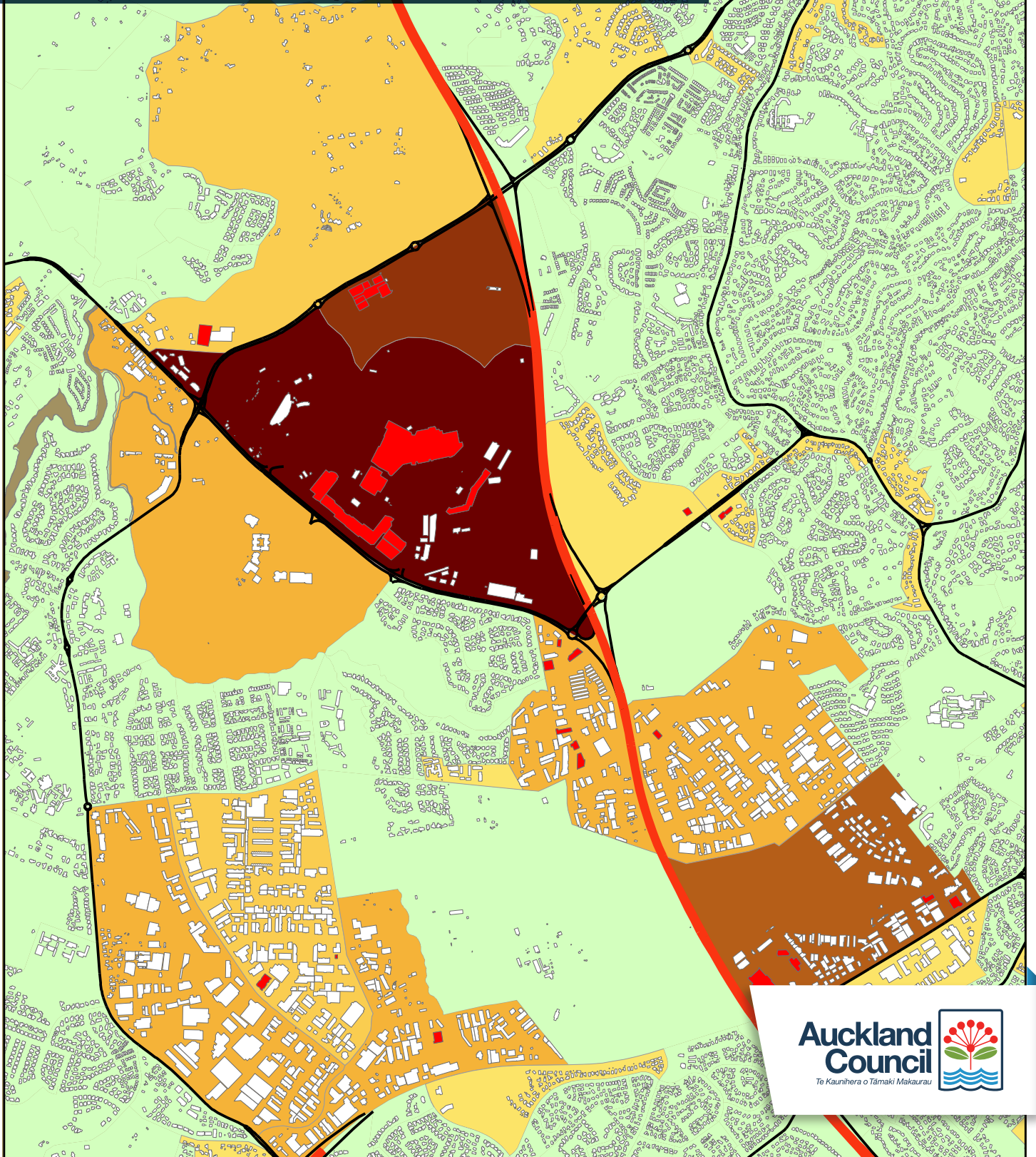


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Auckland Retail Economic Evidence Base

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Executive Summary

Retail is a major driver of urban form and how the city expands, with its spatial distribution having a large impact on travel and time efficiency for households and businesses. It also influences other patterns of land use, particularly those contributing to the vitality and viability of centres, which play an important social amenity role for the communities they serve (in their provision of social infrastructure), and as commercial centres for businesses (including the productivity effects from agglomeration economies). The spatial management of retail location therefore plays a core role in achieving the strategic land use and sustainable resource management objectives and policies of city plans and the Resource Management Act.

The establishment of Auckland Council's centralised Research, Investigations and Monitoring Unit (RIMU), which brings together specialist expertise, has enabled the construction and analysis of this comprehensive economic evidence base for retail in Auckland. It provides the spatially integrated empirical evidence required to understand Auckland's retail sector now and into the future in the development of land use policy for the Proposed Auckland Unitary Plan and subsequent retail assessment in Auckland.

The evidence base contains six key parts. It firstly establishes the context for retail in relation to assessment and policy direction in Auckland and New Zealand (part 1), then examines how the retail sector is currently operating in Auckland (part 2). It goes on to assess balances of retail supply and demand within the context of Auckland's commercial property market. Part 3 evaluates the future retail sector and space required to accommodate future growth. A framework for planners, policymakers and analysts to evaluate the effects of retail location in Auckland is developed in part 4. A summary and further areas of retail research are outlined in part 5, and appendices are contained in part 6.

Part 1 - Context for retail assessment in Auckland and New Zealand

Substantial discussion on retail has occurred in Auckland given its pivotal role in urban planning outcomes. Key areas of economic retail evidence from the Auckland Environment Court Change 6 hearings include changes in consumer demand and centres' ability to accommodate growth, transport and travel effects, and retail effects on other land uses. The Change 6 hearings provided greater guidance to retail location in Auckland by promoting a centres-plus policy approach in the regional policy statement; and recognised the need to accommodate different types of retail supply in response to changes in the structure of demand for retail. Population growth and urban expansion will increase the demand for retail in Auckland. It is important sufficient space is provided to accommodate

additional retail growth, including the ability to cater for consumer preferences for a range of different retail formats, while at the same time managing its effects to achieve the best urban form outcomes.

Centres-based urban growth forms the predominant approach to commercial development across most other major New Zealand cities. Planning authorities recognise and aim to reinforce the role of centres as important destinations to meet household and business needs, and recognise the need to manage out of centre large format retail (LFR). Broad responses to changes in the retail landscape include reinforcing centres-based approaches, greater management of LFR through urban design and planning controls in out-of-centre locations, and provisions on specific areas to accommodate LFR.

Part 2 - Current operation of Auckland's retail sector

Demand

In 2012 there were \$18.3bn of retail sales through Auckland stores. Food and liquor (including groceries) and core retail (i.e. comparison and durable goods) were the largest categories of sales with over \$5bn each. The remainder of sales were in food hospitality and household services (\$2bn) and trade (\$1bn). Households, businesses and tourists form the three key drivers of demand. Households accounted for nearly three-quarters of sales, businesses 14 per cent, and tourists 14 per cent. The average household spent \$29,600 on retail in 2012, with real increases in household expenditure through time.

As New Zealand's largest urban economy, Auckland has a highly complex spatial economic structure of retail centres and locations across which households meet their needs. A preceding study (Fairgray, 2012) established the basis for identifying detailed spending flows for each retail type between neighbourhoods and centres across Auckland. It provides important information for understanding and challenging assumptions about spatial patterns of consumer spending and the areas which centres serve. Large centres play a key role in meeting household demand, particularly within the core retail category. Along with the city centre, the sub-regional centres of Newmarket, Albany, Botany and Manukau make up the five largest centres of core spend. Major core retail centres play a large relative role for households in their catchment areas, meeting a high share of their retail needs. This is particularly true for the larger centres in the outer suburban locations which are dominant retail locations.

Detailed household access patterns are identified when observing the areas which these centres serve. Large catchment overlaps are present, with many larger centres serving geographically extensive areas. Overall, 80 per cent of household spend (at centres) originates from households located within 13 kilometres road network distance, and 50 per

cent within five kilometres. Significant variation exists between retail categories where the distance within which 80 per cent of spend occurs ranges from nine kilometres for food and liquor retail to 27 kilometres for medical services. Household needs are generally met across shorter distances in central Auckland with the high density of centres on the isthmus. Similar patterns are observed in suburban areas surrounding larger metropolitan centres, reflecting the large relative role of these centres to local households.

Supply

Spatial information on employment and floorspace was used to construct a picture of retail supply in Auckland. The latter includes primary field research, thus creating empirical evidence on supply.

Retail employees

In 2012 there were 93,000 employees in Auckland's retail and household services sector, accounting for 14.5 per cent of the region's total employment. Retail employment grew by 17,800 employees since 2000, but declined between 2008 and 2010 following a slowdown in consumer spend during the global financial crisis. Centres contain nearly two-thirds of Auckland's retail employment, with core retail particularly concentrated into larger centres. Significant variation exists in the spatial patterns of employment location by retail type and across levels of the centre hierarchy. The spatial structure has changed through time (2000-2012) with larger centres playing greater relative roles, along with increasing shares of retail employment locating along arterial road corridors and outside of centres. The establishment of Albany, Sylvia Park and Botany have contributed substantially to growth in the share of retail employment in larger centres.

Retail floorspace

Understanding the existing retail supply base is critical to determining how Auckland's retail market is currently operating in the supply of retail floorspace to household and other demand. It is also key to understanding the appropriate level of floorspace supply to different levels of demand across Auckland. This research spatially integrates new information, including primary field research, within a GIS system to provide an empirical robust calculation of the existing supply base. The incorporation of floorspace information from Auckland's rating database forms a key component of the base.

Approximately 3.9 million m² of retail floorspace was identified (7.79m² per household), significantly exceeding previous estimates of Auckland regional floorspace from other sources. This study estimates core retail accounts for half of the floorspace, followed by food hospitality and household services, trade, and food and liquor retail. Large format retail accounts for over one-third of floorspace, with over 1.4 million m² identified within Auckland.

Approximately two-thirds of retail floorspace is located within centres and a further 17 per cent along the arterial road corridors. The share of floorspace in centres is higher for small format retail at 72 per cent, than 53 per cent for large format retail. Large centres play a key role, with nearly half (44%) of Auckland's floorspace located in metropolitan and town centres. Within this, LFR is particularly concentrated into metropolitan centres, which contain over one-quarter of the region's LFR. LFR plays a key role in these centres, accounting for nearly half of their floorspace. There is a substantial quantum of retail floorspace located around the edges of several large metropolitan centres.

A higher share of LFR (than small format retail) is located within corridors, where it makes up nearly half of retail floorspace. Here, light industrial zones contain a large amount of LFR, equivalent to the quantum in metropolitan centres. These zones play a greater role in accommodating LFR than small format retail. Core retail and supermarkets make up nearly all of the LFR in centres, with core dominating in larger centres, and supermarkets becoming dominant further down the centre hierarchy. Trade LFR tends to be located in other business zoned areas outside of centres, particularly light industrial zones.

A full set of detailed working maps of retail floorspace within each centre and area across Auckland are contained in Appendices 5 and 6.

Retail supply and demand balances

The evidence base analyses balances between retail supply and demand within Auckland. It investigates claims of undersupply during the Change 6 hearings, then examines how supply in the retail sector has responded to changes in demand through time. Balances between supply and demand are also considered geographically across Auckland, and the basis for considering ratios of supply and demand within the context of Auckland's wider commercial property market is demonstrated.

It was suggested by some expert witnesses during the Change 6 hearings that Auckland was currently significantly underserved by retail, and that substantially more space (relative to demand growth) should be provided going forward to cater for this latent demand. No evidence was found to support this argument, with this research concluding retail supply and demand are currently largely in balance within Auckland. The retail sector has contracted across a range of indicators in response to changes in spend from the global financial crisis, whereas no change in supply would be expected in the presence of a large pent up demand; and retail supply has also responded to growth in demand over the last two decades both in the quantum and structure of supply and on a widespread geographic basis. Within this, a large and increasing share of floorspace has gone into centre locations.

Floorspace productivity varies geographically across Auckland, reflecting differences in rents/land values, underlying land use opportunity costs (driving the urban spatial economic structure) and the success of certain retail locations. Auckland's retail sector should therefore be considered within the context of Auckland's wider commercial property market. The construction of an empirical supply base has enabled the supply-demand ratios to be calculated and evaluated geographically across Auckland, creating a better understanding of how the sector operates within the wider urban economic context. Generally, more central and accessible locations of higher value trade at higher rates, and outer suburban locations at lower productivities. Higher trading rates also reflect successful retail areas where consumers travel further to higher quality retail destinations. Therefore, when calculating future demand, each unit of floorspace can serve greater demand in more productive, central locations, and less demand in other locations. Furthermore, any analysis of community accessibility to retail should take into account the geographical extent of areas served by larger centres.

Part 3 - Future retail sector in Auckland

Demand for retail floorspace will grow significantly in Auckland over the next 20 years to meet the needs of the anticipated growth in households, businesses and tourism. The RIMU Retail Growth Model developed as part of this research incorporates the geographical variances in supply-demand ratios, spatial spending flows, and empirical retail supply evidence (from the previous stages) with forecast spending growth to identify the level of future retail floorspace demand across Auckland.

Spending in Auckland is forecast to increase by 56 per cent between 2012 and 2031, amounting to an additional \$10.2bn of spend (equating to a growth rate of 2.4 per cent). Households are expected to account for three-quarters of this growth, driven by a combination of new household formation and real increases in expenditure across existing households. Growth in online sales is expected to account for an increasing share of spend, meaning that the increase in spend through physical retailers is expected to be between 48 and 51 per cent (a net increase of \$8.8bn to \$9.4bn, and growth rate of 2.1 per cent). Over one-third of the sales growth is expected to occur in each of food and liquor and core retail, followed by food hospitality and household services (16%) and trade (9%).

Patterns of urban residential growth (including household compositional changes) influence the origin of spend. Areas of highest net forecast spending growth include the northern rural areas and suburban fringe area, as Auckland expands geographically, areas on the eastern isthmus, particularly around Glen Innes, the City Centre, parts of western Auckland, and parts of southern Auckland, some of which is also driven by urban

expansion. These patterns of growth are likely to have a significant effect on the main centres within these locations.

Demand for retail floorspace (in physical stores) is forecast to increase by 35 per cent between 2012 and 2031, amounting to an additional 1.4 million m² of floorspace (equating to a growth rate of 1.6 per cent). Core retail has the largest forecast net increase, but is expected to grow slower due to the impact of online spend. These figures represent the current underlying differentials between areas within the commercial property market. However, it is likely that a greater share of demand will be met through increases in productivity within larger dominant centres, including the substantial quantum of floorspace surrounding some metropolitan areas that is likely to be currently trading at lower rates. This would reduce overall floorspace demand by 193,000 m², resulting in a forecast net increase in floorspace demand of 1.2 million m² by 2031.

LFR is expected to account for over half of retail floorspace growth out to 2031, with higher shares for food and liquor, and trade. This amounts to an additional 669,000 m² to 744,000 m² of LFR floorspace.

If current spatial spending flows prevail into the future, the City Centre is forecast to have the largest sales increase, accounting for 11 per cent of sales growth. The next largest increases are expected to occur across several of the metropolitan centres, with the greatest contribution from core retail. Isthmus centres are expected to have the largest increase in sales, a significant component of which will be driven by household spend occurring at the workplace and the sub-regional catchments of large centres serving areas significantly beyond the isthmus area.

Auckland's large size and consequent complex urban structure mean growth will occur across a range of different centres and centre types, and retail areas. Two scenarios of floorspace growth are presented: the first, where expansion occurs around existing centres with the existing differentials between locations prevailing; the second, greater intensification of centres and surrounding land in existing retail use (i.e. a share of the floorspace growth will be met through increasing productivity on existing floorspace). Under the first scenario, 38 per cent of floorspace is forecast in and around metropolitan centres, with a further 308,000 m² (23%) in town centres. The second reduces overall floorspace growth by 14 per cent, with 36 per cent of floorspace growth to occur in and around metropolitan centres.

Part 4 - Economic retail location evaluation framework

The spatial management of retail is a core lever for urban planners to influence urban form to achieve strategic land use objectives, with retail being at the centre of many major

urban land use court cases. It is therefore crucial that the effects of retail location are understood and evaluated in relation to their impact on urban form policy objectives.

The effects of retail location have been evaluated on the basis of community enablement, and sustainable and efficient resource management through the RMA. Distributional impacts on other retail centres include the current, future, actual and potential effects on changes to centre amenity as a result of retail impact. Patterns of retail distribution have a significant impact on spatial efficiency for households and businesses as it affects the time and dollar resources used in accessing retail, and influences the vitality and viability of centres, which play an important social role for households, and commercial role for businesses.

Increasingly, the effects of retail have been evaluated more widely in relation to its alignment with city planning objectives and its wider spatial urban economic context. This is important as urban form develops incrementally through time with the cumulative aggregation of individual decisions or developments. Therefore, the effects of urban form emerge through time (without clear attribution to any individual decision). It means the alignment of retail to urban planning objectives is crucial as planning objectives are unlikely to be achieved if effects are evaluated only upon single applications without considering their effect of alignment to planning direction or wider context.

This research develops a framework for assessment of retail location. It provides an initial quantitative methodology for assessing retail distributional effects using empirically calibrated spatial interaction modelling and building off the evidence base established in previous stages of the report. The following principles provide guidance on the interpretation of results and assessment of retail location:

- Actual and potential effects.
- Changes in community enablement and amenity from effects on other retail.
- Alignment with city planning and policy objectives, and the land use strategic direction.
- Sustainable management and efficient resource use.
- Current and future effects, including their cumulative impact on urban form.
- Land use opportunity costs.

Part 5 - Areas for further Auckland retail research

There are several key areas of further retail research that have not been undertaken within the time available. These include additional calibration of the RIMU Retail Growth Model, particularly the incorporation of updated population growth forecasts as new forecasts become available from the census and the Auckland planning process. Secondly, application of the existing evidence base would include the evaluation of potential sites for retail location, and the definition and prioritisation of corridors. Lastly, the following

research areas would occur with the integration of the evidence base with other workstreams:

- Alignment with urban business capacity modelling.
- Incorporation of retail evidence base with Sustainable Pathways 2.
- Understanding the retail land use trade-offs with other commercial sectors.
- Identifying the optimal location for retail development patterns across Auckland.
- Preparation of a retail location strategy for Auckland.
- Understanding the effectiveness of planning and policy tools in the management of retail location.

Table of Contents

Executive Summary	i
Table of Contents	ix
List of Figures.....	xiii
List of Tables.....	xvii
Part 1 - Introduction and Context	1
1 Introduction	2
1.1 Background	2
1.2 Objectives and brief.....	3
1.3 Auckland Council Research Strategy and workstream connections.....	5
1.4 Structure of report.....	6
1.5 Spatial definitions for analysis	7
1.6 Limitations	15
1.7 Acknowledgements	15
1.7.1 Peer review	16
2 Retail as a driver of urban form and household efficiency.....	17
2.1 Auckland Environment Court Change 6 evidence	17
2.1.1 Changing consumer demand and centres' ability to accommodate growth	17
2.1.2 Transport and travel effects	18
2.1.3 Retail effects on other land uses.....	20
2.1.4 Agreement among expert witnesses.....	21
2.2 Retail policy approaches in other major New Zealand cities	22
Part 2 - Current retail sector in Auckland	25
3 Auckland household retail spending patterns.....	26
3.1 Retail sales in Auckland	26
3.2 Household spend by retail category and market share.....	28
3.3 Role of centres/areas in Auckland household retail spend.....	29
3.4 Catchment geographic sizes	33
4 Retail employment in Auckland.....	35
4.1 Current market	35

4.2	Employment change through time	37
4.3	Spatial distribution of retail employment.....	38
4.3.1	Methodology	38
4.3.2	Employment spatial distribution	40
5	Current retail floorspace supply in Auckland	45
5.1	Introduction and context	45
5.2	Methodology.....	46
5.2.1	Estimating retail floorspace supply in total	47
5.2.2	Disaggregation of floorspace by retail type	50
5.3	Results	54
5.3.1	Regional floorspace supply	54
5.3.2	Floorspace disaggregation by Proposed Auckland Unitary Plan zones and corridors	58
5.4	Distribution of large format retail.....	65
5.4.1	Methodology	65
5.4.2	Results.....	68
6	Regional retail supply-demand balances in Auckland.....	81
6.1	Latent demand for Auckland retail floorspace	82
6.1.1	Context - Change 6 Auckland Environment Court hearings.....	82
6.1.2	Structure	83
6.1.3	Current Auckland regional retail supply and demand balances	84
6.2	Geographically localised patterns of undersupply in Auckland.....	101
6.3	Retail supply and demand within the context of Auckland's commercial property market.....	110
6.3.1	Urban economic context for the drivers of commercial sector location	110
6.3.2	Ratios of retail supply and demand.....	113
6.3.3	Auckland ratios of retail supply and demand	117
6.4	Section conclusions.....	125
Part 3 – Future retail sector in Auckland.....		128
7	Forecast growth in retail across Auckland.....	129
7.1	Introduction and context	129

7.2	Methodology	131
7.2.1	Establishing base estimates (stage 1)	132
7.2.2	Regional spend and floorspace forecasts (stage 2)	137
7.2.3	Geographical origin of demand, spatial integration and spend destination (stages 3-5).....	140
7.2.4	Calculating rates of floorspace supply within each centre (stages 6-8).....	142
7.3	Results	143
7.3.1	Growth in retail spend, 2012-2031 (medium).....	143
7.3.2	Geographic origin of forecast household spend in Auckland	146
7.3.3	Growth in retail floorspace demand, 2012-2031 (medium)	151
7.3.4	Share of forecast floorspace as large format retail.....	154
7.3.5	Comparison of regional retail demand forecasts to other sources	156
7.3.6	Geographical destination of forecast retail demand	160
Part 4	– Evaluating economic effects of retail location.....	169
8	Evaluating the economic effects of retail location.....	170
8.1	Introduction and context	170
8.2	Resource Management Act and retail economic effects.....	171
8.3	Framework for evaluation	178
8.3.1	Evaluation of existing retail provision and identification of potential for new retail 180	
8.3.2	Estimating dollar value of retail sales (stage 3).....	185
8.3.3	Gravity/spatial interaction modelling (stage 4)	185
8.3.4	Changes in amenity to households (stage 5).....	187
8.3.5	Household shopper survey	192
Part 5	– Conclusions and next stages of analysis.....	193
9	Conclusions and next stages of analysis	194
9.1	Summary	194
9.2	Further Auckland retail research	199
9.2.1	Improvements to current evidence base	199
9.2.2	Application of current retail evidence base	201
9.2.3	Integration of retail economic evidence base.....	201

References.....	204
Part 6 – Appendices	220
Appendix 1 – Glossary of key terms and definitions.....	221
Appendix 2 – Summary of Auckland Environment Court Change 6 evidence on the interaction between retail, land use, urban form and transport.....	223
Appendix 3 – Meshblock alignment to Proposed Auckland Unitary Plan centres, and arterial road corridor areas	234
Appendix 4 – Alignment between Proposed Auckland Unitary Plan and Fairgray (2013) centres	237
Appendix 5- Total retail floorspace supply by area in Auckland	240
Appendix 6 – Large format retail floorspace maps for Auckland	243
Appendix 7 – Spatial patterns of retail building consents across Auckland 1991-2012	244
Appendix 8 – Calculation of Auckland centre average retail rents	248
Appendix 9 – Internet-based retail sales in New Zealand, Australasia and internationally	251
Appendix 10 – Forecast net sales increases by Auckland centre and retail category, 2012-2031	259

List of Figures

Figure 1. Wairau Valley to Takapuna corridor	10
Figure 2. Lincoln Road and Hobsonville Road corridors	11
Figure 3. Great North Road corridor	12
Figure 4. Central isthmus corridors	12
Figure 5. Lunn Ave-Mt Wellington Highway, Ti Rakau Drive, Te Irirangi Drive and upper Great South Road corridors	13
Figure 6. Lower Great South Road corridor	14
Figure 7. Auckland household electronic spend in Auckland centres and elsewhere, 2011	29
Figure 8. Share of Auckland household electronic spend in Auckland centres/areas by type, 2011	30
Figure 9. Distribution of Auckland household core retail spend in Auckland centres by centre, 2011	31
Figure 10. Role of Auckland centres/areas in meeting Auckland household core retail demand, 2011	33
Figure 11. Composition of retail employment in Auckland, 2012	36
Figure 12. Retail and total employment in Auckland, 2000-2012	37
Figure 13. Geographical distribution of retail employment in Auckland by centre/corridor, 2011	41
Figure 14. Share of total retail employment in Auckland centres and corridors, 2000-2011	42
Figure 15. Net change in total retail employment across Auckland metropolitan centres, 2000-2012	43
Figure 16. Net change in core retail employment across Auckland metropolitan centres, 2000-2012	44
Figure 17. Retail floorspace in the eastern City Centre and fringe area, 2012/2013 ..	62
Figure 18. Retail floorspace in Manukau metropolitan centre and surrounding area, 2012/2013	63
Figure 19. Selected sub-regional view of retail floorspace in Auckland, 2012/2013 ..	64
Figure 20. Large format retail floorspace (GFA) by retail type in Auckland, 2013	68
Figure 21. Large format retail floorspace (GFA) by location in Auckland, 2013	69
Figure 22. Large format retail floorspace by retail category across areas in Auckland, 2013	70
Figure 23. Large format retail floorspace within different areas by retail category across Auckland, 2013	70
Figure 24. Wairau Valley area large format retail floorspace quantum and building footprints, 2013	72

Figure 25. Albany/Rosedale area large format retail floorspace quantum and building footprints, 2013	73
Figure 26. Large format retail floorspace by meshblock in the eastern isthmus, eastern and southern Auckland areas, 2013	74
Figure 27. CBRE Auckland retail vacancy rates by type of retail area, 2000-2011	85
Figure 28. Jones Lang LaSalle Auckland retail vacancy rates, 2002-2012	85
Figure 29. Annual retail and total GRP growth in Auckland, 2002-2012	86
Figure 30. Retail sales per household in Auckland and New Zealand, 1983-2012	88
Figure 31. Retail sales per person in Auckland and New Zealand, 1983-2012	88
Figure 32. New shops floorspace granted building consent in Auckland, 1992-2011	90
Figure 33. Consented retail floorspace by floorspace size of consent in Auckland, 1991-2012.....	92
Figure 34. Share of consented retail floorspace by size of consent in centres, corridors and other areas, 1991-2012	93
Figure 35. Share of total consented retail floorspace by area in Auckland, 1991-2012	95
Figure 36. Share of consented retail floorspace 5,000 m² or larger by area in Auckland, 1991-2012.....	95
Figure 37. Floorspace supply per household across 50 shopping centres in Auckland by type, 1980-2012	97
Figure 38. Existing shopping centre supply and large format retail centre growth (1980-2012) in Auckland	99
Figure 39. 80 per cent spend catchment areas of metropolitan centres, 2011.....	103
Figure 40. 50 per cent spend catchment areas of metropolitan centres, 2011.....	104
Figure 41. Allocation of Auckland neighbourhood areas to the closest metropolitan centre, 2013	106
Figure 42. Index of average distance across which household core retail needs are met by decile, 2012	109
Figure 43. Bid rent drivers of commercial land use in urban economies	112
Figure 44. Conceptual relationship between household demand, retail floorspace supply and Auckland's commercial property market.....	113
Figure 45. Retail centre rents in relation to demand and rents from land use opportunity costs.....	115
Figure 46. Total Auckland neighbourhood households and estimated electronic spend on retail, 2012	119
Figure 47. Average household income and retail spend by Auckland neighbourhood	119
Figure 48. Average rent and electronic sales per m² of floorspace in Auckland metropolitan centres and the City Centre, 2012/2013.....	121

Figure 49. Average rent and electronic sales per m² of floorspace in Auckland metropolitan and town centres and the City Centre, 2012/2013	122
Figure 50. Auckland neighbourhood relative access to retail floorspace and total households, 2011/2012	124
Figure 51. Structure of RIMU Retail Growth model	132
Figure 52. Forecast retail spend in Auckland by component of growth, 2012-2031 (medium)	144
Figure 53. Geographic distribution of current and forecast household spend by census area unit in Auckland, 2012, 2021 and 2031	147
Figure 54. Change in CAU share of regional household spend, 2012-2031	149
Figure 55. Forecast net changes in total Auckland CAU household retail spend, 2012-2031 (medium)	150
Figure 56. Forecast Auckland retail floorspace and net change by retail category, 2012-2031	152
Figure 57. Net change in retail floorspace by retail type, 2012-2031 (medium internet sales scenario)	156
Figure 58. Current study forecast demand for retail floorspace and Auckland Plan floorspace, 2012-2041	160
Figure 59. Forecast net increase in total sales through centre areas across Auckland, 2012-2031	164
Figure 60. Net difference in forecast floorspace between hard and soft agglomeration scenarios by area, 2012-2031	168
Figure 61. Estimated share of retail floorspace as core retail by Auckland centre size, 2012	184
Figure 62. Examples of patterns of change in household core retail amenity and distribution of dollar value impact on core retail centres (Sylvia Park expansion) .	190
Figure 63. Examples of patterns of change in household core retail amenity and distribution of dollar value impact on core retail centres (Constellation Drive retail expansion)	191
Figure 64. Meshblocks used to approximate the Proposed Auckland Unitary Plan Henderson metropolitan centre (April 2013) for the economic evidence base employment analysis	235
Figure 65. Meshblocks used to approximate the Wairau Valley arterial corridor buffer area for the economic evidence base employment analysis	236
Figure 66. Centres sales study meshblock boundaries and Proposed Auckland Unitary Plan (April 2013) zones – Albany	238
Figure 67. Centres sales study meshblock boundaries and Proposed Auckland Unitary Plan (April 2013) zones - Papakura	239
Figure 68. Total retail floorspace by meshblock in Otahuhu, 2012	241

Figure 69. Total retail floorspace by meshblock in southern and eastern Auckland, 2012	242
Figure 70. Geographic distribution of retail building consents in Auckland (metropolitan area focus), 1991-2012	245
Figure 71. Geographic distribution of retail building consents in Auckland (wider rural area focus), 1991-2012	246
Figure 72. Net growth in core retail sales by channel with a 14.3 per cent CAGR in online sales 2012-2031	255
Figure 73. Net growth in total retail sales by channel with a 14.3 per cent CAGR in online sales 2012-2031	256
Figure 74. Net growth in core retail sales by channel with a 14.3 per cent CAGR in online sales 2012-2021 and 20 per cent of total sales online at 2031	257
Figure 75. Net growth in total retail sales by channel with a 14.3 per cent CAGR in online sales 2012-2021 and 20 per cent of total sales online at 2031	257
Figure 76. Forecast net increase in core sales through centre areas across Auckland, 2012-2031	260
Figure 77. Forecast net increase in trade sales through centre areas across Auckland, 2012-2031	261
Figure 78. Forecast net increase in food and liquor sales through centre areas across Auckland, 2012-2031	262
Figure 79. Forecast net increase in food hospitality and household services sales through centre areas across Auckland, 2012-2031	263

List of Tables

Table 1. Proposed Auckland Unitary Plan centres as at April 2013	7
Table 2. Auckland retail sales by retail category and demand category, 2012	27
Table 3. Road network distance (kilometres) containing cumulative shares of Auckland household spend, 2011	34
Table 4. Employment change by retail category in Auckland, 2000-2012	38
Table 5. Known values and parameters for estimation of floorspace by retail type	51
Table 6. Auckland retail floorspace by retail type and format, 2012/2013	55
Table 7. Auckland floorspace per household and person by retail type and format, 2012/2013	56
Table 8. Comparison of retail supply base estimations for Auckland (m²)	56
Table 9. Distribution of retail floorspace across Proposed Auckland Unitary Plan centres and zones by format type, 2012/2013	58
Table 10. Average floorspace size of Proposed Auckland Unitary Plan centres, 2012	58
Table 11. Floorspace distribution by metropolitan centre	60
Table 12. Core large format retail floorspace by zone type and broad Auckland area, 2013	77
Table 13. Supermarkets large format retail floorspace by zone type and broad Auckland area, 2013	78
Table 14. Trade large format retail floorspace by zone type and broad Auckland area, 2013	80
Table 15. Comparison of consented retail floorspace and estimated demand increases in Auckland, 1991-2011	91
Table 16. Spend flows from household catchments to Auckland metropolitan centres (\$m 2012)	105
Table 17. Forecast growth in retail spend demand by growth component and retail type, 2012-2031 (medium)	145
Table 18. Forecast growth in retail sales through physical Auckland retailers by retail type, 2012-2031 (medium)	146
Table 19. Forecast Auckland retail floorspace growth by retail category, 2012-2031 (medium)	153
Table 20. Estimated LFR share of forecast retail floorspace growth (existing structure scenario), 2012-2013	156
Table 21. Comparison of previous Auckland retail floorspace demand forecasts	157
Table 22. Forecast sales growth by geographical location and retail type across Auckland, 2012-2031	162

Table 23. Forecast floorspace by growth by geographical location and retail type across Auckland (existing structure scenario), 2012-2031 165

Table 24. Forecast floorspace by growth by geographical location and retail type across Auckland (centres-focussed scenario), 2012-2031 167

Table 25. Centres and retail areas for which retail rental information was obtained248

Table 26. International rates of past, current and future retail spend online251

Part 1 - Introduction and Context

1 Introduction

1.1 Background

The retail sector is a major driver of urban form and how the city expands. Its spatial distribution has a large impact on travel and time efficiency for households (and indirectly, for businesses). It also influences other patterns of land use, particularly the vitality and viability of centres, which play an important social amenity role for the communities they serve (in their provision of social infrastructure) and as commercial centres for businesses (including the productivity effects from agglomeration economies). Understanding the role of the retail sector across different centres and areas is key to determining the impact of different urban forms on households' spatial efficiency, with the effective management of retail playing a core role in achieving the Auckland Plan and Proposed Auckland Unitary Plan land use strategic direction.

Population and urban growth, including changes in the economic standard of living, will increase the demand for retail in Auckland. It is important that sufficient space is provided to accommodate additional retail growth, including the ability to cater for consumer preferences for a range of different retail formats, while at the same time managing its' effects to achieve the best urban form outcomes. Change 6 to the Auckland Regional Policy Statement¹ states that commercial growth should be located within high density centres in the first instance to support the land use strategic direction, and then in intensive corridor locations (policy 2.6.5 section 9)², followed by out-of-centre locations if it can be demonstrated no suitable sites exist in the former categories. Consequently, Auckland Council needs to understand the demand for retail and the effects of its location in different areas across Auckland to assist in the prioritisation of areas to accommodate future retail growth.

The Proposed Auckland Unitary Plan Business workstream has requested the construction of an economic evidence base for retail in Auckland from Auckland Council's Research, Investigations and Monitoring Unit (RIMU). It sits alongside the planning evidence report

¹ The Auckland Regional Policy Statement is operative with the aim to “provide greater certainty over the ways that natural and physical resources are to be managed... (s1.1: Auckland Council, 2012)”.

² While the Auckland Regional Policy Statement refers to high density centres *and* intensive corridors, policy 2.6.5 section 9 gives effect to a centres-plus approach where growth should be located within centres in the first instance “Commercial Activities are, where appropriate, to be enabled in business and mixed use zones along Intensive Corridors... ..having regard to the following matters: (i) any effects on High Density Centre function and their role; ...” with further points (ii) to (vi) also implicitly giving effect to a centres-based approach where centres support social and economic enablement, positive transport/travel effects, and efficient resource use.

prepared by Matt Bonis, Planz Consultants Ltd³. This research provides an economic empirical evidence base to inform the Proposed Auckland Unitary Plan retail policy direction, which gives effect to the centres-plus approach in Change 6. It has been prepared within RIMU and utilises in-house technical capability, comprehensive exclusive data sources and links to other RIMU primary research within the Research Strategy (Auckland Council, 2013). Evidence-based research is a key requirement of decision making for Auckland⁴.

The research analyses how the Auckland retail market is currently operating using information newly (comprehensively) available within the Auckland context. In doing so, it lends additional support to current and legacy land use planning, and provides a better approach to the earlier assumptions in some of the Auckland retail evidence. It then builds off this empirical base to forecast future demand for retail and the effects of different location patterns to inform the Proposed Auckland Unitary Plan retail policy direction.

1.2 Objectives and brief

The key objective of this research is to provide a retail economic evidence base to inform the Proposed Auckland Unitary Plan retail policy direction. It will also be an important input into other land use planning, growth modelling, policy and strategic development workstreams across Auckland Council.

The Proposed Auckland Unitary Plan Business workstream developed the initial brief for the evidence base. Specific areas contained within the brief include:

1. Analysis of retail employment and spending patterns in Auckland, including drawing upon large origin-destination spending datasets.
 - a. Understanding the role and function of key centres and retail destinations across Auckland in meeting different types of household demand.
 - b. Identifying changes to the size and structure of Auckland's retail sector through time, including location and category of retail offering.
 - c. Analysing the spatial structure of the retail sector, with a focus on identifying the role of centres and corridors.
 - d. Identifying how the market is currently operating in regards to the spatial connections between centres and the location of households accessing centres

³ Bonis, M. 2013 *Corridor Analysis - General Business Zone and Identified Growth Corridors*, DRAFT, prepared for Auckland Council by Planz Consultants Ltd.

⁴ The Local Government (Auckland Council) Amendment Act 2010 states that Auckland Council must produce a spatial plan for Auckland (79) and that this must "provide an evidential base to support decision making for Auckland, including evidence of trends, opportunities, and constraints within Auckland (79)(4)(c)". This flows through to the Proposed Auckland Unitary Plan process.

- (i.e. any regional patterns of amenity differences to households across Auckland).
2. Construction and analysis of current *total* retail floorspace patterns across Auckland.
 - a. Locally by quantum and type of format (i.e. large format retail (LFR) vs. other retail)
 - b. Regionally, by category of retail in addition to format.
 - c. Identify role of centres and corridors in floorspace offering for total retail and LFR.
 3. Construction (field work, etc.) and analysis of LFR floorspace patterns across Auckland.
 - a. Local and regional patterns by retail type.
 - b. Quantum of LFR floorspace.
 - c. Spatial structure of LFR across Auckland (including the distribution by Proposed Auckland Unitary Plan zones).
 - d. Type of LFR and share of floorspace as LFR within each sector.
 4. Investigation of regional balances of supply and demand within Auckland's retail sector.
 - a. Investigation of the presence of latent demand for retail floorspace within Auckland's retail sector. This includes evaluating claims/calculations of undersupply by some expert witnesses during the Auckland Environment Court Change 6 hearings.
 5. Forecast growth in retail demand in Auckland – regional level.
 - a. Quantum of expenditure growth.
 - b. Expenditure growth by retail type.
 - c. Floorspace demand from expenditure growth.
 6. Forecast growth in retail demand in Auckland – spatial disaggregation.
 - a. Geographical origin of demand by quantum and retail type.
 - b. Some spatially disaggregated analysis of broad spatial areas for retail supply to meet demand.
 7. Summarisation of the Auckland Environment Court Change 6 discussion/evidence on the relationship between retail and urban form.
 8. Outline a framework through which to evaluate the economic effects of retail location, drawing upon major retail development court cases in New Zealand.

Several key stages of analysis were undertaken to address this brief. The first stage involved establishing the context of retail analysis and policy approaches through observing the Change 6 evidence on retail and policy approaches to retail location in other New Zealand cities. The second stage examined how the retail sector is currently operating in Auckland through looking at levels of retail spending (demand) and how this occurs across different areas in Auckland, as well as analysing how households access retail spatially. Supply was then analysed through retail sector employment data and then construction of an empirical base of floorspace supply, including primary research to identify large format retail across Auckland. Balances of supply and demand were then investigated through considering how the market has responded to changes in demand; and using the empirical evidence to evaluate geographical variations in the rate of supply across Auckland within the context of the wider commercial property market. Thus, a framework was developed capturing the geographical variation in how the sector operates across Auckland.

The next stage of analysis was to forecast spend across Auckland taking account of the main drivers of demand and their spatial origin of spending growth. This was connected to the framework of retail geographical variations developed in the previous stage to forecast spatially the supply growth required across different parts of Auckland to meet future retail demand.

The final stage was to develop a framework for planners, policymakers and analysts to assess the effects of retail location in Auckland. This was developed from the empirical evidence base and framework established in earlier stages, and drew on the economic evaluation of retail under the RMA in major court cases involving retail.

1.3 Auckland Council Research Strategy and workstream connections

The retail economic evidence base interconnects with other workstreams and research within RIMU and other parts of Council. Most notably, it will provide inputs for subsequent stages of RIMU's *Capacity for Growth* study (Fredrickson and Balderston, 2013 and 2013a) through the Auckland Growth Model (Owen, 2012) to inform capacity and land development analysis across Auckland.

Priority research areas in the *Auckland Council Research Strategy* within which this research is situated include:

"Research theme 2: Infrastructure and land use

- evaluate what drives the demand for different transport modes and their effects on people, the economy and the environment.
- understand the effects of strategies, policies and standards on shaping infrastructure and land use.
- investigate interactions between land use and infrastructure in planning for development.
- investigate how polycentric urban form contributes to well-being, economic change and associated agglomeration effects.

Research theme 3: Environment

- assess the effects and drivers of different built environment structures and forms across a range of spatial scales.
- investigate the most efficient distribution of land use activity across different urban centres.
- evaluate the connections between people, heritage, the environment and quality of life and assess methods for achieving positive outcomes.

Research theme 5: Economy

- assess the impact of Auckland's urban structure on the economy, businesses, communities and households.

- understand the roles and functions of Auckland's economic sectors.
- assess the effects of Auckland's household sector on urban function and form (Auckland Council, 2013)".

1.4 Structure of report

The report contains nine sections and ten appendices split across six main parts. Part 1 outlines the brief for the work (section 1), then summarises the major points from the Change 6 evidence relating to the connection between retail, land use and transport infrastructure (section 2.1). It also provides an overview of New Zealand's major urban cities' policy directions to manage growth and changes in the structure of retail (section 2.2).

Part 2 analyses the current operation of Auckland's retail sector. It firstly examines demand in the sector through spend on retail, including how households are accessing retail across Auckland, and the role and function of centres within the urban structure (section 3). Sections 4 and 5 then look at supply through analysing spatial employment and floorspace trends. Section 5 establishes an empirical evidence base on retail floorspace across Auckland. Comprehensive primary fieldwork on the location and quantum of large format retail across Auckland forms a major component of this section. The final stage (section 6) of Part 2 investigates regional balances of supply and demand within the retail sector. It investigates the presence of any latent demand in Auckland from an undersupply of retail, then develops a framework to evaluate levels of retail supply within the wider context of Auckland's commercial property market, building off the empirical base established in section 5.

Part 3 analyses future retail growth in Auckland. It forecasts the level of spending growth from the main drivers of demand (households, businesses and tourism). It then uses the ratios of supply and demand by location developed in Part 2 to calculate the corresponding levels of floorspace required to meet this demand geographically.

Part 4 develops a framework through which to analyse the effects of future retail growth by location. It includes spatial interaction (gravity) modelling techniques calibrated against actual spatial spending flows identified from earlier empirical research in RIMU. Spatial metrics (in the form of a household amenity index) are used to provide planners with an indication of the potential spatial patterns of distributional effects on households. Part 5 concludes with a summary of the report and identifies the next stages of research in Auckland's retail land use evidence base.

Appendices and references compose Part 6. These include: a glossary of key terms and definitions; a summary table of Change 6 retail evidence; the meshblock alignment of Proposed Auckland Unitary Plan centres for spatial employment analysis; alignment between centres and spend; total retail floorspace supply maps, including primary large format retail research; spatial building consents maps; average centre rental calculations; calculations of online sales; and forecasts of retail sales by centre.

1.5 Spatial definitions for analysis

Spatial analysis in this research has been conducted in accordance with the Proposed Auckland Unitary Plan boundaries as at April 2013⁵, the centre and retail area definitions within the Fairgray (2012a) study adopted from the development of the Auckland Growth Model (Owen, 2012), and the arterial road corridors identified in the Planz Consultants Ltd report (Bonis, 2013). The areas used for each stage of analysis are specified throughout the report.

Table 1 provides a list of Proposed Auckland Unitary Plan centres and their positioning within the Auckland centres hierarchy (as at April 2013).

Table 1. Proposed Auckland Unitary Plan centres as at April 2013

Centre type and individual centres			
Auckland City Centre			
Metropolitan Centres			
Albany	Manukau	Papakura	Westgate
Botany	New Lynn	Sylvia Park	
Henderson	Newmarket	Takapuna	

⁵The April 2013 zones were those available at the time the analysis was conducted. While some changes have occurred, these are insignificant and will have only a minor impact on the regional analysis. Specifically, Eden Valley is now a local centre, while Wellsford and Kumeu-Huapai are now town centres; Chelsea and St Johns are no longer local centres, while Grafton, Karaka, Leigh, Massey West, Te Hana and Wellsford are now local centres.

Town Centres

Avondale	Hunters Corner	Otara	St Lukes
Birkenhead	Mangere	Pakuranga	Stoddard
Browns Bay	Manurewa	Panmure	Sunnynook
Devonport	Milford	Papatoetoe	Takanini
Ellerslie	Mt Albert	Parnell	Te Atatu (North)
Glen Eden	Newton	Ponsonby	Three Kings
Glen Innes	Northcote	Pt Chevalier	Warkworth
Glenfield	Onehunga	Pukekohe	Whangaparaoa
Helensville	Orewa	Remuera	
Highland Park	Ormiston	Royal Oak	
Howick	Otahuhu	Silverdale	

Local Centres

Albany Village	Greville Road	Mangere East	
Balmoral	Grey Lynn	Village	
Beach Haven	Gulf Harbour	Market Road	St Heliers
Belmont	Hauraki Corner	Matakana	St Johns
Blockhouse Bay	Hingaia	Meadowbank	Stonefields
Browns Road/Homai	Hobsonville	Meadowlands	Sturges
Chatswood/Mokoia Rd	Huapai	Mission Bay	Sunnyvale
Chelsea	Jervois Road	Morningside	Swanson
Clendon	Kaukaupakaupa	Mt Eden Village	Takanini/Addison
Dawson Road	Kelston	Mt Wellington	Te Atatu South
Drury	Kingsland	Mt Roskill	Titirangi
Eastridge/Kepa Road	Kumeu	Northcross	Torbay
Eden Valley	Long Bay	Ormiston/Botany Jn	Waimauku
Favona	Lynfield	Pah	Waiuku
Glendene	Mahurangi/Snells	Road/Greenwoods	West Lynn
Greenlane East	Beach	Panama Road	Windsor Park
Greenlane West	Mairangi Bay	Ranui	
	Mangere Bridge	Riverhead	
		Sandrigham	

Neighbourhood centres

Neighbourhood centres are not listed here due to the large number, but are viewable on www.aucklandcouncil.govt.nz.

The corridor areas of arterial roads used to spatially disaggregate the results are displayed in Figures 1 to 6. They are defined by the 400 metre buffer area on either side of the arterial roads identified in the planning analysis (Bonis, 2013). They exclude the centre areas that fall within these buffer zones to avoid double counting with areas located within centres. Importantly, this does not suggest the suitability of all corridors or land areas within corridors for retail development. Rather, it forms the framework for consideration of potential sites for future growth within the potential corridor locations. Potential sites for future development will be evaluated for suitability on an individual basis. Moreover, the corridors used in this report do not suggest the establishment of these areas as intensive corridors in the Auckland Regional Policy Statement. Separate analysis needs to be undertaken to formally establish areas as intensive corridor locations as outlined in the regional policy statement (see also section 9.2.2).

