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West Nowra Resource
Recovery Learning Centre
Traffic, Car Parking & Access
Report
(15/09/23)

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PeopleTrans Car Park Review and Bus Drop Off/Pick Up Concept Design

PeopleTrans Potential Future Stage Concept Car Park and Bus Drop Off/Pick Up Designs

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1. Introduction

1.1 Background

A development application is to be lodged with Shoalhaven City Council for a proposed resource recovery learning centre (RRLC) on land located at 120 Flat Rock Road in West Nowra.

The project involves the design of a building(s) that aim to provide an integration of education, innovation and technology. Serving as an exciting learning hub of Shoalhaven for resource recovery and waste management, the RRLC will effectively service a population of over 100,000 with total gross internal area of approximately 800m² and could potentially attract up to a maximum of 20,000 visitors per year based on 60 visitors per day.

The proposed development will be able to accommodate the following potential internal and external users:

- ◆ School Students & Staff (Over 30 Shoalhaven schools and pre-schools)
- ◆ University of Wollongong Students & Staff (Researchers)
- ◆ Community Groups (Social, Environmental, Recreational, Professional etc.)
- ◆ Shoalhaven Council Staff (Various Departments)
- ◆ Resource Recovery/Waste Services Staff

PeopleTrans was commissioned by Terroir Architects in June 2023 to provide transport planning and traffic engineering advice related primarily to the car parking and access requirements of the project.

1.2 Scope and Objectives of this Technical Note

This technical note sets out an assessment of the anticipated transport needs of the proposed development, including consideration of the following:

- (1) the existing traffic, transport and parking conditions surrounding the site.
- (2) the adequacy of the proposed parking supply and layout.
- (3) The adequacy of the proposed loading facilities.
- (4) the suitability of the proposed access.

1.3 Background Studies/Proposals

Terroir Architects provided PeopleTrans with previous traffic impact assessment reports for the West Nowra Resource Recovery Park (Referenced below) which have been utilised to extract relevant traffic data as it related to and in support of the RRLC project.

- (1) Bioelektra Australia Pty Ltd, West Nowra Resource Recovery Park-Stage 2, Traffic Impact Assessment, May 2021, GHD
- (2) West Nowra Stage 4 Landfill Extension, July 2018, Arcadis
- (3) West Nowra Resource Recovery Park, Traffic Impact Assessment, November 2015, GHD

Existing Conditions

2. Existing Conditions

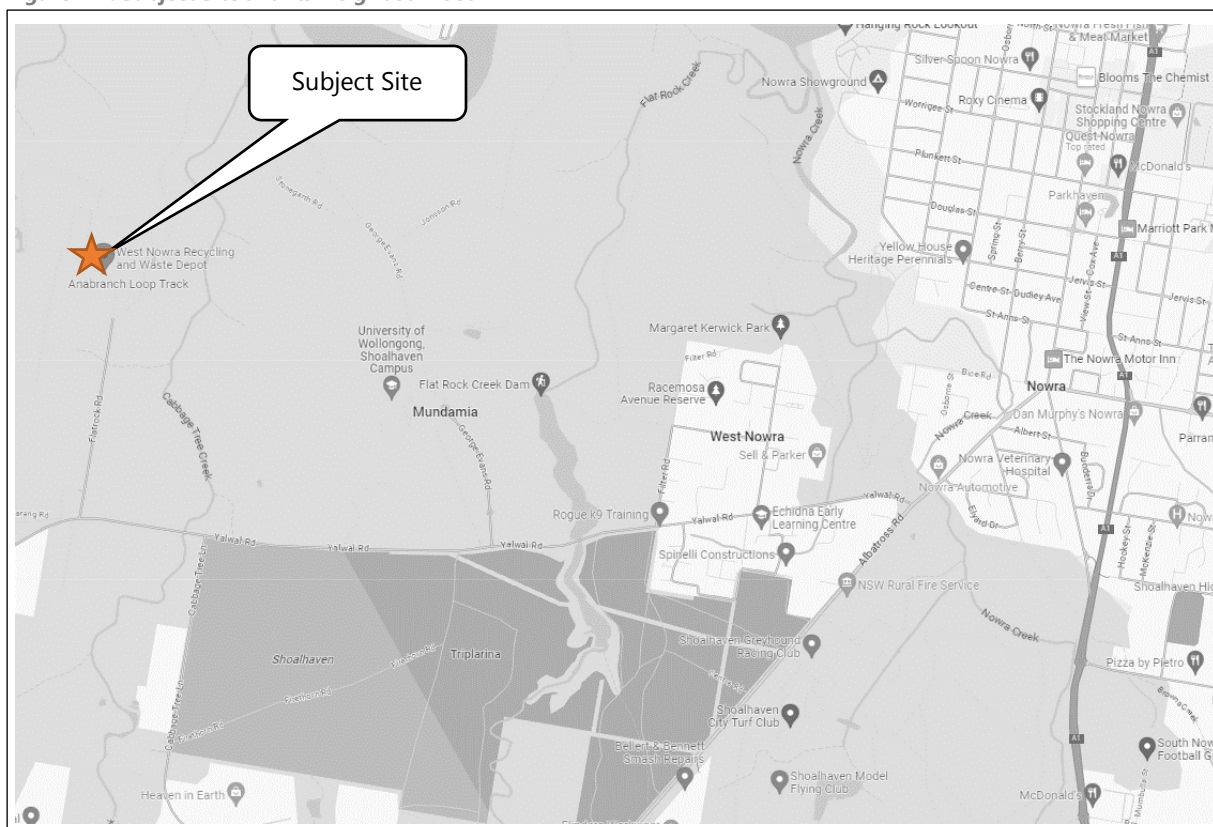
2.1 Site Location

The subject site is located approximately 5km west of the Nowra CBD with access via Yatala Road and Flat Rock Road as indicated in Figure 2-1. The proposed West Nowra Resource and Recovery Learning Centre (the project) is to be located directly adjacent to the Resource and Recovery Park and in brief will include 3 key buildings, being a multi-purpose space, a front of house/entry space and an administrative office as well as some outside learning space.

The site is currently zoned "SP2 Infrastructure" and, apart from some existing buildings and a car park is essentially a green field site.

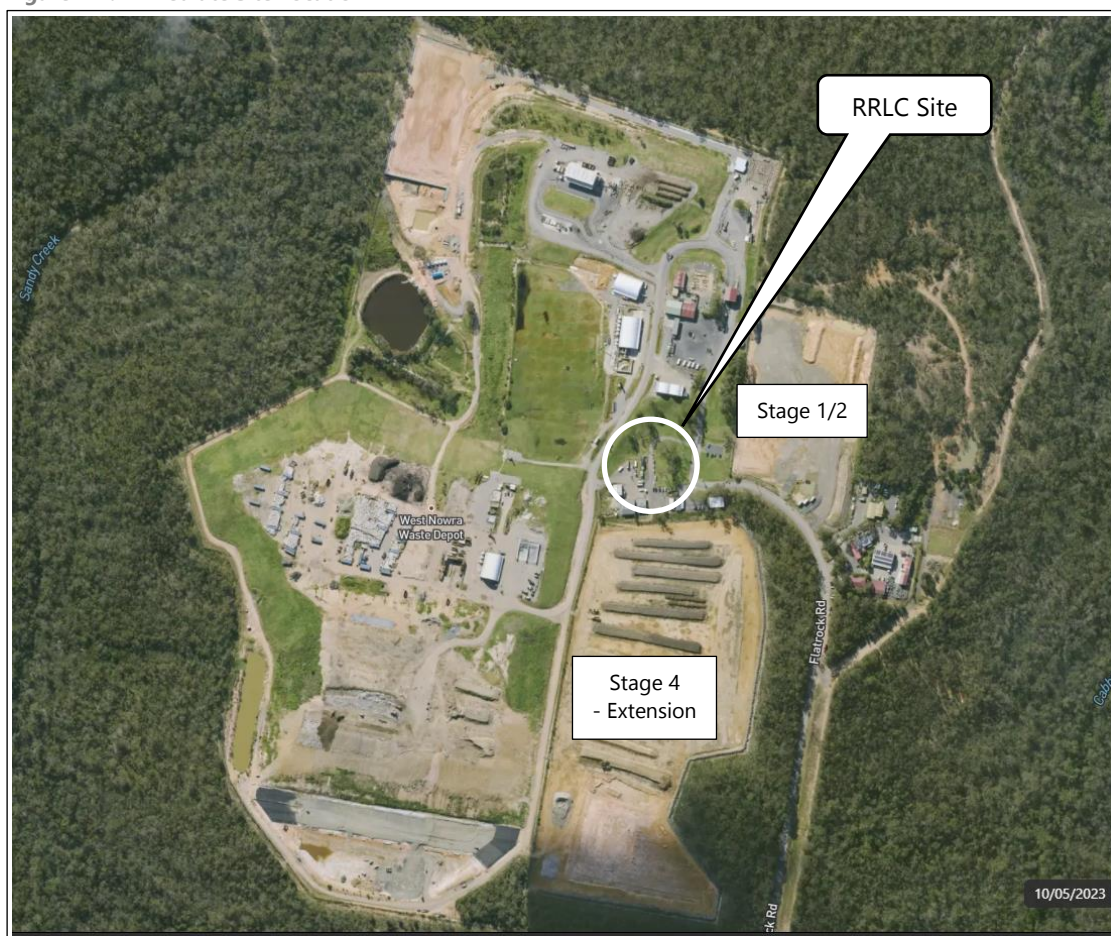
The location of the subject site and its neighbourhood is shown in Figure 2-1 and Figure 2.2.

