25. Sensitivity Testing Using UDS Landuse

25.1 Introduction

During the course of this study, the Greater Christchurch Urban Development Strategy (UDS) has been prepared by Environment Canterbury, Christchurch City Council, Waimakariri District Council, Selwyn District Council and Transit New Zealand. The UDS establishes the agreed growth strategy for the Greater Christchurch area to address the pressures being placed on the Greater Christchurch area's expansion to around 500,000 population at the year 2041. The UDS aims to integrate land use development with transport and other social, environmental and infrastructural planning. The UDS is a step towards a more collaborative means of planning for the future. The UDS is not just about transport but takes a holistic approach to urban planning including land use, community identity, natural environment and economic factors.

The Christchurch, Rolleston and Environs Transportation Study (CRETS) is a Transportation study based on projected landuse and growth within the CRETS study area of south west Christchurch. The CRETS landuse projection to 2021 was based on a medium growth forecast established from the 2001 Census. The recommended transportation strategy is therefore devised to address the resultant level of travel demands.

In order to align the recommended transportation strategy with the agreed UDS landuse growth forecasts, a sensitivity test using the 2026 UDS landuse forecasts has been undertaken.

The agreed UDS landuse have adopted a Medium High forecast, based around the latest 2006 Census. This results in higher household and employment numbers than those assumed in CRETS for 2021. The same transportation modelling assumptions have been used to derive the resultant travel demands and traffic flow forecasts.

25.2 CRETS vs UDS Landuse and Travel Demand

A comparison of the CRETS landuse against the UDS landuse is shown in Table 40 below. It should be noted that for CRETS there are landuses for 2001 and 2021, and UDS 2001 (CRETS equivalent) and 2026.

AREA	2001 CRETS		2021 CRETS		2026 UDS		2021 CRETS to 2026 UDS	
	HH	Jobs	HH	Jobs	HH	Jobs	HH	Jobs
Rolleston	959	260	5296	2107	7112	6117	1816	2939
Lincoln	665	1492	1750	1571	3411	4062	1661	1954
Prebbleton	503	397	2000	468	1614	92	-386	-556
Templeton	710	843	833	903	2037	1727	1204	600
West Melton	554	215	758	263	1260	209	502	-189
Hornby	4782	5820	4654	6521	5617	15986	963	7971
Avonhead	4448	722	4283	756	5027	2107	744	635
Wigram	264	506	3388	1635	2970	8766	-418	6914
Halswell	4568	984	8743	1439	9640	2391	897	84
Model Total [1]	**139321**	**120033**	**172200**	**129842**	**216210**	**231600**	**44010**	**101758**

Table 40
CRETS vs UDS Landuse

Note [1] – This is not the sum of the areas outlined above rather the total for the whole model including the areas.

Comments on UDS landuse

- CRETS 2001 to CRETS 2021 has a 24% growth in Households and a 14% growth in Jobs. This is a 1.2% growth per year for Households and a 0.7% growth per year for Jobs over the 20 years.
- CRETS 2001 to UDS 2026 has a 55% growth in Households and a 94% growth in Jobs. This is a 2.2% growth per year for Households and a 3.8 % growth per year for Jobs over the 25 years.

25.2.1 Forecast Travel Demand

The resultant travel demand forecast for the UDS landuse is shown in the table below.

Trip Purposes in the 24-Hour period (Modelled)

Trip Purpose	Total Trips 2001	Total Trips 2021	*Increase 2001 to 2021*	*Increase 2001 to 2021*	Total Trips UDS 2026	*Increase 2021 to 2026*	*Increase 2021 to 2026*	*Increase 2001 to 2026*	*Increase 2001 to 2026*
Home Based Work	157179	187979	*30800*	*19.60%*	209785	*21806*	*11.60%*	*52606*	*33.47%*
Home Based Shopping	156214	197049	*40835*	*26.14%*	230755	*33706*	*17.11%*	*74541*	*47.72%*
Home-Based Social/Rec	125774	157883	*32109*	*25.53%*	184111	*26228*	*16.61%*	*58337*	*46.38%*
Home Based Other	283769	335691	*51922*	*18.30%*	393318	*57627*	*17.17%*	*109549*	*38.60%*
Non Home Based	290572	350196	*59624*	*20.52%*	403367	*53171*	*15.18%*	*112795*	*38.82%*
Light Goods	98914	154600	*55686*	*56.30%*	232076	*77476*	*50.11%*	*133162*	*134.62%*
Heavy Goods	51482	59071	*7589*	*14.74%*	86574	*27503*	*46.56%*	*35092*	*68.16%*
External	32268	51596	*19328*	*59.90%*	58229	*6633*	*12.86%*	*25961*	*80.45%*
Total	1196172	1494065	*297893*	*24.90%*	1798215	*304150*	*20.36%*	*602043*	*50.33%*

Lincoln University Trips 24-Hour period (Modelled)

Horizon	2021	2026
Matrix Total at end of CTS procedure	1494065	1798215
CTS procedure generated Lincoln University Trips Removed	4258	7257
CRETS procedure generated Lincoln University Trips Added	11726	12394
Matrix Total at end of CRETS procedure	1501533	1803352

Overall 24-Hour Trip Rates

Horizon	2021	2026
Trip Matrix Total at end of CRETS procedure	1501533	1803352
Total Households in model	172200	216210
Overall 24-hour trips per household	8.72	8.34
Total Jobs in model	129842	231600
Overall 24-hour trips per job	11.56	7.79

Table 41

Travel demand forecast for UDS landuse

25.3 Traffic Volumes on Transport Strategy with UDS 2026 Landuse (UDS 2026)

It has been found from modelling the Transport Strategy, that if the UDS 2026 landuse was to be implemented, it would result in changes to the traffic volumes on various links. Figure 45 shows the predicted changes in traffic volumes compared to the revised Do Minimum Network for a 24 hour period in 2026, while Figure 46 shows the predicted changes in traffic volumes compared to the Transport Strategy. Figure 47 shows the predicted absolute traffic volumes for a 24 hour period in 2026 for the UDS landuse, while Table 42 contains the 24 hour period for 2026 traffic volumes for a number of significant links for the UDS landuse.