Figure 1. Wairau Valley to Takapuna corridor

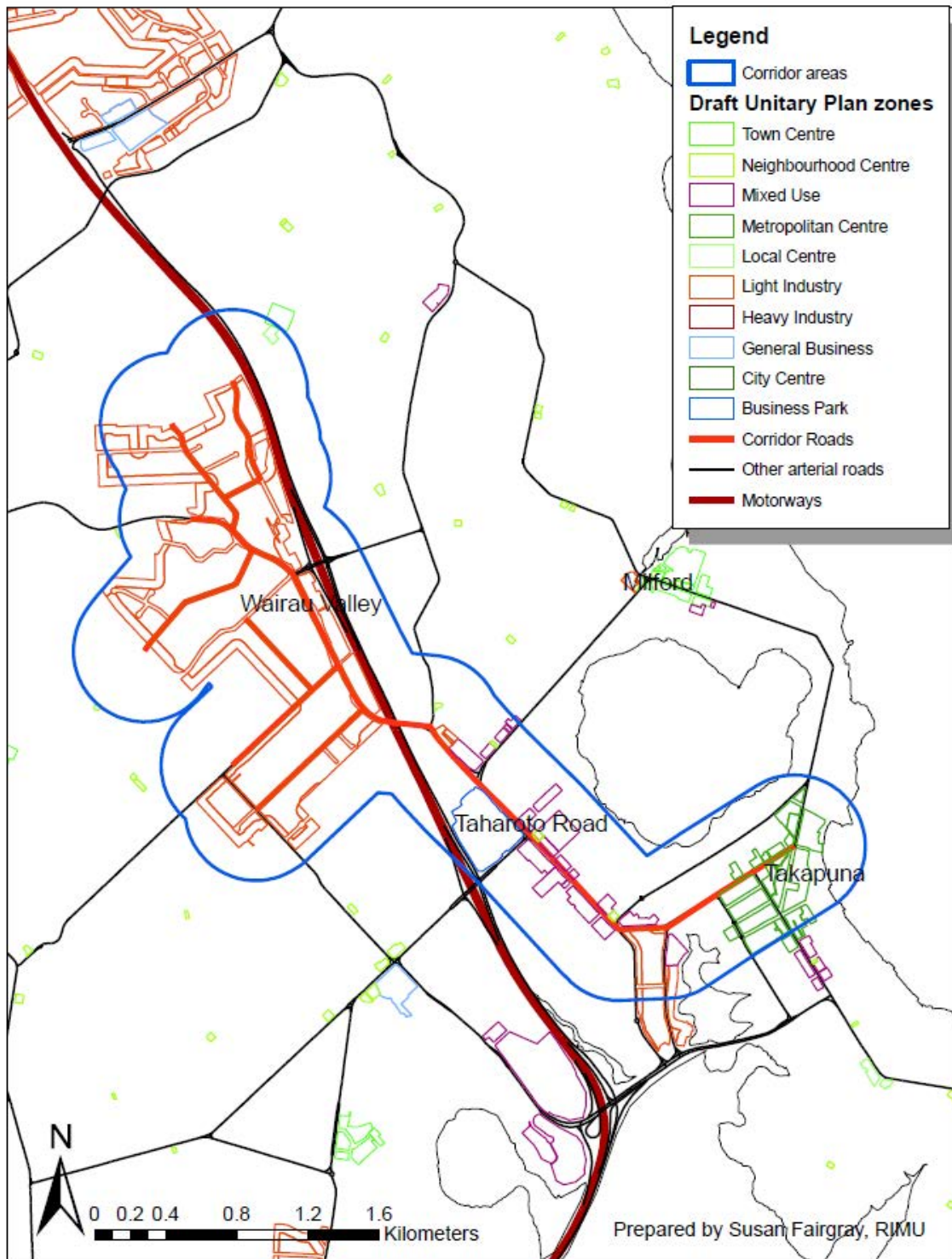


Figure 2. Lincoln Road and Hobsonville Road corridors

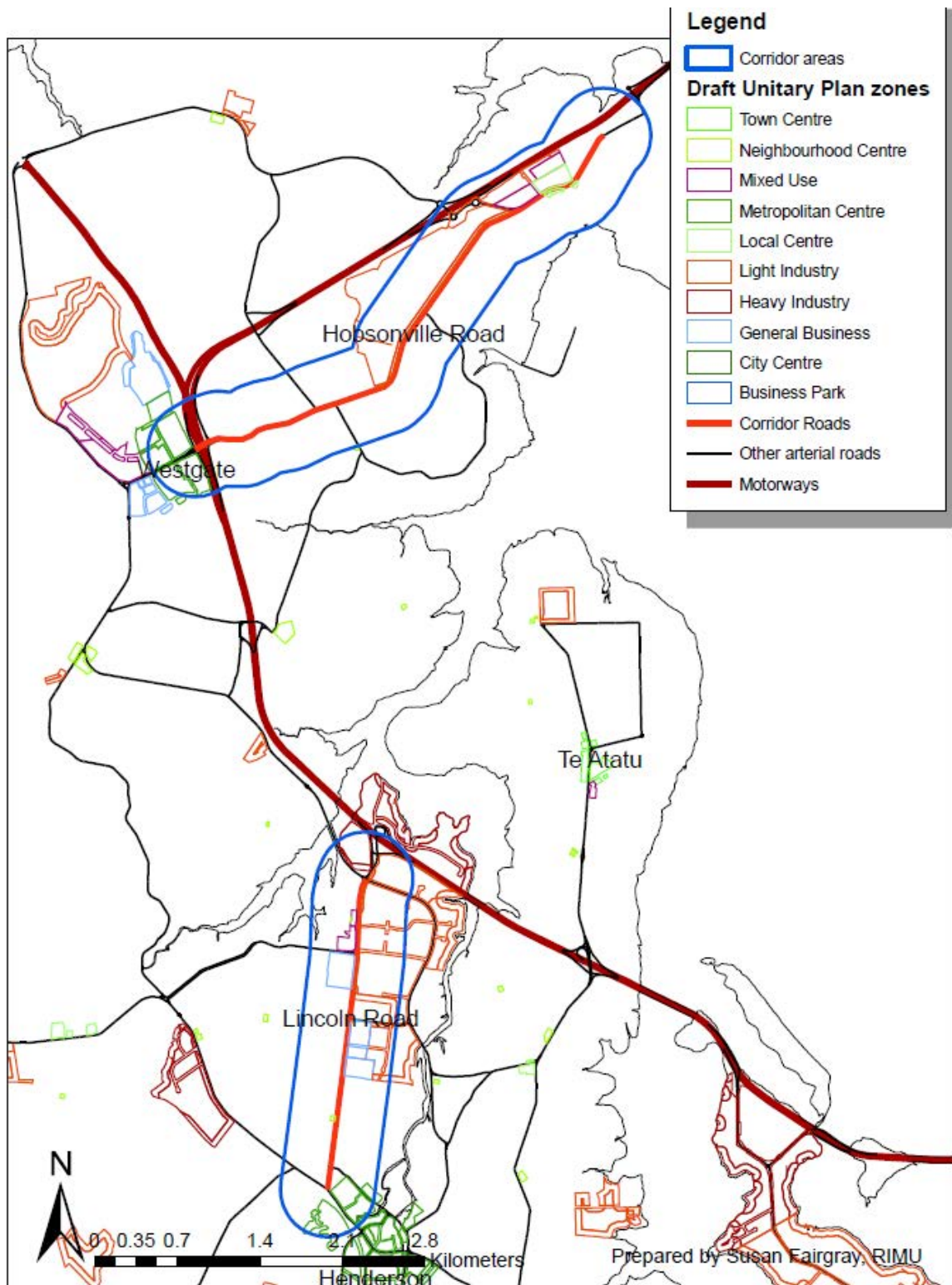


Figure 3. Great North Road corridor

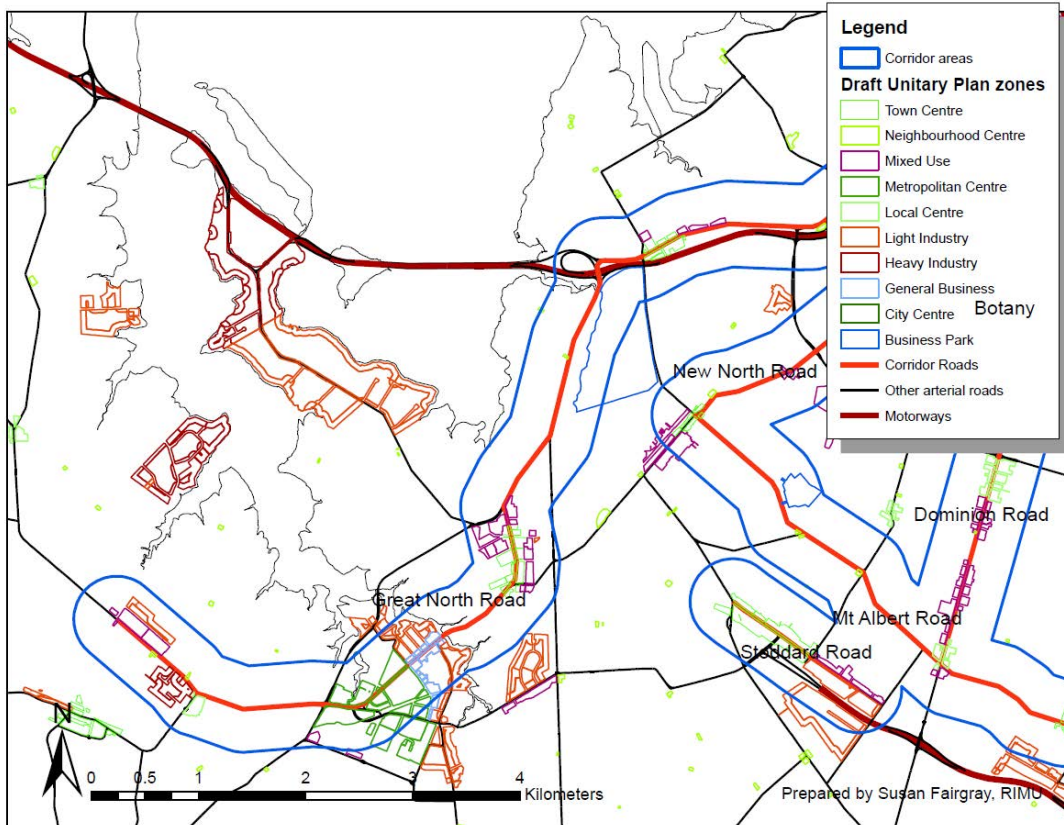


Figure 4. Central isthmus corridors

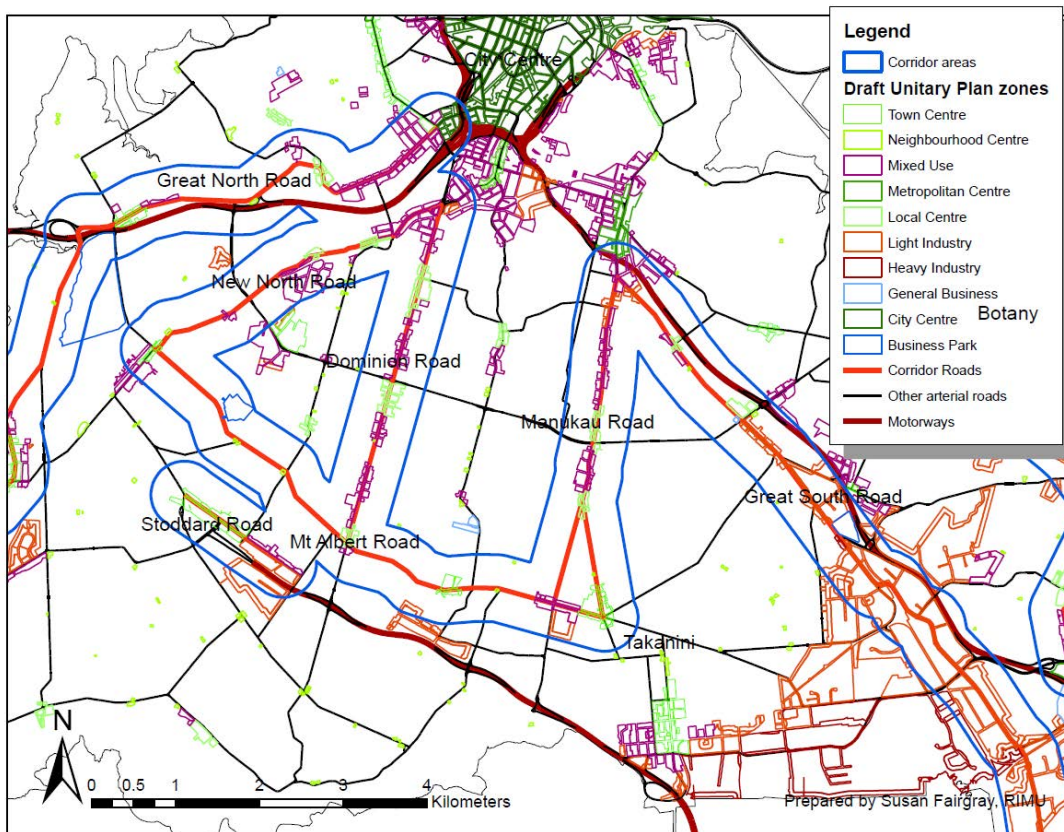


Figure 5. Lunn Ave-Mt Wellington Highway, Ti Rakau Drive, Te Irirangi Drive and upper Great South Road corridors

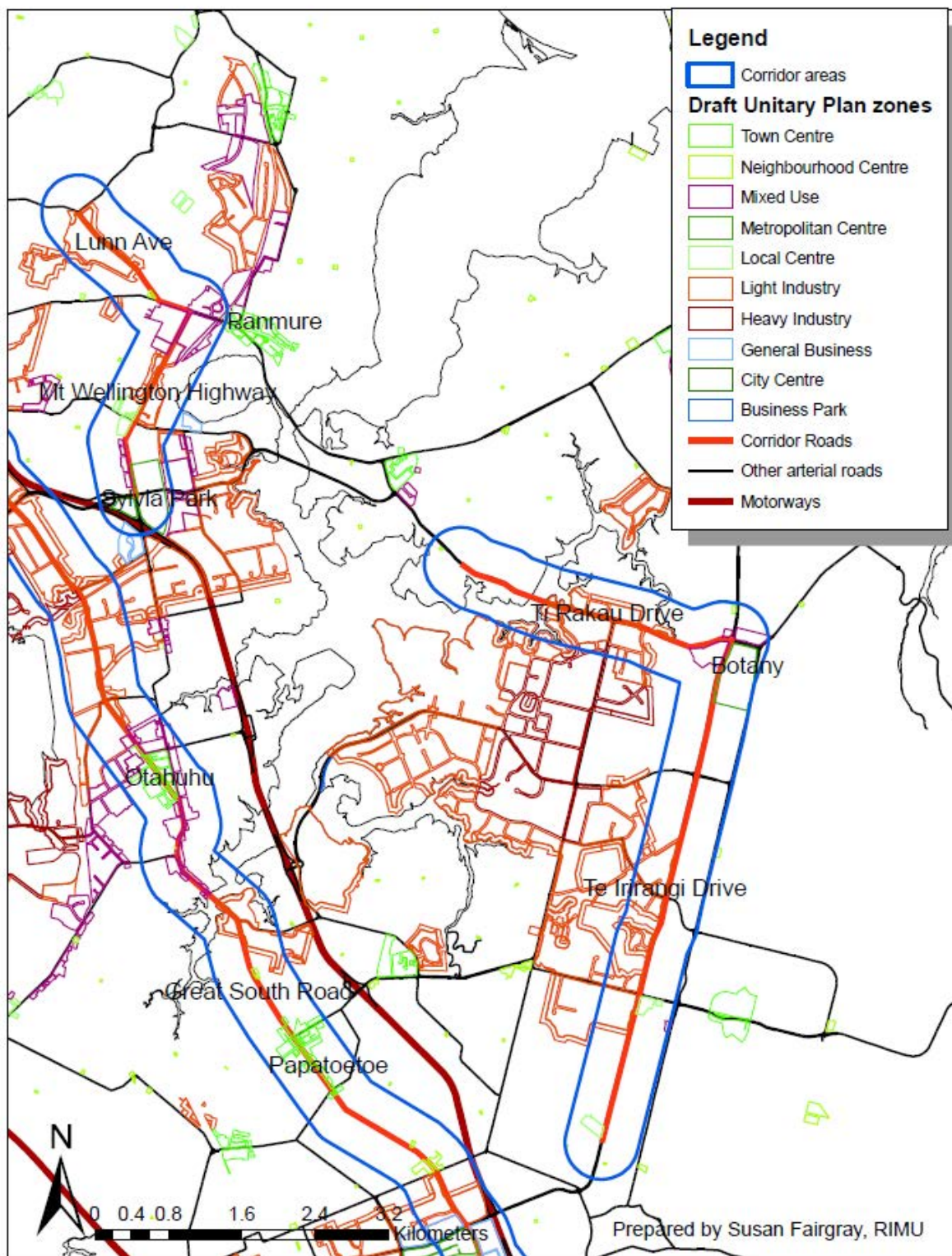
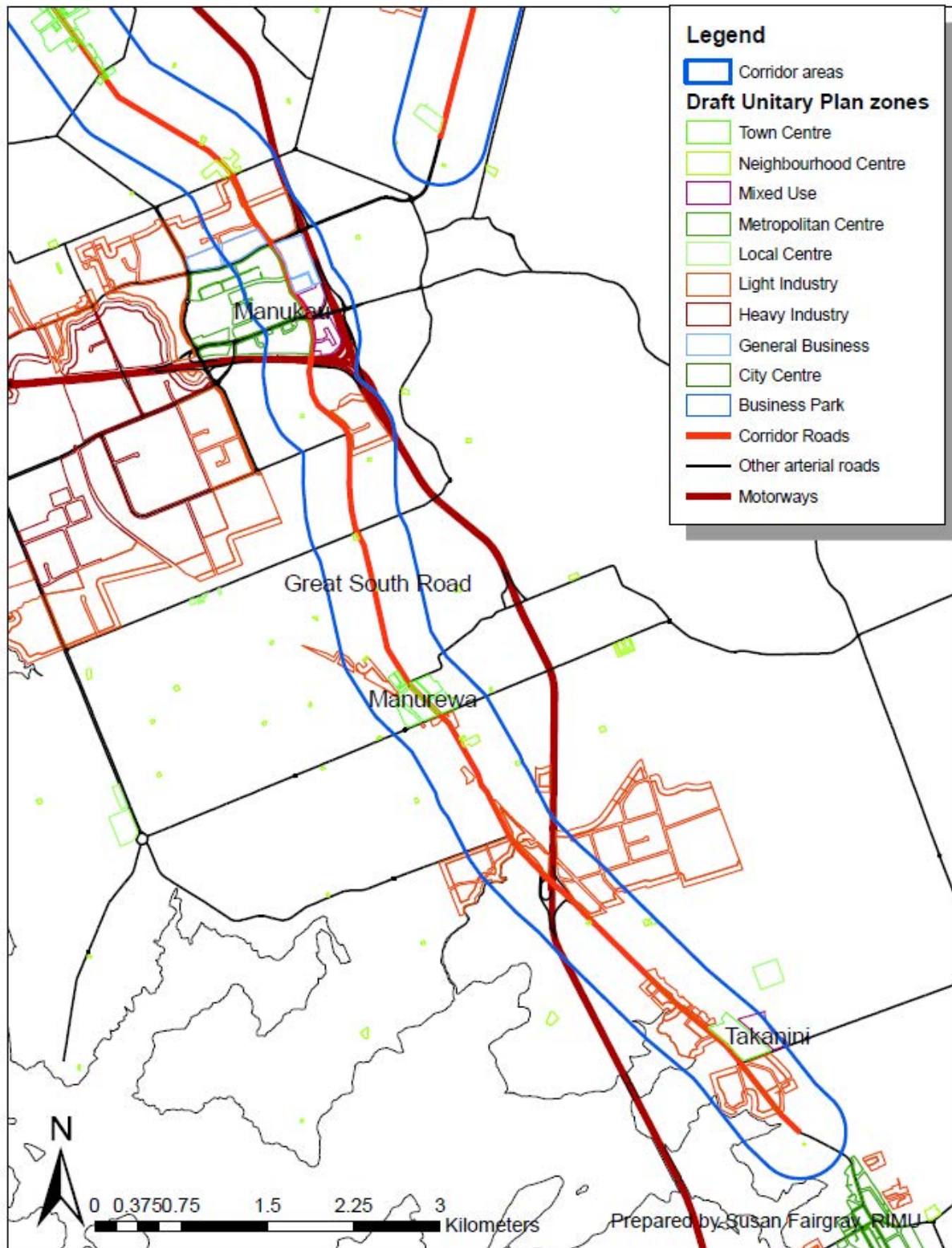


Figure 6. Lower Great South Road corridor



The spatial relationship between the Proposed Auckland Unitary Plan centre zones and centre meshblock definitions in Fairgray (2012a) is described in Appendix 4.

1.6 Limitations

Within the time available (November 2012 to September 2013), research undertaken in the current study has generated a substantial component of the evidence base. It has identified how Auckland's retail sector is currently operating, including spatially integrated supply and demand side analysis; has calculated future demand for retail in Auckland (including the development of the RIMU Retail Growth Model); and has outlined a framework for evaluation of retail location. Areas of further research exist for the retail economic evidence base that extend beyond the time available for the current study. These are outlined in section 9.2, including how they relate to the existing evidence base.

Data limitations and application are outlined where applicable in the methodology sections of each stage of the evidence base throughout the report. Further technical information on data sources is available through the original data source documentations, which are referenced accordingly within the report.

1.7 Acknowledgements

The construction and analysis of this comprehensive evidence base for retail in Auckland has been enabled through the establishment of Auckland Council's Research Investigations and Monitoring Unit (RIMU). RIMU brings together specialist subject matter expertise into a centralised in-house unit fostering the production of leading edge, cross-disciplinary research. Thus, it has enabled Auckland Council to meet the challenge of spatially integrated evidence-based planning (DIA, 2011) across many areas in Council. Centralised in-house capability of this scale is unique and new in the local government setting, generating efficiencies and savings for Auckland ratepayers, along with better decision making outcomes. Moreover, centralised expertise, together with exclusive access to a solid base of research and data sources, puts RIMU research and evaluation at a comparative advantage.

Consequently, the following list outlines the assistance I have gratefully received from others in RIMU (and elsewhere) in the production of this retail economic evidence base:

- Hadyn Hitchins and Mehrnaz Rohani (Economic Analysts, RIMU): assistance with primary field work in large format retail study, and subsequent data alignment and connection to spatial files; collection of raw property market data; sourcing other data sets; and collating information on other New Zealand city planning approaches.
- Kiely McFarlane (Analyst, RIMU): Preparation of table summarising Auckland Environment Court Change 6 evidence.

- Dayne Skinner (Market Economics Ltd): Construction of and technical support for the retail gravity model.
- Kyle Balderston (Growth Analyst, RIMU), Craig Fredrickson (Analyst - Land Use, RIMU), Paul Owen (Growth Analyst, RIMU), Brian Osborne (Statistical Information Analyst, RIMU), Ross Wilson (Analyst, RIMU), Lindsay Wilson (Analyst, RIMU), Alyssa Stent (Business Development and Support, RIMU), Tony Edhouse (Researcher, RIMU), Regan Solomon (Team Leader – Land Use, Built Environment and Infrastructure Research, RIMU), Jeremy Wyatt, Nick Pollard (Principal Planners, Unitary Plan), Matt Bonis (Associate, Planz Consultants Ltd) and Michael Stechman (Marketview Ltd) for sourcing and collation of data sets and reference documents, technical support with GIS spatial applications, provision of Auckland Growth Model inputs and feedback.

1.7.1 Peer review

The retail economic evidence base has undergone a formal peer review process. An external peer review by New Zealand retail experts McDermott Miller Strategies Ltd is gratefully acknowledged on sections 5, 6, 7 and 8 (excluding section 8.2) and their corresponding appendices; Simpson Grierson Ltd have reviewed section 8.2⁶; and the remainder of the sections have been reviewed within RIMU and the Auckland Council Unitary Plan team. These reviews are also gratefully acknowledged.

⁶ The assistance of Auckland Council's legal department is acknowledged in coordinating this review. The section has been reviewed at a high level as a guide for relevant matters or considerations of the economic effects of retail in relation to the RMA, with any changes to the structure of the section out of scope.

2 Retail as a driver of urban form and household efficiency

2.1 Auckland Environment Court Change 6 evidence

Substantial discussion occurred during the Auckland Environment Court Change 6 hearings around the role of centres and corridors in future retail location and the effects that retail activities have when they locate in different areas, including the travel and wider land use effects. The guidance given in Auckland's planning policies has historically been insufficient as to the appropriate location of retail across the region. This often resulted in less certainty in the development and planning process, with retail in many cases becoming spatially dispersed across a range of different zones across Auckland. Change 6 sought to clarify the region's strategic direction on future retail growth. It provided for a centres-plus approach where retail development is encouraged to occur within centres in the first instance, enabled in appropriate locations on identified growth corridors, then lastly in other business zoned areas, if appropriate. The Proposed Auckland Unitary Plan takes a similar approach to accommodating future retail growth in Auckland.

This section summarises the main premises put forward in the hearing evidence. A full summary table⁷ of the statements made in evidence by each expert witness in relation to retail, travel impacts and land use is included in Appendix 2⁸.

The support for centres, corridors and other locations varies across expert witnesses, in several cases corresponding with the location needs of clients. These are summarised in the following sections.

2.1.1 Changing consumer demand and centres' ability to accommodate growth

Consumer demand patterns are changing to reflect greater desire for a wider range of cheaper goods, and consequently larger format retail options. Smith (2009) stated that large format retail (LFR) chains with highly organised and centralised logistical functions and cheaper, more efficient operating cost structures, are the format required to meet this

⁷ The summary table has been prepared by Kiely McFarlane, Analyst, RIMU.

⁸ The arguments presented here are those from expert witnesses involved in the Change 6 hearings and are not necessarily a representation of the argument of this evidence base.

consumer demand. These stores have corresponding requirements for space, location and accessibility across Auckland to sustain these formats. Smith (2009), and to some extent Tansley (2009), argued that land restrictions (through high demand from other uses) in centres made it increasingly difficult for these retailers to locate within centres. This is compounded by a limited number of appropriately sized and priced land parcels. The competition from other land uses in edge-of-centre locations made it difficult for those retailers to locate here too, thus requiring out-of-centre locations. Furthermore, Smith (2009) argued retailers needed access to these locations to follow spatial patterns of consumer demand.

2.1.2 Transport and travel effects

Transport is a major use of household resources, with the consequent travel effects therefore becoming a core economic effect of retail location. The travel demand from retail also has significant implications for the operation of the region's transport network more broadly. Abley (2009), Fairgray (2009), Harries (2009), Heath (2009), MacKay (2009) and Osborne (2009) highlight the role of a centres-based growth configuration in achieving travel efficiency and sustainability of urban form in the use of transport resources (RMA, s5 and 7).

The evidence of Abley (2009), Fairgray (2009) and Harries (2009) shows that co-location of retail within centres increases household travel efficiency through increasing the viability and occurrence of multipurpose trips (within the same destination), therefore reducing the demand for travel. Traffic flow modelling conducted by Durdin (2009) shows consumers were able to access a greater share of their needs from a single car trip to an integrated development (with subsequent walking trips across the centre) than if the same activity were dispersed along a corridor location. Importantly, Harries (2009) shows the demand for travel corresponds inversely with centre size, where larger centres increasingly reduce the travel effect. Harries (2009) states the critical mass of these centres can then support public transport network infrastructure (such as interchanges), providing a compounding mode share distribution effect on transport resource sustainability. It was argued by Osborne (2009) that the benefits of changing travel mode share (to public transport and other non-car uses) is often not captured by the market as the private benefit of car use is greater to the individual than the benefit of supporting a public transport network, which can be greater but accrue to the wider community rather than the individual.

Contrastingly, retail that is more dispersed along a corridor location generates greater demand on the transport network. Harries (2009) states the linear configuration lessens the opportunity for multipurpose trips through reduced ability to walk between clustered

activities. As such, dispersed corridor development generates a greater frequency and overall number/length of trips. Moreover, this dispersal also reduces the shared use of traffic circulation and parking spaces with greater numbers of entry/exit points on to the main corridor route.

Traffic modelling by Abley (2009) demonstrated these multiple connections slow traffic movement along the corridor, thus undermining the primary transport function of the corridor. This also impacts upon the freight function of the corridor, generating wider economic impacts for the region. This effect is heightened when the corridor is a key transport arterial route and/or entry/exit points are spread throughout the corridor. Therefore, Abley (2009) suggests that any retail development occurring within corridors is carefully managed as to reduce the externalities on the transport function of the corridor (also supported by Fairgray, 2009). The best outcomes are achieved where retail land uses are clustered together along certain stretches in the most appropriate locations within corridors.

McCoy (2009) stated that corridors form important linkages between major centres, which therefore already carry significant volumes of the multi-destination shopping travel. Hence, they instead contend that corridor retail development generates less travel impact if it matches existing shopper travel patterns. Burgess (2009) argued this in relation to grocery shopper patterns where a high share of customers for some types of (smaller) supermarket format are those that are passing through between destinations and therefore, a main road is most appropriate. Moreover, McCoy (2009) stated the major corridor arterial locations on the isthmus are already aligned with key public transport network routes. However, these arguments do not take account of the micro-travel pattern impacts of multiple entry points to the corridors transport role or compare development patterns to a centres-based counterfactual that would generate fewer trips.

Burgess (2009) and MacKay (2009) argued that the transport and accessibility requirements of LFR need to be considered and that these need to be differentiated between types of LFR. Most LFR requires car-based trips to enable purchases of larger (or volumes of) items, with public transport being an unviable option (McCoy, 2009). This is especially important for supermarkets which require car-based trips that are predominantly higher volume (than other LFR comparison good shopping) and single destination. As such, supermarkets and other LFR require large parking areas⁹ with good accessibility to the rest of the road network to enable the safe entry/exit of car and freight trips. Burgess

⁹ MacKay (2009) contended these need to be at grade and exclusive use for supermarkets to enable easy store to car transfer of groceries and lack of competition for parks with other comparison shopping.

(2009), and MacKay (2009) in the case of supermarkets, argued these are therefore often in locations outside of (but within proximity to) both centres and corridors.

To support this argument, McCoy (2009) presented shopper interview survey results showing: the low percentage of household trips involving shopping; and the low share of shopping trips on public transport. They concluded that any change in the share of shopping trips on public transport or on the network generally would therefore, be marginal in relation to the wider network usage.

2.1.3 Retail effects on other land uses

Retail is a key driver of urban form and underpins the functionality of centres through its economic and social linkages to other land uses. Crucially, retail plays a key role in sustaining centres, therefore supporting the viability of other social amenity and infrastructure that rely on a centre location. Community facilities and their ability to efficiently serve households depend upon good location within (particularly larger) centres and the frequenting of the centre by the population. Fairgray (2009), Heath (2009) and Osborne (2009) stated that patterns of retail development that undermine the performance and integrity of centres consequently reduce household enablement from social amenity/infrastructure that are reliant on centre performance.

These effects are often not captured or adequately valued by the market. Osborne (2009) contends the marginal private cost of accessing retail from standalone/out-of-centre stores is less than the social cost of undermining the social function of centres from accessing out-of-centre retail¹⁰. Therefore, as an aggregation of individual consumer actions, the market cannot account for the social benefits of locating retail within centres, requiring planning involvement to maintain levels of household enablement from urban form.

Further land use social benefits¹¹ of centres include the pedestrian oriented environment and the interaction with space in walking trips through the centre from multipurpose shopping. Osborne (2009) stated these effects are partly captured by the market through agglomeration economies for retailers and consumers arising from comparison shopping.

¹⁰ To illustrate this point, a similar concept is true in relation to traffic congestion and private vehicle usage where the marginal private cost of an additional car on the network is less than the social cost of the added congestion spread across all users.

¹¹ Social benefits are much wider than this, but are not discussed here as this focuses on the interactions between retail, land use (urban form) and travel/transport. It should be noted though that the intangible nature of social benefits mean they are often captured to a lesser extent.

Also, that comparison shopping through smaller vehicle movements along a corridor reduces consumers' interaction with the pedestrian environment.

Within the retail component of centres, large stores and supermarkets act as key anchors for centres. MacKay (2009) stated the presence of a large store is often crucial in generating greater pedestrian flows that benefit adjacent smaller strip retailers. Higher turnover is often vital to sustaining these stores (and therefore, cumulatively, the centre) as they have higher average rents (per m²) than the larger format anchor stores.

Other commercial land uses, particularly the office sector, are influenced by the retail function of the centre. Greater retail provides higher amenity value within centres, encouraging the location of office activity into centres, rather than the dispersal across out-of-centre locations. Fairgray (2009) and MacKay (2009) asserted this generates productivity benefits to the wider economy through the agglomeration effects of office co-location. These are important drivers for achieving the region's compact form land use strategic direction. Furthermore, Fairgray (2009) stated the location of retail and office activity into centres reduces the displacement of other land uses in non-centre business zones across the region.

2.1.4 Agreement among expert witnesses

A statement of agreement between the economic and retail analyst witnesses was prepared during the Change 6 hearings (Environment Court Auckland, 2009). There was no agreement reached on a substantial share of the evidence base, however, areas where agreement (in relation to the scope of this research) was reached include:

- "An economic assessment of proposed Change 6 to the ARPS ("Change 6") should ideally be comprehensive in scope, take a long term view and include consideration of market and non-market costs and benefits; the foregoing alternatively expressed within the concept of economic efficiency (para 2.1.2)."
- "Assessments of regional spending growth should have regard to likely demographic changes (population, household formation and tourist flows) and a wide range of economic factors that affect supply and demand (para 2.1.3)."
- "The suite of Policies adopted by the ARPS must be robust in relation to future variations in spending within the region (para 2.1.4)."
- "The retail trading space information within Appendix Two to Mr Tansley's evidence-in-chief is accepted as the best available database on regional floorspace trends over the period covered by its Table 3 (para 2.3.1)."
- "It would be inappropriate to incorporate a definition of LFR within the ARPS (para 2.4.1)."

The statement of agreement also requested a brief summary of the points of differences among the witnesses be prepared. This never occurred as the hearings were settled prior

to its construction. The report aims to address the gaps in Auckland's retail economic evidence base.

2.2 Retail policy approaches in other major New Zealand cities

Centres-based urban growth forms the predominant approach to commercial development across most other major New Zealand cities¹². Planning authorities recognise and aim to reinforce the role of centres as important destinations to meet household and business needs, and recognise the need to manage out-of-centre LFR. This is reflected in city planning documents, which specify the growth of activity permitted in both centre and non-centre locations¹³. Several cities have published specific centres or retail strategies¹⁴. Generally, retail development is enabled in defined centres, with tighter controls to direct the quantum and location of growth in other areas. In addition to Auckland, some cities (e.g. Christchurch and Tauranga) include a centres hierarchy, while others, particularly smaller cities (e.g. Napier and Dunedin), have a greater relative focus on maintaining a strong CBD hub¹⁵.

While some cities such as Wellington¹⁶ have put a large focus on maintaining and strengthening existing centres within this centres-based approach, others have included provisions for the construction of new centres to follow population demand. Urban expansion in Tauranga has generated the need to develop new major centres to serve household demand. The need to develop new centres due to outward urban growth has been heightened in Tauranga where the natural configuration of the land delineates the peripheral suburban areas from the inner urban areas.

¹² This relates mainly to core (i.e. comparison goods) retail, while many cities seek to disperse convenience retail (i.e. dairies, etc) throughout broad suburban areas to meet local population demand. In doing so, this reduces trip lengths for frequently purchased items from outlets that are reliant on smaller catchment sizes.

¹³ Major New Zealand cities investigated within this section include Wellington, Christchurch, Tauranga, Dunedin, Hamilton and Napier (Borthwick et al. 2010; Christchurch City Council, 2013; Hamilton City Council, 2008, 2008a and 2012; NZ Retail, 2010; Tauranga City, 2011 and 2012; Tauranga City, et al. 2007; Thompson, 2010; Waikato Regional Council, 2012; Wellington City Council, 2003, 2003a, 2008, 2008a and 2010).

¹⁴ Examples include Napier and Wellington, with Wellington's strategy now superseded by the Suburban Centres Review.

¹⁵ Wellington's centres-based approach identifies several key suburban centres, but does not establish a centres hierarchy within the city plan per se.

¹⁶ Wellington also allows for some growth outside of centres, but the main focus is on centres. A key approach has been to allow a wide range of retail commercial land uses within the centres to enable flexibility for the market to respond to changes in demand within these locations. Within this, traditional retail mainstreets are still maintained through urban design controls on shop street frontages.

New Zealand cities have faced the challenge in accommodating a changing format in consumer demand and retail supply to include greater shares of LFR. The key challenge has been in managing this growth to avoid adverse effects on existing centres. In nearly all cases LFR has developed in industrial zones away from centres, generating pressure on the viability of more traditional smaller retail format offerings in centre mainstreet areas. Thompson (2010) has stated the detrimental effect of out-of-centre LFR on the core CBD retail hubs of Dunedin. In some cases, land (including price competition from demand) or zoning constraints have also prevented LFR locating in edge of centre locations, increasing the propensity for locating away from existing major centres.

Cities have adopted a range of approaches in response to this challenge, including:

- i. Reinforcing centres-based approaches;
- ii. Greater management of LFR through urban design and planning controls in out-of-centre locations; and
- iii. Provision of specified areas to accommodate LFR.

Most cities with a centres-based approach have the intention to incorporate LFR into centres but with greater integration with the surrounding local areas. Napier's retail strategy has sought to integrate LFR development into edge-of-centre locations surrounding the existing CBD. Within Hamilton, substantial large format growth has occurred north of the CBD in Rotokauri (The Base development), impacting upon the Hamilton CBD. This has now been recognised within growth strategies and identified as a major retail area, along with two other major centres¹⁷. Hamilton City is seeking to re-establish the primacy of the CBD (Hamilton City Council and UrbanismPlus Ltd, 2008).

Centres-based approaches are reinforced through requiring out of centre retail to demonstrate the effect on existing centres, including through distributional impacts where regard has to be given to the most efficient distribution of activity across centres. Other urban design controls restrict out-of-centre development to particular floorspace sizes and demonstration of population demand growth, similarly with respect to distributional impacts (e.g. Tauranga).

Varied responses have been taken in relation to retail floorspace restrictions to guide types of development. Wellington has enabled high flexibility within centres to allow the market to respond quickly; Tauranga has specified location-specific limits in areas suggested for LFR development; Dunedin has identified specific sites for LFR development.

¹⁷ The Hamilton District Plan has been notified and is currently under review, along with the Waikato Regional Policy Statement, and is within a submission stage.

The effectiveness of approaches has varied across cities, along with the impact of LFR on the existing retail landscape and households' efficiency. Plan changes and strategies have occurred in some locations in response to the rise of LFR. Plan Changes 52 (now replaced by active Plan Change 73) and 78 in Wellington were introduced to give better effect to centres-based approaches. This was supported by a suburban centres review undertaken to understand the role and functioning of centres for households and businesses, and to respond to the transitioning of industrial land to other uses.

Variation 86 in Christchurch sought to support the centres-based approach, and the Plan sought enablement and efficient access. This was then tested in Plan Change 22, which sought to support the existing CBD retail hub through establishing a centre in Belfast¹⁸. Other major retail cases in Christchurch include the Stirling High Court (and previous Environment Court) decision (Borthwick et al. 2010 and Chisholm, 2011) that reinforced support for centres-based planning approaches and alignment of retail development to Council planning direction generally. Christchurch has introduced business retail as LFR zones around major existing concentrations of LFR to manage out of centre LFR growth.

¹⁸ The Environment Court both supported this development in relation to a centres-based approach, but limited its size to protect the core retail hub of the CBD as it was out of alignment with demand from the natural catchment.

Part 2 - Current retail sector in Auckland

3 Auckland household retail spending patterns¹⁹

Retail sales provide an important picture of retail demand in Auckland, with households, businesses and tourists being the three key drivers of demand. This section firstly examines levels of spending on retail in Auckland. It then uses key findings from an earlier study on Auckland's spatial economy in 2012 to show how households use centres and access retail supply. It then looks within this at the role of centres spatially and for Auckland households.

3.1 Retail sales in Auckland

In the 2012 calendar year, there were \$18.3 billion of sales through Auckland stores. Sales have been grouped into the following categories within the current evidence base to reflect the main retail divisions within the Proposed Auckland Unitary Plan and the economic differences in operation of retail types:

- Core retail – durable and comparison goods such as household appliances, clothing, footwear, stationery, etc.
- Trade retail – garden centres, DIY materials and hardware, landscaping, etc.
- Food and liquor retail – supermarkets, specialised food, other food and liquor purchased for consumption not on the retail premises (excluding prepared meals).
- Food hospitality and household services – restaurants, takeaway food, bars, clubs taverns, etc and household services that occupy storefront locations such as drycleaners, travel agents, hair dressers, etc.

Table 2 shows the estimated sales in each of these categories to households, businesses and tourists. The construction of these estimates are outlined in section 7.2 where they form key inputs to the RIMU Retail Growth model. Households account for the bulk of sales (73%), with the remainder from domestic (7%) and international (7%) tourists and businesses (14%).

¹⁹ This section summarises evidence from the Fairgray (2012 and 2012a) study on spatial spending flows across Auckland by different centre types. It is used to illustrate the *spatial* magnitude and dynamics of household travel across different centres and centre types across Auckland, with a focus on core retail due to its key role in major retail patterns across Auckland. Within the time available, it was not possible to reconstruct the information for this section using 2012 data aligned specifically to the Proposed Auckland Unitary Plan centre boundaries, classifications or retail definitions. However, this alignment has been conducted during subsequent stages of the report where spatial spending data has been used to inform particular calculations. This has been specified accordingly within the relevant sections.

Table 2. Auckland retail sales by retail category and demand category, 2012

		Sales by retail category (\$m 2012)				
		Core	Trade	Food and liquor	Food hospitality and household services	Total retail
Households (spend in Auckland)	Sales	\$5,127	\$1,069	\$5,151	\$1,985	\$13,332
	Share of category sales	68%	70%	78%	73%	73%
	Share of sales to hhold	38%	8%	39%	15%	100%
Tourism - domestic	Sales	\$595	\$49	\$252	\$377	\$1,272
	Share of category sales	8%	3%	4%	14%	7%
	Share of sales to tourists	47%	4%	20%	30%	100%
Tourism - international	Sales	\$546	\$111	\$445	\$130	\$1,231
	Share of category sales	7%	7%	7%	5%	7%
	Share of sales to tourists	44%	9%	36%	11%	100%
Businesses	Sales	\$1,220	\$288	\$748	\$225	\$2,481
	Share of category sales	16%	19%	11%	8%	14%
	Share of sales to businesses	49%	12%	30%	9%	100%
Total	Sales	\$7,488	\$1,518	\$6,595	\$2,716	\$18,317
	Share of category sales	100%	100%	100%	100%	100%
	Share of total sales	41%	8%	36%	15%	100%

Source: RIMU Retail Growth Model, 2013.

In 2012 there were an estimated 517,000 households in Auckland, meaning that the average household spent \$29,600 (incl. GST) on retail. Approximately \$11,500 was spent on each of core and food and liquor retail, with the remaining \$6,800 on trade and food hospitality and household services.

Levels of retail spend have increased through time along with real increases in household expenditure over the longer-term as economic living standards and consumption have increased. Over the longer-term, this equates to an annual average growth rate of 1.0 per cent. Changes in the structure and composition of households have also driven increases in spend where average household sizes have become smaller through an increase in single-person households. Consequently, greater numbers of core household appliances relative to the population are required. Changes in retail sales through time are illustrated in Figures 30 and 31 in section 6.1.3.2.

3.2 Household spend by retail category and market share

As New Zealand's largest city, Auckland has a complex urban structure where households meet their needs across a range of different centres and centre types. It cannot be assumed that all needs can be met locally, however, more efficient configurations in the balance of activity across different centre types can be achieved (enabled through planning provisions of land and zoning). Understanding how the regional urban structure functions is key to effective planning and policy development for different areas.

This subsection and the next use findings from research conducted in 2012 (Fairgray, 2012) to illustrate the spatial patterns through which households are accessing retail supply across Auckland. It is important information in understanding patterns of retail in Auckland. It uses Marketview Ltd electronic card data linking 2,700 neighbourhood areas to 100 Auckland centres, with a focus on core retail²⁰.

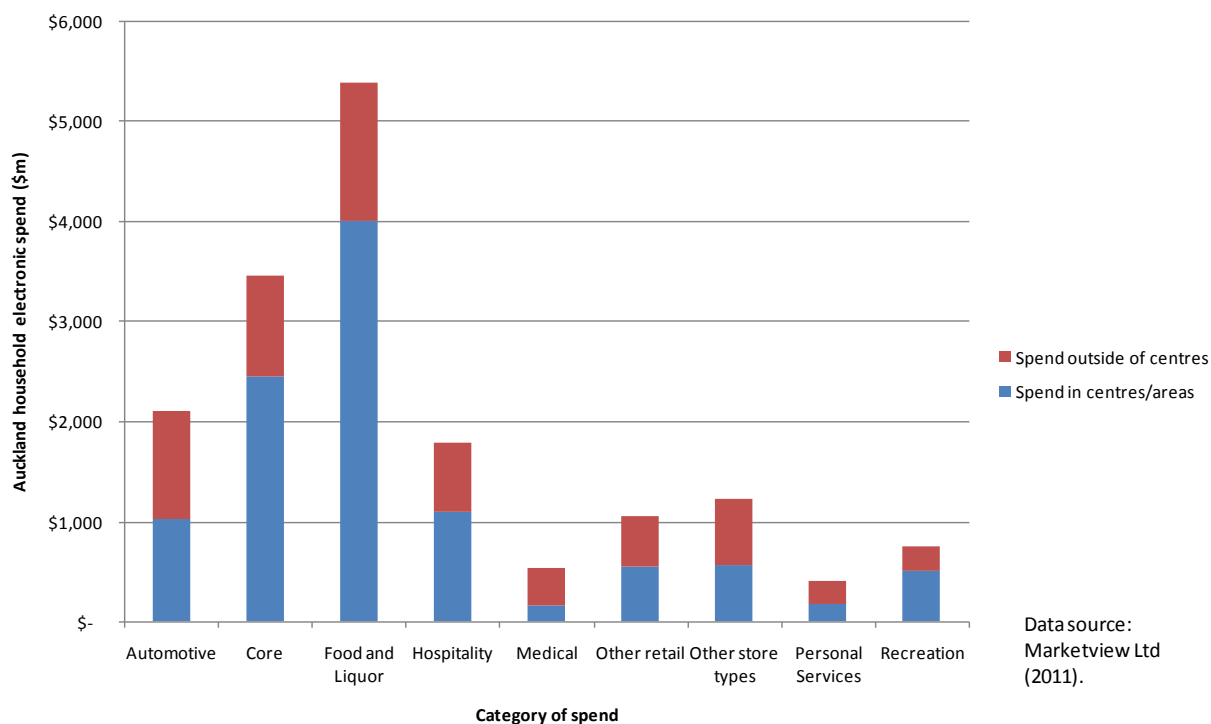
Auckland households spent an estimated \$16.7bn on retail and household services through electronic transactions in the 2011 calendar year²¹. The largest categories of expenditure were food and beverage (\$5.4bn; 32% of electronic spend) and core retail (\$3.5bn; 21%) (see Figure 7). In a recent study on Auckland retail/services centres and households, Fairgray (2012) estimated that two-thirds (\$11.2bn; 67%) of this spend occurred in the 96 centres identified across Auckland²². This share was higher for the food and liquor and core retail categories where 74 and 71 per cent of spend respectively, occurred within the identified centres/areas.

²⁰ Differences between the Fairgray (2012) study centres and the Proposed Auckland Unitary Plan centres are outlined in Appendix 4. It is an area of future research to update spending information to the Proposed Auckland Unitary Plan centres given the scale of research and analysis involved.

²¹ This represents total Auckland household electronic card spending, including spend by Auckland households outside of the Auckland region. As such, the share of Auckland household spend occurring within Auckland is likely to be higher than 67 per cent.

²² Fairgray (2012) identified an existing centres/areas classification system across Auckland including the city centre (1), city centre fringe centres (3), sub-regional centres (8), major urban centres (28), minor urban centres (36), rural/satellite centres (11) and non-centre areas (8). The classification system "differs to the Auckland Plan because it necessarily represents Auckland's urban structure as it currently operates, while the Auckland Plan recognises the longer-term future planned role of centres within the urban structure (p13)". The subsequent analysis of corridor areas in the Planz report (Bonis, 2013) were not covered by the Fairgray (2012) study.

Figure 7. Auckland household electronic spend in Auckland centres and elsewhere, 2011

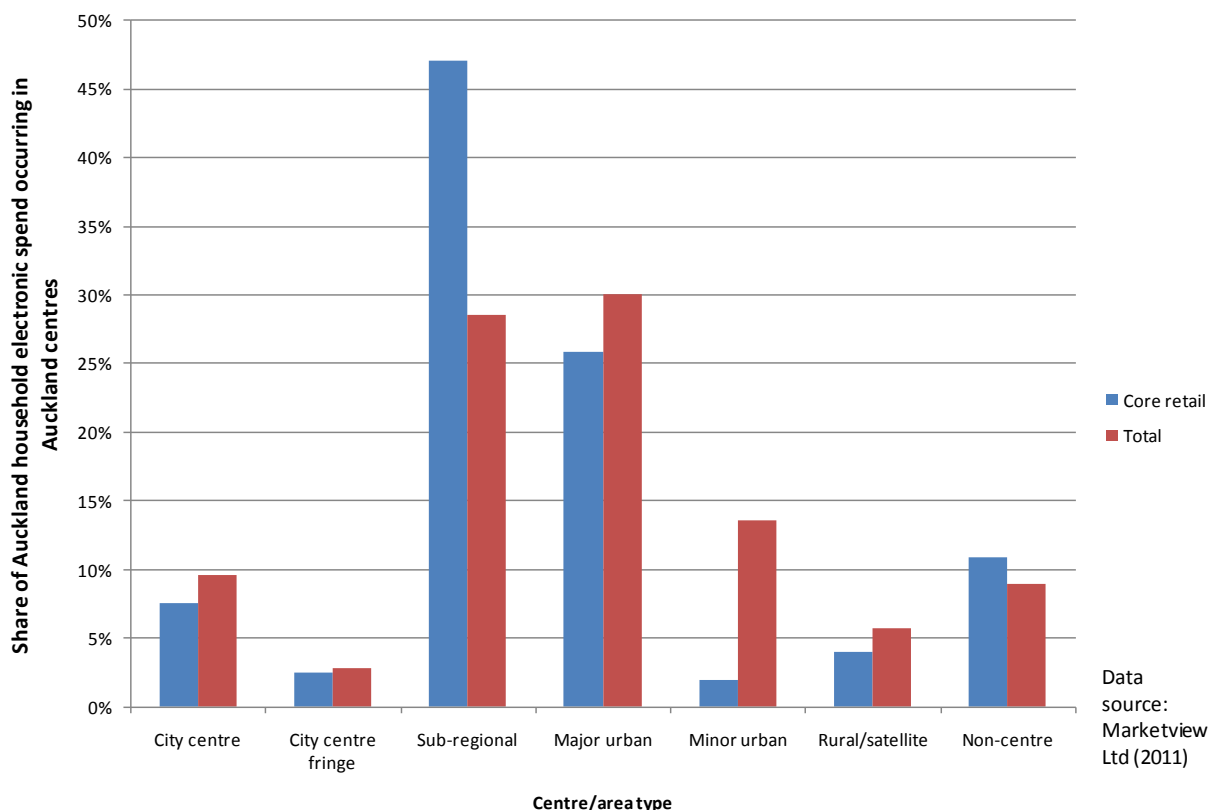


3.3 Role of centres/areas in Auckland household retail spend

Large urban centres and areas of retail concentration play an important role in meeting Auckland household core retail²³ demand. Figure 8 shows that of the spend occurring in the identified centres/areas, 30 per cent of total household demand was met in major urban centres, followed by 29 per cent in sub-regional centres. Within this, core retail had a greater propensity to concentrate and centralise into larger centres, with nearly half (47%; \$1.2bn) occurring in sub-regional centres and a further 26 per cent (\$632m) in major urban centres.

²³ Here, core retail refers to the definition used within the Fairgray (2012) study. This differs to that in the Proposed Auckland Unitary Plan as it includes Trade, and excludes spend at recreational goods stores, which are listed as a separate category.

Figure 8. Share of Auckland household electronic spend in Auckland centres/areas by type, 2011



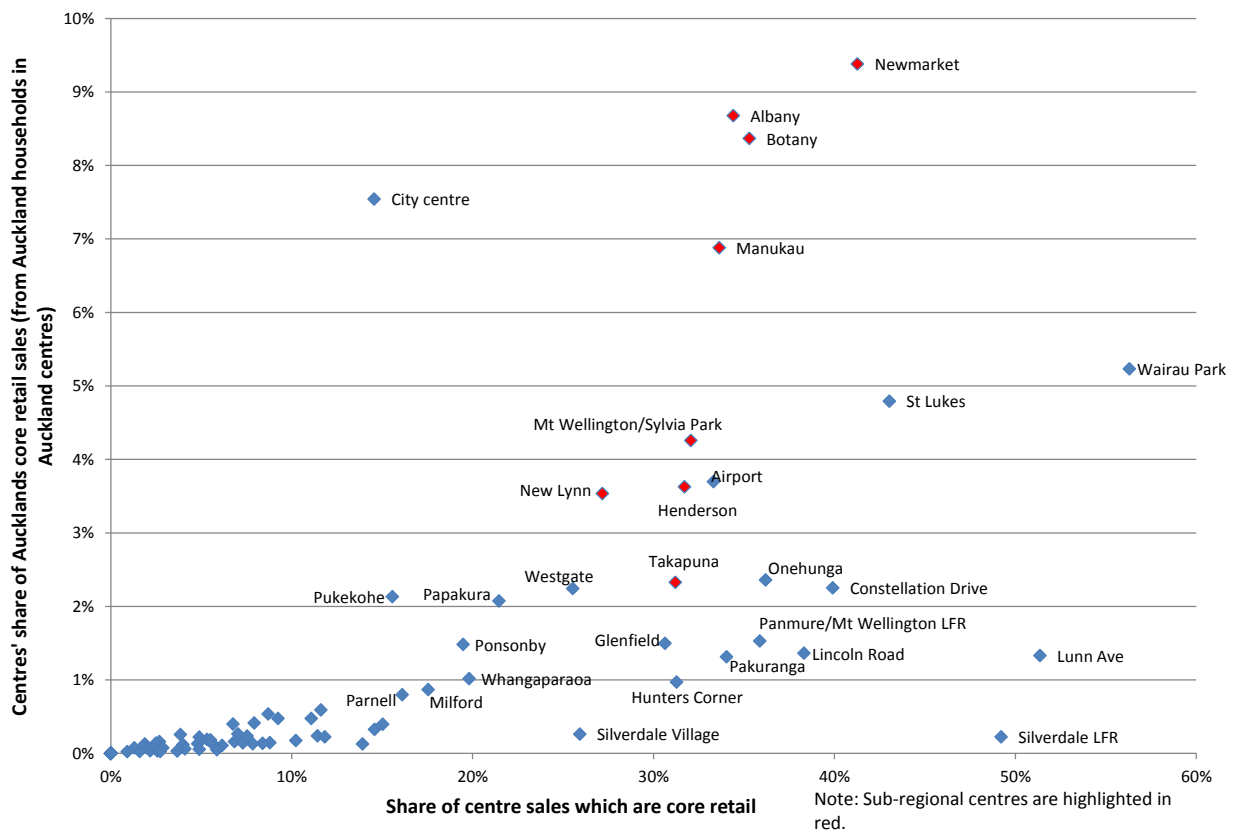
Large centres play an important role for households in Auckland. Core retail tends to concentrate into larger centres, and has a higher relative importance for these centres. Figure 9 shows the distribution of core retail sales across different centres in Auckland (vertical axis). It also shows the contribution of core retail to each centres' sales (horizontal axis).

