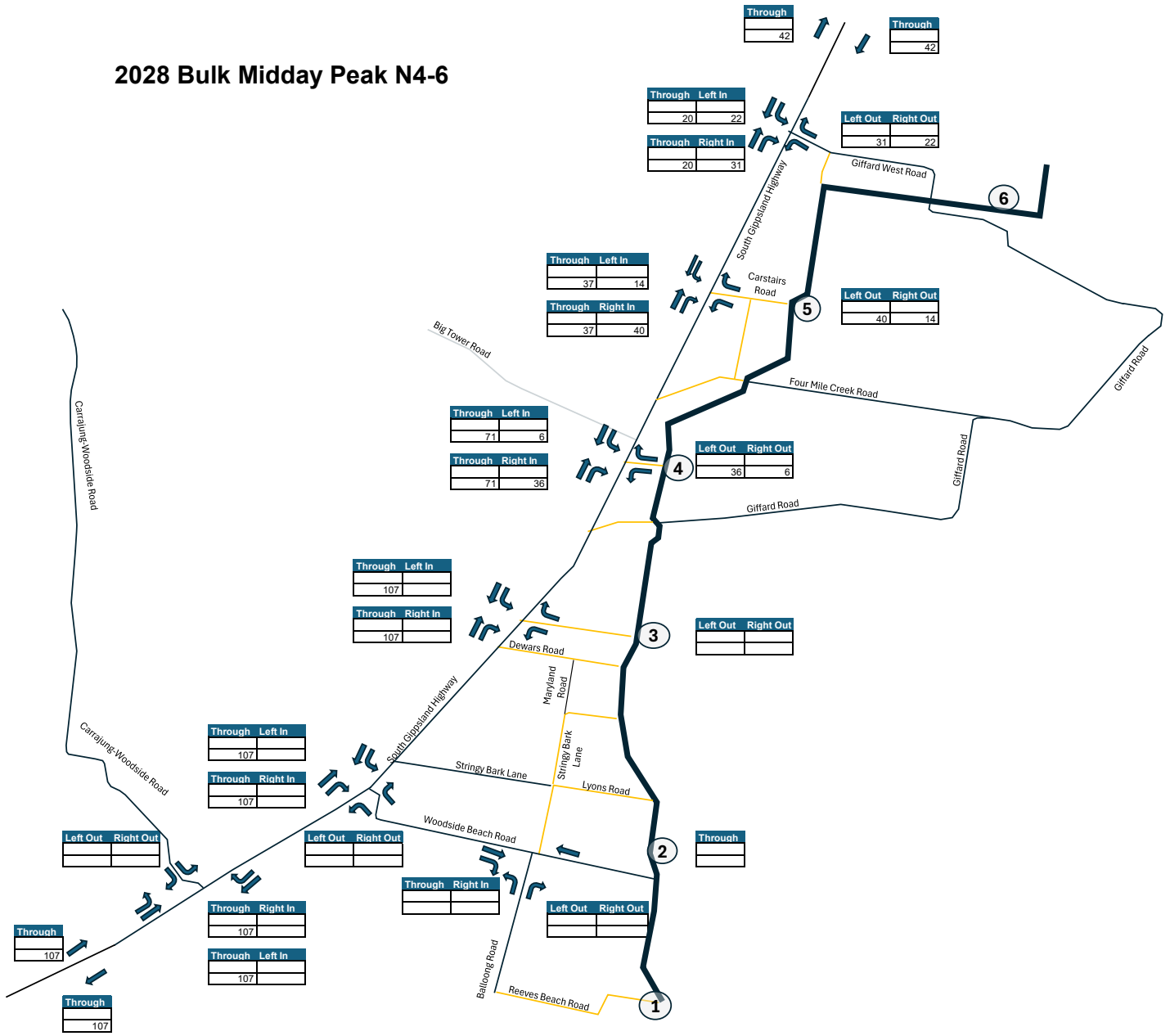
2028 Workforce AM Peak N4-6



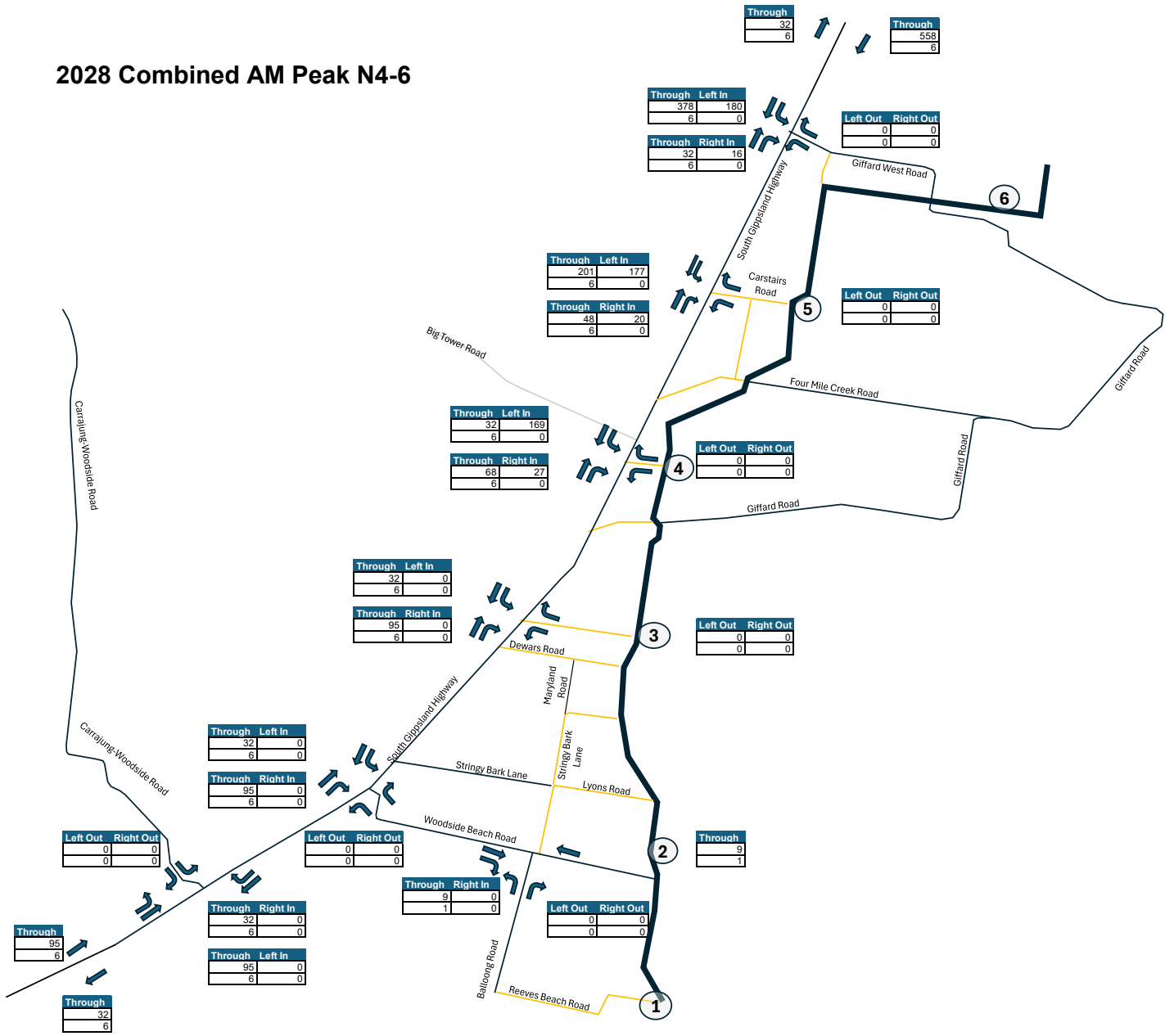
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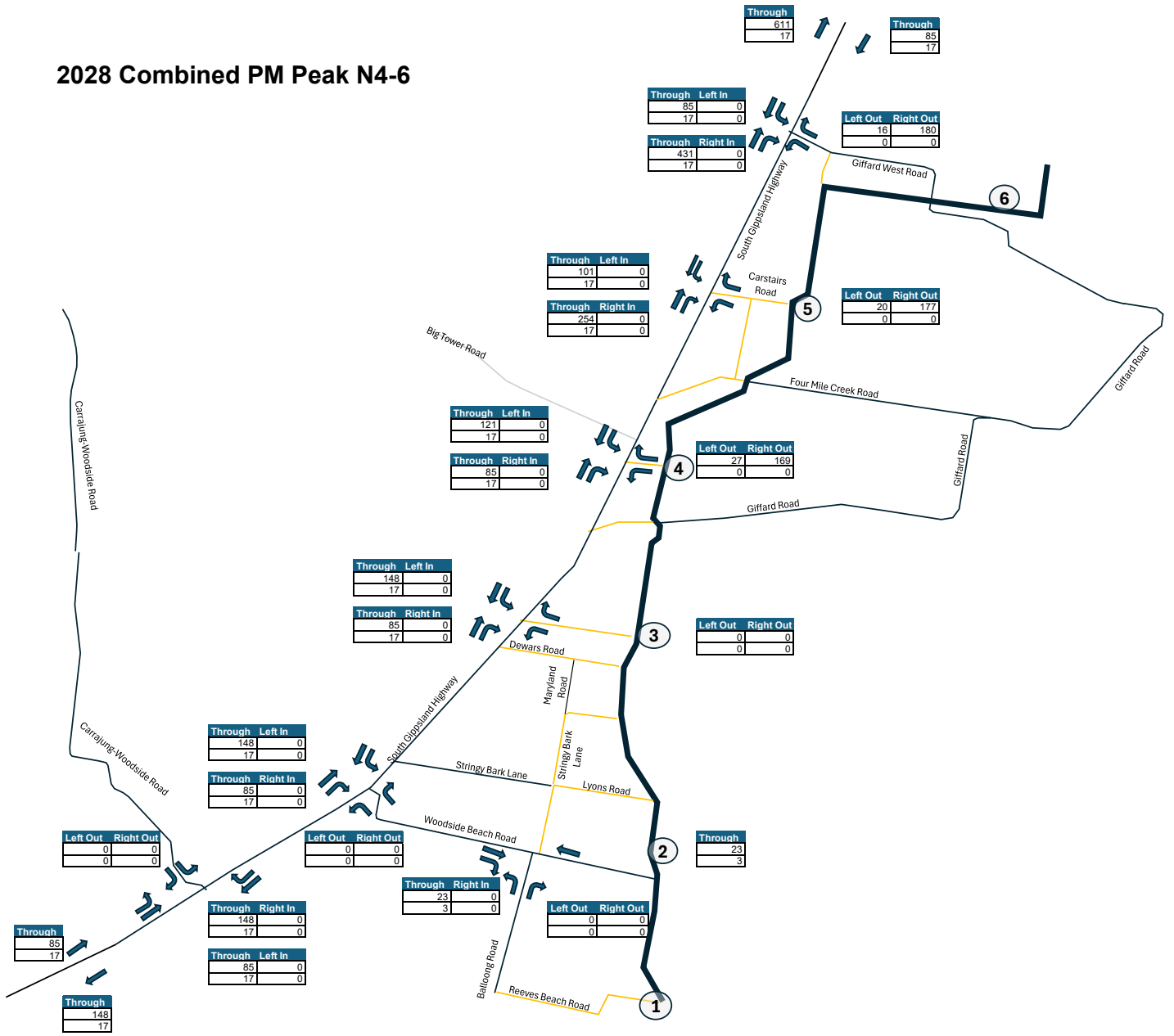
2028 Bulk Midday Peak N4-6



