

Sheet Name	Land Use and Trip Rates Source
TRIP SUMMARY - AIRPORT	Using Tim Kelly's estimated number of trips rather than applying trip rates to assumed land use.
Paraparaumu Town Centre TripGen	For 2016, we have used the Peter Knight evidence note for land use (Review of Proposed Plan Change 72A, McDermott Miller Ltd., 29 October 2007) and Opus trip rates as used in the plan change process; and for 2026 we have used land use as outlined in Don Wignall's email of 26 October 2011 'Full Development' - Model Sensitivity Testing.
Waikanae North TripGen	Land use as outlined in Don Wignall's email of 26 October 2011 'Full Development' - Model Sensitivity Testing and SKM trip rates from TIA. Assumption is these trip rates are for Cars/LCVs only.
Ngarara Zone & Precinct TripGen	Land use as outlined in Don Wignall's email of 26 October 2011 'Full Development' - Model Sensitivity Testing and SKM trip rates from TIA. Note that the maximum assumed number of residential dwellings is 1,689, not 1,649 as stated in this email - refer to Don Wignall's email 9 November 2011 'FW: M2PP - Ngarara Households'
<b>Other sources</b>	
Proportional Splits	NZ10153\ID:\3320901_M2PP\Demand Matrix Analysis\Trip rates\Land Use & Traffic Generation (6Jul06)_TripRates_v2.xls P:\339\3390000\NZ Trips Database_2010\TDB Database\TDB Database August 2010.xls

Type	AM In	AM Out	IP In	IP Out	PM In	PM Out
Office	0.85	0.15	0.50	0.50	0.20	0.80
Warehouse / Storage	0.61	0.39	0.50	0.50	0.20	0.80
Warehouse / Distribution	0.61	0.39	0.50	0.50	0.20	0.80
Business Services	0.85	0.15	0.50	0.50	0.21	0.79
Service	0.50	0.50	0.50	0.50	0.20	0.80
Warehouse / Trading	0.61	0.39	0.50	0.50	0.20	0.80
Large Format Retail	0.61	0.39	0.50	0.50	0.20	0.80
Industrial / Manufacturing			0.50	0.50		
Education	0.90	0.10	0.50	0.50	0.50	0.50
Restaurant			0.50	0.50		
Convenience Retail			0.50	0.50		
Retail - Specialist/Convenience	0.61	0.39	0.50	0.50	0.20	0.80
Supermarket	0.61	0.39	0.50	0.50	0.20	0.80
Mixed Use	0.85	0.15	0.50	0.50	0.21	0.79
Tourist Accommodation	0.20	0.80	0.50	0.50	0.65	0.35
Low Density Housing	0.20	0.80	0.50	0.50	0.65	0.35
Medium Density Housing	0.20	0.80	0.50	0.50	0.65	0.35
Higher Density Housing	0.20	0.80	0.50	0.50	0.65	0.35
Health	0.59	0.41	0.10	0.90	0.50	0.50
Aquatic Centre	0.50	0.50	0.50	0.50	0.50	0.50
Recreation Centre	0.50	0.50	0.50	0.50	0.50	0.50
Community Facility	0.50	0.50	0.50	0.50	0.50	0.50
Community Centre	0.50	0.50	0.50	0.50	0.50	0.50
Womens Centre	0.50	0.50	0.50	0.50	0.50	0.50
Youth Centre	0.50	0.50	0.50	0.50	0.50	0.50
Civic Amenity	0.50	0.50	0.50	0.50	0.50	0.50
Open Space			0.50	0.50		
Wetland Buffer Zone			0.50	0.50		
Airport - Terminal Buildings	0.61	0.39	0.50	0.50	0.20	0.80
Airport - 10% Aviation Use	0.61	0.39	0.50	0.50	0.20	0.80
Airport - Core	0.61	0.39	0.50	0.50	0.20	0.80
Retirement dwellings	0.52	0.48	0.50	0.50	0.56	0.44

AM Peak	IP Peak	PM Peak
1	1	1

# Paraparaumu Town Centre

## Land Use and Trip Rate Assumptions

### 2016 Land Use Assumptions

Type	GFA (m <sup>2</sup> )
Retail – LFR Comparison	20,000
Retail – supermarket	5,000
1 Retail – speciality	1,700
Retail – other (inc cafes etc)	2,300
2 Commercial/office	6,000
3 Apartments	9,300
Community facility	2,000
<b>Total</b>	<b>46,300</b>