Core retail spend is concentrated into several key destinations, with the top five locations accounting for 41 per cent of spend, and the largest ten, 62 per cent of spend. Along with the city centre, sub-regional centres Newmarket, Albany, Botany and Manukau, make up the five largest centres of core spend. These sub-regional centres are dispersed geographically across Auckland, forming the main retail hubs in the central isthmus, north shore, eastern Auckland, and southern Auckland respectively.

Many of the key core retail locations also have higher shares of their total spend activity as core retail, with 20 of the largest 25 core retail locations having greater than 25 per cent of

their spend on core retail, and 18 with greater than 30 per cent. This compares to an overall average of 20 per cent of spend on core retail within centres/areas²⁴.

Figure 9. Distribution of Auckland household core retail spend in Auckland centres by centre, 2011



The role of different centres/areas in meeting core retail household demand is identified further in Figure 10. It shows the relationship between the overall core retail sales size of a centre and the share of household core retail demand it meets from households within its catchment. Centres are ordered by the overall size of their core retail sales (with rural/satellite centres excluded). For each centre, the household catchment area from which 50 per cent and 80 per cent of its sales originate has been obtained from the Fairgray (2012a) study²⁵. The blue and red bars then show the share of household core retail demand from each of these 50 and 80 per cent areas that is being met within that centre (i.e. the centres' market share within these catchments). This indicates the relative

²⁴ This differs slightly to the 21 per cent share quoted in section 3.2.1 as the previous figure relates to share of Auckland household spend across all areas, while the 20 per cent figure refers to Auckland household core retail spend within Auckland centres/areas.

²⁵ The 50 and 80 per cent areas have been chosen as they correspond approximately to the primary and secondary catchments of a centre, as well as differentiations in the relative role of the centre for household areas. Beyond 80 per cent, the area from which the remaining spend originates from tends to be very dispersed geographically – i.e. a share of any centres spend tends to occur from minor contributions from neighbourhoods dispersed across Auckland.

importance of each centre to households located within the 50 and 80 per cent catchment areas²⁶ - i.e. the role of the centre in meeting household core retail demand.

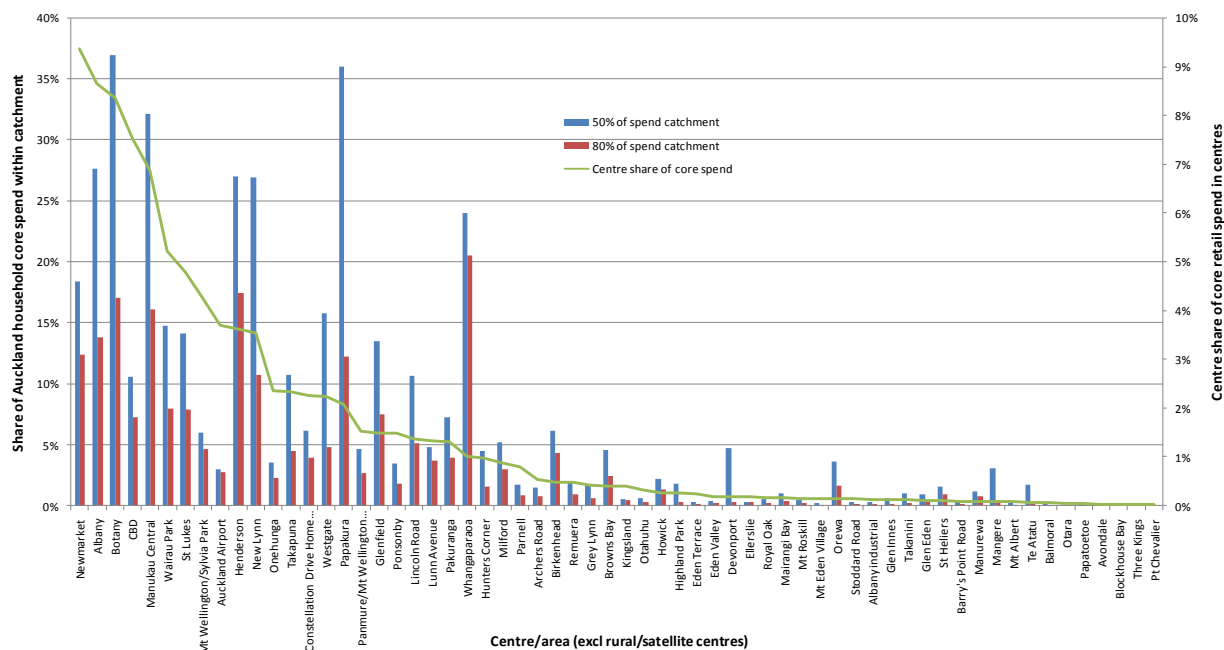
A general expected correlation exists, albeit with high variability, between centre core retail activity and relative importance for households within the catchment area. Smaller centres play a smaller role in meeting household demand, while larger centres are relatively more important. Within this, several of the key centres emerge as meeting a high *share* of household demand within their catchment areas, quantifying the role and significance of large centres in core retail demand. These include the sub-regional centres, Botany, Albany, Manukau, Henderson and New Lynn, along with Papakura and Whangaparaoa, which all cater for more than 24 per cent of household core retail demand within their 50 per cent catchment areas. This shows that, even when controlling for distance, core retail demand is relatively more concentrated into these key centres.

While a share of this effect relates to the composition of these centres containing more core retail, their relative performance for households within their catchments is above other major core retail locations. This can be seen in the lower relative performance (in the share of household demand catered for) of other centres that are major core retail locations (i.e. in adjacent positions on the horizontal axes of the graph). Interestingly, these sub-regional centres with higher relative performance tend to be located in less central locations (i.e. further from the city centre), where households are on average geographically less proximate to other major sub-regional centres. In comparison, the sub-regional centre Newmarket, is the largest core retail location (see Figure 10), but meets only 18 per cent of the household demand within its 50 per cent catchment area. This corresponds with its central location and the relative proximity of households to other major core retail locations (i.e. lending to greater degrees of catchment overlap where household core retail demand is likely to be spread over a greater number of major core retail locations).

The higher relative importance of Papakura and Whangaparaoa likely results from a spatial monopoly arising from a combination of peripheral urban locations and unique land geographies limiting the road network distance of households to other centres.

²⁶ It is important to note that the analysis uses catchment sizes relative to each centre and therefore, geographically different between centres. This is to understand the relative performance of each centre in meeting demand within the centres area of operation (i.e. catchment) so that comparisons of performance can be made across centres without being skewed by differences in catchment sizes.

Figure 10. Role of Auckland centres/areas in meeting Auckland household core retail demand, 2011



3.4 Catchment geographic sizes

It is important to understand the spatial role different centres play and the geographical areas which they serve. The Fairgray (2012) study used the spatial spending flows information to quantify differences in the scale of areas served by different centre types as well as between different retail categories. It observed a positive correlation between centre size and catchment extent, where larger centres serve larger areas. It also showed that the catchment sizes of different retail categories differed within centres. Core retail typically has a larger distance effect than retail overall, where core retail within a centre draws from a wider area than the activity in the centre overall. This correspondingly means that households on average travel further to meet their core retail needs than for retail overall.

Table 3 (adapted from Fairgray (2012)) shows the cumulative road network distance from within which different shares of the centres/areas sales originate from, disaggregated by retail category. From the table, it can be seen that 50 per cent of the sales at centres/areas overall originates from households located within five kilometres road network distance,

and 80 per cent of sales from within 13 kilometres road network distance. This compares to seven and 16 kilometres respectively for core retail²⁷.

Table 3. Road network distance (kilometres) containing cumulative shares of Auckland household spend, 2011

Spend category	Cumulative share of Auckland household spend			
	50%	60%	80%	90%
Automotive	5	7	14	23
Core retail	7	9	16	23
Food and liquor	4	5	9	15
Hospitality	6	9	15	22
Medical services	16	19	27	36
Other retail	7	9	17	24
Other store types	7	10	18	26
Personal services	7	10	19	27
Recreation	8	10	16	23
Total	5	7	13	22

Data source: Marketview Ltd and Auckland road network distance matrix.

Table sourced from Fairgray (2012).

The distance effects show that Auckland households travel further to meet their core retail demand, with a greater share of spend occurring in larger centres. Part of this effect is driven by consumer demand-side preferences for comparison shopping, as well as the economics governing supply where larger catchments are required on average to support generally larger, less frequent purchases (along with the role of retail agglomeration economies). As such, core retail tends to concentrate increasingly into larger centres because of the economics of the retail sector.

²⁷ While the centre/area structure distribution would have some effect on overall distance effects by spend category, core retail typically had greater distance effect curves within each centre/area type. Table 6 in Fairgray (2012) disaggregates the distance effect by spend category and centre/area type to illustrate this pattern.

4 Retail employment in Auckland

Retail employment in Auckland is a key indicator of retail supply (along with floorspace). Levels of employment correspond with the size and performance of the sector, with information available spatially, by retail category and through time. This section examines the size and activity composition of Auckland's retail sector and how this has changed through time. It then investigates the spatial distribution of retail employment across Auckland in relation to different centre types, and how this has changed through time. Spatial shifts in employment indicate changes in the relative importance of different types of areas for retail in Auckland²⁸.

4.1 Current market

In 2012 there were 93,000 employees²⁹ in Auckland's retail, food hospitality and household services sector³⁰ (from here on in referred to as 'retail'), accounting for 14.5 per cent of Auckland's total employment. Combined employment in the retail sector exceeds the employment contained in any other individual sector in Auckland. The next largest sectors are manufacturing (11.2% of total employment; 72,250 employees), professional and scientific services (10.2%; 65,680) and health care and social assistance (9.6%; 61,940).

²⁸ Retail business counts from the same dataset are another indicator. Analysis of retail business numbers spatially and by retail type has not been conducted within the time available, but is an area for future research.

²⁹ The *Business Demographic* dataset (Statistics New Zealand, 2012) is used here as the measure of employment. It allocates employees into over 500 different industry classifications using the Australia New Zealand Standard Industry Classification (ANZSIC) system. Customised data for Auckland at the meshblock (i.e. city block) level has been obtained enabling the spatial analysis of employment trends across Auckland. This includes a breakdown of employees by ANZSIC division within each meshblock.

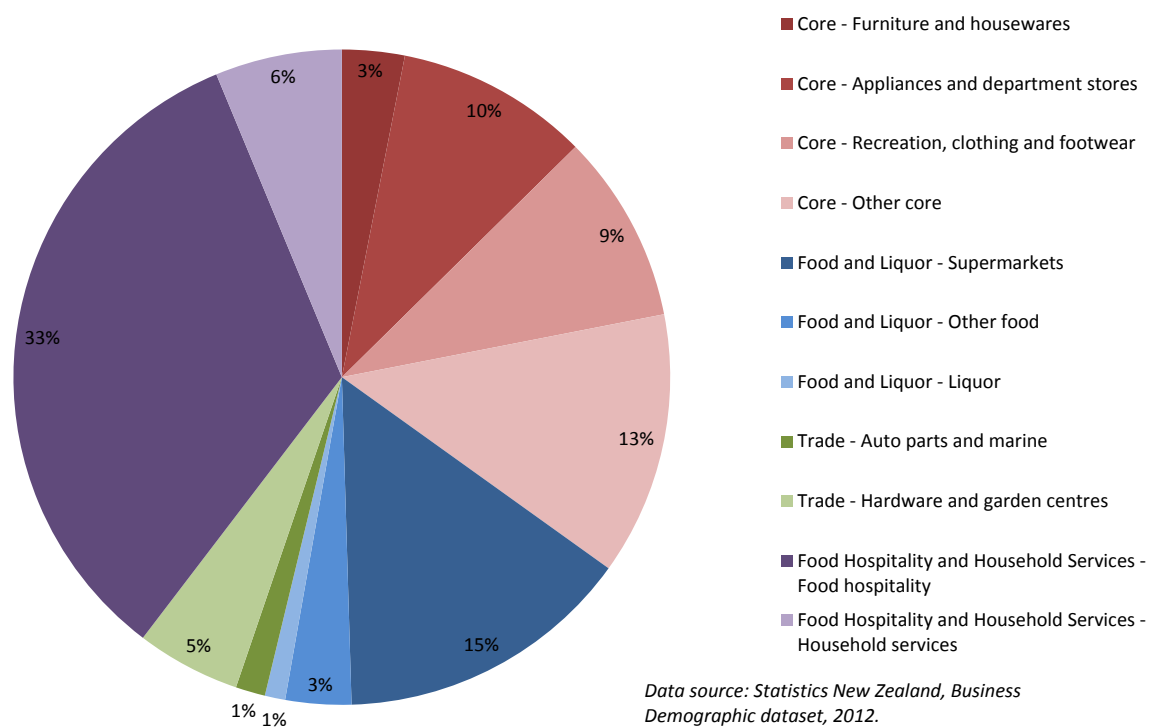
³⁰ ANZSIC categories used to define the retail sector include G Retail trade (less G391100 Car Retailing, G391300 Trailer and Other Motor Vehicle Retailing and G400000 Fuel Retailing), H451 Cafes, Restaurants and Takeaway Food Services (less H451300 Catering Services), L663200 Video Rental, N722000 Travel Agents, S942100 Domestic Appliance Repair and Maintenance, S949100 Clothing and Footwear Repair, S949900 Other Repair and Maintenance n.e.c., S951100 Hairdressing and Beauty Services, S953100 Laundry and Dry-Cleaning Services, S953200 Photographic Film Processing and S953900 Other Personal Services n.e.c.. Seventy per cent of employment within the Video Rental and 'S Other Services' categories, and 50 per cent of employment within the Travel Agents category was used to allow for a share of non-household oriented activity within these sectors. The share was lower for Travel Agents to reflect the presence of corporate-oriented travel firms not occupying store-front type premises. The other sectors outside of the 'retail' ANZSIC division were included because they also typically occupy store-front premises serving household demand in the same way as retail, and are regarded similar to retail activities within the Proposed Auckland Unitary Plan.

Within Auckland's retail sector, food hospitality and household services accounts for 40 per cent (36,900) of employment, with the largest share (33%; 31,100) as food hospitality. Core retail (i.e. durable and comparison goods)³¹ accounts for the next largest share, spread across the following sub-categories:

- appliances and department stores (10%; 8,900)
- recreation, clothing and footwear (9%; 8,700)
- furniture and housewares (3%; 2,900)
- other core (13%; 12,100)

The remaining employment is spread across food and liquor (19%; 17,500), of which the bulk (15%; 13,600) is in supermarkets; and trade (7%; 6,100). The composition of retail by sub-sector is displayed in Figure 11.

Figure 11. Composition of retail employment in Auckland, 2012



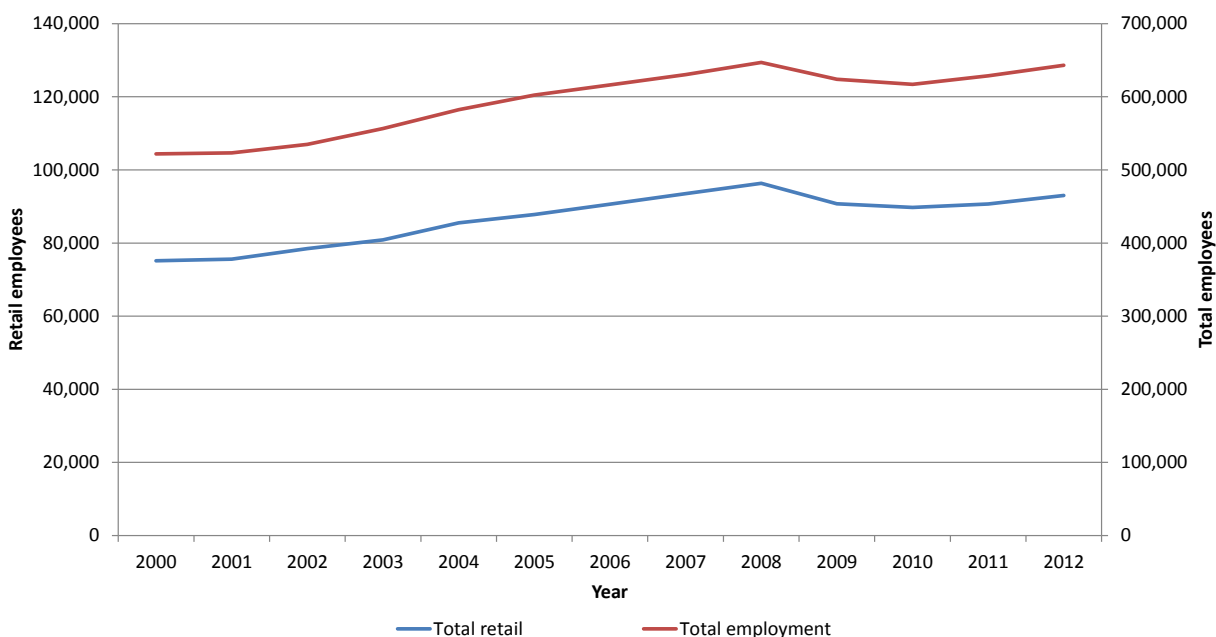
³¹ The ANZSIC categories used to define core retail include G421 Furniture, Floor Coverings, Houseware and Textile Goods Retailing, G422 Electrical and Electronic Goods Retailing, G424 Recreational Goods Retailing, G425 Clothing, Footwear and Personal Accessories Retailing, G426 Department Stores and G427 Pharmaceutical and Other Store-Based Retailing.

4.2 Employment change through time

Auckland's retail sector experienced a net increase of 17,800 employees between 2000 and 2012, equating to an average annual growth rate of 1.8 per cent (+24%). Retail grew at approximately the same rate as the economy as a whole, which increased by 23 per cent across the same period (average annual growth rate of 1.8%).

Growth has not been consistent during this period, with the global financial crisis having a significant impact on retail growth (see also section 6). Figure 12 shows Auckland retail employment grew by 28 per cent between 2000 and 2008 (compared to a 24% increase for the economy as a whole). However, retail employment declined by five per cent (-6,580) between 2008 and 2010, followed by an increase of four per cent (+3,260) in the last two years. The increase in retail employment growth during the last two years has been in line with the recovery in employment in the economy overall, with retail employment remaining below 2008 levels (-3,320). Consequently, retail's share of total employment (14.5%) has remained similar to what it was in 2000 (14.4%).

Figure 12. Retail and total employment in Auckland, 2000-2012



Data source: Statistics New Zealand, Business Demographic dataset, 2000-2012.

Retail categories have experienced differential growth rates across the 2000 to 2012 period. Food hospitality and household services has accounted for over half (52%) of the net growth in retail employment, with a net increase of 9,300 employees (+34%). The next largest share (34%) of growth was contributed by core retail, which increased by 6,100 employees (+23%). Within core retail, recreation, clothing and footwear contained the largest share of growth (+2,800), as well as increasing at the fastest rate (+48%).

Employment growth was slower across Food and Liquor (+1,500; +9%) and Trade (+960; +19%) across the same period (see Table 4).

Table 4. Employment change by retail category in Auckland, 2000-2012

Retail category	Employment		Change 2000-2012		Average annual growth rate
	2000	2012	Net	Percentage	
Core	26,367	32,468	6,101	23%	1.7%
<i>Furniture and housewares</i>	2,647	2,863	216	8%	0.7%
<i>Appliances and department stores</i>	7,720	8,854	1,134	15%	1.1%
<i>Recreation, clothing and footwear</i>	5,854	8,672	2,818	48%	3.3%
<i>Other core</i>	10,146	12,079	1,933	19%	1.5%
Food and Liquor	16,075	17,538	1,463	9%	0.7%
<i>Supermarkets</i>	13,004	13,593	589	5%	0.4%
<i>Other food</i>	1,906	3,011	1,105	58%	3.9%
<i>Liquor</i>	1,165	934	-231	-20%	-1.8%
Trade	5,165	6,129	964	19%	1.4%
<i>Auto and marine</i>	1,101	1,355	254	23%	1.7%
<i>Hardware and garden centres</i>	4,064	4,774	710	17%	1.4%
Food Hospitality and Household Services	27,555	36,863	9,308	34%	2.5%
<i>Hospitality</i>	22,048	31,056	9,008	41%	2.9%
<i>Household services</i>	5,508	5,808	300	5%	0.4%
Total retail	75,162	92,999	17,836	24%	1.8%
Total employment	521,949	643,219	121,270	23%	1.8%

Data source: Statistics New Zealand, Business Demographic dataset, 2000 and 2012.

Employment has declined across all retail sectors, other than food hospitality and liquor between 2008 and 2012 with the global financial crisis impact on consumer retail spending. The sector declined by 3,320 employees (-3%), with the largest net declines in supermarkets (-1,163), recreation, clothing and footwear (-1,034), appliances and department stores (-815), household services (-769) and hardware and garden centres (-632).

4.3 Spatial distribution of retail employment

4.3.1 Methodology

The geographical patterns of retail supply across Auckland (in addition to spending patterns) have been investigated in this study through the distribution of employment and floorspace information at a fine spatial scale. Employment information from 2000-2012 was available from the Statistics New Zealand Business Demographic dataset by

meshblock³² and at a high industry disaggregation, giving detailed spatial patterns of different retail activities.

Employment data were imported into a GIS system and analysed against the Proposed Auckland Unitary Plan spatial definitions of corridors³³, centres and other business zones (as at April 2013). As Proposed Auckland Unitary Plan centre boundaries have been developed at sub-meshblock level, a process of best fit was applied to allocate meshblocks to centre or corridor areas. The approach taken was to include meshblocks in a centre/corridor that had any level of intersection with the centre/corridor. This was deemed the approach of least error as centre boundaries have generally been determined to reflect zoning boundaries and therefore, in the majority of cases, the additionally included meshblock areas are non-commercial and consequently have little impact on overall retail employment counts. The meshblock definition of each centre/corridor area is displayed in Appendix 3.

Employment information was then analysed at the centre/corridor level to identify the quantum and share of retail across different centres, as well as changes in these distributions through time.

The spatial analysis of retail employment data is a method used widely in New Zealand retail analysis. In many cases it has been used to generate estimates of the spatial distribution and quantum of retail floorspace across Auckland through applying floorspace to employment ratios to the spatial employment data (McDermott Fairgray Group Ltd, 1993)³⁴.

³²"A meshblock is the smallest geographic unit for which statistical data is collected by Statistics New Zealand. Meshblocks vary in size from part of a city block to large areas of rural land (Statistics New Zealand, no date)".

³³ Corridor land areas have been defined within the PLANZ report to include a 400 metre buffer of land surrounding identified major arterial roads. The spatial extent of buffer zones have also been identified through GIS applications.

³⁴ While it is an important spatial dataset, the meshblock employment information should be used carefully at fine spatial levels. In some cases, employment may be geocoded incorrectly to an adjacent meshblock, making it important to view the information spatially within a GIS viewer to be cognisant of employment in surrounding meshblocks. Within the retail sector, care should also be taken to eliminate any retail employment in head offices of retail firms if it occurs. For further information on meshblock level use of Statistics New Zealand Business Demographic data, refer to Statistics New Zealand (2012c).

4.3.2 Employment spatial distribution

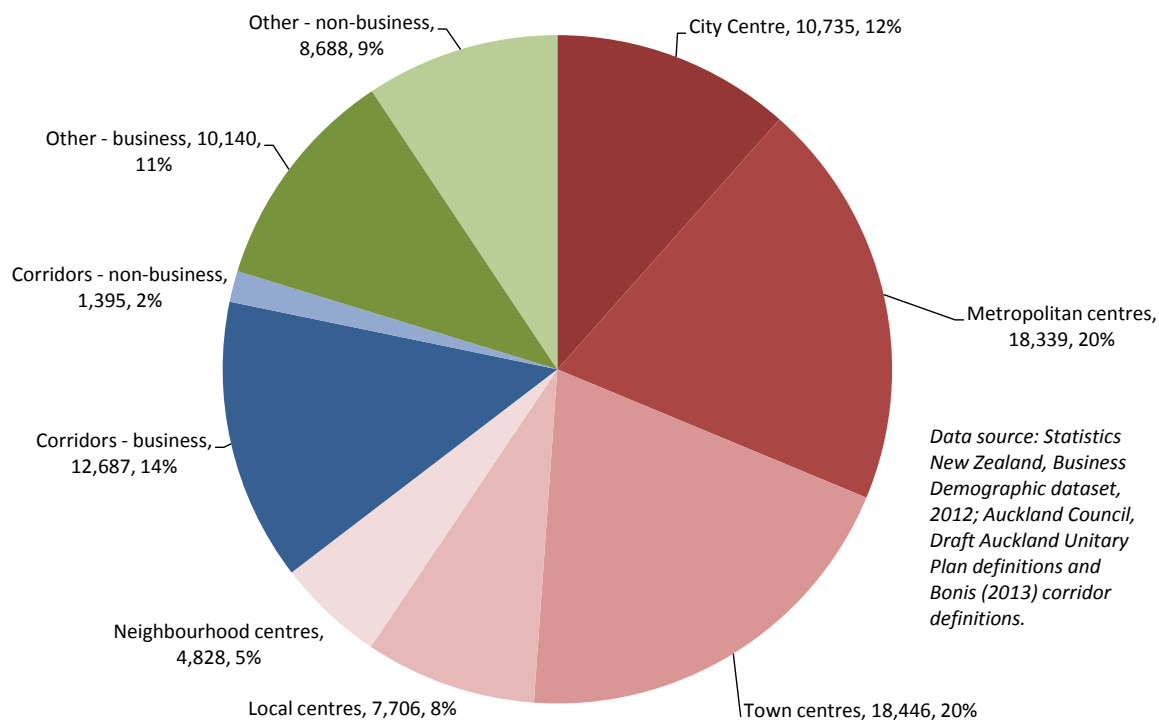
Centres play a key role in retail employment location across Auckland, with the role of larger centres important particularly in accommodating core retail. Nearly two-thirds of Auckland's retail employment is located within centres, with a further 15 per cent in corridor areas. Approximately one-fifth is located outside of both centre and corridor areas. Within centres, retail employment is concentrated into the upper levels of the centre hierarchy, with metropolitan and town centres each containing 20 per cent of retail employment overall. The share of employment located within centres is even higher for food and liquor (75%) and food hospitality and household services (67%) retail categories, and lower for trade (27%), and core retail at 63 per cent.

Core retail has the greatest tendency to locate within the largest centre types, with 30 per cent of employment within metropolitan centres and 18 per cent in town centres. It accounts for 43 per cent of employment within these centre types, and also 37 per cent of employment within corridor areas.

Food and liquor employment also tends to concentrate into larger centres, although typically with greater shares of employment in centres further down the centre hierarchy. It has 30 per cent of employment in town centres and 18 per cent in metropolitan centres. Part of this effect may be due to the spreading of supermarkets across different centres in response to patterns of household demand, compared to core retail, which has a greater tendency to co-locate into fewer, larger centres.

Trade employment is relatively more distributed into corridor areas, and lesser shares in centres. Nearly three-quarters of trade employment is located outside of centres in either corridors (35%) or other non-centre, non-corridor areas (37%) (see Figure 13).

Figure 13. Geographical distribution of retail employment in Auckland by centre/corridor, 2011



The spatial structure of retail employment in Auckland has gradually changed over the 2000 to 2012 period. Larger centres are playing greater relative roles, and increasing shares of employment are also locating in corridors and areas outside of centres and corridors.

Figure 14 shows the share of retail employment in centres has decreased slightly from 69 per cent in 2000 to 65 per cent in 2012, with corresponding increases in corridors, and particularly areas outside of centres and corridors. While the number of employees in centres has grown (+17%) across this period, it has grown faster in areas outside of centres and corridors (+40%) and corridors (+38%).

The effect differs across the centre hierarchy, where metropolitan centres attracted an increasing share of employment (from 18% in 2000 to 20% in 2012), while town centres have shown very little change in employees, with consequent decreases in employment shares from 25 per cent in 2000 to 20 per cent in 2012. Employment growth in metropolitan centres has been driven by core retail, where the relative role for these centres in core retail has increased through time (from containing 25% to 30% of core retail).

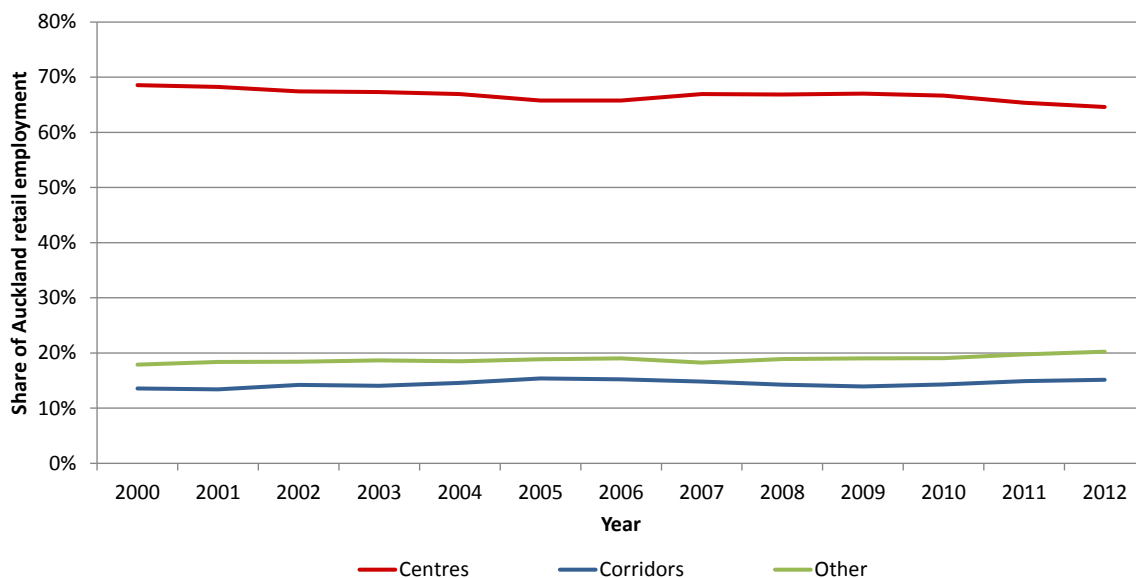
Although a slower growing category, food and liquor has also contributed to the rise of employment within metropolitan centres, growing at double the rate in metropolitan centres

than in Auckland overall. Part of this effect may have been a transfer from town centres, which have experienced net decreases in food and liquor employment (38% to 30%).

Core retail employment has also shown strong growth in business zones outside of centres and corridors. These areas account for the next largest shares of net core retail employment growth. Corridor business zones have also attracted a large share of food and liquor employment growth.

Food hospitality and household services employment has shown relatively different growth patterns to that of the rest of the retail sector, with new growth tending to locate in areas outside of centres and corridors.

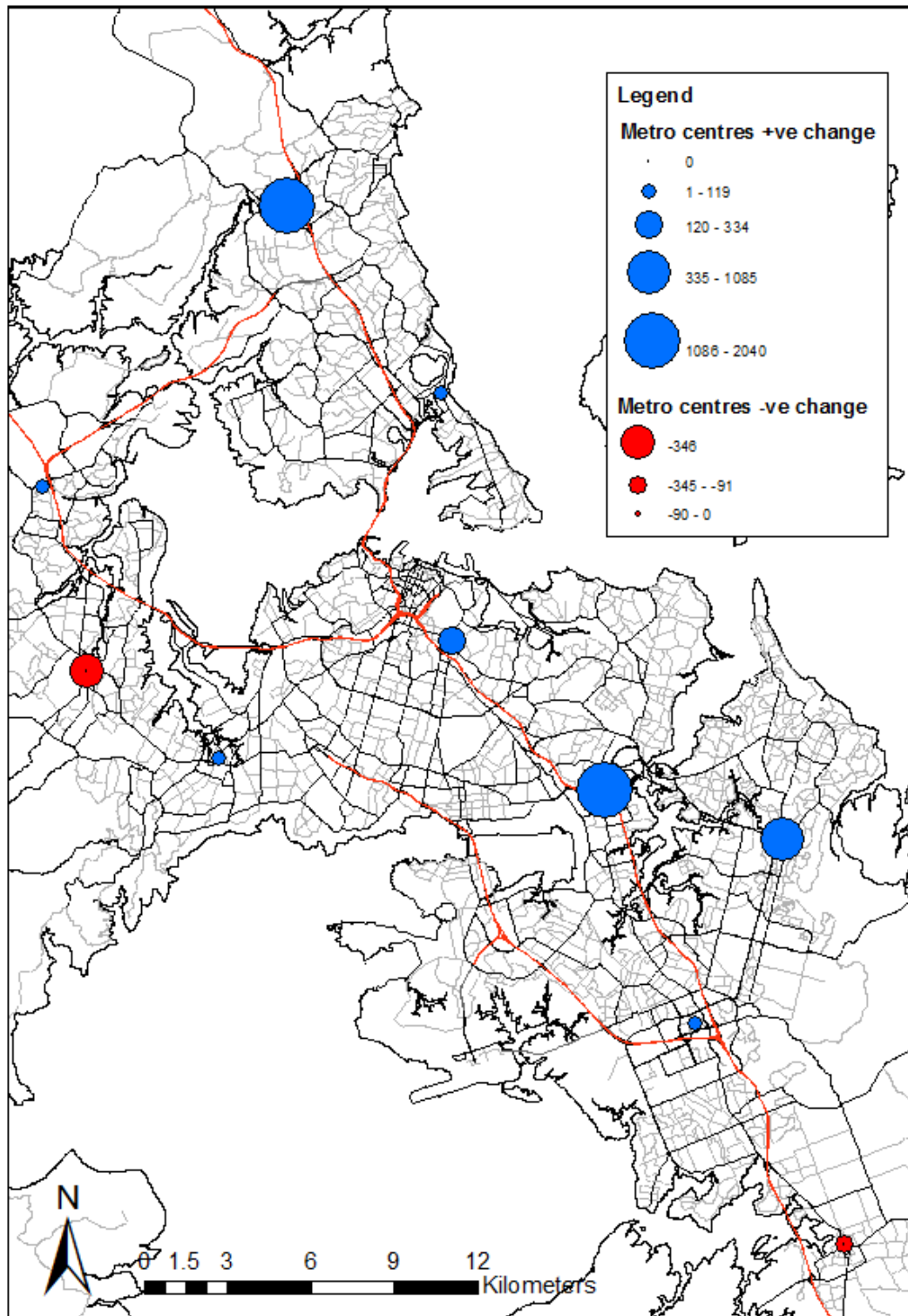
Figure 14. Share of total retail employment in Auckland centres and corridors, 2000-2011



Data source: Statistics New Zealand, Business Demographic dataset, 2000-2012; Auckland Council, Draft Auckland Unitary Plan definitions; Bonis (2013) corridor definitions.

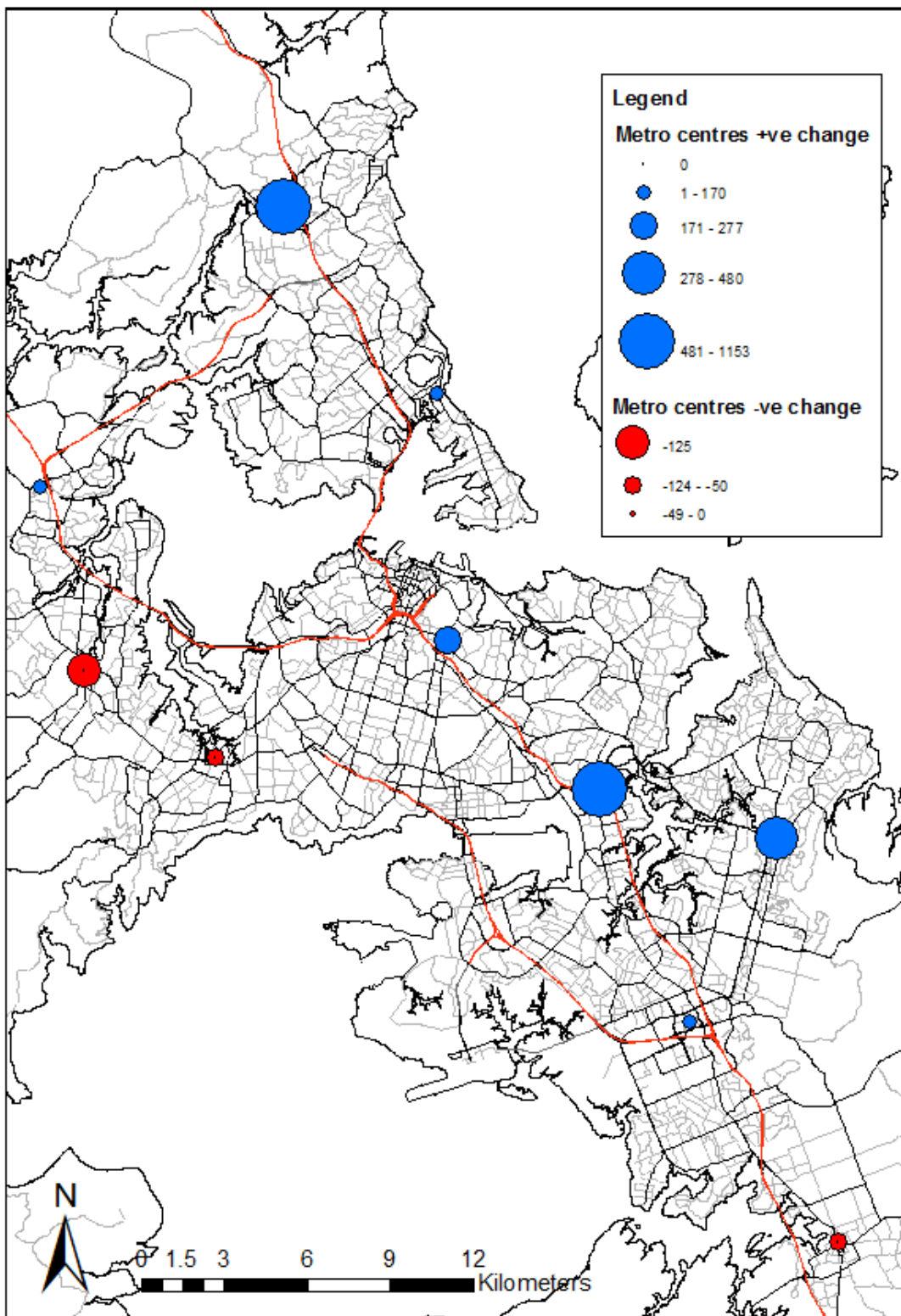
Figure 15 below shows the spatial patterns of net total retail employment change across Auckland metropolitan centres between 2000 and 2012. The largest growth among metropolitan centres has occurred in Albany (+2,040), Sylvia Park (+1,837) and Botany (+1,085) and to a lesser extent, Newmarket (+334), while Henderson (-346) and Papakura (-91) have declined. Substantial positive growth in these centres is largely the result of new retail developments during the previous decade, including the establishment of Sylvia Park and Botany as new major centres.

Figure 15. Net change in total retail employment across Auckland metropolitan centres, 2000-2012



A large share of the growth in these centres has been driven by core retail, where a similar spatial pattern holds true. Figure 16 shows the largest net growth in core retail employment between 2000 and 2012 has occurred in Sylvia Park (+1,153), Albany (+1,127) and Botany (+480), while smaller declines have occurred in Henderson (-125), New Lynn (-55) and Papakura (-50).

Figure 16. Net change in core retail employment across Auckland metropolitan centres, 2000-2012



5 Current retail floorspace supply in Auckland

5.1 Introduction and context

Understanding the existing retail supply base is critical to determining how Auckland's retail market is currently operating in the supply of retail floorspace to household and other demand. It is also key to understanding the appropriate level of floorspace supply to different levels of household demand across Auckland. Within this, it is important to identify:

- i. existing ratios of supply, specifically between floorspace, employees, spend and households, and
- ii. how the ratios vary across space in response to land values, and density of household demand (which itself is connected to land values – see section 6).

These ratios implicitly quantify the productivity of space and crucially, its *geographical variance* which underlies the geographical supply-demand relationships across Auckland. Differences in land values ultimately mean different ratios of supply per unit of demand (e.g. 10 m² vs. 12m² per \$1,000 sales) are appropriate in different locations.

The robustness of estimations and forecasts for current and future retail demand rely heavily on a solid quantification of the existing base. Moreover, they rely on geographically specific information to capture differences across locations in the supply-demand ratios of floorspace. These in turn drive the level of required land supply to meet demand.

The research in this study aims to make an important contribution to understanding the current base through bringing in empirical evidence. Previously, retail bases have either been estimated from calculated ratios then extrapolated across Auckland, or partial surveying of existing net trading areas (then estimated through a conversion to gross floor area (GFA))³⁵ across main centres. Estimation has meant the substantial variations in supply (per unit of demand) have not been able to be captured (as they become circular with the estimation method), which therefore impacts upon the ability to determine the appropriate level of land/floorspace supply to meet household demand by location.

³⁵ The Thompson (2011) study captured the net trading area of retail outlets across all retail *centres* and concentrations of retail across Auckland through surveying individual outlet floor areas using laser pointers. However, a significant quantum of retail spend occurs in outlets outside of these areas, often scattered throughout non-retail precinct areas. Further calculations from the Fairgray (2012) study across 96 main retail centres and areas in Auckland estimate that around one-third of household spending occurs outside of these areas.

Providing an actual quantification of existing supply removes this circularity and enables the significant variations in the productivity of retail space across Auckland to be incorporated within recommendations for land supply.

The various estimates have also yielded substantially different results. While part of the differences are attributable to differing levels of methodological robustness, the differences extend beyond this to reflect the underlying structural variances in methodological approach and assumptions. Correspondingly, significantly different forecasts for retail demand and the required level of space to accommodate retail have ensued. Arguments have also arisen in relation to the presence of existing latent demand for retail in Auckland based on differences between existing and sustainable supply, which are investigated in section 6. Providing an empirical base will overcome these differences and create a platform from which to establish forecasts of future retail demand.

This section outlines the methodological approach taken to establish the current supply of total retail floorspace in Auckland and presents the results. It firstly considers retail floorspace across all formats detailing the construction of floorspace in total. Section 5.4 then describes the methodology undertaken to measure large format retail (LFR) floorspace across Auckland. It also provides a more in-depth analysis of the spatial patterns of LFR due to differences in its spatial configuration to other retail, the ability of different areas to accommodate an increasing share of supply as LFR and the effects of its distribution on existing patterns of retail location and households.

5.2 Methodology

The creation of a retail floorspace supply base was constructed in two key parts (total vs. LFR) to reflect differences in the nature of retail supply and implications for geographical location of different forecasts. Firstly, total retail floorspace was established, including all sized formats; and secondly, the identification of the LFR component. The latter involved large amounts of primary fieldwork and is outlined in section 5.4.1. The following points outline the key stages taken in establishing the total retail base.

5.2.1 Estimating retail floorspace supply in total

Stage 1 – Review of existing estimates of past and current retail supply

Several estimates of existing floorspace were reviewed as an initial stage to identify the likely range of floorspace and the distribution across retail categories. These included the 1996 and 2008 estimates of net trading area (and subsequent conversion to GFA) presented as evidence in chief by Tansley (2009) as part of the Change 6 hearings, which were accepted as the best source of historic and existing supply estimates at the time. Estimates of GFA supply by Market Economics Ltd (2008) in a retail research report prepared for Auckland City Council, and most recently, a study of net trading areas by Thompson (2011) across different Auckland catchments form the other two sources of investigation.

Stage 2 –Property parcel retail information and Auckland Council rating database

Property IQ (PIQ) 2012 data on the existing use of every individual property parcel was obtained for Auckland (over 500,000 commercial parcels). As part of earlier research for the *Capacity for Growth Study*, the Land Use Built Environment Team within Auckland Council's Research, Investigations and Monitoring Unit (RIMU) had connected this using advanced GIS technologies to Auckland Council's rating database. This yielded a highly detailed spatial distribution of actual retail land use at the property parcel level across the entire Auckland area.

Records of retail land use³⁶ were selected, amounting to 3.1 million m² of floorspace. Ninety-five per cent of this space was selected to account for a small share of activity located in these areas that are likely to be non-retail or household services³⁷ (within the retail category frame used here³⁸). This primarily includes banks and small amounts of

³⁶ The specific PIQ categories used here include 'Commercial-Retail-CBD-superior', 'Commercial-Retail-CBD-average', 'Commercial-Retail-CBD-poor', 'Commercial-Retail-Provincial-superior', 'Commercial-Retail-Provisional-average', 'Commercial-Retail-Provisional-poor', 'Commercial-Retail-Suburban-superior', 'Commercial-Retail-Suburban-average', and 'Commercial-Retail-Suburban-poor'. Other PIQ categories that capture parts of the household sector excluded from this analysis include 'Commercial-Service Stn-Provincial/Suburban', 'Commercial-Tourist-CBD/Provincial/Suburban', 'Commercial-Motor Vehicle-CBD/Provincial/Suburban', 'Commercial-Cinema/Hall-CBD/Provincial/Suburban', 'Commercial-Health Operations-CBD/Provisional/Suburban' and 'Commercial-Multiple/Other-CBD/provincial/Suburban', which includes banks.

³⁷ The sensitivity of this assumption was explored. If the share of non-retail floorspace is double what is assumed here (i.e. if 90 per cent were instead applied), then the total retail floorspace identified would reduce by 4.0 per cent; and would increase by 4.0 per cent if no floorspace were assumed to be non-retail (i.e. 100 per cent were instead applied).

³⁸ Estimates of retail floorspace include retail, food hospitality (i.e. hospitality less accommodation), and other household services outlets that are likely to occupy the same areas as retail outlets in a similar format to

medical services being offered mainly within shopping malls, that are estimated to be less than five per cent through calibration across several sites³⁹. Outside of malls (which are often captured as one title within the database) these activities fall within other land use categories within the PIQ dataset.

The PIQ dataset was obtained as at 2012. Direct correspondence with PIQ determined this data is continuously updated on an individual property basis. This occurs in response to several triggers including when a property is bought or sold, when a building consent is obtained (and construction subsequently occurs including both alterations and new building construction) and when a revaluation is conducted on a property. Furthermore, the floorspace contained in the dataset is the record from Auckland Council's rating database and is therefore, used in the rating calculation. The PIQ dataset (and its connection with the rating database) was the best and most comprehensive data on floorspace available, reflecting its use also within the Auckland Growth Model.

Stage 3 – Further selection of retail within the PIQ land use database

An additional 'multiuse-commercial' category within the PIQ dataset contained around 3.3 million m² of commercial floorspace, a component of which is retail. To determine this share, the unique records of the 2,800 units that fell into this category were purchased as a customised order. These provided further breakdowns of the floorspace use within each record, enabling the identification of the retail component.

Approximately 45 per cent of the floorspace within these contained no retail uses and were therefore, discarded. A further nine per cent were recorded as singularly retail, in which case 80 per cent of the ground floor area (identified through the building footprint area) was taken as retail. The remainder of listings contained some retail as secondary uses of

1.0

shops, such as travel agents and hair dressers that attract household expenditure. Other household services that are excluded include banks, gymnasiums, health care providers and education. This delineation ensures consistency with retail groupings within the PIQ dataset as well as with other established retail floorspace forecasts.

³⁹ The use of a 95 per cent selection is likely to be a conservative estimate as the survey frame (and subsequent analysis as per the scope identified for the research) includes a range of household sector activity that is not retail per se (i.e. household services and food hospitality) that would occupy most of the non-retail uses of retail floorspace. As such, there is a low instance of other uses outside of this scope likely to occupy retail premises and that are not captured in other non-retail codes within the database. Direct correspondence with the supplier determined that the PIQ 'retail' classification captures any floorspace that has been fitted out in a manner suitable for shop front uses, and is therefore, consistent with the classification framework (including the 95 per cent selection) used in this research.

the building. It was assumed in these cases that retail made up 50 per cent of the ground floor area of these uses, which constitutes a conservative estimate.

In total, there was 385,000 m² of retail floorspace identified within the multiuse-commercial category, which equates to 12 per cent of the total floorspace within the category. These records were then linked spatially within the GIS system to unique property parcels through the rating database valuation number.

Stage 4 – Incorporation of major shopping centre floorspace stock information

Customised data on the existing stock of floorspace in 50 shopping centres across Auckland was purchased from CBRE Ltd. In total, this covered 1.1 million m² of floorspace and was obtained at the individual centre level, as well as a categorisation of the type of centre⁴⁰.

The floorspace stock for each centre was crosschecked against the PIQ/rating database, and added to the relevant centre area where it was missing. In total, this added a further 280,000 m² of retail floorspace supply.

Stage 5 – Crosschecking floorspace with LFR study

The CBRE Ltd and PIQ/rating database floorspace information was then crosschecked against the empirical data collected in the field in the LFR study (refer to section 5.4). A series of spatial selections were performed within the GIS system to identify LFR building footprints that were not captured by the retail floorspace from the previous stages. This stage also ensured that the *quantum* of LFR floorspace identified within each building footprint was included within the retail listing for the parcel.

In total, this added a further 275,000 m² of retail floorspace. Approximately 35,000 m² of this was supermarkets, other food and liquor, 138,000 m² was core retail, and the remainder (103,000 m²) was trade.

Stage 6 – Disaggregation of floorspace by centre

The retail floorspace information at a property parcel (PIQ/rating database) and building footprint (LFR study and CBRE shopping centre stock) level was then geocoded spatially

⁴⁰ While this data is included within the overall retail base information, raw data is not exclusively published in this report due to conditions of data supply and commercial sensitivity of the data. While this data cannot be released (due to commercial confidentiality agreements), it has been cross checked for accuracy against other sources including the New Zealand Property Council (2009) *Shopping Centre Directory*, aerial photographs GIS measurements (Auckland Council, 2010 and 2012a), Property IQ (2012) floorspace, and building consent data (Auckland Council, 2012). CBRE Ltd hold this floorspace information from the shopping centre plans as they manage many of the leasing (see also section 6).

to meshblocks within the GIS system. Meshblocks were then allocated to the main retail centres (and out of centre areas) across Auckland in alignment with the Fairgray (2012) spend study. This is because these centres reflect the natural boundaries of centres⁴¹, while the Proposed Auckland Unitary Plan centres in many cases contain the centre zone along with adjacent other business/industrial zones that effectively form part of the centre as it has historically emerged. While results have also been analysed specifically by Proposed Unitary Plan zones, this process of aggregation to centres is a crucial part to subsequent analysis of spatial ratio variances and spend/floorspace ratios conducted in this research. The alignment between the Fairgray (2012) centres defined at the meshblock level and those in the Proposed Auckland Unitary Plan at the zoning level are described and displayed in Appendix 4.