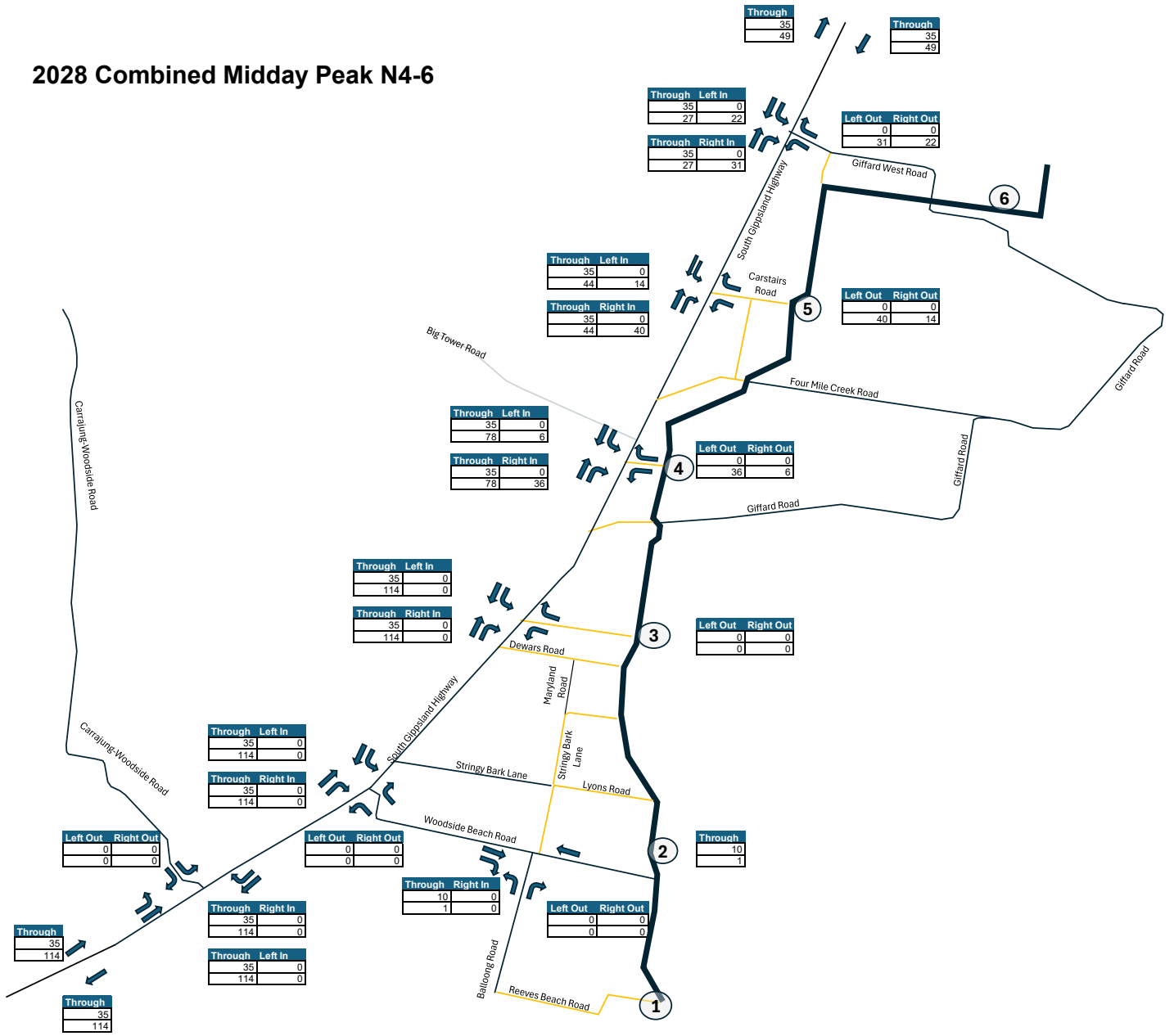
2028 Combined AM Peak N4-6



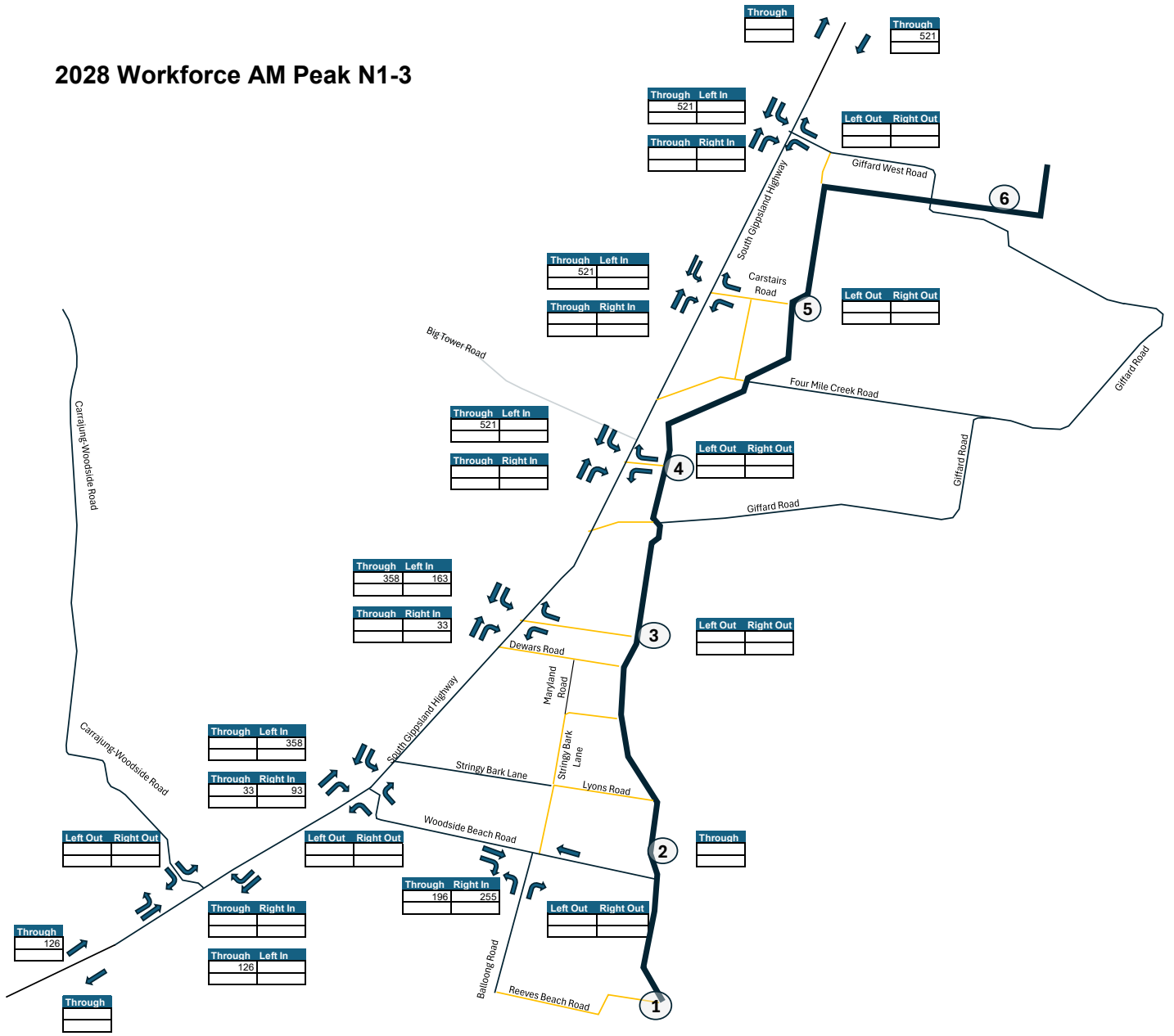
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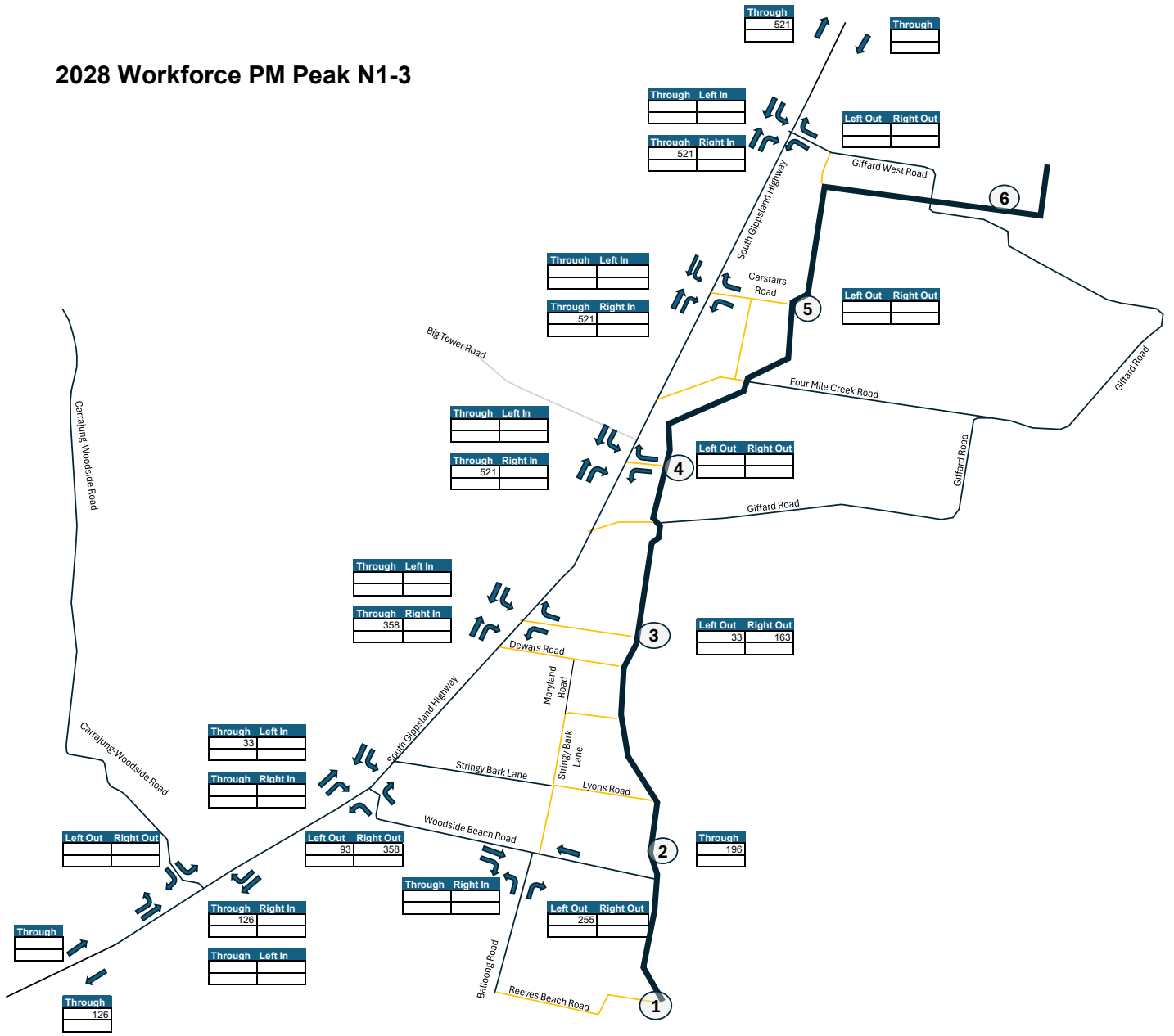
2028 Combined Midday Peak N4-6



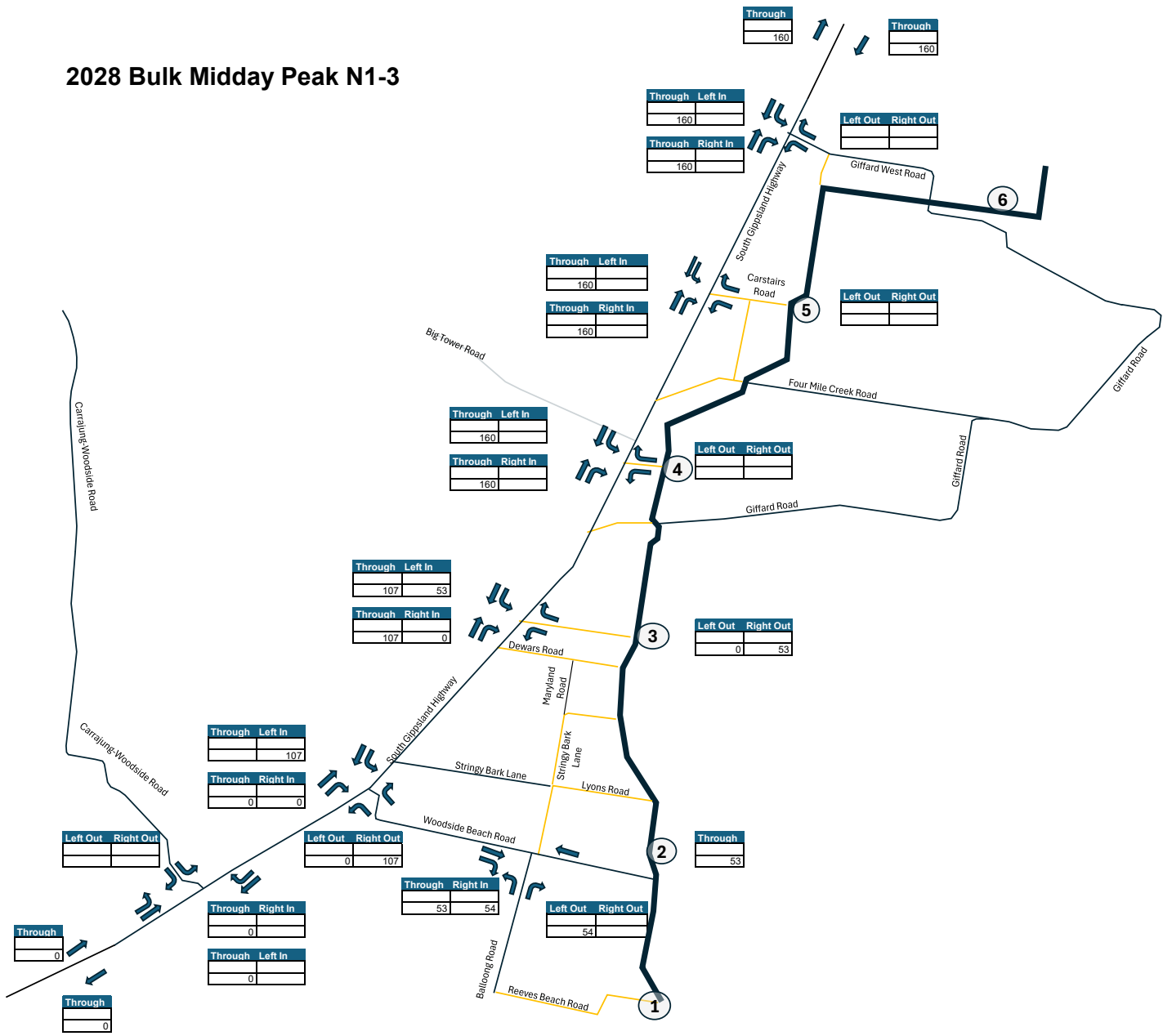
2028 Workforce AM Peak N1-3



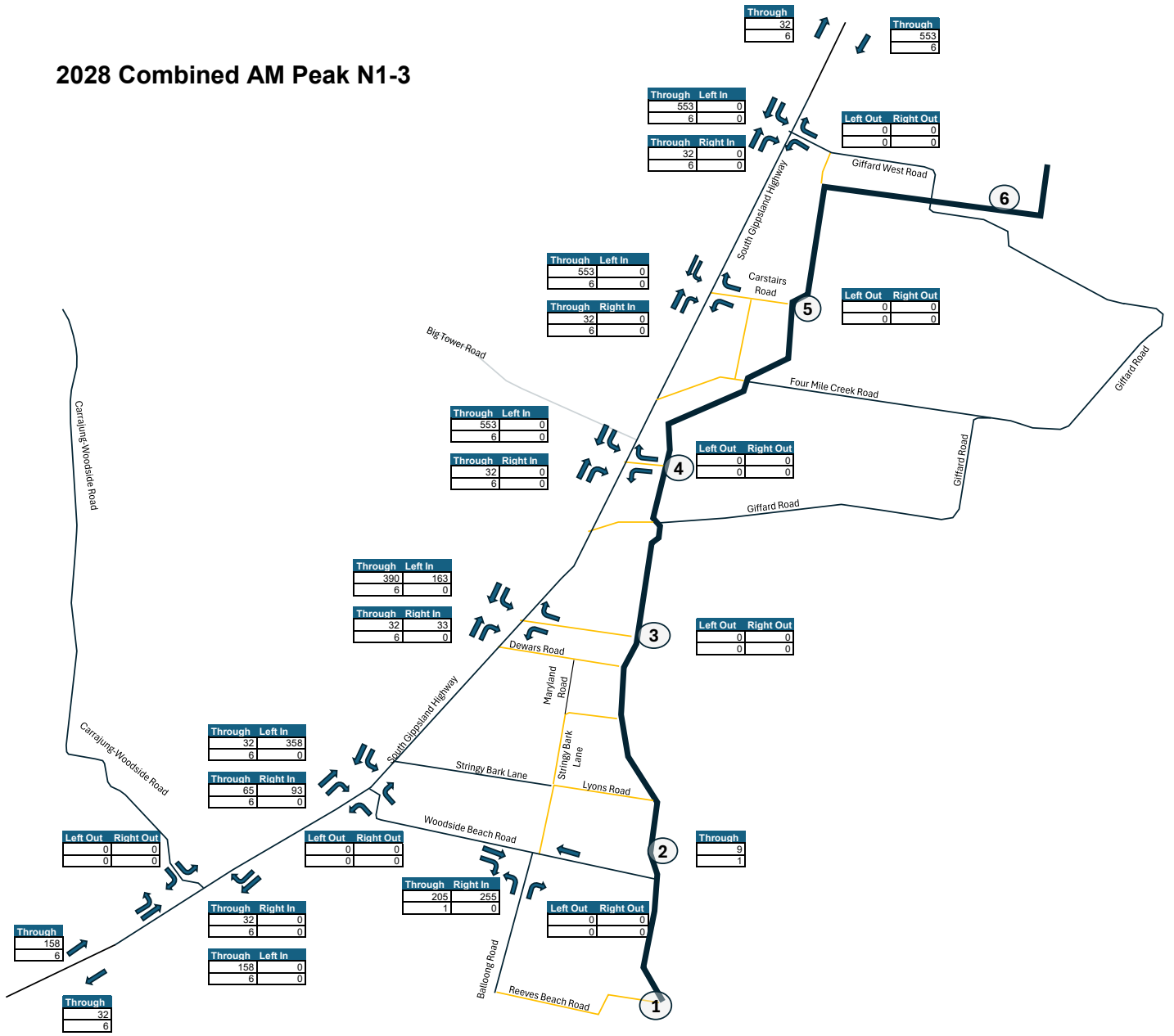
2028 Workforce PM Peak N1-3



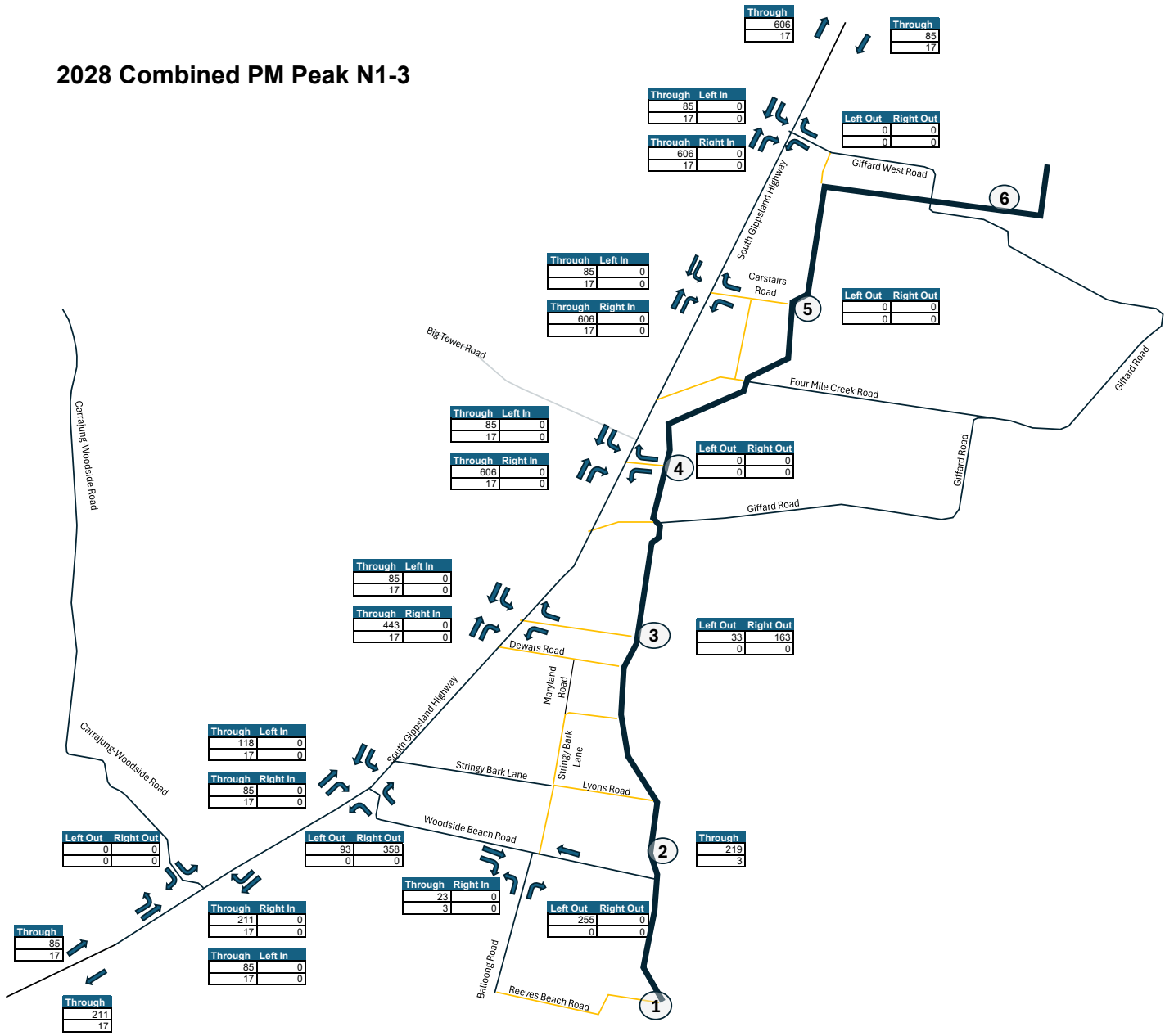
2028 Bulk Midday Peak N1-3



2028 Combined AM Peak N1-3



2028 Combined PM Peak N1-3



Appendix D

Risk Register

Impact or Risk ID	Impact or risk pathway	Initial mitigation	Initial impact or risk level					Final mitigation	Residual impact or risk level				
			Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level		Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level
Construction													
TTP-I001	Additional traffic during construction may result in increased congestion, compromising road operation within the vicinity of the project area.	TTP-M002 Traffic Management Plan to include measures for the management of light and heavy vehicle routes and reduction in trips where possible. Heavy vehicle routes would be investigated further during the TMP development to reduce the risk of accidents and enhance safety for all road users. Given that the increase in traffic volumes would be temporary, it is expected that temporary measures would be sufficient to reduce delays to negligible levels.	Medium	Medium	Moderate (C)	-	-	TTP-M001 Stakeholder Engagement Plan to inform the community and other stakeholders of changes in transport conditions such as the increase in traffic expected and likely peak times so traffic can be avoided if desired. TTP-M005 Site Access Strategy to identify suitable routes workers will use to access each site, method of travel (carpooling, buses, etc), parking and time of arrivals and departures to reduce the traffic volumes on roads and intersection during peak times. The temporary accommodation of workers is to be outlined in the Workforce Accommodation Strategy in Technical Report R: Social Assessment and access to and from these locations will be specified in the Site Access Strategy.	Low	Medium	Minor (D)	-	-
TTP-I002	Additional traffic during construction may result in reduced safety within the vicinity of the project area.	TTP-M002 Traffic Management Plan to identify constraints and implement mitigation measures such as temporary traffic controls, structural risk management and local road safety enhancements which are to be developed and managed in agreement with road authorities.	Medium	Medium	Moderate (C)	-	-	TTP-M001 Stakeholder Engagement Plan for agreement and finalisation of final B-Double and OSOM transportation options with relevant road authorities. This would consider route suitability to accommodate heavy vehicles and road user safety to minimise the risk of accidents and ensure the safety of all road users. This would include obtaining necessary relevant permits from NHVR and Department of Transport and Planning for travel. TTP-M004 Heavy Vehicle Transport Route Assessment planned to be used during construction. This should include route assessments to identify constraints such as limited pavement capacity, road geometry, overhead structures (i.e. bridges, overpasses, etc.), signage clearance, and other physical or operational limitations.	Low	Medium	Minor (D)	-	-
TTP-I003	Insufficient road network infrastructure to accommodate safe movement of oversized over-mass loads which may result in vehicles driving off carriageway.	TTP-M002 Traffic Management Plan to identify constraints and implement mitigation measures such as temporary traffic controls, structural risk management and local road safety enhancements which are to be developed and managed in agreement with road authorities.	Medium	Medium	Moderate (C)	-	-	TTP-M001 Stakeholder Engagement Plan for agreement and finalisation of final B-Double and OSOM transportation options with relevant road authorities. This would consider route suitability to accommodate heavy vehicles and road user safety to minimise the risk of accidents and ensure the safety of all road users. This would include obtaining	Low	Medium	Minor (D)	-	-