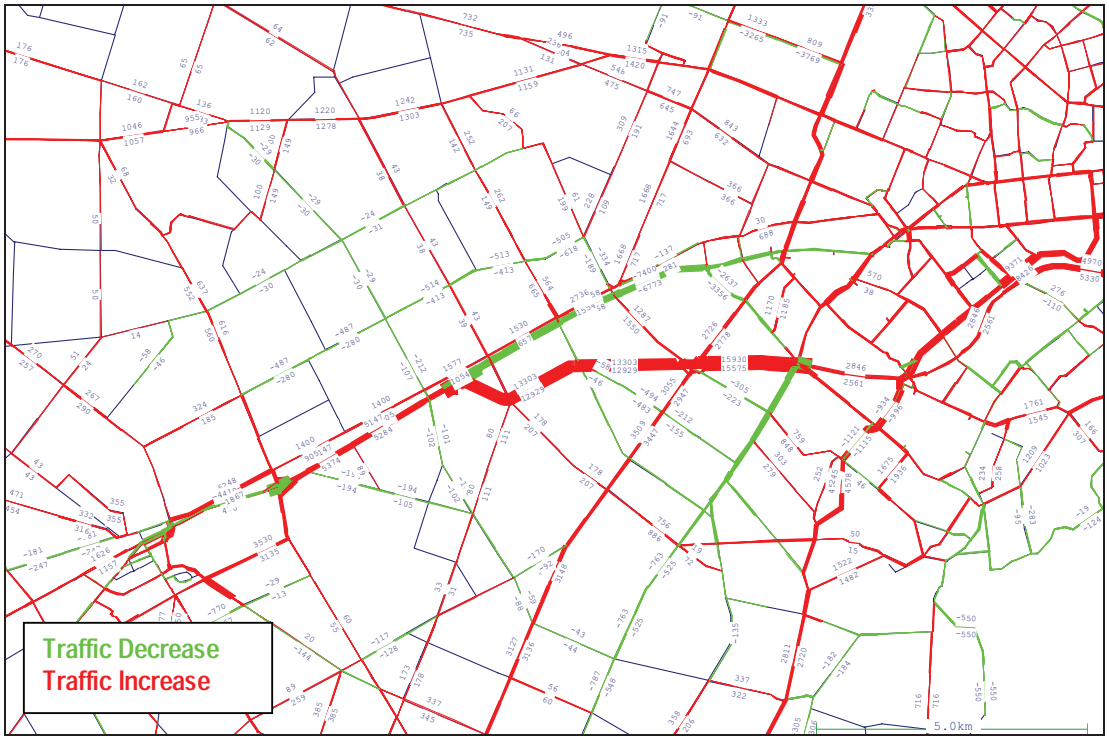

Figure 45

Transport Strategy with UDS 2026 Landuse – 24 Hour Traffic Volume Change Plot (Compared to Revised 2001 Do Minimum)

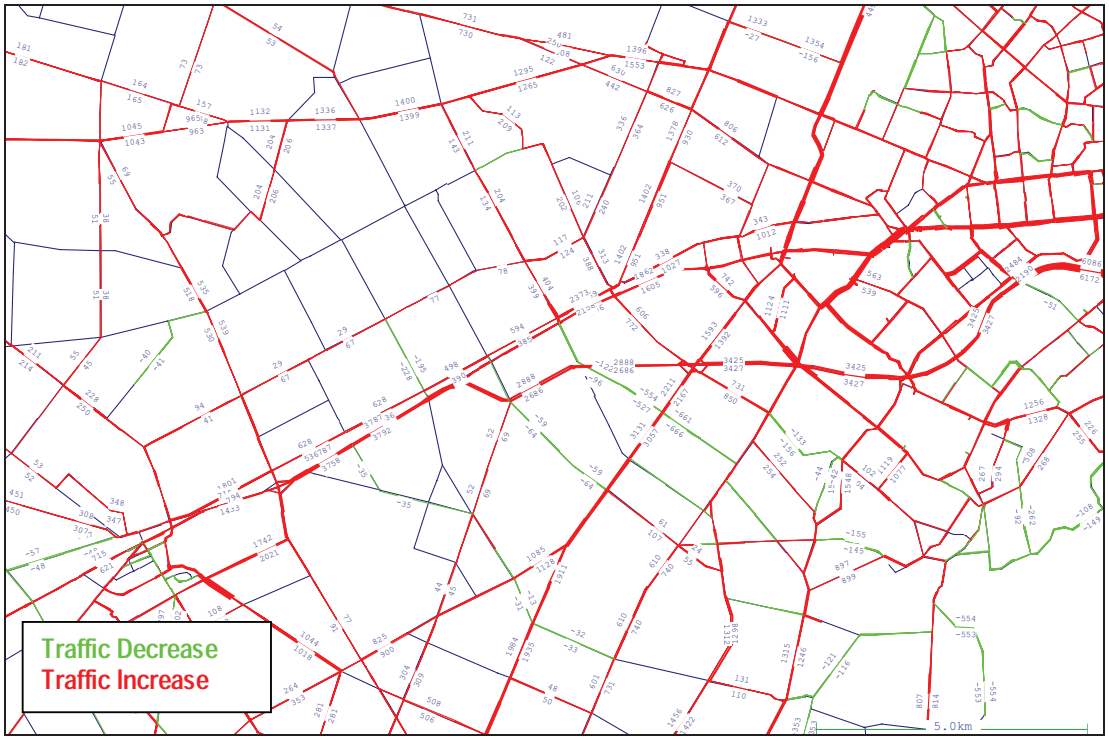

Figure 46

Transport Strategy with UDS 2026 Landuse – 24 Hour Traffic Volume Change Plot (Compared to 2021 Transport Strategy)