Figure 2-1: Subject Site and Its Neighbourhood



Source: Google Maps

Figure 2-2: Immediate Site Location



Source: Metromap

2.2 Road Network

2.2.1 Adjoining Roads

Details of the roads in close proximity and providing access to the site are provided in Table 2.1

Table 2.1 Summary of Adjoining Roads

Road Name	Classification	Orientation	Configuration	Width	Daily Volume	Posted Speed Limit
Flat Rock Road	Local Road	North to South	One lane/two-way	6.5m	900 [1]	80km/hr
Yalwal Road	Collector Road	East to West	One lane/two-way	8.0m	7,100 [1]	60km/hr
Albatross Road	Collector Road	Southwest to Northeast	One lane/two-way	11.0m	11,700 [1]	60km/hr

[1] – Based on 2009 traffic counts applying a 2% per annum growth rate to 2020.

2.2.2 Surrounding Intersections

There is only one key existing intersection in the vicinity of the site as indicated in Table 2.2.

Table 2.2 Existing Intersections in the Vicinity of the Site

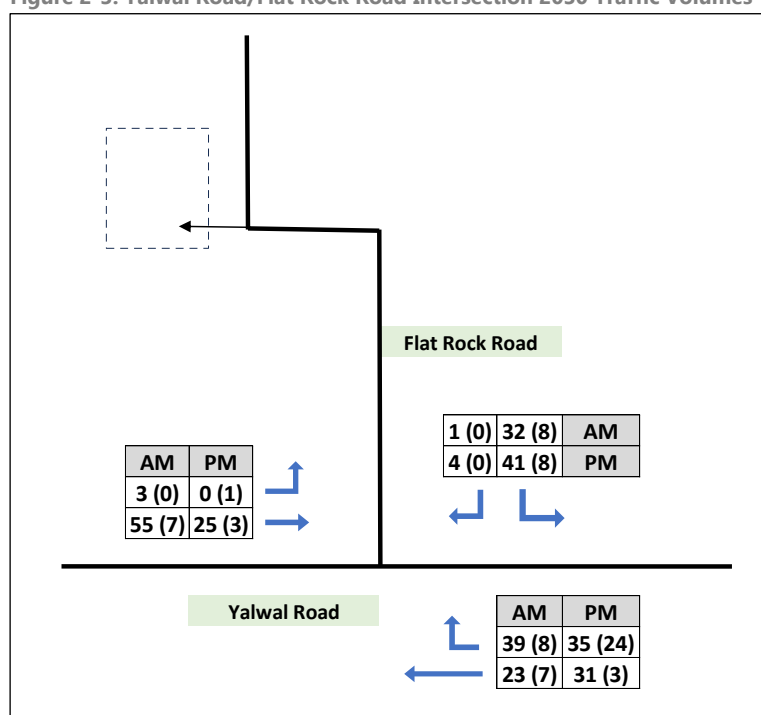
Intersection	Intersection Control
Yalwal Road/Flat Rock Road	Stop Control

2.2.3 Intersection Performance

The performance of the Yalwal Road/Flat Rock Road intersection was sourced from the latest traffic report provided by Shoalhaven City Council *"Bioelektra Australia Pty Ltd, West Nowra Resource Recovery Park- Stage 2 Traffic Impact Assessment"*, undertaken by GHD in May 2021 which indicated that in 2030 the intersection of Yalwal Road/Flat Rock Road would continue to operate satisfactory with a Level of Service A.

Traffic volumes for this intersection forecast to 2030, also contained in this report, were extracted by PeopleTrans and are replicated in Figure 2-3.

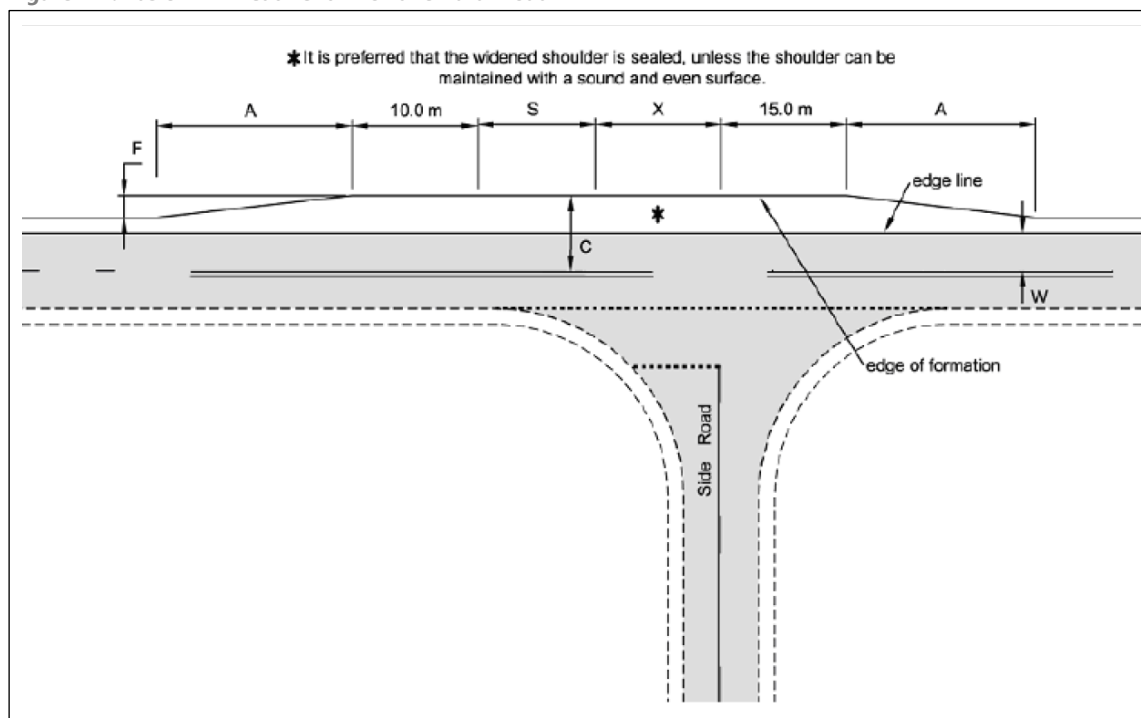
Figure 2-3: Yalwal Road/Flat Rock Road Intersection 2030 Traffic Volumes



Bracketed numbers represent heavy vehicles.

This report also importantly determined, based on a warrants assessment, that this intersection should include a widened shoulder on Yalwal Road (Refer Figure 2-4.) as per the requirement of "Austroads Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections" for a basic intersection treatment.

Figure 2-4: Basic BAR Treatment Two Lane Rural Road



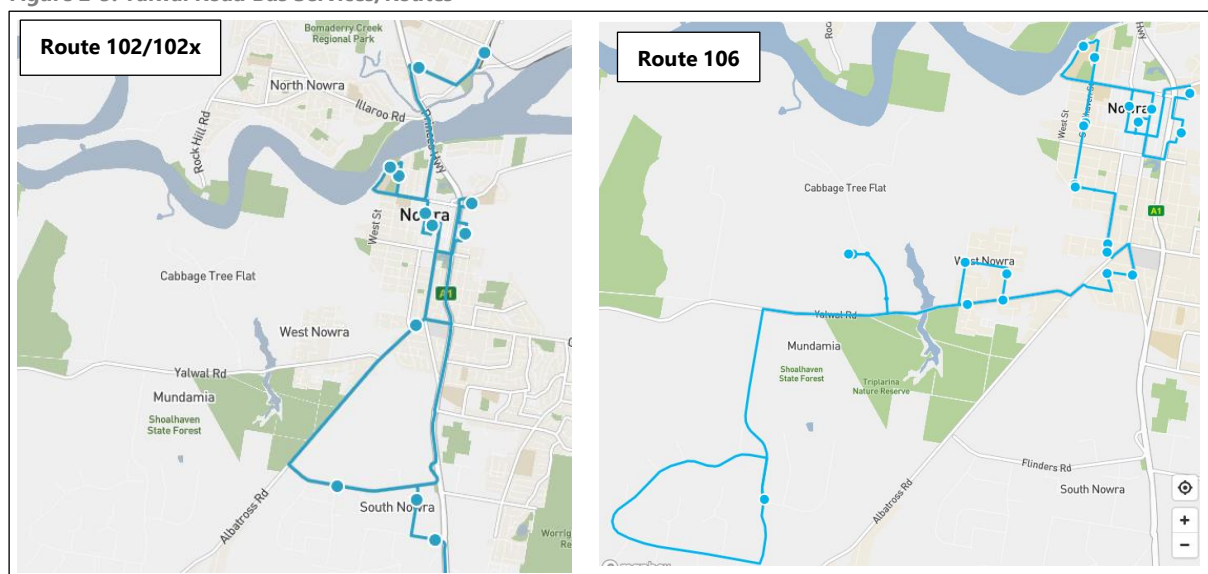
2.2.4 Public Transport

The site is not currently serviced by public buses with the nearest bus stop located within the University of Wollongong Shoalhaven campus. The nearest bus services operate on Yalwal Road & Albatross Road and include bus routes 102, 102x and 106 as indicated in Table 2.3 and Figure 2-5.