Impact or Risk ID	Impact or risk pathway	Initial mitigation	Initial impact or risk level				Final mitigation	Residual impact or risk level					
			Receptor sensitivity	Magnitude	Consequence level	Likelihood		Risk level	Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level
								necessary relevant permits from NHVR and Department of Transport and Planning for travel. TTP-M004 Heavy Vehicle Transport Route Assessment planned to be used during construction. This should include route assessments to identify constraints such as limited pavement capacity, road geometry, overhead structures (i.e. bridges, overpasses, etc.), signage clearance, and other physical or operational limitations.					
TTP-I004	Proposed access locations exacerbate or create new road safety issues. Risk of crash at intersection of access road and public road due to non-complying sight lines, stopping distance and lack of lighting.	<p>TTP-M002 Traffic Management Plan to implement measures that may be required to provide safe access and egress to and from the proposed construction access points. Recommended measures include:</p> <ul style="list-style-type: none"> - Confirmation of access road locations - Sight distance checks to confirm restrictions at both direct access and wider access intersections - Provision of a temporary speed limit where sight distances are found to be restricted. The feasibility and duration of any temporary speed limit changes would be subject to approval by relevant road authorities and may not be supported for extended periods during construction. Where temporary speed limit reductions are implemented, provision of appropriate advance warning signage. - Localised vegetation removal where possible at relevant intersections after appropriate environmental (flora, fauna and cultural) impact assessments have been completed to improve sight distance - Other additional traffic management measures such as advance warning signage, line markings, driver's code of conduct, provision of passing bays etc. in the vicinity of the proposed site access points, particularly during the construction peak, in the event that more than a single 	Medium	Medium	Moderate (C)	-	-	<p>TTP-M001 Stakeholder Engagement Plan to obtain relevant road authorities' input on transport management particularly during the development of the TMP (TTP-M002) and to give the community and other stakeholders adequate notice of any anticipated changes to transport conditions including road and lane closures associated with works.</p> <p>TTP-M003 Road Safety Audits at:</p> <ul style="list-style-type: none"> o All access points onto both minor and major roads to ensure all intersections and entry points can provide safe vehicle movements to the satisfaction of the responsible road authorities. o Access roads and roads to be used and their intersections with the public road network to confirm upgrade requirements. <p>TTP-M004 Heavy Vehicle Transport Route Assessment to assess and confirm final routes and provide the necessary mitigation measures to ensure that construction heavy vehicle movements can be safely accommodated on the road network including at intersections. The assessments should consider route options, safety, alignment, cross section and pavement design.</p> <p>TTP-M005 Site Access Strategy which would be developed to investigate and manage each of the access points to provide safe access and egress for construction vehicles with consideration of the following:</p> <ul style="list-style-type: none"> - T-intersection design for all access points intersecting with the public road network, with intersection 	Low	Medium	Minor (D)	-	-

Impact or Risk ID	Impact or risk pathway	Initial mitigation	Initial impact or risk level					Final mitigation	Residual impact or risk level				
			Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level		Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level
		<p>heavy vehicle requires access due to the limited road width at some of the locations.</p> <p>Following completion of works, consideration should be made to remove new access points built for the transmission alignment construction.</p>						<p>angles between 70-90 degrees, in accordance with Austroads guidance.</p> <ul style="list-style-type: none"> - Potential road section upgrades for roads providing access to the construction access points, notably for roads such as Giffard West Road where the road width at some points is insufficient to accommodate safely heavy vehicle bidirectional movements and there are no road shoulders to cater for the heavy vehicle turning movements. - Consideration of B-Double and OSOM delivery time to determine if time restrictions could be implemented to reduce potential vehicular conflicts during project peak periods at direct access intersections 					
TTP-I005	Proposed access locations exacerbate or create new road safety issues. Risk of crash at intersection of public roads due to non-complying sight lines, stopping distance, lack of lighting and space restrictions.	<p>TTP-M002 Traffic Management Plan to implement measures that may be required to provide safe access and egress to and from the proposed construction access points. Recommended measures include:</p> <ul style="list-style-type: none"> - Confirmation of access road locations - Sight distance checks to confirm restrictions at both direct access and wider access intersections - Provision of a temporary speed limit where sight distances are found to be restricted. The feasibility and duration of any temporary speed limit changes would be subject to approval by relevant road authorities and may not be supported for extended periods during construction. Where temporary speed limit reductions are implemented, provision of appropriate advance warning signage. - Localised vegetation removal where possible at relevant intersections after appropriate environmental (flora, fauna and cultural) impact assessments have been completed to improve sight distance 	Medium	Medium	Moderate (C)	-	-	<p>TTP-M001 Stakeholder Engagement Plan to obtain relevant road authorities' input on transport management particularly during the development of the TMP (TTP-M002) and to give the community and other stakeholders adequate notice of any anticipated changes to transport conditions including road and lane closures associated with works.</p> <p>TTP-M003 Road Safety Audits at:</p> <ul style="list-style-type: none"> o All access points onto both minor and major roads to ensure all intersections and entry points can provide safe vehicle movements to the satisfaction of the responsible road authorities. o Access roads and roads to be used and their intersections with the public road network to confirm upgrade requirements. <p>TTP-M004 Heavy Vehicle Transport Route Assessment to assess and confirm final routes and provide the necessary mitigation measures to ensure that construction heavy vehicle movements can be safely accommodated on the road network including at intersections. The assessments should consider route options, safety, alignment, cross section and pavement design.</p> <p>TTP-M005 Site Access Strategy which would be developed to investigate and manage each of the access points to provide safe access and egress for</p>	Low	Medium	Minor (D)	-	-

Impact or Risk ID	Impact or risk pathway	Initial mitigation	Initial impact or risk level				Final mitigation	Residual impact or risk level					
			Receptor sensitivity	Magnitude	Consequence level	Likelihood		Risk level	Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level
		<ul style="list-style-type: none"> - Other additional traffic management measures such as advance warning signage, line markings, driver's code of conduct, provision of passing bays etc. in the vicinity of the proposed site access points, particularly during the construction peak, in the event that more than a single heavy vehicle requires access due to the limited road width at some of the locations. <p>Following completion of works, consideration should be made to remove new access points built for the transmission alignment construction.</p>						<p>construction vehicles with consideration of the following:</p> <ul style="list-style-type: none"> - T-intersection design for all access points intersecting with the public road network, with intersection angles between 70-90 degrees, in accordance with Austroads guidance. - Potential road section upgrades for roads providing access to the construction access points, notably for roads such as Giffard West Road where the road width at some points is insufficient to accommodate safely heavy vehicle bidirectional movements and there are no road shoulders to cater for the heavy vehicle turning movements. <p>Consideration of B-Double and OSOM delivery time to determine if time restrictions could be implemented to reduce potential vehicular conflicts during project peak periods at direct access intersections</p>					
TTP-I006	Road/lane closures or disruptions result in impacts on local access or business operations	<p>TTP-M002 Traffic Management Plan will be developed in consultation with key stakeholders to minimise disruptions during temporary road closures. The TMP will ensure that local access is maintained for landowners/local residents. Access arrangements will be coordinated in advance with affected property owners to minimise disruptions and ensure safe, reasonable access to private properties. Where possible, the TMP is to ensure continued access for local motorists, school buses, pedestrians and cyclists, following road design standards and in collaboration with landholders and relevant parties. School bus routes, particularly on South Gippsland Highway, are an important consideration. Closures are to be scheduled during weekends or school holidays whenever possible to reduce impacts. Additionally, seasonal factors such as bushfire season and major local events will be assessed to minimise inconvenience, especially on Woodside Beach Road. The TMP should aim to facilitate necessary</p>	<i>Medium</i>	<i>Medium</i>	<i>Moderate (C)</i>	-	-	<p>TTP-M001 Stakeholder Engagement Plan is to include road and lane closures notification to impacted residents and emergency services where vehicular passage may not be available or be limited. The SEP should include a detailed review of specific landowners that may be directly affected by temporary road closures, with targeted engagement sessions conducted.</p>	<i>Medium</i>	<i>Low</i>	<i>Minor (D)</i>	-	-

Impact or Risk ID	Impact or risk pathway	Initial mitigation	Initial impact or risk level					Final mitigation	Residual impact or risk level				
			Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level		Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level
		roadworks while maintaining safe and efficient connectivity in the area											
TTP-I007	Plant and spoil trucks deposit construction debris on public roads leading to dust generation and loss of amenity and public health and safety issues.	TTP-M002 Traffic Management Plan will include the development of dust and debris management strategies and will include dust suppression methods such as covering vehicle loads and street sweeping if required necessary.	Medium	Low	Minor (D)	-	-	No additional mitigation measures	Medium	Low	Minor (D)	-	-
TTP-I008	Movement of construction vehicles resulting in potential road closures/diversions and delays to public transport and limited access for school buses.	Stakeholder Engagement Plan (TTP-M001) will include consultation with local councils and bus operators during the development of the TMP to ensure any affected public and/or school routes have appropriate diversions in place that still service necessary stakeholders and deliver acceptable travel time changes. Traffic Management Plan (TTP-M002) will include traffic management measures to manage road closures and safe bidirectional vehicular passage. A review of existing bus services will be undertaken to confirm bus services that may be affected prior to construction commencement.	Medium	Low	Minor (D)	-	-	No additional mitigation measures	Medium	Low	Minor (D)	-	-
TTP-I009	Additional project generated traffic and construction works impact other vulnerable road or site users resulting in a reduction in public safety and amenity.	TTP-M002 Traffic Management Plan will include details pertaining to construction vehicle travel times and ensure major works in sensitive areas such as Woodside Primary School are to be scheduled during weekends or school holidays whenever possible to reduce impacts.	Medium	Low	Minor (D)	-	-	No additional mitigation measures	Medium	Low	Minor (D)	-	-
TTP-I010	Public roads experience damage or deterioration due to the movement of heavy vehicles, machinery and plant resulting in crashes.	TTP-M001 Stakeholder Engagement Plan will require agreements with road asset owners, includes DTP and Wellington Shire Council, on the following which should be in place: - Extent and form of dilapidation surveys to be undertaken prior to works commencing, either by way of photographic or more detailed survey vehicle techniques. This would provide a comprehensive and accurate baseline of pavement conditions, shoulder integrity, drainage infrastructure	Medium	Low	Minor (D)	-	-	No additional mitigation measures	Medium	Low	Minor (D)	-	-

Impact or Risk ID	Impact or risk pathway	Initial mitigation	Initial impact or risk level					Final mitigation	Residual impact or risk level				
			Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level		Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level
		<p>and any pre-existing defects at the commencement of construction.</p> <ul style="list-style-type: none"> - Define a road maintenance methodology, which would typically involve a drive-over inspection at a minimum frequency of one inspection per month. The checking procedures would need to be agreed with, along with the intervention criteria, treatments and response timeframes based on the pavement distress type identified (e.g. potholes, surface treatment, cleaning etc.). - In case where significant structural or safety related deficiencies are identified, particularly along high-volume and/or heavy vehicle routes, targeted pre-construction upgrades may be required to ensure roads are fit for purpose. The scope and timing of any such upgrades should be determined in consultation with relevant road authorities - Post construction review and identification and hand-back protocols would need to be agreed and documented. <p>If impacts occur during the construction period, rectification should be implemented to reinstate road to an equivalent standard to existing condition or better in agreement with relevant road authority.</p>											
TTP-R001	Given the rural location and construction site locations emergency access will need to be considered / maintained (notable fire risks) to ensure adequate access and minimal delays for emergency vehicles reaching the worksite.	<p>Stakeholder Engagement Plan (TTP-M001) to include active engagement with local emergency service operators to inform changes in transport conditions, in particular any road or traffic lane closures.</p> <p>Traffic Management Plan (TTP-M002) to include appropriate traffic management measures, in accordance with relevant road design standards, including proposed measures to maintain emergency services access. These requirements that may be developed in consultation with relevant emergency service stakeholders should</p>	Medium	Medium	Moderate (C)	Unlikely	Low	Road Safety Audit (TTP-M003) to include consideration of emergency vehicle access and if road surface upgrades are required.	Low	Medium	Minor (D)	Unlikely	Low

Impact or Risk ID	Impact or risk pathway	Initial mitigation	Initial impact or risk level					Final mitigation	Residual impact or risk level				
			Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level		Receptor sensitivity	Magnitude	Consequence level	Likelihood	Risk level
		be included as part of any broader emergency management plan that may be developed for the project.											
Operation													
TTP-I011	Capacity of road network to accommodate workforce and heavy vehicle movements during operation without resulting in increased crash risk	TTP-M002 Traffic Management Plan	<i>Low</i>	<i>Low</i>	<i>Negligible (E)</i>	-	-	No additional mitigation measures	<i>Low</i>	<i>Low</i>	<i>Negligible (E)</i>	-	-

Appendix E

Swept Path Assessment



Access point 1 (Node 1)



Access point 2



Access point 3 (Node 2)



Access point 4



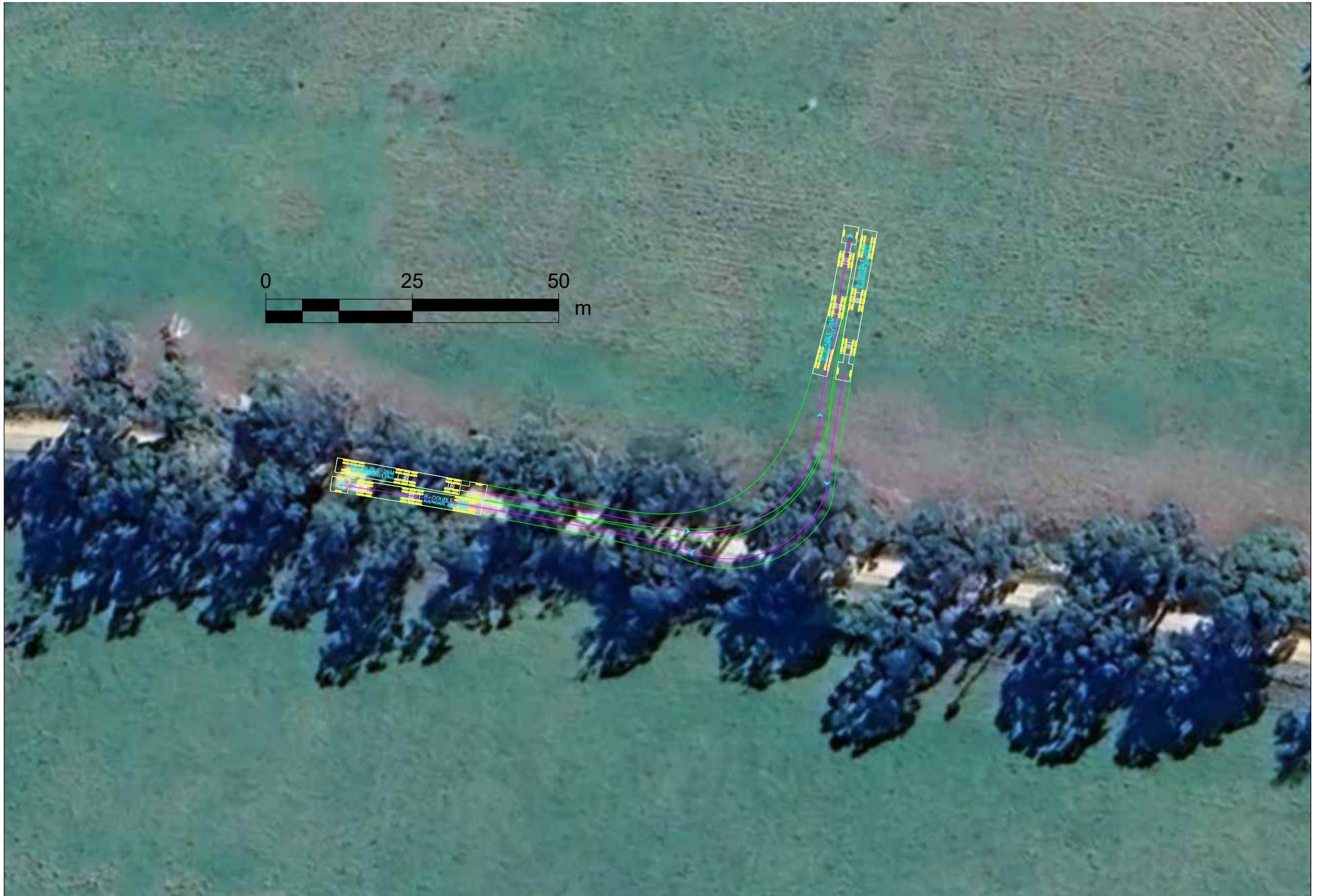
Access point 5



Access point 6



Access point 7



Access point 8



Access point 9 (Node 3)