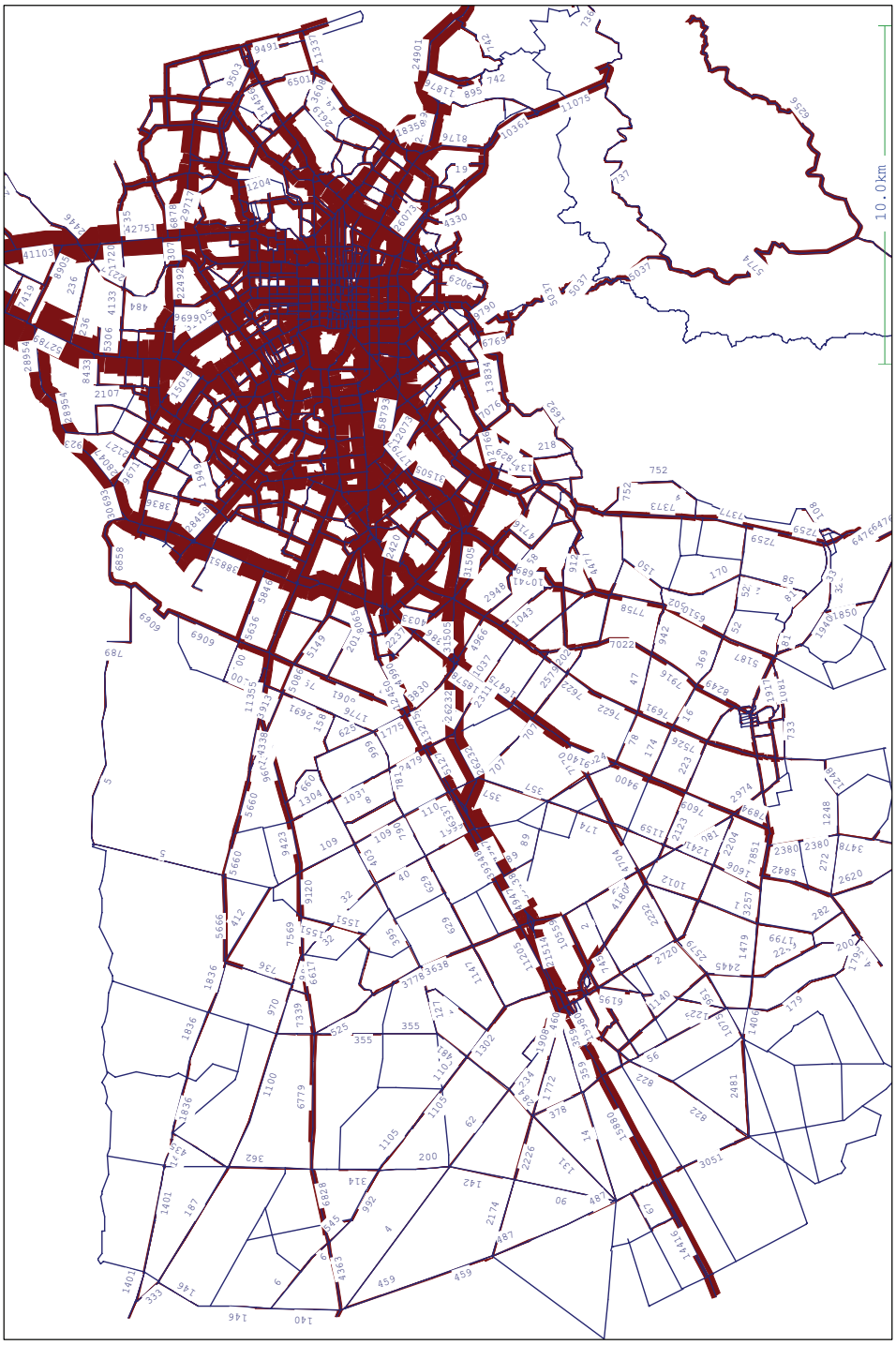

Figure 47

Transport Strategy with UDS 2026 Landuse – Traffic Volume Plot

ROUTE	DESCRIPTION	24 hour volumes							
		Validation Network 2001	Do Min Network 2021	Growth Val to Do Min	Package of Options TS 2021	Growth Val to Pckge TS 2021	Package of Options UDS 2026	Growth Val to Pckge UDS 2026	Growth TS 2021 to UDS 2026
SH1 - Hornby to Rolleston	SH1 Sth Carmen	16400	19200	17%	11000	-33%	13100	-20%	19%
	SH1 Sth HJR	15500	26600	72%	9000	-42%	12500	-19%	39%
	SH1 Sth Barters	15800	27300	73%	11400	-28%	14800	-6%	30%
	SH1 Sth Kirks	16300	29800	83%	12100	-26%	14500	-11%	20%
	SH1 Sth Dawsons	15700	29200	86%	11100	-29%	13100	-17%	18%
	SH1 Sth Curraghs	15300	28900	89%	31800	108%	39300	157%	24%
	SH1 Sth Weedons	14700	25400	73%	19400	32%	21500	46%	11%
Springs - Trents to Main South	Springs Sth Main South	18000	22400	24%	21100	17%	30900	72%	46%
	Springs Sth Amyes	14600	16200	11%	15100	3%	20000	37%	32%
	Springs Sth HJR	10300	27300	165%	10500	2%	14900	45%	42%
	Springs Sth Marshs	10500	23200	121%	11300	8%	13800	31%	22%
	Springs Sth Birchs	9200	21400	133%	10300	12%	12700	38%	23%
	Springs Sth Toswilll	6500	15900	145%	6500	0%	9200	42%	42%
	Springs Sth Hamptons	4500	8900	98%	6300	40%	7600	69%	21%
Shands - Halswell Junction to Main South	Sth Main South	21100	26200	24%	27000	28%	35600	69%	32%
	Sth Amyes	11400	11000	-4%	13700	20%	15900	39%	16%
	Sth Seymour	12500	12100	-3%	14200	14%	17100	37%	20%
Lincoln Connection	Birmingham Sth Vulcan	5700	6500	14%	14500	154%	18400	223%	27%
	Wigram Sth Haytons	3500	8800	151%	16700	377%	21900	526%	31%
	Dunbars to Halswell Junction			NA	12300	NA	15900	NA	29%
	Halswell Junction to Marshs			NA	11000	NA	13500	NA	23%
	Whincops Sth Quaifes	200	500	150%	7200	3500%	10200	5000%	42%
	Ellesmere Sth Leadleys	2800	2200	-21%	5200	86%	7800	179%	50%
	Lincoln Southern Collector			NA	1400	NA	1900	NA	36%
SH1 - Main South to Main North	Johns Wst Main North	12100	19800	64%	20000	65%	29000	140%	45%
	Johns Wst Gardiners	11300	18700	65%	19300	71%	28000	148%	45%
	Johns Wst of Sawyers Arms	17100	27300	60%	23100	35%	30700	80%	33%
	Russley Sth Harewood	16500	21700	32%	20600	25%	28600	73%	39%
	Russley Sth Wairakei	16900	22100	31%	22300	32%	30200	79%	35%
	Russley Sth Memorial	22200	30800	39%	30300	36%	39500	78%	30%
	Russley Sth Ryans	18000	23700	32%	26600	48%	34400	91%	29%
	Masham Sth Yaldhurst	16100	23600	47%	23800	48%	30600	90%	29%
	Carmen Sth Buchannans	16900	25400	50%	24900	47%	32800	94%	32%
	Carmen Sth Waterloo	17100	23800	39%	24000	40%	31200	82%	30%
CSM - Nash to Jerrold	Barrington Wst Selwyn	27300	43800	60%	42500	56%	51500	89%	21%
	CSM Wst Barrington	24000	48500	102%	46500	94%	58800	145%	26%
	CSM Wst Curletts		26100	NA	24700	NA	31500	NA	28%
	CSM Wst Nash		26100	NA	24700	NA	31500	NA	28%
	CSM Wst Awatea/Dunbars		26100	NA	24700	NA	31500	NA	28%
	CSM Wst Springs			NA	24700	NA	31500	NA	28%
	CSM Wst Shands			NA	20700	NA	26200	NA	27%
Main South/Blenhiem - Springs to Curletts	Blenhiem Wst Curletts	40200	35500	-12%	31500	-22%	40500	1%	29%
	Main South Wst Epsom	50200	54400	8%	52200	4%	67800	35%	30%
	Main South Wst Lowther	43300	48000	11%	39200	-9%	52400	21%	34%
	Main South Est Springs	44500	48700	9%	40400	-9%	55000	24%	36%
Curletts - Blenhiem to Lincoln/Halswell	Curletts Sth Blenhiem	35500	37400	5%	33300	-6%	37900	7%	14%
	Curletts Sth Parkhouse	35400	35100	-1%	35000	-1%	41100	16%	17%
	Curletts Sth CSME	12000	11900	-1%	12100	1%	12100	1%	0%
Amyes - Shands to Springs	Amyes Sth Shands	7700	16900	119%	14600	90%	20500	166%	40%
	Amyes Nth Springs	10600	20500	93%	17900	69%	23700	124%	32%
	Awatea Sth Springs	2600	18300	604%	15500	496%	22900	781%	48%
	Awatea Nth Wigram	2400	10700	346%	9000	275%	12400	417%	38%
	Dunbars Sth Wigram	5100	12000	135%	13000	155%	16100	216%	24%
	Dunbars Nth Halswell	4700	9800	109%	9700	106%	13200	181%	36%
Halswell Junction - Main Sth to Springs	HJR Nth Shands	1800	8200	356%	900	-50%	2200	22%	144%
	HJR Nth Springs	7200	16900	135%	8300	15%	18600	158%	124%
Halswell - Nicholls to Lincoln	Lincoln Sth Wrights	24400	30500	25%	27800	14%	29200	20%	5%
	Halswell Sth Curletts	23500	27200	16%	24600	5%	25200	7%	2%
	Halswell Sth Hendersons	18000	26100	45%	22400	24%	23000	28%	3%
	Halswell Sth Aidenfield	18000	22100	23%	18600	3%	22700	26%	22%
	Halswell Sth Dunbars	13600	17500	29%	14800	9%	16700	23%	13%
Rolleston Drive	Rolleston Sth SH1	2400	5900	146%	9700	304%	12400	417%	28%
	Rolleston Sth Tennyson	100	2300	2200%	2400	2300%	4200	4100%	75%

