

# HUTT CITY TRAFFIC MODEL 2003 REVISION



*Report for the  
Hutt City Council*



**BARCLAY TRAFFIC PLANNING**

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February 2003



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10 February 2003

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## 1. INTRODUCTION

### 1.1 Background

Since 1987 Hutt City Council has maintained a computer traffic model of the city's roading network. The model has been progressively upgraded and has proved invaluable for investigating transportation issues.

The last improvements to the model were completed in January 2001, and consisted of updating the network, revising the Park and Ride tables, and increasing the number of zones to make the model more serviceable. The land use tables were last updated in 1999 to incorporate information from the 1996 Census of Population and Dwellings.

Release of data from the 2001 Census has enabled a further revision of the land use tables, as will be documented in this report.

### 1.2 Scope

Development work has followed closely methodology of the 1999 upgrade when the land use tables were last updated.

First, the network description was revised to take into account physical works either recently completed, or committed for implementation in the near future.

Second, fresh land use tables were compiled using census data. This was accompanied by a review of population and employment trends within Lower Hutt City and the Wellington region.

Finally the revised model was reassembled with an updated set of trip generation parameters and external trips, and screenlines validated against recent count data.



## 2. NETWORK CHANGES

### 2.1 General

Although the Council has an extensive programme of roading works each year, many projects are minor, or have little effect on traffic patterns. There is little advantage in representing these works in the model.

Since the last update in 2001, few network changes have been of a nature to warrant adjustments to the model coding. The only project considered to be in this category was reconstruction of the roundabout at the intersection of Waione Street, Randwick Road, Seaview Road and Port Road. Although not yet implemented, at time of writing tenders are being called and the work can be treated as a committed project.

The 2001 revision included the anticipated conversion of the intersection of Rutherford Street, Connolly Street and Melling Road within the Central Business District.

### 2.2 Comment

Although only one change was required, the upgrade of the Seaview roundabout is a very significant project, with the potential to relieve congestion and influence traffic patterns over a considerable area. The intersection is now represented with a substantially increased capacity, and deletion of a bypass link for left-turn traffic.



### 3. LAND USE TABLES

#### 3.1 General

Statistics New Zealand supplied standard and customised datasets for the model update, including figures for population, households, car ownership, employment, and the home-to-work tables for the Wellington region.

As well as compiling fresh land use tables for the model, the statistics were analysed to examine recent trends in population, households and employment.

#### 3.2 Population and employment trends

Trends for the last three censuses are plotted in Table 1.

	1991	1996	2001
Population			
Lower Hutt City	94,882	95,872	95,472
Wellington City	147,711	157,646	163,812
Metropolitan area (1)	355,024	375,444	375,483
Households			
Lower Hutt City	33,080	34,140	35,505
Mean household occupancy	2.87	2.81	2.69
Employment: full and part time			
Lower Hutt CBD	8,259	7,827	7,797
Seaview, Gracefield	9,327	8,829	8,955
Petone, Alicetown	3,972	3,636	3,714
Lower Hutt City	36,297	35,733	35,505
Wellington CBD	58,389	57,960	61,632
Metropolitan area	158,463	163,605	167,985
Part-time employment (%)	15.5	21.0	20.8

Note (1): "Metropolitan area" consists of Wellington, Lower Hutt, Upper Hutt, Porirua Cities and Kapiti District.

TABLE 1: Land use trends

Lower Hutt's population continues fluctuate within a small range, as it has for some 25 years. Overall metropolitan population is also fairly static, although there has been some redistribution with a build up of population within Wellington City.

Household numbers continue to rise, accompanied by a steady reduction in household size. Average household size is now 2.69, lower than the 2.70



contained in the 2006 tables (now superseded), and moving steadily toward the figure of 2.45 predicted for 2016.

Employment in the Hutt Valley continues to be under pressure, with small reductions for both Hutt Central and Lower Hutt as a whole. There were small gains recorded for the industrial areas of Seaview and Gracefield, and for the triangle formed by Petone and Alicetown (mixed industrial and commercial activity).

After 15 years of decline, the Wellington central business district is beginning to grow again, although employment is still well below the figure of 66,615 recorded in 1986. The rise from 57,960 to 61,632 is sufficient to account for most of the net employment growth in the metropolitan area as a whole.