Access point 10



Access point 11



Access point 12 (Node 4)



Access point 13



Access point 14



Access point 15



Access point 16



Access point 17 (Node 5)



Access point 18 (Node 6)



Access point 19



Access point 20



Access point 21



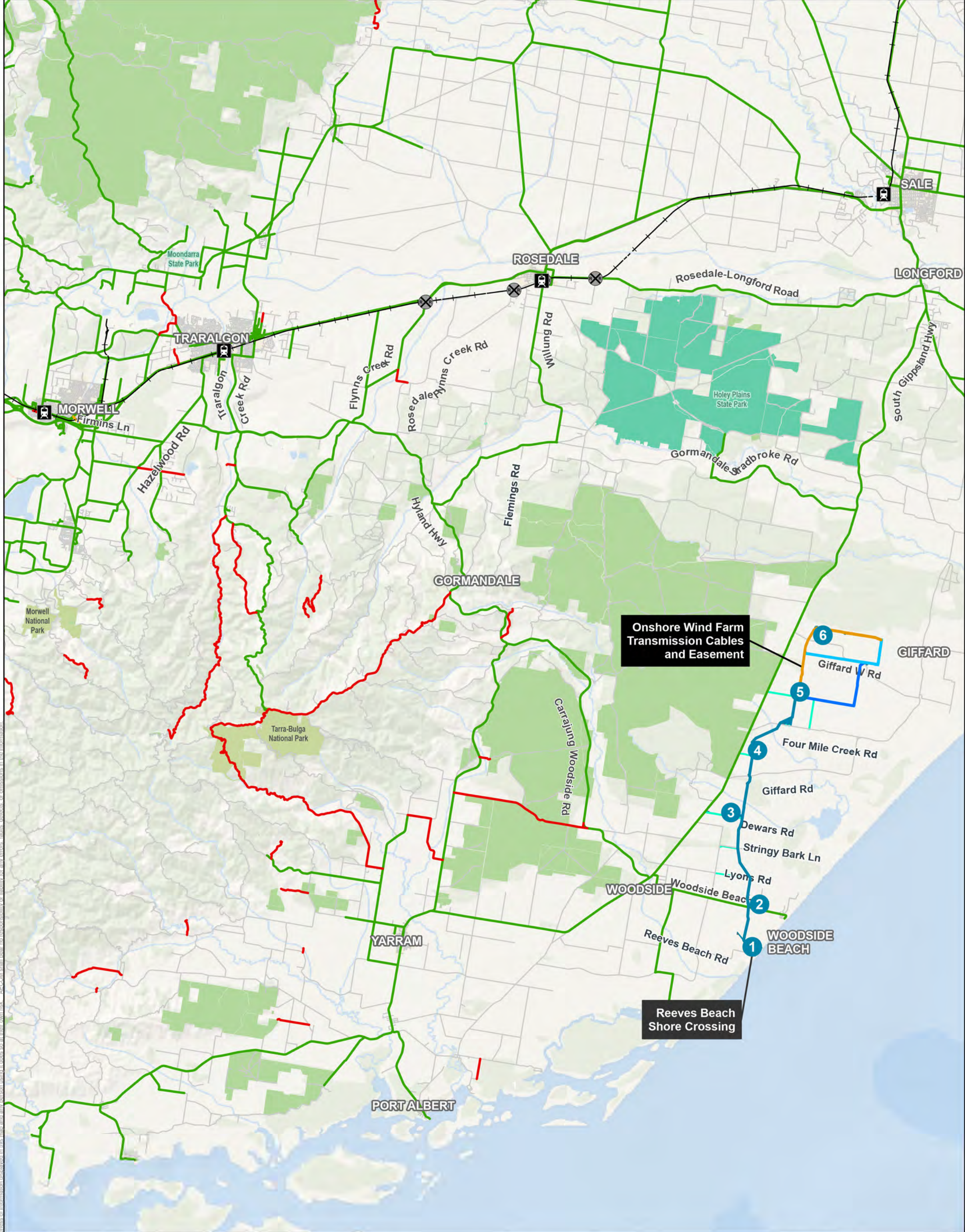
Access point 22 (Node 6)



Access point 23 (Node 6)

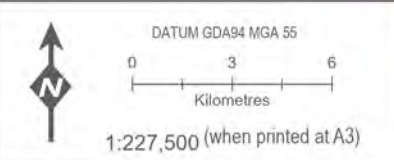
Appendix F

Heavy Vehicle Maps



**Onshore Wind Farm
Transmission Cables
and Easement**

**Reeves Beach
Shore Crossing**

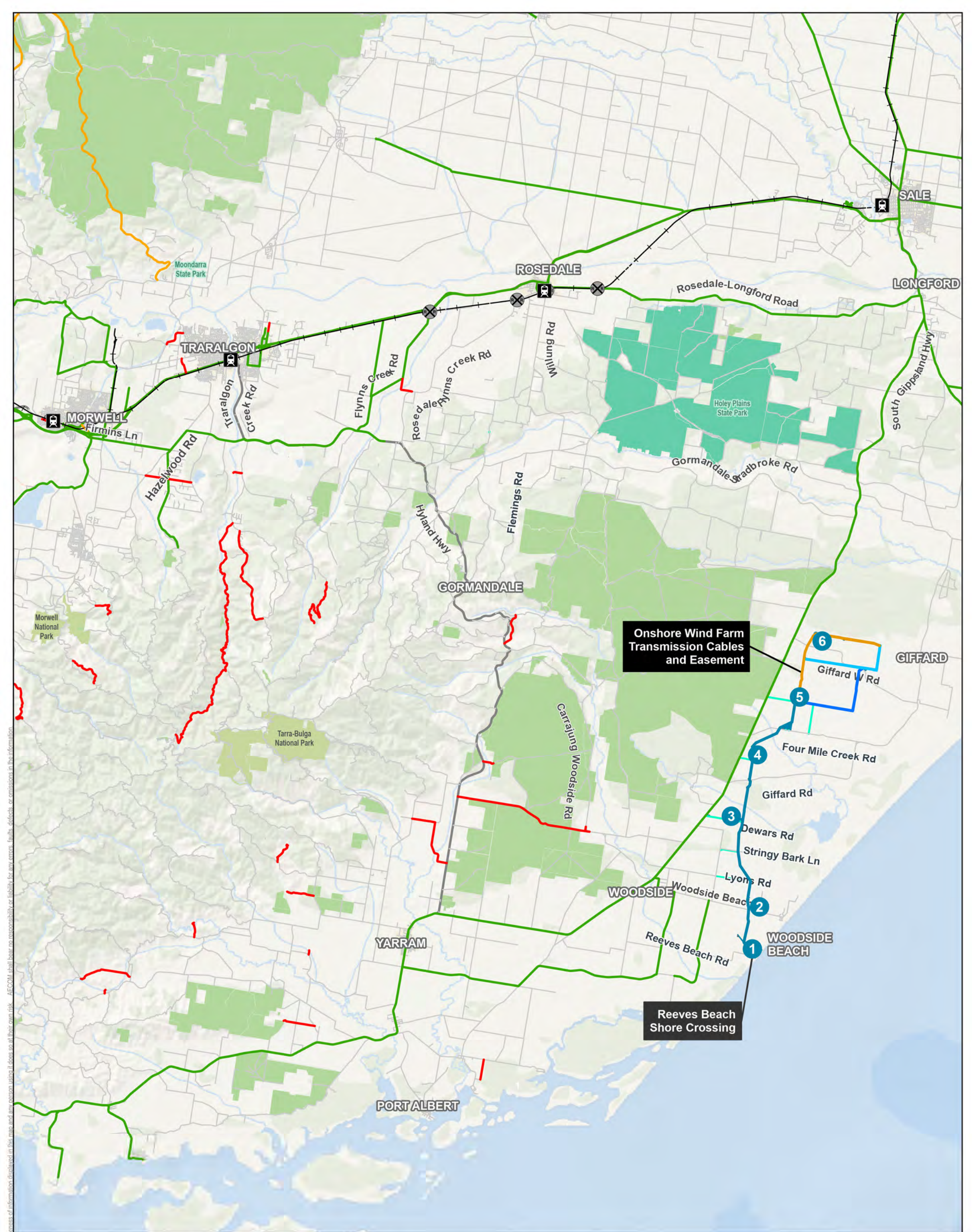


- Access tracks
- Transmission alignment
- Staging node

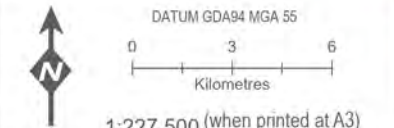
- Alignment options**
- Option AB
 - Option C
 - Option D
- Rail station
 - Level crossing

- Other major roads
 - Other minor roads
- B-Double network**
- Approved
 - Conditionally approved
 - Restricted

PROJECT #:	60616204
CREATED BY:	JB
LAST MODIFIED:	Salimia: 25/11/2025
VERSION:	1



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- Access tracks
- Transmission alignment
- Staging node

- Alignment options**
- Option AB
 - Option C
 - Option D
- Rail station
 - Level crossing

- Other major roads
 - Other minor roads
- OSOM network**
- Approved
 - Conditionally Approved
 - Restricted

Star of the South
OSOM NETWORK

PROJECT #:	60616204
CREATED BY:	JB
LAST MODIFIED:	SalimA: 25/11/2025
VERSION:	

Appendix G

Approvals

Transport

TMP and transport approvals

When any works are planned on a road, lane, street or footpath, a TMP needs to be submitted to the relevant road authority for review. This requirement is in accordance with the *Road Management Act 2004*, the *Road Safety Act 1986* and the Australian Standard AS 1742.3 2009 Traffic control devices for works on roads.

During the development of the TMP, consultation would be undertaken with key stakeholders. Secondary approvals may include:

- **Road works permits:** Typically, functional and detailed design plans would be submitted to the relevant road authority for approval prior to the commencement of any upgrade. A 'works within the road reserves permit', 'road opening permits' and 'vehicle crossing permits' will be sought as required. Application process may vary depending on road authorities.
- **Memorandum of Authorisation (MoA):** Relevant road authorities may require MoAs to be completed for implementation of traffic management measures. It should be noted that each road authority will be required to review, assess and respond (approval) applications for Worksite Safety Traffic Management plans and associated amendments to major traffic control devices.
- **Overhead constraints:** Overhead constraints assessments are required to ensure sufficient clearance from wires, structures and trees. This also applies to ground clearance at rail level crossings. A request for raising overhead cables is to be made with the relevant asset owner who would perform these works for a fee should there be insufficient clearance for passage of any OD vehicles.
- **Over-size vehicle permits:** The National Heavy Vehicle Regulator (NHVR) issues permits for oversized vehicles. DTP, on behalf of NHVR, and require at least 28 days' notice to assess any route. Local councils would also be consulted, and agreements sought during this process.

The NHVR outlines requirements for the movement of oversize loads and provides dimensional limits depending on vehicle types. Where the dimensions or mass limits exceed those outlined on NHVR guidelines, a specific permit must be requested from the relevant road authority. The relevant road authority on behalf of NHVR, would require at least 28 days to assess any route.

- **Bridge and culvert condition / weight bearing assessments:** These may be required to ensure any construction or operation vehicles do not have any adverse impacts to any bridges or culverts on route to the project sites and/or end destinations during the operation phase. Co-ordination with the local authority would be required to understand any historical data on such assets and need for any additional assessments.
- **Rail track crossings:** DTP would need to give permission (provide necessary staff on site) for any such over-dimensional or OSOM (e.g. 30m A-Double) vehicle crossing or travelling across train tracks. A permit would be required if a vehicle crossing the railway line is greater than 4.9 metres in height, three metres wide or 26 metres in length.

Early consultation is to be undertaken with relevant stakeholders in relation to necessary permits to minimise delays in approvals process. The above information should be used as a guide only in relation to those discussions.

The above typical requirements are dependent on several parameters to ensure safe and efficient movement of oversize loads:

- Vehicle and load width and length
- Location of movement
- Traffic volumes and variations
- Other associated risks such as road congestion or crash risk.

Driver induction training

Prior to commencing construction activities, regular and returning drivers of semi-trailers, rigid vehicles and/or B/A-Double and OSOM vehicles who would access and egress the site for pick-up and delivery of material would be required to undertake a driver induction. The induction course would be developed early to ensure it is ready prior to construction activity (including any site preparation

works) commencing. Irregular and one-off drivers of pick-ups and deliveries would be exempt from this induction requirement.

The induction course would be intended to cover:

- Suitable routes to and from the site.
- Suitable times of travel (i.e. outside of school bus times as outlined in TMP).
- Applicable traffic management procedures that will need to be in place prior to approaching or departing the site (if required).
- Communications and notification procedures.
- Speed restrictions (on the road network and the site).
- Safety procedures (during transportation and in the event of an accident / emergency).

Construction staging and parking

It is proposed to provide all car parking within the confines of the site and will therefore not encroach on the local road network.

It is considered that there will be sufficient area within the site during differing phases of construction to accommodate vehicle parking, including construction traffic deliveries and on site manoeuvring as and when required.

The site manager will continually monitor parking provisions within the site boundary, as well as the staging of construction vehicles into and out of the site, to ensure no impact on the local road network occurs. If required, the day-to-day vehicle parking demands can be reduced via the promotion and consideration of car sharing of workforces to and from the site and mini-bus / bus service transporting construction workers to/from the site.

Signage and speed limits

Signage

The safety of traffic (both construction and general background) should be managed at the access points through the installation of appropriate construction vehicle signage. Australian Standard AS 1742 defines the signage layout required for entering or crossing construction vehicles. The signage requirements at all intersections will involve similar signage, an example of such signage includes:

- 'Give Way' (R1-2)
- 'Trucks (crossing or entering)' (T2-25)
- 'T-intersection' with 'Driveway' supplementary (W2-4 with TM1-V100-2 supplementary)
- Nominated speed signage.
- Depending upon the vehicle access wayfinding strategy additional signage may be required for the following:
- No truck entry signs to inform drivers of access locations where access is not permitted.

Speed limits

Consideration of reducing speed limits on roads in proximity to the transmission cables access tracks should be considered during the construction of the project.

It is considered that if safe system principles were adopted in suggesting what the reduced speed limit should be, that at the following be considered:

- Local access tracks (likely unsealed for this project) and access points have reduced traffic speeds posted (e.g. between 20 to 40km/hr speed limits). The nominated speed should be reviewed against the access position, pavement type, alignment and number of local interactions.

Temporary speed reductions can also serve as a potential mitigation measure to improve safety at construction access tracks intersecting with major roads such as South Gippsland Highway. However, it is noted that these roads are commonly designated as part of the heavy vehicle approved networks, including B-double approved routes. As such, it is anticipated that other mitigation strategies including

temporary warning signage, traffic control personnel would be considered more appropriate and effective.

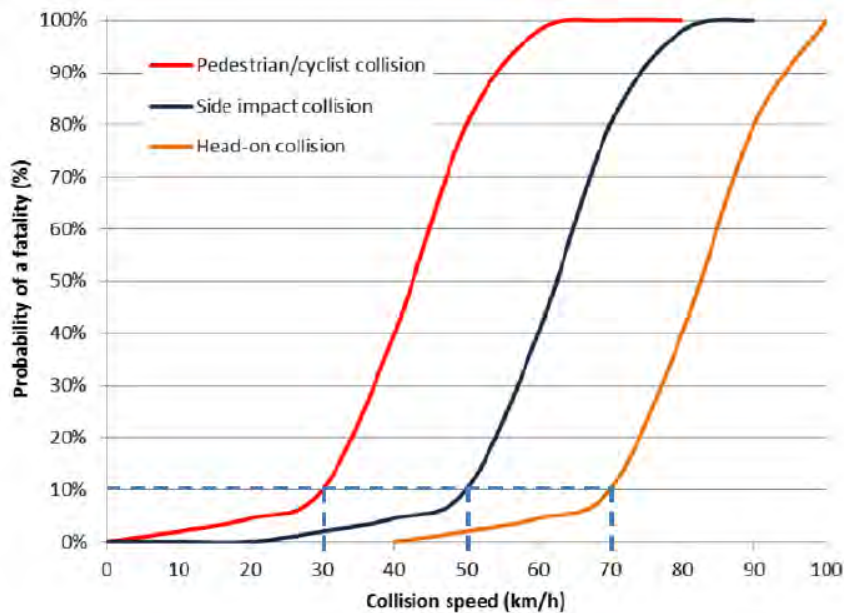


Figure 1 Relationship between collision speed and probability of a fatality – Source: Austroads (2018b)

General

Public consultation, advertising and complaints

Public communication will need to be undertaken by a nominated project team member with regards to any traffic matters causing disruption to local business or residents in accordance with a developed Community Engagement Plan. This plan sets out relevant stakeholders and means of communication with local residents, property owners and road users in relation to traffic deliveries, timeframes, and any traffic related activities with potential to disturb or disrupt local traffic. An underlying principle of the plan is that early and frequent communication with local stakeholders will reduce potential for complaints.