5.2.2 Disaggregation of floorspace by retail type

The above stages identified the total quantum of retail, food hospitality and household services floorspace overall. The next stages identify how the share of floorspace across different *types* of retail category were determined or estimated. These included supermarkets and other food and liquor retail, core retail (furniture and housewares, appliances and department stores, recreation, clothing and footwear, and other core retail), trade, and food hospitality and household services. These categorisations reflect both the divisions within the Proposed Auckland Unitary Plan, as well as those typically used within retail current and future floorspace estimations and forecasts. Importantly, these divisions reflect differences in the ratios within supply-demand relationships within the retail sector, and differences in the spatial distribution of retail types arising from the spatial component of the supply-demand relationship. The latter relates predominantly to the economics of supply in terms of frequency and scale of purchase (and required demand catchments and efficiencies in the provision of supply) and the (supply and demand driven) agglomerations of retail (refer to section 3.1 and Appendix 1 for further detail on the configuration of retail types within Auckland).

The following further stages were needed in the breakdown of retail floorspace by type.




Stage 7 – Input known values and establish parameters for estimation

Known values of floorspace by retail type and overall floorspace were put into a table to establish the parameters for estimation by retail type. This is summarised in the stylised table below:

⁴¹ The Fairgray (2012) study went through a process of defining centre boundaries using previous zoning, aerial photographs and spatial employment distribution information. This built upon and aligned with the centres used in the Auckland Growth Model.

Table 5. Known values and parameters for estimation of floorspace by retail type

Retail type	Employment	LFR floorspace	Other floorspace	Total floorspace
Food and liquor	Known value	Known value	Area of estimation	Area of estimation
Supermarkets	Known value	Known value	Area of estimation	Known value
Other food and liquor	Known value	Known value	Area of estimation	Area of estimation
Core	Known value	Known value	Area of estimation	Area of estimation
Furniture and housewares	Known value	Known value	Area of estimation	Area of estimation
Dept stores and appliances	Known value	Known value	Area of estimation	Area of estimation
Recreation, clothing and footwear	Known value	Known value	Area of estimation	Area of estimation
Other core	Known value	Known value	Area of estimation	Area of estimation
Trade	Known value	Known value	Area of estimation	Area of estimation
Food hospitality and services	Known value	Area of estimation	Area of estimation	Area of estimation
Total	Known value	Partially known value	Area of estimation	Known value

Key:  Known value  Partially known value  Area of estimation

The total LFR (less food hospitality and services) floorspace is known for Auckland, along with the total floorspace. Within this, the total floorspace for supermarkets is known as it is assumed all supermarkets fall into the LFR category (with smaller outlets being classified as grocery stores or dairies). The share of supermarkets' employment in the 'supermarket and grocery stores' ANZSIC category is also known by extracting all employment with 15 or more employees.

Stage 8 – Establish floorspace per employee ratios

Overall regional ratios of floorspace per employee were then established by retail type across Auckland. LFR results available at the building footprint level were matched spatially to employment data at the meshblock level through the GIS system. Meshblock data was examined for each individual LFR study record to identify those where reliable information⁴² was available to provide an estimate of the individual stores employment. The employment data was obtained as a customised order to also give a breakdown by

⁴² At fine spatial scales (i.e. meshblocks) Business Demographic information can be unreliable where often firms present within the meshblock are not represented in the data or are coded to the wrong (mostly adjacent) meshblock.

employment size category of the firm for each fine division industry within each Auckland meshblock⁴³.

In total, 55 readings across Auckland were obtained for the trade retailers, and 303 across the four categories of core retail. Ratios of m² per employee varied geographically across Auckland with higher floorspace per employee in areas of lower land value and vice versa. As regional estimates were being generated, it was appropriate to use regional average ratios, with adjustments used in any subsequent sub-regional disaggregation.

A number of key large stores were also noted as missing from the Business Demographic data during this process. The employment in each was estimated using the ratios, then added to the regional employment count to give a more accurate representation of the employment size of each category.

Stage 9 – Estimate LFR share of retail type employment

The floorspace per employee established within the previous stage were used to estimate the share of employment within LFR, with the remainder as small format retail (SFR – i.e. stores up to 450 m²). The following equations illustrate the calculation of LFR employment:

$$EC_{LFRi} = \frac{FS_{LFRi}}{R_{LFRi}}$$

where EC_{LFRi} is the LFR employment in retail type i, FS_{LFRi} is the LFR floorspace of type i identified in the LFR study, and R_{LFRi} is the LFR ratio of floorspace per employee for retail type i identified in stage 8.

The quantum of SFR employment then becomes:

$$EC_{SFRi} = EC_{Ti} - EC_{LFRi}$$

where EC_{SFRi} is the remainder of employment not in LFR of type i, and EC_{Ti} is the total employment for retail type i identified from the business demographic dataset, plus the additional estimated employment from missing significant stores.

⁴³ This meant that within each category, the number of employees within each firm size category could be identified, without estimation required to apportion the share of employment across different outlets where multiple outlets of different sizes were present. For example, a meshblock containing a supermarket and a dairy (both classified under the same industry category), would have separate employment counts as they would be captured under separate cells (i.e. counts within the 0-5 employees vs. 50-99 employees categories) within the table. Without this additional breakdown, estimation would be required to apportion the share of employees into either outlet.

These estimations were carried out across the four core and trade retail categories.

Stage 10 – Estimate quantum of total core and trade floorspace

It was assumed that LFR was 10 per cent more efficient in its employment ratios than other retail formats, making the ratios of floorspace per employee 10 per cent higher for LFR than SFR⁴⁴. It is important to build this assumption into calculating the remaining share of SFR floorspace for each category as it is one of the key drivers of LFR growth in retail supply over the last few decades.

Consequently, approximately 10 per cent smaller ratios of floorspace per employee were applied to estimate the quantum of SFR floorspace by retail type. The SFR share of employment estimated in stage nine was multiplied by the smaller ratios to estimate the quantum of floorspace across the trade and core retail categories. As such, the total floorspace in each category becomes:

$$FS_{Ti} = FS_{LFRi} + \left(EC_{SFRi} * \left(\frac{R_{LFRi}}{1.1} \right) \right)$$

where FS_{Ti} is the total floorspace in retail category i and FS_{LFRi} is the LFR floorspace in retail category i.

The overall ratios of floorspace per employee for each retail type depend upon the distribution of retail floorspace across LFR and SFR categories. The overall core retail ratio was further dependent upon the distribution of floorspace across LFR and SFR within each sub-category of core retail.

Stage 11 – Distribution of floorspace remainder across other floor and liquor, and food hospitality and household services categories

Stages seven to 10 amounted to the allocation of 76 per cent of the identified retail floorspace across categories. The remaining 24 per cent was allocated across the other food and liquor and food hospitality/household services categories. To guide the distribution, assumptions were made around the differential in the floorspace per employee ratio between the two categories, as well as in relation to other categories. The

⁴⁴ Limited quantitative information was available to guide this assumption beyond the premise that LFR is more efficient than SFR established in the literature to explain the increasing share and rapid growth of LFR (from a supply side perspective where employees can cover a larger floor area). If it were instead assumed that LFR employees serve a 20 per cent larger area (than SFR), the total share of floorspace as core would shift from 52 to 49 per cent, the share as trade from 15 to 14 per cent, and the share as food hospitality and household services from 20 to 23 per cent.

differentials between ratios were viewed in the context of those obtained in the Thompson (2011) study⁴⁵.

Employment estimates across all areas surveyed in the Thompson (2011) study were obtained as a subset of total Auckland retail employment. Survey coverage was estimated through aligning reported surveyed centres⁴⁶ with retail centre concentrations identified within the GIS system, then extracting the employment from the corresponding areas. Net trading area surveyed in the study was then converted to GFA using the conversion ratios supplied within the Tansley (2009) Environment Court evidence⁴⁷.

Stage 12 – Comparison of findings to previous studies

The results were then compared to the Thompson (2011), Tansley (2009) and Market Economics (2008) studies on floorspace in relation to both the quantum of floorspace identified and the distribution of floorspace across different retail categories.

5.3 Results

5.3.1 Regional floorspace supply

In 2012/2013 there was 3.86 million m² of retail floorspace in Auckland. Just over half (51%; 1.99 million m²) was in core retail, 15 per cent (562,000 m²) in trade, and 14 per cent (534,000 m²) in food and liquor. The remaining 20 per cent (777,000 m²) was in food hospitality and household services (see Table 6). Within food and liquor, there was 379,000 m² (10% of total floorspace) in supermarkets and within core, the floorspace was distributed across the furniture and housewares (7%; 266,000 m²), appliances and department stores (14%; 550,000 m²), recreation, clothing and footwear (12%; 464,000

⁴⁵ Here, the differentials in floorspace per employee between categories were compared to those from the Thompson (2011) study. The employment within each retail category surveyed in Thompson (2011) was calculated and subsequently applied to the surveyed floorspace to calculate ratios. While the net figures between the studies are different, the comparison made here was on ratios between categories *within* each study.

⁴⁶ Through direct correspondence with the author it was determined that students were sent to survey (with laser pointers to calculate distance) retail centres and retail concentrations in Auckland and requested to survey all retail within the respective centre/concentration.

⁴⁷ There has been disagreement among expert witnesses around which ratios to use, with Fairgray (2009) suggesting 80 per cent overall, which is consistent with Tansley (2009) once categories are consistently aligned; meanwhile, Heath (2009) suggests 70 per cent. The Tansley (2009) figures were used here because they were available at a disaggregated category level and they have previously been supplied to Property Economics Ltd (Thompson's previous firm) (para 3.0.3).

m²) and other core (18%; 708,000 m²) categories. When examined by format, supermarkets (27%), appliances and department stores (27%) and trade (22%) made up higher shares of large format retail floorspace than retail floorspace overall.

Table 6. Auckland retail floorspace by retail type and format, 2012/2013

Retail category	Floorspace			Share by category			Share of FS		FS per employee		
	SFR	LFR	Total	SFR	LFR	Total	as LFR	Employees	SFR	LFR	Total
Food and liquor	129,500	404,800	534,300	5%	28%	14%	76%	17,600			30
<i>Supermarkets</i>	-	378,700	378,700	0%	27%	10%	100%	12,700			30
<i>Other food and liquor</i>	129,500	26,200	155,700	5%	2%	4%	17%	4,900			32
Core	1,276,000	713,300	1,989,300	52%	50%	51%	36%	34,100	57	60	58
<i>Furniture and housewares</i>	112,200	154,200	266,400	5%	11%	7%	58%	2,900	87	96	92
<i>Appliances and Department Stor</i>	166,100	384,400	550,500	7%	27%	14%	70%	10,300	50	55	53
<i>Recreation, clothing and footwe</i>	362,600	101,700	464,200	15%	7%	12%	22%	8,800	52	57	53
<i>Other Core</i>	635,200	73,100	708,300	26%	5%	18%	10%	12,100	58	64	59
Trade	255,200	306,900	562,100	10%	22%	15%	55%	6,800	79	87	83
Hospitality and services	776,800	-	776,800	32%	0%	20%	0%	36,900			21
Total	2,436,100	1,426,900	3,863,000	100%	100%	100%	37%	95,300			41

Overall, 37 per cent (1.4 million m²) of floorspace was in large format retail. The share was higher for supermarkets (100%) (where dairies and small grocery stores are included within 'other food and liquor'), appliances and department stores (70%), furniture and housewares (58%), and trade (55%).

Table 6 also shows that 95,300 people are employed within these sectors, equating to an average of 41 m² of retail floorspace per employee. These ratios were larger across all core retail and trade categories (58 and 83 m² per employee respectively), and lower for food and liquor (30 m²) and food hospitality and household services (21 m²), meaning that each employee in the core and trade categories cover a larger amount of space than in other retail types.

The ratios of floorspace per employee vary substantially across space due ultimately to land values. Sections 6 and 7 provide evidence on these variances and explores their implications in relation to meeting floorspace demand.

At a regional level, there is on average 7.79 m² of retail floorspace per household and 2.54 m² per person. Table 7 disaggregates this by retail and format type. Overall, there is an average of 2.88 m² of LFR floorspace per household, and 4.91 m² of SFR (0.94 m² and 1.60 m² per person respectively). The relativities between these format divisions vary across categories as the share of floorspace as LFR or SFR differs by category.

The largest category, core retail, equates to an average of 4.01 m² per household, with 1.44 m² per household as LFR and 2.57 m² as SFR. A further 1.13 m² is in trade, 1.08 m² in food and liquor, and the remaining 1.57 m² across hospitality and household services.

Table 7. Auckland floorspace per household and person by retail type and format, 2012/2013

Retail category	Floorspace per household			Floorspace per person		
	SFR	LFR	Total	SFR	LFR	Total
Food and liquor	0.26	0.82	1.08	0.09	0.27	0.35
<i>Supermarkets</i>	0.00	0.76	0.76	0.00	0.25	0.25
<i>Other food and liquor</i>	0.26	0.05	0.31	0.09	0.02	0.10
Core	2.57	1.44	4.01	0.84	0.47	1.31
<i>Furniture and housewares</i>	0.23	0.31	0.54	0.07	0.10	0.18
<i>Appliances and Department Stores</i>	0.33	0.78	1.11	0.11	0.25	0.36
<i>Recreation, clothing and footwear</i>	0.73	0.20	0.94	0.24	0.07	0.31
<i>Other Core</i>	1.28	0.15	1.43	0.42	0.05	0.47
Trade	0.51	0.62	1.13	0.17	0.20	0.37
Hospitality and services	1.57	0.00	1.57	0.51	0.00	0.51
Total	4.91	2.88	7.79	1.60	0.94	2.54

Comparison to previous retail floorspace base estimations

Substantial variation exists among the various sources on the existing retail floorspace base in Auckland in relation to both the quantum of supply and the distribution across categories. Table 8 summarises the floorspace estimates presented during the Change 6 hearings (Tansley (2009) and Heath (2009)), as well as two research reports on retail in Auckland (Thompson (2011) and Market Economics Ltd (2008)) (the first columns display the calculations from the present study). While a share of the variation is attributable to different base years of estimation (as shown in the table below), the absolute size of the variation exceeds the expected net annual differences.

Table 8. Comparison of retail supply base estimations for Auckland (m²)

Retail category	2012/2013 calculation		Thompson (2011) study ¹		MEL (2008) study 2007		MEL (2008) 2011 forecast		Tansley (2009) PC6 floorspace		Heath (2009) PC 6
	Floorspace	Share	Floorspace	Share	Floorspace	Share	Floorspace	Share	1996	2008	2008
Food and liquor	534,300	14%	561,649	24%	406,000	15%	445,000	15%			
<i>Supermarkets</i> ²	378,700	10%	396,224	17%	275,000	10%	301,000	10%	214,216	289,584	
<i>Other food and liquor</i>	155,700	4%	165,425	7%	131,000	5%	144,000	5%			
Core	1,989,300	51%	1,212,725	52%	1,340,000	50%	1,470,000	50%	839,593	1,383,500	
Trade	562,100	15%	142,513	6%	547,000	20%	597,000	20%			
Hospitality and services	776,800	20%	395,563	17%	380,000	14%	427,000	15%			
Total	3,863,000	100%	2,312,449	100%	2,673,000	100%	2,939,000	100%			2,224,286

¹ Converted to GFA using Tansley (2009) ratios.

² A share of the supermarkets floorspace in the Thompson study is also likely to include smaller grocery stores and dairies.

All studies are below the level of retail identified within this research, with the most recent Thompson (2011) forming the largest difference (once different years are accounted for) and the Market Economics Ltd (2008) report having the least difference. The greatest relative differences generally occurred in the level of food hospitality and household

services floorspace, followed by core retail and supermarkets. The Thompson (2011) study also had even larger differences in trade floorspace.

The floorspace supply base identified within this study represents the most accurate quantification of retail floorspace in Auckland because it is an empirical evidence base. The floorspace information has been obtained from the Auckland Council rating database (which is used in the Auckland Council, Auckland Growth Model used to conduct Auckland growth capacity modelling), shopping centre information (ultimately from floor plans) and Auckland wide primary field research covering large format retail. Moreover, it is geographically comprehensive, covering all property parcels in Auckland, and available at the property parcel level. While other floorspace estimations may represent the most accurate estimation at the time, they either contain estimations based on employees by area (the ratios of which change geographically), are available at the meshblock rather than property parcel level, or their geographical coverage is unlikely to be comprehensive⁴⁸.

While substantial differences exist in the quantum of floorspace identified, greater consistency is present in some areas within the distribution of floorspace across retail categories. The Thompson (2011) and Market Economics Ltd (2008) reports estimate the share of floorspace as core retail as 52 and 50 per cent respectively, which closely reflects that of the present study (51%). Meanwhile, the share of floorspace in the food and liquor (and within that, supermarkets) category identified in this study (14% and 10%) is more consistent with the Market Economics Ltd (2008) report (15% and 10%), and different to the Thompson (2011) report (24% and 17%). The amount of floorspace in supermarkets (379,000 m²) is above that of the Market Economics Ltd (2008) and Tansley (2009) studies, but below that of the Thompson (2011) report (beyond the differences expected from different base years).

The share of floorspace in Trade (15%) is between that of the Thompson (2011) report (6%) and the Market Economics Ltd (2008) report (20%), and the share in hospitality and services above both of the studies.

⁴⁸ As part of this research, the Thompson (2011) study was analysed for likely geographical coverage in a GIS system to identify comparability with the current study. Direct correspondence with the author determined that students were instructed to go to a list of retail centres (outlined in the Thompson (2011) report) and survey the extent of the retail area. These areas were entered into the GIS system, then overlaid with aerial photographs to determine the extent of the retail area and therefore, the coverage of the survey. When comparing this to the primary LFR field research undertaken as part of this study and the PIQ information, it is likely a large share of retail was not captured, particularly that falling outside of the centre areas, of which there is a significant quantum.

5.3.2 Floorspace disaggregation by Proposed Auckland Unitary Plan zones and corridors

Around two-thirds (65%; 2.5m m²) of Auckland's retail floorspace is concentrated into areas identified as centres in the Proposed Auckland Unitary Plan. A further 17 per cent (655,000 m²) is located in corridors. Within this, town centres account for 24 per cent (920,000 m²) of floorspace, followed by metropolitan centres (20%; 772,000 m²) (see Table 9). When taking into account differences in the number of centres by type, a metropolitan centre contains on average over three times the amount of floorspace in a town centre (77,000 m² compared to 24,000 m²) (see Table 10).

Table 9. Distribution of retail floorspace across Proposed Auckland Unitary Plan centres and zones by format type, 2012/2013

Centre/zone	Large format		Small format		Total		Share as LFR	Share as SFR
	Floorspace	Share	Floorspace	Share	Floorspace	Share		
City Centre	29,200	2%	237,600	10%	266,800	7%	11%	89%
Metropolitan centres	364,600	26%	407,100	17%	771,600	20%	47%	53%
Town centres	265,700	19%	654,200	27%	919,900	24%	29%	71%
Local centres	76,500	5%	222,300	9%	298,800	8%	26%	74%
Neighbourhood centres	13,900	1%	222,300	9%	236,200	6%	6%	94%
Centres	749,800	53%	1,743,500	72%	2,493,300	65%	30%	70%
Mixed Use	85,600	6%	95,700	4%	181,300	5%	47%	53%
General Business	51,500	4%	31,300	1%	82,800	2%	62%	38%
Heavy Industry	900	0%	1,000	0%	1,900	0%	45%	53%
Light Industry	208,400	15%	159,500	7%	367,900	10%	57%	43%
Other	5,500	0%	15,500	1%	21,000	1%	26%	74%
Corridor areas	351,800	25%	303,100	12%	654,900	17%	54%	46%
Mixed Use	60,100	4%	112,100	5%	172,200	4%	35%	65%
General Business	73,000	5%	38,200	2%	111,200	3%	66%	34%
Heavy Industry	2,600	0%	14,200	1%	16,700	0%	15%	85%
Light Industry	161,000	11%	95,500	4%	256,400	7%	63%	37%
Other	28,600	2%	129,600	5%	158,200	4%	18%	82%
Outside of centres and corridors	325,200	23%	389,600	16%	714,800	19%	45%	55%
Total	1,426,900	100%	2,436,100	100%	3,863,000	100%	37%	63%

Table 10. Average floorspace size of Proposed Auckland Unitary Plan centres, 2012⁴⁹

Centre/zone	Total		Average floorspace per centre (m ²)
	floorspace across all centres (m ²)	Number of centres	
City Centre	266,800	1	267,000
Metropolitan centres	771,600	10	77,000
Town centres	919,900	39	24,000
Local centres	298,800	66	5,000

⁴⁹ Changes since the Proposed Auckland Unitary Plan April (2013) zones mean that there are now 43 town centres.

The pattern of SFR is even further concentrated into centre areas, with nearly three-quarters (72%; 1.7m m²) of floorspace located within centres. A further 12 per cent (303,100 m²) is located in corridors. While LFR is also concentrated into centre and corridor areas (77%; 1.1m m²), corridors play a larger relative role (than for SFR), containing one-quarter (25%; 351,800 m²) of LFR floorspace. However, SFR and LFR are distributed differently across the centre structure, where LFR is more concentrated into larger centres. Metropolitan centres contain 26 per cent (365,000 m²) of LFR floorspace, compared to 17 per cent (407,000 m²) of SFR. This relative concentration of LFR into larger centres can also be seen in the higher share (47%) of floorspace as LFR in metropolitan centres, compared to both its share of centre floorspace overall (30%) and total regional retail floorspace (37%).

LFR plays an even higher relative role in corridors, where it accounts for 46 per cent of total retail floorspace. Within these areas, it tends to concentrate into light industrial zones, which accommodate 26 per cent (369,400 m²) of the region's total LFR (on areas within (15%) and outside (11%) of corridors). Mixed use (6%; 85,600 m²) and general business zones (4%; 51,500 m²) contain the next largest shares of LFR within corridors. SFR follows similar patterns within corridor areas.

A substantial share of Auckland's retail floorspace is located outside of centre and corridor areas (19%; 714,800 m²). Within these areas, light industrial zones contain the largest amount, followed by mixed use and general business zones. These areas also play a greater relative role for LFR, which makes up 55 per cent of their total retail floorspace. Half (50%) of the LFR floorspace in these areas is also located on light industrial zones.

5.3.2.1 Metropolitan centres

Given the importance of metropolitan centres, further consideration is given here on an individual centre basis. The left hand side of Table 11 displays the quantum of retail floorspace by format type within each metropolitan centre, defined by the 'metropolitan centre' zone within the Proposed Auckland Unitary Plan. Albany is the largest metropolitan centre containing 148,100 m² of floorspace, followed by Manukau (88,500 m²), Henderson (86,100 m²) and Sylvia Park (84,900 m²). Other than Sylvia Park, these centres are located in the outer suburban areas of Auckland and play a greater relative role for households (seen through market share in household spend) than metropolitan centres in more central areas where a greater density of centres exist (Fairgray, 2012). Furthermore, a higher share of floorspace is located within centres in southern and western areas of

Auckland compared to the North Shore where a higher share of the retail offering is dispersed through non-centre industrial areas.

With the exception of Westgate, centre size broadly corresponds with the share of floorspace as LFR, where larger centres tend to have higher shares of their floorspace as LFR. The share of LFR is high in several of these centres due to the inclusion of LFR centres within the metropolitan centre area.

Table 11. Floorspace distribution by metropolitan centre

Centre	Draft Unitary Plan metropolitan centres					Fairgray (2012) centres				
	Large format	Small format	Total floorspace	LFR share of centre	Share of Auckland	Large format	Small format	Total floorspace	LFR share of centre	Share of Auckland
Albany	99,600	48,500	148,100	67%	3.8%	99,600	50,200	149,800	67%	4%
Botany	42,900	27,400	70,400	61%	1.8%	71,200	34,900	106,000	67%	3%
Henderson	44,600	41,500	86,100	52%	2.2%	45,100	46,500	91,600	49%	2%
Manukau	38,600	49,900	88,500	44%	2.3%	118,400	108,800	227,200	52%	6%
New Lynn	33,000	45,800	78,700	42%	2.0%	40,800	57,800	98,600	41%	3%
Newmarket	10,800	57,100	67,900	16%	1.8%	18,600	88,500	107,100	17%	3%
Papakura	16,700	52,300	69,000	24%	1.8%	16,700	52,400	69,100	24%	2%
Sylvia Park	47,000	37,900	84,900	55%	2.2%	52,500	43,400	95,900	55%	2%
Takapuna	6,100	36,400	42,500	14%	1.1%	6,100	36,700	42,800	14%	1%
Westgate	25,200	10,300	35,500	71%	0.9%	37,000	13,200	50,200	74%	1%
Total across selected centres	364,600	407,100	771,700	47%	20%	506,100	532,300	1,038,300	49%	27%

Several of these centres also have significant amounts of retail floorspace located on areas adjacent to the 'metropolitan centre' zone effectively operating as a larger centre in conjunction with the retail located specifically within the centre zone. The corresponding centres within the Fairgray (2012) study capture these wider areas where the methodology defined the centres through the extent of the business zoned area surrounding the middle of the centre. The right hand side of Table 11 displays the floorspace within these wider centre areas. Here, Manukau is the largest centre, containing 227,200 m² of floorspace with the inclusion of retail in the Supa Centa area and significant amounts of retail floorspace located in the adjacent light industry and general business zoned areas. Other centres showing large amounts of additional floorspace between the two centre definitions are Botany, Newmarket and Westgate.

The role and functioning of metropolitan centres in relation to their geographic location and surrounding household catchments is explored in section 6.2.

5.3.2.2 Spatial distribution of floorspace across Auckland

The methodology described above (see section 5.2) yielded retail floorspace figures at the property parcel level across Auckland. Figures 17 to 19 are working maps⁵⁰ that show examples of the mapped outputs of this analysis at varying levels of spatial resolution. Each map shows the property parcels that contain retail land uses across Auckland along with the footprints of buildings containing LFR uses⁵¹. These are overlaid with Proposed Auckland Unitary Plan centre and other business zones (i.e. Business Park, Mixed Use, General Business, Light Industrial and Heavy Industrial), and areas contained within a 400 metre buffer zone of arterial road corridors identified within the Planz Consultants Ltd report (Bonis, 2013). A full set of detailed maps of total retail supply (i.e. LFR and SFR) by meshblock in Auckland in 2012/2013 is contained in Appendix 5.

⁵⁰ These are working maps and information on retail floorspace (such as changes from new developments or upgrades) will be updated through time as it becomes available. Part of this process may include the incorporation of information from retailers.

⁵¹ Areas where a LFR building footprint is shown, but the property parcel is not registered as retail indicate areas identified in the field as having retail land uses, but not registered on the commercial land use database as retail. In many cases these included LFR in industrial type areas. In a couple of instances, major shopping centres were registered as a separate category, but floorspace was still captured through cross-checks against the CBRE Ltd shopping centre database.

Figure 17. Retail floorspace in the eastern City Centre and fringe area, 2012/2013

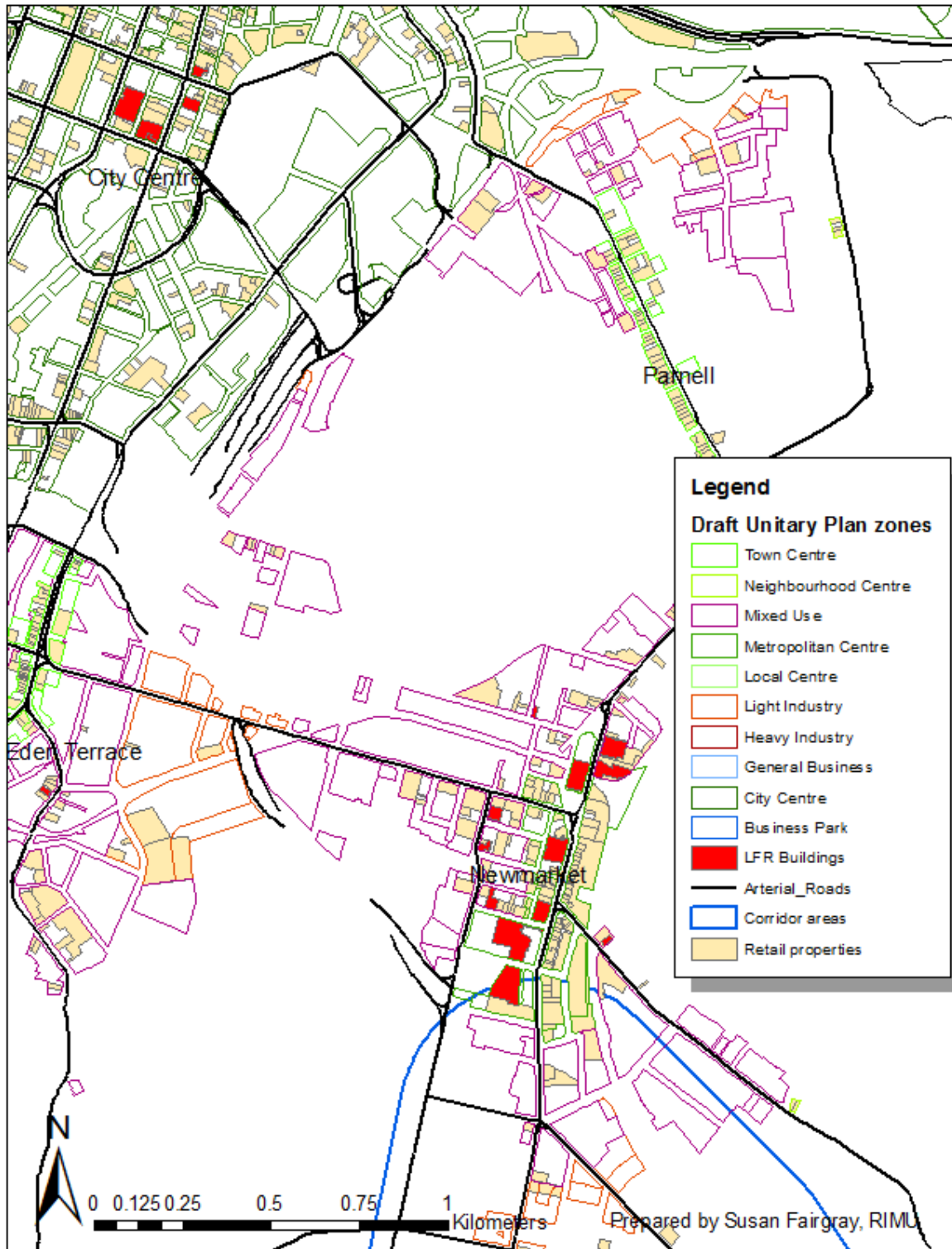


Figure 18. Retail floorspace in Manukau metropolitan centre and surrounding area, 2012/2013

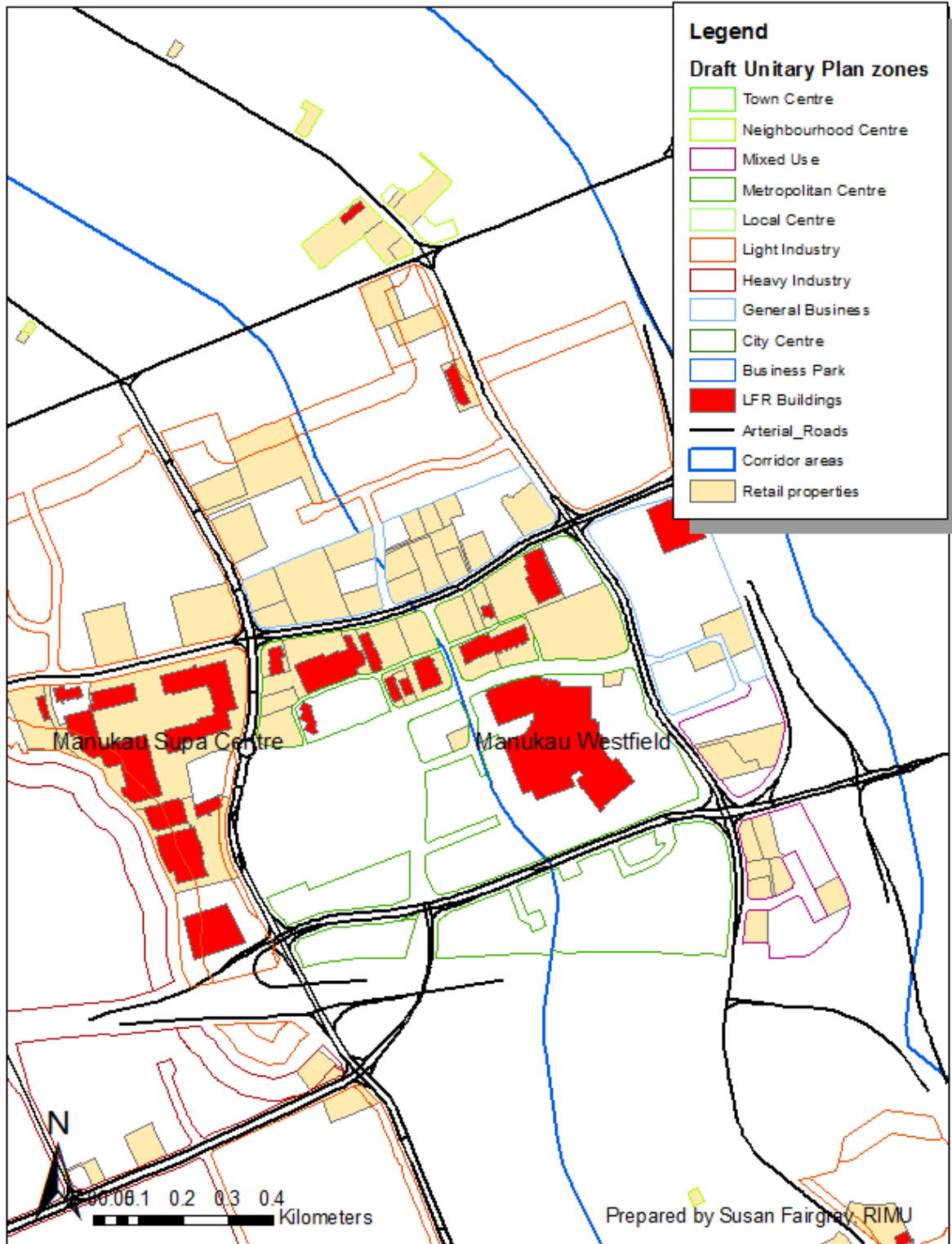
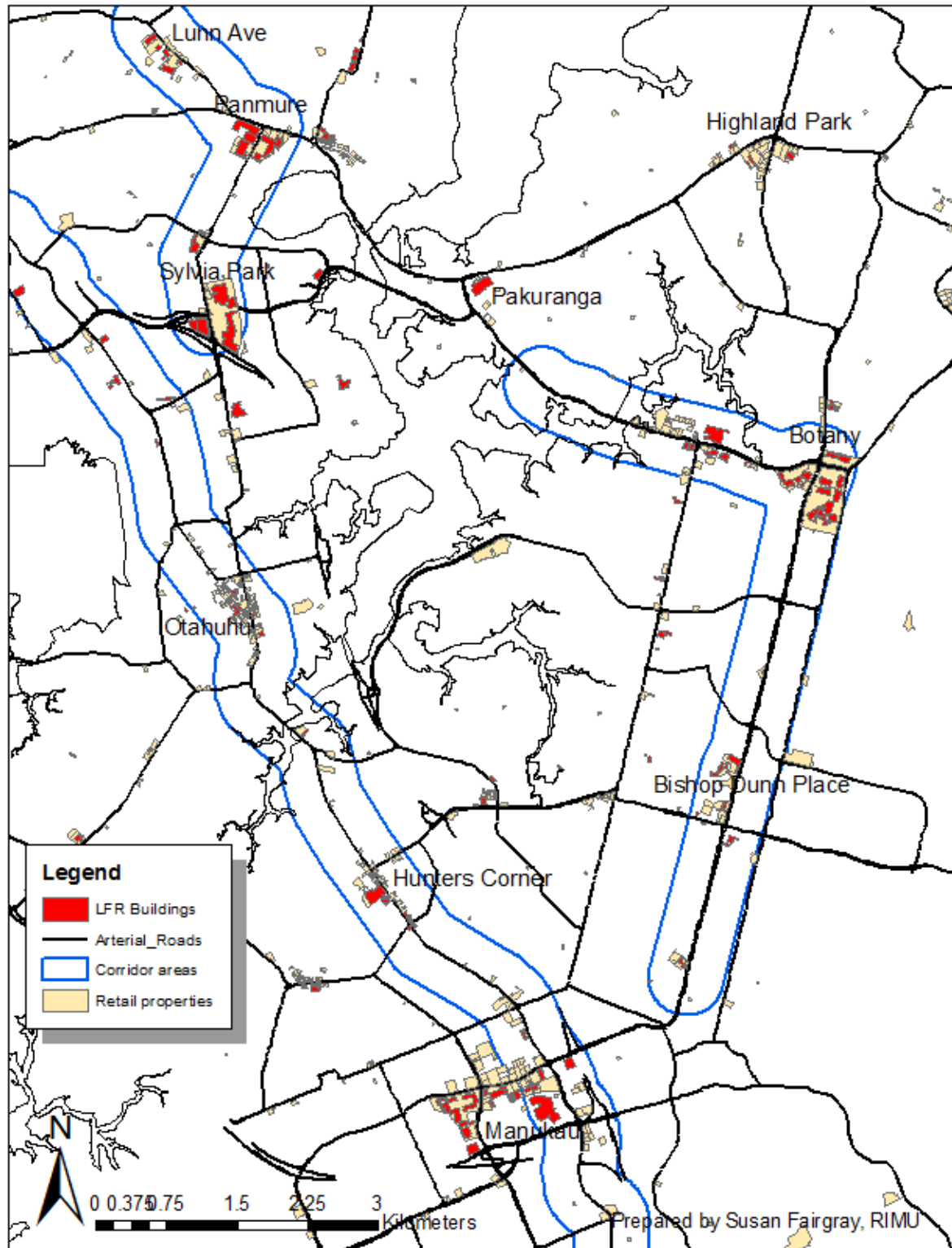


Figure 19. Selected sub-regional view of retail floorspace in Auckland, 2012/2013



5.4 Distribution of large format retail⁵²

The distributional location of large format retail (LFR) across Auckland has major implications for household amenity, urban form and the functioning of centres, as well as the supply of land for other sectors. Changing patterns of consumer demand and retail supply have resulted in increasing shares of retail floorspace as LFR, generating significant locational impacts across Auckland due to the nature and size of retail space available within existing centre locations.

Prior to this study, the exact quantum and location of LFR within and across Auckland formed an important gap in retail information. It has been key to fill this gap to:

- i. Obtain a better understanding of the current retail market in relation to patterns of supply.
- ii. Identify non-centre areas of existing retail land use to be recognised within the Unitary Planning process.
- iii. Provide a baseline from which to calculate any changes from new retail development/changes in retail development and future household demand – i.e. inform baseline floorspace demand estimates.

Consequently, significant fieldwork and desktop research has been undertaken as part of this study to identify the exact location and quantum of LFR across Auckland.

5.4.1 Methodology⁵³

An incrementally staged approach was taken to identify LFR across Auckland, on the anecdotal basis that LFR exhibits significant patterns of co-location with other LFR and with main transport nodes. Hence, the first stage involved a desktop exercise to identify the meshblock locations of all *major* LFR stores in Auckland⁵⁴. This provided a broad structural pattern of key LFR concentrations across Auckland.

⁵² The findings in this section draw upon a study of large format retail across Auckland. A full range of detailed findings will be released in an upcoming report, Fairgray, S., Rohani, M. and Hitchins, H. 2013 *Large Format Retail in Auckland: March 2013*, Auckland Council Technical Report 2013/XXX.

⁵³ The significant assistance in fieldwork and desktop collation of information by RIMU economic analysts Hadyn Hitchins and Mehrnaz Rohani is gratefully acknowledged.

⁵⁴ Larger LFR stores of around 1,500 square metres GFA and above formed the focus of this exercise. Examples include the major retailers of Mitre10, The Warehouse, Countdown, etc.

Queries were then conducted on council rating assessment databases to identify all rating assessments that were retail and were greater than 450 metres squared⁵⁵. This data was displayed spatially through a GIS system to further identify the broad spatial structure of LFR across Auckland. Spatial building consent databases were also searched to identify any consents issued for developments containing 450m² or more retail floorspace. Lastly, zoning files were overlaid to identify all other sites in Auckland that potentially contained LFR⁵⁶.

Significant fieldwork across Auckland was then undertaken across the locations identified in the above process. All locations were driven through with any LFR stores visually identified and recorded by location in the field⁵⁷. Retail operations with trading or storage area (e.g. car yards and hardware store yard trading area) requiring greater than 450m² of space were also included on the basis that these activities constituted a need for space for the retail activity. However, only floorspace per se from these outlets has been included within the analysis.

All stores identified within the field were then measured against aerial photographs and building footprint files to identify gross floor area (GFA). GFA represents the most accurate measure as it reflects the space requirements of a retailer (with parking excluded as this may change with policy changes), as well as requested for consistency from the Environment Court during the Change 6 hearings (ENV-2007-304-000472: 3.0.1).

Retail outlets were then assigned ANZSIC⁵⁸ retail codes and categorised using similar classifications to other retail floorspace sources (Market Economics Ltd, 2008; Tansley, 2009). For the purposes of this analysis, categories were then coded to include the divisions of retail within the Proposed Auckland Unitary Plan (where specifically

⁵⁵ While this provides an important source of information it does not directly identify all LFR floorspace across Auckland as a significant share of cases include single rating assessments greater than 450 m², but are divided into many smaller retail spaces; cases where LFR is made up of several small rating assessments and therefore, not registering as LFR; and also contains a large quantum of floorspace identified as 'mixed use commercial' containing retail and other uses without further information. As such, this information was used as a guide to identify likely concentrations of LFR across Auckland to determine the most efficient driving routes, while the field research overcame this limitation through the collection of primary data from all of Auckland.

⁵⁶ The focus here included all business zones rather than just zones that automatically allow for retail. Naturally, this resulted in a focus on centres, corridors and main business/industrial areas. Retail development occurring outside of these areas would be identified through resource consents where the land use differed to that allowed for within a zone.

⁵⁷ Analysts were requested to identify any outlets that could potentially be LFR as floorspace was checked subsequently in the process and outlets not meeting the threshold of 450 m² excluded.

⁵⁸ Australia New Zealand Standard Industrial Classification 2006 system (Statistics New Zealand, 2006).

identified)⁵⁹. As a result, large format retail has been analysed across the following disaggregation of retail (see also Appendix 1):

- i. Core retail⁶⁰
- ii. Supermarkets with 3,000 m² floorspace or greater
- iii. Supermarkets with less than 3,000 m² of floorspace⁶¹
- iv. Other food
- v. Liquor retail
- vi. Trade suppliers – including automotive retail (i.e. shop oriented car parts suppliers such as Repco and Supercheap Auto oriented toward the general public⁶². Car yards, parts yards and fuel retailing are excluded), building suppliers, landscape suppliers and garden centres.

Within the ANZSIC “supermarkets and grocery stores” division, outlets were further grouped into supermarkets with 3,000 m² floorspace or greater and those with less than 3,000 m² floorspace. During the time of analysis this division reflected the zoning rules proposed for supermarkets by different sizes in the Proposed Auckland Unitary Plan. It has now been updated to 4,000 m² floorspace.

A high share of retailers in the ‘trade suppliers’ category also included substantial non-parking yard areas that are required for their operations. These were measured and reported on separately.

Any outlets deemed to be situated predominantly within the wholesale sector were then removed⁶³.

⁵⁹ In some cases, the Proposed Auckland Unitary Plan retail categories include non-retailing activities outside of the retail sector (accommodation hospitality, showhomes, hire premises and office equipment). Consequently, these have been excluded from this analysis, where the focus is on retail. Further work is required within the automotive car and fuel sales sector, which is not included within this analysis.

⁶⁰ Department stores have been included under core retail to be consistent with other sources of retail analysis and evidence.

⁶¹ At the time of analysis there was a 3,000 m² GFA supermarket floorspace distinction within the Draft Unitary Plan, meaning a 3,000 m² threshold disaggregation was used for analysis. This has since changed to 4,000 m² GFA.

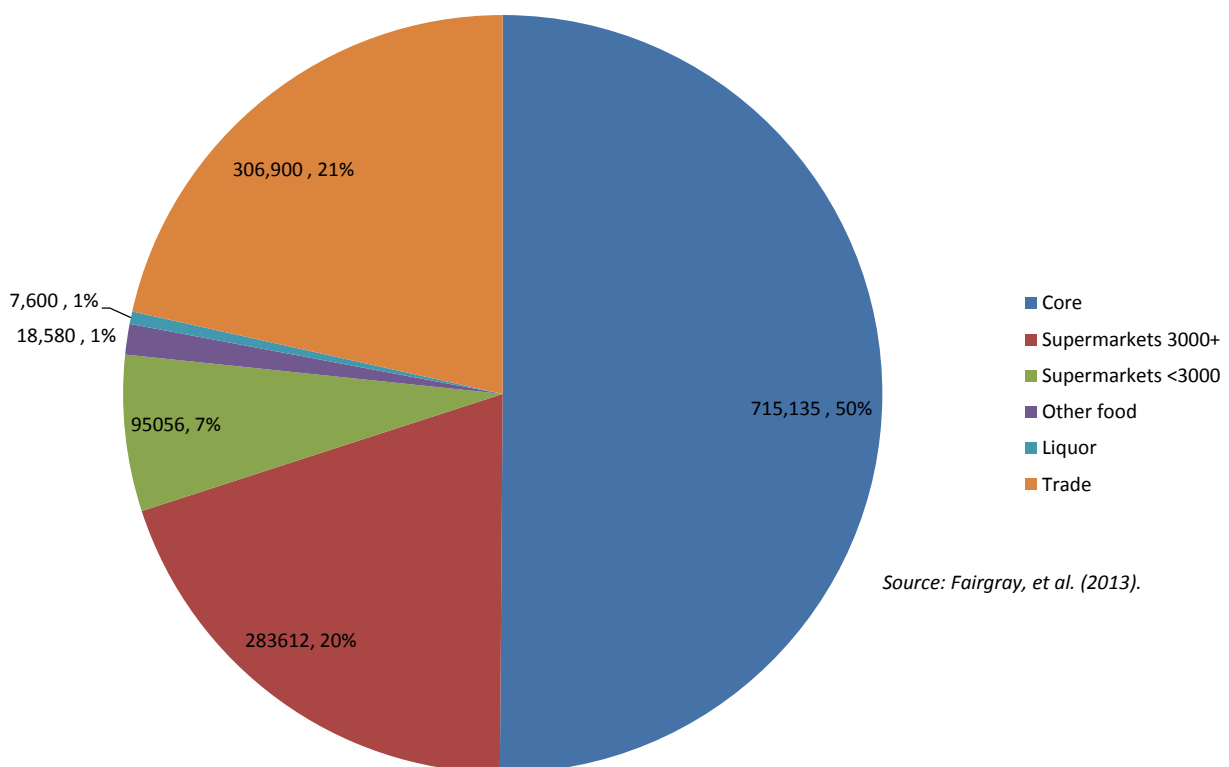
⁶² Trade suppliers is the Proposed Auckland Unitary Plan term to capture retail in the hardware, garden and related categories. The analysis here includes businesses classified within the retail sector and excludes those that are primarily serving a wholesale function where most of their revenue is from businesses purchases. This was subject to judgement by the analysts within the field and was guided by the physical set-up of the businesses with traditional shop fronts likely to attract household customers and is therefore, likely to be subject to some error.

⁶³ Examples include businesses such as ITM where sales are predominantly to business customers rather than households.

5.4.2 Results

In total, 809 retail outlets of 450m² or greater were identified across Auckland, with a combined floorspace area of 1.4million m²⁶⁴. A further 150,000 m² of outdoor yard space is used by 68 of these outlets in the trade⁶⁵retailing category. Figure 20 shows the distribution of floorspace by retail type. Half (50%; 715,100m²) of floorspace was core retail, followed by over one-quarter (27%; 378,700m²) in supermarkets and one-fifth (21%; 306,900m²) in trade.

Figure 20. Large format retail floorspace (GFA) by retail type in Auckland, 2013



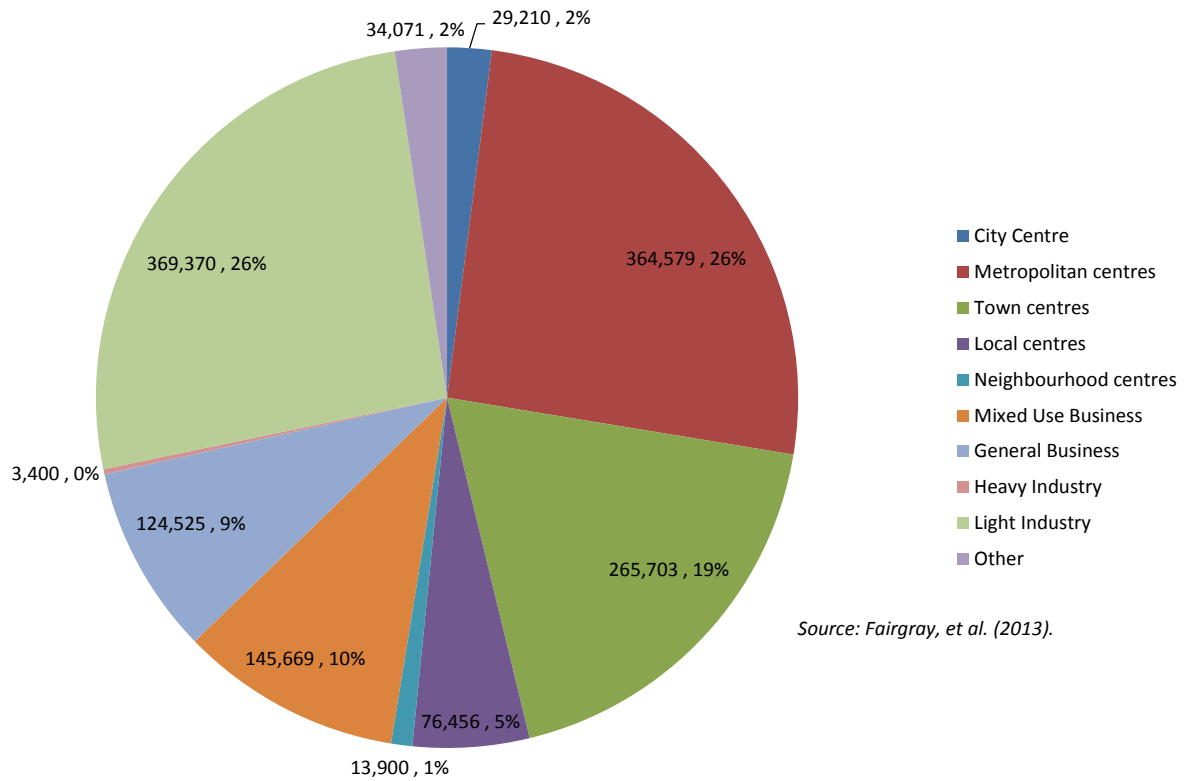
Light industrial zones (26%; 369,400) and metropolitan centres (26%; 364,600) contained the largest shares of floorspace, followed by town centres (19%; 265,700m²). The remainder occurred in mixed use zones (10%; 145,700m²), general business zones (9%;

⁶⁴ This currently excludes car yards and fuel sales as further work is being undertaken to separate floorspace area from yard area. The overall share of actual floorspace (as distinct from land coverage) within these categories is relatively small and will have limited impact upon the results. The trade category also excludes hire premises and office equipment sales as these fall outside the retail sector.