Table 2.3 Existing Bus Service in close proximity to the site

Route No.	Route Description
102	Basin View to Bomaderry Station & Nowra via St Georges Basin
102X	St Georges Basin to Bomaderry Station & Nowra via Sanctuary Point
106	West Nowra to Nowra via UOW Shoalhaven Campus (Loop Service)

Figure 2-5: Yalwal Road Bus Services/Routes



Source: [Routes and timetables / transportnsw.info](https://www.transportnsw.info/routes-and-timetables/). Last referenced September 2023

3. Proposed Development

3.1 Land Uses & People Occupancy

The proposed development includes the construction of a resource recovery learning centre (RRLC) as indicated in Figure 3-1.

Figure 3-1: Proposed Resource Recovery Learning Centre



Source: Realm Studios

Table 3.1: Development Schedule

Reference No.	Site Description	Approx. Size (m2 GFA)	Max Person Capacity
1	Multi- Purpose Room Pavilion + Ancillary uses	360	60 [1]
2	Front of House Pavilion + Ancillary uses	200	30 [1]
3	Office Pavilion + Ancillary uses	105	10 [2]
	Total	665	90
5	Outdoor Learning Space	550	60

[1] Consisting of external user groups.

[2] Consisting of centre administration staff & visitors.

It has been indicated that the RRLC would have 4 staff permanently on site during the centre opening hours.

3.2 Vehicle Access

Access for the centre is proposed via an existing driveway which has been modified to physically separate the entry and exit lanes providing improvements to vehicle safety as well as incorporating a bus drop off/pick up area.

The suitability of the proposed access arrangements and bus drop off/pick-up area is discussed in Section 5 of this report.

Proposed Development

3.3 Car Parking

The proposed learning centre will provide a total of 15 car parking spaces (including 1 x disabled space and 1 x electric vehicle space)

The suitability of the car parking provision and layout is discussed in Section 4 of this report.

3.4 Bicycle Facilities

There are currently no bicycle parking facilities provided at the site. The combination of cyclists (vulnerable road users) and large trucks is regarded as one of the highest risk categories for serious road accidents and should not be encouraged unless fully separated cycleways are provided.

3.5 Pedestrian Facilities

Pedestrian access to the site is proposed via the car park and a connecting central walkway noting that the walkway will need to be compliant as far as disabled access grades are concerned.

3.6 Loading Facilities

One loading area is proposed for the site which is located at the western most end of the car park which will accommodate small rigid 6.4m vehicles able to enter and exit in a forward direction meeting the loading requirements of the site.

The suitability of the proposed loading arrangements is discussed in Section 4 of this report.

4. Car Parking & Loading

4.1 Car Parking Requirements

It was emphasised from the outset of this project that private car parking was not to be a defining factor during the design development process for the site. Given the educational nature of the project it was anticipated that the users of the site (i.e. community groups and the like) would be arriving primarily by bus. Although it was acknowledged that there would be a requirement for some private car parking this was to be limited.

It has been indicated that the maximum number of people that the site could cater for at any one time would be in the region of 60-90.

Using a first principles approach and assuming there are 4 groups, of which 2 groups arrive by bus (25-seater buses) and the other 2 groups arrive by private vehicle (3 people per vehicle) then there is likely to be a requirement for 13 car parking spaces.

The car parking requirements for various development types are set out in *"Shoalhaven Council's Development Control Plan 2014, Chapter G21: Car Parking & Traffic"*. The closest parking rate identified for this site use was determined to be "Entertainment" and has been applied to the site as indicated in Table 4.1.

Table 4.1: DCP Car Parking Requirements

Description	Use	Size	DCP Parking Rate	Statutory Parking Requirement
Resource Recovery Learning Centre	Entertainment	60-90 People	1 space per 10 seats/people	9 Spaces

Based on the above, the proposed development is required to provide up to 9 car parking spaces.

PeopleTrans also sourced parking information from two similar sites in New South Wales as indicated in Table 4.2

Table 4.2: Similar Sites Parking

No	Main Site Name	Learning Centre Name	Parking Supply	References
1.	Kimbriki Resource Recovery Centre	The Eco House & Garden	10 Off-Street	The Eco House and Garden - Kimbriki Resource Recovery Centre
2.	Snowy Hydro Scheme	Discovery Centre	12 Off-Street & 8 On-Street	Snowy Hydro Discovery Centre - Snowy Hydro

Table 4.2 indicates that between 10 to 20 parking spaces were provided for these two sites.

4.1.1 Adequacy of Parking Supply

Based on the empirical assessment of the demand, the proposed on-site car parking provision is expected to be capable of accommodating the car parking demands associated with the RRLC.

4.2 Car Parking Layout Review

The car park layout has been reviewed against the requirements of the Australian Standard for Off Street Car Parking (AS/NZS2890.1:2004 and AS/NZS2890.6:2009). This assessment included a review of the following:

- ◆ bay and aisle widths
- ◆ adjacent structures
- ◆ turnaround facilities
- ◆ pick-up / set-down areas
- ◆ accessible parking

Table 4-3 shows the minimum car parking geometry and aisle width requirements of the proposed development as per AS2890.1:2004.

Table 4-3: AS2890.1:2004 geometry requirements for 90-degree parking

Parking Use	Parking category	Space dimensions	Aisle width
Visitors	Class 2	2.5m x 5.4m	5.8m

The car park layout has been reviewed by PeopleTrans (**Refer Appendix A**) and meets the requirements of AS2890.1:2004 as it relates to the car park geometry (space dimensions and aisle widths) and circulation.

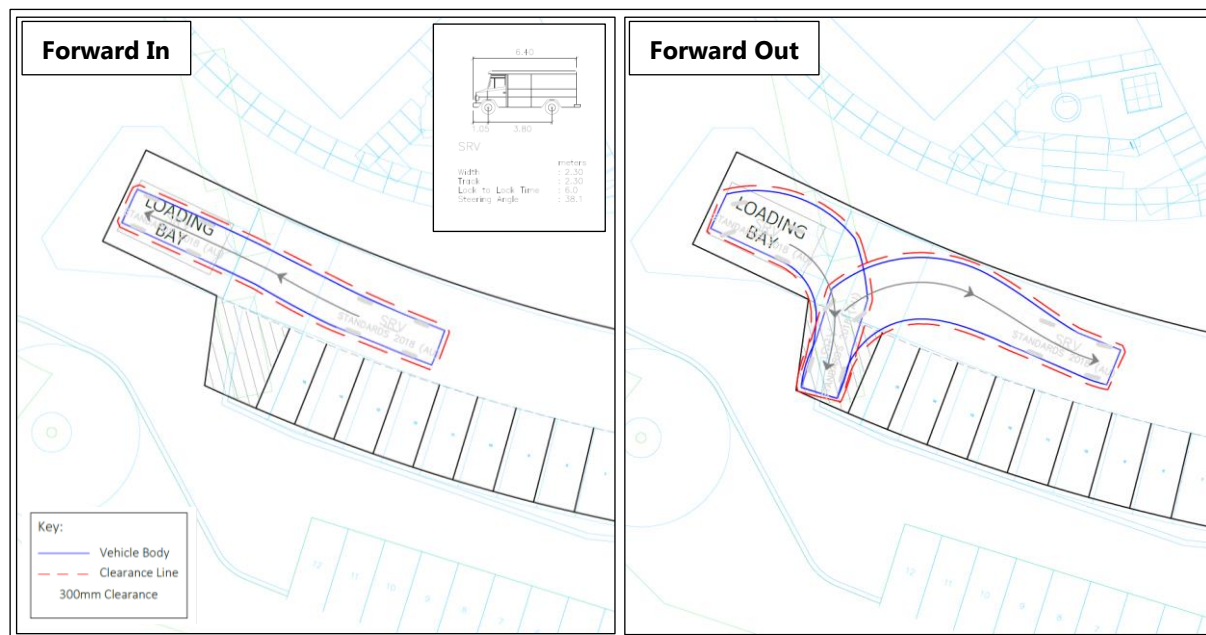
This review indicates that the proposed car parking layout is expected to operate satisfactorily.

4.3 Loading Requirements

4.3.1 Proposed Loading Arrangements

A loading area is proposed to be located at the western most end of the proposed car park within an enclosed / gated area. The loading bay had been designed to cater for a 6.4m Single Rigid Vehicle to enter forward in and then reverse into a turnaround bay and drive out in a forward direction as indicated in Figure 4-1.