Complaints will be managed in accordance with the Stakeholder Engagement Plan (MM-TP01) which will include a Complaints Investigation and Response Plan developed for the project. The plan applies on a whole of project basis and outlines how complaints will be received, administered, investigated, and managed.

In the event of unexpected impacts, the relevant site manager will need to be contacted and reference to the Complaints Investigation and Response Plan be undertaken to resolve such impacts in a timely and safe manner.

Road authority notifications

DTP and the local Councils will have specific road authority notifications what will need to be conducted and adhered to. Such measures might typically include:

- VMS or additional signage erection as part of road works to be put in place to inform local road users of works or closures to be informed 2 weeks prior to the construction works and/or closure occurring.
- Directly affected business / residents to be notified (letter drop or other means), also see above subsection.
- 24-hour public complaints hotline or website that allows public to raise concerns and issues directly with the nominated contractor.

Appendix H

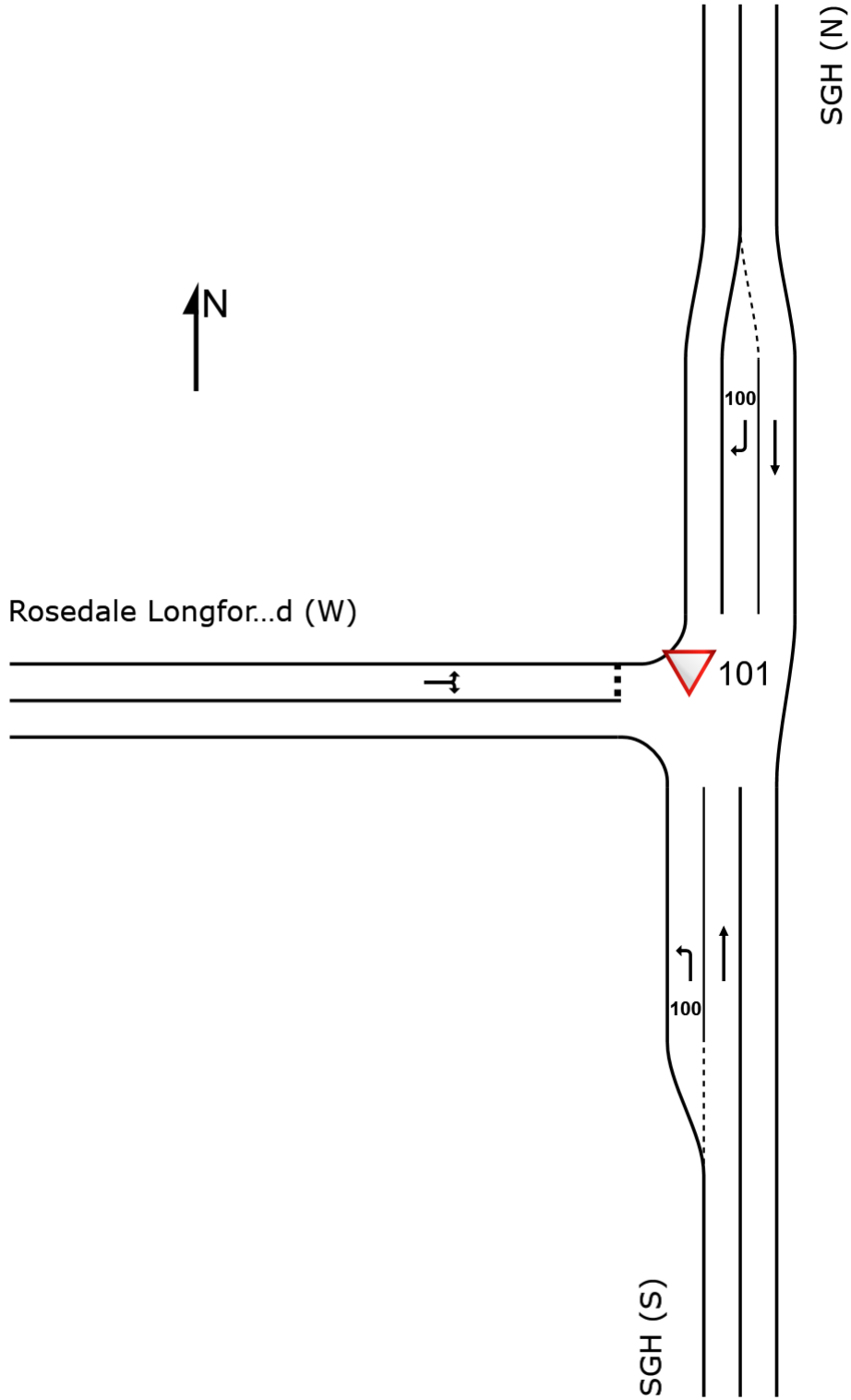
SIDRA Results

SITE LAYOUT

▼ Site: 101 [SGH RL - AM (Site Folder: AM Peak)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: C:\Users\hellakalagamageh\OneDrive - AECOM\Files\Transport Planning\SOTS\Variation\Client Comments 13052025\25062025\SoTS
Access Points_24062025.sip9

MOVEMENT SUMMARY

Site: 101 [SGH RL - AM (Site Folder: AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
1	L2	All MCs	7	42.9	7	42.9	0.005	6.0	LOS A	0.0	0.0	0.00	0.57	0.00	51.2
2	T1	All MCs	65	45.2	65	45.2	0.043	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			73	44.9	73	44.9	0.043	0.6	NA	0.0	0.0	0.00	0.06	0.00	58.9
North: SGH (N)															
8	T1	All MCs	253	11.7	253	11.7	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	7	42.9	7	42.9	0.007	6.4	LOS A	0.0	0.3	0.20	0.55	0.20	50.3
Approach			260	12.6	260	12.6	0.139	0.2	NA	0.0	0.3	0.01	0.02	0.01	59.6
West: Rosedale Longford Road (W)															
10	L2	All MCs	29	46.4	29	46.4	0.618	9.6	LOS A	6.1	45.3	0.69	0.91	1.13	46.1
12	R2	All MCs	391	3.5	391	3.5	0.618	13.4	LOS B	6.1	45.3	0.69	0.91	1.13	47.5
Approach			420	6.5	420	6.5	0.618	13.2	LOS B	6.1	45.3	0.69	0.91	1.13	47.4
All Vehicles			753	12.3	753	12.3	0.618	7.5	NA	6.1	45.3	0.39	0.52	0.63	52.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Access Points_24062025.sip9

MOVEMENT SUMMARY

Site: 101 [SGH RL - PM (Site Folder: PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
1	L2	All MCs	372	0.6	372	0.6	0.201	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
2	T1	All MCs	284	5.9	284	5.9	0.151	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			656	2.9	656	2.9	0.201	3.2	NA	0.0	0.0	0.00	0.33	0.00	55.7
North: SGH (N)															
8	T1	All MCs	97	17.4	97	17.4	0.055	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	All MCs	11	20.0	11	20.0	0.019	10.3	LOS B	0.1	0.5	0.57	0.72	0.57	48.6
Approach			107	17.6	107	17.6	0.055	1.0	NA	0.1	0.5	0.06	0.07	0.06	58.6
West: Rosedale Longford Road (W)															
10	L2	All MCs	43	17.1	43	17.1	0.155	7.4	LOS A	0.6	4.5	0.54	0.73	0.54	48.9
12	R2	All MCs	43	17.1	43	17.1	0.155	13.3	LOS B	0.6	4.5	0.54	0.73	0.54	48.8
Approach			86	17.1	86	17.1	0.155	10.4	LOS B	0.6	4.5	0.54	0.73	0.54	48.9
All Vehicles			849	6.2	849	6.2	0.201	3.6	NA	0.6	4.5	0.06	0.34	0.06	55.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [SGH RL - Midday (Site Folder: Midday Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h	%	veh/h	%				veh	m				
South: SGH (S)															
1	L2	All MCs	72	94.1	72	94.1	0.064	6.6	LOS A	0.0	0.0	0.00	0.56	0.00	49.2
2	T1	All MCs	143	76.5	143	76.5	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			215	82.4	215	82.4	0.110	2.2	NA	0.0	0.0	0.00	0.19	0.00	55.9
North: SGH (N)															
8	T1	All MCs	143	76.5	143	76.5	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	5	20.0	5	20.0	0.006	7.2	LOS A	0.0	0.2	0.39	0.58	0.39	50.7
Approach			148	74.5	148	74.5	0.110	0.3	NA	0.0	0.2	0.01	0.02	0.01	59.5
West: Rosedale Longford Road (W)															
10	L2	All MCs	18	17.6	18	17.6	0.274	7.4	LOS A	1.2	13.2	0.63	0.82	0.70	46.4
12	R2	All MCs	84	82.5	84	82.5	0.274	16.7	LOS C	1.2	13.2	0.63	0.82	0.70	44.2
Approach			102	71.1	102	71.1	0.274	15.1	LOS C	1.2	13.2	0.63	0.82	0.70	44.6
All Vehicles			465	77.4	465	77.4	0.274	4.4	NA	1.2	13.2	0.14	0.27	0.16	53.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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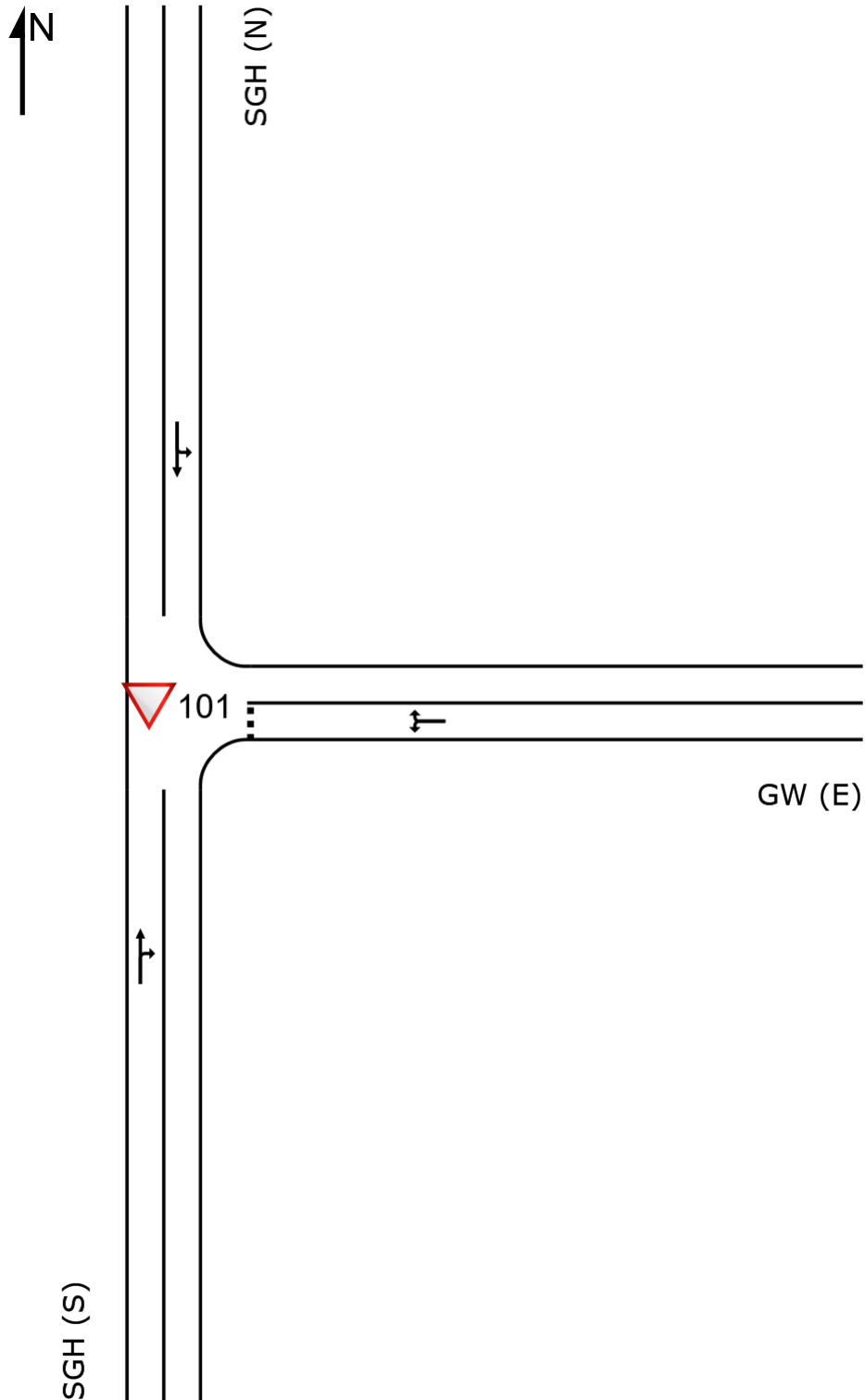
Project: C:\Users\hellakalagamegh\OneDrive - AECOM\Files\Transport Planning\SOTS\Variation\Client Comments 13052025\25062025\SoTS Access Points_24062025.sip9

SITE LAYOUT

▽ Site: 101 [SGH GW - AM (Site Folder: AM Peak)]

New Site
Site Category: (None)
Give-Way (Two-Way)

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Access Points_24062025.sip9

MOVEMENT SUMMARY

Site: 101 [SGH GW - AM (Site Folder: AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	40	15.8	40	15.8	0.040	0.0	LOS A	0.2	1.2	0.36	0.40	0.36	56.7
3	R2	All MCs	17	0.0	17	0.0	0.040	11.0	LOS B	0.2	1.2	0.36	0.40	0.36	54.2
Approach			57	11.1	57	11.1	0.040	3.3	NA	0.2	1.2	0.36	0.40	0.36	56.0
East: GW (E)															
4	L2	All MCs	1	0.0	1	0.0	0.002	6.9	LOS A	0.0	0.1	0.44	0.58	0.44	51.5
6	R2	All MCs	1	0.0	1	0.0	0.002	7.8	LOS A	0.0	0.1	0.44	0.58	0.44	51.3
Approach			2	0.0	2	0.0	0.002	7.4	LOS A	0.0	0.1	0.44	0.58	0.44	51.4
North: SGH (N)															
7	L2	All MCs	189	0.0	189	0.0	0.311	5.6	LOS A	0.0	0.0	0.00	0.19	0.00	55.8
8	T1	All MCs	404	1.6	404	1.6	0.311	0.1	LOS A	0.0	0.0	0.00	0.19	0.00	58.1
Approach			594	1.1	594	1.1	0.311	1.9	NA	0.0	0.0	0.00	0.19	0.00	57.3
All Vehicles			653	1.9	653	1.9	0.311	2.0	NA	0.2	1.2	0.03	0.21	0.03	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Access Points_24062025.sip9

MOVEMENT SUMMARY

Site: 101 [SGH GW - PM (Site Folder: PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	472	3.8	472	3.8	0.248	0.0	LOSA	0.0	0.1	0.00	0.00	0.00	60.0
3	R2	All MCs	1	0.0	1	0.0	0.248	5.5	LOSA	0.0	0.1	0.00	0.00	0.00	57.2
Approach			473	3.8	473	3.8	0.248	0.0	NA	0.0	0.1	0.00	0.00	0.00	60.0
East: GW (E)															
4	L2	All MCs	17	0.0	17	0.0	0.279	6.1	LOSA	1.1	7.7	0.52	0.76	0.56	50.4
6	R2	All MCs	189	0.0	189	0.0	0.279	9.1	LOSA	1.1	7.7	0.52	0.76	0.56	50.2
Approach			206	0.0	206	0.0	0.279	8.9	LOSA	1.1	7.7	0.52	0.76	0.56	50.2
North: SGH (N)															
7	L2	All MCs	1	0.0	1	0.0	0.062	5.6	LOSA	0.0	0.0	0.00	0.01	0.00	57.4
8	T1	All MCs	107	16.7	107	16.7	0.062	0.0	LOSA	0.0	0.0	0.00	0.01	0.00	59.9
Approach			108	16.5	108	16.5	0.062	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles			787	4.5	787	4.5	0.279	2.3	NA	1.1	7.7	0.14	0.20	0.15	57.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Access Points_24062025.sip9