Table 42

Transport Strategy (CRETS 2021) and UDS 2026 – Traffic Volumes

The data in Figure 46 and Table 42 shows comparisons between traffic volumes for the Transport Strategy in 2021 and UDS in 2026. The comparison shows a significant increase in traffic across the network on most corridors. The 24 hour period effects in 2026, of the UDS 2026 landuse sensitivity test on the major works corridors and growth areas include:

- Christchurch Southern Access Corridor – Significant increase in traffic volume over the entire length, including through Sockburn and along the Southern Motorway,
- Belfast to Hornby Corridor – Significant increase in traffic volume over the entire length,
- Russley to Aylesbury Corridor – Small increase in traffic volume over the entire length,
- Hornby to Burnham Corridor – Significant increase in traffic volume between Hornby and Weedons Ross Road and a small increase between Weedons Ross Road and Burnham,
- Christchurch to Lincoln Corridor including Prebbleton – Moderate increases on Ellesmere and Birches Road with small increases on Springs Road,
- Christchurch to Tai Tapu Corridor – Very small increase in traffic volume between Henderson and Wrights Road,
- Dunbars and Henderson Road – Moderate increase in traffic volume south of Dunbars Road,
- Christchurch Outer Suburbs and Western Orbital Corridor – both very small increases and decreases in traffic volumes along route, basically no significant change,
- Rolleston to Lincoln Corridor – No significant change in traffic volume along this corridor.

A sample of the main changes in traffic flows are shown in the following table.

Location	CRETS 2021	UDS 2026	Difference
Brougham Wst Selwyn	42,500	51,500	9,000
CSM West of Barrington	46,500	58,800	12,300
CSM West Awatea/Dunbars	24,700	31,500	6,800
CSM Wst Shands	20,700	26,200	5,500
Main South Road north of Sockburn	23,700	29,700	6,000
Main South Road south of Sockburn	52,200	67,800	15,600
Johns Wst of Main North	20,000	29,000	9,000
Russley Sth Harewood	20,600	28,600	8,000
Russley Sth Memorial	30,300	39,500	9,200
Carmen Sth Buchanans	24,900	32,800	7,900
SH1 Sth Halswell Junction Rd	9,000	12,500	3,500
SH1 Sth Dawsons	11,100	13,100	2,000
SH1 Sth Curraghs	31,800	39,300	7,500
SH1 Sth Weedons	19,400	21,500	2,100
Springs Sth Main South	21,100	30,900	9,800
Springs Sth Halswell Junction Rd	10,500	14,900	4,400
Springs Sth Birches	10,300	12,700	2,400
Birmingham Sth Vulcon	14,500	18,400	3,900
Wigram Sth Haytons	16,700	21,900	5,200
Whincops Sth Quaifes	7,200	10,200	3,000
Ellesmere Sth Leadleys	5,200	7,800	2,600
Lincoln Sth Wrights	27,800	19,200	1,400
Halswell Sth Aidenfield	18,600	22,700	4,100

Table 43

Comparison of traffic volumes generated by CRETS 2021 and UDS 2026

It has been found from modelling the CIA works that if the UDS 2026 was to be implemented, it would result in changes to the traffic volumes on various links. Figure shows the predicted changes in 24 hour period 2026 traffic volumes around the airport compared to the revised Do Minimum Network in 2026, while Figure shows the predicted change in traffic volumes compared to the Transport Strategy and Figure shows the predicted absolute traffic volumes for a 24 hour period in 2026 for the UDS landuse, while Table 44 contains the 24 hour period 2026 traffic volumes for a number of significant links around the airport.