Figure 4-1: Proposed Loading Bay



5. Access Design/Assessment

5.1 Access Design

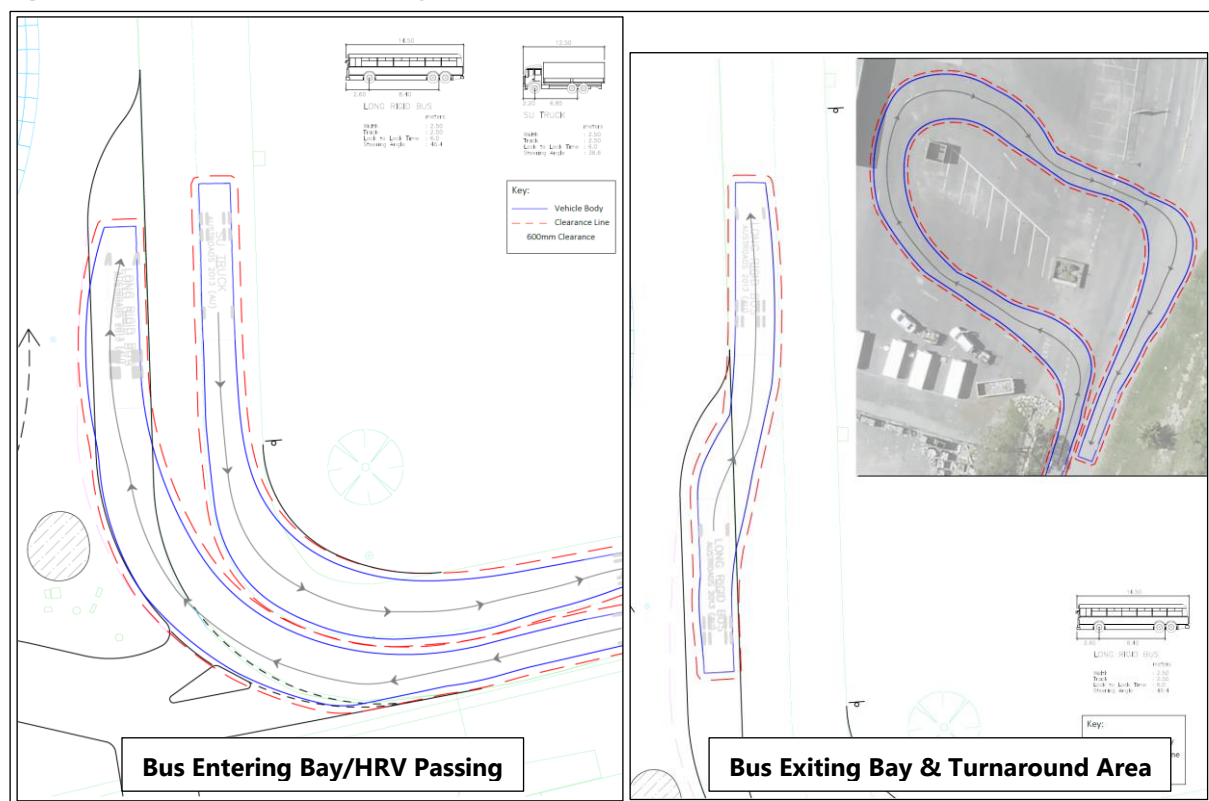
The design of the site access was defined primarily by the need to provide access for buses, service vehicles and private vehicles with buses anticipated to be the primary mode of transport used by people visiting the site.

At an early stage in the design process buses were proposed to be incorporated within the proposed car park but given the space restraints and the large bus turning circles this was not considered to be practical.

As a result of this PeopleTrans developed access concept designs which allowed safe access for private vehicles and service vehicles into the car park whilst simultaneously catering for 14.5m buses in a drop off/pick up bay directly north of the access. **(Refer Appendix B)**

To ensure that buses could safely access the proposed bus bay without conflicting with Resource Recovery Park heavy rigid vehicles travelling in the opposite direction PeopleTrans undertook a series of swept path analysis to inform the design as indicated in Figure 5-1.

Figure 5-1: 12.5m HRV Swept Patha Analysis



The results of this assessment indicated that there was a requirement to increase the radius on the inside of the curve of Flat Rock Road to allow heavy vehicles to safely bypass a bus entering the proposed bus bay.

To further improve safety at this location it is also recommended that additional warning signs, a restricted right turn movement and tree/vegetation trimming be included .

It should also be noted that buses would be required to use the existing area to the north of Flat Rock Road to turn around as also indicated in Figure 5-1.

5.2 Future Access Design Options

PeopleTrans also investigated alternate access and bus drop-off/pick up solutions, details of which are included in **Appendix B**. These however would require services relocation due to further widening of the radius on the bend of Flat Rock Road to allow all heavy vehicle types to pass side by side.

6. Traffic Impact Assessment

6.1 Trip Generation

Traffic generation estimates for the proposed RLCC have been determined by first principles, assuming that the RLCC has a maximum capacity of between 60-90 people and assuming a worst-case scenario where all people arrive by bus and private vehicle.

On this basis it has been estimated that there could be an additional 10-20 vehicles including 15 private vehicles (capacity of the visitor car park), 2 visitor groups arriving by 2 x 25-seater buses and 4 staff who drive private vehicles parking in the existing staff car park.

6.2 Operational Assessment

Against existing and future 2030 traffic volumes in the vicinity of the site, the additional traffic generated by the proposed development is negligible and is not expected to compromise the safety or function of the surrounding road network.

7. Conclusions

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

- (1) Empirical data indicates that there is a requirement to provide between 10-20 car parking spaces to meet the demand of the RRLC.
- (2) The proposed supply of 15 spaces is appropriate having consideration for the types of users and the predominance of buses as the key mode of transport to and from the site.
- (3) The proposed parking layout is consistent with the dimensional requirements as set out in the Australian/New Zealand Standard for Off Street Car Parking (AS/NZS2890.1:2004 and AS/NZS2890.6:2009).
- (4) The provision of loading is consistent with the dimensional requirements as set out in the Australian Standard for Off Street Commercial Parking Facilities (AS2890.2:2018) for a 6.4m single rigid vehicle which can enter and exit the site on a forward direction.
- (5) The bus drop-off/pick up bay has been designed to accommodate a 14.5m bus which can safely enter the bus bay without conflicting with a 12.5m heavy rigid vehicle traveling in the opposite direction on Flat Rock Road. This requires the inside radius of the bend on Flat Rock Road to be increased.
- (6) The RRLC access design includes a separation island to safely divide entering and exiting traffic but also to improve driver sight lines when exiting the site. It is also recommended that the right turn into the RRLC be restricted due to poor sight lines in this direction.
- (7) In the future if demand for the RRLC and Waste Recycling Park increases significantly there would be a requirement to make further adjustments to the access design including further adjustments to the radius on Flat Rock Road.
- (8) The site is expected to generate up to a maximum of 20 vehicle movements in any peak hour.
- (9) There is adequate capacity in the surrounding road network to cater for the traffic generated by the proposed development, although it should be noted that existing traffic volume warrants indicate a requirement to provide a basic BAR treatment at the intersection of Flat Rock Road/Yalwal Road.

