

Before an Independent Hearings Panel
Appointed by Waimakariri District Council

under: the Resource Management Act 1991

in the matter of: Submissions and further submissions on the Proposed
Waimakariri District Plan

and: Hearing Stream 12: Rezoning requests (larger scale)

and: **Carter Group Property Limited**
(Submitter 237)

and: **Rolleston Industrial Developments Limited**
(Submitter 160)

Statement of evidence of Chris Sexton (Spatial Analysis) on
behalf of Carter Group Limited and Rolleston Industrial
Developments Limited

Dated: 5 March 2024

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**STATEMENT OF EVIDENCE OF CHRIS SEXTON ON BEHALF OF
CARTER GROUP LIMITED AND ROLLESTON INDUSTRIAL
DEVELOPMENTS LIMITED**

INTRODUCTION

- 1 My full name is Christopher Philip Sexton. I am a Civil Engineer at Inovo Projects Limited.
- 2 My qualifications include a Bachelor of Natural Resources Engineering with Honours from the University of Canterbury (BE(Hons) Nat. Res), and I am a member of Engineering New Zealand.
- 3 I have over 7 years' experience as a Civil Engineer working on a range of Infrastructure and Land Development projects in both the public and private sector. In this capacity, I frequently use Geographic Information Systems to analyse property information as it relates to land development and constraints to development.
- 4 My previous experience includes 1.5 years working at the Waimakariri District Council as a Graduate Engineer within the Network Planning team. I was involved in network assessments of current capacity and future growth within the districts water and wastewater schemes. Specific projects include an investigation into the Mandeville sewer scheme regarding the 2014 flood events, investigation into the combination of the Pegasus and Woodend water supply schemes and assisting in the design of a recycled water system as part of the Rangiora WWTP headworks upgrades.
- 5 My experience in the private sector has focused on land development and site development projects within Canterbury and the West Coast of New Zealand.
- 6 I am familiar with the Submitters' request to rezone land bound by Mill Road, Whites Road, Bradleys Road (the *Site*).
- 7 I was involved in private plan change 31 (*PC31*) to rezone this land under the operative District Plan.

CODE OF CONDUCT

- 8 Although this is not an Environment Court hearing, I note that in preparing my evidence I have reviewed the Code of Conduct for Expert Witnesses contained in Part 9 of the Environment Court Practice Note 2023. I have complied with it in preparing my evidence. I confirm that the issues addressed in this statement of evidence are within my area of expertise, except where relying on the opinion or evidence of other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE

- 9 The purpose of my evidence is to set out my involvement in the preparing of evidence to support this rezoning request.
- 10 My evidence will deal with the following:
- 10.1 Spatial analysis of Formative's assessment of development capacity within the Waimakariri District.
- 10.2 Spatial Analysis of data available from Environment Canterbury and Waimakariri District Council to produce the development constraint maps for this process.

SUMMARY OF EVIDENCE

- 11 As part of this hearing process, I have assisted **Mr Akehurst** in his analysis of the *Waimakariri Residential Capacity and Demand Model – IPI 2023, Economic Assessment* prepared by Formative, dated 8th December 2023 (Formative Report). This included preparing a spatial analysis of the capacity figures of the Formative Report for both new and existing urban areas.
- 12 My spatial analysis has informed **Mr Akehurst's** evidence.
- 13 As part of this hearing process, I have assisted **Mr Walsh** in preparing constraint maps for the Waimakariri District, identifying areas where residential development opportunities may be constrained.

SPATIAL ANALYSIS OF WAIMAKARIRI CAPACITY FOR GROWTH MODEL 2022

- 14 Formative Ltd have prepared the Waimakariri Capacity for Growth Model 2022 (WCGM22) to account for development capacity within the Waimakariri District. The Formative Report is based on the WCGM22. The raw data from the model was made available to the submitters as part of the PC31 process in the form of an Excel spreadsheet and I was asked to review this data. My review focused on investigating any constraints to development/intensification that were overlooked and to classify the data in terms of the Statistics New Zealand Statistical Area 2 (2023) boundaries.
- 15 The Formative Growth Model identified areas available for development under the Medium Density Residential Standards (MDRS), along with General Residential, Large Lot Residential and Settlement Zones. All of the MDRS development was focused in Rangiora, Kaiapoi, Woodend/Ravenswood and Pegasus. A small amount of settlement development was allowed for in Ōhoka, Tuahiwi and Waikuku Beach. Large lot residential development was

applicable in Mandeville, Ōhoka, Rangiora, Swannanoa and Waikuku.