The sharp rise in the proportion of part time workers recorded between 1991 and 1996 has not been sustained, remaining at approximately 21 per cent.

Employment trends are still well below what was expected when the 2016 future trip table was compiled in 1995. At that time it was believed employment in Hutt Central would grow by approximately 60 per cent by 2016, in Petone by 25 to 40 per cent, and in Seaview-Gracefield by 15 per cent. In fact the number of jobs as determined by the 1996 and 2001 censuses has been static or declining throughout Lower Hutt, and it must now be seriously questioned whether the 2016 predictions can be fulfilled.

### 3.3 Car ownership

Increasing car ownership is an important factor behind traffic growth, and it is important to monitor trends accurately. The model uses two household categories: for zero or one cars per household, and two or more respectively.

In accordance with past practice, the city was divided into nine reasonably homogenous areas, and the category split determined for each, as set out in Table 2.

There are wide variations in ownership around the city, from a 71/29 per cent split in Naenae-Taita to 32/62 on the Western Hills, reflecting differences in income, household composition and lifestyle.

The table reveals a steady increase in ownership, moving from an overall split of 66/34 in 1986, 63/37 in 1991, 60/40 in 1996, to 57/43 in 2001. A figure of 50/50 remains credible for 2016.



Area	Numbers of households		Split (%)	
	0-1 cars	2+ cars	0-1 cars	2+ cars
Western Hills	1,775	2,893	38.0	62.0
Petone, Alicetown	2,409	1,194	66.9	33.1
Eastbourne	909	927	49.5	50.5
Eastern Hills	3,050	1,669	64.6	35.4
Hutt Central	1,826	1,567	53.8	46.2
Boulcott, Avalon	1,014	792	56.1	43.9
Naenae, Taita	3,902	1,618	70.7	29.3
Stokes Valley	1,653	1,515	52.2	47.8
Wainuiomata	3,025	2,576	54.0	46.0
<i>LOWER HUTT CITY</i>	<i>19,562</i>	<i>14,752</i>	<i>57.0</i>	<i>43.0</i>

TABLE 2: Household car ownership

### 3.4 Mode of travel

The traffic model is *vehicle* based which assumes a constant mode choice split between car, bus and rail travel modes. Public transport accounts for a considerable proportion of commuter travel within some corridors, and any significant shift in mode choice would result in a substantial change in traffic flow. It is important therefore to monitor mode choices from census to census. The most useful indicator is the proportion of commuters using public transport in the Hutt Valley-Wellington corridor, and comparisons are shown in Table 3.

Travel mode	1996	2001
Mode numbers:		
Train	2,838	3,300
Bus	561	786
Private or work car	6,507	6,102
Bicycle	96	147
<i>TOTAL:</i>	10,002	10,335
Mode proportions (%):		
Train	28	32
Bus	6	8
Private or work car	65	59
Bicycle	1	1

TABLE 3: Mode choice trends (Hutt-Wellington corridor)

The table records a small increase in total commuting on the corridor, with growth in the public transport share. If the trend continues some slowing of traffic growth at peak periods can be expected.



### 3.5 Employment category tables

Employment numbers were derived from census employment data, which are divided into 18 industry categories. These do not allow *retail* and *non-retail* employment to be determined directly, since industry definitions are not directly compatible with the definitions applying to the non-census figures used when the model was last calibrated. The relevant industry categories are “Retail” and “Accommodation, Cafes and Restaurants”. Employment in the “Retail” classification will have the characteristics assumed by the model for retail jobs, but “Accommodation, Cafes and Restaurants” will be more mixed: it will include motels and hotels with relatively low trip rates, and cafes and fast food outlets with high rates.

It was decided to derive retail employment figures for the model by using 100 per cent of the “Retail” category, plus 50 per cent of “Accommodation, Cafes and Restaurants”. This procedure produced figures compatible with those for which the model was calibrated.

### 3.6 Land use tables

The new land use tables are contained in Appendix 1, alongside the 1996 tables for comparison.