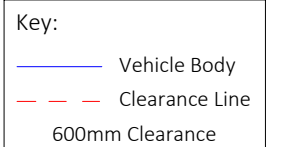
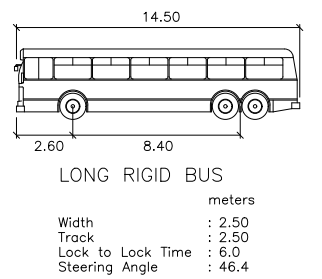
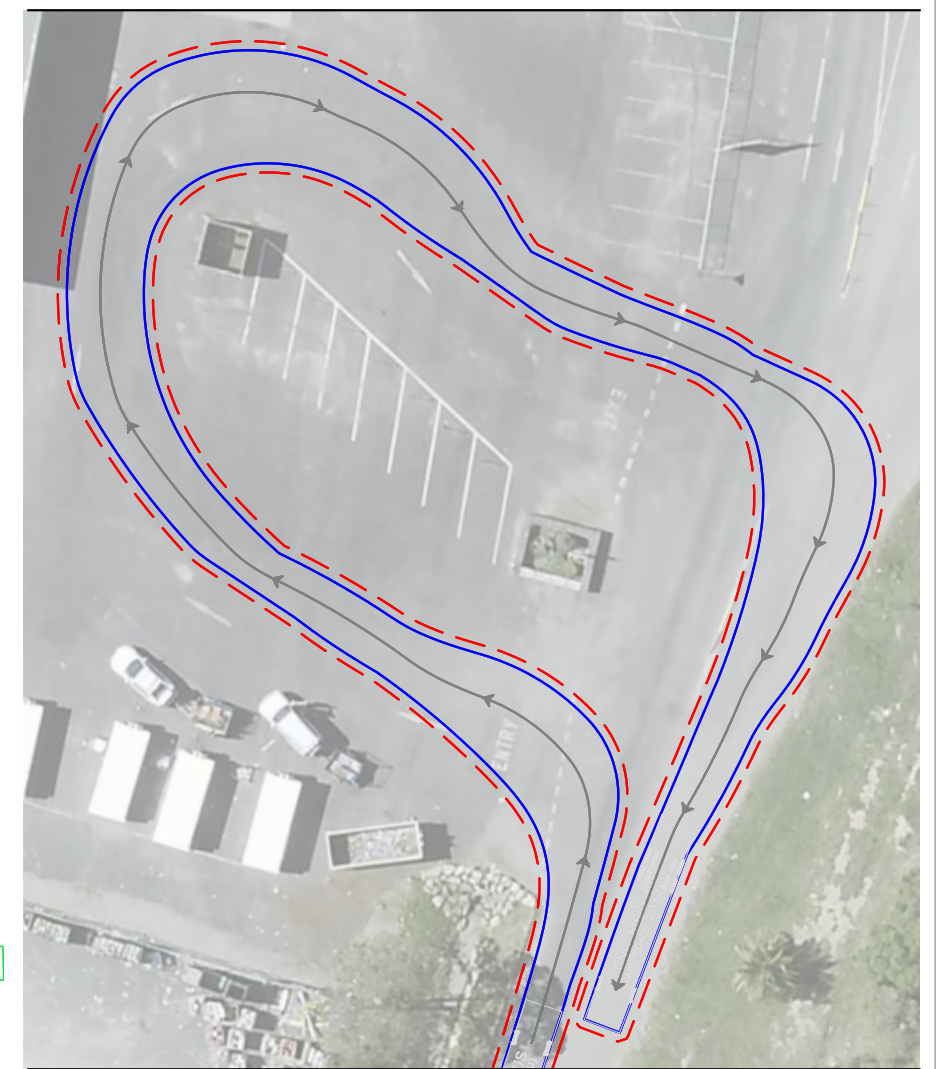
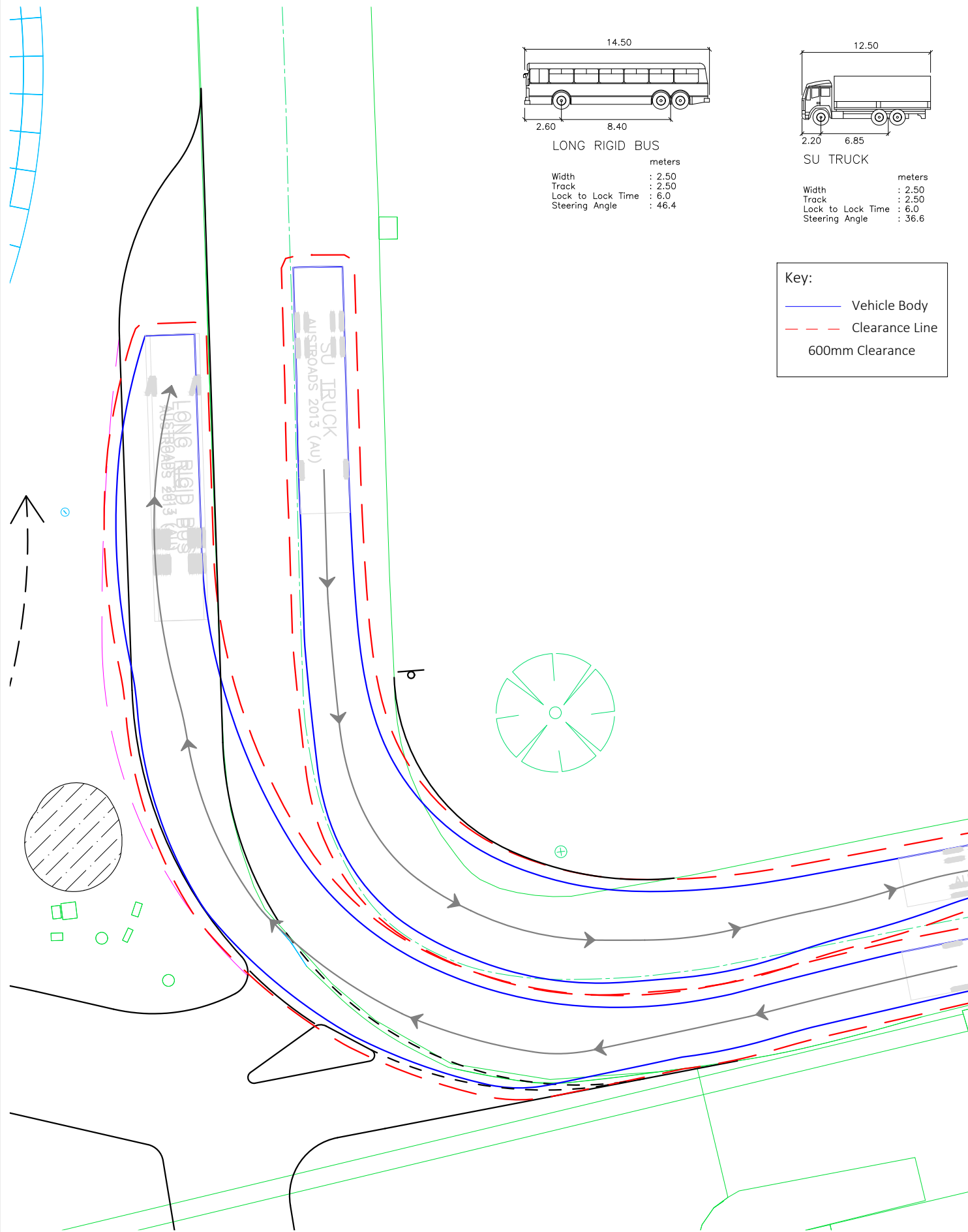
7.1 References

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

- ◆ Shoalhaven Council Development Control Plan (DCP) Chapter G21 Car Parking & Traffic.
- ◆ plans for the proposed development prepared by [Realm Studios], *Drawing Number 22449-00-L102, Revision B, dated 29/06/23.*
- ◆ Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004.
- ◆ Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2002.
- ◆ Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009.
- ◆ other documents and data as referenced in this report.