- 16 The Excel spreadsheet provided included fields for an ID, Zone Name, Township, Land Area, Building Count, Medium Term feasible yield, Long Term feasible yield.
- 17 The ID field from the Formative dataset matches with the parcel ID's assigned by LINZ. The Formative dataset was imported into Q-GIS matching the ID fields of the Formative dataset and the LINZ Primary Parcel dataset to provide a spatial representation of the parcels identified by Formative, while also providing further information such as address, appellation, title(s), purpose etc.
- 18 The georeferenced dataset was then referenced with the Statistics New Zealand Statistical Area 2 (SA2) 2023 boundaries.
- 19 The Formative Report proceeds to break down the development capacity and demand by areas. The numbers presented by Formative for these areas can generally be related back to the SA2 2023 boundaries with some minor adjustments. Where proposed development is to occur on the edge of a township this has been included within the township area.

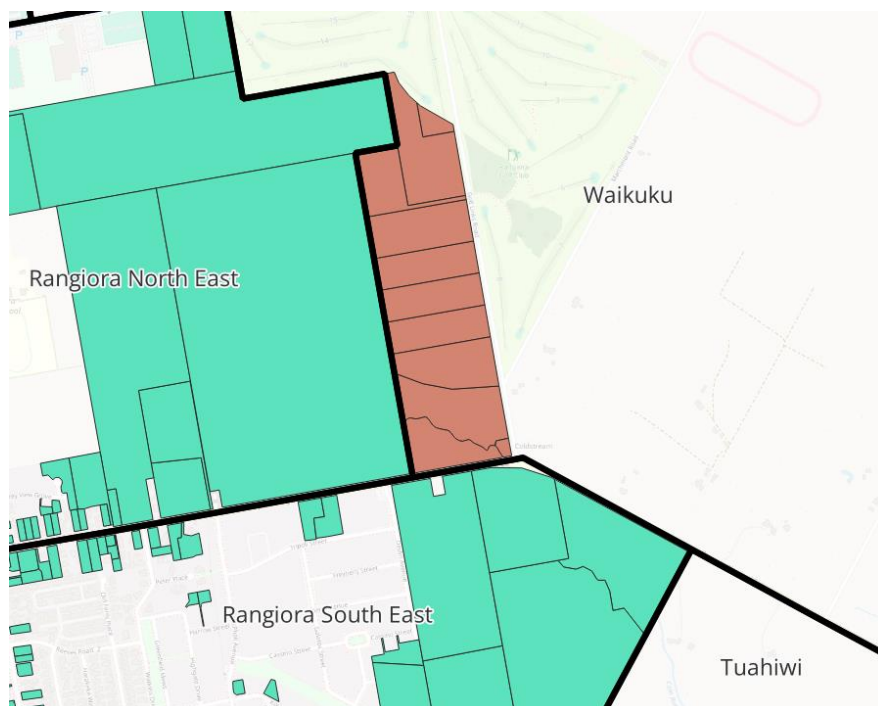


Figure 1- SA2 Area Analysis

- 20 Figure 1 above shows an example of where an adjustment has been made. The brown coloured lots (Waikuku SA2 2023 area) have been added to the Rangiora North East SA2 area for the purpose of defining future capacity, as this area clearly relates to the Rangiora township.

- 21 As part of the analysis, several SA2 areas were adjusted to account for development capacity bordering existing townships. Table 1 in **Appendix A** shows the development capacity within the district, split by SA2 2023 boundaries, as identified by Formative as part of the WCGM22 dataset. Areas denoted with an * indicate that an adjustment has been made to the SA2 boundary.
- 22 The classification of development capacity by the modified SA2 areas also aligns with the information provided by Formative in its December 2023 report (Figures 4-4, 4-5 and 4-6 in the Formative Report).
- 23 I then undertook further analysis of the Formative dataset and its relation to the LINZ cadastral information to highlight areas meeting any of the following criteria (which indicate that residential development/intensification is unlikely to occur):
- (a) Parcels whose purpose is for Utility or Local Purpose Reserve;
 - (b) Parcels with a designation by a requiring authority; and
 - (c) Parcels that have areas subject to Esplanade Provisions.
- 24 Further desktop analysis was undertaken accounting for other constraints to urban development. This included identifying lots that cannot be developed or intensified in a way that provides additional residential capacity including:
- (a) Council Owned Facilities (i.e. water treatment plants),
 - (b) Parcels featuring heritage buildings or protected trees,
 - (c) Parcels with community facilities (e.g. Pre-Schools/early learning centres, Churches/Places of worship),
 - (d) Land covenants and/or encumbrances that prevent further subdivision or intensification, and
 - (e) Land where a dwelling or development had been completed therefore removing any potential future capacity in the medium term (e.g. individual homes, multi-unit residential developments, etc.).
- 25 Further, the household capacity stated in the WCGM22 for new subdivisions in greenfield areas was reviewed and validated, by either:
- 25.1 Adopting yields in publicly available and consented subdivision master plans, or