## 4. PROCESSING

### 4.1 Trip parameters

A feature of the Lower Hutt model is a changing demand structure, with steadily increasing trip generation rates and a relative decline in the amount of commuting to work. This enables the model to reflect current traffic growth rates, and the changing profile resulting from rates of growth during the commuter peak periods which are slower than for the interpeak period.

Trip rates and purpose proportions were obtained by interpolation, and are set out in Table 4.

	1996	2001	2006
Trip generation rates (per day):			
0-1 car households	4.73	4.90	5.07
2+ car households	9.46	9.80	10.14
Purpose proportions:			
Home-based work	0.134	0.130	0.125
Home-based non-work	0.416	0.401	0.387
Non-home based	0.450	0.469	0.488

TABLE 4: Trip generation parameters

### 4.2 Validation

Seven screenlines have been established for validation purposes, as shown in Figure 1.

Measured traffic counts for links of each screenline have been compiled using the most recent available count data from Hutt City Council. State highway counts for 2001 were obtained from Transit New Zealand, however it was found that data for many of the sites were corrupt. Because of this the screenline table has been compiled from 2000 data, as was used in the 2001 modelling report. (At the time of writing, 2002 data were not available.)

The comparisons are summarised in Table 5, with the full table in Appendix 2.



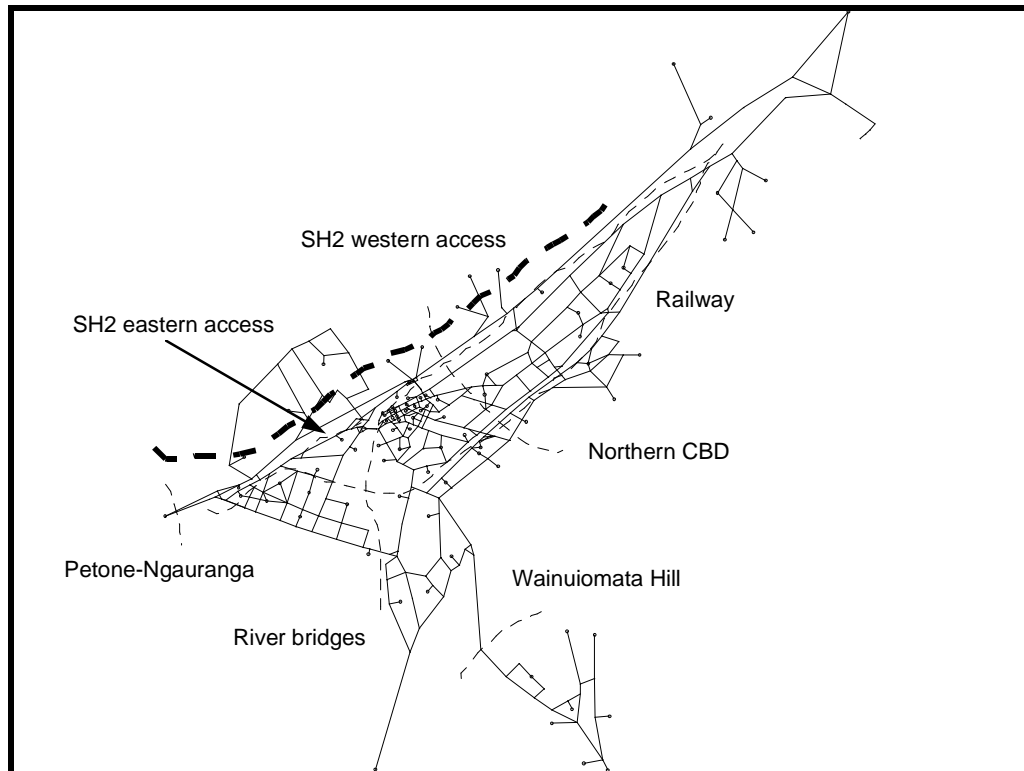


FIGURE 1: Screenlines

	Morning peak		Interpeak		Afternoon peak	
	Forward	Return	Forward	Return	Forward	Return
1. River bridges	12	27	22	14	24	14
2. Railway	17	3	19	5	27	4
3. Eastern access	25	-12	26	9	9	7
4. Western access	44	18	48	30	4	15
5. Petone-N'ranga	-1	7	3	-3	6	-3
6. Northern CBD	-8	56	-11	17	40	-14
7. W'mata Hill	28	14	-10	37	-12	49

TABLE 5: Screenline comparisons (% difference)

In most cases modelled counts are within 10 to 20 per cent of the measured values. It is now ten years since the last major calibration, but the model remains very serviceable.