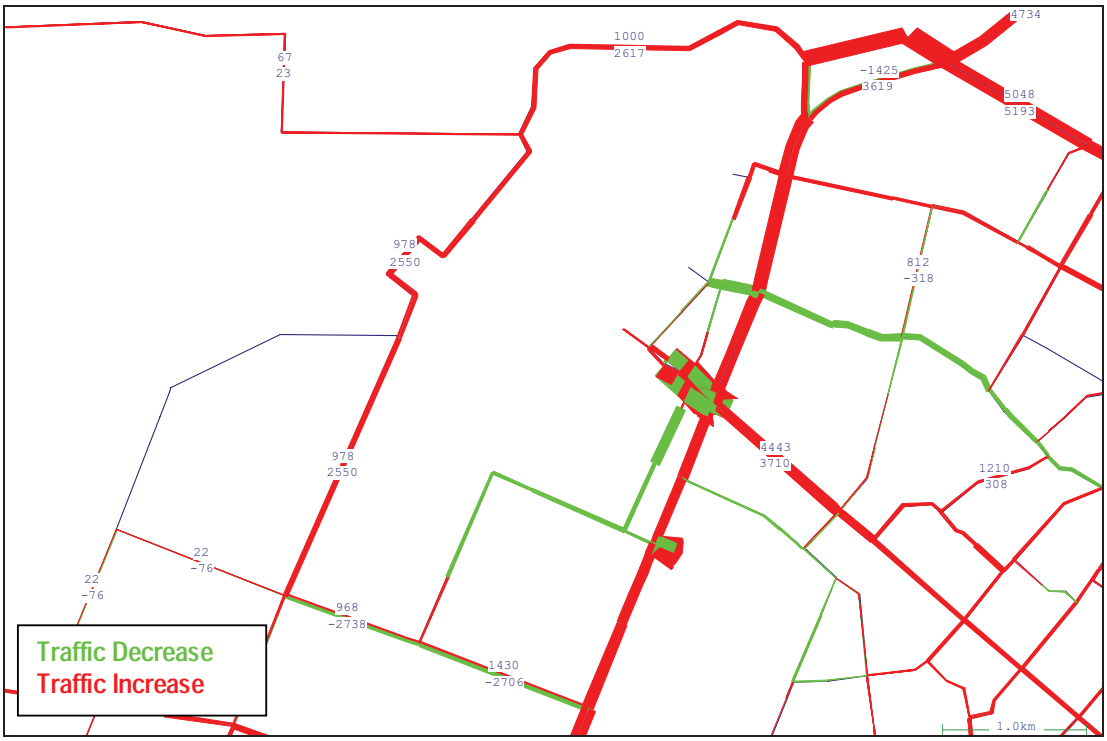

Figure 48

Transport Strategy with UDS 2026 Landuse CIA Works – Traffic Volume Change Plot (Compared to Do Minimum)

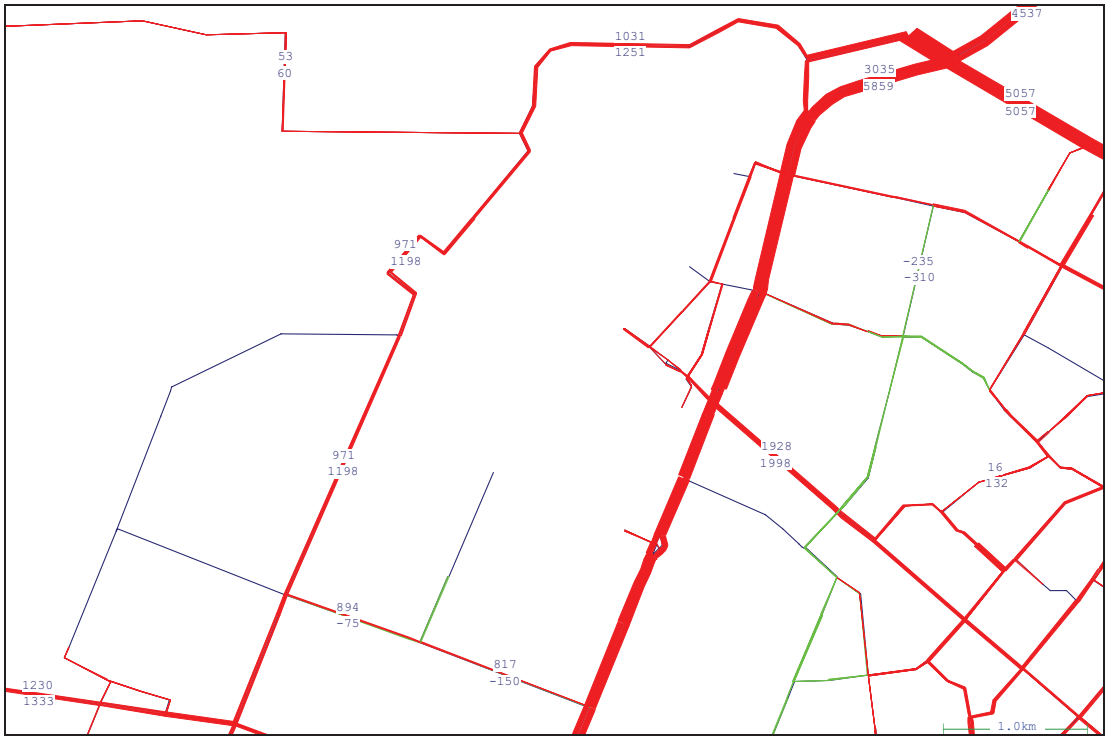

Figure 49

Transport Strategy with UDS 2026 Landuse CIA Works – Traffic Volume Change Plot (Compared to 2021 Transport Strategy)

