

TECHNICAL MEMO

SUBJECT: Cedar Grove Traffic Impact Assessment

OUR REF: 2260542A-TPT-RPT-002 RevC.docx

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1. INTRODUCTION

The Logan Water Infrastructure Alliance (WIA) has proposed to build a wastewater treatment plant (WWTP) on land at Cedar Grove Road, Dennis Road and Rogers Road in Cedar Grove, Logan City. The proposed works include the establishment of a regional WWTP and associated ancillary infrastructure, including an access road, a discharge main and construction of artificial wetlands. Operation of the facility will require regular vehicle traffic for supply delivery, waste removal and maintenance. All of these vehicles are expected to access the site via Cedar Grove Road and Mount Lindesay Highway, coming from the north.

Table 1.1 Cedar Grove WWTP vehicle access

PURPOSE	VEHICLE TYPE	RETURN TRIPS PER WEEK	ORIGIN / DESTINATION
Chemical deliveries	20,000 L tanker	1	Brisbane
Bio-solids removal*	Body truck	5	Various – likely Swanbank, Ipswich
Grit & Screenings	8t truck	1	Swanbank landfill
Operator light vehicles	Ute	8	Logan/Beenleigh

Note: Traffic estimates provided by Logan WIA

A swept path analysis was undertaken for a 3.5 km section of Cedar Grove Road between Mount Lindesay Highway and the proposed access road (approximately 550 m east of Rogers Road). The design vehicle is a 12.5 m single unit truck, as shown in Figure 1.1. This design vehicle was chosen to represent the body truck used for bio-solids removal, the largest of the vehicles required to access the facility.

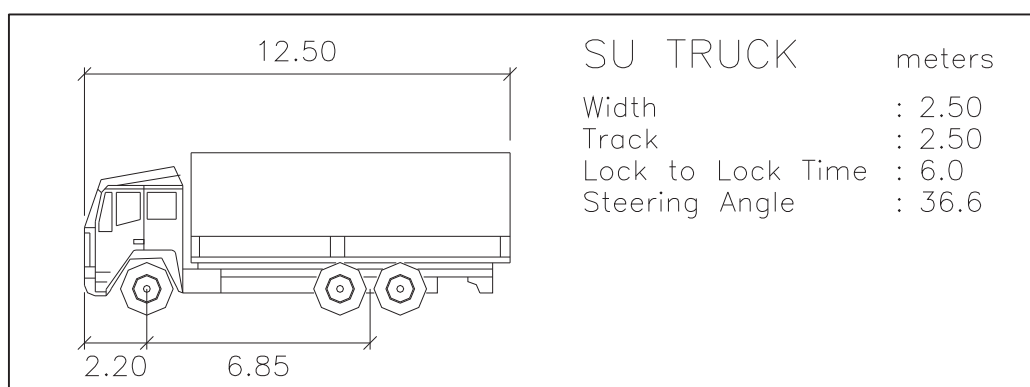


Figure 1.1 Design vehicle details – 12.5 m truck

2. SWEEP PATH ASSESSMENT

Cedar Grove Road has an existing sealed road width of approximately 6.0 m, with localised widening at some bends and intersections.

2.1 DESIGN STANDARDS

Austrroads Guide to Road Design (Part 3, Section 4.2.6) recommends that two lane sealed rural roads with low traffic volumes have a minimum total seal width of 7.2 m to allow adequate width for passing. Figure 2.1 shows an extract from this section of the Austrroads guide. The highlighted dimensions are recommended for low traffic, single carriageway rural roads.

Table 4.5: Single carriageway rural road widths (m)

Element	Design AADT				
	1 – 150	150 – 500	500 – 1,000	1,000 – 3,000	> 3,000
Traffic lanes ⁽¹⁾	3.7 (1 x 3.7)	6.2 (2 x 3.1)	6.2 – 7.0 (2 x 3.1/3.5)	7.0 (2 x 3.5)	7.0 (2 x 3.5)
Total shoulder	2.5	1.5	1.5	2.0	2.5
Minimum shoulder seal ^{(2),(3),(4),(5),(6)}	0	0.5	0.5	1.0	1.5
Total carriageway	8.7	9.2	9.2 – 10.0	11.0	12.0

Figure 2.1 Austrroads extract – Guide to Road Design Part 3 - Table 4.5

2.2 MOUNT LINDESAY HIGHWAY INTERSECTION

Vehicle movements to or from Mount Lindesay Highway south have been excluded from this assessment based on advice from the project team. It is unlikely that vehicles will approach the treatment facility from the Beaudesert area and all other origins / destinations would approach from the north.

2.2.1 EXITING CEDAR GROVE ROAD

The existing intersection does not provide adequate room for the design vehicle to perform a left turn to the left lane of Mount Lindesay Highway (NB). Turning left into the left lane, the swept path crosses over the existing kerb. This corner would require widening of approximately 2 m to allow left turn using a single lane only. However, the left turn can be achieved by using both northbound lanes on Mount Lindesay Highway. Swept paths for both turns are shown in Figure 2.2.