⁶⁵ These are now referred to as 'Trade suppliers' in the Proposed Auckland Unitary Plan.

124,500m²) and local centres, the city centre, areas outside of business zones, neighbourhood centres and heavy industry zones (combined 11%; 157,000m²) (see Figure 21).

Figure 21. Large format retail floorspace (GFA) by location in Auckland, 2013



Source: Fairgray, et al. (2013).

Significant differences exist in the geographical patterns of different types of large format retail. Figures 22 and 23 show firstly the distribution of each retail type *across* different areas, and secondly, the composition of floorspace across retail types *within* different areas.

Figure 22. Large format retail floorspace by retail category across areas in Auckland, 2013

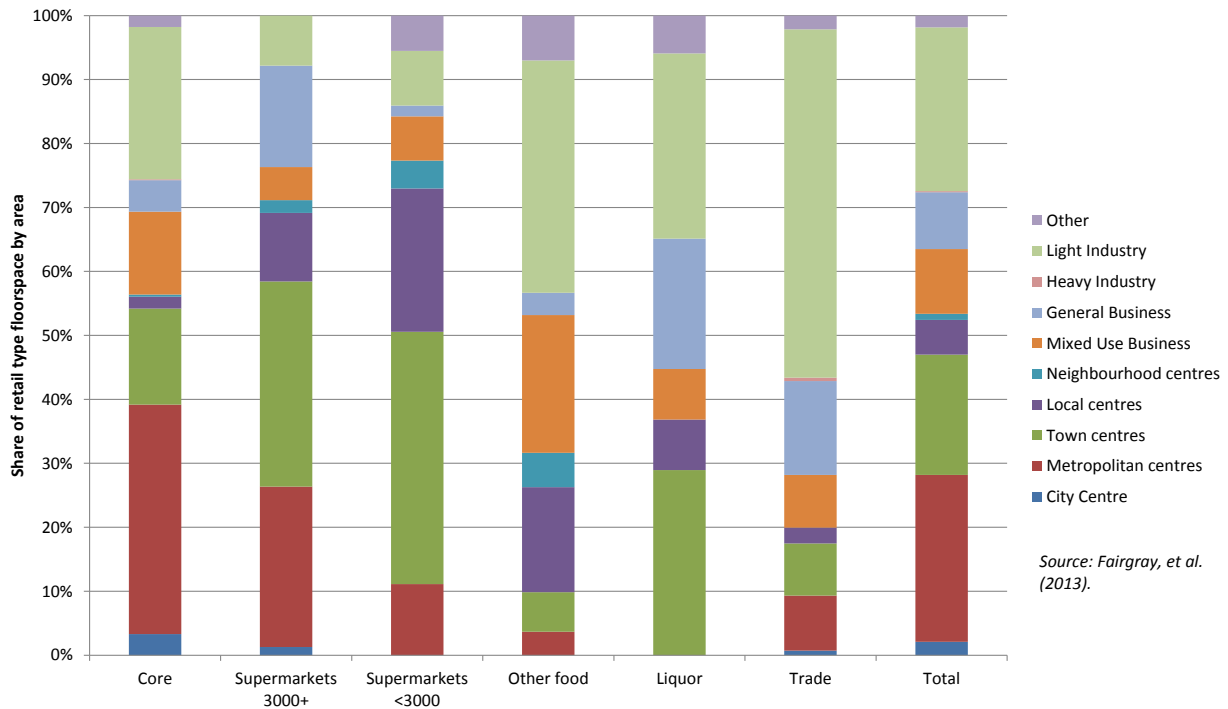
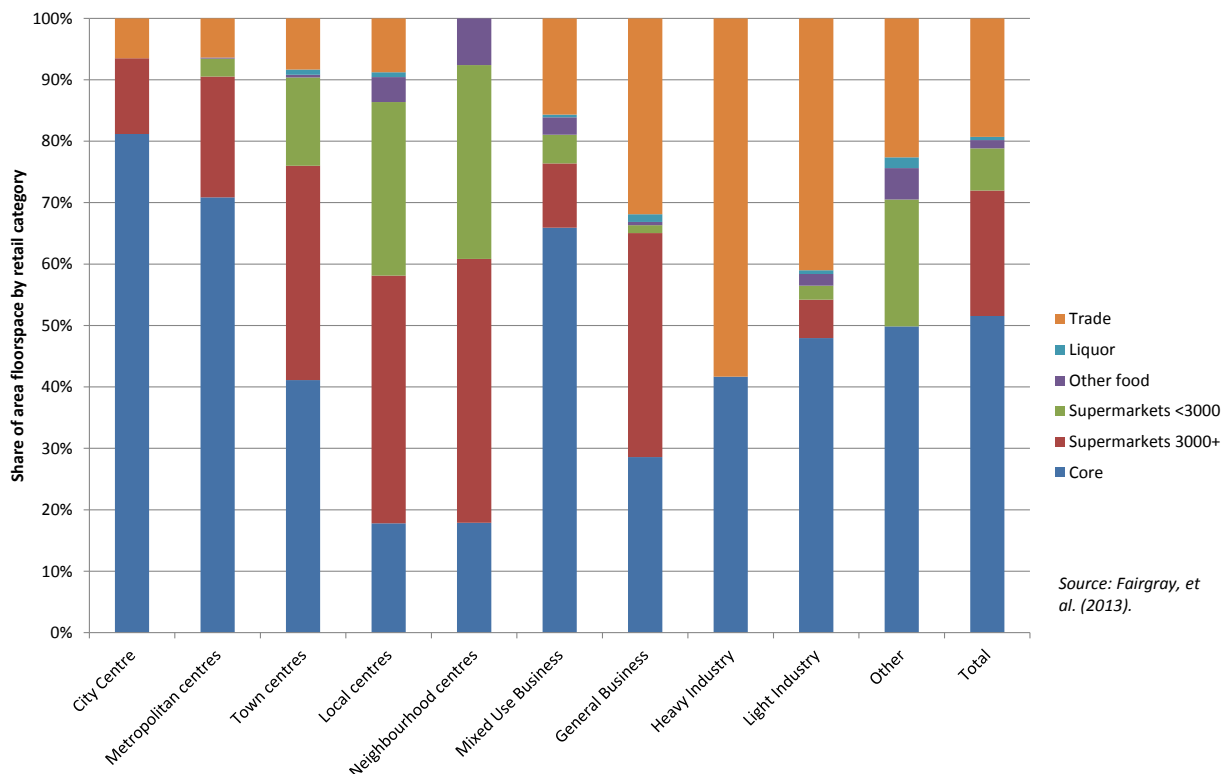


Figure 23. Large format retail floorspace within different areas by retail category across Auckland, 2013



Core retail, supermarkets (3000+) and supermarkets (<3000) are more concentrated into centres than other retail types, with 56, 69 and 73 per cent of large format retail floorspace respectively in centres. Metropolitan and town centres play the largest role here, with 51,

57 and 51 per cent of core, supermarkets (3000+) and supermarkets (<3000) respectively located in these areas. Within this, core retail has a higher share (36%) of floorspace in metropolitan centres, while town centres play a larger relative role for supermarkets.

Conversely, trade LFR has a larger share of floorspace located on business zoned land outside of centres (75%), with only one-fifth (20%) located within centres. Within these areas, light industrial zones play a key role, containing over half of the trade LFR floorspace (52%).

Correspondingly, core retail accounts for the dominant share of large format retail floorspace in the city centre (81%) and metropolitan centres (70%), as well as a significant share in town centres (40%). Supermarkets also have a significant presence in centres, accounting for 71, 68, 48 and 22 per cent of large format floorspace in neighbourhood, local, town and metropolitan centres respectively – i.e. generally, the relative role of supermarkets (in large format retail floorspace) increases as centre size decreases⁶⁶.

Importantly, core retail and supermarkets also account for a large share of large format retail floorspace in business zones outside of centres. Core retail contributes two-thirds (66%) of large format retail floorspace in mixed use zones and 48 per cent in industrial areas. Meanwhile, supermarkets make up 38 per cent of the large format retail floorspace in general business zoned areas.

Figures 24 to 26 show selected examples of mapped outputs from the large format retail study across Auckland. They identify the quantum of large format retail floorspace by meshblock, and the building footprint within the meshblocks where the floorspace is located. Unitary plan centre and business zone boundaries (draft) are also overlaid to illustrate where floorspace specifically occurs in relation to these zones. A full set of regional maps at both broad and smaller centre-specific scales are available on compact disc in Appendix 6 and within the Fairgray, et al. (2013) study.

⁶⁶ This is not to say the role of supermarkets for the centre as a whole increases as centre size decreases as the share of large format retail floorspace of total centre floorspace is likely to change with centre size and type.

Figure 24. Wairau Valley area large format retail floorspace quantum and building footprints, 2013

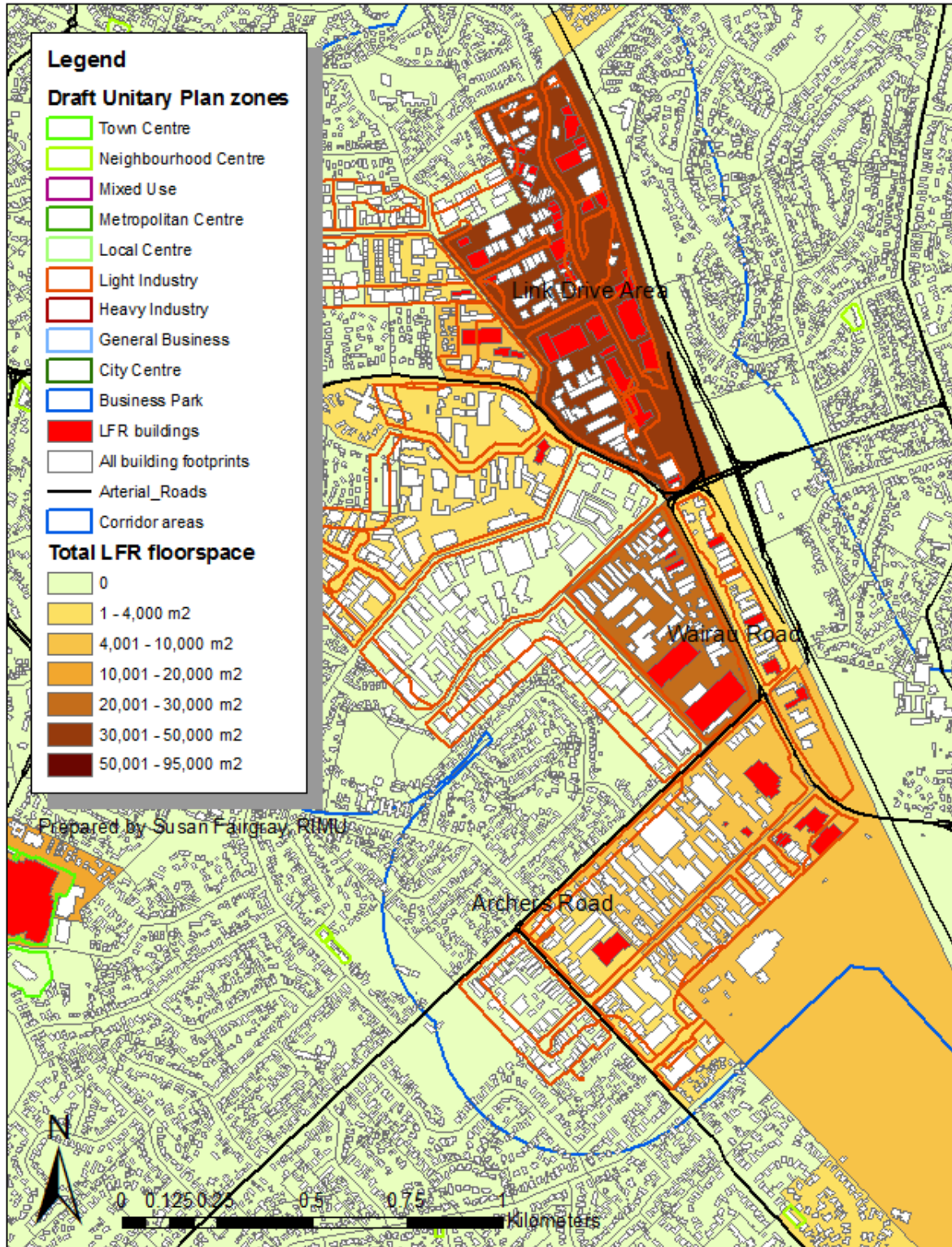


Figure 25. Albany/Rosedale area large format retail floorspace quantum and building footprints, 2013

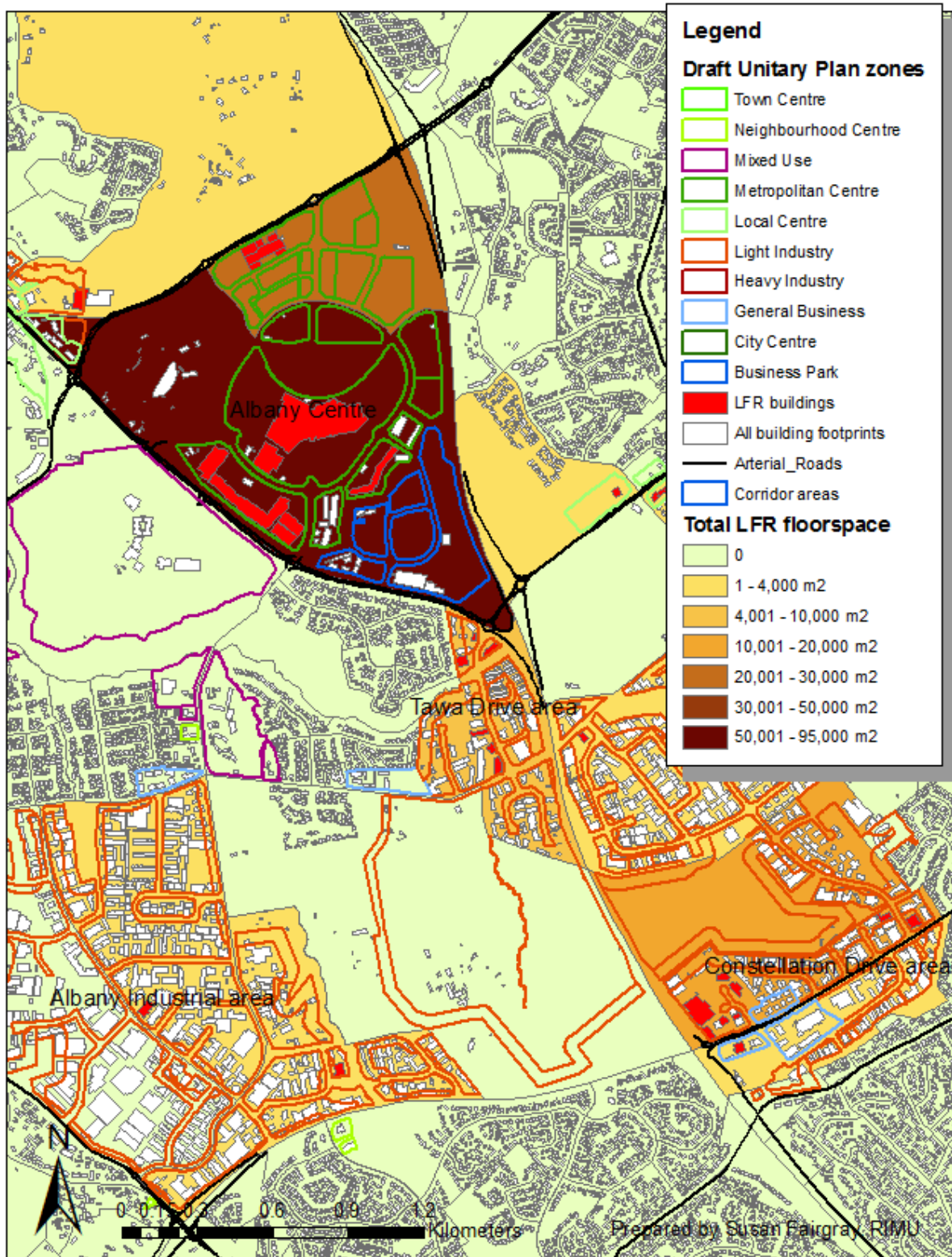
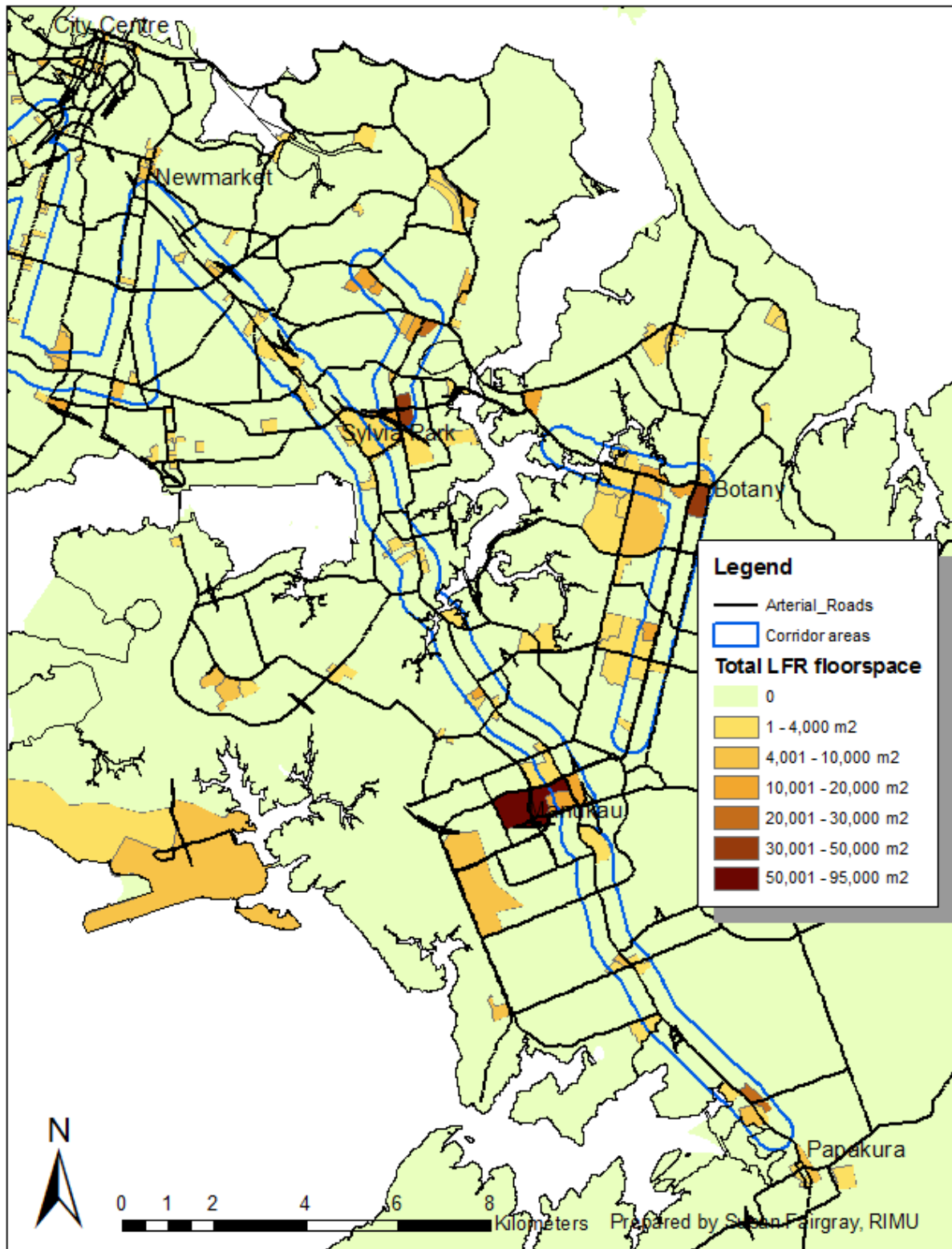


Figure 26. Large format retail floorspace by meshblock in the eastern isthmus, eastern and southern Auckland areas, 2013



5.4.2.1 Role of centres and corridors for large format retail floorspace

Centres and corridors play a key role in accommodating LFR floorspace in Auckland. Together they contain three-quarters (74%; 1.1m m²) of LFR floorspace, with centres containing over half (53%; 749,800 m²) and corridors a further quarter (25%; 351,800 m²). This is slightly lower than for retail floorspace as a whole where 81 per cent of floorspace is located within centres and corridors. The main difference is due to the greater tendency of SFR to locate in centres (72% of SFR floorspace).

Supermarkets have the greatest tendency to locate in centres, which contain nearly three-quarters (73%; 275,300 m²) of their floorspace. They are followed by core retail, with 56 per cent (403,200 m²) of floorspace in centres. Trade is lowest, at only 20 per cent (62,700 m²) of floorspace in centres. Corridors play a greater relative role for liquor, other food and trade, containing 37, 36 and 35 per cent of their floorspace respectively. However, the overall larger size of the core retail category means it makes up over half (52%) of the floorspace in corridors. Within corridors, all LFR categories except supermarkets are predominantly located in light industrial zones, particularly so for trade.

A significant share (23%; 325,200 m²) of floorspace is located outside of centres and corridor areas. The largest shares are in trade (41%; 133,700 m²) and core (40%; 128,500 m²), with these areas containing nearly half (44%) of total trade LFR floorspace.

The following subsections provide further spatial analysis of large format retail floorspace in the core, supermarkets and trade retail categories. Specifically, they identify how the intra-regional patterns of floorspace in non-centre business zoned areas relate to the quantum and share of large format retail floorspace (within each category) within centres, and is disaggregated broadly by northern rural and Hibiscus Coast, North Shore, western rural, western Auckland, isthmus, eastern Auckland, southern Auckland and southern rural areas.

5.4.2.2 Core large format retail

The following provides a description of the spatial distribution of core large format retail (LFR) floorspace across business zoned areas and centres within broad spatial areas of Auckland:

- **Hibiscus Coast and northern rural areas:** Concentrations of core LFR floorspace are driven by the presence of single outlets, with the exception of multiple outlets in the Whangaparaoa town centre, forming the largest concentration. Other significant areas include Mahurangi and Silverdale,

with the latter occurring outside of the business zoned area. A small amount of core LFR also occurs outside of centre in Warkworth's light industrial zone.

- **North Shore:** Albany metropolitan centre, Milford town centre, Glenfield town centre, Wairau Valley/Link Drive area and the Albany industrial areas form the main concentrations of core LFR floorspace. A significant amount of core LFR floorspace occurs outside of and away from centres (i.e. not edge of centre locations) in light industrial zones across the North Shore, with the main locations being Albany industrial area, Constellation Drive area and the Wairau Valley/Link Drive area.
- **Western rural areas:** A single furniture store in the light industrial zone in Kumeu (edge of centre) is the only core retail LFR floorspace in this area.
- **Western Auckland:** The large metropolitan centres of Westgate and Henderson, along with the Lincoln Road area are the main concentrations of core LFR floorspace in this area. There is some core LFR floorspace located in light industrial zones and general business zones on the edge of centres (e.g. Glen Eden), with a significant amount also occurring in these zones away from centres (especially in Lincoln Road).
- **Auckland isthmus:** Several significant concentrations of core LFR floorspace exist, including the City Centre, Sylvia Park, Newmarket and New Lynn metropolitan centres, St Lukes town centre, Wesley town centre and adjacent business area, the business area adjacent to Panmure town centre and the quarry area north of Three Kings town centre. Significant core LFR floorspace development has occurred along key transport arterial routes, as well as within mixed used business zones on the edge of centres (i.e. Newmarket, New Lynn, St Lukes, Panmure and Wesley) and in transport corridors. Significant amounts of floorspace are also present in the light industrial zones especially, but not limited to, transport corridors.
- **Eastern Auckland:** Botany metropolitan and Pakuranga town centres form the main concentrations of core LFR floorspace. Significant floorspace is also present in the light industrial zones within the East Tamaki area, particularly along Te Irirangi Drive.
- **Southern Auckland:** The largest concentrations of core LFR floorspace are in and around Manukau and Papakura metropolitan centres, Takanini and Hunters Corner town centres, and the Auckland airport area. Significant floorspace is present in the light industrial zones adjacent to Takanini, Manurewa, Otara and Manukau centres, with little floorspace occurring in business zones away from centres (with the exception of lower East Tamaki).
- **Southern rural areas:** Core LFR floorspace is only present in Pukekohe, with the main locations being within the town centre behind the mainstreet area and more recently, along Manukau Road, and in general business and some light industrial zoned areas further south along Manukau Road.

The following table summarises the distribution of core LFR floorspace by zone type across Auckland. Overall, it shows that the Hibiscus Coast and northern rural (89%), western Auckland (73%) and eastern Auckland (59%) have the highest shares of core LFR floorspace in centres. The share is lower for southern Auckland (47%), the Auckland isthmus (49%), southern rural areas (52%) and the North Shore (59%). Light industrial zones accommodates a large share of core LFR floorspace on the North Shore and southern Auckland, although this occurs more within edge of centre locations in southern Auckland and away from centres on the North Shore.

Table 12. Core large format retail floorspace by zone type and broad Auckland area, 2013

Auckland area	Measure	Description of zoned location				Total
		In centre zone	Light industrial zone	Other non-centre business zone	Non-business zone	
Hibiscus Coast and northern rural	Floorspace	16,432	750	-	1,350	18,532
	Share of area total	89%	4%	0%	7%	100%
North Shore	Floorspace	100,141	69,660	600	-	170,401
	Share of area total	59%	41%	0%	0%	100%
Western rural areas	Floorspace	-	600	-	-	600
	Share of area total	0%	100%	0%	0%	100%
Western Auckland	Floorspace	56,611	2,250	17,745	750	77,356
	Share of area total	73%	3%	23%	1%	100%
Auckland isthmus	Floorspace	112,288	31,950	77,604	3,950	225,792
	Share of area total	50%	14%	34%	2%	100%
Eastern Auckland	Floorspace	45,593	11,600	19,120	750	77,063
	Share of area total	59%	15%	25%	1%	100%
Southern Auckland	Floorspace	56,807	52,903	-	5,875	115,585
	Share of area total	49%	46%	0%	5%	100%
Southern rural areas	Floorspace	15,367	600	13,839	-	29,806
	Share of area total	52%	2%	46%	0%	100%
Total Auckland	Floorspace	403,239	170,313	128,908	12,675	715,135
	Share of area total	56%	24%	18%	2%	100%

5.4.2.3 Supermarkets large format retail

The following provides a description of the spatial distribution of supermarkets large format retail (LFR) floorspace across business zoned areas and centres within broad spatial areas of Auckland:

- **Hibiscus Coast and northern rural areas:** All LFR supermarkets occur in centres, with the exception of Pak N Save in Silverdale on general business zoned land.
- **North Shore:** The location of LFR supermarkets occur across a mixture of (large and small) in-centre and light industrial zones away from centres. The key areas of supermarket LFR floorspace include Albany metropolitan centre, Browns Bay, Birkenhead, Glenfield and Northcote town centres, and Barrys Point Road and Wairau Valley areas.
- **Western rural areas:** All supermarkets are located within centres, with some smaller LFR supermarkets in smaller centres serving more local catchments (e.g. Waimauku and Parakai).
- **Western Auckland:** Nearly all LFR supermarkets are located within centres, with the exception of Pak N Save located on a general business zone on Lincoln Road. Several non-major supermarkets are also present in the largest western Auckland centres as well as several of the smaller centres.
- **Auckland isthmus:** Locations containing the largest amount of supermarket LFR floorspace include Wesley town centre and adjacent business area, the City Centre, Sylvia Park and Newmarket metropolitan centres, St Lukes, Three Kings, Mt Albert and Glen Innes town centres and the Lunn Ave area. LFR supermarkets are predominantly located within centres, with the exceptions of light industrial zoned area in Wesley, other business zoned area in Otahuhu, Richmond Road the edge of the City Centre.

- **Eastern Auckland:** The main LFR supermarkets are located in Botany metropolitan centre, Pakuranga, Howick and Highland Park town centres, and Meadowlands local centre. All floorspace is contained within centre zoned area, except for light industrial floorspace along Ti Rakau Drive and mixed use business adjacent to Botany metropolitan centre.
- **Southern Auckland:** There are several key locations of LFR supermarkets, with smaller LFR supermarkets in less central areas. The main locations include Manukau metropolitan centre and adjacent area, Papakura metropolitan centre and Mangere, Hunters Corner and Manurewa town centres, Takapuna town centre and surrounding area and a light industrial zoned area in Wiri away from centres.
- **Southern rural areas:** LFR supermarkets are located in Pukekohe and Waiuku across a range of centre and general business zoned areas.

The following table summarises the distribution of supermarkets LFR floorspace by zone type across Auckland. Overall, all areas except the southern rural area had high shares of supermarket LFR floorspace located within centres. Out of centre LFR supermarkets are located across a mixture of edge of centre and away from centre locations, with the latter predominantly on main transport arterial routes.

Table 13. Supermarkets large format retail floorspace by zone type and broad Auckland area, 2013

Auckland area	Measure	Description of zoned location				Total
		In centre zone	Light industrial zone	Other non-centre business zone	Non-business zone	
Hibiscus Coast and northern rural	Floorspace	16,518	-	6,800	-	23,318
	Share of area total	71%	0%	29%	0%	100%
North Shore	Floorspace	51,305	9,770	5,300	-	66,375
	Share of area total	77%	15%	8%	0%	100%
Western rural areas	Floorspace	3,350	-	-	-	3,350
	Share of area total	100%	0%	0%	0%	100%
Western Auckland	Floorspace	28,230	-	8,950	-	37,180
	Share of area total	76%	0%	24%	0%	100%
Auckland isthmus	Floorspace	93,333	8,013	15,380	1,496	118,222
	Share of area total	79%	7%	13%	1%	100%
Eastern Auckland	Floorspace	24,696	1,650	6,350	-	32,696
	Share of area total	76%	5%	19%	0%	100%
Southern Auckland	Floorspace	50,827	10,250	10,300	2,450	73,827
	Share of area total	69%	14%	14%	3%	100%
Southern rural areas	Floorspace	7,000	650	14,750	-	22,400
	Share of area total	31%	3%	66%	0%	100%
Total Auckland	Floorspace	275,259	30,333	67,830	5,246	378,668
	Share of area total	73%	8%	18%	1%	100%

5.4.2.4 Trade large format retail

The following provides a description of the spatial distribution of trade large format retail (LFR) floorspace (excluding yard area) across business zoned areas and centres within broad spatial areas of Auckland:

- **Hibiscus Coast and northern rural areas:** The new Mitre 10 Mega in Warkworth's industrial area, and Placemakers and Mitre 10 Mega in Whangaparaoa industrial area are the main concentrations of trade LFR floorspace. Nearly all floorspace occurs outside of centre areas, with the exception of a relatively small amount of floorspace within the Orewa and Warkworth town centres.
- **North Shore:** Most trade LFR floorspace is located out of centres in light industrial zones, with the exception of Mitre 10 Mega in Albany metropolitan centre and Mitre 10 in Browns Bay town centre. The main concentrations of floorspace occur in the Wairau Valley/Link Drive area, Constellation Drive area and Albany metropolitan centre and surrounding area.
- **Western rural areas:** All trade LFR floorspace is located within and on the edge of Kumeu local centre and the edge of Helensville town centre.
- **Western Auckland:** The main concentrations of trade LFR floorspace are determined by the presence of single large format building supplies retailers. The main locations are Westgate metropolitan centre the Lincoln Road area, where floorspace has largely been located within general business or light industrial zoned areas.
- **Auckland isthmus:** While some trade LFR floorspace is located within centres, the largest amount has occurred on mixed use business or light industrial zones away from or on the edge of centres. Key locations are New Lynn metropolitan centre, Lunn Ave, the area adjacent to Panmure town centre and Carr Road.
- **Eastern Auckland:** The largest concentrations of trade LFR floorspace have occurred in the light industrial zones along Ti Rakau Drive and mixed use business zone adjacent to Botany metropolitan centre. Some floorspace is also located in the heavy industry zones in East Tamaki and within Highland Park town centre (Placemakers).
- **Southern Auckland:** The area adjacent to Manukau metropolitan centre, Takanini town centre and Bishop Dunn Place in East Tamaki form the main concentrations of trade LFR floorspace, with a combination of in-centre and light industrial zoned locations.
- **Southern rural areas:** Trade LFR floorspace occurs in a mixture of in-centre and light industrial zone locations, with large concentrations in new development on the edge of Pukekohe and Waiuku local centre.

The following table summarises the distribution of trade LFR floorspace by zone type across Auckland. Over three-quarters of floorspace is located on business zones outside of centres. Light industrial zones play a large role in accommodating trade LFR floorspace in western rural areas (80%), eastern Auckland (76%), the North Shore (72%), southern Auckland (62%) and the Auckland isthmus (58%). Western Auckland (83%), the Hibiscus Coast and northern rural areas (80%) and the southern rural area (41%) have higher shares in other non-centre business zones.

Table 14. Trade large format retail floorspace by zone type and broad Auckland area, 2013

Auckland area	Measure	Description of zoned location				Total
		In centre zone	Light industrial zone	Other non-centre business zone	Non-business zone	
Hibiscus Coast and northern rural	Floorspace	2,600	450	16,950	1,100	21,100
	Yard area	80	3,600	8,600	-	12,280
	Share of area total (excl yard)	12%	2%	80%	5%	100%
	Share of area total - yard	1%	29%	70%	0%	100%
North Shore	Floorspace	16,850	47,210	450	750	65,260
	Yard area	350	4,800	-	4,700	9,850
	Share of area total	26%	72%	1%	1%	100%
	Share of area total - yard	4%	49%	0%	48%	100%
Western rural areas	Floorspace	2,000	11,150	-	750	13,900
	Yard area	9,600	8,400	-	-	18,000
	Share of area total	14%	80%	0%	5%	100%
	Share of area total - yard	53%	47%	0%	0%	100%
Western Auckland	Floorspace	1,180	3,150	27,556	1,400	33,286
	Yard area	7,200	12,450	3,500	-	23,150
	Share of area total	4%	9%	83%	4%	100%
	Share of area total - yard	31%	54%	15%	0%	100%
Auckland isthmus	Floorspace	14,250	41,982	14,450	1,550	72,232
	Yard area	2,450	12,450	6,400	-	21,300
	Share of area total	20%	58%	20%	2%	100%
	Share of area total - yard	12%	58%	30%	0%	100%
Eastern Auckland	Floorspace	3,250	29,300	2,700	3,350	38,600
	Yard area	-	-	6,000	-	6,000
	Share of area total	8%	76%	7%	9%	100%
	Share of area total - yard	0%	0%	100%	0%	100%
Southern Auckland	Floorspace	14,340	23,982	-	500	38,822
	Yard area	5,260	3,450	-	-	8,710
	Share of area total	37%	62%	0%	1%	100%
	Share of area total - yard	60%	40%	0%	0%	100%
Southern rural areas	Floorspace	8,200	2,550	7,950	700	19,400
	Yard area	-	4,800	-	-	4,800
	Share of area total	42%	13%	41%	4%	100%
	Share of area total - yard	0%	100%	0%	0%	100%
Total Auckland	Floorspace	62,670	159,774	70,056	14,400	302,600
	Yard area	24,940	49,950	24,500	4,700	104,090
	Share of area total	21%	53%	23%	5%	100%
	Share of area total - yard	24%	48%	24%	5%	100%

6 Regional retail supply-demand balances in Auckland

It is important to understand the existing balance between retail supply and demand within Auckland as it impacts upon land use planning for retail growth to meet population needs into the future. Significant attention has been given in the Environment Court, research, media and other settings as to whether Auckland (and other urban economies) is currently under or over-served by retail⁶⁷. This section investigates these balances between what retail is supplied by the market, and the levels of demand for retail to meet household, business and tourist needs.

Structure of section

Section 6.1 considers the issue of latent demand for retail within Auckland, arising from some participants during the Change 6 hearings⁶⁸. It firstly assesses the basis for these claims during the hearings, then investigates how the retail market has responded through time to changes in retail demand. Section 6.2 subsequently examines sub-regional variation in how consumers meet their needs spatially within the market in relation to retail supply to investigate claims of localised undersupply within the market.

Section 6.3 goes on to investigate patterns of supply and demand spatially within the context of Auckland's commercial property market. This is crucial as the rate of retail supply in relation to demand across Auckland must vary geographically to take account of differences in land values (ultimately, through rents) and the differential rates of trading (productivity) required across different areas to offset the opportunity cost of other land uses. Establishing the empirical evidence base of supply in section 5 is critical to this process as it enables differences in these ratios to be identified geographically, which became, in some instances, circular with previous supply estimation approaches. It is also enabled by the identification of spending levels and flows across Auckland from the Fairgray (2012) study (and updated datasets). Both are key pieces of evidence newly comprehensively available within the Auckland context.

⁶⁷ Examples include the recent brief report by Jones Lang LaSalle (2013a).

⁶⁸ Investigating the existence of latent demand, specifically the potential 600,000 m² of floorspace gap between sustainable and existing supply (Heath, 2009a) was explicitly stated as part of the brief for this research.

6.1 Latent demand for Auckland retail floorspace

6.1.1 Context - Change 6 Auckland Environment Court hearings

As New Zealand's largest urban economy, Auckland has significant and geographically expansive demand for land use (residential, commercial, industrial, agricultural and recreational/conservation). Land is a finite resource and is therefore, subject to the same principles of scarcity as other finite resources within the economy. During the Change 6 hearings it was suggested the land constraints and previous policies restricted floorspace development within Auckland's retail sector (Tansley, 2009 and Heath, 2009). Specifically, the region's growing household demand for large format retail had not been accommodated within the urban fabric or in the most efficient location to serve household demand. Therefore, it was argued that Auckland's households were underserved by retail, with a significant and large amount of unmet demand within the Auckland retail market.

Geographical differences in retail supply by territorial local authority (TLA) were observed through variation in retail floorspace to household ratios across Auckland, as well as differences in the growth rates of the ratios through time (Tansley, 2009). From this, it was implied households in some areas (namely, the isthmus) were underserved where lower ratios (of floorspace per household) existed, or where growth rates were below either household formation or growth in the retail sector, and that needs were being met inefficiently through meeting retail demand in areas outside their local area⁶⁹⁷⁰.

The argument was presented on a conceptual basis, although evidence was not generated to identify the actual quantum of undersupply. Heath (2009) used ratios of average sales productivity on retail floorspace to estimate the total retail floorspace able to be *sustained* by the Auckland market. The "figures represent the amount of floorspace that can be sustainably and viably be supported by the market in each sector based on the retail expenditure generated and sustainable trading productivity for each sector (p12, 10.2)". In 2009, it amounted to 2.17 million m² of floorspace, which was around 600,000 m² (approximately the size of 16 Albany mega centres) above the current retail floorspace of 1.56 million m² identified by Tansley (2009) during the hearings. However, Heath (2009) stated "the possible reason for this apparent undersupply is that the Marketplace NZ (Tansley) retail floorspace supply survey data does not include all retail categories that are

⁶⁹ Analysis was conducted at a TLA level (the local government context at the time), meaning the analysis broadly suggested household demand should be met by retail supply within the same TLA.

⁷⁰ From the Tansley (2009) evidence it can be implied that the rapid growth in retail in Auckland's southern area was driven by the undersupply of retail in central Auckland areas (para 3.6.1, p11).

assessed in the demand estimates (p13, 10.3)". Heath (2009a) further clarifies this during rebuttal evidence where he states "I have not quantified whether there is an under or oversupply of the current regional retail supply. My evidence merely points out a difference between my net sustainable floorspace figure of 2.17m sqm (around 2.9m sqm gross) and the retail supply data from Mr Tansley (which excludes my estimated cafes, restaurants and takeaways floorspace) (p8 para 24)".

In summary, no consensus on the level of sustainable retail floorspace or presence of any undersupply in Auckland was reached during the Change 6 hearings. Importantly, no evidence either was submitted to demonstrate any undersupply. Nor was any consensus reached on the forecast future level of retail floorspace demand in Auckland⁷¹.

6.1.2 Structure

The level and presence of any latent demand in Auckland was potentially a significant issue and warranted further investigation within this evaluation. Two key and interconnected issues arise from this argument and are addressed in turn within this section:

- i. Firstly, the regional imbalance of retail supply and demand within Auckland, and
- ii. Secondly, any geographically localised areas of undersupply within the market.

Crucially, these issues need to be considered within the context of the Auckland commercial property market. This is because, by nature, they have arisen as a result of land scarcity conditions within the market and therefore, need to be evaluated within the same parameters - i.e. viable levels of sustainable trading (spend per m²) need to be determined against threshold opportunity costs from other land uses. Therefore, the final part of this section investigates the conceptual arguments of sustainable floorspace against what level of household demand can sustain retail floorspace in different locations in relation to other land uses within the Auckland market. It also considers how the retail market operates as a network where retailers balance new store expansion with increased trading across existing stores.

⁷¹ The absence of any agreement was verified through the statement of agreed matters between the expert witnesses (Environment Court Auckland, 2009).

6.1.3 Current Auckland regional retail supply and demand balances

It follows from the Change 6 hearings the conceptual arguments that if a large unmet demand were present in Auckland, the evidence would show that:

- i. Auckland's retail sector would not contract even during economic downturn, and employment would not decrease across any time period, or vacancy rates increase. In fact, vacancy rates would always be nearly equal to zero.
- ii. Households have been unable to meet their needs in the current retail market, and are spending elsewhere.
- iii. Retail development in Auckland has not been sufficient to eliminate latent demand. This would mean that as soon as development opportunity arose, it would be taken up.
- iv. Retail land use congestion has occurred at the place of supply to the point where customers have been unable to purchase goods or services⁷².

The above situations have been investigated in this report and each is addressed in turn in the subsections below.

6.1.3.1 Changes in the size and performance of Auckland's retail sector

If a significant imbalance of supply and demand existed in Auckland (due to a land constraint), the retail sector would never contract as any outlet closures would be immediately replaced by another outlet waiting to be enabled to operate in the Auckland market. Moreover, household spending would never decrease due to tighter economic conditions⁷³ as pent up demand would ensure spending remained at least as high as previous levels (before the economic conditions changed). Finally, retail employment would never decline as greater numbers of employees would be required to service an increasingly productive floorspace.

The key indicators of Auckland's retail sector instead evidence a contrasting picture of positive and negative change. Figures 27 and 28 below show how CBRE and Jones Lang LaSalle calculated retail vacancy rates have varied through time across Auckland. Periods have occurred where vacancy rates have increased, suggesting an absence of large pent up demand. Both series show more recent increases in vacancy rates coinciding with the global financial crisis where household spending has decreased (which is addressed later in this section). Crucially, retail vacancy rates also vary across different types of retail offerings (including LFR) in Auckland. This shows the rise in vacancy is contributed by all

⁷² This differs to effects of traffic congestion, which would still occur on the transport network if more retail space were to be developed as retail development occurs within relatively the same land area served by the same transport network.

⁷³ As distinct from other constraints.

retail types rather than just the formats for which there is lower household demand. Moreover, if sufficient demand for LFR were unmet, it would spill over into other retail types (keeping overall vacancy rates low) if it could not be met in LFR⁷⁴.

Figure 27. CBRE Auckland retail vacancy rates by type of retail area, 2000-2011

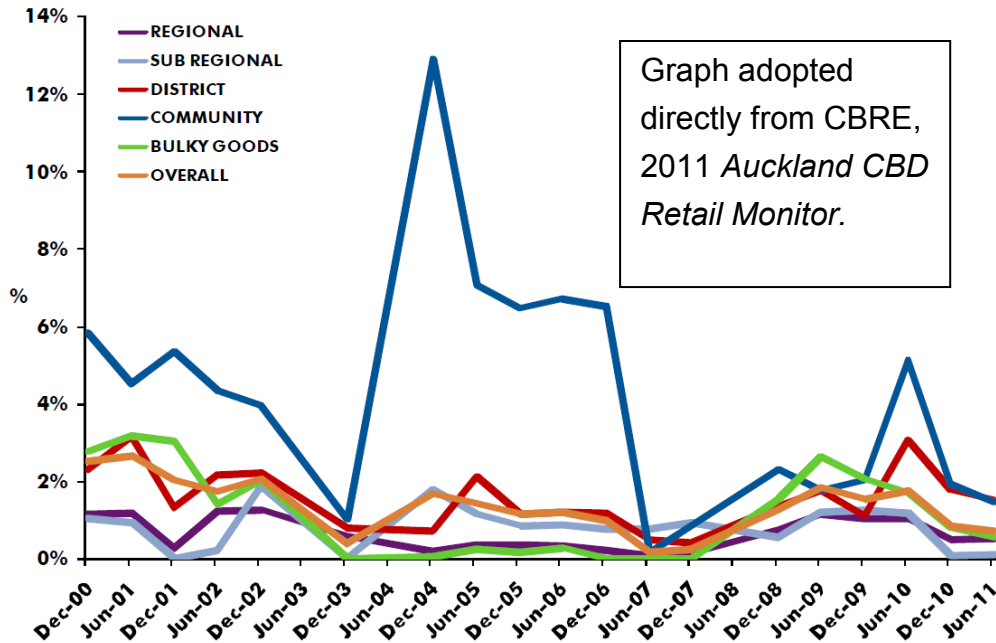
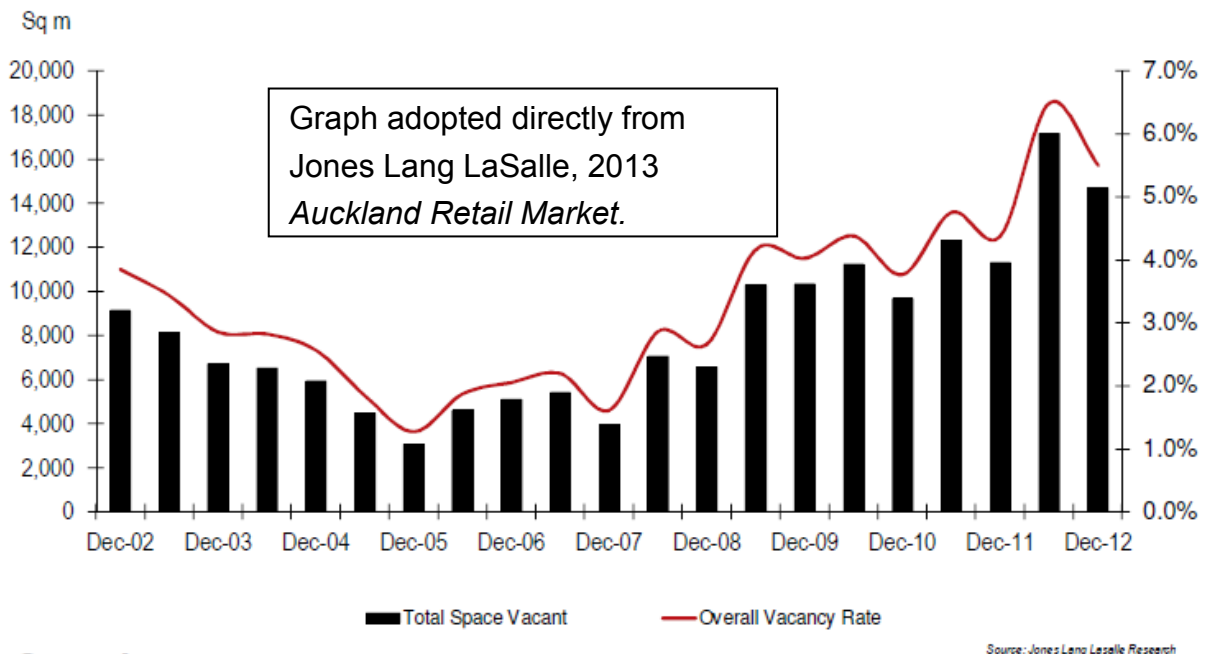


Figure 28. Jones Lang LaSalle Auckland retail vacancy rates, 2002-2012



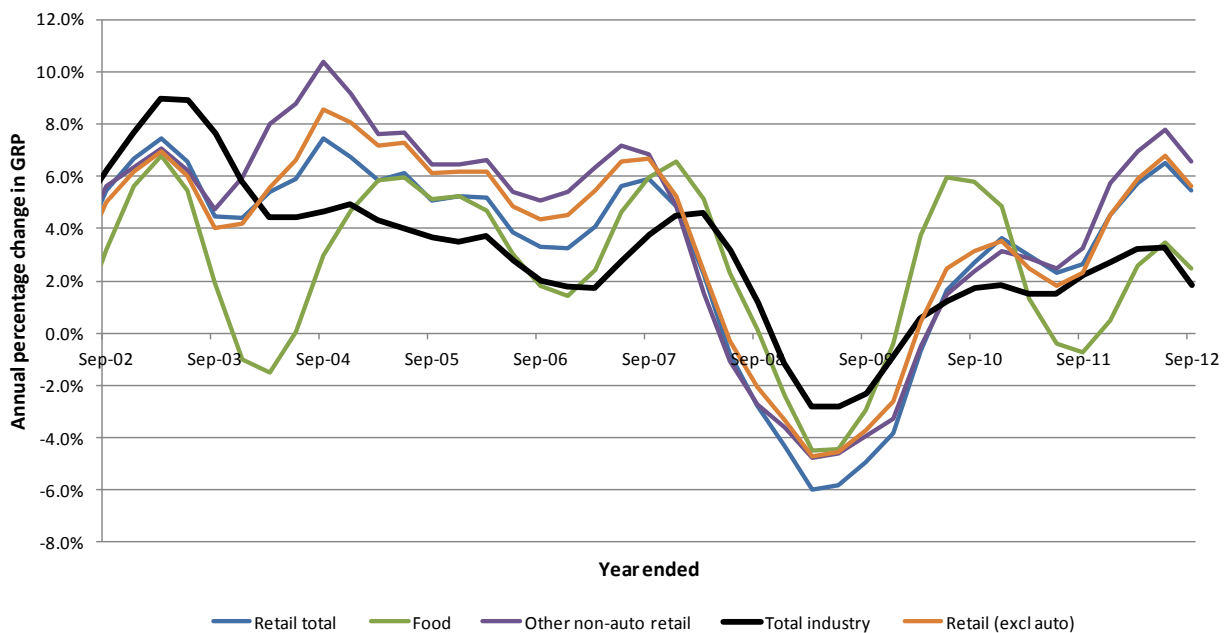
⁷⁴ The effect of online shopping generating increased options for consumers should also be mentioned here. Growth in the number of retailers with online offering means consumers also have the option of researching and purchasing goods online to be delivered if an LFR chain is not in a convenient location. The effect of online shopping is discussed in section 7 and Appendix 9.