Figure 50

Transport Strategy with UDS 2026 Landuse CIA Works – Traffic Volume Plot

ROUTE	DESCRIPTION	24 hour volumes Validation Network 2004	Do Min Network 2021	Growth Val to Do Min	Package of Options TS 2021	Growth Val to Pckge TS 2021	Package of Options UDS 2026	Growth Val to Pckge UDS 2026	Growth TS 2021 to UDS 2026
SH1 - Main South to Main North	Johns Wst Gardiners	11200	17500	56%	17900	60%	26900	140%	50%
	Johns Wst of Sawyers Arms	19200	31100	62%	24400	27%	33300	73%	36%
	Russley Sth Harewood	18800	25600	36%	25700	37%	36900	96%	44%
	Russley Sth Wairakei	19800	27800	40%	26200	32%	37100	87%	42%
	Russley Sth Memorial	22800	29500	29%	28900	27%	38100	67%	32%
	Russley Sth Ryans	18000	25500	42%	27900	55%	36300	102%	30%
Ryans Road	Ryans Est Pound	3500	7100	103%	4500	29%	5400	54%	20%
	Ryans Est Greys	3800	7000	84%	5000	32%	5700	50%	14%
Capital A Road	Capital A Wst Russley		4600	NA	3100	NA	3200	NA	3%
Memorial Avene	Memorial Est Orchard EB	6100	9400	54%	11900	95%	12400	103%	4%
	Memorial Est Orchard WB	5900	10500	78%	12200	107%	12700	115%	4%
	Memorial Wst Russley EB	7000	11400	63%	14300	104%	15200	117%	6%
	Memorial Wst Russley WB	6800	12400	82%	15000	121%	15800	132%	5%
	Memorial Est Russley	13800	21900	59%	26200	90%	30100	118%	15%
Wairakei Road	Wairakei Wst Russley	4200	8500	102%		-100%		-100%	NA
	Wairakei Est Russley	5600	9800	75%	3900	-30%	4100	-27%	5%
Harewood Road	Harewood Wst Russley	7500	12400	65%	14200	89%	15400	105%	8%
	Harewood Est Russley	6800	9900	46%	11900	75%	12900	90%	8%
Mcleans Island Road	Mcleans Wst Johns	900	3400	278%	2700	200%	5700	533%	111%
Sawyers Arms Road	Sawyers Wst Johns	6300	14000	122%	15200	141%	31600	402%	108%
	Sawyers Est Johns	9500	16300	72%	16400	73%	26600	180%	62%
Pound Road	Pound Sth Mcleans	400	2700	575%	4000	900%	6200	1450%	55%
	Pound Sth Ryans	3700	9600	159%	8100	119%	11100	200%	37%
Orchard Road	Orchard Sth Harewood	5900	11100	88%	12900	119%	14200	141%	10%
	Orchard Sth Wairakei	7700	14200	84%	12800	66%	13700	78%	7%

Table 44
Transport Strategy with UDS 2026 Landuse CIA Works – Traffic Volumes

The data in Figure and Table 45 shows comparisons between traffic volumes for the Transport Strategy in 2021 and UDS in 2026.

The 24 hour period effects in 2026 of the UDS 2026 landuse on the CIA works includes:

- A significant increase in traffic volume on Johns Road/Russley Road and Sawyers Arm Road East of State Highway 1,
- A moderate increase in traffic on Pound Road/McLeans Island Road,
- A moderate increase in traffic on Memorial Avenue east of State Highway 1.

25.4 Transport Strategy with UDS 2026 Landuse – Levels of Service

Table 45 and Table 46 contain the predicted link and intersection levels of service in 2026 for the UDS 2026 strategy. The locations included in the tables are those identified as being under pressure in the Do Minimum plus other sites that have been identified using a Performance Level Analysis of the UDS 2026 strategy.