MOVEMENT SUMMARY

Site: 101 [SGH GW - Midday (Site Folder: Midday Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h		veh/h					veh	m				
South: SGH (S)															
2	T1	All MCs	65	43.5	65	43.5	0.081	0.0	LOS A	0.3	3.3	0.21	0.27	0.21	59.0
3	R2	All MCs	34	96.9	34	96.9	0.081	8.3	LOS A	0.3	3.3	0.21	0.27	0.21	51.6
Approach			99	61.7	99	61.7	0.081	2.8	NA	0.3	3.3	0.21	0.27	0.21	56.2
East: GW (E)															
4	L2	All MCs	34	96.9	34	96.9	0.071	7.2	LOS A	0.3	3.4	0.26	0.57	0.26	48.4
6	R2	All MCs	24	95.7	24	95.7	0.071	8.5	LOS A	0.3	3.4	0.26	0.57	0.26	48.0
Approach			58	96.4	58	96.4	0.071	7.7	LOS A	0.3	3.4	0.26	0.57	0.26	48.2
North: SGH (N)															
7	L2	All MCs	24	95.7	24	95.7	0.065	6.7	LOS A	0.0	0.0	0.00	0.15	0.00	53.0
8	T1	All MCs	65	43.5	65	43.5	0.065	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	59.8
Approach			89	57.6	89	57.6	0.065	1.8	NA	0.0	0.0	0.00	0.15	0.00	57.8
All Vehicles			246	68.4	246	68.4	0.081	3.6	NA	0.3	3.4	0.14	0.29	0.14	54.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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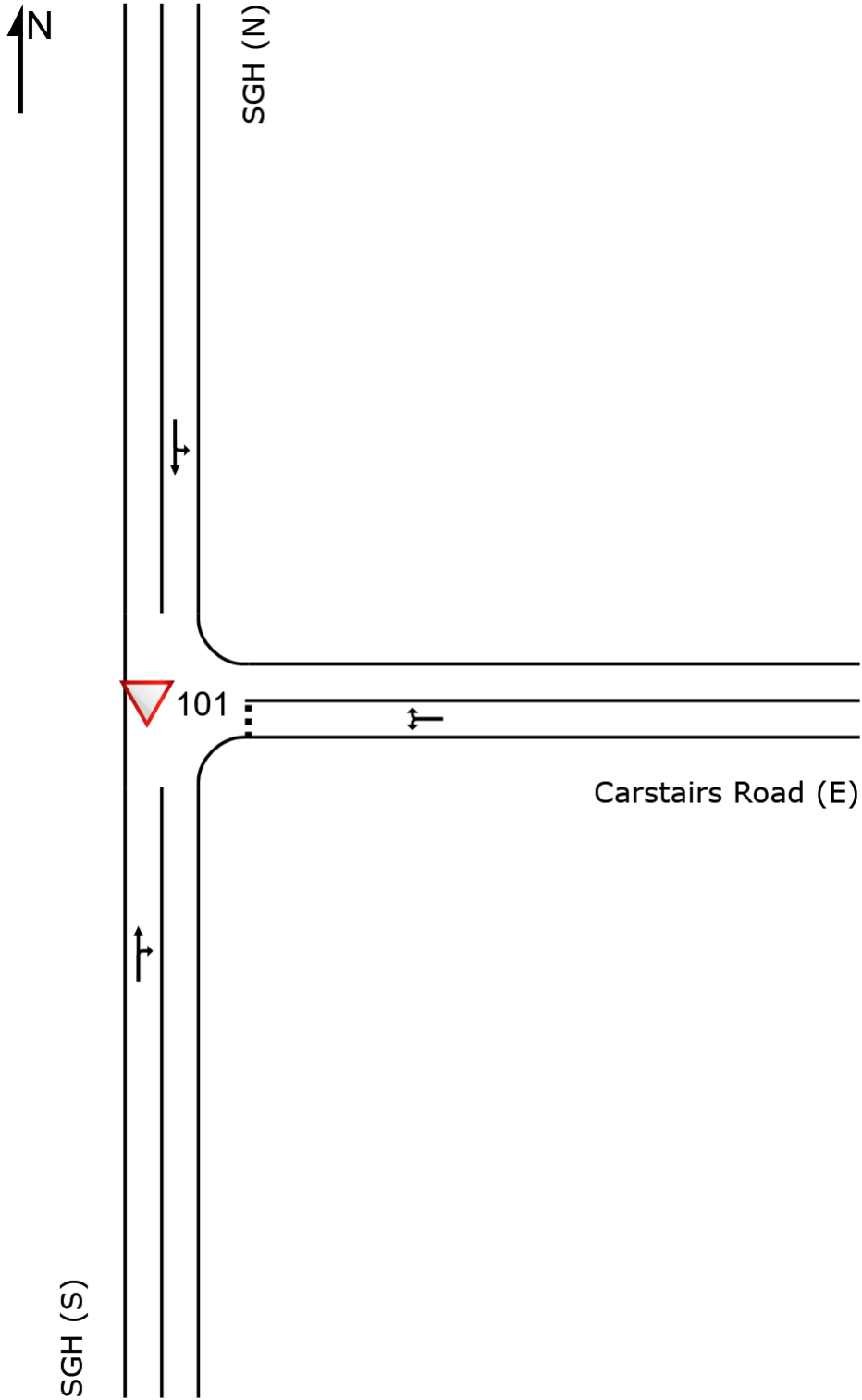
Access Points_24062025.sip9

SITE LAYOUT

▽ Site: 101 [SGH Carstairs - AM (Site Folder: AM Peak)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 101 [SGH Carstairs - AM (Site Folder: AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	57	11.1	57	11.1	0.048	0.0	LOSA	0.2	1.2	0.27	0.30	0.27	57.4
3	R2	All MCs	21	0.0	21	0.0	0.048	8.6	LOSA	0.2	1.2	0.27	0.30	0.27	54.8
Approach			78	8.1	78	8.1	0.048	2.3	NA	0.2	1.2	0.27	0.30	0.27	56.7
East: Carstairs Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.002	6.2	LOSA	0.0	0.0	0.33	0.55	0.33	52.0
6	R2	All MCs	1	0.0	1	0.0	0.002	6.9	LOSA	0.0	0.0	0.33	0.55	0.33	51.7
Approach			2	0.0	2	0.0	0.002	6.5	LOSA	0.0	0.0	0.33	0.55	0.33	51.8
North: SGH (N)															
7	L2	All MCs	186	0.0	186	0.0	0.214	5.6	LOSA	0.0	0.0	0.00	0.27	0.00	55.2
8	T1	All MCs	218	2.9	218	2.9	0.214	0.1	LOSA	0.0	0.0	0.00	0.27	0.00	57.4
Approach			404	1.6	404	1.6	0.214	2.6	NA	0.0	0.0	0.00	0.27	0.00	56.4
All Vehicles			484	2.6	484	2.6	0.214	2.6	NA	0.2	1.2	0.04	0.28	0.04	56.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [SGH Carstairs - PM (Site Folder: PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h		veh/h					veh	m				
South: SGH (S)															
2	T1	All MCs	285	6.3	285	6.3	0.153	0.0	LOSA	0.0	0.1	0.00	0.00	0.00	60.0
3	R2	All MCs	1	0.0	1	0.0	0.153	5.5	LOSA	0.0	0.1	0.00	0.00	0.00	57.1
Approach			286	6.3	286	6.3	0.153	0.0	NA	0.0	0.1	0.00	0.00	0.00	60.0
East: Carstairs Road (E)															
4	L2	All MCs	21	0.0	21	0.0	0.230	6.0	LOSA	0.9	6.0	0.43	0.68	0.43	51.5
6	R2	All MCs	186	0.0	186	0.0	0.230	7.6	LOSA	0.9	6.0	0.43	0.68	0.43	51.2
Approach			207	0.0	207	0.0	0.230	7.4	LOSA	0.9	6.0	0.43	0.68	0.43	51.2
North: SGH (N)															
7	L2	All MCs	1	0.0	1	0.0	0.070	5.6	LOSA	0.0	0.0	0.00	0.01	0.00	57.4
8	T1	All MCs	124	14.4	124	14.4	0.070	0.0	LOSA	0.0	0.0	0.00	0.01	0.00	59.9
Approach			125	14.3	125	14.3	0.070	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles			619	5.8	619	5.8	0.230	2.5	NA	0.9	6.0	0.14	0.23	0.14	56.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [SGH Carstairs - Midday (Site Folder: Midday Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	83	55.7	83	55.7	0.106	0.0	LOS A	0.4	4.6	0.22	0.28	0.22	58.9
3	R2	All MCs	43	97.6	43	97.6	0.106	8.6	LOS A	0.4	4.6	0.22	0.28	0.22	51.6
Approach			126	70.0	126	70.0	0.106	2.9	NA	0.4	4.6	0.22	0.28	0.22	56.2
East: Carstairs Road (E)															
4	L2	All MCs	43	97.6	43	97.6	0.071	7.4	LOS A	0.3	3.5	0.28	0.57	0.28	48.3
6	R2	All MCs	16	93.3	16	93.3	0.071	9.1	LOS A	0.3	3.5	0.28	0.57	0.28	48.0
Approach			59	96.4	59	96.4	0.071	7.9	LOS A	0.3	3.5	0.28	0.57	0.28	48.2
North: SGH (N)															
7	L2	All MCs	16	93.3	16	93.3	0.072	6.6	LOS A	0.0	0.0	0.00	0.09	0.00	53.0
8	T1	All MCs	83	55.7	83	55.7	0.072	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	59.8
Approach			99	61.7	99	61.7	0.072	1.1	NA	0.0	0.0	0.00	0.09	0.00	58.6
All Vehicles			284	72.6	284	72.6	0.106	3.3	NA	0.4	4.6	0.16	0.27	0.16	55.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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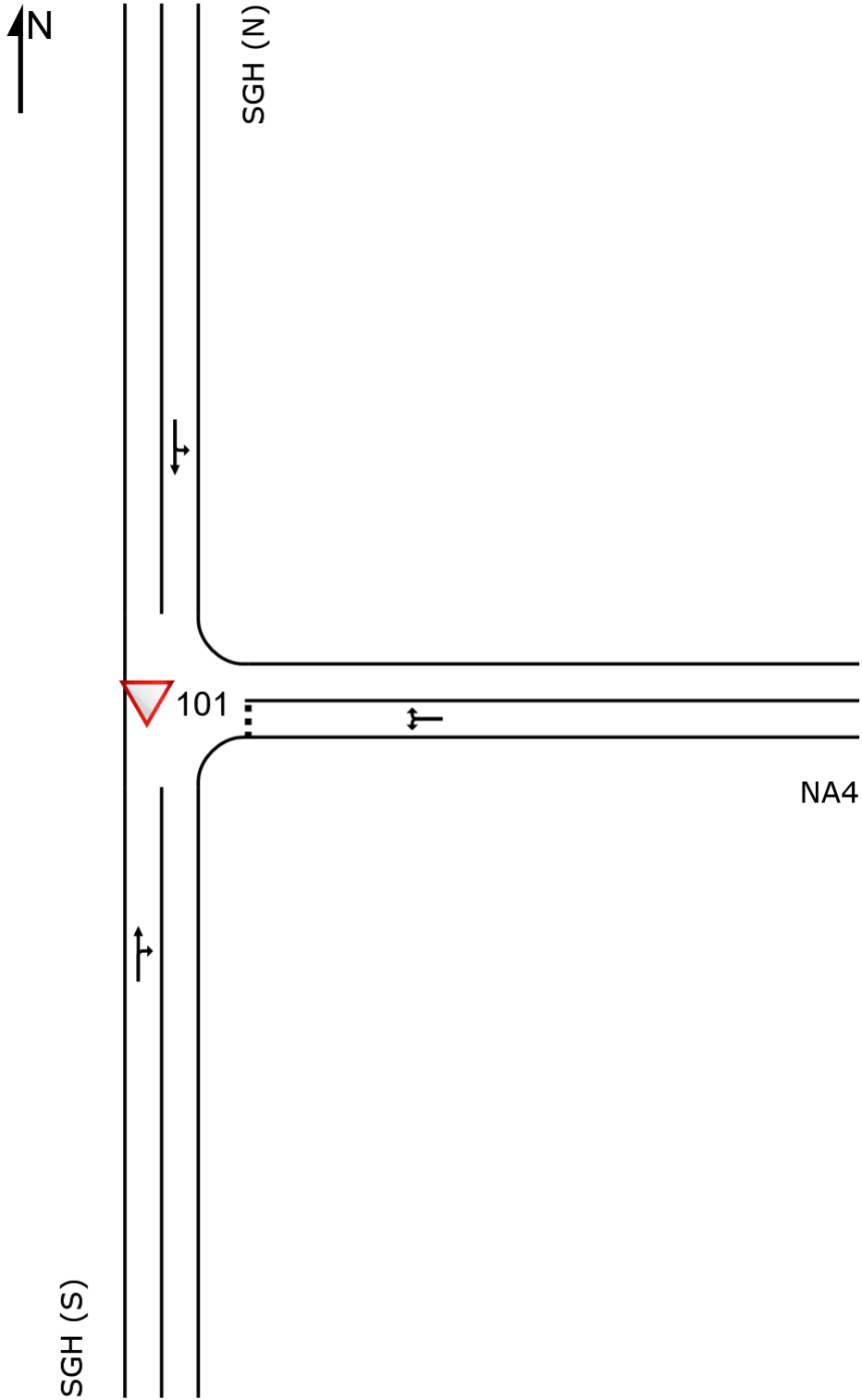
Access Points_24062025.sip9

SITE LAYOUT

▽ Site: 101 [SGH NA4 - AM (Site Folder: AM Peak)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 101 [SGH NA4 - AM (Site Folder: AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	78	8.1	78	8.1	0.061	0.0	LOSA	0.2	1.3	0.18	0.23	0.18	57.8
3	R2	All MCs	28	0.0	28	0.0	0.061	6.9	LOSA	0.2	1.3	0.18	0.23	0.18	55.2
Approach			106	5.9	106	5.9	0.061	1.9	NA	0.2	1.3	0.18	0.23	0.18	57.1
East: NA4															
4	L2	All MCs	1	0.0	1	0.0	0.002	5.6	LOSA	0.0	0.0	0.16	0.54	0.16	52.5
6	R2	All MCs	1	0.0	1	0.0	0.002	6.2	LOSA	0.0	0.0	0.16	0.54	0.16	52.2
Approach			2	0.0	2	0.0	0.002	5.9	LOSA	0.0	0.0	0.16	0.54	0.16	52.3
North: SGH (N)															
7	L2	All MCs	178	0.0	178	0.0	0.118	5.6	LOSA	0.0	0.0	0.00	0.48	0.00	53.5
8	T1	All MCs	40	15.8	40	15.8	0.118	0.0	LOSA	0.0	0.0	0.00	0.48	0.00	55.7
Approach			218	2.9	218	2.9	0.118	4.6	NA	0.0	0.0	0.00	0.48	0.00	53.9
All Vehicles			326	3.9	326	3.9	0.118	3.7	NA	0.2	1.3	0.06	0.39	0.06	54.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Access Points_24062025.sip9