Similar findings, albeit higher vacancy rates, are present in other Auckland property market sources. Colliers (2011) reported an overall Auckland retail vacancy rate of 5.4 per cent in 2011, up from 4.5 per cent in June 2010, as well as alluding to declining returns to retail property investment in Auckland. Moreover, the report showed similar vacancy rates in other main urban centres, Wellington CBD (5.7%) and Dunedin CBD (5.1%).

Retail employment (Statistics New Zealand, 2012), another measure of the size of the sector, has also shown a contraction in Auckland, having declined since 2008 (see section 4.2). This has coincided with the increase in retail vacancy rates across the same period.

Figure 29 shows the annual growth rate in Auckland retail gross regional product (GRP) in relation to growth in total Auckland GRP across the last decade (Infometrics Ltd, 2012). Retail broadly follows patterns in performance of the total economy. Between 2008 and 2010 Auckland retail experienced negative annual GRP growth, coinciding with increases in vacancy rates and employment decreases. In the last two years (2010-2012), the sector has experienced positive annual GRP growth (see also Fairgray, 2011).

Figure 29. Annual retail and total GRP growth in Auckland, 2002-2012



Data source: Infometrics Ltd.

The combination of these factors show changes in demand for retail and how the supply side of the sector has responded accordingly. If supply and demand were not broadly in balance, it would require very substantial shifts in demand to see a drop in supply as the level of supply (floorspace, employment) would be able to be sustained by much lower levels of demand.

6.1.3.2 Auckland households' spend on retail

In the 2010 *Household Economic Survey* (Statistics New Zealand, 2010), Auckland had a higher average weekly spend (\$287.40 in 2010 dollar values) per household on non-auto retail than New Zealand households overall (\$277.20), and a lower rate of household savings (\$12.50 per week) than New Zealand households overall (\$15.10). To account for higher incomes and housing costs, retail expenditure and savings has been expressed as a percentage of non-housing net expenditure. Here, Auckland households spend on non-automotive retail (33.3%) was a similar share to New Zealand households overall (33.7%). Savings rates as a share of net non-housing expenditure (1.4%) were also very similar to that of New Zealand households overall (1.8%).

Figures 30 and 31 below show the real changes in Auckland retail sales expressed on a per household and per person basis⁷⁵ from 1981 to 2012. While the information has been sourced from a series of different data sources⁷⁶, it illustrates three key points:

- i. real changes in per household expenditure have occurred through time, including both positive and negative changes, thus illustrating the retail sectors responsiveness to changes in consumer demand. Declines since 2007 are further consistent with other data sources showing recent increasing vacancy rates and decreases in employment,
- ii. there is a higher spend per household and per person in Auckland than in New Zealand as a whole, which is contrary to constraints in demand being met, and

⁷⁵ This differs to household and personal spend per se as it includes tourism and business spend. The impact of tourism expenditure has been investigated between 2000 and 2012 (period of data availability), with non-tourist expenditure still maintaining the same pattern of changes in spend. International tourism spend comprises 3 to 4 per cent of total spend across this period, with the methodology for calculating tourism spend outlined in detail in section 7.2. Business spend also only makes up a small component of overall sales and corresponds with levels of household spend as they are interconnected through labour force participation.

⁷⁶ Data has been collected from the Statistics New Zealand (2012a) *Retail Trade Survey* and has been produced as several different series through time. These vary slightly in definition and therefore, have different volumes of sales recorded at equivalent points in time. Larger, and geographical, variation exists between the earlier RET series and other series. The *Retail Trade Survey* series include RTS, RET, RTN and RTT series codes. Subnational household and population estimates are also inputs to this calculation (Statistics New Zealand, 2012c).

- iii. most importantly, sales per person and household have shown real increases since the early 1990s, showing the sector is meeting an increasing household demand. This is contrary to the implication of households not being able to meet their needs within the Auckland retail sector due to constrained retail supply growth.

Figure 30. Retail sales per household in Auckland and New Zealand, 1983-2012

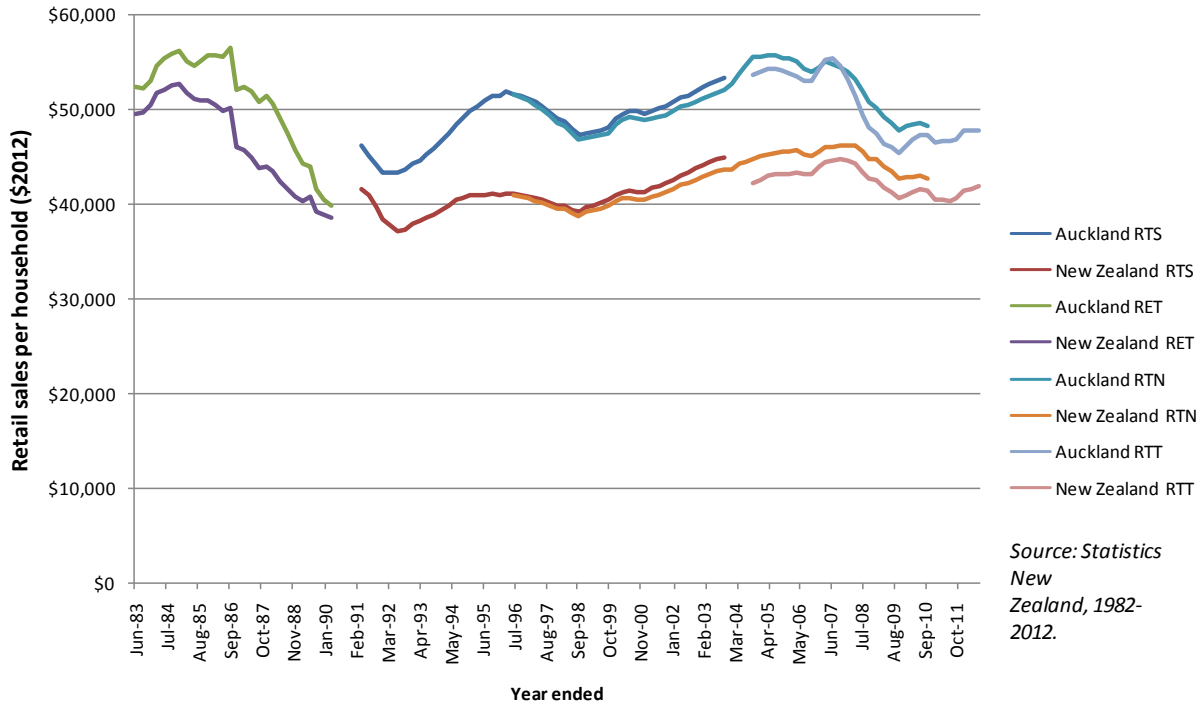
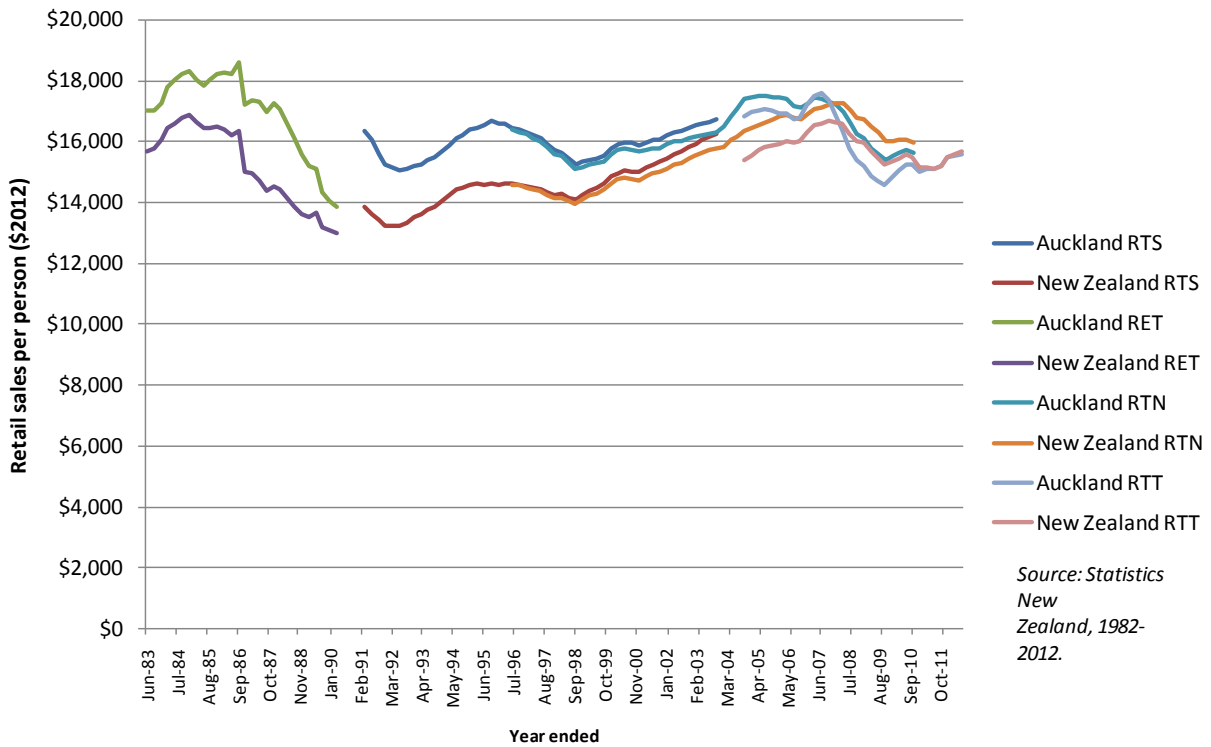


Figure 31. Retail sales per person in Auckland and New Zealand, 1983-2012



Evidence on how and where Auckland households are currently meeting their retail needs within the Auckland market is presented in sections 3 and 6.2 on geographical patterns of supply and demand.

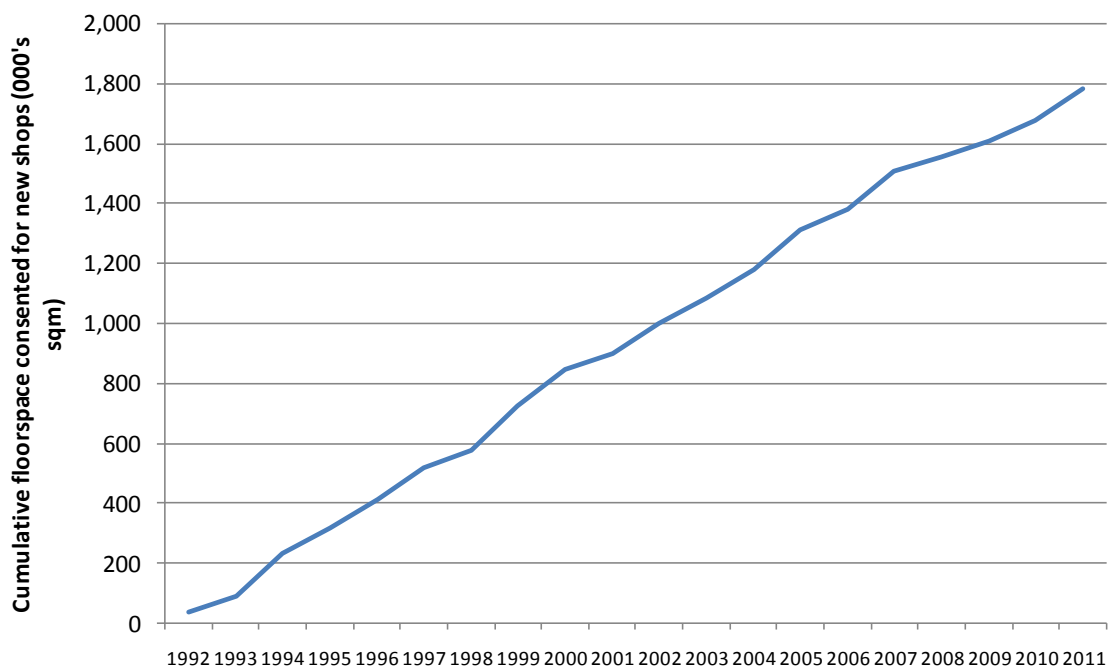
6.1.3.3 Recent retail development in Auckland - building consent information

Significant retail development has occurred within Auckland across the last two decades. Figure 32 shows the retail⁷⁷ floorspace that has been consented for⁷⁸ in building consents within Auckland between 1992 and 2011. In total, building consents have been granted for approximately 1.8 million m² of retail floorspace (Auckland Council, 2012), amounting to an average of 89,300 m² per year across this period. A further 140,800 m² of floorspace has been consented for in other uses that include a retail component, and a further 200,200 m² of service stations (which have not been included in this analyses).

⁷⁷ Other retail development may also be included under multipurpose building consents captured in a separate category. This includes some instances such as where consent is for an office development with a shop, making it a conservative figure.

⁷⁸ This data should be used as an *indicator* of retail sector development activity rather than an exact measure of new retail floorspace. It includes new development where building consents have been granted, where a free text keyword search suggests 'Retail' is the intended end use, but does not provide information on the amount of consented floorspace actually constructed. Nor does the primary use indicate the proportion of total GFA granted approval that is constructed that is actually used for retail purposes. Furthermore, buildings may be granted a consent under a different type of category (e.g. the construction of 'general warehouses') with the land uses as retail being granted consent (or converted as a permitted activity with or without further building consent) at a subsequent stage.

Figure 32. New shops floorspace granted building consent in Auckland, 1992-2011



Source: Auckland Council Building Consent data.

The level of consented floorspace is above that of household demand growth across the same period. This includes demand from both new household formation and real expenditure growth per household (across existing and new households). A comparison between the estimated floorspace demand per household (i.e. the demand from a real increase in expenditure) and the average floorspace per *new* household for the remainder illustrates the difference.

Table 15 sets out the comparison. As limited information is available on floorspace per household in 1991, a range has been used from 5.07 m² per household (1.8 m² per person) to 7.04 m² (2.5 m² per person), with the actual value likely to be at the lower end of the range⁷⁹ (column 1). Real household expenditure is estimated to have grown at 1.0 per cent per year based on trends in historic spending data⁸⁰, and the productivity of

⁷⁹ The Tansley (2009) figures represent the only data source on historic floorspace trends on retail in Auckland. Using the conversions set out in the statement of evidence, the 1996 GFA for general merchandise and supermarkets equated to around 3 m² per household, but did not include the hospitality or personal services categories, which would be captured here.

⁸⁰ This involves analysing (the household share of) retail trade survey expenditure growth rates against household and population growth rates through time. The figure is consistent with what has been used previously in the Environment Court Setting.

floorspace is estimated to have increased by half a per cent per year⁸¹. The net effect being that real floorspace demand would increase by 10.4 per cent across the period on a per household basis. Column three shows the increased floorspace demand per household, while column four shows the total net increase of floorspace demand across the existing households.

Column five shows from the remainder of the consented floorspace (i.e. less the share absorbed through real increases in demand from existing households) the average amount of space consented per *new* household. Lastly, column six compares this to the new level of floorspace demanded from existing households (once productivity and real expenditure growth has been applied). Values over 1 show that, once the demand growth from real expenditure increases in existing households has been taken account of, the level of consented retail floorspace is above the rate at which the market is currently operating. Values below 1 suggest the market (i.e. consented floorspace) has not kept pace with estimated increases in demand.

Table 15. Comparison of consented retail floorspace and estimated demand increases in Auckland, 1991-2011

Assumed 1991 retail floorspace per household (m ²)	Total 1991 retail floorspace from estimated base demand (m ²)	2011 floorspace demand per household (exp increases + FS productivity applied) (m ²)	Demand growth from real change on existing households (m ²)	Remainder consented floorspace per new household (m ²)	Floorspace per hhold for new households relative to estimated demand per hhold from base hhold
5.07	1,620,859	5.59	168,240	10.04	1.80
5.21	1,665,882	5.75	172,913	10.01	1.74
5.35	1,710,906	5.90	177,586	9.98	1.69
5.49	1,755,930	6.06	182,260	9.95	1.64
5.63	1,800,954	6.21	186,933	9.92	1.60
5.77	1,845,978	6.37	191,606	9.89	1.55
5.91	1,891,002	6.52	196,280	9.86	1.51
6.05	1,936,026	6.68	200,953	9.83	1.47
6.19	1,981,049	6.83	205,626	9.80	1.43
6.33	2,026,073	6.99	210,300	9.78	1.40
6.47	2,071,097	7.14	214,973	9.75	1.36
6.61	2,116,121	7.30	219,646	9.72	1.33
6.75	2,161,145	7.45	224,320	9.69	1.30
6.89	2,206,169	7.61	228,993	9.66	1.27
7.04	2,251,193	7.77	233,666	9.63	1.24

Data source: Auckland Council Building Consents data; Statistics New Zealand, Subnational Household and Population Estimates.

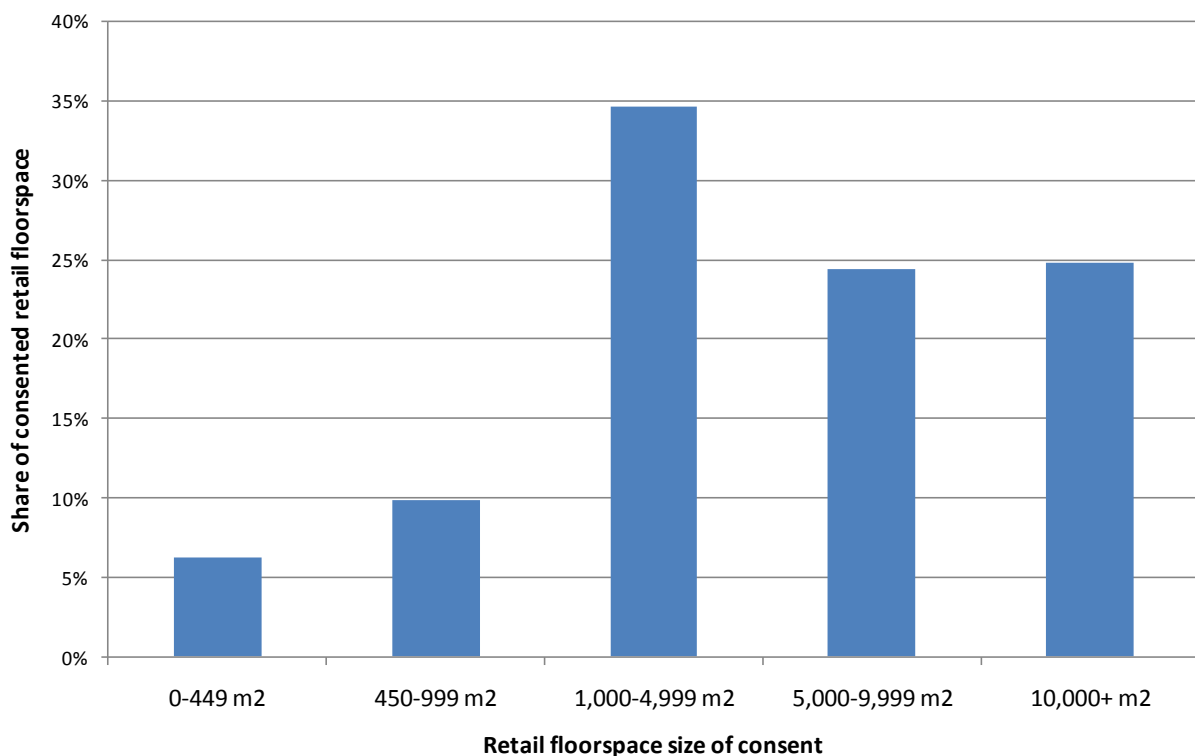
All values in column six are above 1, suggesting higher levels of floorspace than household demand have been consented to. If there was 5.07 m² of floorspace per household in 1991 (growing to 5.59 m²), then the remainder of consented floorspace

⁸¹ This is an assumption used to reflect increases in the intensity of land use through time. Sensitivity testing was conducted using different rates, specifically 0% and 1%. At 0% (i.e. no change in the productivity of space through time), the last column ranged from 0.93 to 1.43 where the last three rows were below 1; and at 1% (i.e. an annual average increase of 1% in floorspace productivity), the last column ranged from 1.58 to 2.2.

would be 1.8 times that of the existing market on a per new household basis. If 7.04 m² per household were assumed in 1991 (growing to 7.77 m²), then consented floorspace across new households would be at 1.24 times the existing households. It is possible that some of the growth may have increased ratios to account for an earlier undersupply (and thus decreased spend per m² floorspace ratios). However, consented floorspace has occurred relatively evenly through time (when viewed cumulatively due to lumpy data), with no evidence to suggest a market constraint⁸². In fact, the opposite is true given the large ratios of consented floorspace to estimated demand.

Figure 33 disaggregates the consented floorspace by retail size of consent⁸³. Nearly all (94%) of the consented floorspace is in consents for 450 m² or larger, and half (49%) in consents of 5,000 m² or greater. The size of consents has been relatively consistent through time, with relatively even shares of consents above 450 m² and 5,000 m² either side of the year 2000.

Figure 33. Consented retail floorspace by floorspace size of consent in Auckland, 1991-2012



Source: Auckland Council, Building Consent data, 1991-2012.

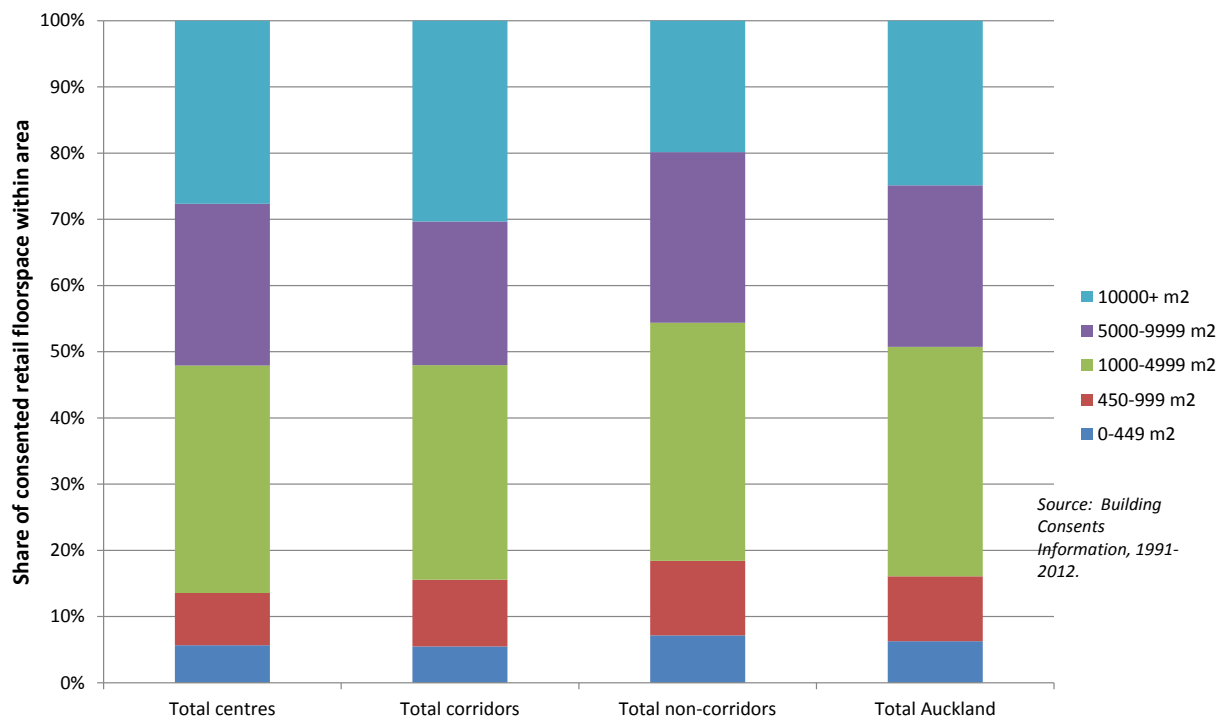
⁸² This can be seen in Table 15. The cumulative increases in consented floorspace also fall between the cumulative population growth (below) and the rate of new household formation (above), so it is also relatively evenly distributed through time relative to population and household growth.

⁸³ Floorspace data from 1991 and the first quarter of 2012 are also included here. They were excluded in the previous analysis to enable comparisons with population growth across a consistent period.

A high share of consented floorspace in large consents is at odds with arguments of an unmet demand for LFR because the market cannot deliver it. Instead, it shows a high level of consented floorspace in large consents, well above the existing and previous levels of LFR in the retail offering. While not all of this floorspace is for LFR (some of the larger consents may consist of several shops within the same consent), the important point is the market has still been able to find sites and ways to accommodate large areas of retail floorspace (whether it is LFR or the same sized multi-unit retail development).

Figure 34 shows the distribution of floorspace by size across different types of location in Auckland. While zones may have differed at the time of consent (as these represent the Proposed Auckland Unitary Plan zones), the data still reflect the broad spatial patterns of retail market activity across Auckland, and the Proposed Auckland Unitary Plan zones generally reflect the previous activity nature of zones (e.g. industrial areas vs. office-commercial vs. centres, etc). Most consents were either in centres or corridors, particularly larger centres, with centres attracting greater numbers of larger consents. Light industrial areas play an important role in corridors. The share of consents going into centres has increased through time.

Figure 34. Share of consented retail floorspace by size of consent in centres, corridors and other areas, 1991-2012



Over half of the floorspace within consents were either within centres (35%) or corridor areas (22%), with the remainder outside of these areas. Consents were on average larger within centres, where 86 per cent of the floorspace was within consents of 1,000 m² or larger, compared to 84 per cent within corridors and 82 per cent in areas outside of centres and corridors. The largest retail developments were concentrated into the largest centres where over three quarters (78%) of the consented floorspace in centres was within metropolitan and town centres. These centres also accounted for nearly all (92%) of the floorspace within the largest consents (over 5,000 m²) that occurred within centres.

Two-thirds (68%) of the consented floorspace within corridor areas was in light industrial (40%) and mixed use (28%) zones, while one-quarter (23%) was on areas outside of Proposed Auckland Unitary Plan business zoned land. These zones also tended to accommodate a higher share of the larger consents within corridor areas, where they contained two-thirds of the floorspace within consents of 5,000 m² or larger.

Two-thirds (66%) of the consented floorspace outside of centres and corridor areas was on non-business or industrial zoned land, with a further fifth (22%) on light industrial zoned land. Non-business zoned land includes land zoned for a specific purpose such as the airport or a quarry, which is likely to account for a significant share of the activity outside of business zones.

Figure 35 shows that an increasing share of consented floorspace has been within centres through time. The share outside of centres and corridor areas has simultaneously decreased through time, with the share in corridors fluctuating. The same pattern is true for the larger retail building consents of 5,000 m² or greater (see Figure 36). Larger consents are becoming increasingly concentrated into centres through time⁸⁴. The ability of centres and the market to accommodate the high share of large floorspace retail consents also counters the argument of unmet demand for larger retail offering due to an inability of the market to deliver it due to zoning rules.

⁸⁴ Other than in the 2011-2012 (first quarter), the share of total retail floorspace consents above 5,000 m² has remained relatively consistent through time, ranging from between 47 per cent in 2006-2010 to 58 per cent in 1996-2000.

Figure 35. Share of total consented retail floorspace by area in Auckland, 1991-2012

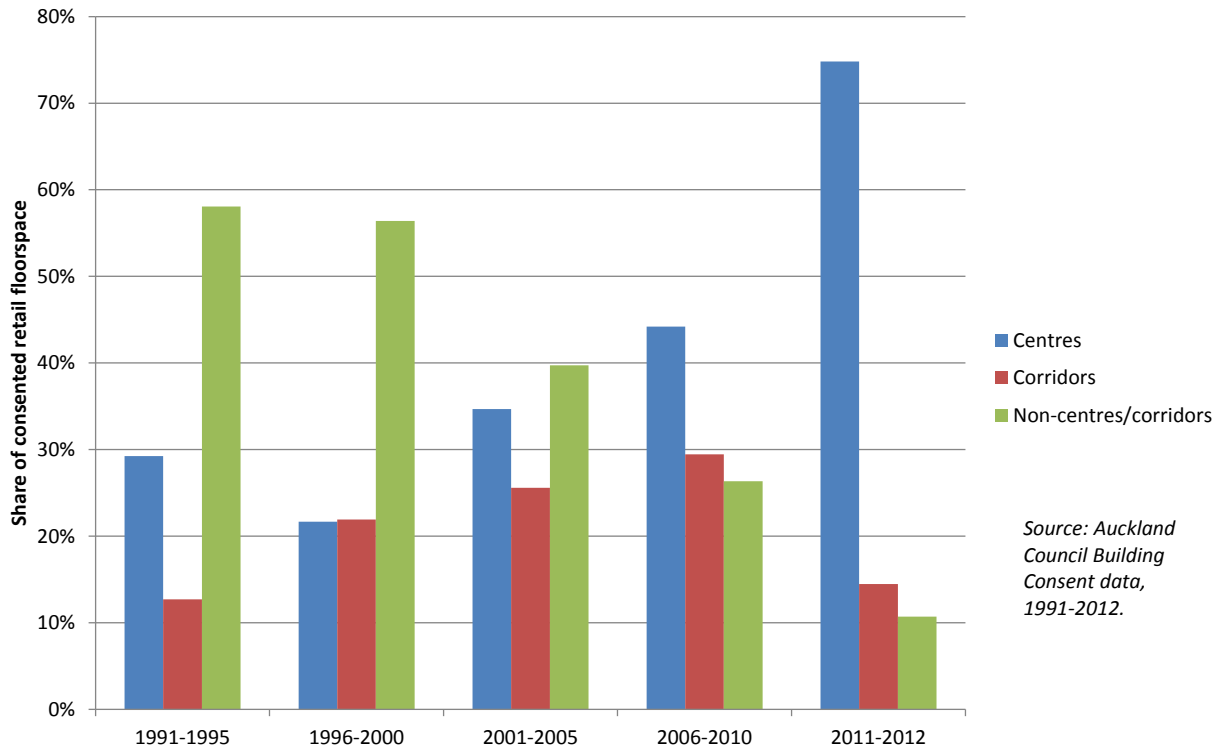
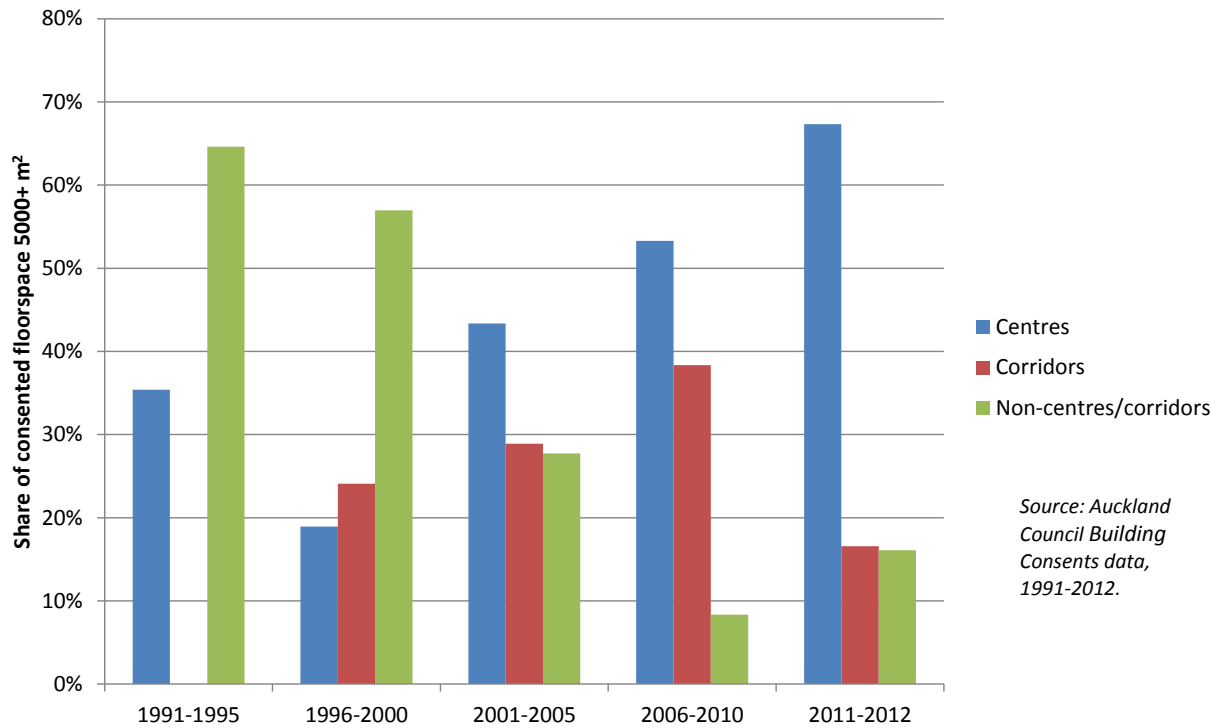


Figure 36. Share of consented retail floorspace 5,000 m² or larger by area in Auckland, 1991-2012



An analysis of retail building consents spatially through time has been included in Appendix 7.

6.1.3.4 Recent retail development in Auckland - shopping centre floorspace supply

Further information on the rate of floorspace supply across most major shopping centres from 1980 to 2012 is available from CBRE Ltd (2013)⁸⁵. The following analysis considers the supply of space across 50 Auckland centres, malls or mega centres where all leases fall under a single ownership and are managed by the centre. This extensive coverage provides good information on the level and rate of floorspace supply within these types of centres, particularly mall and mega centre configurations, and provides a comparison to rates of population growth across the same period.

In 2012, the centres had a combined floorspace of 1.1 million m², which represents about 28 per cent⁸⁶ of total retail floorspace in Auckland. Two thirds of the floorspace was in either large format retail centres (420,000 m²; 39%) or regional centres (320,000 m²; 29%), which are the largest non-LFR centres in the urban economy (but do contain some LFR through anchor and other large stores).

Over the 1980 to 2012 period, floorspace supply across these centres increased by nearly 500 per cent (+900,000m²). This exceeds the rate of population growth and household formation, suggesting changes in the structure of demand. If the structure of retail supply (i.e. shopping centre vs. strip retail vs. LFR, etc) in Auckland remained the same (and household real expenditure growth and floorspace productivity rates were applied as per the previous section), then only around one-quarter of the growth in shopping centres would have been expected. Meanwhile, the rate of shopping centre supply (across these centres) has increased from 0.7 m² per household in 1980, to 2.2 m² in 2012.

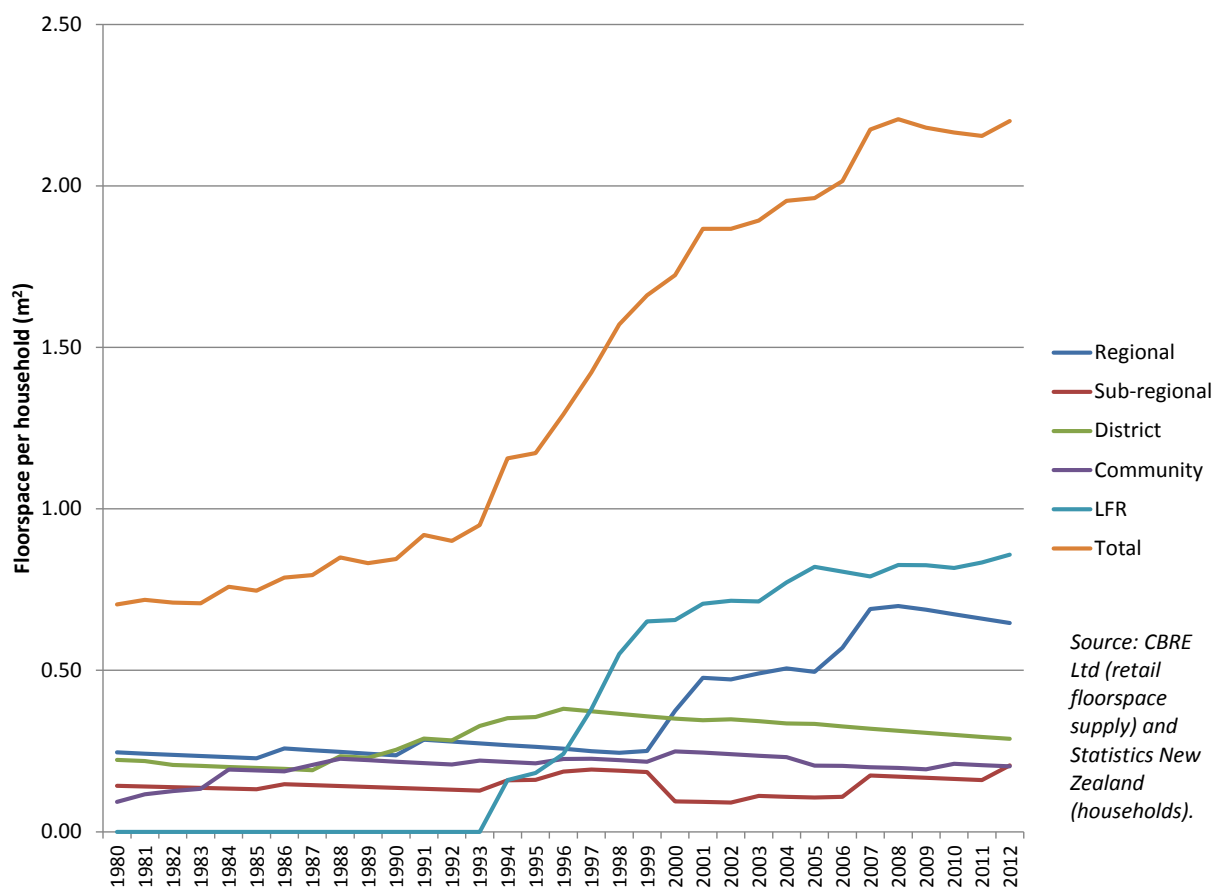
⁸⁵ A customised dataset was purchased from CBRE Ltd giving the total floor area size of each shopping centre across Auckland. While this data cannot be released (due to commercial confidentiality agreements), it has been cross checked for accuracy against other sources including the New Zealand Property Council (2009) *Shopping Centre Directory*, aerial photographs GIS measurements (Auckland Council, 2010 and 2012a), Property IQ (2012) floorspace, and building consent data (Auckland Council, 2012). CBRE Ltd hold this floorspace information from the shopping centre plans as they manage many of the leasing (see section 5).

⁸⁶ Some floorspace will be activities such as banks and medical services that fall outside the analysis framework here. This has been accounted for in section 5 where 95% (rather than 100%) of floorspace within shopping centres has been included in regional floorspace calculations.

Large format retail centres accounted for nearly half (48%; 421,000 m²) of the floorspace growth, having emerged as major mega/super centres since the early 1990's. Regional centres (i.e. the major urban centres) accounted for the next largest share (26%; 225,000 m²), with most of the growth occurring during the 2000's.

Growth in the rate of supply to households by centre type is shown in Figure 37, which shows the square metres per household (for the total regional households) of each centre type (across the 50 centres) from 1980 to 2012. The large rise in supply ratios of LFR and regional centres since the 1990's demonstrate shifts in the structure of demand. Decreases in the ratios for other smaller centre types have occurred simultaneously, showing that growth in these areas have been below rates of household growth, with retail (centre) offering becoming more concentrated into larger centres and LFR centres⁸⁷.

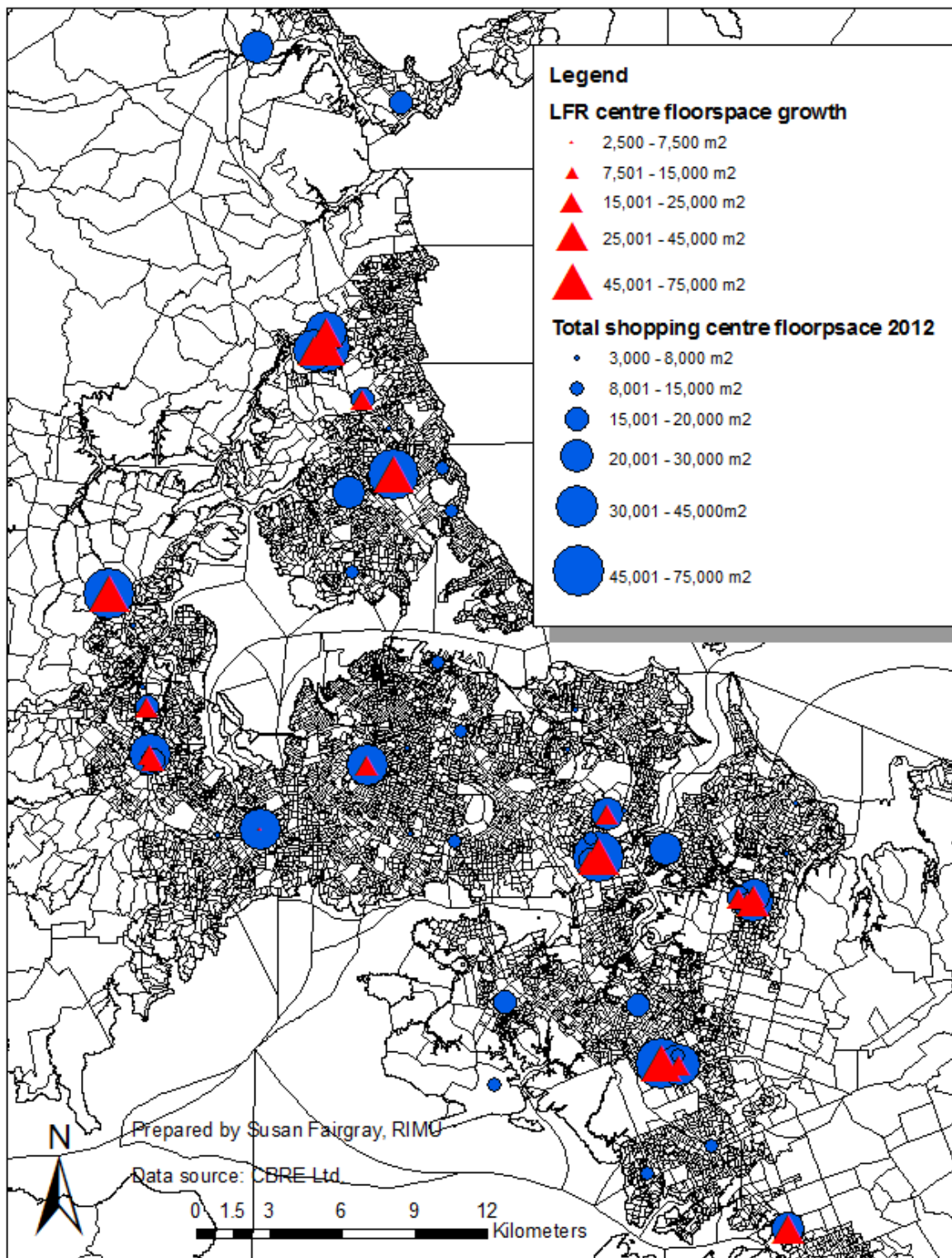
Figure 37. Floorspace supply per household across 50 shopping centres in Auckland by type, 1980-2012



⁸⁷ LFR centres may also contain some non-large format retail (i.e. stores with lower than 450 m² floorplates). A share of the retail offering within, particularly larger, centres is also LFR.

The large growth in LFR centres has occurred through the development (and subsequent expansion) of 16 centres across Auckland. The first, Wairau Park, was developed in 1993, and the most recent being the Apex Centre adjacent to Sylvia Park Mall in 2011. Figure 38 shows the geographical distribution of this LFR development across Auckland, along with the current supply across all of the shopping centres (i.e. LFR and other centres). The market area coverage of supply is such that there are no major areas that are outside of the geographical catchment of major shopping centres. In fact, most neighbourhood areas fall within the effective trading area of multiple major centres. The spatial patterns of supply and demand are investigated in greater detail in sections 5 and 6.2.

Figure 38. Existing shopping centre supply and large format retail centre growth (1980-2012) in Auckland



6.1.3.5 Retail centre congestion

If large amounts of latent demand for retail were present within Auckland, it would follow that significant congestion would occur within shops as consumers attempted to meet their retail needs. Customers would struggle to make their purchases in store to the point where significant shares of sales volume were lost, thus generating this latent demand.

Arguments have arisen to state that some geographical areas within Auckland are over-trading as they are supporting a much higher level of sales per square metre of floorspace than across Auckland as a whole. Heath (2009) (and to some extent, Tansley (2009)) has used an Auckland-wide ratio of sustainable trading levels on floorspace to identify any additional productivity as over-trading due to a lack of capacity within the sector. Specifically, it was suggested the higher land value areas of the Auckland isthmus were underserved by retail, with significant overtrading occurring in these areas. Tansley (2009) also argues this through the corresponding lower ratios of retail floorspace per household across some sectors⁸⁸.

However, these locations could instead be interpreted as successful retail areas, seen in the high sales turnover being achieved. The previous section showed the continual issuing of building consents through time, with the following section illustrating their comprehensive geographic distribution right across Auckland, thus signalling retailers have elected to trade at these higher rates as a more efficient option than developing further retail stores⁸⁹ - i.e. the market has suggested that it is more efficient for retailers to increase sales on existing stores, up to a certain time at which point further development has been able to occur⁹⁰.

Moreover, it is necessary for some areas to trade at higher rates than others to overcome the higher land values and opportunity costs of other land uses. The use of a single region-wide ratio to determine these levels of over-trading prevents this concept from

⁸⁸ Household size is not taken account of in these calculations. Auckland isthmus has historically had smaller average household sizes than the rest of Auckland (Statistics New Zealand, 1991-2006), which would account for a share of this difference.

⁸⁹ Ball, et al. (1998) show there are three markets here – the user market, the developer market and the land market. In this case, these have been considered together as many of the larger retailers generating the demand for sites (land/premises) that are supposedly subject to market constraint act as one agent across all three of these markets – i.e. owning/purchasing the land, constructing the store, then occupying the store. In other cases, the land/developer market would respond over the medium-term to increased demand in the user market at an appropriate rate. The lag time between these markets moving toward equilibrium would also be reduced through greater information availability on future population demand for retail, meaning supply in the market could anticipate these changes.

⁹⁰ Further analysis and description of network wide effects is available in Birkin, et al (2002).

being captured within the analysis and therefore, underestimates the level of sustainable trading space required in some areas and overestimates it in others. Sub-regional variances in these retail trading rates are explored in section 6.3.

6.2 Geographically localised patterns of undersupply in Auckland

Auckland's urban economy is highly complex in both its spatial economic structure (number and type of centres) and the way in which flows of supply and demand operate geographically across this structure. Households meet their needs across a range of different centres and types of retail location, of which there are large patterns of overlap in catchment areas⁹¹.

It is important to understand the way in which households access their needs in relation to retail supply across Auckland, then compare differentials in access across different neighbourhood areas. Arguments of undersupply suggest household retail needs are unable to be met within the local area (on the isthmus), and therefore, have driven expansion of suburban retail in other locations (Tansley, 2009). Part of the research brief was to investigate these flows⁹², specifically identifying any disproportionate shares of isthmus household demand that are met in more peripheral locations⁹³.

For the first time, comprehensive data on spending flows in Auckland is available to test this hypothesis (Fairgray, 2012 and 2012a; Marketview Ltd 2011 and 2012). The first part of this subsection uses this information to investigate the regional patterns of spatial spending flows across Auckland. It explores whether geographical variations in spend are consistent with what urban economic theory would suggest (in relation to the types of patterns observed); and specifically, whether large flows of spend are occurring between isthmus households and retail supply in other more peripheral locations within Auckland.

⁹¹ This is common across many (geographically) large urban economies that support a wide and varied centre network. Further examples in the international literature include Balakrishnan et al. (1994), Birkin et al. (2002), Borchert (1998), Burger (2011), Dale and Sjøholt (2007), Dennis et al. (2002), Gjestland et al. (2006) and Guy (1998).

⁹² The brief also stated to identify "leakage" in spend from households in surrounding areas to other non-closest centres.

⁹³ It can be implied from the Tansley (2009) evidence that part of the large growth in retail floorspace in locations such as Manukau could be attributed to isthmus latent demand where large flows of spend were occurring to these outer locations as needs are unable to be met more locally.

From this, it draws some conclusions on how households are meeting their needs, and consequently, how these should guide interpretation of how the market is operating.

Metropolitan centre flows

Evidence from the Fairgray (2012 and 2012a) study shows how Auckland households meet their needs across a range of different centre and centre types in Auckland (see also section 3). The study shows major Auckland retail centres have geographically expansive and overlapping catchment areas, meaning that households have access to a wide range of centres. For instance, 60 per cent of the sales occurring at sub-regional centres originates from within 8 kilometres road network distance, and 80 per cent (deemed to be close to the effective catchment) from within 13 kilometres. This also highlights the high level of consumer mobility experienced within the Auckland market. Moreover, the study (along with various other studies and analyses⁹⁴ including the Auckland Plan (Auckland Council, 2012b)) has identified a large number of significant urban centres within Auckland. The study specifically identifies eight sub-regional centres, three city centre fringe centres, the city centre, 28 major urban centres, and a large number of smaller or other non-centre areas. It is, therefore demonstrated that if household needs are not met at the local or closest major retail centre, they are met elsewhere in the region.