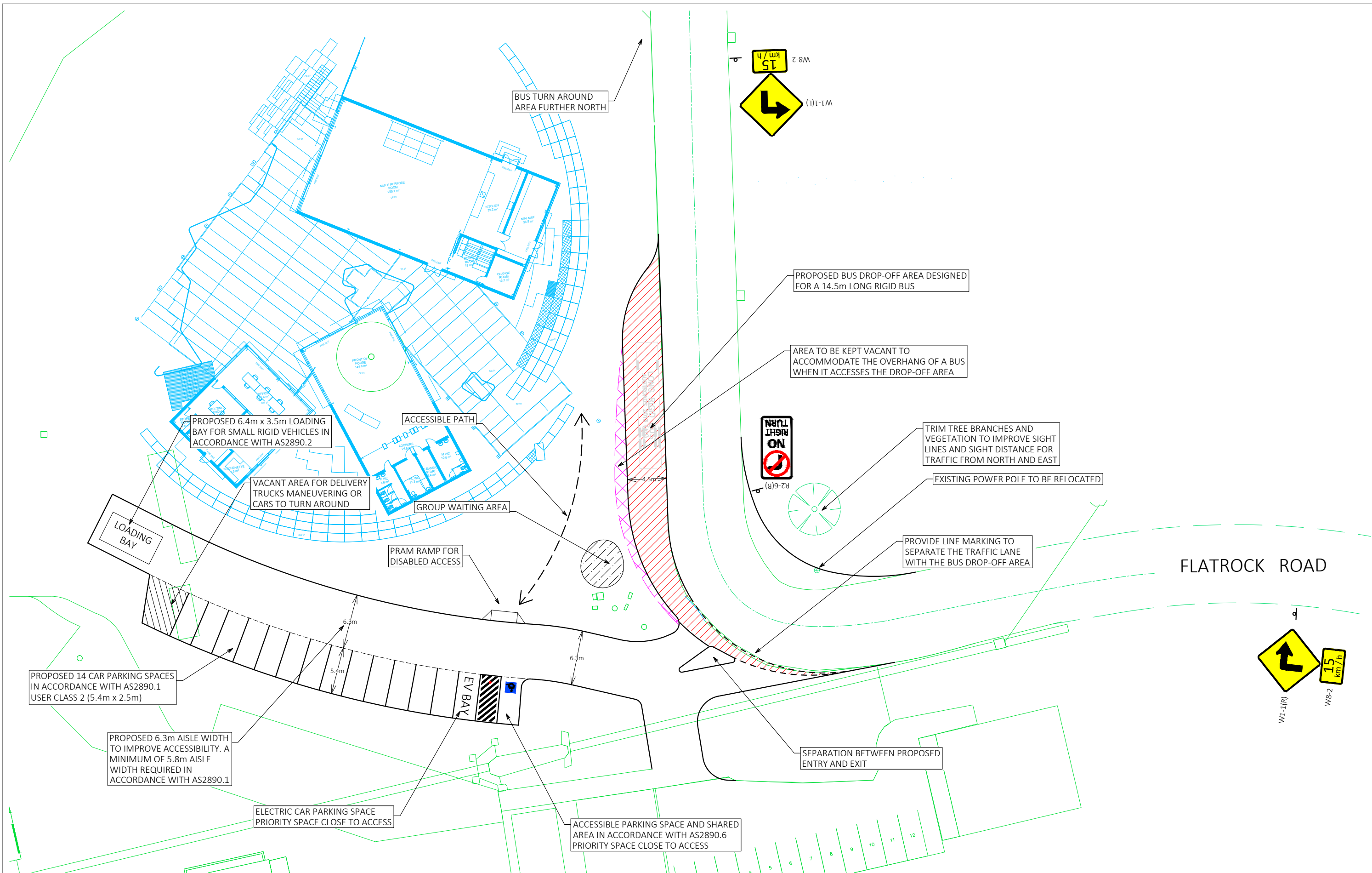
Appendix A

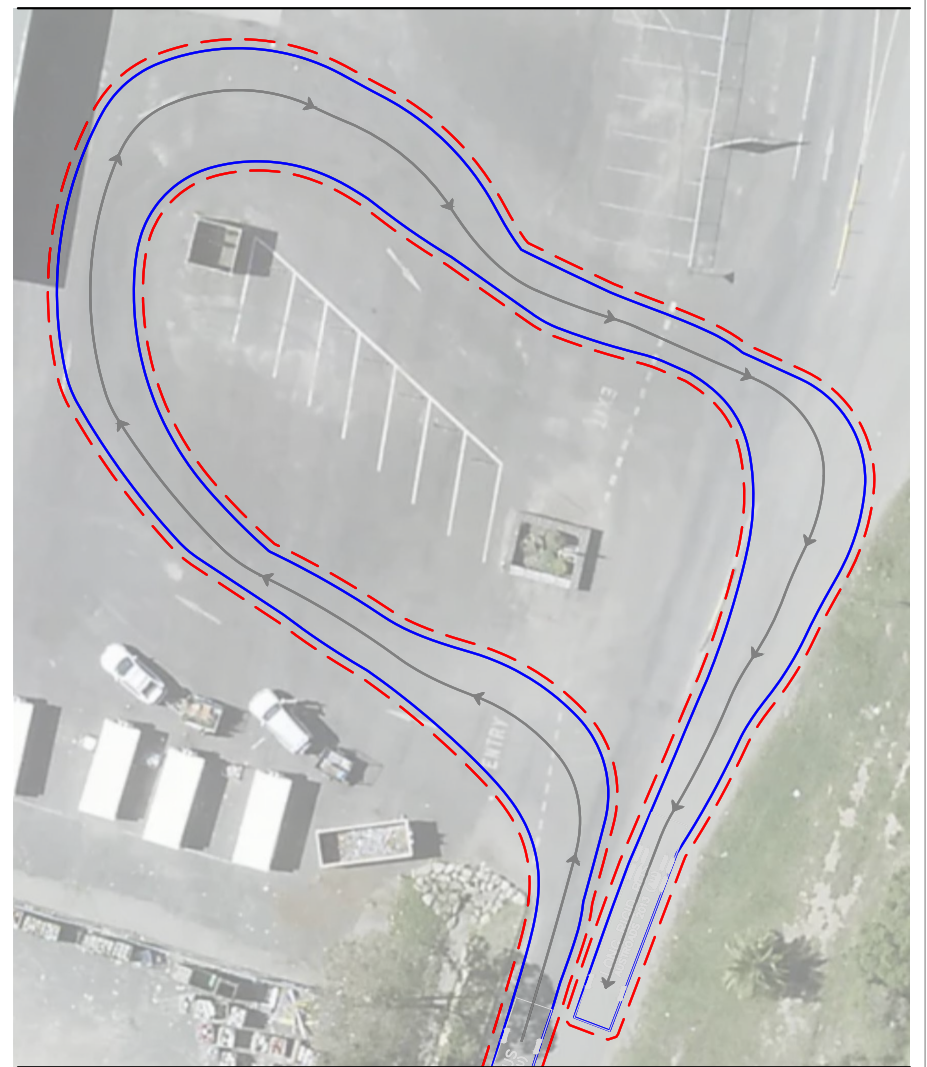
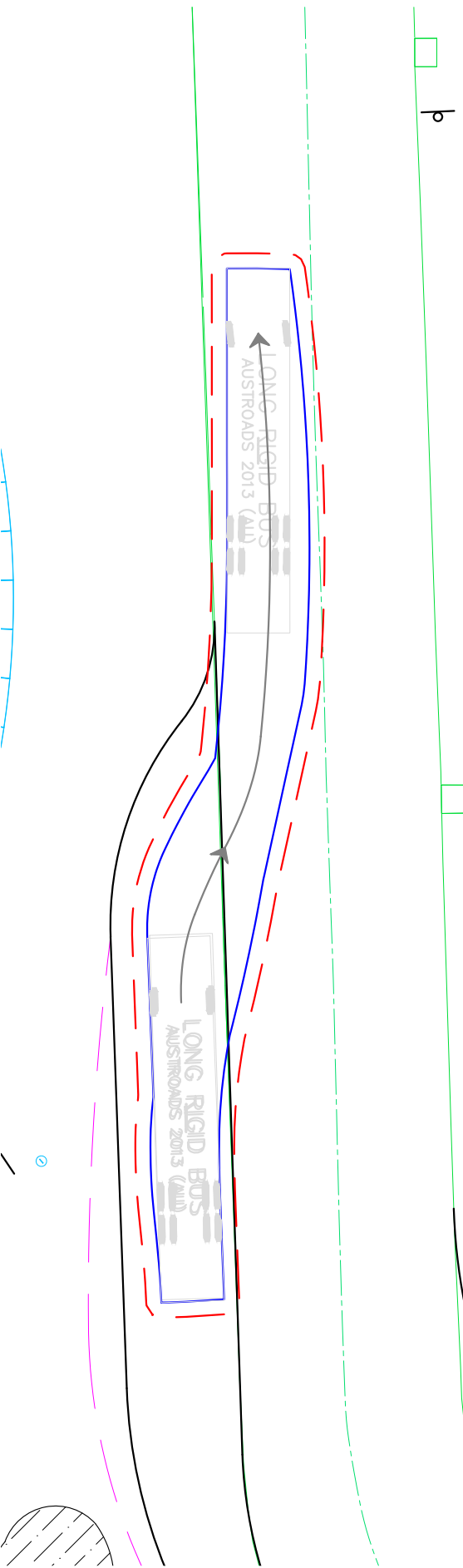