MOVEMENT SUMMARY

Site: 101 [SGH NA4 - PM (Site Folder: PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	107	16.7	107	16.7	0.062	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
3	R2	All MCs	1	0.0	1	0.0	0.062	5.6	LOS A	0.0	0.1	0.01	0.01	0.01	57.1
Approach			108	16.5	108	16.5	0.062	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.9
East: NA4															
4	L2	All MCs	28	0.0	28	0.0	0.195	6.1	LOS A	0.7	5.1	0.34	0.63	0.34	52.0
6	R2	All MCs	178	0.0	178	0.0	0.195	6.6	LOS A	0.7	5.1	0.34	0.63	0.34	51.7
Approach			206	0.0	206	0.0	0.195	6.6	LOS A	0.7	5.1	0.34	0.63	0.34	51.8
North: SGH (N)															
7	L2	All MCs	1	0.0	1	0.0	0.081	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.4
8	T1	All MCs	145	12.3	145	12.3	0.081	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			146	12.2	146	12.2	0.081	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			461	7.8	461	7.8	0.195	3.0	NA	0.7	5.1	0.15	0.28	0.15	56.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [SGH NA4 - Midday (Site Folder: Midday Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h		veh/h					veh	m				
South: SGH (S)															
2	T1	All MCs	119 69.0		119 69.0		0.134	0.0	LOS A	0.4	4.9	0.20	0.24	0.20	59.0
3	R2	All MCs	39 97.3		39 97.3		0.134	9.5	LOS A	0.4	4.9	0.20	0.24	0.20	51.6
Approach			158 76.0		158 76.0		0.134	2.4	NA	0.4	4.9	0.20	0.24	0.20	57.0
East: NA4															
4	L2	All MCs	39 97.3		39 97.3		0.057	7.8	LOS A	0.2	2.8	0.34	0.58	0.34	48.2
6	R2	All MCs	7 85.7		7 85.7		0.057	10.0	LOS A	0.2	2.8	0.34	0.58	0.34	48.1
Approach			46 95.5		46 95.5		0.057	8.1	LOS A	0.2	2.8	0.34	0.58	0.34	48.1
North: SGH (N)															
7	L2	All MCs	7 85.7		7 85.7		0.095	6.6	LOS A	0.0	0.0	0.00	0.03	0.00	53.4
8	T1	All MCs	119 69.0		119 69.0		0.095	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.8
Approach			126 70.0		126 70.0		0.095	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.4
All Vehicles			331 76.4		331 76.4		0.134	2.4	NA	0.4	4.9	0.14	0.21	0.14	56.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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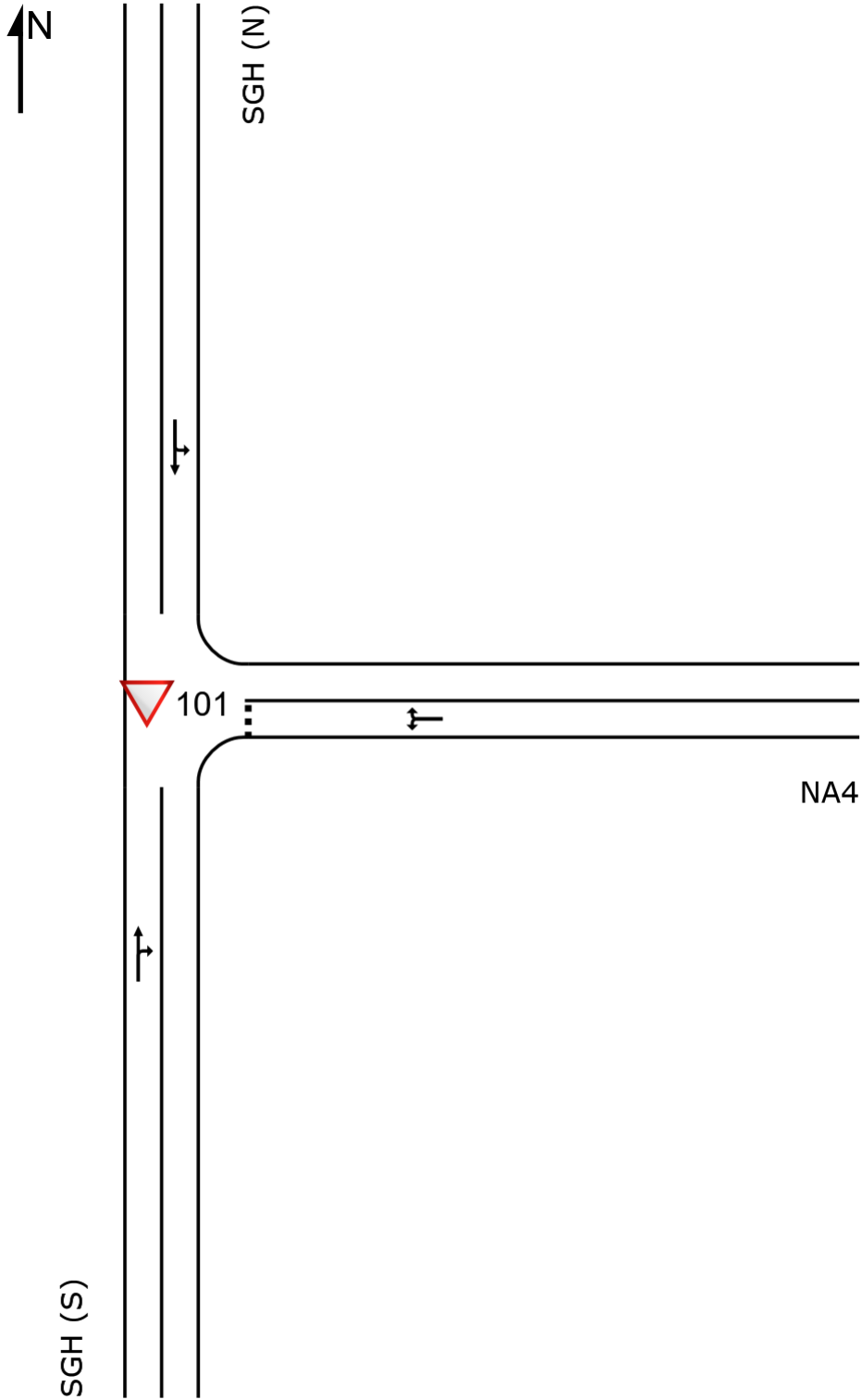
Access Points_24062025.sip9

SITE LAYOUT

▽ Site: 101 [SGH NA3 - AM (Site Folder: AM Peak)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Access Points_24062025.sip9

MOVEMENT SUMMARY

Site: 101 [SGH NA3 - AM (Site Folder: AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	40	15.8	40	15.8	0.058	0.0	LOS A	0.3	2.1	0.47	0.54	0.47	55.5
3	R2	All MCs	35	0.0	35	0.0	0.058	10.2	LOS B	0.3	2.1	0.47	0.54	0.47	53.0
Approach			75	8.5	75	8.5	0.058	4.7	NA	0.3	2.1	0.47	0.54	0.47	54.3
East: NA4															
4	L2	All MCs	1	0.0	1	0.0	0.002	6.9	LOS A	0.0	0.1	0.45	0.59	0.45	51.5
6	R2	All MCs	1	0.0	1	0.0	0.002	8.0	LOS A	0.0	0.1	0.45	0.59	0.45	51.2
Approach			2	0.0	2	0.0	0.002	7.4	LOS A	0.0	0.1	0.45	0.59	0.45	51.3
North: SGH (N)															
7	L2	All MCs	172	0.0	172	0.0	0.308	5.6	LOS A	0.0	0.0	0.00	0.17	0.00	55.9
8	T1	All MCs	417	1.5	417	1.5	0.308	0.1	LOS A	0.0	0.0	0.00	0.17	0.00	58.3
Approach			588	1.1	588	1.1	0.308	1.7	NA	0.0	0.0	0.00	0.17	0.00	57.6
All Vehicles			665	1.9	665	1.9	0.308	2.1	NA	0.3	2.1	0.05	0.22	0.05	57.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [SGH NA3 - PM (Site Folder: PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	484	3.7	484	3.7	0.255	0.0	LOSA	0.0	0.1	0.00	0.00	0.00	60.0
3	R2	All MCs	1	0.0	1	0.0	0.255	5.5	LOSA	0.0	0.1	0.00	0.00	0.00	57.2
Approach			485	3.7	485	3.7	0.255	0.0	NA	0.0	0.1	0.00	0.00	0.00	60.0
East: NA4															
4	L2	All MCs	35	0.0	35	0.0	0.270	6.0	LOSA	1.0	7.1	0.50	0.70	0.50	50.6
6	R2	All MCs	172	0.0	172	0.0	0.270	9.1	LOSA	1.0	7.1	0.50	0.70	0.50	50.4
Approach			206	0.0	206	0.0	0.270	8.6	LOSA	1.0	7.1	0.50	0.70	0.50	50.4
North: SGH (N)															
7	L2	All MCs	1	0.0	1	0.0	0.062	5.6	LOSA	0.0	0.0	0.00	0.01	0.00	57.4
8	T1	All MCs	107	16.7	107	16.7	0.062	0.0	LOSA	0.0	0.0	0.00	0.01	0.00	59.9
Approach			108	16.5	108	16.5	0.062	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles			800	4.5	800	4.5	0.270	2.2	NA	1.0	7.1	0.13	0.18	0.13	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [SGH NA3 - Midday (Site Folder: Midday Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h		veh/h					veh	m				
South: SGH (S)															
2	T1	All MCs	157	76.5	157	76.5	0.121	0.0	LOSA	0.0	0.1	0.01	0.00	0.01	59.8
3	R2	All MCs	1	0.0	1	0.0	0.121	5.9	LOSA	0.0	0.1	0.01	0.00	0.01	57.0
Approach			158	76.0	158	76.0	0.121	0.0	NA	0.0	0.1	0.01	0.00	0.01	59.8
East: NA4															
4	L2	All MCs	1	0.0	1	0.0	0.130	6.2	LOSA	0.4	5.5	0.53	0.81	0.53	49.2
6	R2	All MCs	57	98.1	57	98.1	0.130	11.9	LOS B	0.4	5.5	0.53	0.81	0.53	45.4
Approach			58	96.4	58	96.4	0.130	11.8	LOS B	0.4	5.5	0.53	0.81	0.53	45.5
North: SGH (N)															
7	L2	All MCs	57	98.1	57	98.1	0.172	6.7	LOSA	0.0	0.0	0.00	0.15	0.00	52.8
8	T1	All MCs	157	76.5	157	76.5	0.172	0.1	LOSA	0.0	0.0	0.00	0.15	0.00	59.7
Approach			214	82.3	214	82.3	0.172	1.8	NA	0.0	0.0	0.00	0.15	0.00	57.7
All Vehicles			429	81.9	429	81.9	0.172	2.5	NA	0.4	5.5	0.07	0.18	0.07	56.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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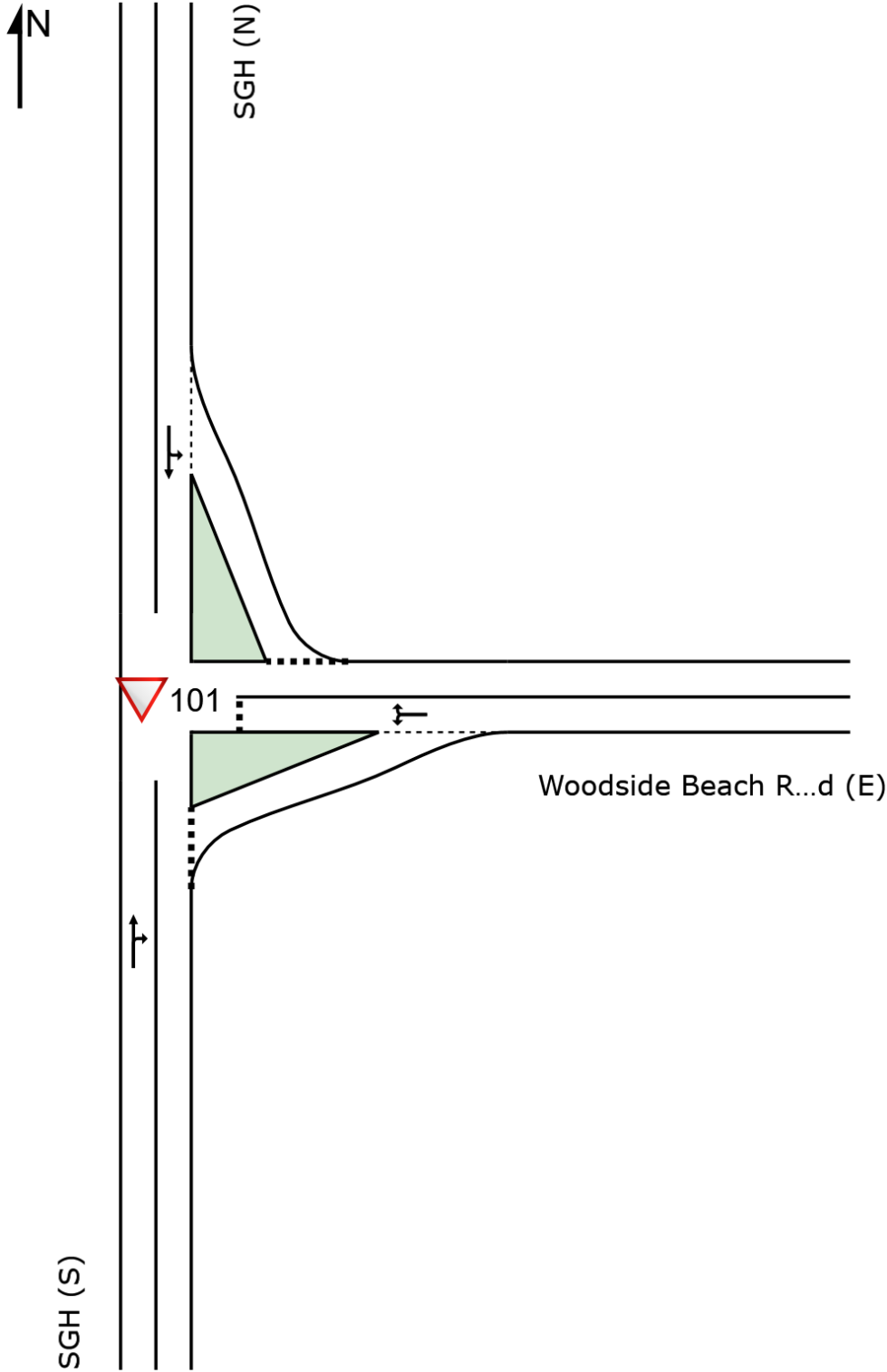
Access Points_24062025.sip9

SITE LAYOUT

▽ Site: 101 [SGH WB - AM (Site Folder: AM Peak)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Access Points_24062025.sip9

MOVEMENT SUMMARY

Site: 101 [SGH WB - AM (Site Folder: AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	75	8.5	75	8.5	0.097	0.0	LOSA	0.4	3.2	0.12	0.34	0.12	56.6
3	R2	All MCs	98	0.0	98	0.0	0.097	5.7	LOSA	0.4	3.2	0.12	0.34	0.12	54.1
Approach			173	3.7	173	3.7	0.097	3.2	NA	0.4	3.2	0.12	0.34	0.12	55.1
East: Woodside Beach Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.002	5.7	LOSA	0.0	0.0	0.17	0.52	0.17	52.6
6	R2	All MCs	1	0.0	1	0.0	0.002	6.9	LOSA	0.0	0.0	0.17	0.52	0.17	52.0
Approach			2	0.0	2	0.0	0.002	6.3	LOSA	0.0	0.0	0.17	0.52	0.17	52.3
North: SGH (N)															
7	L2	All MCs	377	0.0	377	0.0	0.272	6.0	LOSA	1.4	9.7	0.23	0.49	0.23	52.7
8	T1	All MCs	40	15.8	40	15.8	0.272	0.0	LOSA	1.4	9.7	0.23	0.49	0.23	54.5
Approach			417	1.5	417	1.5	0.272	5.4	NA	1.4	9.7	0.23	0.49	0.23	52.9
All Vehicles			592	2.1	592	2.1	0.272	4.8	NA	1.4	9.7	0.20	0.44	0.20	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [SGH WB - PM (Site Folder: PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	107	16.7	107	16.7	0.062	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
3	R2	All MCs	1	0.0	1	0.0	0.062	5.6	LOS A	0.0	0.1	0.01	0.01	0.01	57.1
Approach			108	16.5	108	16.5	0.062	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.9
East: Woodside Beach Road (E)															
4	L2	All MCs	98	0.0	98	0.0	0.439	6.6	LOS A	2.5	17.3	0.41	0.65	0.46	51.9
6	R2	All MCs	377	0.0	377	0.0	0.439	7.3	LOS A	2.5	17.3	0.41	0.65	0.46	51.4
Approach			475	0.0	475	0.0	0.439	7.1	LOS A	2.5	17.3	0.41	0.65	0.46	51.5
North: SGH (N)															
7	L2	All MCs	1	0.0	1	0.0	0.079	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.8
8	T1	All MCs	142	12.6	142	12.6	0.079	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			143	12.5	143	12.5	0.079	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			726	4.9	726	4.9	0.439	4.7	NA	2.5	17.3	0.27	0.43	0.30	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [SGH WB - Midday (Site Folder: Midday Peak)]

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New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: SGH (S)															
2	T1	All MCs	44	16.7	44	16.7	0.026	0.0	LOS A	0.0	0.0	0.01	0.01	0.01	59.8
3	R2	All MCs	1	0.0	1	0.0	0.026	5.5	LOS A	0.0	0.0	0.01	0.01	0.01	57.0
Approach			45	16.3	45	16.3	0.026	0.1	NA	0.0	0.0	0.01	0.01	0.01	59.8
East: Woodside Beach Road (E)															
4	L2	All MCs	1	0.0	1	0.0	0.168	5.8	LOS A	0.6	7.7	0.34	0.64	0.34	51.9
6	R2	All MCs	114	99.1	114	99.1	0.168	8.3	LOS A	0.6	7.7	0.34	0.64	0.34	47.5
Approach			115	98.2	115	98.2	0.168	8.3	LOS A	0.6	7.7	0.34	0.64	0.34	47.5
North: SGH (N)															
7	L2	All MCs	114	99.1	114	99.1	0.140	6.7	LOS A	0.6	7.4	0.02	0.37	0.02	53.5
8	T1	All MCs	44	16.7	44	16.7	0.140	0.0	LOS A	0.6	7.4	0.02	0.37	0.02	59.8
Approach			158	76.0	158	76.0	0.140	4.8	NA	0.6	7.4	0.02	0.37	0.02	55.1
All Vehicles			318	75.5	318	75.5	0.168	5.4	NA	0.6	7.7	0.13	0.41	0.13	52.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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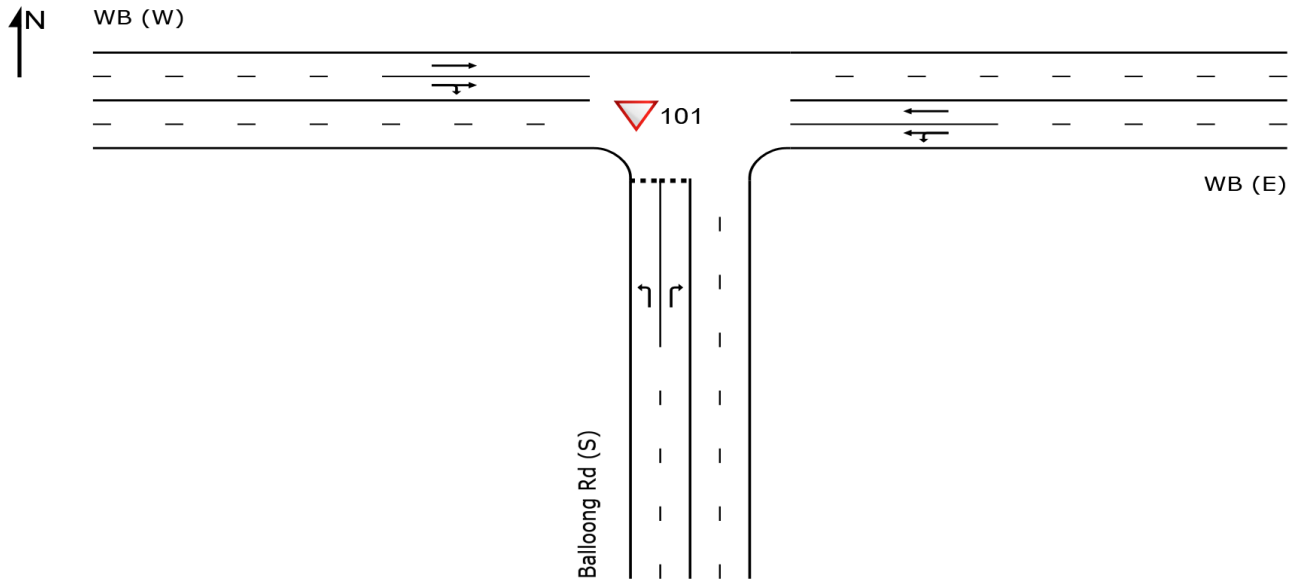
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SITE LAYOUT