The degree of overlap of metropolitan centre⁹⁵ catchments is illustrated in Figure 39 below⁹⁶. Here, the catchment areas are calculated from selecting the neighbourhood areas

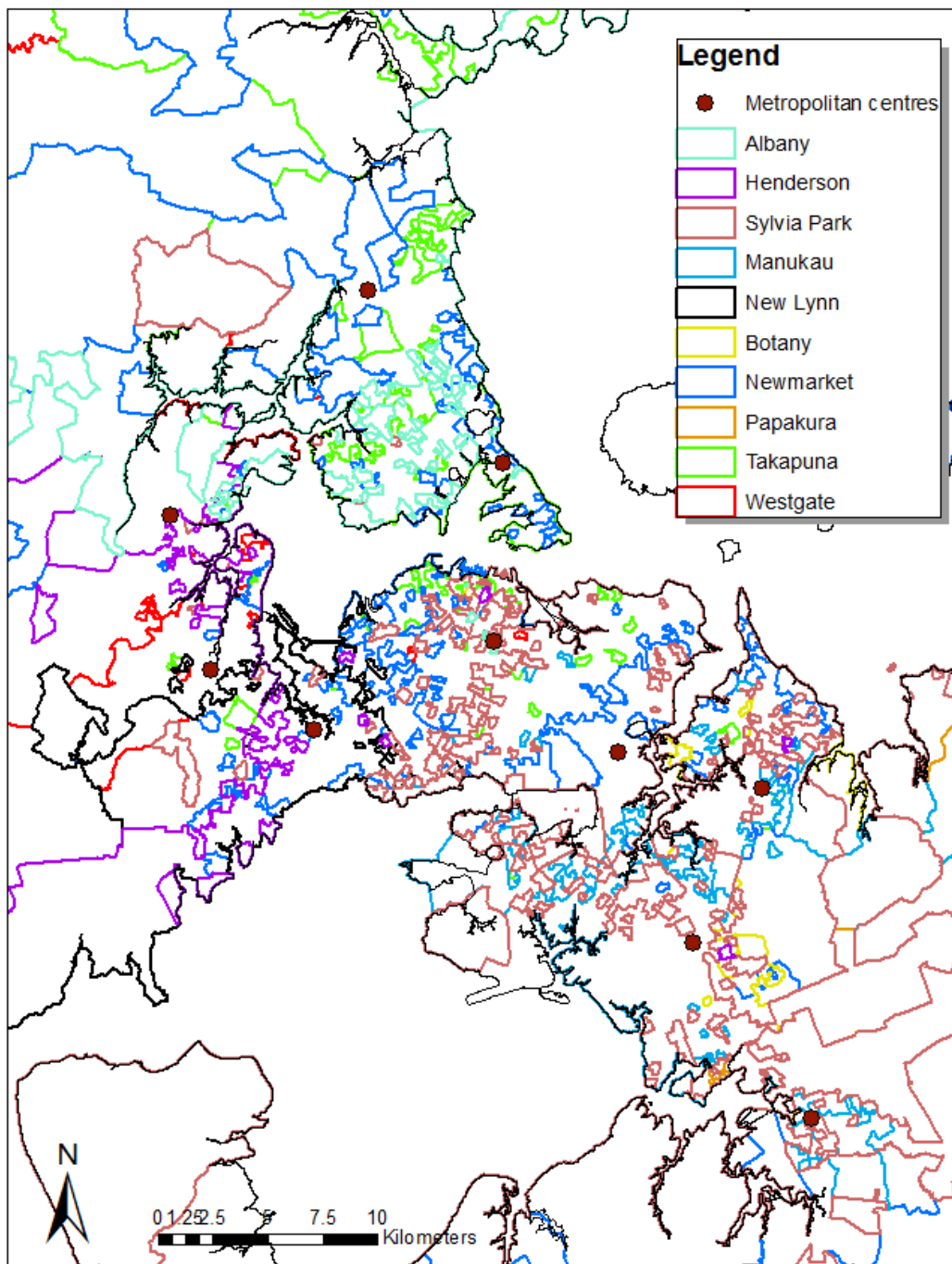
⁹⁴ The main reference reports on the Auckland centres network undertaken within various council workstreams include Auckland City Council (2010 and 2010a), Auckland Council (2011 and 2011a), Auckland Regional Council (2007, 2010, 2010a, 2010b, 2010c and 2011), Auckland Regional Growth Forum (1999), Boffa Miskell (2011), Franklin District Council (2008), Manukau City Council (2010), North Shore City Council (undated), Regional Sustainable Development Forum (2008), Rodney District Council (2009), SGS Economics & Planning (2007) and Waitakere City Council (2010).

⁹⁵ The centre boundaries used here reflect those in the Fairgray (2012a) study as this is the level at which data is available. This also enables a more robust understanding of the way in which these centres are functioning geographically, as in many cases the adjacent parcels not specifically zoned as 'centres' under the Proposed Auckland Unitary Plan function together with the centre as a whole. Differences between these areas are outlined in Appendix 4 and described in section 5.

⁹⁶ 2011 data is used here to illustrate these centre catchments as they were identified as part of the Fairgray (2012) study. Updating to 2012 catchment areas was not possible within the time available, but there are unlikely to be substantial changes in the degree of overlap between these years.

that contribute 80 per cent of the centres retail spend⁹⁷. It shows both that catchments are geographically expansive and that there are high levels of overlap in catchment areas.

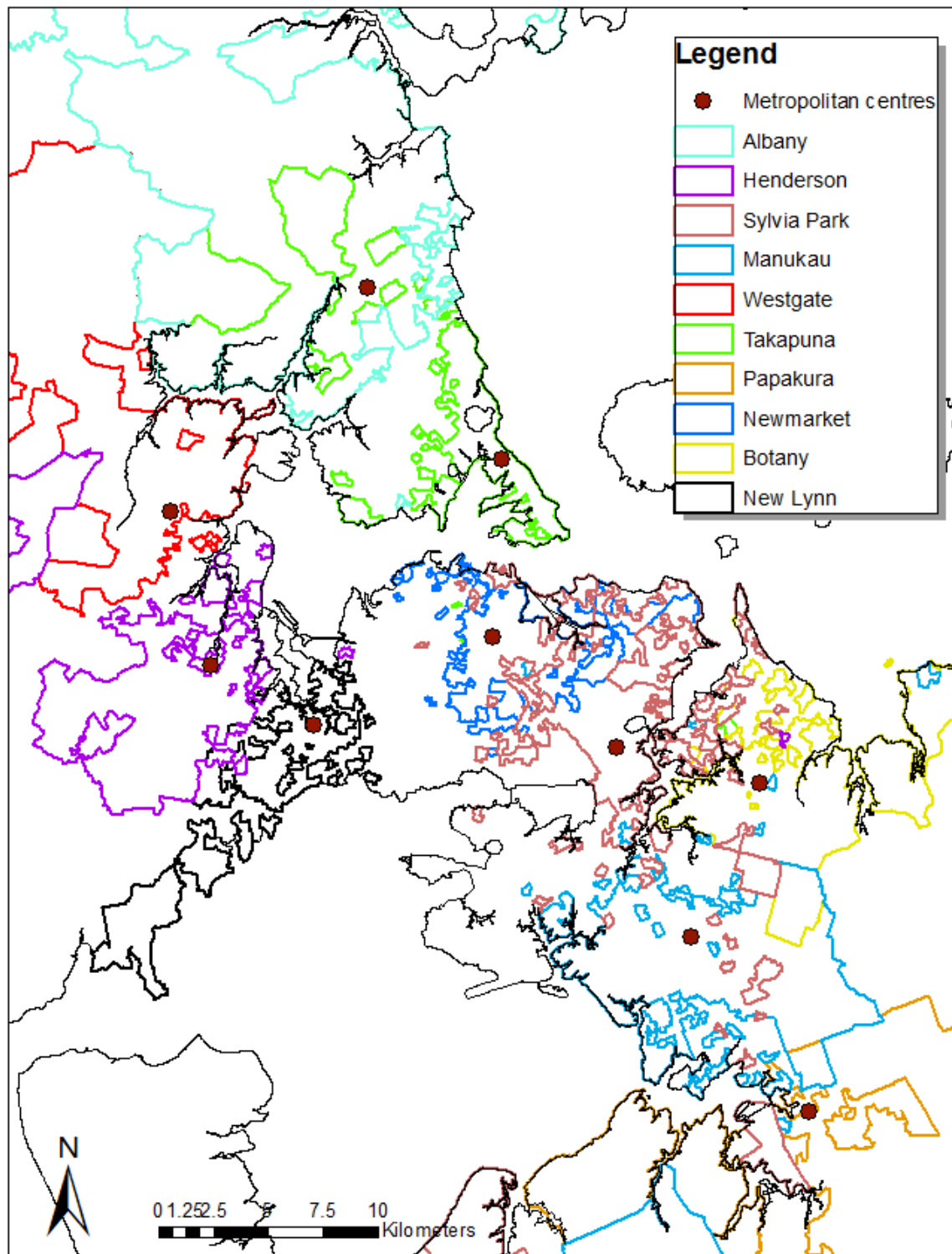
Figure 39. 80 per cent spend catchment areas of metropolitan centres, 2011



⁹⁷ The approximate 2,700 neighbourhood areas in Auckland were ranked according to their total contribution of spend to each metropolitan centre. Once in this rank order, the areas cumulatively contributing 80 per cent of the centres spend were selected. Each neighbourhood area is formed from a combination of 3-4 contiguous meshblocks. While there is some issue with some catchments containing more households than others, this is partly mitigated by the design of meshblocks, which aim to capture relatively even numbers of households (with their spatial areas changing accordingly). This would also need to have a geographical bias across Auckland to affect the analysis.

When considered at the 50 per cent level (see Figure 40), clearer patterns begin to emerge between centre locations, although significant overlap is still present in many locations. Notably, three gaps occur in the inner North Shore, western isthmus, and upper-western southern Auckland areas. These gaps correspond with the location of other major core retail locations in town centres – i.e. Glenfield, Birkenhead, Milford (partially), St Lukes, Onehunga and Mangere.

Figure 40. 50 per cent spend catchment areas of metropolitan centres, 2011



To understand the degree of overlap, comparisons were drawn between the share of household core retail⁹⁸ spend going into the closest metropolitan centre to that of spend going into other metropolitan centres. Using the road network distance matrix (Abley Transportation Consultants Ltd, 2012), neighbourhoods were allocated to their closest metropolitan centre⁹⁹ (see Figure 41). The 2012 spending flows data¹⁰⁰ was then aggregated to these areas and summarised into a matrix shown in Table 16. This matrix shows the flows of household core retail spend from these defined areas (rows) to each of the metropolitan centres (columns). The last column calculates the centre's share of households' total metropolitan centre spend within its defined catchment area¹⁰¹. The highlighted diagonal vector mostly contains the largest absolute values as it captures the flow of spend between households in a catchment to the catchments respective centre. The last row also shows the net position of a centre by comparing its total spend from all households with that of the total spend across all metropolitan centres from households within its catchment area.

Table 16. Spend flows from household catchments to Auckland metropolitan centres (\$m 2012)

Catchment of spend origin	Centre of spend destination											Total	Share of household catchment spend at closest centre
	Albany	Botany	Henderson	Manukau Central	New Lynn	Newmarket	Papakura	Mt Wellington /Sylvia Park	Takapuna	Westgate			
Albany	\$ 197	\$ 3	\$ 2	\$ 3	\$ 1	\$ 11	\$ -	\$ 4	\$ 14	\$ 3	\$ 238	83%	
Botany	\$ 2	\$ 158	\$ 1	\$ 22	\$ 1	\$ 13	\$ 1	\$ 29	\$ 1	\$ -	\$ 227	69%	
Henderson	\$ 5	\$ 2	\$ 67	\$ 2	\$ 14	\$ 6	\$ -	\$ 3	\$ 1	\$ 14	\$ 115	58%	
Manukau Central	\$ 1	\$ 21	\$ 1	\$ 110	\$ 2	\$ 4	\$ 3	\$ 17	\$ -	\$ -	\$ 159	69%	
New Lynn	\$ 6	\$ 4	\$ 27	\$ 7	\$ 72	\$ 20	\$ -	\$ 9	\$ 2	\$ 4	\$ 151	48%	
Newmarket	\$ 13	\$ 14	\$ 4	\$ 10	\$ 5	\$ 184	\$ 1	\$ 59	\$ 7	\$ 2	\$ 299	61%	
Papakura	\$ 1	\$ 18	\$ -	\$ 53	\$ 1	\$ 7	\$ 32	\$ 15	\$ -	\$ -	\$ 128	25%	
Mt Wellington/Sylvia Park	\$ 2	\$ 9	\$ 1	\$ 15	\$ 1	\$ 14	\$ -	\$ 45	\$ 1	\$ -	\$ 88	51%	
Takapuna	\$ 58	\$ 2	\$ 1	\$ 5	\$ 1	\$ 16	\$ -	\$ 4	\$ 47	\$ 1	\$ 134	35%	
Westgate	\$ 19	\$ 1	\$ 18	\$ 1	\$ 3	\$ 5	\$ -	\$ 2	\$ 2	\$ 45	\$ 95	47%	
Total	\$ 305	\$ 231	\$ 121	\$ 229	\$ 100	\$ 281	\$ 37	\$ 186	\$ 75	\$ 70	\$ 1,633	59%	
Share of centre spend from local catchment	65%	68%	55%	48%	72%	65%	86%	24%	63%	64%			
Net balance of centre	\$67	\$4	\$6	\$70	-\$51	-\$18	-\$92	\$99	-\$59	-\$26			

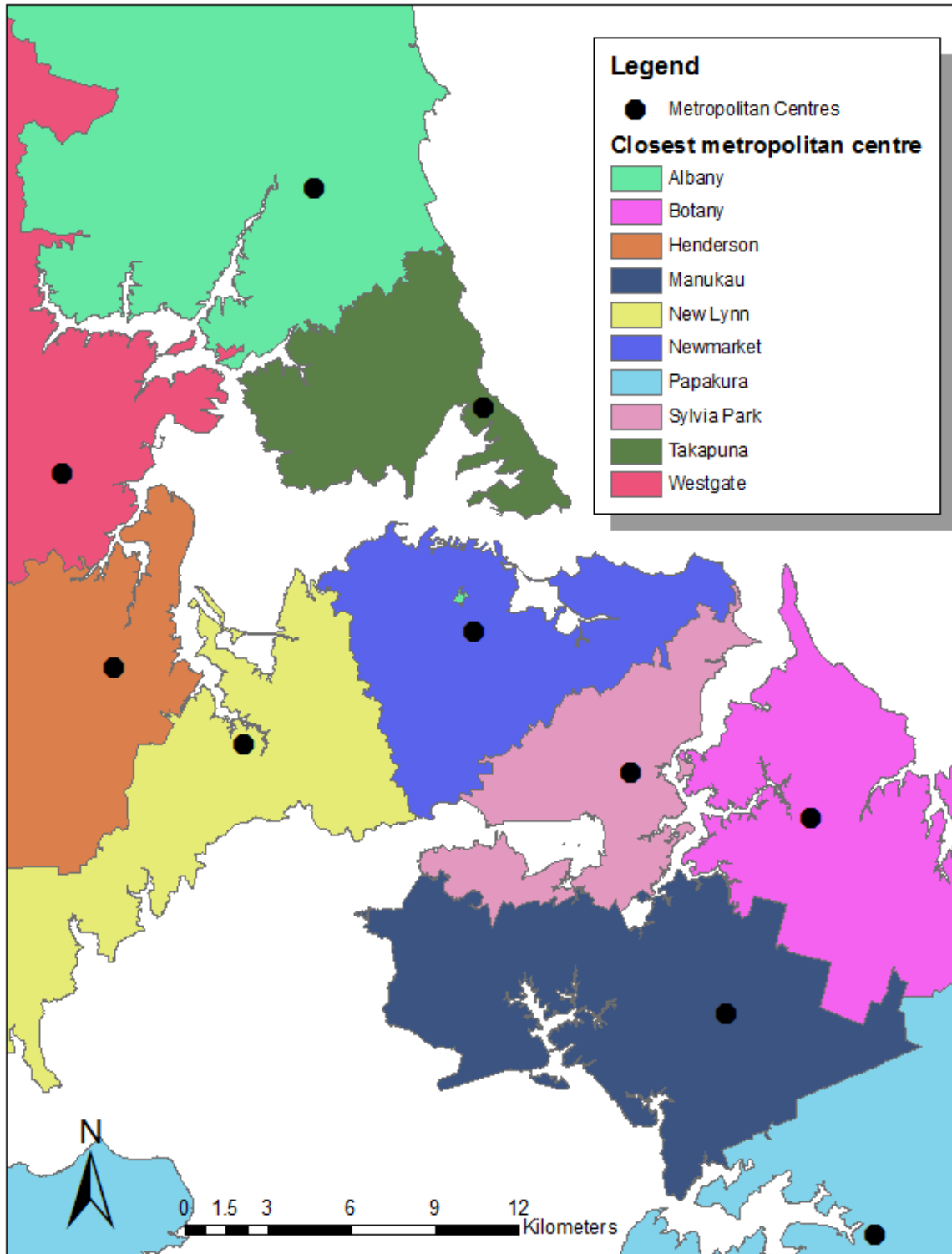
⁹⁸ Core retail is also analysed here as it largely drives the spatial spending patterns of metropolitan and large town centres. It was not possible to conduct further analysis on other retail categories within the time available.

⁹⁹ For the purposes of this section of analysis, these areas are referred to as catchments. In reality, the sizes of catchments per se would instead correspond to the size of each centre, however, this would make the analysis circular and differ to its intended purpose, which is to analyse the level of household spend not occurring at the closest centre.

¹⁰⁰ As data is available at the fine spatial level (i.e. flows between 2,700 neighbourhood catchments to approximately 100 centres) aggregation to different spatial geographies is possible. The 2012 data is an update from the 2011 data used within the Fairgray (2012) study.

¹⁰¹ That is, the matrix is a closed system of spending flows at metropolitan centres. It excludes household spend at other locations to explicitly analyse these metropolitan centre flows.

Figure 41. Allocation of Auckland neighbourhood areas to the closest metropolitan centre, 2013



Overall, Table 16 shows that 59 per cent of household core retail spend at metropolitan centres is occurring at the closest metropolitan centre. These shares are highest for Albany (83%), Botany (69%), Manukau (69%), Newmarket (61%) and Henderson (58%). Areas with lower market share include Papakura (25%) and Takapuna (35%). When the balances between the total catchment spend and spend at each centre (from all

catchments) are considered, Sylvia Park (\$98m), Manukau (\$70m) and Albany (\$67m) attract larger amounts of spend than the total spend from households within their catchments.

The specific flows of spend between different catchments and centres generate an important picture of the components driving overall patterns. Albany and Manukau are drawing large flows from their adjacent metropolitan centre catchments, reflecting their size dominance as major centre hubs within these outer urban locations. Nearly one-fifth (19%; \$58m) of Albany's spend is drawn from the Takapuna catchment, six per cent (\$19m) from Westgate, and four per cent (\$13m) from Newmarket. Nearly one-quarter (23%; \$53m) of Manukau's spend comes from the Papakura catchment, and a further 10 per cent (\$22m) from the Botany catchment and seven per cent (\$15m) from Sylvia Park.

Sylvia Park is relatively unique in its operation, drawing widely across the Auckland regional area (Fairgray, 2012a). Nearly one-third (32%; \$59m) of its spend comes from households in the Newmarket catchment, 16 per cent (\$29m) from Botany, nine per cent (\$17m) from Manukau and eight per cent (\$15m) from Papakura.

Importantly, there is no evidence to suggest that large surplus demand in the Auckland isthmus areas are driving the growth of outer-suburban retail centres. These centres have grown largely as a result of spend from their market dominance in the outer suburban areas, seen through their spending flows from adjacent catchments. While some flows exist between central households and these major outer centres, the largest flows in most cases are instead from other peripheral suburban catchments.

The largest spending flows from isthmus areas are between the Newmarket and Sylvia Park catchments, where one-fifth (20%; \$59m) of the metropolitan centre household needs in the Newmarket catchment are met at Sylvia Park. Similarly, 18 per cent (\$27m) of New Lynn household catchment needs are met at Henderson, although part of this catchment falls outside of the isthmus area.

Average spend distance index

In addition to analysing flows between metropolitan centres and their closest household areas, an index was generated as part of this research for each household catchment to examine intra-regional differences in the distance across which core retail needs are met. The index is a measure comparing the average distance across which households meet their core retail needs (AD_i), where distance to spend is weighted by share of spend. By taking a percentage approach, the index has prevented the distortion that would have otherwise occurred from differences in household spending levels per household between neighbourhoods. The index is described by the equation below:

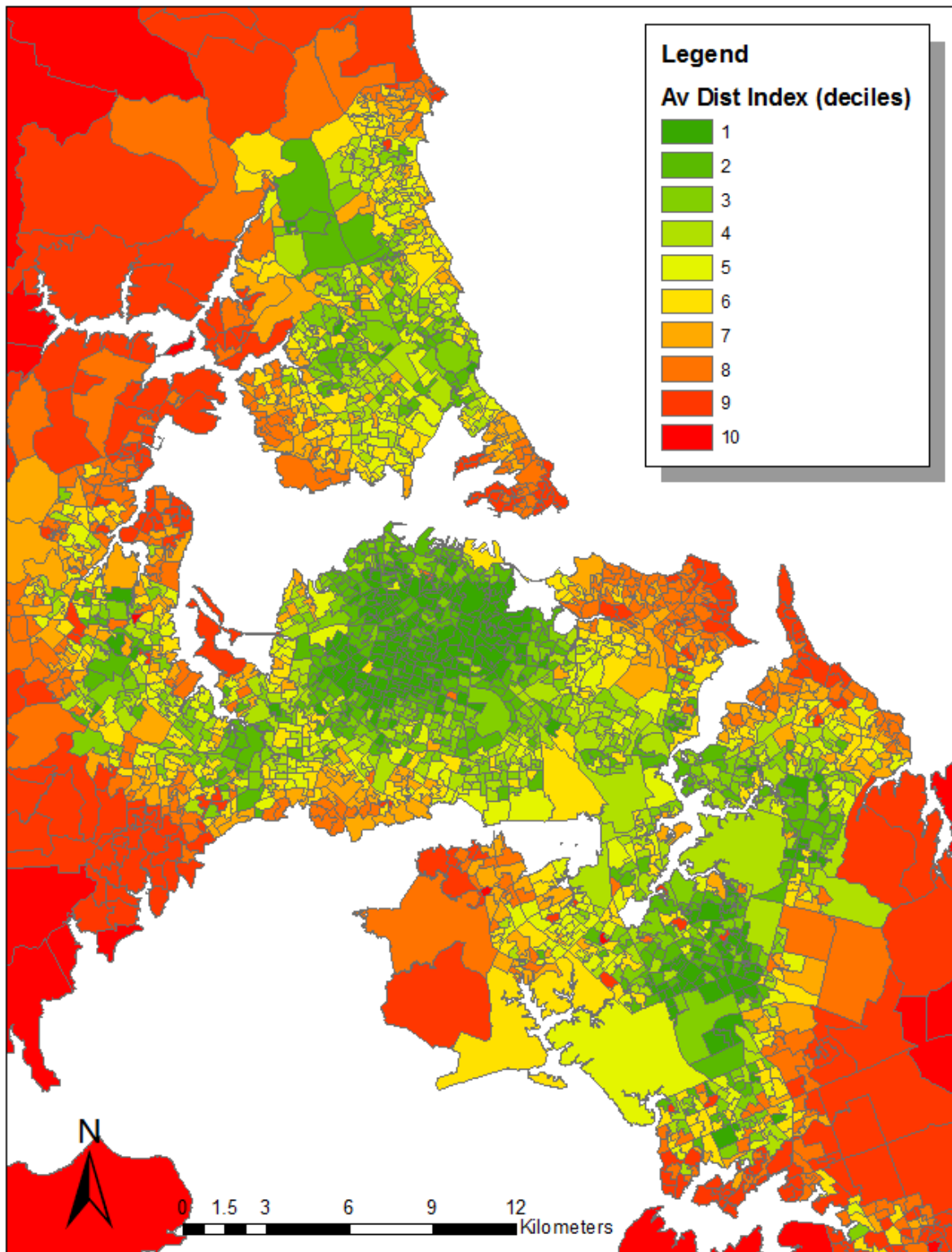
$$AD_i = \sum_1^j \left(\left(\frac{CS_{ij}}{\sum_1^j CS_{ij}} \right) D_{ij} \right)$$

where CS_{ij} is the core retail spend from household catchment i in centre j , and D_{ij} is the road network distance between household catchment i and centre j ¹⁰². The index results were then sorted into decile groupings where 1 represents the shortest average distance and 10, the greatest. This enabled a clearer display of the results in the GIS system¹⁰³, shown in Figure 42.

¹⁰² Note that this excludes out of centre spend.

¹⁰³ In particular, this allowed a focus on the urban area where the scale was not distorted by the very large (expected) average distances experienced in rural areas.

Figure 42. Index of average distance across which household core retail needs are met by decile, 2012



Overall, the shortest distances (darker green areas) occurred across the central isthmus areas and neighbourhoods surrounding several of the large metropolitan centres (especially Manukau, Botany, Henderson and Albany). Other than rural areas, neighbourhoods access needs across the largest distances (red) tend to be those located

in the geographical fringes of the metropolitan areas on either coastlines or peninsulas. This reflects the natural geographical constraints on the road network and overall quantum of demand. Distances are also higher in some parts of southern and western Auckland, reflecting naturally lower densities in the number of centres due to lower densities of demand (from lower household incomes). Other than the eastern most areas, shorter average distances across most of the isthmus are contrary to suggestions of households having to travel further to meet their retail needs from a lack of supply.

6.3 Retail supply and demand within the context of Auckland's commercial property market

It is very important that retail supply and demand is conceptualised within the context of Auckland's commercial property/land market to determine an efficient quantum and location of supply. Retail is one commercial sector within the urban economy and competes for physical land and property resources with other commercial (and sometimes residential) sectors. Simplistically, the presence of other sectors affects the land values and therefore, affects the ratios between retail demand and quantum of supply across locations of different land values in Auckland. Broadly, retail floorspace must trade at higher rates in more expensive (central) areas to offset higher land prices from the opportunity cost of other land uses. It must also take a network approach to consider the optimal level of service across the network.

This section investigates how the context of Auckland's commercial property market influences the levels of supply in response to demand across Auckland. It begins by establishing the context of urban economic drivers of land uses within urban areas, briefly explaining their influence on land values and the spatial configuration of different land uses. It then develops a framework through which retail supply and demand ratios should be considered across Auckland. Empirical data from the Auckland context from this research is used to populate this framework before conclusions are drawn on overall retail supply-demand balances within the context of Auckland's commercial property market.

6.3.1 Urban economic context for the drivers of commercial sector location

At a high level, the commercial sector within an urban economy (for the purposes of land use analysis) can be divided up into three broad land uses – office-based, industrial and

the household sector (retail)¹⁰⁴. Each have a different set of drivers for location that correspondingly operate at different spatial scales. Agglomeration economies at close proximate spatial scales drive the clustering of office-based activity into major commercial urban centres, most prominently the CBD¹⁰⁵. The productivity increases associated with this co-location drive increases in land value (where benefits are partly capitalised into land prices), which in turn drives increases in density of land use (McCann, 2001). The consequent patterns are increasingly high land values in central areas of greater accessibility, with land value gradients across axes of distance from central areas¹⁰⁶. This phenomenon is well established empirically, and fundamentally underpins the formation of cities.

This is contrasted with more industrial land uses where the drivers of location are more responsive to major regional infrastructure (e.g. ports, rail and motorways) and the availability of appropriately zoned, sized and priced land to accommodate their land-intensive activities. Generally, industrial activities are located more in less central locations away from the centre of major commercial hubs and in areas better connected by key freight infrastructure (Balchin, et al., 2000 and Hirsch, 1973). Beyond interests in common for these types of location, they benefit less from the networking with other firms occurring in close proximity. These patterns are also well established empirically.

The spatial configuration of industrial and office-based land uses across Auckland can be explained and quantified through bid rent theory (Ball, et al. (1998), Balchin and Kieve (1982) and McCann (2001)). A stylised diagram (Figure 43) is presented below to illustrate this theory¹⁰⁷. For simplicity, it is applied to a monocentric city structure and shows the spatial interaction between two broad land uses – industrial and office commercial.

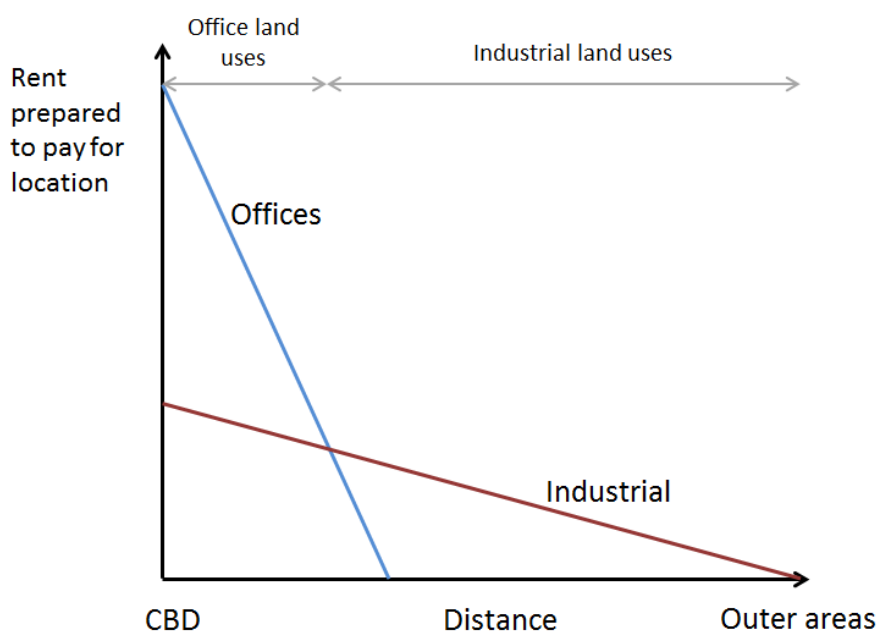
¹⁰⁴ In reality there are other significant non-residential sectors that also form part of this land use equation that are not easily captured by these broad divisions. These include the commercial land uses associated with social infrastructure. Further reading on social infrastructure is available in Teriman, et al. (2010) and Williams and Pocock (2010).

¹⁰⁵ The foundation and measurement of productivity benefits from agglomeration economies are formalised in the New Zealand context in the New Zealand Transport Agency (NZTA) Economic Evaluation Manual (NZTA, 2010), building off the empirical study by Mare (2008). Further derivations and measurement proofs are available from Venables (2007), and empirical studies in the literature by Rosenthal and Strange (2001).

¹⁰⁶ This also occurs at the level of different major centres within an urban area, seen at a broader scale in many urban economies through the formation of large sub-centres (Anas et al. 1998; Kloosterman and Musterd, 2001; LaLiberte, 2009).

¹⁰⁷ Here, the rent curves for each sector are shown to be linear for simplicity. Bid rent curves are actually non-linear and convex as firms substitute different factors within their production function.

Figure 43. Bid rent drivers of commercial land use in urban economies



The horizontal axis represents the distance away from the CBD area, while the vertical axis shows the total rental each land use is prepared to pay at different distances from the CBD. The blue line shows office type uses, with the steep gradient showing these uses are prepared to pay higher rents for central locations, with rent dropping quickly as areas become less central. The red line shows industrial uses, with a shallower gradient. It shows they will pay lower rents for central areas (than office uses) and higher rents (than office uses) in more peripheral locations. Thus, the predominant land use becomes that which pays the highest rent, with the point of land use differences defined by the intersection of the curves¹⁰⁸.

At a high level, bid rent theory underpins the opportunity cost of other land uses. Quantitatively, it sets this through the land/property market highest bid rent at different locations¹⁰⁹.

¹⁰⁸ This theory is applicable at different spatial scales. Here, it is presented to describe broad patterns of commercial sector activity as they occur across the region. However, it also operates both at finer scales (e.g. within a centre), as well as within commercial sectors. The latter explains one of the drivers behind the greater propensity of core retail to locate in larger centres.

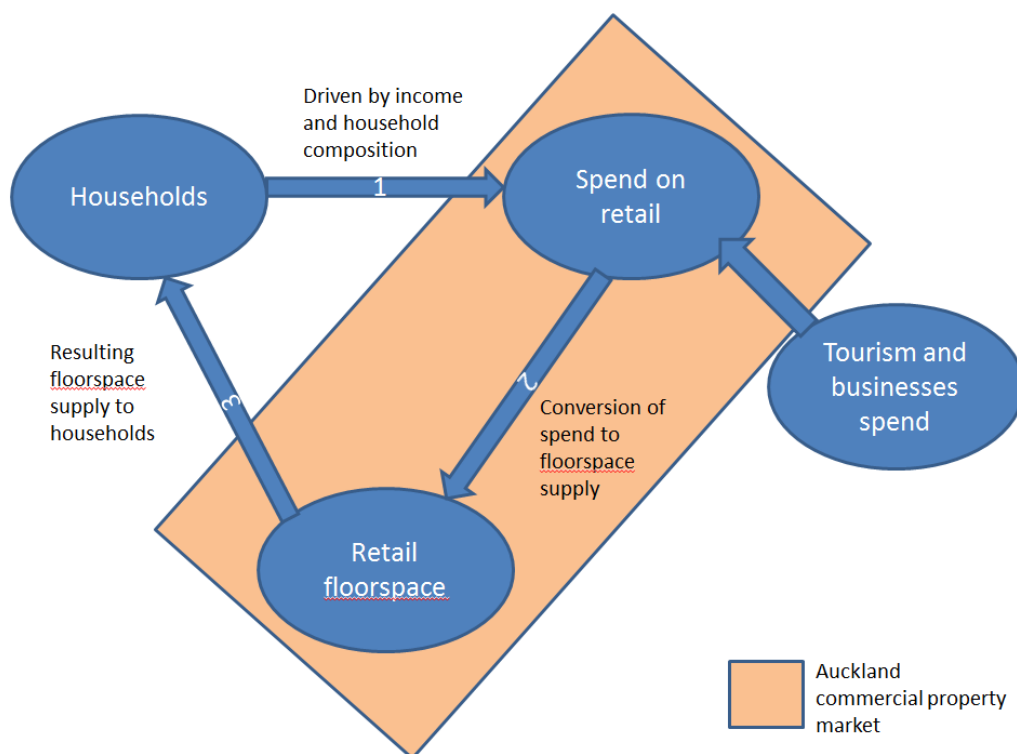
¹⁰⁹ It is important also to note here the relative changes in the floorspace density of between different land uses. Office land uses typically have higher ratios of floorspace to land area due to multi-levelled developments, compared to industrial uses, which have a much lower propensity to develop vertically.

This research establishes a framework for considering retail supply-demand ratios within this context, which is set out in the following section.

6.3.2 Ratios of retail supply and demand

Retail supply and demand needs to be conceptualised within the context of Auckland’s commercial property/land market to determine an efficient quantum and location of supply. This is because land prices (ultimately rent) will impact upon the viability of retail supply in relation to different levels of demand. To do this, the relationship between household demand and spend, and then spend and floorspace need to be delineated by location. Figure 44 sets out the framework.

Figure 44. Conceptual relationship between household demand, retail floorspace supply and Auckland’s commercial property market



Arrow 1 describes household demand and illustrates the relationship between households and spend on retail. Levels of spend are broadly driven by household income and composition, both of which vary across space. Arrow 2 represents the relationship between the level of demand and floorspace supply. Importantly, this occurs within the

context of the commercial land/property market and therefore, will change through space. Areas of higher land value or rent will require higher dollar spend (productivity) per square metre to sustain retail, while lower value areas are able to trade at lower productivities and offset other land uses¹¹⁰. This results in arrow 3 that represents the appropriate¹¹¹ level of retail floorspace to households across different locations. It shows that the ratios between household spend and retail floorspace change by location because of differences in land values spatially within the market.

Figure 45 shows the influence of rent on retail supply¹¹². It builds on Figure 44 in the previous subsection by superimposing the minimum bid rents for retail to be equal to the opportunity cost of other land uses¹¹³. While the location of industrial and other commercial land uses is driven by wider sub-regional factors (section 6.3.1), retail follows patterns of household demand at a more localised level¹¹⁴. The dark blue line displays variations in household demand (corresponding to the second vertical axis) and illustrates these are different spatially to the drivers of other commercial uses. Therefore, the ratio of retail supply to demand also becomes a function of rent, meaning the rate of supply per unit of demand changes (as seen in the changing density of retail centres along the horizontal axis).

¹¹⁰ This concept is well established within the (empirical) urban economic literature, particularly around bid rent curves and the consequent formation of commercial sub-centres as a function of land values across space within urban economies. For further reading, refer to Alonso (1964), Anas, et al. (1998), Balakrishnan, et al. (1994), Burger (2011), Davoudi (2003), Gjestland, et al. (2006), LaLiberte (2009) and McCann (2001).

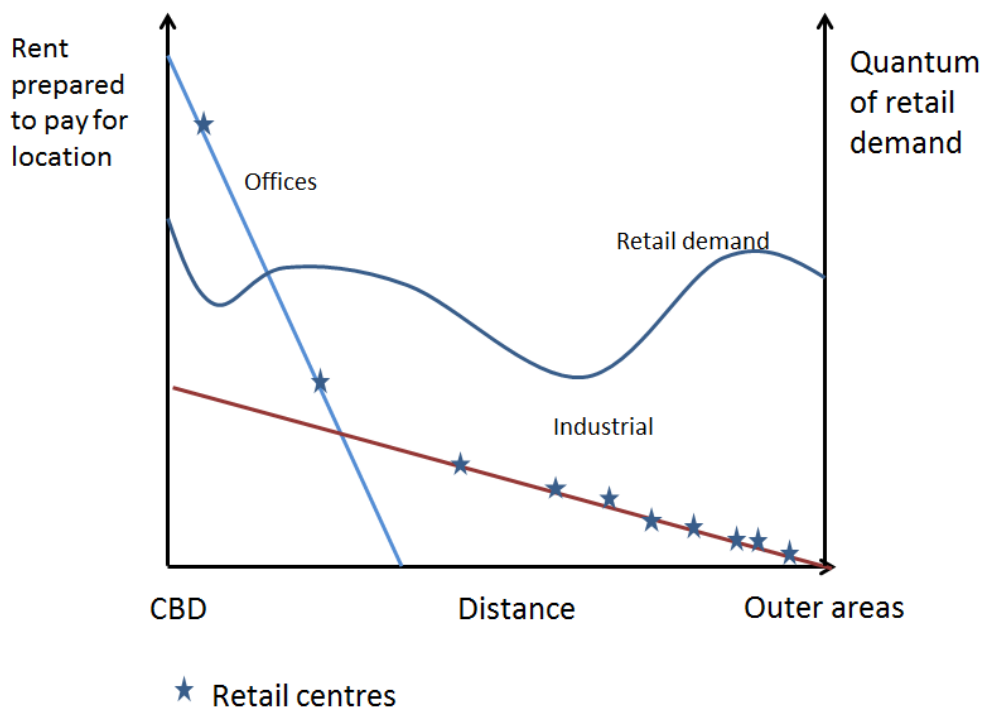
¹¹¹ Importantly, this differs to sustainable floorspace as it may be beneficial for retailers to trade at higher levels per square metre, which is discussed later within the section.

¹¹² It is important to consider the impact of rent rather than land values as large variation can occur in the correlation between these factors. Furthermore, the development of land to different uses is sensitive to changes in the capitalisation rate (Ball, et al. 1998), which impacts upon the overall rental income required to make development feasible.

¹¹³ This should be calculated as a rent per square metre of land to account for different densities of land use between sectors and reflect the equal returns on the land. In some cases a combination of land uses may occur with retail on the ground floor and offices on higher storeys, in which case the comparison is between the ground floor rental.

¹¹⁴ That is, local in relation to other land uses where the location of retail is much more sensitive to patterns of population growth that have more local variation than patterns of major sub-regional infrastructure.

Figure 45. Retail centre rents in relation to demand and rents from land use opportunity costs



While the above diagrams show the rental values generated by other land uses, in many cases the retail rents may be significantly higher in a location. This is because retail is generally highly sensitive to the market location and specific type of site within a centre (e.g. side street vs. mainstreet (Balchin, et al. (2000))). Consequently, retailers in many cases will bid up rental prices within a location (through competition within the sector) to reflect the benefit they receive from a location (i.e. the value of a site is capitalised into rent¹¹⁵). To this end, the retailer has achieved a balance between revenue (sales) and other factors within its production function, notably land (floorspace)¹¹⁶. This further explains the variation in sales per square metre across locations.

Previous analysis of floorspace supply in Auckland has not considered the impact of land values (or rent through the above processes) on the productivity required for sustainable supply. Different ratios of floorspace per household delivered by the market have been wholly considered as signalling wider oversupply. This disregards the sales productivity

¹¹⁵ Part of this effect can be observed empirically through the large rental differentials between large commercial centres and other retail areas within their surrounding catchments. Large centres command higher rents given the benefits retailers receive from their market dominance. This is particularly true for retail sectors that obtain the greatest benefit from retail agglomeration (e.g. core retail) where larger centres are playing an increasingly larger relative role.

¹¹⁶ This does not imply that other factors of production are not important (e.g. number and quality/experience of staff, quality of fit-out for quality of shopper experience, etc), rather that land is the focus of the argument here.

required to offset the differences in land values from other land use opportunity costs. It also neglects to consider the effect of the retail network and urban centre hierarchy operation. This is set out in the following paragraphs.

Predominantly, the objective of retailers is to maximise profit, which at a high level is determined through the difference between total revenue (sales) and total cost (including rent and store construction, labour, operating costs and wholesale merchandise, etc)¹¹⁷. Importantly, the net position from the combination of these factors should be considered across the network of stores within an ownership structure given the trade and market accessibility interaction between stores. Put another way, retailers seek to maximise their profit through efficient market coverage in relation to both population accessibility and the total costs in the number of stores (Birkin, et al. 2002).

In expanding the network through developing new retail, the consideration then includes marginal cost and revenue (i.e. the net increase in sales from a new store and the additional costs) against the profit maximisation objective¹¹⁸. This differs to where a firm will produce up to the point where marginal cost equates to marginal revenue per se (Balchin, et al. (2000)) as the demand is not unlimited and continuous at a market clearing price. Rather, it is the consideration of the impact of new stores on the network of existing stores and whether sufficient profit can be made at the new additional location. This is because demand is not unlimited at a particular price, and there will be some trade impact on existing stores. Therefore, the question for retailers becomes whether it is more efficient to increase trading across existing stores (from population demand growth) and have higher productivities of floorspace, or to expand the number of stores/quantum of floorspace thereby lowering the average productivity across the existing stores – i.e. a trade-off between the marginal increase in market coverage and average cost ratio changes across other stores (from overlaps in demand).

The incremental development of retail across different locations in Auckland through time illustrates the market responding to demand thresholds reached. If sufficient demand were present to achieve the required productivity, the development would have occurred earlier. Most larger retailers have multiple branch locations within Auckland, suggesting prior to

¹¹⁷To reduce complexity, only rent is considered to vary spatially here as other factors of production are considered to be constant spatially. Within this, it is assumed the location, quality and characteristics of the retail floorspace are capitalised into the rent.

¹¹⁸ While this provides a basic framework of some of the market drivers, strategic patterns of retail location are in many instances more complex, such as strategies to crowd out the market from competitors through market saturation (thus increasing overall sales through the loss of competition), whereby the addition of some stores may have higher marginal costs than revenue (in the first instance until the effect of competition removal occurs).

new development it was more efficient to serve the market from an existing branch location.

A significant share of consented floorspace was also within areas of other non-retail land uses. Up to the point of development, this suggests the land had a higher short-run value for other uses¹¹⁹. The previous proliferation of retail development across Auckland where zoning has not been strictly enforced has shown zoning constraints have not been absolute. Retail has still been able to develop in a large number of these locations where sufficient demand has been present, meaning that it has not constrained supply-demand balances. Section 5 demonstrates the quantum of retail floorspace across different zones in Auckland. Moreover, the evidence has shown increasing shares of consented floorspace going into centres through time. Where retail development has occurred on these zones out of centre, it has also been subject to the above principles of opportunity cost as outlined above.

The following section investigates these relationships between rent and sales productivity across space in Auckland to investigate geographical changes in the supply-demand ratios.

6.3.3 Auckland ratios of retail supply and demand

A set of urban economic relationships between households, spend and retail supply naturally flow from the delineated conceptual basis to evaluate the supply-demand relationship established in Figure 44. They should be used to understand and guide levels of retail supply to household demand geographically across Auckland. These relate to each stage of Figure 44 and are the relationships between:

- i. Household income and spend on retail.
- ii. Retail floorspace productivity and rent.
- iii. Household numbers and retail floorspace.

Each are addressed in turn within the following subsections.

¹¹⁹ The higher short-term value of retail (driven by spatial patterns of household demand growth) is often able to outbid other land uses. However, the indirect effects from the displacement and consequent constraint of other land uses that occur over the medium to longer-term are often larger. This is one reason for the management of retail as a planning decision that an entirely laissez-faire approach to land use – i.e. the externalities of land uses cannot be fully accounted for in a free market approach to land use where land goes to the highest bidder.

6.3.3.1 Household income and spend on retail

The first relationship captures the drivers between households and retail spend (i.e. the top part of Figure 44). While a correlation exists between the number of households and total catchment spend, this is significantly influenced by the underlying positive relationship between income levels and spend¹²⁰. Figures 46 and 47 below demonstrate these relationships.

Here, each point represents an Auckland neighbourhood¹²¹, with the total number of households, average household income and average household spend estimated for each. Total households have been sourced from the Auckland Growth Model (Owen, 2012); average incomes have been estimated from the 2006 census data¹²²; total spend per household has been estimated from the BNZ cardholder Marketview Ltd data, and expressed relative to the Auckland total¹²³.

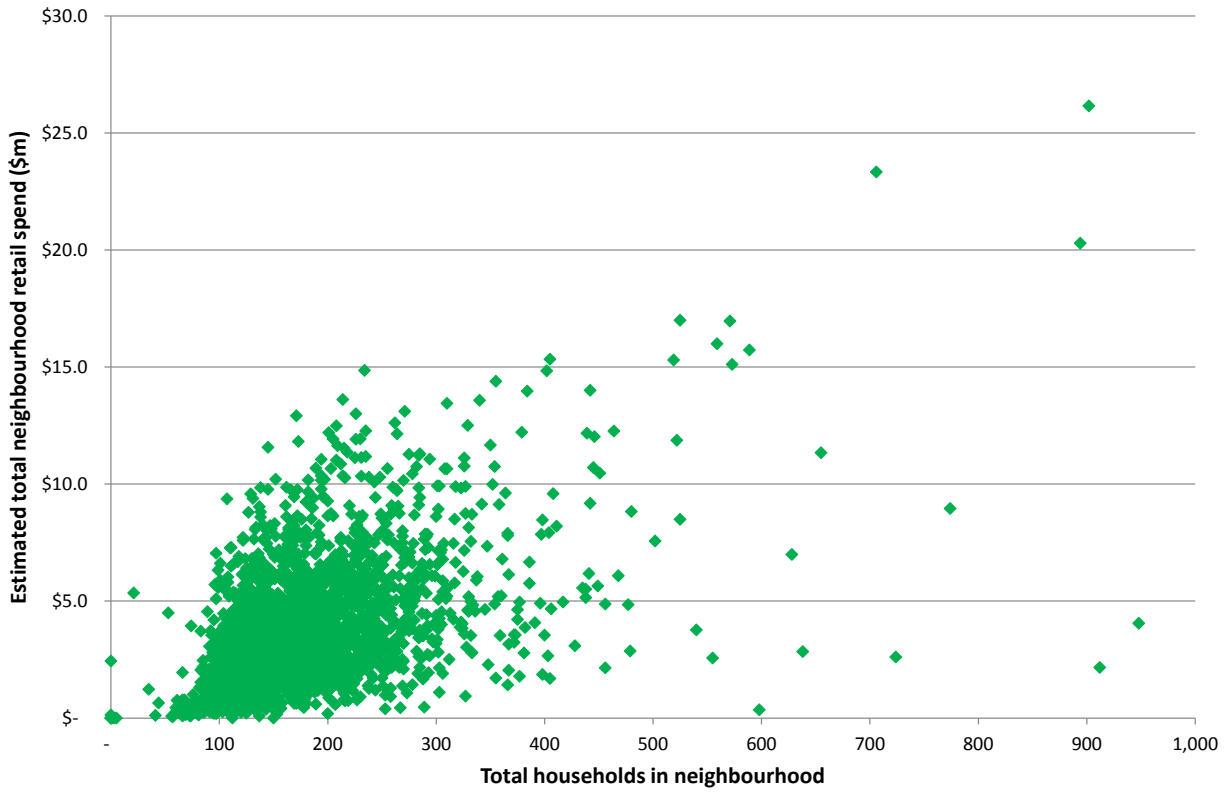
¹²⁰ This is well established within the area of retail analysis, but is important to illustrate here as conclusions were drawn between household numbers and retail floorspace to support arguments of latent demand by some expert witnesses (Tansley, 2009) during the Change 6 Hearings.

¹²¹ These are the same neighbourhoods established by Marketview Ltd and used in the Fairgray (2012 and 2012a) study. There are approximately 2,700 of them in Auckland (refer to section 3).

¹²² This assumes that no major structural change in the relative distributions of household income across Auckland has occurred since 2006. Average incomes for each meshblock have been estimated through taking the midpoint of each income band, then multiplying by the share of households within each band (excluding non-responses), and assuming a “midpoint” of \$110,000 for the ‘\$100,000 or more’ category. Using a different midpoint for this category does not change the overall pattern of results. Meshblocks were then aggregated to the 2,700 neighbourhood catchments. Incomes were then expressed relative to the Auckland average to remove monetary values as they were subsequently compared to 2012 patterns of household spend. Average total spend was similarly expressed relative to the Auckland average for each neighbourhood area.

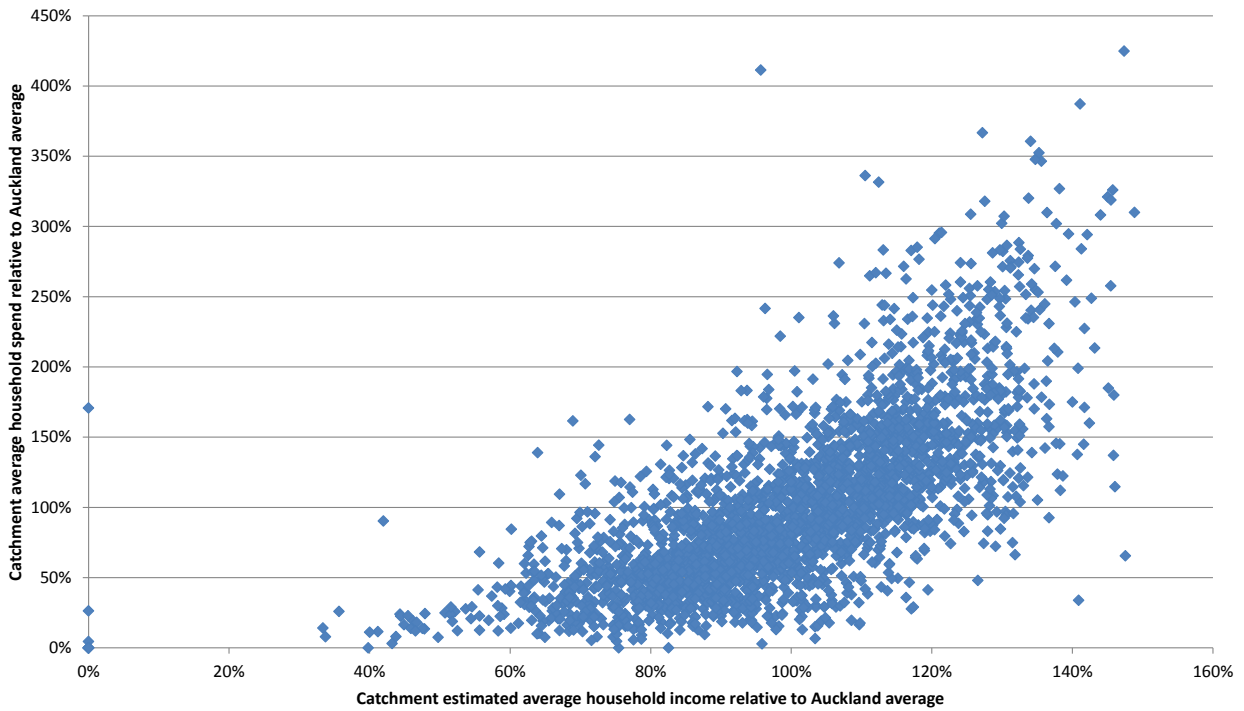
¹²³ It was assumed the BNZ cardholder data represents a 15 per cent market share across all catchments. While there is some variance in market share here, it is insufficient to invalidate the relationship between household income and spend.

Figure 46. Total Auckland neighbourhood households and estimated electronic spend on retail, 2012



Data source: Marketview Ltd and Auckland Council, Auckland Growth Model.