78 Dwellings - 2 floors above ground at 2/3 gf area

### 4 2026 Land Use Assumptions

Type	GFA (m <sup>2</sup> )
Retail - Specialist/Convenience	22,650
Retail - Large Format	20,000
Business Services / offices	23,100
Commercial / light industrial	32,475
Civic	5,000
Mixed Development	8,310
Medium Density Housing	56,120
Higher Density Housing	21,750
<b>Total</b>	<b>189,405</b>

468 Dwellings - 2 floors above ground at 2/3 gf area

242 Dwellings - 2nd floor; 2/3 ground floor area

### Opus Trip Rate Assumptions

Type	Cars/lights, Trip rates after adjustment			HCV, Trip rates after adjustment		
	AM	IP	PM	AM	IP	PM
Retail - Specialist/Convenience per 100 m <sup>2</sup>	1.00	2.50	5.00	0.07	0.07	0.06
Retail - Large Format per 100 m <sup>2</sup>	1.60	2.08	2.40	0.04	0.04	0.03
Business Services / offices per 100 m <sup>2</sup>	0.94	1.15	1.06	0.04	0.04	0.04
5 Commercial / light industrial per 100 m <sup>2</sup>	1.90	1.90	1.90	0.14	0.14	0.12

6	Mixed Development	1.08	1.08	1.08		0.06	0.06	0.05
	Medium Density Housing per dwelling	0.23	0.12	0.23		0.00	0.00	0.00
	Higher Density Housing per dwelling	0.23	0.11	0.23		0.00	0.00	0.00

		AM Trips	IP Trips	PM Trips		AM Trips	IP Trips	PM Trips
7	Civic	102.40	84.00	129.60		0.00	0.00	0.00
8	Community facility in 2016	12.80	11.20	19.20		0.00	0.00	0.00

Notes:

- 1 Retail - Specialist/Convenience trip rates assumed.
- 2 Business Services / offices trip rates assumed.
- 3 Medium density housing trip rates assumed.
- 4 The number of trips generated for 2026 include those generated for 2016.  
Commercial / light industrial not specified in Opus trip rates. Therefore we have assumed industrial / manufacturing trip rates as a proxy and taken
- 5 warehouse/distribution for IN/OUT proportional splits since only IP is only specified for Industrial / manufacturing.
- 6 Mixed Development trip rates have been calculated using existing land use assumptions - TRIPS Generation Information Summary Sheet (based on meeting with KCDC, TKTP, FFTP, Duffill Watts and TSE Ltd, Opus on 12 July 2006).
- 7 Civic is made up of Aquatic, Recreation, Community, Womens and Youth Centres in 2026. Total trips, not trip rates, presented here.
- 8 Community facility in 2016 represents total trips, not trip rates.

# Waikanae North Development

## Land Use and Trip Rate Assumptions

### 2016 Land Use Assumptions

Type	GFA (m <sup>2</sup> )	Dwellings	Units
1 Residential – dwellings		233	
Retirement dwellings – units			33
Retail, GFA (m <sup>2</sup> ) – local convenience	400		
2 Commercial, GFA (m <sup>2</sup> ) – local services	267		

### 3 2026 Land Use Assumptions

Type	GFA (m <sup>2</sup> )	Dwellings	Units
Residential – dwellings		700	
Retirement dwellings – units			100
Retail, GFA (m <sup>2</sup> ) – local convenience	1,200		
Commercial, GFA (m <sup>2</sup> ) – local services	800		

### 4 SKM Trip Rate Assumptions

Type	AM Peak	Inter-peak	PM Peak	Daily
Residential (HHU)	1	1	1	10
Office per 100 m <sup>2</sup>	2	1.4	2	15
Retail per 100 m <sup>2</sup>	4	10	20	120
Education per 100 m <sup>2</sup>	2	2.6	1	30
Tourist per 100 m <sup>2</sup>	0.67	0.5	0.64	9.08
Community per 100 m <sup>2</sup>	2	4	2	15
5 Residential (retirement) units	0.32	0.29	0.29	-

Notes:

- 1 Medium housing density assumed for IN/OUT proportional splits.
- 2 For commercial / local services the Retail - local convenience trip rate has been assumed.
- 3 The number of trips generated for 2026 include those generated for 2016.
- 4 Trip rates assumed to be in car/LCV units  
For residential (retirement dwellings) trip rates have taken from the NZ Trip Generation Database 2010 - source is Tauranga City Council. IP assumed to be on a par with PM peak.
- 5

# Ngarara Zone and Precinct Development

## Land Use and Trip Rate Assumptions

### 2016 Land Use Assumptions

Type	GFA (m <sup>2</sup> )	Dwellings
1 Residential (dwellings)		563
Retail, GFA (m <sup>2</sup> ) – local convenience	800	
2 Commercial, GFA (m <sup>2</sup> ) – local services	533	

### 3 2026 Land Use Assumptions

Type	GFA (m <sup>2</sup> )	Dwellings
Residential (dwellings)		1,689
Retail, GFA (m <sup>2</sup> ) – local convenience	2,400	
Commercial, GFA (m <sup>2</sup> ) – local services	1,600	

### 4 SKM Trip Rate Assumptions

Type	AM Peak	Inter-peak	PM Peak	Daily
Residential (HHU)	1	1	1	10
Office per 100 m <sup>2</sup>	2	1.4	2	15
Retail per 100 m <sup>2</sup>	4	10	20	120
Education per 100 m <sup>2</sup>	2	2.6	1	30
Tourist per 100 m <sup>2</sup>	0.67	0.5	0.64	9.08
Community per 100 m <sup>2</sup>	2	4	2	15
5 Residential (retirement) units	0.32	0.29	0.29	-

Notes:

- 1 Medium housing density assumed for IN/OUT proportional splits.
- 2 For commercial / local services the Retail - local convenience trip rate has been assumed.
- 3 The number of trips generated for 2026 include those generated for 2016.
- 4 Trip rates assumed to be in car/LCV units
- 5 For residential (retirement dwellings) trip rates have taken from the NZ Trip Generation Database 2010 - source is Tauranga City Council. IP assumed to be on a par with PM peak.



## Development Phasing

Development	2016	2026	2031
Airport	Current composite scenario	100%	100%
Paraparaumu Town Centre	PC72A generation for land use	100%	100%
Waikanae North	33%	100%	100%
Ngarara Zone and Precinct	33%	100%	100%

## Airport Development

### Estimated Number of Trips in 2026

HCV PCU factor

1

STILL TO BE CONVERTED TO 2 FOR MODELLING PURPOSES!!!!

#### Total Assumed Vehicle Trips TO Airport

Parcel	LCVs (cars & lights) To airport			HCVs To airport		
	AM	IP	PM	AM	IP	PM
1	60	51	8	11	11	1
2	100	81	55	8	7	2
3	137	156	264	9	5	8
4	43	30	22	7	4	5
5	152	114	116	21	12	15
6	41	34	44	1	1	1
7	55	42	53	1	1	1
8	4	4	4	0	0	0
9	61	31	22	0	0	0
10	28	36	64	1	1	2
11	38	17	14	10	5	7
12	89	62	63	19	10	13
13	75	45	46	27	14	18
14	73	33	27	21	11	14
15	52	25	22	16	8	11
16	0	0	0	0	0	0
17	72	32	25	18	9	12
18	42	24	28	11	6	8

#### Total Assumed Vehicle Trips FROM Airport

Parcel	LCVs (cars & lights) From airport			HCVs From airport		
	AM	IP	PM	AM	IP	PM
1	41	51	33	9	11	4
2	50	81	90	6	7	4
3	59	156	323	6	5	11
4	18	30	44	5	4	7
5	63	114	166	14	12	22
6	18	34	65	0	1	1
7	21	42	84	0	1	1
8	4	4	4	0	0	0
9	16	31	66	0	0	0
10	29	36	58	1	1	1
11	14	17	38	7	5	10
12	38	62	96	13	10	20
13	34	45	78	18	14	27
14	27	33	73	14	11	21
15	22	25	52	11	8	16
16	0	0	0	0	0	0
17	25	32	72	12	9	18
18	16	24	52	7	6	11

19	45	21	19	18	9	12
20	0	0	0	0	0	0
21	118	53	36	15	8	10
22	51	24	23	24	12	16
23	2	1	2	0	0	0
24	0	0	0	0	0	0
25	42	19	16	14	7	10
26	0	0	0	0	0	0
27	3	2	1	0	0	0
28	44	30	15	4	2	1
29	51	34	17	4	3	2
<b>Total</b>	<b>1,479</b>	<b>999</b>	<b>1,004</b>	<b>261</b>	<b>145</b>	<b>168</b>