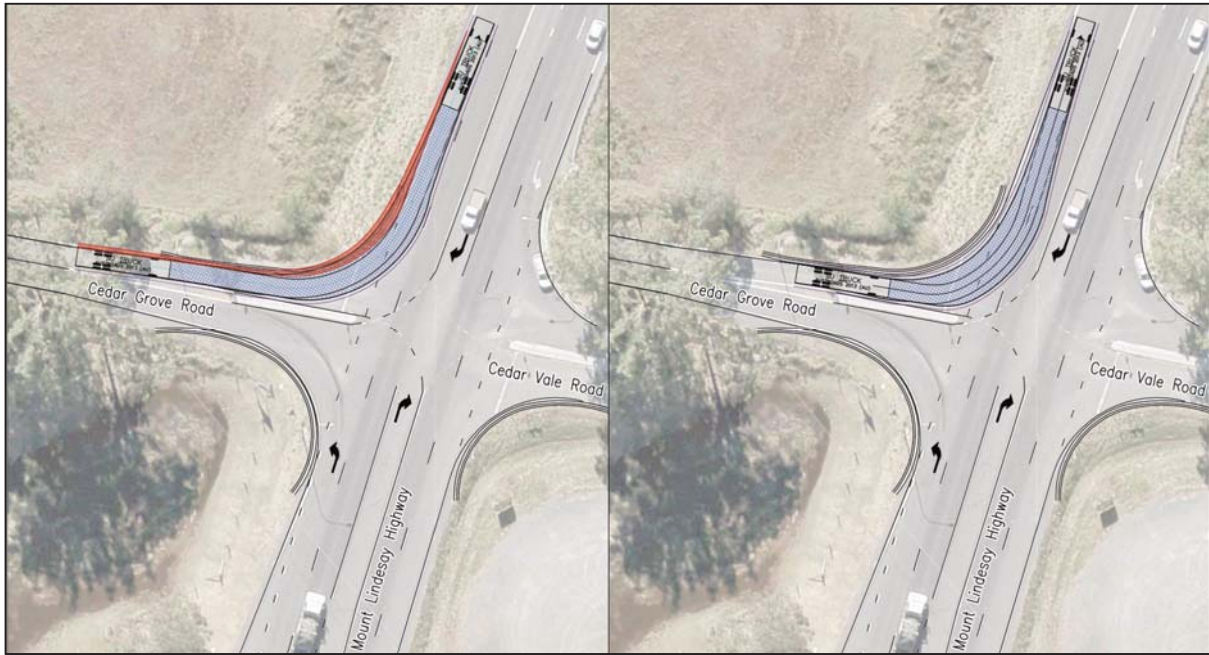


Figure 2.2 Swept paths – Cedar Grove Road left onto Mt Lindesay Highway northbound

2.2.2 ENTERING CEDAR GROVE ROAD

The existing intersection provides adequate room for the design vehicle to perform a right turn from the existing turning lane of Mount Lindesay Highway (SB) into Cedar Grove Road as shown in Figure 2.3.



Figure 2.3 Swept paths – Mt Lindesay Highway southbound right into Cedar Grove Road

2.3 CEDAR GROVE ROAD

Swept paths were assessed along Cedar Grove Road in both directions between Mount Lindesay Highway and the proposed access road. On straight sections for this road type Austroads guidelines recommend a minimum seal width of 7.2 m, greater than the existing 6.0 m.

In order for two design vehicles to pass each other on Cedar Grove Road, one or both vehicles are required to use the shoulder. This is adequate for low volume rural roads where shoulders are in good condition and clear of obstructions. Table 2.1 lists the swept path width for two design vehicles passing each other on curves along Cedar Grove Road, with chainage 0 starting at Mt Lindesay Highway. The existing width is generally below the swept path width, requiring design vehicles to use the shoulder when passing.

Table 2.1 Cedar Grove Road sealed width on bends

CHAINAGE	EXISTING SEALED WIDTH	SWEPT PATH WIDTH FOR 2 DESIGN VEHICLES PASSING
245 m	6.4 m	7.35 m
460 m	8.95 m	7.5 m
765 m	6.0 m	7.2 m
1060 m	6.0 m	7.2 m
1520 m	6.45 m	7.2 m
1940 m	6.3 m	7.3 m
2130 m	7.3 m	7.3 m
2290 m	6.0 m	7.3 m
2500 m	6.0 m	7.25 m
2900 m	6.0 m	7.2 m
3250 m	6.1 m	7.65 m

2.4 PROPOSED ACCESS ROAD

The intersection between Cedar Grove Road and the proposed access road should allow space for the design vehicle to perform right turns in and left turns out as shown in Figure 2.4. It is envisaged that this can be easily accommodated in the access road design.



Figure 2.4 Proposed access road intersection

3. CONCLUSION

This assessment only considered vehicles required for the ongoing operation and maintenance of the wastewater treatment plant. It is likely that larger vehicles will be required to access the site during construction. Traffic management and temporary works may be required to accommodate larger vehicles during construction.

The following conclusions can be drawn from the swept path analysis:

- The existing Cedar Grove Road sealed width is not adequate for two 12.5 m trucks to pass each other both physically on the existing pavement and for compliance to Austroads. However, the shoulders can be used to allow the two design vehicles to pass each other.
- Swept paths at the intersection between Cedar Grove Road and Mount Lindesay Highway demonstrate that the design vehicle requires both lanes for the turn exiting Cedar Grove Road to northbound Mount Lindesay Highway.
- Adequate width is available for the design vehicle to perform turns entering Cedar Grove Road from northbound Mount Lindesay Highway.

3.1 RECOMMENDATIONS

It is recommended that regular condition assessments are undertaken to assess the pavement and shoulders to determine if there has been any deterioration. This would then identify areas needing rectification. The recommended condition assessment frequencies are:

- prior to construction commencing,
- 1 / month during construction of the WWTP, and
- 1 / year during operation of the WWTP.