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Subject: Plan Change 5 Modelling Review

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Plan Change 5 Modelling Review

1 Introduction

Purpose

- 1.1 To review modelling undertaken in relation to Proposed Plan Change 5 (Private): 100 and 110 Te Moana Road (hereafter called the 'plan change' site).
- 1.2 The models reviewed are SIDRA 10 am and pm peak hour network models covering the following intersections:
 - Ngārara Farms subdivision access (Te Ara Kawakahia) hereafter referred to as the 'Ngārara development'.
 - The proposed 'plan change' access
 - Western Te Moana expressway interchange signalised intersection
 - Eastern Te Moana expressway interchange signalised intersection
- 1.3 The work required consideration of traffic demands by interrogating the Kapiti Traffic Model version 4 (KTM4) future year 2036 am and pm peak do-minimum (DM) SATURN models. The KTM4 model was built for KCDC, is the best assignment model available and has been successfully applied in the assessment of various plans and major proposals since 2018.
- 1.4 The output from the work represents a review of the underlying traffic demands for SIDRA scenario testing.
- 1.5 It should be noted that no adjustments to the SATURN KTM4 DM models have been made.

2 Model Scenarios

- 2.1 Six scenarios have been investigated for the am and pm peak hour as follows:
 - (i) Existing (2026) demands based on traffic counts at the Te Ara Kawakahia / Te Moana Road intersection and recorded SCATS demand for the Te Moana (western and eastern) signalised expressway interchanges.
 - (ii) Existing plus 'plan change' traffic, assuming 150 dwellings @ 1.3 peak hour trips (195 PCU in the am and pm peak hours).
 - (iii) Existing plus consented future development (including retirement units) at the Ngārara development (626 PCU) as follows.

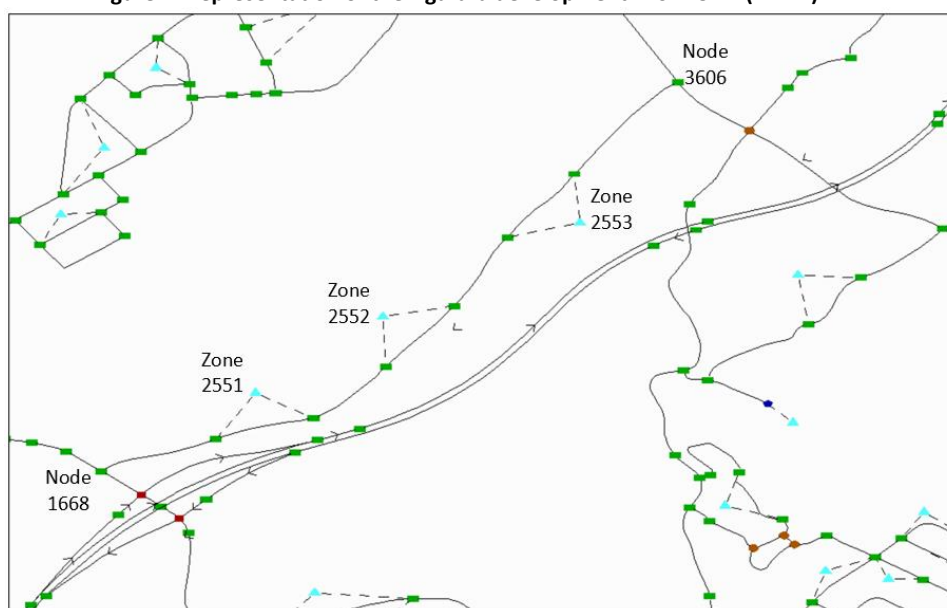
Table 1 Ngārara Consented Development

GFA (misc.) sq. m.	Residential Units	Peak Hour (2-way) PCU	Location
	80	104	Waimeha North
	179	54	Arvida RV Units
	40	16	Arvida RV CH Beds
	155	202	Ti Kouka
300	7	52	Lot 504
815	3	199	Lot 505
1,115	464	626	Scenario Totals

- (iv) Existing plus Ngārara consented future development plus 'plan change' traffic.
- (v) Existing plus a (hypothetical) future Ngārara development of 900 dwellings @ 1.3 peak hour trips (1,170 PCU).
- (vi) Existing plus a future (hypothetical) Ngārara development of 900 dwellings plus 'plan change' traffic.

2.2 The traffic distribution for the Ngārara development and 'plan change' traffic is based on the forecast traffic from 3 KTM4 2036 DM model zones (2551, 2552 and 2553) which are connected in the model by a future link road (between node 1668 and node 3606), as shown below.

Figure 1: Representation of the Ngārara development in SATURN (KTM4)



- 2.5 Select link analysis on the KTM4 model was used to establish the routing of traffic to and from the Ngārara zones and this distribution has been applied to calculated Ngārara development trip generations in the scenario testing.
- 2.6 The presence of the link road in the network means that Ngārara development traffic will be able to obtain access via node 1668 (via Te Moana Road) or via node 3606 (Nga Manu Reserve Road). The KTM4 model indicates that this link will reduce the calculated am and pm traffic generation from the Ngārara development by $\approx 27\%$ ¹.
- 2.6 It has been assumed that 'plan change' traffic will have the same distribution as Ngārara development traffic.

¹ After allowance for anticipated 'through-traffic' effects.

2.7 Further details of traffic demand calculations are contained in issued workbooks.²

3 SIDRA Review

3.1 The calculated scenario demands were uploaded into the am and pm SIDRA models and following minor variations to these models the following results³ were obtained.

Table 2: SIDRA Review Results (am)

Scenario	Network LOS (speed efficiency)	Average Speed (km/hr)	Link LOS F
i) Existing	C	38.0	None
ii) Existing + Plan Change	C	36.9	None
iii) Existing + Ngārara Consented	D	30.4	None
iv) Existing + Ngārara Consented + Plan Change	D	27.7	Right turn to s/b expressway
v) Existing + Ngārara 900 dwellings	E	22.2	Right turn to s/b expressway
vi) Existing + Ngārara 900 dwellings+ Plan Change	E	21.8	Right turn to s/b expressway Northbound expressway off ramp left turn

Table 3: SIDRA Review Results (pm)

Scenario	Network LOS (speed efficiency)	Average Speed (km/hr)	Link LOS F
i) Existing	C	36.0	None
ii) Existing + Plan Change	D	35.3	None
iii) Existing + Ngārara Consented	C	34.4	None
iv) Existing + Ngārara Consented + Plan Change	D	33.8	None
v) Existing + Ngārara 900 dwellings	D	28.6	None
vi) Existing + Ngārara 900 dwellings+ Plan Change	D	26.5	None

² Three analysis workbooks (versions 4.1, 4.2 and 4.3) have been issued with this memo, covering: Existing & PC; Consented & PC; Ngārara & PC scenarios, respectively.

³ Three am peak SIDRA network models (v6.2) and three pm peak (v6.3) models have been issued with this memo.