19	19	21	45	12	9	18
20	0	0	0	0	0	0
21	36	53	118	10	8	15
22	23	24	51	16	12	24
23	2	1	2	0	0	0
24	0	0	0	0	0	0
25	16	19	42	10	7	14
26	0	0	0	0	0	0
27	1	2	3	0	0	0
28	15	30	44	1	2	4
29	17	34	51	2	3	4
<b>Total</b>	<b>625</b>	<b>999</b>	<b>1,750</b>	<b>173</b>	<b>145</b>	<b>255</b>

## Summary of the Total Number of Estimated Trips Paraparaumu Town Centre

GFA conversion to 100m<sup>2</sup>

**100**

### Car / LCV Trips

		AM Peak		Inter Peak		PM Peak	
		8am - 9am		1 hour average of 9am - 4pm		5pm - 6pm	
Land Use Type	GFA (m <sup>2</sup> )	IN	OUT	IN	OUT	IN	OUT
Retail – LFR Comparison	20,000	195	125	208	208	96	384
Retail – supermarket	5,000	31	20	63	63	50	200
Retail – speciality	1,700	10	7	21	21	17	68
Retail – other (inc cafes etc)	2,300	14	9	29	29	23	92
Commercial/office	6,000	48	8	35	35	13	50
Apartments	9,300	4	14	5	5	12	6
Community facility	2,000	6	6	6	6	10	10
<b>Total GFA (m<sup>2</sup>)</b>	<b>46,300</b>	-	-	-	-	-	-
<b>Total Car/LCVs Trips</b>		<b>308</b>	<b>189</b>	<b>365</b>	<b>365</b>	<b>221</b>	<b>810</b>

		AM Peak		Inter Peak		PM Peak	
		8am - 9am		1 hour average of 9am - 4pm		5pm - 6pm	
Land Use Type	GFA (m <sup>2</sup> )	IN	OUT	IN	OUT	IN	OUT
Retail - Specialist/Convenience	22,650	138	88	283	283	227	906
Retail - Large Format	20,000	195	125	208	208	96	384
Business Services / offices	23,100	185	33	133	133	51	193
Commercial / light industrial	32,475	376	241	309	309	123	494
Civic	5,000	51	51	42	42	65	65
Mixed Development	8,310	76	13	45	45	19	71
Medium Density Housing	56,120	22	86	28	28	70	38
Higher Density Housing	21,750	11	44	13	13	36	19
<b>Total GFA (m<sup>2</sup>)</b>	<b>189,405</b>	-	-	-	-	-	-
<b>Total Car/LCVs Trips</b>		<b>1,054</b>	<b>682</b>	<b>1,061</b>	<b>1,061</b>	<b>687</b>	<b>2,170</b>

## HCV Trips

2016 - Phase 1		AM Peak		Inter Peak		PM Peak	
		8am - 9am		1 hour average of 9am - 4pm		5pm - 6pm	
Land Use Type	GFA (m <sup>2</sup> )	IN	OUT	IN	OUT	IN	OUT
Retail – LFR Comparison	20,000	5	3	4	4	1	5
Retail – supermarket	5,000	2	1	2	2	1	2
Retail – speciality	1,700	1	0	1	1	0	1
Retail – other (inc cafes etc)	2,300	1	1	1	1	0	1
Commercial/office	6,000	2	0	1	1	1	2
<b>Total GFA (m<sup>2</sup>)</b>	<b>35,000</b>	-	-	-	-	-	-
<b>Total HCVs Trips</b>		<b>11</b>	<b>6</b>	<b>8</b>	<b>8</b>	<b>3</b>	<b>11</b>

2026 - Phase 2		AM Peak		Inter Peak		PM Peak	
		8am - 9am		1 hour average of 9am - 4pm		5pm - 6pm	
Land Use Type	GFA (m <sup>2</sup> )	IN	OUT	IN	OUT	IN	OUT
Retail - Specialist/Convenience	22,650	10	6	8	8	3	11
Retail - Large Format	20,000	5	3	4	4	1	5
Business Services / offices	23,100	8	1	5	5	2	7
Commercial / light industrial	32,475	29	18	23	23	8	31
Mixed Development	8,310	4	1	2	2	1	3
<b>Total GFA (m<sup>2</sup>)</b>	<b>106,535</b>	-	-	-	-	-	-
<b>Total HCVs Trips</b>		<b>55</b>	<b>30</b>	<b>42</b>	<b>42</b>	<b>15</b>	<b>57</b>

