Technical Memorandum

Title	**Calderwood UDP MOD 4 Traffic and Transport Study** **Sensitivity Testing**		
Client	Lendlease	**Project No**	820180194
Date	17/07/2020	**Status**	Final
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Reviewer	Ivo Pais	**Office**	St Leonards, NSW

1.1 Introduction

Cardno was engaged by Lendlease Communities (Calderwood) Pty Limited (Lendlease) to undertake a traffic and transport study to address the Secretary's Environmental Assessment Requirements (SEARs) and to support a proposed increased yield from approximately 4,800 dwellings to approximately 6,000 dwellings in the area known as the Calderwood Urban Development Project (CUDP).

The CUDP site is located within the Calderwood Valley in the Illawarra region. It is approximately 700 hectares in area with approximately 107 hectares of land in the Wollongong LGA and the remainder located within the Shellharbour LGA. Lendlease is the developer of the majority of the CUDP, controlling approximately 609 ha of the overall site. The indicative subdivision plan for the CUDP site is shown in **Figure 1-1**.

The CUDP traffic and transport study was finalised and issued on 30 May 2019.

Further to a meeting held with Cardno and Lendlease on Wednesday 10 June 2020 regarding the Calderwood Urban Development Project (CUDP) development scale and impact on Calderwood Road, this technical memo details the sensitivity testing performed to understand the impact of reduced commercial floor space to traffic volumes on Calderwood Road. More specifically, the scenario tested consists of removing 5,000 m^2 of commercial floor space from within the Town Centre (20,000 m^2 down from 25,000 m^2 retail GFA).

1.2 Methodology

The steps in undertaking the sensitivity testing were:

- Update the demographics in the TRACKS model to account for the reduced floor space (which is associated with jobs within the model)
- Run the TRACKS model for both the 2036 AM and PM peaks
- Extract cordon matrices and input into the Aimsun model
- Run the AIMSUN model for both the 2036 AM and PM peaks.