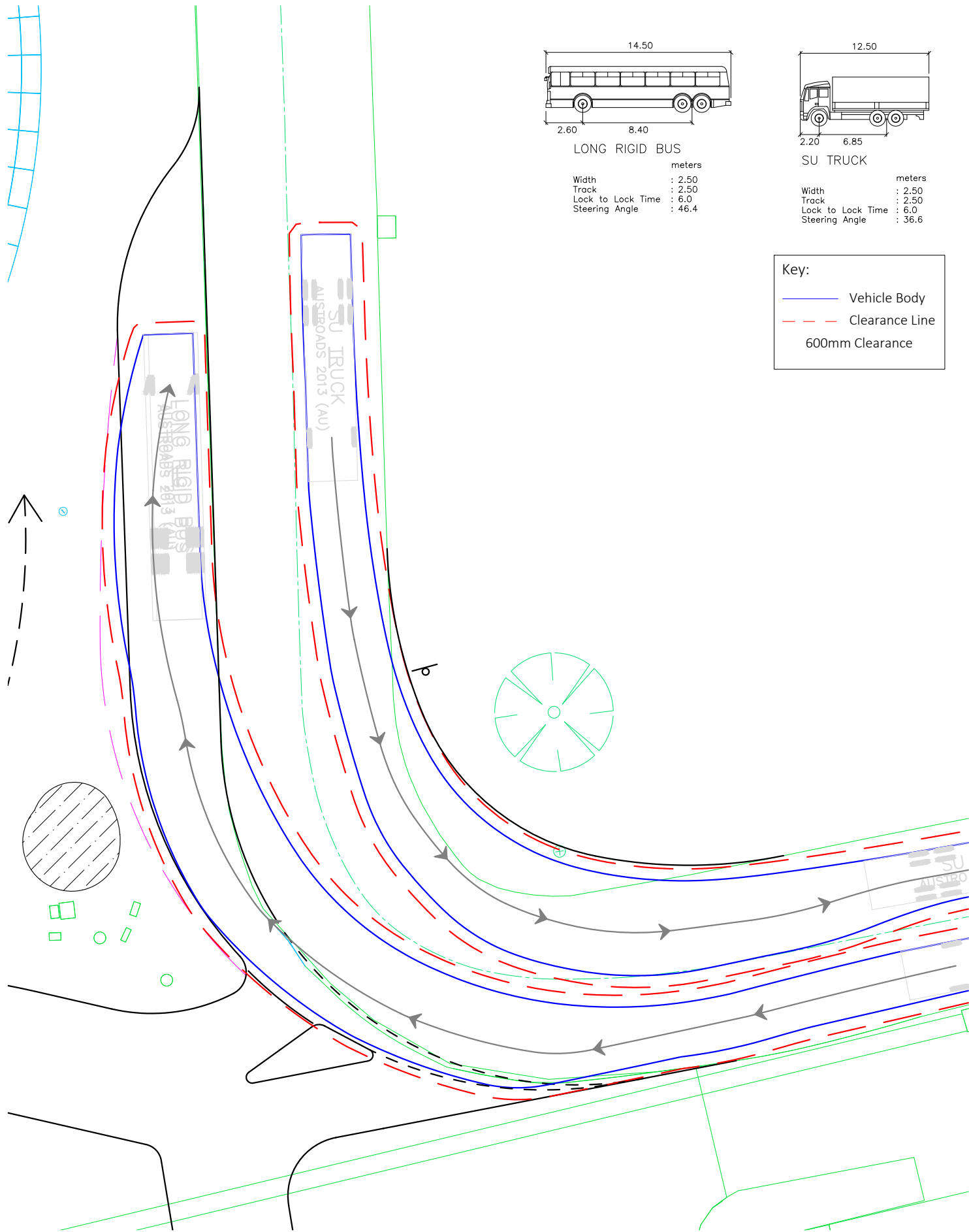
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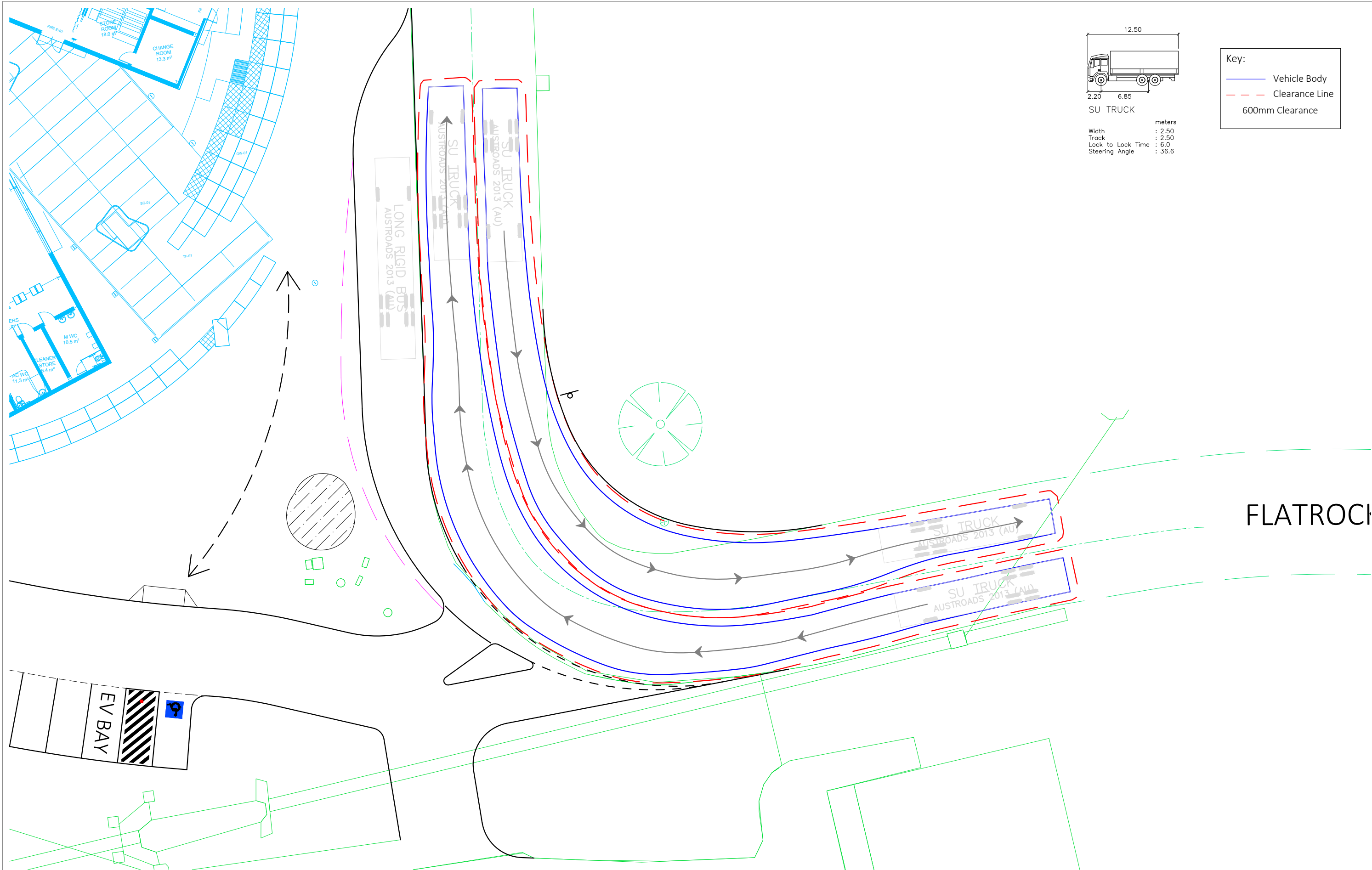