- 25.2 Deducting 12.5% of the gross site area (per exclusions from 'net density' such as stormwater management & commercial areas), and then multiplying the remaining area by 15 households/hectare (hh/ha) to determine capacity. This is consistent with the methodology set out in the Canterbury Regional Policy Statement (CRPS), Our Space, the Greater Christchurch Housing Development Capacity Assessment (HDCA), and the independent review of greenfield densities commissioned by the Greater Christchurch Partnership undertaken by Harrison Grierson Limited (HGL)¹.
- 26 The approach above can be contrasted with Formative's calculation of capacity in greenfield areas where an allowance of only 25% of the gross area for all infrastructure, including stormwater management and commercial areas which are specifically excluded by the statutory and non-statutory documents listed above. Formative's allowance of only 25% is also considerably less than the 40.2% average area for all infrastructure in the case studies identified by HGL. Subject to excluding stormwater etc. from gross areas, the 15hh/ha density calculation applied to greenfield areas is equivalent to Formative's approach, and that set out in the HDCA, of allowing 25% of the net area for local infrastructure and an average 500m² lot size for the balance, to determine capacity.
- 27 Following the GIS analysis described above, physical inspections of sites and areas were undertaken (in the week of 21 August 2023) to validate findings and provide current verification of the potential future capacity of land. In undertaking those site inspections, particular attention was given to:
- 27.1 Land identified as vacant, that has since been developed and occupied (and therefore cannot provide capacity);
- 27.2 Land identified as vacant, that has been partially developed and appears incomplete and/or unoccupied (and can therefore provide capacity);
- 27.3 Land identified as providing capacity by way of infill, that has attributes indicating such infill is unlikely to materialise (e.g. recently completed development where redevelopment is unlikely, building position limiting infill potential, lifestyle properties with areas of open space that appear unlikely to be developed, and other site specific or environmental attributes indicating infill as unlikely).

¹https://www.greaterchristchurch.org.nz/assets/Documents/greaterchristchurch/reports/Greater-Christchurch-Partnership-Greenfield-Density-Analysis-Technical-Report-Final_Optimized.pdf

- 28 This analysis identified a significant number of lots unable to support further urban development and/or intensification. Some examples of lots identified by Formative for urban development are listed below:
- 28.1 Lots within Pegasus featuring land covenants that are restrictive to further subdivision or establishment of a second dwelling on the allotment.
 - 28.2 Windsor Park in Rangiora (Recreational reserve).
 - 28.3 The Cust Water Treatment headworks site.
 - 28.4 Tuahiwi Cemetery (noted on title as historic Māori Burial Grounds).
- 29 From the above analysis it was found that there was a significant number of lots where urban development could not realistically occur. The overestimation is at least 1,776 dwellings in the medium term and in the vicinity of 1,932 dwellings in the long term. The vast number of lots identified indicates that the WCGM22 model has not been adequately verified and that it clearly overestimates the potential development capacity available within the district. Further evidence and examples of incorrectly identified allotments in WCGM22 can be found within **Appendix B**. Adjustments made to greenfield developments can be found in **Appendix C**.
- 30 Please note that the overestimation I set out in paragraph 29 is slightly higher than what was reported in the PC31 process. The reason for this is since the PC31 hearing, I have:
- 30.1 identified some additional overestimations and mistakes in the WCGM22 capacity assessment for the three main townships (which was the focus of my analysis in PC31); and
 - 30.2 identified further errors in WCGM22 outside the three main townships; and
 - 30.3 revised my figures with respect to capacity accordingly.
- 31 Given this analysis mainly focuses on the medium term, there is potential for additional overestimation in relation to the long term.
- 32 As part of PC31 Mr Yeoman of Formative was questioned in relation to the development capacity within the Waimakariri District. Mr Yeoman conceded that there were some errors within WCGM22 and that reserves had not been removed, along with some of the other omissions pointed out. From reading the Formative Report, it appears that the raw WCGM22 data has been used to inform the numbers in that report and no corrections have been made to errors identified in the PC31 process.