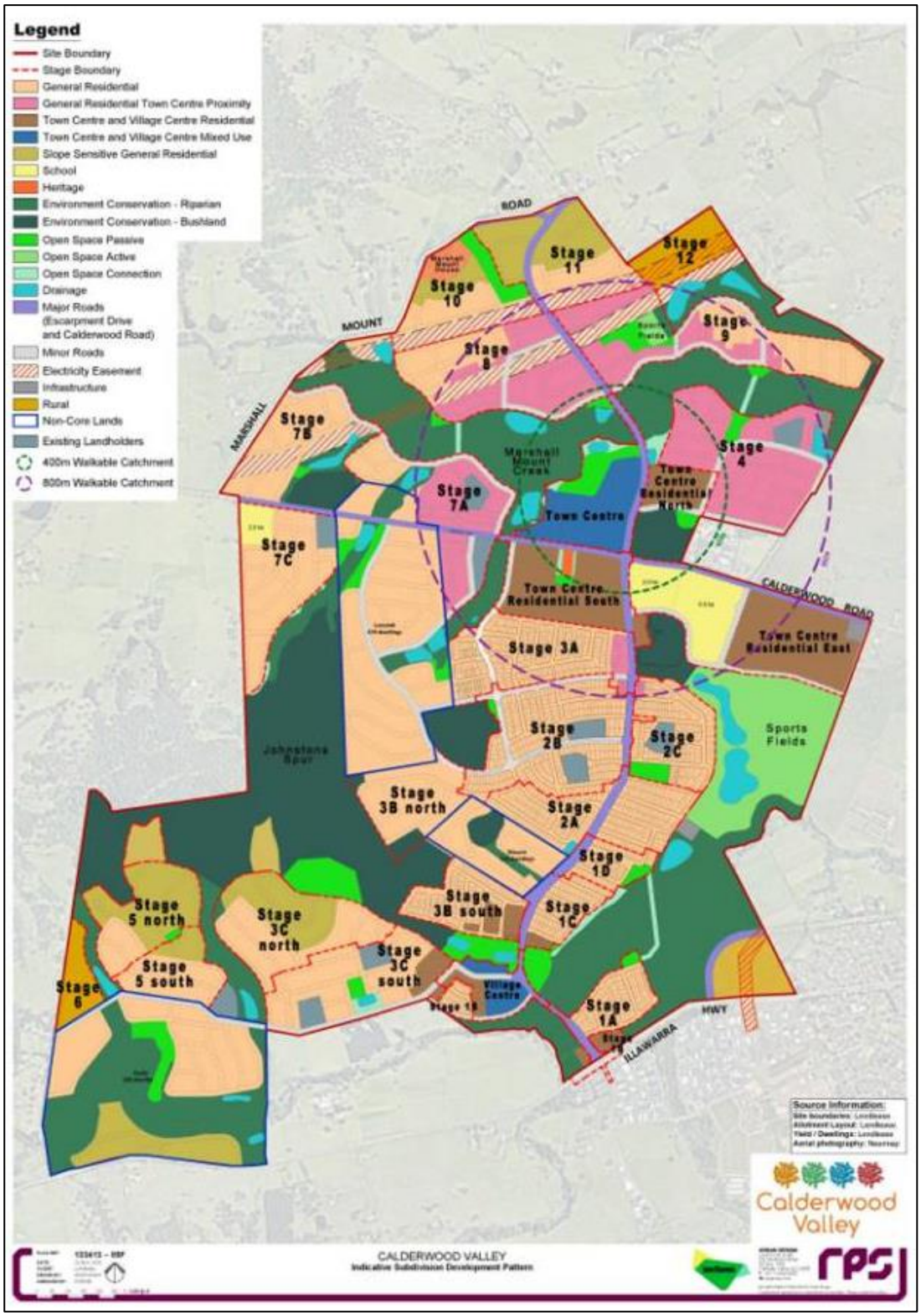


Figure 1-1 Indicative Subdivision Plan

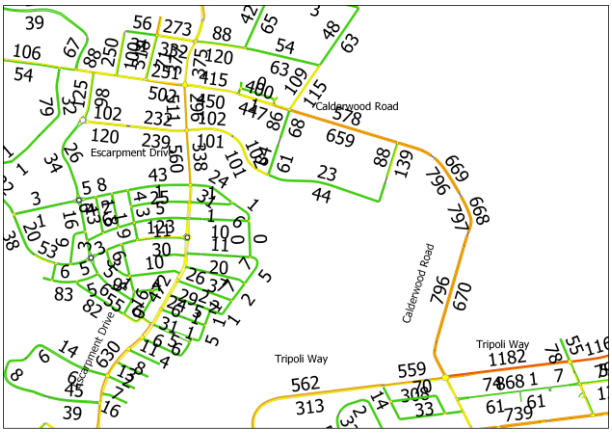
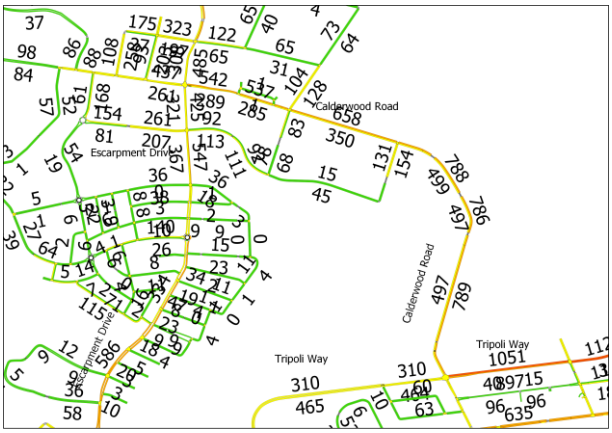
Source: Lendlease (2019)

1.3 Sensitivity Testing Results

The modelling results in **Table 1-1** indicate that the estimated traffic volume on Calderwood Road (north of Tripoli Way) during the peak periods are:

- AM Peak – 797 vph in the northbound direction to the Town Centre and 670 vph in the southbound direction from the Town Centre
- PM Peak – 499 vehicles per hour (vph) in the northbound direction to the Town Centre and 789 vph in the southbound direction from the Town Centre.