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## 5. CONCLUSIONS

### 5.1 Network changes

Since the previous network update in 2001, the only change to the roading system with significant network implications has been the upgrade to the roundabout at the intersection of Waione Street, Port Road, Seaview Road and Randwick Road. The reconstruction work is due to proceed shortly, and will relieve a severe capacity bottleneck in Seaview.

### 5.2 Land use changes

Population data from the 2001 census shows continued static or slow growth for Lower Hutt city, fluctuating around 95,000 within a small range. The number of households continues to rise, with a steady increase in car ownership.

Total employment for the Wellington metropolitan area as a whole is growing slowly, with a significant increase in the Wellington central business district. Employment in Lower Hutt is lagging this trend, with continued declines in many parts of the city.

### 5.3 Validation

The model calibration remains serviceable, with good levels of validation on many of the key screenlines.

c:\data\jobs\j155\j155002.doc





# APPENDIX 1

## Land use tables



LAND USE TABLES			1996				2001			
ZONES			Households		Employees		Households		Employees	
No.	Name	Description	0-1 car	Multi car	Retail	Non-ret	0-1 car	Multi car	Retail	Non-ret
1	CBD	Dudley-Daly block	0	0	182	114	0	0	163	115
2	CBD	Dudley-High block	1	0	182	115	1	0	163	115
3	CBD	Andrews-High-rbk	1	0	182	114	1	0	163	115
4	CBD	High-Queens-Laings	1	0	182	115	1	0	163	115
5	CBD	High-Queens-Margaret	0	0	182	114	0	0	163	115
6	CBD	Queens-Myrtle-Laings	1	0	182	115	1	0	163	115
7	CBD	High-Rutherford-Queens	0	0	182	114	0	0	163	115
8	CBD	Queensgate	0	0	182	115	0	0	163	115
9	CBD	Queensgate	1	0	182	114	1	0	163	115
10	CBD	Waterloo-Queens-Kings	1	1	17	387	1	1	20	368
11	CBD	Pretoria-Kings-High	17	13	17	388	15	14	20	369
12	CBD	Osborne Pl	2	1	17	388	2	2	20	369
13	CBD	HCC buildings	0	0	181	115	0	0	163	115
14	CBD	Bloomfield-Myrtle	15	12	17	388	13	12	20	369
15	CBD	High-Rutherford-LINK	1	1	17	388	1	1	20	369
16	CBD	Queens-High-Rutherford	1	1	17	388	1	1	20	369
17	CBD	Pretoria-High-Kings	107	86	17	387	96	93	20	368
18	CBD	Epuni-Knights	280	224	17	388	249	244	20	369
19	CBD	Knights-Bellevue	173	139	17	388	154	152	20	369
20	CBD	Huia-Myrtle-Hutt Rec	25	20	17	387	23	20	20	368
21	Waiiti Cr	Ludlam Cr catchment	102	81	6	15	95	93	14	22
22	Tama St	Victoria catchment	413	170	100	444	388	193	143	523
23	Penrose St	Woburn N AU	249	200	0	174	178	269	27	165
24	Hutt Rd	N of railway	141	58	100	449	133	65	143	525
25	Boulcott	Part AU	439	332	58	365	489	396	53	362
26	Park Rd	Park Rd catchment	166	235	8	93	139	278	27	115
27	Dowse Dr	Maungaraki AU	509	723	51	207	514	746	28	260
28	N'dale Rd	Part Normandale AU	184	262	0	90	162	323	0	111
29	Harbourview	Harbourview catchment	110	157	0	90	97	193	0	111
30	Korokoro	Korokoro AU	199	283	19	284	217	275	13	466
31	Gear site		6	3	300	700	6	3	237	602
32	Esplanade W	Part Esplanade AU	534	220	120	164	497	246	171	164
33	Wilford E	Part AU (E of Cuba)	600	247	0	116	575	286	0	116
34	Randwick Cr	Moera AU	404	205	72	246	472	134	58	318
35	Port Rd	W of Seaview	5	3	10	1000	4	3	37	1048
36	Hutt Pk Rd	Seaview-Hutt Park Rd	1	0	12	1604	1	0	44	1631
37	Grfld Rd	Part AU	11	5	20	990	9	7	73	1043
38	Waiwhetu S	AU	588	297	40	665	591	285	19	664
39	Waiwhetu N	AU	339	171	39	171	337	173	49	190
40	Waterloo E	Part AU	1052	532	36	405	945	642	55	747
41	Waterloo W	Part AU	151	121	36	405	179	151	31	147
42	Fairfield	Epuni E AU	730	370	42	249	690	426	63	207
43	Epuni W	AU	654	523	100	1298	728	430	75	1518
44	Wainui Cent	Wainui CBD	0	0	292	273	0	0	315	207
45	Wise St	Glendale AU	642	478	35	250	580	512	13	150
46	Wellington Rd	Arakura AU	492	367	4	86	489	354	6	85
47	Parkway	AU less CBD	558	415	0	400	530	445	0	262
48	Fernlea	Fernlea AU	375	280	19	350	344	304	38	153
49	Coast Rd	Pencarrow AU	93	69	26	58	50	112	3	75