- 33 Section 2.3 of the Formative Report states that the Kainga Nohoanga Special Purpose Zone was excluded from WCGM22 as non-developable, and that while this covered an area of 1,147 ha it acknowledged that this land could be used more intensively in the future. However, the WCGM22 and the Formative Report includes the Tuahiwi settlement which falls within the centre of the Kainga Nohoanga Special Purpose Zone. Our review and analysis has retained the Tuahiwi settlement in calculating the capacity within the district to allow for a conservative estimate of capacity within the district.

DEVELOPMENT CONSTRAINT MAPS

- 34 I prepared the development constraint maps that are appended to the evidence of Mr Walsh. Information displayed on the maps is sourced from publicly available data from the Environment Canterbury Open Data Geographic Information System (GIS) Portal, Land Information New Zealand (LINZ) data service, Waimakariri District Council (WDC) GIS data. Further, the Christchurch International Airport Ltd (CIAL) 50dBA Combined Noise Contour was digitised from a Marshall Day report that was published by CIAL in June 2023. All information was collated in QGIS 30.3.
- 35 The following layers were used in the preparation of the development constraint maps:
- 35.1 Eastern Canterbury Liquefaction Susceptibility Study (2012) – areas identified at risk of Liquefaction damage as published by Environment Canterbury.
 - 35.2 WDC Flood Hazard Modelling – All Events 1:500 Year High Hazard areas.
 - 35.3 WDC Flood Hazard Modelling – All Events 1:200 Year Medium and High Flood Hazard areas.
 - 35.4 WDC Flood Hazard Modelling – 1:200 Year Coastal Inundation Depths.
 - 35.5 Canterbury Tsunami Evacuation Zones – Yellow, Orange and Red zones as published by Environment Canterbury.
 - 35.6 Land identified as Highly Productive Land (HPL) under the NPS-HPL or as versatile soils under the CRPS. Land is classified as HPL if it is LUC 1, 2 or 3 within General Rural or Rural Production zoned land (but not within Rural Lifestyle zoned land). Information was sourced from the New Zealand Land Resource Inventory (NZLRI) dataset as published by Environment Canterbury.
 - 35.7 WDC Proposed District Plan Zones:

- (a) Special Purpose Zone Kainga Nohoanga (SPZ KN);
- (b) Natural Open Space Zone (NOSZ);
- (c) Open Space Zone (OSZ); and
- (d) Sport and Active Recreation Zone (SARZ).

35.8 WDC Proposed District Plan – Areas of Cultural Māori Significance:

- (a) Ngā Tūranga Tupuna Overlay.

35.9 Noise Contours:

- (a) WDC Proposed District Plan Speedway Noise Avoidance Contour;
- (b) WDC Proposed District Plan Rangiora Airport Noise Avoidance Contour;
- (c) WDC Proposed District Plan CIAL 50 dBa contour (Canterbury Regional Council RPS);and
- (d) CIAL Combined 50dBA noise contour (Published May 2023) (digitised from the Marshall Day report).

36 The final combined constraint map was created by layering the information. Constraints were not weighted, but are simply represented by the number of constraints affecting an area. I note that for the purposes of the combined constraint map, the CIAL noise contour in the WDC Proposed District Plan is shown, not the recently revised contour. I note that no double counting has occurred in relation to the flood risk layers.

CONCLUSION

- 37 The WCGM22 significantly overestimates available residential capacity by including lots that are unable to be developed, overstating the realistic capacity of proposed and current greenfield development areas, and overestimating the number of vacant lots available to be developed within the district. This overestimation is at least 1776 in the medium term and 1932 in the long term.