Table 1-1 2036 CUDP Simulated flow plot

AMP 8.00 am to 9.00 am	PMP 5.00 pm to 6.00 pm
	

*Model: 20190321_APRB R19_Options_6000wOPB_*

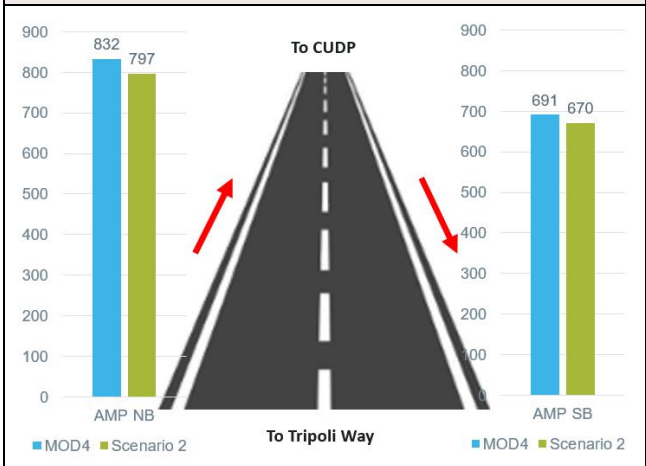
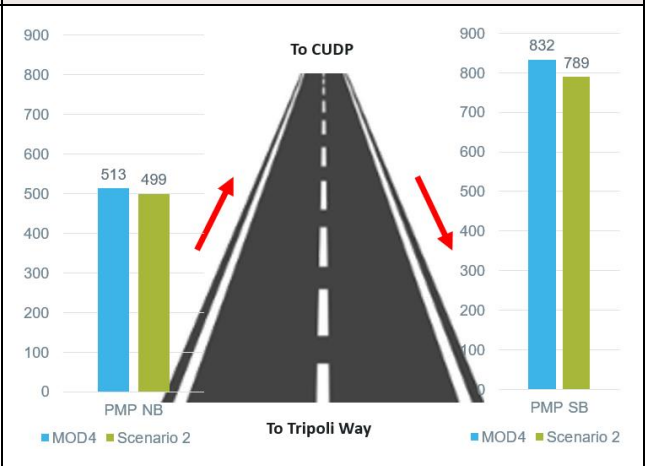
1.3.2 Comparative Assessment

The modelling results indicate that removing retail space at the Town Centre reduces traffic flows most noticeably in the northbound direction on Calderwood Road during the AM peak and also in the southbound direction during the PM peak. This is reflective of removing trips associated with employment at the Town Centre with less workers travelling to the Town Centre during the AM peak and leaving the Town Centre during the PM peak.

The estimated traffic volumes on Calderwood Road are generally higher in the northbound direction (to the Town Centre) than the southbound direction during the AM peak, and higher in the southbound direction (from the Town Centre) than the northbound direction during the PM peak. The comparative results are summarised in **Table 1-2**.

Table 1-2 Comparison of Traffic volume on Calderwood Road

Traffic volume on Calderwood Road (north of Tripoli Way)	AM 8.00 am to 9.00 am		PM 5.00 pm to 6.00 pm	
Scenario	Northbound (vph)	Southbound (vph)	Northbound (vph)	Southbound (vph)
2036 CUDP 6000 dwellings (MOD4)	832	691	513	832
Sensitivity Analysis – remove 5,000 m^2 of retail space from Town Centre	797	670	499	789

AM 8.00 am to 9.00 am	PM 5.00 pm to 6.00 pm
	

1.4 Conclusions

This technical memo detailed the sensitivity testing results to understand the impact of reduced commercial floor space within the Town Centre of the proposed Calderwood Urban Development Project to peak hour traffic volumes on Calderwood Road in 2036. The TRACKS strategic transport model was updated to account for the reduced floor space (which is associated with jobs within the model). The cordon matrices from the updated TRACKS model was then used to update the Aimsun model.

The Aimsun model results indicated reduced trips on Calderwood Road during the AM and PM peak hours in 2036. The most noticeable reduction in traffic flows is experienced in the 'critical' direction of Calderwood Road, which is northbound in the AM peak and southbound in the PM peak. This is reflective of removing trips associated with employment at the Town Centre with less workers travelling to the Town Centre during the AM peak and leaving the Town Centre during the PM peak.

Previous analysis documented that Calderwood Road would operate satisfactorily with a two lane cross section (one lane in each direction) based on the land use proposed under MOD 4. The proposed reduction in commercial floor space results in a further reduction of peak hour volumes on Calderwood Road and therefore contributes to an improved operational level and improved safety along the corridor.