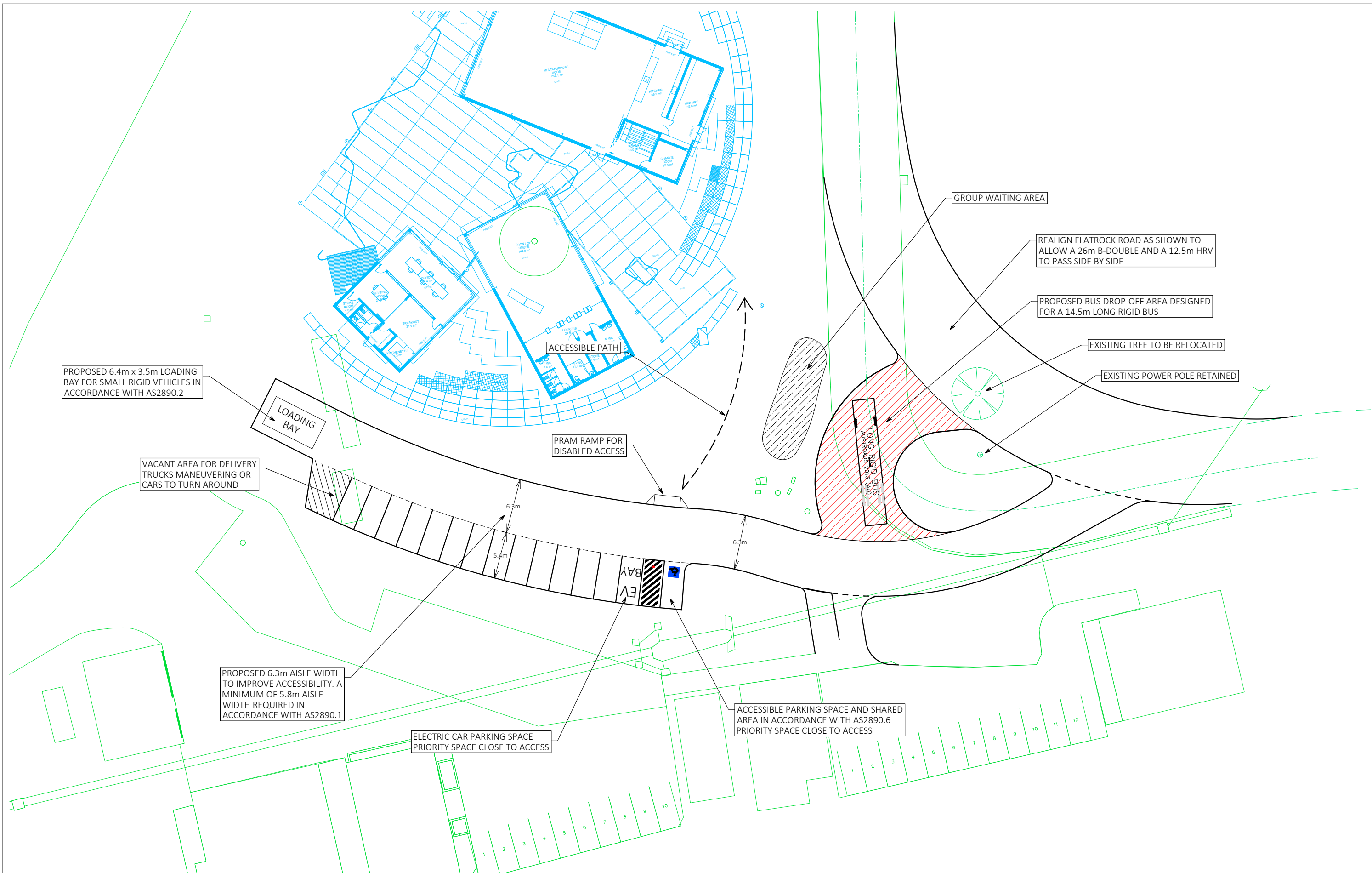
Appendix B

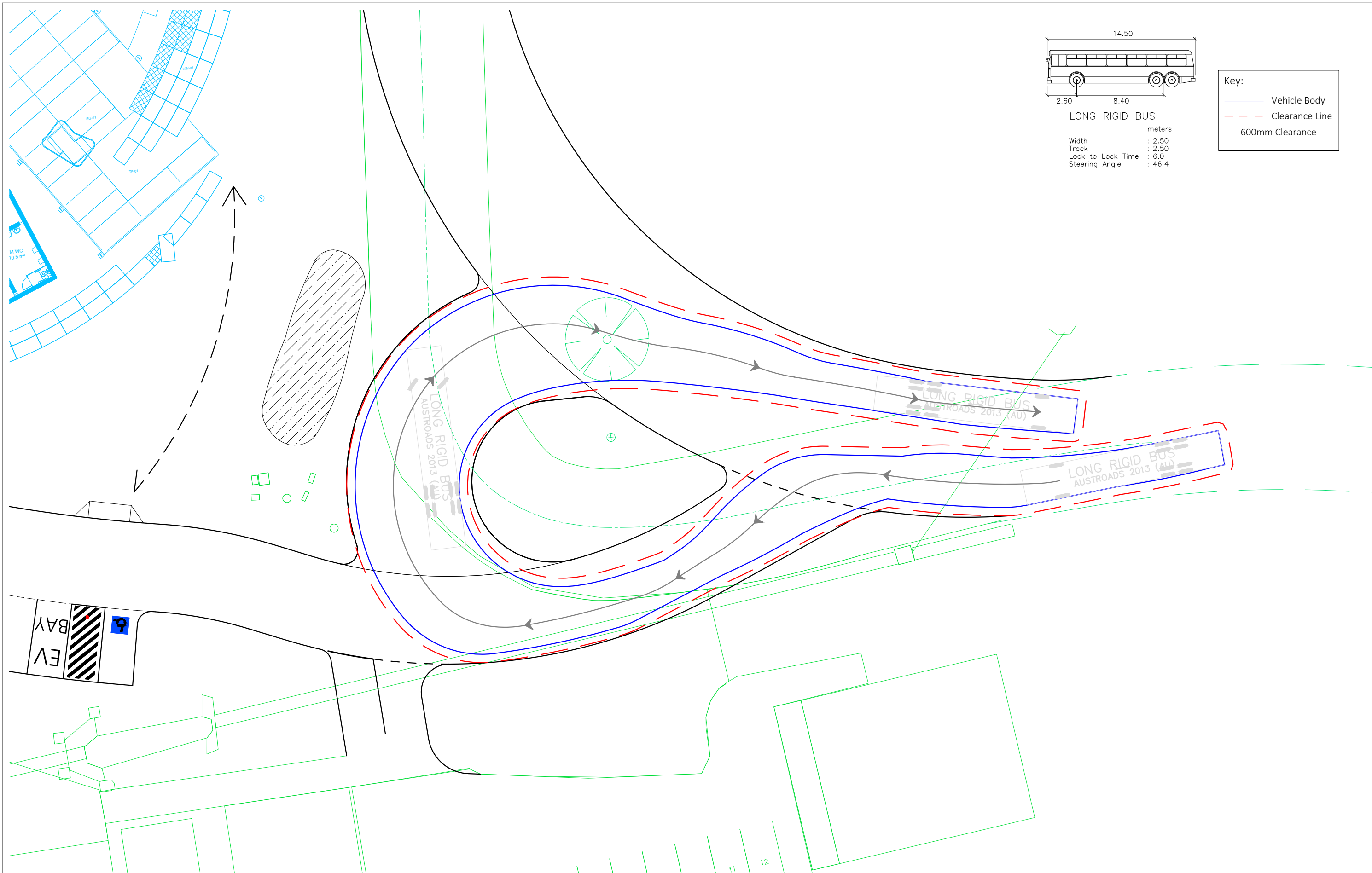
PeopleTrans Potential Future Stage Concept Car Park and Bus Drop Off/Pick Up Designs

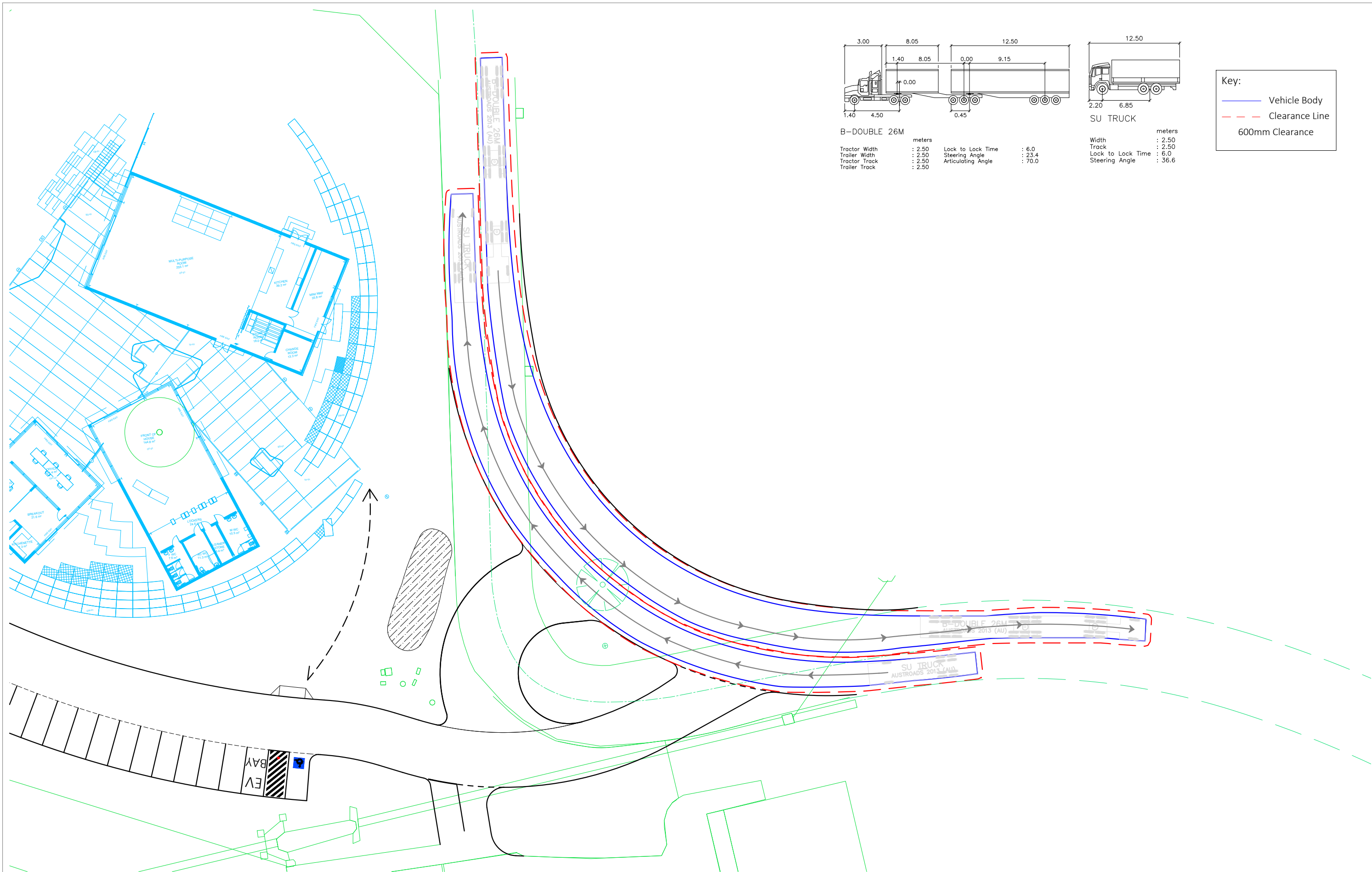




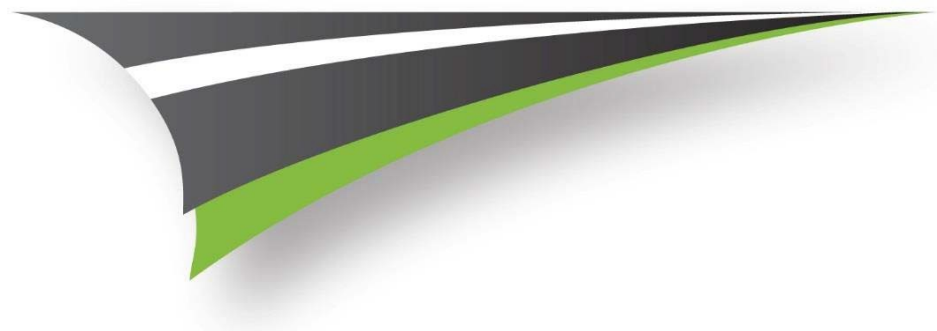








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