LAND USE TABLES			1996				2001			
ZONES			Households		Employees		Households		Employees	
No.	Name	Description	0-1 car	Multi car	Retail	Non-ret	0-1 car	Multi car	Retail	Non-ret
50	Homedale E	AU	574	428	103	182	547	464	27	259
51	Avalon	Part AU	557	420	58	365	525	396	53	364
52	Naenae S	AU less comm. zone	935	313	0	0	799	440	0	0
53	Rata St	Naenae N AU	1136	381	0	594	1142	403	94	516
54	Naenae shops	comm. zone	0	0	250	653	0	0	103	801
55	Taita N	AU	645	217	0	486	658	230	41	498
56	Kelson	AU	373	530	18	207	353	550	13	260
57	Manor Park	AU	38	55	4	158	57	63	3	147
58	Delaney	AU	416	362	0	69	517	278	5	87
59	Eastbourne	AU	979	899	121	527	909	927	105	616
60	Tirohanga Rd	Tirohanga-Pomare Rds	127	179	0	101	107	211	0	124
61	Hill Rd	Hill Rd catchment	96	135	0	101	81	160	0	124
62	Owen St	Owen St catchment	57	80	0	0	48	94	0	0
63	NZ Post		0	0	50	500	0	0	71	501
64	Hutt Rd	Hutt Rd Jackson-rly	225	92	200	2000	198	97	285	2005
65	Petone N	N of Bouverie	18	8	20	314	16	8	29	315
66	Waione St	Espl. AU E of Jessie	142	59	28	2000	132	65	40	2005
67	Petone Rec	Wilford AU W of Cuba	336	138	140	500	322	159	200	501
68	HVHS etc	Market - Waiti	97	78	17	388	87	84	16	376
69	Melling	AU	145	60	61	791	142	71	100	667
70	Naenae W	AU	628	211	0	396	614	244	56	495
71	Taita S	AU	756	254	185	1162	689	301	77	1094
72	Tawhai	AU	583	508	0	249	544	551	34	228
73	Holborn	AU	364	317	226	158	366	327	113	291
74	Manuka	AU	305	266	0	132	225	360	11	137
75	Homedale W	AU	503	375	48	117	484	386	18	159
76	R'bank S	carpark	0	0	17	388	0	0	20	369
77	R'bank N	carpark	0	0	17	388	0	0	20	369
78	Plaza carpark	carpark	0	0	182	114	0	0	166	115
79	Melling P & R	carpark								
80	Petone P & R	carpark								
81	Waterloo W P&R	carpark								
82	Waterloo E P&R	carpark								
83	Wellington	External zone								
84	Porirua	External zone								
85	Upper Hutt	External zone								
<b>TOTALS</b>			<b>22405</b>	<b>13670</b>	<b>5279</b>	<b>29703</b>	<b>21563</b>	<b>14752</b>	<b>5267</b>	<b>30238</b>