▽ Site: 101 [WB Balloong - AM (Site Folder: AM Peak)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [WB Balloong - AM (Site Folder: AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: Balloong Rd (S)															
1	L2	All MCs	1	0.0	1	0.0	0.001	5.5	LOSA	0.0	0.0	0.03	0.56	0.03	52.8
3	R2	All MCs	1	0.0	1	0.0	0.002	9.3	LOSA	0.0	0.0	0.52	0.59	0.52	50.2
Approach			2	0.0	2	0.0	0.002	7.4	LOSA	0.0	0.0	0.28	0.58	0.28	51.5
East: WB (E)															
4	L2	All MCs	1	0.0	1	0.0	0.003	5.5	LOSA	0.0	0.0	0.00	0.11	0.00	56.5
5	T1	All MCs	11	10.0	11	10.0	0.003	0.0	LOSA	0.0	0.0	0.00	0.05	0.00	59.5
Approach			12	9.1	12	9.1	0.003	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.2
West: WB (W)															
11	T1	All MCs	217	0.5	217	0.5	0.112	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	59.9
12	R2	All MCs	268	0.0	268	0.0	0.188	5.6	LOSA	0.9	6.1	0.07	0.55	0.07	52.7
Approach			485	0.2	485	0.2	0.188	3.1	NA	0.9	6.1	0.04	0.31	0.04	55.7
All Vehicles			499	0.4	499	0.4	0.188	3.0	NA	0.9	6.1	0.04	0.30	0.04	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [WB Balloong - PM (Site Folder: PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: Balloong Rd (S)															
1	L2	All MCs	268	0.0	268	0.0	0.224	6.1	LOS A	0.9	6.6	0.25	0.56	0.25	52.1
3	R2	All MCs	1	0.0	1	0.0	0.001	7.2	LOS A	0.0	0.0	0.38	0.54	0.38	51.7
Approach			269	0.0	269	0.0	0.224	6.1	LOS A	0.9	6.6	0.25	0.56	0.25	52.1
East: WB (E)															
4	L2	All MCs	1	0.0	1	0.0	0.061	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.4
5	T1	All MCs	234	1.4	234	1.4	0.061	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			235	1.3	235	1.3	0.061	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: WB (W)															
11	T1	All MCs	27	11.5	27	11.5	0.008	0.0	LOS A	0.0	0.1	0.03	0.03	0.03	59.6
12	R2	All MCs	1	0.0	1	0.0	0.008	7.6	LOS A	0.0	0.1	0.06	0.07	0.06	56.8
Approach			28	11.1	28	11.1	0.008	0.3	NA	0.0	0.1	0.03	0.03	0.03	59.5
All Vehicles			533	1.2	533	1.2	0.224	3.1	NA	0.9	6.6	0.13	0.29	0.13	55.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [WB Balloong - Midday (Site Folder: Midday Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh.] veh	[Dist] m				
South: Balloong Rd (S)															
1	L2	All MCs	58	98.2	58	98.2	0.069	7.1	LOS A	0.3	3.3	0.16	0.54	0.16	48.7
3	R2	All MCs	1	0.0	1	0.0	0.001	7.2	LOS A	0.0	0.0	0.39	0.54	0.39	51.6
Approach			59	96.4	59	96.4	0.069	7.1	LOS A	0.3	3.3	0.16	0.54	0.16	48.7
East: WB (E)															
4	L2	All MCs	1	0.0	1	0.0	0.027	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	56.7
5	T1	All MCs	67	84.4	67	84.4	0.027	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
Approach			68	83.1	68	83.1	0.027	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.5
West: WB (W)															
11	T1	All MCs	67	84.4	67	84.4	0.053	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
12	R2	All MCs	58	98.2	58	98.2	0.069	7.5	LOS A	0.3	3.6	0.25	0.55	0.25	48.4
Approach			125	90.8	125	90.8	0.069	3.5	NA	0.3	3.6	0.12	0.25	0.12	54.0
All Vehicles			253	90.0	253	90.0	0.069	3.4	NA	0.3	3.6	0.10	0.25	0.10	54.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix I



Sight Distance Assessment





Access ref.	Access road	Existing sight distance (m)		Site visit photos		Potential restrictions
		Left of inter-section**	Right of inter-section^			
1*	New access road via Reeves Beach Road – eastern access	Restricted	Adequate	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- Mild roadside vegetation when looking left at intersection.
2	Off Reeves Beach Road – western access	Adequate	Restricted	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- Horizontal curve when looking right at intersection.
3*	New access road via Woodside Beach Road, situated approx. 2.7km east of Belchers Road	Restricted	Adequate	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- Minor roadside vegetation when looking left at intersection.





Access ref.	Access road	Existing sight distance (m)		Site visit photos		Potential restrictions
		Left of inter-section**	Right of inter-section^			
4	Off Woodside Beach Road – southern access	Restricted	Adequate	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- Minor vegetation when looking left at intersection.
5	Off Lyons Road	Adequate	Adequate	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- No restrictions.
6	Off Stringy Bark Lane	Adequate	Adequate	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- No restrictions.





Access ref.	Access road	Existing sight distance (m)		Site visit photos		Potential restrictions
		Left of inter-section**	Right of inter-section^			
7	Off Dewars Road – southern access	Restricted	Restricted	No photo available	No photo available	<ul style="list-style-type: none"> - Curve and vegetation when looking left at intersection - Mild vegetation when looking right at intersection.
8	Off Dewars Road – northern access	Restricted	Restricted	No photo available	No photo available	<ul style="list-style-type: none"> - Mild vegetation when looking left at intersection. - Curve and vegetation when looking right at intersection
9*	New access road via South Gippsland Highway, situated approx. 900m north of Dewars Road	Restricted	Adequate	 <p>Left of intersection</p>	 <p>Right of intersection</p>	<ul style="list-style-type: none"> - Heavy roadside vegetation when looking left at intersection.

Access ref.	Access road	Existing sight distance (m)		Site visit photos		Potential restrictions
		Left of inter-section**	Right of inter-section^			
10	Off Giffard Road	Adequate	Adequate	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- No restrictions.
11	Off Giffard Road	Adequate	Adequate	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- No restrictions.
12*	New access road via South Gippsland Highway, situated approx. 1.9km north of Giffard Road	Restricted	Restricted	 <p>Left of intersection</p>	 <p>Right of intersection</p>	<ul style="list-style-type: none"> - Minor vegetation when looking both directions at intersection. - Crest when looking right at intersection.

Access ref.	Access road	Existing sight distance (m)		Site visit photos		Potential restrictions
		Left of inter-section**	Right of inter-section^			
13	Off Four Mile Creek Road, Approximately 4km from SGH	Restricted	Restricted	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- Minor vegetation when looking both directions at intersection
14	Off Four Mile Creek Road – southern access	Restricted	Restricted	No photo available	No photo available	- Mild vegetation when looking both directions at intersection
15	Off Four Mile Creek Road – northern access	Restricted	Restricted	No photo available	No photo available	- Mild vegetation when looking both directions at intersection

Access ref.	Access road	Existing sight distance (m)		Site visit photos		Potential restrictions
		Left of inter-section**	Right of inter-section^			
16	Off Four Mile Creek Road	Restricted	Restricted	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- Minor vegetation when looking both directions at intersection.
17*	Carstairs Road	Restricted	Restricted	 <p>Left of intersection</p>	 <p>Right of intersection</p>	- Mild vegetation when looking both directions at intersection.
18*	New access road via Giffard West Road, situated approx. 5km east of South Gippsland Highway – Eastern access	Restricted	Restricted	 <p>Left of intersection</p>	 <p>Right of intersection</p>	<ul style="list-style-type: none"> - Mild vegetation when looking left at intersection. - Curve and vegetation when looking right at intersection

Access ref.	Access road	Existing sight distance (m)		Site visit photos		Potential restrictions
		Left of inter-section**	Right of inter-section^			
19	New access road via Giffard West Road, approx. 5km east of SGH – Western access	Restricted	Restricted	 <p>Left of intersection</p>	 <p>Right of intersection</p>	<ul style="list-style-type: none"> - Curve and vegetation when looking left at intersection - Minor vegetation when looking right at intersection.
20	Approx. 250m south of Giffard West Road via Eppelestuns Road – eastern access	Restricted	Restricted	 <p>Left of intersection</p>	 <p>Right of intersection</p>	<ul style="list-style-type: none"> - Mild vegetation when looking left at intersection - Curve and mild vegetation when looking right at intersection.
21	Approx. 250m south of Giffard West Road via Eppelestuns Road – western access	Restricted	Restricted	 <p>Left of intersection</p>	 <p>Right of intersection</p>	<ul style="list-style-type: none"> - Curve and mild vegetation when looking left at intersection - Minor vegetation when looking right at intersection.

Access ref.	Access road	Existing sight distance (m)		Site visit photos		Potential restrictions
		Left of inter-section**	Right of inter-section^			
22*	New access road situated approximately 1m east of South Gippsland Highway via Giffard West Road (northern access)	Restricted	Restricted	 <p>Left of intersection</p>	 <p>Right of intersection</p>	<ul style="list-style-type: none"> - Minor vegetation when looking left at intersection - Curve and minor vegetation when looking right at intersection.
23*	New access road situated approximately 1km east of South Gippsland Highway (southern access)	Restricted	Adequate	 <p>Left of intersection</p>	 <p>Right of intersection</p>	<ul style="list-style-type: none"> - Curve and minor vegetation when looking left at intersection

* denotes primary access point which has been analysed in more detail in Table 10-16 (Section 10.4.1)

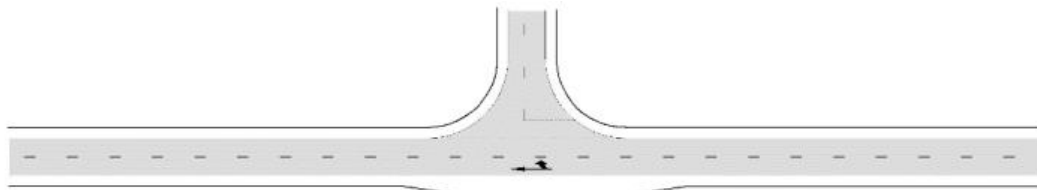
** 'Left of intersection' sight distances indicates the unimpeded distance when driver is looking to the left when exiting access road.

^ 'Right of intersection' sight distances indicates the unimpeded distance when driver is looking to the right when exiting.

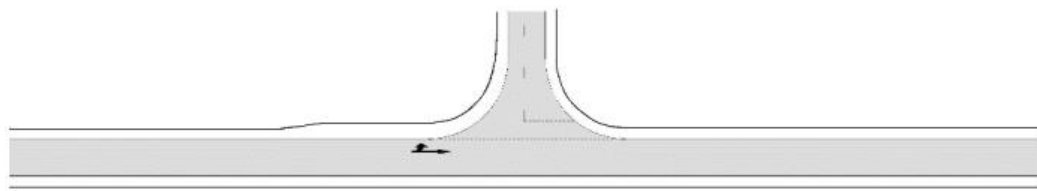
Appendix J

Turn treatment diagrams

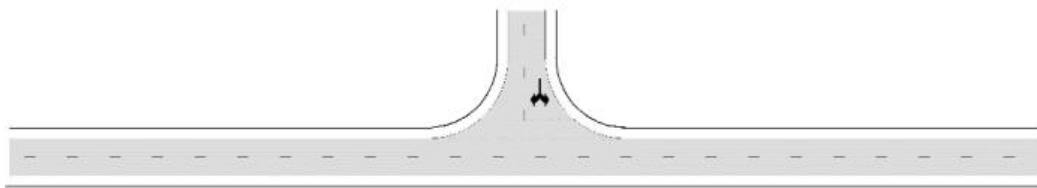
Rural basic (BA) treatment examples



**Basic Right Turn (BAR)
on the Major Road (Two-Lane, Two-Way Road)**



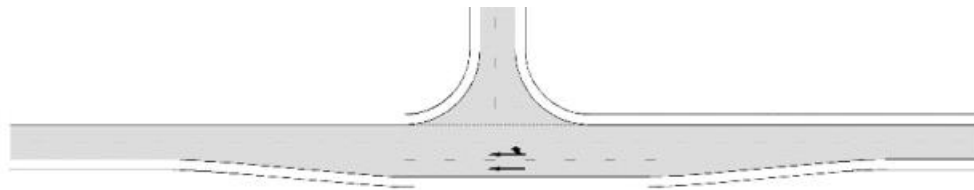
**Basic Left Turn (BAL)
on the Major Road**



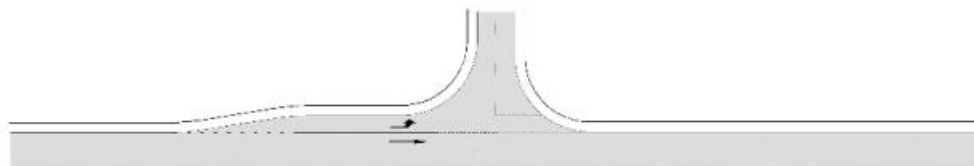
**Basic Left Turn (BAL)
on the Minor Road**

Source: Austroads Guide to Road Design Part 6 – Figure 2.1

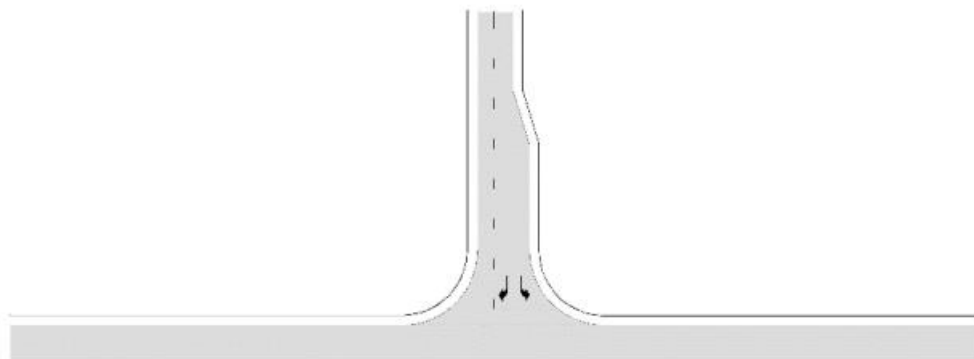
Rural auxiliary lane (AU) turn treatment examples



**Auxiliary Right Turn (AUR)
on the Major Road (Two-Lane, Two-Way Road)**
This turn type not as safe as a channelised treatment
at unsignalised intersections



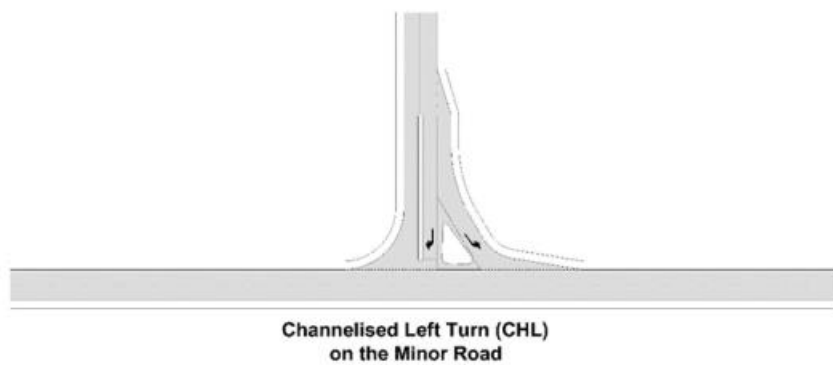
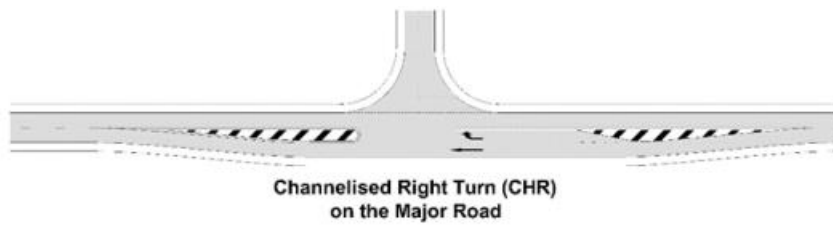
**Auxiliary Left Turn (AUL)
on the Major Road**
CHL treatment is preferred at unsignalised
intersections to ensure a clear line of sight for vehicles
turning from the minor road.



**Auxiliary Left Turn (AUL)
on the Minor Road**
This turn type is undesirable at unsignalised intersections
because it is not as safe as a single lane approach.
CHL treatment preferred.

Source: Austroads Guide to Road Design Part 6 – Figure 2.5

Rural channelised (CH) turn treatment examples



Source: Austroads Guide to Road Design Part 6 – Figure 2.7

Note: these diagrams illustrate principles and is not detailed design. Arrows indicate movements relevant to turn type and do not represent actual pavement markings.