Dated: 5 March 2024

Chris Sexton

APPENDIX A – WCGM22 ANALYSIS RESULTS

Table 1:

| SA2 (2023) Name | WCGM22 Capacity | | Revised Capacity | | Difference | |
|-------------------------------------|-----------------|--------------|------------------|--------------|--------------|--------------|
| | Medium Term | Long Term | Medium Term | Long Term | Medium Term | Long Term |
| Okuku | 0 | 0 | 0 | 0 | 0 | 0 |
| Ashley Gorge | 0 | 0 | 0 | 0 | 0 | 0 |
| Oxford | 257 | 293 | 242 | 278 | -15 | -15 |
| Starvation Hill-Cust | 47 | 47 | 43 | 43 | -4 | -4 |
| Loburn | 0 | 0 | 0 | 0 | 0 | 0 |
| Eyrewell | 0 | 0 | 0 | 0 | 0 | 0 |
| West Eyreton | 0 | 17 | 0 | 8 | 0 | -9 |
| Ashley-Sefton | 12 | 80 | 12 | 80 | 0 | 0 |
| Fernside | 0 | 2 | 0 | 2 | 0 | 0 |
| Rangiora North West | 133 | 391 | 42 | 300 | -91 | -91 |
| Kingsbury | 193 | 496 | 192 | 495 | -1 | -1 |
| Ashgrove | 24 | 199 | 21 | 196 | -3 | -3 |
| Rangiora North East* | 1005 | 1847 | 849 | 1618 | -156 | -229 |
| Oxford Estate | 12 | 692 | 12 | 692 | 0 | 0 |
| Rangiora Central | 0 | 6 | 0 | 6 | 0 | 0 |
| Rangiora South West | 649 | 1504 | 455 | 1309 | -194 | -195 |
| Lilybrook | 53 | 310 | 40 | 283 | -13 | -27 |
| Waikuku* | 0 | 52 | 0 | 52 | 0 | 0 |
| Ravenswood | 1350 | 1350 | 880 | 880 | -470 | -470 |
| Waikuku Beach | 69 | 69 | 69 | 69 | 0 | 0 |
| Mandeville | 0 | 15 | 0 | 15 | 0 | 0 |
| Ohoka | 21 | 111 | 21 | 110 | 0 | -1 |
| Rangiora South East* | 139 | 1693 | 106 | 1649 | -33 | -44 |
| Southbrook | 243 | 419 | 214 | 390 | -29 | -29 |
| Swannanoa-Eyreton | 0 | 1 | 0 | 1 | 0 | 0 |
| Tuahiwi* | 140 | 140 | 134 | 134 | -6 | -6 |
| Woodend | 469 | 1014 | 378 | 891 | -91 | -123 |
| Pegasus | 369 | 409 | 123 | 150 | -246 | -259 |
| Clarkville | 0 | 0 | 0 | 0 | 0 | 0 |
| Pegasus Bay | 0 | 7 | 0 | 7 | 0 | 0 |
| Kaiapoi North West | 107 | 295 | 19 | 196 | -88 | -99 |
| Silverstream (Waimakariri District) | 317 | 325 | 263 | 271 | -54 | -54 |
| Sovereign Palms | 598 | 2561 | 381 | 2357 | -217 | -204 |
| Kaiapoi West | 29 | 160 | 14 | 144 | -15 | -16 |
| Kaiapoi Central | 222 | 432 | 183 | 390 | -39 | -42 |
| Kaiapoi South | 14 | 328 | 3 | 317 | -11 | -11 |
| Kaiapoi East | 0 | 0 | 0 | 0 | 0 | 0 |
| Waimakariri District total | 6472 | 15265 | 4696 | 13333 | -1776 | -1932 |

Table 2:

| SA2 Name | WCGM22 Capacity | | Revised Capacity | | Difference | |
|------------------------------------|-----------------|--------------|------------------|--------------|--------------|--------------|
| | Medium Term | Long Term | Medium Term | Long Term | Medium Term | Long Term |
| Rangiora | 2451 | 7557 | 1931 | 6938 | -520 | -619 |
| Kaiapoi | 1287 | 4101 | 863 | 3675 | -424 | -426 |
| Pegasus/Woodend/Ravenswood | 2188 | 2773 | 1381 | 1921 | -807 | -852 |
| Total of three main towns | 5926 | 14431 | 4175 | 12534 | -1751 | -1897 |
| WDC excluding Townships | | | | | | |
| GC area in WDC outside major towns | 230 | 397 | 224 | 390 | -6 | -7 |

APPENDIX B – EXAMPLES OF ERRORS IN WCGM22

Land Covenant Examples:

Ravenswood restrictive covenants:

Land Use Restrictions

- 3.36 No Lot shall be used for any form of temporary residential purposes either by the construction of temporary Buildings or by the placement of caravans, modular homes, mobile homes, motor homes, house trailers, buses, tractors, huts, tents and/or vehicles able to be used for human habitation except for a builder's shed at the commencement of, and for the duration of construction, of any dwelling being erected on the Lot.
- 3.37 Lot Owners must not use any Lot for any primary purpose other than for residential occupation unless previously agreed in writing by a duly authorised representative of Ravenswood. Ancillary purposes are governed by the planning provisions under any regulatory land use controls applicable from time to time.
- 3.38 No Lot shall be sold, leased, transferred, assigned or otherwise disposed of to any Governmental agency or Territorial Authority for the purposes of public or institutional housing without the prior approval of Ravenswood.
- 3.39 No inflammable, explosive or noxious materials are to be stored or used on any Lot or in any Building. The Lot Owner must not allow any offensive activity to be conducted or permitted to exist upon any Lot, or in any Building, nor shall anything be done or permitted to exist on any Lot or in any Building that may be or may become an annoyance or private or public nuisance. An annoyance or private or public nuisance includes loud sounds or noises or offensive smells.
- 3.40 No Lot, driveway or common area shall be used for the purpose of long term vehicle parking, repair or maintenance. No unregistered, non-licensed or expired license or inoperable vehicles of any kind shall be permitted to remain on any Lot (unless parked inside the garage).
- 3.41 No recreational or commercial vehicles boats or trailers are to be regularly located on the road or in front of the Building line of the main Building constructed or to be constructed on the Lot.
- 3.42 No Lot may be further subdivided nor shall any further easements be agreed to, granted or registered on any Lot, including rights of way.

Townsend Fields restrictive covenants:

ANNEXURE SCHEDULE

The Covenantor:

1. No Subdivision

Shall not further subdivide the land either by way of unit plan, cross-lease or fee simple subdivision, but this shall not apply to a boundary adjustment between two lots which does not create any additional record of title.

Pegasus restrictive covenants:

(3.44) No Lot may be further subdivided nor shall any further easements be agreed to, granted or registered on any Lot, including rights of way.

Mansfield Drive (Kaiapoi) restrictive encumbrance:

1. (a) The Grantor shall not cover the surface of any of the said lots with more than 300m² of any substance impervious to water (including buildings).

(b) The Grantor shall not further subdivide any of the lots by any means whatsoever including Cross-Lease Titles and the Unit Titles Act 1972.

(These covenants shall be called "the secured covenant" provided that the secured covenant shall be enforceable only against the registered proprietors and occupiers for the time being of the said lots and not otherwise against the Grantor and its successors).

Windsor Park Rangiora (Recreation Reserve):



Mary Ellen Wastewater Pump Station (Pegasus):



Kaiapoi Golf Club and recently completed multi-lot residential developments:



Tuahiwi Cemetery (Legal Statute on title: Maori Reservation (Burial Ground) New Zealand Gazette 1969 p 1972):



APPENDIX C – GREENFIELD DEVELOPMENT YIELDS

| Location | WCGM 22 Capacity | Validated Capacity (Based on subdivision plan) | Validated Capacity (Gross area - 12.5% x 15hh/ha) | Difference in Capacity (Validated vs WCGM22) |
|------------------------------|------------------|---------------------------------------------------|------------------------------------------------------|----------------------------------------------|
| Rangiora: | | | | |
| Bellgrove | 952 | | 800 | -152 |
| Townsend Fields | 419 | | 370 | -49 |
| Summerset Retirement Village | 211 | | 182 | -29 |
| Flaxton Village | 59 | | 52 | -7 |
| East Rangiora | 76 | | 66 | -10 |
| Kaiapoi: | | | | |
| Beach Grove | 332 | 330 | | -2 |
| Silver Stream | 89 | | 65 | -24 |
| Future Silver Stream | 44 | | 41 | -3 |
| The Sterling | 137 | | 90 | -47 |
| Momentum | 116 | | 0 (not med term) | -116 |
| Woodend | | | | |
| Ravenswood | 969 | 677 | | -292 |
| Commons Lifestyle Village | 131 | | 114 | -17 |
| Woodland Estate | 104 | 75 | | -29 |
| Eders | 42 | | 45 | +3 |
| Parsonage/Gladstone Road | 148 | | 119 | -29 |
| Gladstone South | 18 | | 73 | +55 |