					24 hour volume	AM Peak (1 hour equivalent volumes)				PM Peak (1 hour equivalent volumes)			
ROUTE	DESCRIPTION	Link Type	FWD Dir	Link Lanes		FWD Vol	BAK Vol	FWD LOS	BAK LOS	FWD Vol	BAK Vol	FWD LOS	BAK LOS
SH1 - Hornby to Rolleston	SH1 Sth Carmen	Urbm	Sth	2	**13000**	330	726	Urban Link		894	524	Urban Link	
	SH1 Sth HJR	R2L	Sth	1	**12000**	251	659	D		811	460	D	
	SH1 Sth Barters	Urb	Sth	1	**15000**	513	1043	Urban Link		1222	622	Urban Link	
	SH1 Sth Kirks	R2LP	Sth	2	**14000**	514	773	Passing Lanes		904	665	Passing Lanes	
	SH1 Sth Dawsons	R2L	Sth	1	**13000**	471	656	D		831	601	D	
	SH1 Sth Weedons	Mtw	Sth	2	**22000**	943	901	A	A	1622	809	B	A
	SH1 Sth Rolleston	Mtw	Sth	1	**16000**	543	901	A	C	814	809	B	B
Springs - Trents to Main South	Springs Sth Main South	Urb	Sth	1	**31000**	1202	1286	Urban Link		1640	1269	Urban Link	
	Springs Sth Amyes	Urb	Sth	1	**20000**	1076	953	Urban Link		1017	1209	Urban Link	
	Springs Sth HJR	R2L	Sth	1	**15000**	496	1015	D		1143	867	E	
	Springs Sth Marshs	R2L	Sth	1	**14000**	506	841	D		1011	786	E	
	Springs Sth Birchs	Urbm	Sth	1	**13000**	493	787	Urban Link		879	757	Urban Link	
	Springs Sth Toswilll	Urbm	Sth	1	**9000**	453	524	Urban Link		584	641	Urban Link	
Shands - Halswell Junction to Main South	Sth Main South	Urb	Sth	2	**36000**	1358	1462	Urban Link		1491	1588	Urban Link	
	Sth Amyes	Urb	Sth	1	**16000**	582	678	Urban Link		869	613	Urban Link	
	Sth Seymour	Urb	Sth	1	**17000**	750	761	Urban Link		962	852	Urban Link	
SH1 - Main South to Main North	Johns Wst Main North	Mtw	Wst	2	**29000**	1876	1052	C	A	1206	2132	B	C
	Masham Sth Yaldhurst	Urb	Sth	2	**31000**	1459	1517	Urban Link		1593	1871	Urban Link	
	Carmen Sth Buchannans	Urb	Sth	2	**33000**	1562	1375	Urban Link		1809	1695	Urban Link	
	Carmen Sth Waterloo	Urb	Sth	2	**31000**	1475	1511	Urban Link		1606	1928	Urban Link	
CSM - Nash to Jerrold	CSM Wst Barrington	Mtw	Wst	2	**59000**	2728	3816	D	E	3809	3203	E	D
	CSM Wst Curletts	Mtw	Wst	2	**32000**	938	2751	A	D	2505	1584	C	B
	CSM Wst Nash	Mtw	Wst	2	**32000**	938	2751	A	D	2505	1584	C	B
	CSM Wst Awatea/Dunbars	Mtw	Wst	2	**32000**	938	2751	A	D	2505	1584	C	B
	CSM Wst Springs	Mtw	Wst	2	**32000**	938	2751	A	D	2505	1584	C	B
	CSM Wst Shands	Mtw	Wst	2	**26000**	767	1824	A	C	1890	1064	C	A
Main South/Blenhiem - Springs to Curletts	Blenhiem Wst Curletts	Urbm	Wst	2	**40000**	1394	1557	Urban Link		1646	1445	Urban Link	
	Main South Wst Epsom	Urbm	Wst	2	**68000**	2298	2378	Urban Link		3013	2439	Urban Link	
	Main South Wst Lowther	Urbm	Wst	2	**52000**	1718	1642	Urban Link		2293	1810	Urban Link	
	Main South Est Springs	Urbm	Wst	2	**55000**	1745	2099	Urban Link		2546	1973	Urban Link	
Curletts - Blenhiem to Lincoln/Halswell	Curletts Sth Blenhiem	Urbm	Sth	2	**38000**	1788	1658	Urban Link		2016	1838	Urban Link	
	Curletts Sth Parkhouse	Urbm	Sth	2	**41000**	1983	2329	Urban Link		2609	2233	Urban Link	
	Curletts Sth CSME	Urb	Sth	1	**12000**	456	848	Urban Link		1019	524	Urban Link	
Amyes - Shands to Springs	Amyes Sth Shands	Urb	Sth	1	**20000**	798	959	Urban Link		947	1140	Urban Link	
	Amyes Nth Springs	Urb	Sth	1	**24000**	1103	989	Urban Link		1116	1316	Urban Link	
	Awatea Sth Springs	Urb	Sth	1	**23000**	966	830	Urban Link		1160	952	Urban Link	
	Awatea Nth Wigram	Urb	Sth	1	**12000**	479	786	Urban Link		1182	649	Urban Link	
	Awatea Sth Wigram	Urb	Sth	1	**12000**	479	786	Urban Link		1182	649	Urban Link	
	Dunbars Sth Wigram	Urb	Sth	1	**16000**	509	1221	Urban Link		1330	820	Urban Link	
	Dunbars Nth Halswell	Urb	Sth	1	**13000**	645	731	Urban Link		1012	802	Urban Link	
	Dunbrs/Hndsns Est Halwell	Urb	Est	1	**21000**	590	1474	Urban Link		1509	949	Urban Link	
Halswell Junction - Main Sth to Springs	HJR Nth Shands	Urb	Sth	1	**2000**	165	59	Urban Link		81	220	Urban Link	
	HJR Nth Springs	Urb	Sth	1	**19000**	576	1394	Urban Link		1387	942	Urban Link	
Halswell - Nicholls to Lincoln	Lincoln Sth Wrights	Urbm	Sth	2	**29000**	611	1972	Urban Link		2084	1141	Urban Link	
	Halswell Sth Curletts	Urb	Sth	2	**25000**	445	1896	Urban Link		1963	924	Urban Link	
	Halswell Sth Aidenfield	Urb	Sth	2	**23000**	298	1637	Urban Link		1479	886	Urban Link	
	Halswell Sth Aidenfield	Urb	Sth	2	**23000**	298	1637	Urban Link		1479	886	Urban Link	
	Halswell Sth Dunbars	Urb	Sth	1	**17000**	338	879	Urban Link		936	694	Urban Link	
Wigram - Birmingham to Halwell Junction	Wigram Extn Sth Brmghm	Urb	Sth	1	**18000**	468	1204	Urban Link		1216	899	Urban Link	
	Wigram Sth Treffers	Urb	Sth	1	**18000**	421	1178	Urban Link		1106	826	Urban Link	
	Wigram Sth Haytons	Urb	Sth	1	**22000**	402	1404	Urban Link		1566	871	Urban Link	
	Wigram Sth Nash	Urb	Sth	1	**16000**	408	1074	Urban Link		1166	803	Urban Link	
	Wigram Dev Sth Awatea	Urb	Sth	1	**14000**	286	892	Urban Link		919	760	Urban Link	
Hayton - Blenheim to Washbornes	Hayton De Sth Blenheim	Urb	Sth	1	**9000**	517	899	Urban Link		688	619	Urban Link	
SH1 - Main South to Main North	Johns Wst Gardiners	Mtw	Wst	2	**27000**	1501	1069	B	A	1293	1625	B	B
	Johns Wst of Sawyers Arms	Mtw	Wst	2	**33000**	2253	1028	C	A	1329	1502	B	B
	Russley Sth Harewood	Mtw	Sth	2	**37000**	1956	1521	C	B	1606	2011	B	C
	Russley Sth Wairakei	Mtw	Sth	2	**37000**	2254	1521	C	B	1792	2011	B	C
	Russley Sth Memorial	Mtw	Sth	2	**38000**	1982	2075	C	C	2046	1903	C	C
	Russley Sth Ryans	Mtw	Sth	2	**36000**	2041	1753	C	B	2183	1709	C	B
Memorial Avene	Memorial Est Orchard EB	Urb	Est	2	**12000**	676		Urban Link		1436		Urban Link	
	Memorial Est Orchard WB	Urb	Est		**13000**		1553	Urban Link			701	Urban Link	
	Memorial Wst Russley EB	Urb	Est	2	**15000**	609		Urban Link		1716		Urban Link	
	Memorial Wst Russley WB	Urb	Est	2	**16000**		1854	Urban Link			759	Urban Link	
	Memorial Est Russley	Urb	Est	2	**30000**	1189	1609	Urban Link		1656	1061	Urban Link	
Wairakei Road	Wairakei Est Russley	Urb	Est	1	**4000**	148	446	Urban Link		148	334	Urban Link	
Harewood Road	Harewood Wst Russley	Urb	Est	1	**15000**	349	881	Urban Link		786	421	Urban Link	
	Harewood Est Russley	Urb	Est	1	**13000**	479	644	Urban Link		661	822	Urban Link	
Pound Road	Pound Sth Mcleans	R2L	Sth	1	**6000**	469	388	C		520	439	D	
	Pound Sth Ryans	R2L	Sth	1	**11000**	494	872	D		566	701	D	
Orchard Road	Orchard Sth Harewood	Urb	Sth	1	**14000**	790	328	Urban Link		378	696	Urban Link	
	Orchard Sth Wairakei	Urb	Sth	1	**14000**	653	574	Urban Link		585	597	Urban Link	