# APPENDIX 2

## Screenline tables



SCREENLINE <i>(table amended 23 JAN. 2003)</i>	(vph)											
	Morning				Interpeak				Afternoon			
	FORWARD		RETURN		FORWARD		RETURN		FORWARD		RETURN	
Meas.	Model	Meas.	Model	Meas.	Model	Meas.	Model	Meas.	Model	Meas.	Model	
<b>1. River bridges</b>												
Kennedy-Good Bridge	1055	1066	668	750	605	834	621	862	888	863	1099	1154
Melling Bridge	1020	1074	750	1317	726	944	868	1197	852	1104	1173	1408
Ewen Bridge	1472	1696	1530	1406	1249	1447	1362	1215	1846	2111	1406	1498
Estuary Bridge	779	1004	1092	1667	928	1037	963	1090	1113	1764	1021	1274
<b>TOTAL</b>	<b>4326</b>	<b>4838</b>	<b>4040</b>	<b>5141</b>	<b>3508</b>	<b>4263</b>	<b>3814</b>	<b>4364</b>	<b>4699</b>	<b>5842</b>	<b>4699</b>	<b>5335</b>
<i>Differences:</i>		512		1101		755		550		1143		636
<i>% difference</i>		12		27		22		14		24		14
<b>2. Railway</b>												
S H 2 (S of Haywards)	1227	1271	2322	2848	993	1441	1028	1465	2386	2498	1218	1438
High St (Taita)	213	374	674	1146	380	358	331	351	810	1160	266	349
Wingate overbridge	270	149	313	445	221	107	261	178	245	438	376	299
Naenae overbridge	573	621	538	693	424	585	386	638	556	695	512	756
Waterloo Rd overbridge	302	214	724	614	392	432	294	445	742	680	344	347
Whites Line overbridge	429	404	962	966	512	604	560	643	877	990	431	562
Randwick Rd overbridge	971	1166	760	625	661	746	691	747	741	876	1041	1241
Cuba St	616	632	728	373	459	509	727	547	441	575	1180	818
Hutt Rd overbridge	988	1393	526	958	602	912	541	730	469	1106	923	1331
Koro Cr	448	463	420	568	416	339	399	446	514	280	427	854
Petone off-ramp	1535	2163	0	0	1217	1428	0	0	1576	2540	0	0
Petone on-ramp	0	0	1625	657	0	0	1233	574	0	0	1499	580
<b>TOTAL</b>	<b>7572</b>	<b>8850</b>	<b>9592</b>	<b>9894</b>	<b>6277</b>	<b>7462</b>	<b>6451</b>	<b>6764</b>	<b>9357</b>	<b>11837</b>	<b>8217</b>	<b>8577</b>
<i>Differences:</i>		1278		302		1185		313		2480		360
<i>% difference</i>		17		3		19		5		27		4
<b>3. Eastern access</b>												
SH2	1184	1042	2091	1982	933	1147	948	1152	2096	1730	1125	1116
Owen St	29	5	62	50	35	31	39	29	65	55	38	19
Kennedy-Good Bridge	1055	1066	668	750	605	834	621	862	888	863	1099	1154
Block Rd	211	1113	692	272	287	595	225	452	593	627	205	773
Melling Bridge	1020	1074	750	1317	726	944	868	1197	852	1104	1173	1408
Koro Cr	448	463	420	568	416	339	399	446	514	280	427	854
Petone Park & Ride	127	103	16	0	17	17	12	17	10	0	44	86
Petone off-ramp	1535	2163	0	0	1217	1428	0	0	1576	2540	0	0
Petone on-ramp	0	0	1625	657	0	0	1233	574	0	0	1499	580
<b>TOTAL</b>	<b>5609</b>	<b>7029</b>	<b>6324</b>	<b>5596</b>	<b>4236</b>	<b>5334</b>	<b>4345</b>	<b>4730</b>	<b>6594</b>	<b>7198</b>	<b>5610</b>	<b>5990</b>
<i>Differences:</i>		1420		-728		1098		385		604		380
<i>% difference</i>		25		-12		26		9		9		7