## Summary of the Total Number of Estimated Trips Waikanae North

GFA conversion to 100m<sup>2</sup>

100

### Car / LCV Trips

2016 - Phase 1				AM Peak		Inter Peak		PM Peak	
				8am - 9am		1 hour average of 9am - 4pm		5pm - 6pm	
Type	GFA (m <sup>2</sup> )	Dwellings	Units	IN	OUT	IN	OUT	IN	OUT
Residential – dwellings		233		47	187	117	117	152	82
Retirement dwellings – units			33	5	5	5	5	6	3
Retail, GFA (m <sup>2</sup> ) – local convenience	400			10	6	20	20	16	64
Commercial, GFA (m <sup>2</sup> ) – local services	267			7	4	13	13	11	43
<b>Total GFA (m<sup>2</sup>) / Dwellings / Units</b>	<b>667</b>	<b>233</b>	<b>33</b>	-	-	-	-	-	-
<b>Total Car/LCVs Trips</b>				<b>68</b>	<b>202</b>	<b>155</b>	<b>155</b>	<b>185</b>	<b>192</b>

2026 - Phase 2				AM Peak		Inter Peak		PM Peak	
				8am - 9am		1 hour average of 9am - 4pm		5pm - 6pm	
Type	GFA (m <sup>2</sup> )	Dwellings	Units	IN	OUT	IN	OUT	IN	OUT
Residential – dwellings		700		140	560	350	350	455	245
Retirement dwellings – units			100	16	16	15	15	19	10
Retail, GFA (m <sup>2</sup> ) – local convenience	1,200			29	19	60	60	48	192
Commercial, GFA (m <sup>2</sup> ) – local services	800			20	12	40	40	32	128
<b>Total GFA (m<sup>2</sup>) / Dwellings / Units</b>	<b>2,000</b>	<b>700</b>	<b>100</b>	-	-	-	-	-	-
<b>Total Car/LCVs Trips</b>				<b>205</b>	<b>607</b>	<b>465</b>	<b>465</b>	<b>554</b>	<b>575</b>

## Summary of the Total Number of Estimated Trips Ngarara Zone and Precinct

GFA conversion to 100m<sup>2</sup>

100

### Car / LCV Trips

2016 - Phase 1			AM Peak		Inter Peak		PM Peak	
			8am - 9am		1 hour average of 9am - 4pm		5pm - 6pm	
Type	GFA (m <sup>2</sup> )	Dwellings	IN	OUT	IN	OUT	IN	OUT
Residential – dwellings		563	113	450	282	282	366	197
Retail, GFA (m <sup>2</sup> ) – local convenience	800		20	12	40	40	32	128
Commercial, GFA (m <sup>2</sup> ) – local services	533		13	8	27	27	21	85
<b>Total GFA (m<sup>2</sup>) / Dwellings / Units</b>	<b>1,333</b>	<b>563</b>	-	-	-	-	-	-
<b>Total Car/LCVs Trips</b>			<b>145</b>	<b>471</b>	<b>348</b>	<b>348</b>	<b>419</b>	<b>410</b>

2026 - Phase 2			AM Peak		Inter Peak		PM Peak	
			8am - 9am		1 hour average of 9am - 4pm		5pm - 6pm	
Type	GFA (m <sup>2</sup> )	Dwellings	IN	OUT	IN	OUT	IN	OUT
Residential – dwellings		1,689	338	1351	845	845	1098	591
Retail, GFA (m <sup>2</sup> ) – local convenience	2,400		59	37	120	120	96	384
Commercial, GFA (m <sup>2</sup> ) – local services	1,600		39	25	80	80	64	256
<b>Total GFA (m<sup>2</sup>) / Dwellings / Units</b>	<b>4,000</b>	<b>1,689</b>	-	-	-	-	-	-
<b>Total Car/LCVs Trips</b>			<b>435</b>	<b>1,414</b>	<b>1,045</b>	<b>1,045</b>	<b>1,258</b>	<b>1,231</b>