Table 45

2021 Link level of service for Transport Strategy with UDS 2026 Landuse

Intersection	Control	AM Peak (seconds of delay) Worst App	Max App Del	Flw Wgt Del	LOS	PM Peak (seconds of delay) Worst App	Max App Del	Flw Wgt Del	LOS
SH1/Slip Lane/Tennyson St	P	Slip Lane onto SH1	15.3	15.30	C	Slip Lane onto SH1	15.9	15.90	C
SH1/Weedons Rd South Bound On Ramp	P	Sth Bnd On Ramp	16.6	0.20	C	Sth Bnd On Ramp	17.3	0.12	C
SH1/Weedons Rd North Bound On Ramp	P	Nth Bnd On Ramp	19.9	9.27	C	Nth Bnd On Ramp	17.5	4.62	C
Weedons Ross Rd/SH1 Ramps	P	Weedons Ross Nth	24.9	17.13	C	Off Ramp (nth bnd)	14.1	8.78	B
Weedons Rd/SH1 Ramps	P	Off Ramp (sth bnd)	15.8	4.08	C	Off Ramp (sth bnd)	17.2	11.76	C
SH1/Dawsons Rd	P	Waterholes	18.0	3.24	C	Waterholes	22.4	3.28	C
SH1/Kirk Rd	P	Trents	17.8	7.08	C	Trents	33.2	8.04	D
SH1/Yaldhurst	S	Yaldhurst Est	64.4	36.21	D	Yaldhurst Est	598.7	152.99	F
SH1/Barters Rd	S	SH1 Sth	26	21.20	C	SH1 Nth	34.6	25.65	C
SH1/Gardiners Rd	P	Gardiners	11.3	0.87	B	Gardiners	11.9	0.60	B
Main South Rd/Symes	P	Symes	19.2	0.64	C	Symes	32.7	1.86	D
Sockburn Roundabout	R	Main South Wst	67.4	45.45	D	Blenhiem	314.2	156.96	F
Blenhiem Rd/Curletts Rd	S	Curletts Sth	58.2	55.55	E	Curletts Sth	68.1	68.06	E
Parkhouse Rd/Treffers Rd	P	Parkhouse Sth	0.4	0.16	A	Parkhouse Sth	0.3	0.25	A
Curletts Rd/CSME Sth Bnd Offramp	S	Curletts West	0.9	0.34	A	Curletts West	1.9	1.41	A
Springs Rd/ Amyes Rd	P	Springs Sth	7.7	5.56	A	Springs Sth	34.8	19.44	D
Springs Rd/HJR/CSME	R	Springs Sth	15.3	13.65	B	HJR Est	15.2	13.41	B
Springs Rd/ Marshes Rd	P	Marshs Wst	23.1	7.26	C	Marshs Wst	44.4	10.81	E
Springs Rd/Hodgens Rd	P	Hodgens	21.4	1.35	C	Hodgens	25.4	1.18	D
Springs Rd/Toswill Rd	P	Toswill	14.2	1.56	B	Toswill	16.7	1.59	C
Shand Rd/Marshs Rd	P	Marshs Wst	54.7	10.73	F	Marshs Est	38.7	10.88	E
Lincoln Connection/Halswell Junction Road	P	Lincoln Conection Sth	21.9	19.19	C	Lincoln Conection Nth	22.4	19.45	C
Halswell Rd/Curletts Rd	S	Curletts Est	42.2	31.62	C	Curletts Wst	42.1	30.51	C
Halswell Rd/Hendersons Rd	S	Hendersons Est	60.3	7.17	A	Aidenfield Nth	73.4	6.50	A
Halswell Rd/Nash Rd	S	Halswell Nth	11.4	4.31	A	Nash Wst	10.3	5.71	A
Halswell Rd/Dunbars Rd	S	Halswell Sth	69.1	36.56	D	Halswell Nth	45.6	36.41	D
Wigram Rd/Treffers Rd	P	Treffers Wst	9.1	0.59	A	Treffers Wst	9.1	1.06	A
Wigram Rd/Haytons Rd	R	Wigram Sth	55.2	43.85	D	Wigram Nth	209.3	127.07	F
Wigram Rd/Nash Rd	P	Nash Est	27.1	10.69	D	Nash Wst	116	28.06	F
SH1/Memorial Ave South Bound On Ramp	P	Sth Bnd On Ramp	19.7	1.54	C	Sth Bnd On Ramp	19.8	3.18	C
SH1/Memorial Ave North Bound On Ramp	P	Nth Bnd On Ramp	19.4	1.66	C	Nth Bnd On Ramp	19.7	2.67	C
SH1/Memorial Ave North Bound Off Ramp Left	P	Off Ramp (nth bnd)	13.7	2.39	B	Off Ramp (nth bnd)	12.8	1.18	B
SH1/Memorial Ave North Bound Off Ramp Right	S	Off Ramp (sth bnd)	42.1	19.91	B	Off Ramp (sth bnd)	988.5	90.71	F
SH1/Memorial Ave South Bound Off Ramp Left	P	Off Ramp (sth bnd)	13.4	1.93	B	Off Ramp (sth bnd)	13.8	1.53	B
SH1/Memorial Ave South Bound Off Ramp Right	S	Off Ramp (nth bnd)	63.9	8.78	A	Off Ramp (nth bnd)	66.3	5.39	A
SH1/Harewood Rd	R	SH1 Nth	62.6	48.37	D	Harewood Wst	64.2	45.11	D
SH1/Sawyers Arms Rd	R	SH1 Nth	369.2	199.52	F	SH1 Sth	149.1	121.93	F

Table 46

2021 Intersection level of service for Transport Strategy with UDS 2026 Landuse

25.5 Effect of UDS 2026 Landuse on CRETS 2021 Transport Strategy

The UDS 2026 generates considerably more vehicle trips than CRETS 2021. A comparison of Vehicle Kilometres Travelled (VKT) and Vehicle Minutes of Travel (VMT) is shown in Table 47.

	CRETS 2021	UDS 2026	Difference
VKT	3,419,544	4,463,815	+31%
VMT	3,815,621	5,533,521	+45%

Table 47

Comparison of VKT and VMT

25.6 Conclusion

As a result of the increase in vehicle trips for UDS 2026, the effectiveness of the CRETS Transport Strategy, when the UDS 2026 landuse is applied to it, is reduced. While the transport strategy addresses the issues that resulted from the assumed 2021 (CRETS) landuse, the more recent UDS landuse projections indicate that the proposed transport strategy may be more relevant for the year 2016, than 2021. However, the underlying concepts of the CRETS Transport Strategy are equally applicable to the UDS 2026 including Road Hierarchy and the package of works including major, minor and CIA. If the higher vehicle trips eventuate for UDS 2026, the timing of some work for the CRETS Transport Strategy will require bringing forward, while some new works may need to be added.

It is important to note that the traffic forecast assumptions are based upon people travelling in the future as they do today. That is, people drive reasonably long distances to work, and there is only modest use of public transport and other modes. Both the UDS transport response to landuse growth and the Regional Land Transport Strategy encourage greater use of alternative modes of transport and better landuse/transport integration and travel demand management. Similarly the CRETS transport strategy identifies the need for strategic road improvements, but equally

identifies the importance of public transport and other modes of travel. If there is a greater use of alternative modes than the private motor car, then the forecast travel demands may occur later than estimated. If not, then there may need to be further infrastructure improvements required.

Monitoring of actual traffic growth and further investigations will be necessary by the UDS Transportation Group to confirm the transport requirements beyond the transport strategy recommended through this Christchurch Rolleston and Environs Transportation Study.