<b><u>4. Western Access</u></b>												
London Rd	182	217	49	180	93	199	91	207	77	217	216	250
Dowse Dr	74	330	436	119	152	190	155	185	399	153	132	313
Harbourview Rd	38	121	161	61	56	93	62	97	155	82	60	140
Tirohanga Rd	203	128	84	62	61	94	61	98	58	84	148	147
Tirohanga Rd	226	273	275	125	90	184	193	189	109	174	396	301
Major Dr	407	335	113	121	151	212	147	218	157	186	483	361
SH58	784	1353	570	716	371	468	404	449	519	637	815	1083
<b>TOTAL</b>	<b>1914</b>	<b>2756</b>	<b>1688</b>	<b>1384</b>	<b>974</b>	<b>1440</b>	<b>1113</b>	<b>1444</b>	<b>1474</b>	<b>1533</b>	<b>2250</b>	<b>2594</b>
<b>Differences:</b>		<b>842</b>		<b>-304</b>		<b>466</b>		<b>331</b>		<b>59</b>		<b>344</b>
<b>% difference</b>		<b>44</b>		<b>-18</b>		<b>48</b>		<b>30</b>		<b>4</b>		<b>15</b>
<b><u>5. SH2 Petone-Ngauranga</u></b>												
SH2 Petone-Ngauranga	3122	3105	0	0	2379	2456	0	0	3958	4213	0	0
SH2 Petone-Ngauranga	0	0	3855	4124	0	0	2497	2429	0	0	3225	3113
<b>TOTAL</b>	<b>3122</b>	<b>3105</b>	<b>3855</b>	<b>4124</b>	<b>2379</b>	<b>2456</b>	<b>2497</b>	<b>2429</b>	<b>3958</b>	<b>4213</b>	<b>3225</b>	<b>3113</b>
<b>Differences:</b>		<b>-17</b>		<b>269</b>		<b>77</b>		<b>-68</b>		<b>255</b>		<b>-112</b>
<b>% difference</b>		<b>-1</b>		<b>7</b>		<b>3</b>		<b>-3</b>		<b>6</b>		<b>-3</b>
<b><u>6. Northern CBD</u></b>												
S H 2 (N of Melling)	1162	1209	1961	2729	1266	1593	1125	1637	2619	2454	1243	1474
Connolly St	169	182	626	739	282	174	279	241	580	628	241	260
High St (Brunswick St)	271	247	450	632	374	437	360	520	514	549	377	382
Kings Cr	292	130	445	244	324	156	313	150	588	335	322	170
Witako St	332	161	223	98	193	168	159	125	231	161	234	168
Oxford Tce	230	435	431	962	209	343	194	303	445	1149	190	461
Cambridge Tce	243	347	550	808	316	428	326	410	451	852	440	400
Waiwhetu Rd	529	405	445	632	352	380	342	347	513	732	547	406
<b>TOTAL</b>	<b>3383</b>	<b>3116</b>	<b>4374</b>	<b>6844</b>	<b>4150</b>	<b>3679</b>	<b>3200</b>	<b>3732</b>	<b>4892</b>	<b>6861</b>	<b>4314</b>	<b>3721</b>
<b>Differences:</b>		<b>-267</b>		<b>2470</b>		<b>-471</b>		<b>532</b>		<b>1969</b>		<b>-593</b>
<b>% difference</b>		<b>-8</b>		<b>56</b>		<b>-11</b>		<b>17</b>		<b>40</b>		<b>-14</b>
<b><u>7. Wainuiomata Hill</u></b>												
Wainuiomata Hill Rd	419	536	1343	1526	646	582	547	752	1462	1289	530	792
<b>TOTAL</b>	<b>419</b>	<b>536</b>	<b>1343</b>	<b>1526</b>	<b>646</b>	<b>582</b>	<b>547</b>	<b>752</b>	<b>1462</b>	<b>1289</b>	<b>530</b>	<b>792</b>
<b>Differences:</b>		<b>117</b>		<b>183</b>		<b>-64</b>		<b>205</b>		<b>-173</b>		<b>262</b>
<b>% difference</b>		<b>28</b>		<b>14</b>		<b>-10</b>		<b>37</b>		<b>-12</b>		<b>49</b>

Data sourced from MWH and HCC  
J155/screencount data