Figure 47. Average household income and retail spend by Auckland neighbourhood



Data source: Marketview Ltd and Statistics New Zealand, Census of Population and Dwellings, 2006.

A significant relationship exists between average household spend and average household income. This means that any calculation of ratios of supply directly to household numbers would be influenced by these differentials in household spend. Therefore, calculations need to be conducted on the basis of per unit of spend (e.g. per \$1,000) rather than per household. These relationships are influenced at differential rates between retail categories. The Statistics New Zealand Household Economic Survey (Statistics New Zealand, 2010 and 2013) spending patterns show greater *shares* of household income are spent on core retail (i.e. durable goods) within the higher income categories as well as larger overall amounts of spend. This means that geographical household income profiles have an even greater influence on the core retail categories.

6.3.3.2 Retail floorspace productivity and rent

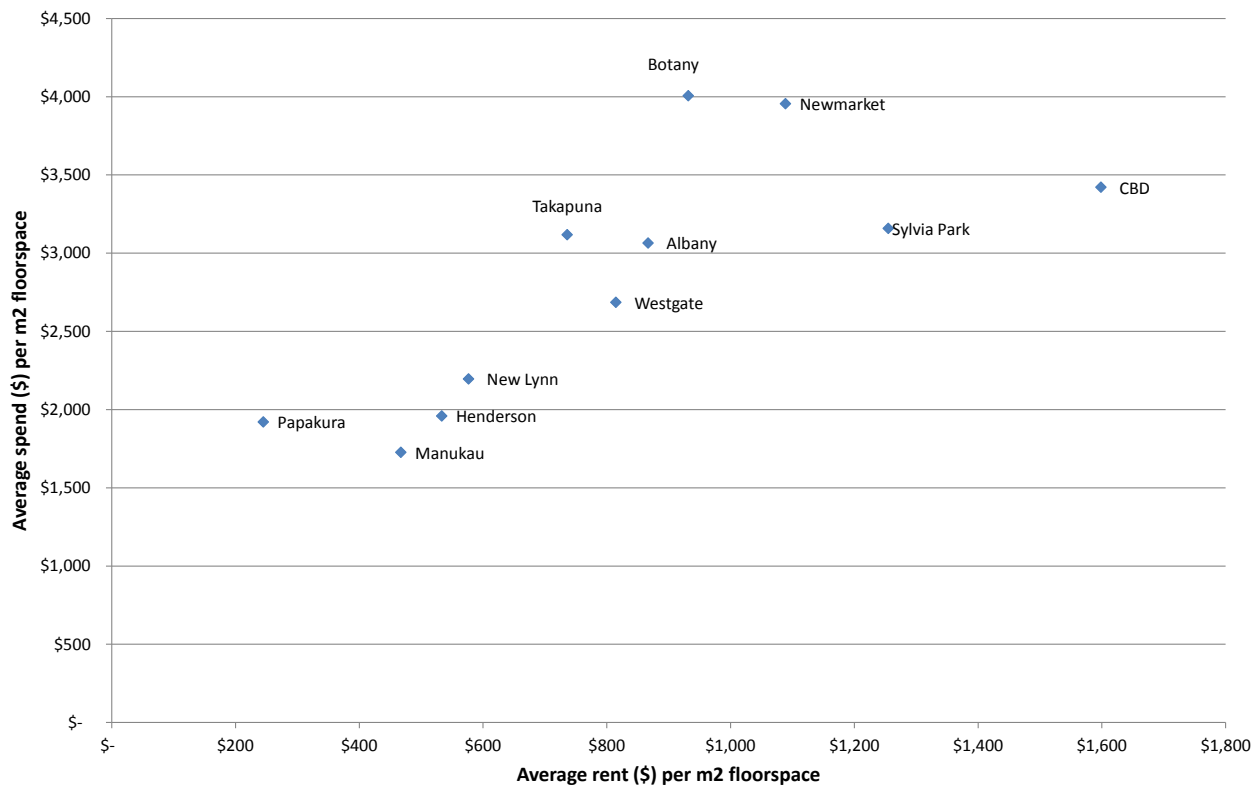
The second relationship occurs between retail sales productivity (i.e. \$ spend per m² of floorspace) and rent (i.e. \$ rent per m² of floorspace), driven by Auckland's commercial property market. A positive correlation exists between rent and sales showing that more expensive space is being used at greater productivities. Appendix 8 outlines the methodology undertaken to calculate average rental values for different centres across Auckland.

Figure 48 shows the average centre rents and sales per m² for the city centre and each metropolitan centre¹²⁴. Centres with higher average rentals also have higher sales per m², while centres with lower rentals have lower sales productivity. This shows that with this relationship, less floorspace is used per \$1,000 spend in more expensive areas. These areas correlate with regional density gradients across Auckland and include the City Centre and Newmarket. The City Centre sales per m² is likely to actually be higher in mainstreet areas (relative to other centres), but this effect is somewhat diluted by *relatively* larger surrounding centre peripheral areas. Areas of high rents and sales also include Sylvia Park and Botany, reflecting their geographic centrality to major household catchment areas; and in Sylvia Park's case, the extensive catchment access across a substantial share of Auckland's urban area¹²⁵.

¹²⁴ This also includes the areas surrounding metropolitan centres that function effectively with the centre. These are outlined in Appendix 4 and discussed in section 5.

¹²⁵ This is demonstrated in the higher distance effects curves for Sylvia Park in Fairgray (2012a).

Figure 48. Average rent and electronic sales per m² of floorspace in Auckland metropolitan centres and the City Centre, 2012/2013

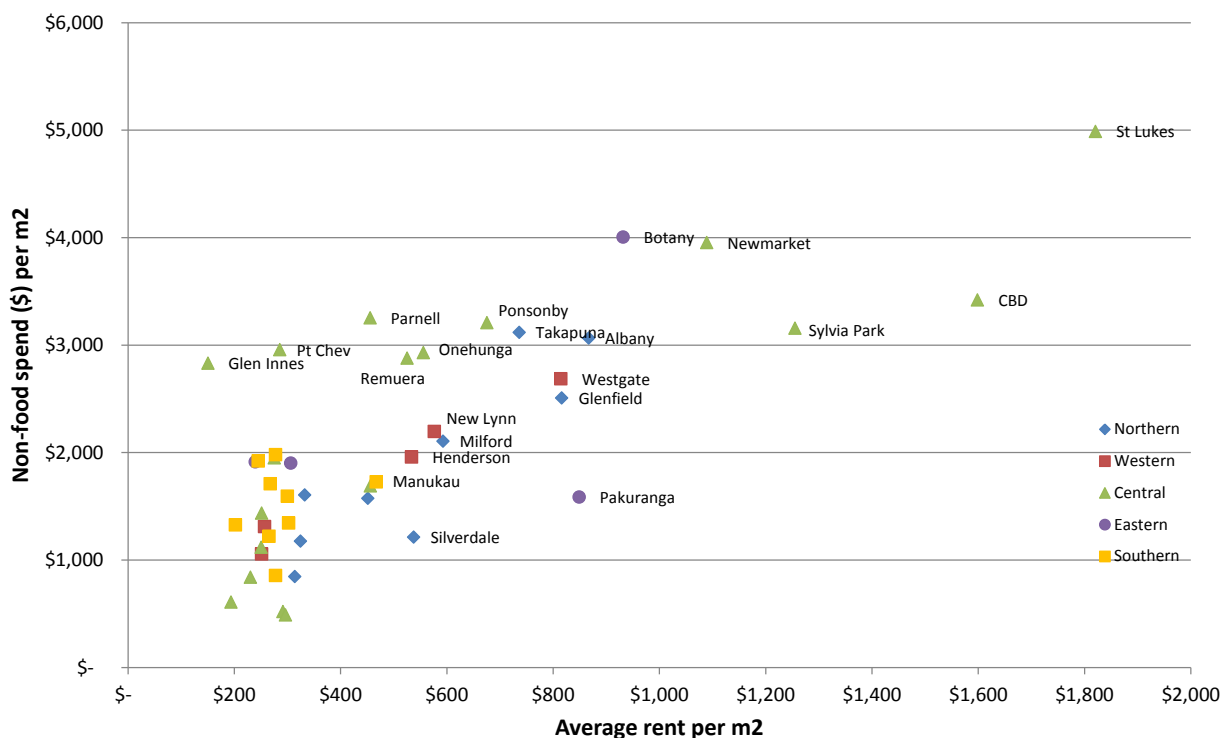


Data source: Colliers International Ltd, Marketview Ltd, and floorspace base established in section 5.

Of the less central metropolitan centres, Takapuna, Albany and Westgate have the highest productivity and rentals, reflecting their generally higher land values and household incomes on the North Shore and northern rural areas (which, account for a large share of Westgate’s catchment). The southern and western centres of Manukau, Papakura, Henderson and New Lynn have lower rents and sales values than other metropolitan centres within Auckland.

These patterns are also present when results are displayed across the City Centre, metropolitan and town centres combined. Figure 49 displays these centres using a different symbol type for northern, western, central, eastern and southern centres. Similarly, a general pattern is shown where higher rentals correspond with higher sales.

Figure 49. Average rent and electronic sales per m² of floorspace in Auckland metropolitan and town centres and the City Centre, 2012/2013



Data source: Colliers International Ltd, Marketview Ltd, and floorspace base established in section 5.

Overall, the central Auckland centres are those with the highest rents and corresponding sales per m². Northern, western and eastern Auckland centres are distributed throughout the middle of the centre profile, with southern centres clustered around the lower rental scale, although some central Auckland centres are supporting higher volumes of sales. These include Onehunga, Glen Innes, Remuera, Pt Chevalier, Parnell and Ponsonby. Part of this effect is likely to represent some producer surplus to retailers and occur due to several factors, including:

- i. Higher catchment demand.
- ii. A share of household spend occurring at the workplace (at these centres).
- iii. The inclusion of major regional attractors (i.e. Dressmart in Onehunga and specialised retail in Ponsonby and Parnell).
- iv. Greater density of centres on the isthmus.

Higher trading rates and customer experience

Higher rates of trading in stores also reflects the success of the store and the higher quality shopping experience rather than overtrading on floorspace. Customers, in particular higher income consumers, are typically prepared to pay more for a higher quality shopping experience. A wide spectrum of literature investigates the drivers of consumer

response to shopping experience, finding that consumers are prepared to pay more for a greater variety of stores, higher level of service (including better quality advice from trained staff), higher quality goods, and higher quality aesthetic and social aspects of retail centres (to reflect also the leisure and social utility derived from shopping)¹²⁶. These factors all tend to increase the cost for retailers, meaning turnover needs to be higher to sustain the retail. A key point is that customers seek a variety of stores and merchandise offering within the retail sector (David and Hodges, 2012). The addition of further LFR stores is unlikely to substantially increase the variety of retail offering at the regional level due to the high concentration of floorspace into chain stores. Conversely, increased variety at the regional level is likely to be achieved through smaller format more specialised stores.

6.3.3.3 Household numbers and retail floorspace

Lastly, the relationship between households and retail floorspace is considered. Importantly, this is calculated based upon the actual catchment service areas of centres (driven by the spatial spending flows) in Auckland. Previous analyses among some expert witnesses during the Change 6 hearings compared the number of households to retail floorspace *within* each territorial local authority (TLA) area. However, new information (Fairgray, 2012 and 2012a) illustrates these legacy jurisdictional areas have little relevance for the operation of centres and their household catchment areas (see also sections 3 and 6.2).

As such, this research instead takes account of these spending flows from each household catchment (forming the actual centre catchments) across a range of different centres from which households meet their needs. To do this, it applies a similar index to that of the household amenity index discussed in Part 4. However, spend (as a measure of the size of the centre) is replaced by floorspace to demonstrate the changes in this relationship. Thus the measure of relative floorspace supply to each neighbourhood (NFS_i) becomes:

$$NFS_i = \sum_1^j \frac{FS_j}{\beta_j D_{ij}}$$

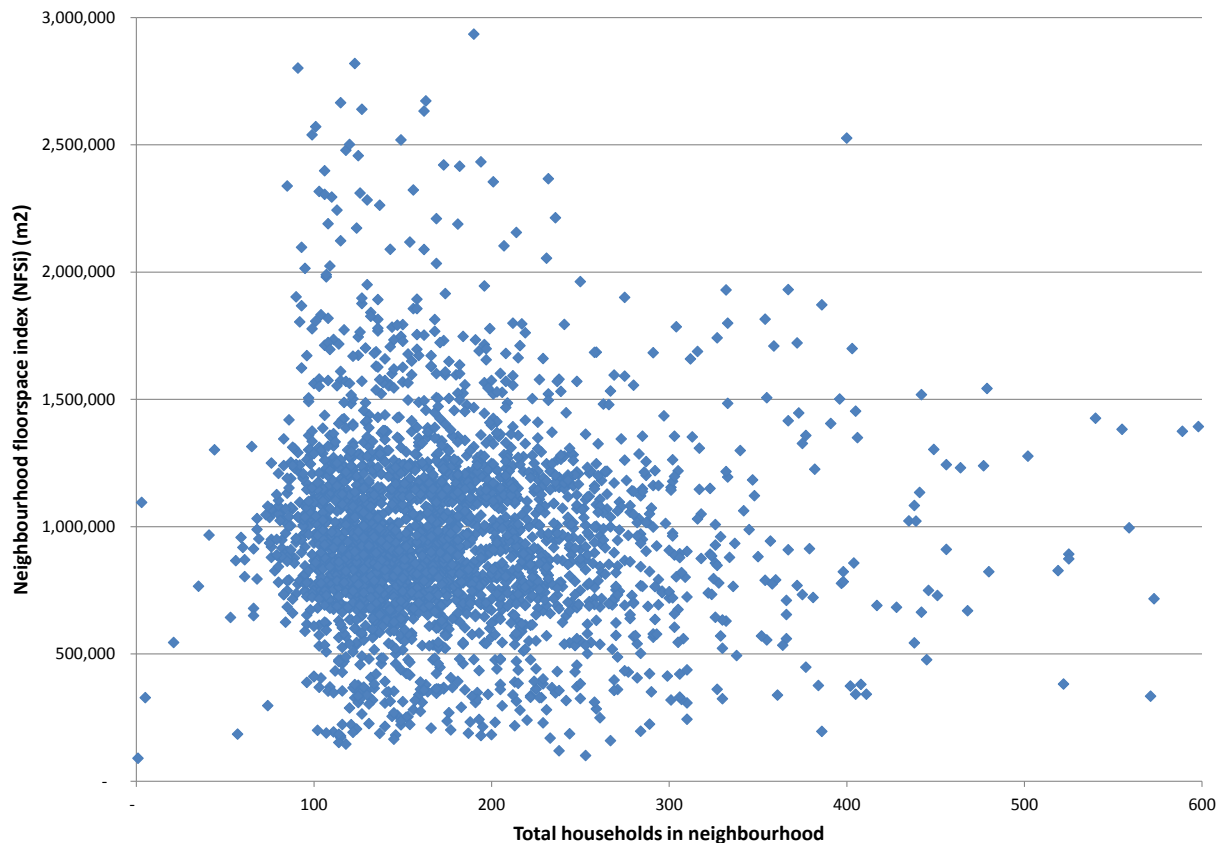
where FS_j is the non-supermarket retail floorspace at centre j , D_{ij} is the road network distance between neighbourhood i and centre j , and β_j is the beta value from the retail

¹²⁶ Examples from the international literature that explore the impact of these factors include Goss (1993), LeHew and Fairhurst (2000), Sorescu et al. (2011) and Wrigley and Lowe (2002).

gravity model, which determines the distance decay effects of different centres (explained in Part 4).

Figure 50 shows the output of the relative floorspace supply measure. There is no clear correlation between the number of households in a neighbourhood and its relative access to retail floorspace¹²⁷.

Figure 50. Auckland neighbourhood relative access to retail floorspace and total households, 2011/2012



The relationships between households, spend, rent and floorspace explored here are used to inform the forecast floorspace demand for retail in the following section. While the methodology is outlined in greater depth in section 7, the relationship between sales per m² and floorspace across different areas of Auckland are extrapolated to make broad sub-regional adjustments to areas falling outside of these centre areas¹²⁸. Household spend is then forecast by neighbourhood, taking account of the relationship between households and spend through the influence of income. Thirdly, spatial spending patterns are used to

¹²⁷ Floorspace is used from section 5.

¹²⁸ These are expressed in relation to the overall Auckland average.

make the final connection between households spending growth and retail supply as it occurs within the context of the commercial property market.

6.4 Section conclusions

Regional balances of household demand and retail supply have been investigated within this section. In accordance with the brief, it has evaluated the suggested undersupply of 600,000m² of retail floorspace referred to during the Change 6 hearings. This has been done firstly through evaluating the basis for the 600,000m² figure as it has been calculated during the hearings; then secondly, through analysing how retail floorspace supply (and the sector generally) has responded to changes in demand. This includes the study of building consent data spatially and temporally across Auckland. It then identified how the retail market is operating in Auckland through analysing spatial flows of spend between household neighbourhood areas and different centres. These were considered against the claims of spending flows (between central households and outer centres) arising from retail undersupply in Auckland during the hearings.

The second half of this section has developed a framework through which to more reliably understand the relationship between households, spend and floorspace *across different geographic areas*, within the context of Auckland's commercial property market. This builds off the empirical supply base established in section 5 that enables these ratios to be calculated spatially across Auckland. This framework forms the basis for spatial supply-demand forecasts in the following section.

In conclusion, this section has found no evidence to support the calculation of 600,000m² of latent demand for retail floorspace in Auckland. Instead, the figure has been stated as the difference between two datasets (supply and demand) due to differences in retail categories and not in fact any calculation of latent demand. Moreover, the differences in the supply and demand calculations were shown to be largely resolved through the same Change 6 process once consistent alignment of retail categories were achieved. The investigation of spending flows across Auckland has also not yielded any evidence to suggest isthmus households are meeting needs peripherally due to local undersupply in retail. Instead, similar levels of household needs were met locally on the isthmus to other areas across Auckland, with the large suburban centre growth partly fuelled by demand from other *adjacent* major centre catchments.

The analysis has also found no evidence to suggest any large unmet retail demand from households (through no unspent budget). Therefore, when considering increasing the supply of retail in an area, the trade impacts on the existing network need to be taken account of when analysing distributional impacts as the spend will be redirected from other centres and not pent up unmet demand.

This section has also found that the retail sector has responded to changes in demand. Supply and sales have dropped and vacancy rates risen in response to a drop in demand (2008-2010), which is contrary to pent up demand where no change in supply would be expected to occur due to the ability of large amounts of unmet demand to sustain supply. A large amount of retail floorspace has also been consented across the last two decades, at rates above expected levels of household demand growth. It has also been spread geographically across Auckland, with nearly all consents with large overall floorspace areas. A large amount of shopping centre supply (including LFR mega centres) has also come online during this period, where the structure of the sector has been able to reflect changes in the structure of demand. These geographic patterns of development are also aligned with the spatial catchment patterns of spend across Auckland (which are highly complex).

The conclusion reached here suggests the absence of any significant market constraint in the current level of supply relative to the wider Auckland commercial property market. It does by no means recommend an entirely market-led approach to commercial land use. Rather, it becomes a planning or policy value decision as to whether to allow future retail growth at the constraint of other sectors as the short-term bids for retail differ to the longer-term effect impacts from changes to the structure of land use, and the externalities (arising from the impact of urban form) cannot fully be accounted for within a free market approach to land use due to differences in the spatial scale, time and direct vs. indirect nature of effects. Consequently, any judgement on the most efficient distribution of land use (and within that, retail) is a much larger research question that has not yet been undertaken within the Auckland urban economy.

The conclusion that regional supply and demand are *currently* broadly in balance within the context of the Auckland commercial property market also does not suggest there will be no land constraint within the future. As shown in section 7, a high share of consumer demand is likely to be for large format retail. The calculations of capacity within centres, corridors and other areas of Auckland's business land as part of a separate workstream will inform this issue.

The establishment of an empirical evidence base of retail supply in section 5 of this research, and earlier detailed spatial spending flows evidence has enabled the identification of geographical variations in how the retail sector operates across Auckland. Consequently, this section has developed a framework to delineate the supply-demand relationships from simply between floorspace per household, to also include the relationships between households and spend, then spend and floorspace, for both of which it is necessary to vary geographically. Importantly, the latter is analysed within the context of Auckland's commercial property market, allowing the productivity of floorspace to vary across locations. This is crucial as it reflects the differences in productivities required to offset land use opportunity costs and the more intensive use of space required in areas of greater land demand (i.e. more central and accessible locations). This has also been demonstrated through the relationships between rental information, sales and floorspace across Auckland.

The framework also recognises the operation of retail centres/stores as part of a network where the establishment of new retail is not just a function of marginal cost and revenue, but impacts on the cost and revenue of the existing network – i.e. it may be more efficient for a store to trade at higher rates in one location than expand its store network, thus expanding the market coverage, but simultaneously reducing average revenue across existing stores.

Given the role of Auckland's wider commercial property market and the retail sectors positioning within it, different productivities of floorspace can be expected geographically across Auckland. This has important planning implications where generally less floorspace is required per unit of demand (e.g. per \$1,000 sales) in areas of higher accessibility and centrality across Auckland, than in more peripheral areas of cheaper land. These ratios flow through to Part 3 in the calculation of future floorspace demand for retail.

Part 3 – Future retail sector in Auckland

7 Forecast growth in retail across Auckland

7.1 Introduction and context

Demand for retail floorspace will grow substantially in Auckland over the next 20-30 years to meet the needs of the anticipated growth in households, businesses and tourism. Within this, growth will be driven by both real increases in expenditure across existing households, as well as new household formation. Part of the latter will be due to demographic changes with increases in the number of smaller households, thus having a greater number of households relative to overall population. Understanding the quantum and type of demand for retail supply (by location) is the core focus of this section.

As well as increases in the amount of floorspace, structural changes are also expected in the type or *format* of new floorspace. In particular, larger format floorspace has accounted for increasing shares of retail growth over the last two decades. The role of larger sub-regional centres has also increased relatively through time, a trend which is likely to continue into the future (see Section 4). While a large share of this past large format growth has been accommodated within existing and new centres, significant shares have also occurred in edge of centre or previously non-retail land.

Auckland's large size and consequent complex urban hierarchy means growth will need to be accommodated across a range of different centres and centre types, and other types of location. This contrasts with monocentric urban structures where growth is accommodated in one or two major centres where households typically meet the predominant share of their needs in a single centre. Therefore, Auckland faces distinct challenges in accommodating and managing the effects from the location of this growth.

Accommodating further growth to meet the population's needs will increase the demand for space across different types of location in Auckland. Importantly, this demand for space occurs within the context of Auckland's commercial property market (upon the base established in sections 5 and 6). Land scarcity and variable demand for different land uses spatially, will mean retail growth needs to be balanced with other land uses and opportunity costs.

Following from section 6, the rate of floorspace supply per unit of demand will differ across Auckland geographically, as well as by *type* of location (e.g. mega vs. metropolitan vs. local centre, etc). This is because the relationship between spending power and floorspace supply occurs within this commercial property market context (see Figure 44 in section 6). Retail space will generally need to be more productive in areas of higher land value (especially central areas or dominant centres) to offset the opportunity cost of land or meet the bid rent prices of major centres (which are high due to the benefit of retail agglomeration and locating within a dominant centre). Retail is also typically more successful and higher quality within these centres, therefore, also increasing the rate of sales as consumers travel to better retail offering (Goss (1993), LeHew and Fairhurst (2000), Sorescu et al. (2011) and Wrigley and Lowe (2002)). Growth of larger centres and their associated higher turnover also reflects efficiencies for consumers through single-destination trips to centres providing choice from a broad range of goods on offer.

Differences in productivity will therefore, have implications for the level of retail space supply required in different areas to meet household demand. Less space will generally be required per unit of demand¹²⁹ in higher value areas as each square metre of retail floorspace will need to serve a greater amount of spend due to the higher bid rent cost of space in these areas. The same is true for larger centres which tend to have high bid rent prices¹³⁰. These centres also tend to have high market share in their respective areas (driven by both demand and supply side factors), meaning they have higher trading productivity than other types of location within their broad catchment areas.

The market will generally correspondingly deliver more floorspace per dollar spend in areas of lower land value. Part of this effect is highly localised at the zoning boundary level, dependent also upon broad balances between industrial and office type uses, including the impact of their respective densities.

Forecasting growth in demand for retail through spending and the corresponding need for land supply form the core focus of this section. A model is developed which calculates the levels of *spending* growth, and the corresponding levels of floorspace required to meet this demand. Importantly, it builds off the existing supply base established in section 5, and applies the supply-demand ratios developed in section 6 to accommodate new supply within the context of Auckland's commercial property market.

¹²⁹ Importantly, this should be expressed per dollar value (e.g. per \$1,000) of spend and not on a per household basis. Differences in household income mean that a 'per household' basis cannot be used as a 'per unit of demand' measure (refer to section 6).

¹³⁰The average rentals per square metre are substantially higher in larger regional and sub-regional centres than other types of shopping centre (CBRE Ltd, 2012 Auckland Property Market Monitor).

The section begins by outlining the technical methodology undertaken to construct the forecasts. It then presents the results of spending growth at the regional level and by geographic origin. The latter part of this section builds off the spatial patterns of supply-demand and geographical variances in floorspace productivity to identify the broad spatial location of supply.

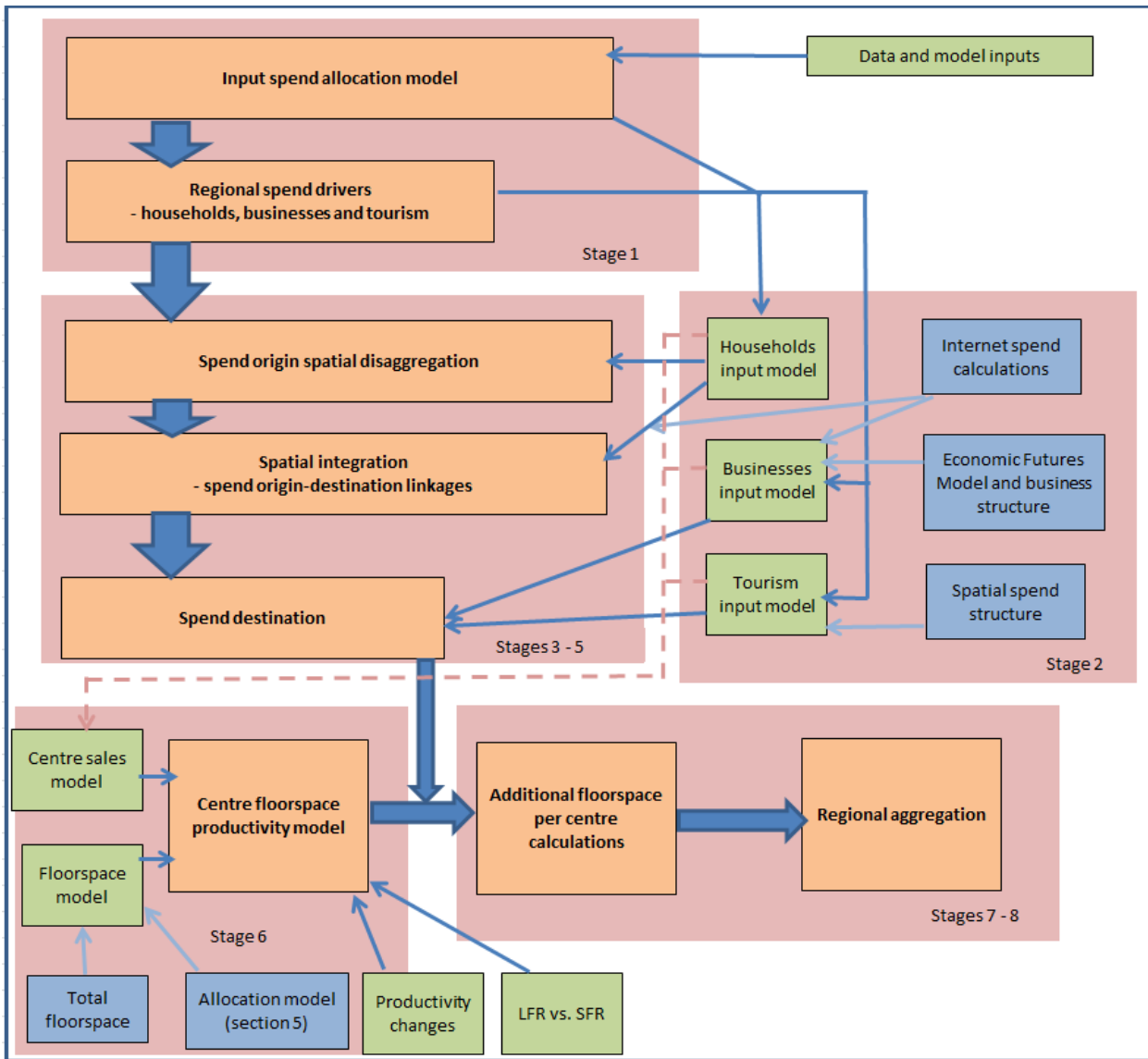
7.2 Methodology

There are several key stages involved in the forecasting of retail growth within Auckland. These include:

- i. Establishing the base relationship of spend by retail type and the distribution across household, business and tourism demand (section 7.2.1 and model stage 1).
- ii. Generating regional level spend forecasts from this base, driven by growth in households, businesses and tourism (section 7.2.2 and model stage 2).
- iii. Identifying the likely spatial origin of spend from households (section 7.2.3 and model stages 3-5).
- iv. Generating the broad geographical location of supply in relation to demand origin (section 7.2.3 and model stages 3-5).
- v. Calculating spatial variances in floorspace productivity across Auckland (section 7.2.4 and model stage 6).
- vi. Applying these productivities across forecast sales growth by destination to convert spend to floorspace (section 7.2.4 and model stages 7-8).

Figure 51 displays the broad structure of the model developed to undertake each of these stages. Each key component is listed below in Figure 51, then described in detail in the subsections within this section.

Figure 51. Structure of RIMU Retail Growth model



7.2.1 Establishing base estimates (stage 1)

The provision of retail floorspace is driven by spend from households, businesses and tourists. It is important to determine the share of spend originating from each division within the current base situation to develop robust forecasts of growth. The structure and quantum of spending (e.g. consumables vs. durables) differs between households, businesses and tourists. It is important to understand these differences to apply to the calculations within the forecasts of each demand stream (i.e. households, businesses and tourists).

Developing a solid base picture of how spend type (i.e. households, businesses and tourist spend) is distributed across these retail categories is a complex process involving the

combination and triangulation of many different data sources. This section outlines the methodology undertaken to generate these estimates.

National level framework

Establishing a national level framework within which to situate the Auckland market is a key first stage because:

- i. It provides a complete system, meaning inter-regional flows of spend between Auckland and the rest of New Zealand are balanced and accounted for.
- ii. A full range of data is generally available at the national level, meaning ratios can be identified at the national level. Ratios are also not subject to process error where some regional level data may be subject to estimations of Auckland's share of the national data.
- iii. National data is in some cases verifiable and balanceable through national level accounting.

Total spend flows

It is also key to firstly identify total flows of retail spend at both the national and Auckland levels. The Statistics New Zealand *Retail Trade Survey* provides the total spend (excluding GST) going through retail¹³¹ outlets nationally and in Auckland, from all sources of spend. Detailed discussions with key contacts at Statistics New Zealand determined that Auckland flows were built up from extensive survey coverage of turnover at Auckland outlets, then multiplied up to the total Auckland level using Statistics New Zealand *Business Demographic* data on the total size of the Auckland retail sector¹³². Consequently, this data captures any differences in productivity between Auckland outlets and the rest of New Zealand (rather than circularity resulting from a pro-rata estimate from employment¹³³), making it a robust estimate of the total retail market size in Auckland. Customised data was then purchased at the Auckland level disaggregating spend by retail category to match those available from the survey at the national level.

Spend figures by retail category were then triangulated with employment and business demographic data to determine whether Auckland shares of national spend were within expected ranges. Discussions with Statistics New Zealand also yielded an ANZSIC activity

¹³¹ The sample frame includes all retail and hospitality categories. For this analysis, automotive (i.e. vehicle, parts and fuel retailing) and accommodation have been removed as the sectors are generally treated differently in planning rules and exhibit different patterns of growth to other retail categories.

¹³² This means survey information on individual businesses were taken from the sample and weighted according to their representation of Auckland's retail sector where the overall size (including the composition of the sector in terms of employment and businesses and the number of employees within each business) was determined through the Statistics New Zealand *Business Demographic* data.

¹³³ These checks were undertaken, because at the outset it appeared Auckland spend was estimated using Auckland shares of national retail businesses due to the alignment of these ratios.

classification definition of the survey frame so alignment could occur between the two data sources.

Tourism spend

Total flows of tourist spend were firstly identified at the national level using the Statistics New Zealand *Tourism Satellite Account* data on tourist retail spend (1990 to 2012, excluding GST). This was disaggregated within the accounts into domestic (household) and international spend. Only international tourist spend was captured at the national level as domestic tourist spend would net out (at the national level) with other household data sources described below.

The Ministry of Business, Innovation and Employment (2013a) *Commercial Accommodation Monitor* was then used to generate an estimate of the average spend per visitor night¹³⁴. This also provided a breakdown of visitor nights for both international and domestic tourists separately between Auckland and the rest of New Zealand over time (2000-2012). Estimates of tourism nights spent in Auckland from the International Visitor Survey and Domestic Visitor Survey has also been undertaken by the tourism sector team within Auckland Council's Auckland Tourism Events and Economic Development (ATEED) unit, in relation to the Commercial Accommodation Monitor, which provided further guidance during this process. On this basis, Auckland's share of international and domestic tourism spend was estimated.

Tourism satellite accounts also provide some breakdown of tourist spend by retail category. These were aligned on a best fit basis to the Retail Trade Survey spending categories and the retail categories used in the Proposed Auckland Unitary Plan. Aggregation to durable (core retail and trade) and consumable (food and liquor, and hospitality) was necessitated to achieve good alignment, with subsequent estimations across the groups within these categories.

¹³⁴ The Commercial Accommodation Monitor only includes guest nights spent within commercial accommodation. However, this is only used to estimate the share of total guest nights spend within Auckland in order to split the national level tourism spend between Auckland and the rest of New Zealand. The assumption therefore, becomes that the share of Auckland's total guest nights spent in commercial accommodation is equal to that of New Zealand. This is likely to provide a conservative estimate of total Auckland tourist spend as it is likely to understate the number of guest nights spent with friends and family, which is likely to be higher in Auckland than other regions. Yet, the underestimate is not likely to be as large as total non-commercial accommodation nights as spend per night is likely to be lower in non-commercial vs. commercial accommodation as tourists have access to their host family resources, reducing the need to spend.

Customised Marketview data on tourist spend was also used to calibrate the net balance of domestic tourist spending flows between Auckland and the rest of New Zealand. Here, the share of domestic electronic card spend in Auckland was disaggregated into origin destination as Auckland vs. rest of New Zealand, and applied to Auckland and national spending totals. Auckland as a larger market attracts a greater amount of spend from households in the rest of New Zealand than Auckland households spend in the rest of New Zealand.

It is more challenging to identify the distribution of spend between households and businesses. A number of data sources were used to identify shares of the Retail Trade Survey spend accounted for by each demand category, which are described in the following paragraphs. Again, it is important to build this up from individual retail categories as the shares across businesses and households will differ by category.

Household spend

The Statistics New Zealand *Household Economic Survey (HES) 2010* provides a detailed disaggregation of spend across retail categories by household type in Auckland and the rest of New Zealand. A customised order was purchased for Auckland with spend for a number of specified retail categories (from this study, that ultimately aggregate to Unitary Plan retail categories) by each of 47 different household types. The household types were developed by Market Economics Ltd (2013)¹³⁵ and form an input into Auckland Council's Auckland Growth Model. They are based on various combinations of household composition, householder age demographics and income quintiles that are key drivers of household spending patterns.

The HES however, underestimates overall retail spend. Direct correspondence with Statistics New Zealand provided further detailed technical information on the survey collection method, but was unable to account for the large differentials between the HES and other data sources (described below). When triangulated with income data, the overall spend recorded by the HES across all expenditure categories is below that expected in relation to household incomes, suggesting an undercount. The undercount appears to be applied equally to all retail categories as the structure of spend across retail categories is consistent with other the other sources. Yet, the HES remains a critical input to the

¹³⁵ Market Economics Ltd originally constructed household types through an analysis of Census data in 1983 and have continually updated and re-evaluated these through time.

calculations because it provides a good overall breakdown of spend by retail category, and crucially, household type¹³⁶.

Large customised orders of Marketview Ltd data on electronic card spending (by retail category, customer geographic origin and destination of spend) were purchased for Auckland for the 2011 and 2012 calendar years. The data uses both BNZ card and total Paymark network transactions, which cover about 70 to 75 per cent of the electronic spend market. Marketview Ltd scale up the data in accordance to market share to give an estimate of overall electronic spend¹³⁷. This data source provides a good foundation for estimating the overall household electronic spending component of household spend. Estimates are also provided by Marketview Ltd on the additional volume of cash spend within each category, based largely on industry knowledge and their analysis against other data sources. These were used to guide estimates of the additional cash spend within this research. Marketview data was also triangulated with household income data¹³⁸ to compare the average overall household retail spend as a share of net income.

Business spend

Less information exists on flows of spend by businesses within the retail sector. It is inappropriate to simply state the residual between the Retail Trade Survey and sources of household and tourist spend data equates to the total business spend. This is because household spending information is underestimated within each of these sources, with the overall quantum requiring adjustment. This becomes clear when applying the residual at face value (i.e. with no household spend data source adjustments) on a per employee basis¹³⁹. Therefore, the most appropriate approach was to refine the household sector

¹³⁶ A correction is made here using the total estimated household share of spend within each retail category, and applied in accordance to the spatial structure of each retail category across household types.

¹³⁷ Extensive fieldwork was conducted by RIMU during 2011 as part of the Fairgray (2012) study to get merchant lists for approximately 100 centres across Auckland (and subsequently updated by Marketview Ltd). The 2012 study estimated around two-thirds of all Auckland spend occurred within these areas, with the remainder occurring elsewhere within the Auckland region. Marketview Ltd estimate that they capture data from the full market within these centres, and around 90 per cent of the merchants elsewhere in Auckland. Therefore, the data represents around 95 per cent of the overall electronic spend in Auckland.

¹³⁸ Various income data sources including the Statistics New Zealand *Income Survey*, *Household Economic Survey* and *Census* were used in this triangulation to determine whether the quantum of retail spend identified was in the correct range.

¹³⁹ This issue arose during the Change 6 hearings where Heath (2009) estimated around 30 per cent of retail spend came from businesses through the residual approach. If this were the case, it would equate to around \$8,500 and \$10,000 per year (\$162 and \$187 per week) per employee at the Auckland and National levels respectively, which is instinctively too high.

spend components, and use other methods to guide the estimation of the size of the business share of spend¹⁴⁰.

The Statistics New Zealand *National Accounts 2007 Input Output tables* (Statistics New Zealand, 2007) form part of this process. A rough benchmark can be obtained through comparing the total industry transactions (i.e. purchases of goods from retail by other industry sectors) with the share of final demand consumed by households and the total output of the sector (Statistics New Zealand, 2012b). However, this is used only for proportionality as the inter-industry transactions, and supply and use tables show the marginal profit from the sector (i.e. value added) in the flows rather than the total output (i.e. sales) from the sector. The input-output tables disaggregate retail in seven categories, which were considered individually to capture differences in the overall structure of demand between sectors. Overall, the tables show the business share of retail demand to be at a maximum of around 11 per cent.

7.2.2 Regional spend and floorspace forecasts (stage 2)

Once a base situation was established, spending growth was forecast forward based on household, business and tourism growth. The calculation of spending growth from each component is described below:

Households

The structure of retail spend is sensitive to household characteristics of composition, demographics and income. As such, Auckland households were disaggregated into 47 household types defined by income quintile, compositional factors (e.g. family vs. single person, etc), and demographic age characteristics. The original establishment of these types was conducted by Market Economics Ltd and form the basis of growth drivers into

¹⁴⁰ Once the business and international tourism quantum of spend were established, the household spend (from Auckland and other New Zealand households in Auckland) was scaled to meet the residual between the business, international tourism and retail trade survey spend to account for the undercount of household spend and arrive at a final estimate of the share of spend coming from households (including domestic tourism, which were identified separately through looking at the ratios of spend between Auckland households spending in Auckland and rest of New Zealand households spend in Auckland from the Marketview Ltd data). This was conducted in the context of analysis of all the spending data sources to ensure the level of magnitude of adjustment was acceptable.

the Auckland Growth Model. Regional and census area unit¹⁴¹ (CAU) level forecasts of household numbers within each of these types was obtained as a customised order from Market Economics Ltd, and form the basis of household growth in these forecasts¹⁴²¹⁴³.

A customised order of HES spend data was obtained for Auckland for each of these 47 household types. This was applied to the quantum of households of each type within each CAU for current and forecast values. Because income quintiles are a variable within the household types, spatial variances in the spending power of households are captured.

A share of retail demand growth from household is driven by real increases in household expenditure. Analysis of retail spend data through time show this increase to be about one per cent per year per household¹⁴⁴. That is, the average spend per household (multiplied across the number of households) increases by one per cent per year through time in real terms.

Businesses

Growth in the quantum of retail demand from businesses was calculated through GDP, employment and business number forecasts from the Economic Futures Model (EFM) (Market Economics Ltd, 2012a). This is also a key driver of the Auckland Growth Model. Based on the inter-industry supply, use and transactions tables of retail category by industry sector, adjustments were made in relation to the industry sector structure of growth from the EFM.

Tourism

Tourism growth forecasts for 2010 to 2016 were obtained from the Ministry of Economic Development (2010) and nationally for 2013 to 2019 from the Ministry of Business, Innovation & Employment (2013). These were then compared to historic growth rates in

¹⁴¹ The 2006 CAU geography was used because in back-casting data across the new (2011) geography, Statistics New Zealand assign all data to the first new CAU where an old CAU has been disaggregated into several new CAUs.

¹⁴² These represent the best available spatial household forecasts for Auckland. Change is expected over the next three years in response to the planning process, at which point spatial forecasts should be updated.

¹⁴³ Household consumption and retail expenditure forecasts are also available from NZIER and Infometrics Ltd, however, these are very short-term in nature (i.e. less than five years) and are more suited to understanding changes in the short-term to retail in response to wider economic factors.

¹⁴⁴ This was obtained through comparing historic time-series data on total spend on retail (from the Retail Trade Survey), with the numbers of households (while accounting for the businesses and tourists component of spend).

both visitor arrivals¹⁴⁵ and commercial accommodation monitor data. Identifying longer-term patterns of tourism growth rates give greater solidity to the assumptions of tourism growth going forward over the longer-term due to the shorter nature of published tourism forecasts. These longer-term historic trends were used to assess whether it was appropriate to apply the tourism growth rates (in terms of visitor numbers) beyond the short-term nature of the forecast¹⁴⁶. The relationship between visitor nights and arrivals (and how this has changed through time) was used to further calibrate the forecast growth in tourism spend¹⁴⁷.

A real increase in household expenditure of 1.0 per cent was also applied to the domestic tourism growth component because this relationship of real household expenditure growth is also observed at the national level.

Internet spending

It was assumed that internet spending is going to account for an increasing share of household and business spend into the future¹⁴⁸. Estimates of the share of spend as internet-based were applied separately to each retail category to reflect differences in the practicability of internet sales by categories. Shares were assumed to be lower for food and liquor, trade, and food hospitality and household services sectors, with the bulk of internet retailing in the core retail category¹⁴⁹.

In total, three scenarios of online sales growth were used within the model to generate a range of values to reflect uncertainty in this area. These include:

- Online sales growth rate double that of non-internet sales 2012 to 2021 and online sales growth rate 1.5 times that of non-internet sales between 2021 and 2031. This would mean online sales would grow at 4.6 per cent compound annual growth rate (CAGR) to 2021, and 3.2 per cent CAGR to 2031. The share of sales online would equal 7.2 per cent in 2021 and 8.0 per cent in 2031.
- Online sales growth rate 2.5 times that of non-internet sales 2012 to 2021 and online sales growth rate double that of non-internet sales between 2021 and 2031. This would mean online sales would

¹⁴⁵ Along with the Domestic Tourism and International Visitor Surveys, the Statistics New Zealand visitor arrivals data (Statistics New Zealand, 2012d) was used to get a robust count of the number of visitor arrivals.

¹⁴⁶ It was deemed appropriate to apply these growth rates beyond MBIE's forecasting horizon based on their comparison with historic tourism data and the absence of other tourism forecasts. Further tourism forecasting research has been identified in section 9 as an area of further research, including the incorporation of ATEED research when it becomes available.

¹⁴⁷ This is because the amount of spend per tourist varies with the amount of time spent within the country.

¹⁴⁸ It is assumed that this does not apply to the tourism component of spend as it is much less likely to be a practicable option for visitor to meet their needs during short-term stays at temporary locations.

¹⁴⁹ It should however, be noted that the effect of internet spending on floorspace demand is likely to partly be mitigated through the tendency of consumers to shop online, but still visit stores to view and test products.

grow at 5.6 per cent CAGR to 2021, and 4.1 per cent CAGR to 2031. The share of sales online would equal 7.8 per cent in 2021 and 9.5 per cent in 2031.

- Online sales growth rate three times that of non-internet sales 2012 to 2021 and online sales growth rate 2.5 times that of non-internet sales between 2021 and 2031. This would mean online sales would grow at 6.6 per cent CAGR to 2021, and 4.9 per cent CAGR to 2031. The share of sales online would equal 8.5 per cent in 2021 and 11.2 per cent in 2031.

Appendix 9 provides a more detailed summary of the New Zealand, Australasian and international evidence guiding these assumptions and the triangulation of scenarios with total Auckland retail sales forecasts.

The tested scenarios of online sales growth are more conservative than forecast short to medium-term forecasts internationally (outlined in Table 27 in Appendix 9). However, it is prudent from a planning perspective to take this approach rather than assume very little growth through stores based on short-term, recent trend information with large uncertainty. It is important that growth in online sales is monitored going forward and growth assumptions updated as greater certainty in online sales growth trends occur. Council could work with key retailers to establish better information into the future within this area.

7.2.3 Geographical origin of demand, spatial integration and spend destination (stages 3-5)

Household spend on retail was estimated spatially at the sub-regional level within Auckland in relation to the geographical origin of supply. This shows from which neighbourhood (and business areas broadly) demand is likely to grow, which is a key stage to determining the appropriate location of retail supply. Again, spend was disaggregated into the drivers of demand being households, businesses and tourism. Household forecasts were obtained at the CAU level¹⁵⁰, with forecast numbers out to 2031. The HES spending patterns were applied to these (along with real increases in expenditure), forming the basis of household demand distributed spatially.

The Marketview electronic card data used in the Fairgray (2012 and 2012a) study together with more recent 2012 calendar year data was used to develop a series of matrices that

¹⁵⁰ The Market Economic Ltd forecasts use a Statistics New Zealand base of spatial population forecasts by demographic cohort, then distribute these within their model to household types. While, this provides the best approach to demand forecasting, it may differ to the Auckland Growth Model approach of allocating households to dwellings based on capacity. Secondly, the spatial location of population growth may change over the next 1-3 years as Unitary Planning zoning and capacity approaches are finalised. It is recommended in Section 9.2 that further research is conducted within this area to take account of these changes. Changes in the patterns of population growth may have a significant impact on retail demand.

link spend generated at neighbourhood origins to sales at centre destinations across Auckland. These spend flow matrices were then converted to percentages to show how the spend from each of the 2,700 neighbourhoods is distributed across the 100 centres (and remainder area). A separate matrix was calculated for each retail type. The neighbourhoods were converted in the GIS system to CAUs, and the matrices regenerated accordingly, to align with the CAU household forecasts in stage 1.

The forecast future spending power within each neighbourhood were then applied to these matrices to convert these to spend destinations. Section 4.3 shows that through time, larger centres have played in increasingly large relative role for households spending. This trend has occurred consistently through time and is likely to continue into the future. As such, adjustments were made to the origin-destination flow matrices to reflect these changes¹⁵¹. These were calculated separately for each retail category, guided by the employment analysis in section 4¹⁵².

The centres used in these matrices are those defined by the Fairgray (2012) study as this is the level at which sales information is available¹⁵³. This is also a better approach (than conducting analysis at the more specifically defined Proposed Auckland Unitary Plan zoning level¹⁵⁴) because it identifies broadly the spatial areas within which demand will arise, which correspond broadly, but not entirely with specific centre-zoned boundaries. Narrowing these areas to specific centre zones would be likely to detract from understanding the likely spatial patterns of sales.

While household retail demand was estimated at the point of origin, tourism and business spend was allocated spatially at the location of supply. This is because it was assumed the location of supply broadly equalled that of demand, since demand arises when tourists are within a particular centre, which they were attracted to for a combination of reasons along with retail. Insufficient data is available to identify the temporary location (i.e. place of stay) of tourists while they are within Auckland¹⁵⁵. As such, the tourism share of demand should be retained directly at these points when estimating patterns of retail supply location.

¹⁵¹ A range of scenarios were modelled linking spend at the origins to sales at the destinations.

¹⁵² Specifically, the share of spend in metropolitan centres was increased, while flows to all other areas were scaled down on a pro-rata basis.

¹⁵³ In many cases, the tighter Proposed Auckland Unitary Plan boundaries would prevent spending data from being obtained due to minimum merchant numbers and single-mall/complex ownership structures required to meet data privacy release criteria.

¹⁵⁴ It would represent a false level of accuracy to predict retail growth on specific property parcels or zoned areas at this level.

¹⁵⁵ Some estimates can be made using spatial data on the accommodation sector, but would differ to patterns of guest nights not spent in commercial accommodation.

The spatial patterns of tourism demand were assumed to follow existing patterns of spend. International spending patterns were obtained from international card data within customised Marketview reports for Business Improvement Districts across each of the approximately 100 Auckland centres¹⁵⁶. Domestic tourism spend was also available across each centre (from a customised Marketview data purchase), with the balance of estimated spend allocated in the same way as that of international spend.

7.2.4 Calculating rates of floorspace supply within each centre (stages 6-8)

The rate of floorspace supply in relation to demand differs substantially geographically across Auckland (as established conceptually in section 6). A model of floorspace productivity is developed in this stage through combining the current spend estimated for each centre in stage 5, with the existing floorspace supply identified in section 5. This provides a relative spatial structure of floorspace productivity across Auckland.

Productivities of sales per m² of floorspace were estimated at the regional level for each retail category to reflect differences in floorspace productivities between sectors. The regional level differentials between sectors were used to estimate how the total floorspace (known) in each centre was distributed across each retail category. This was done by applying the differentials to the known spending across sectors (within the centre) to give a weighted floorspace total (i.e. the spend multiplied by the floorspace productivity for the retail category). The sum of this floorspace was then scaled to the total floorspace for each centre, thus reflecting local variations. Lastly, these ratios were converted to rates of floorspace supply (m²) per \$1,000 spend by retail category in each centre.

As land scarcity increases through time and spending rates per household increase, it was assumed that floorspace productivity increases through time. Therefore, a rate of 0.5 per cent per year was assumed to apply equally across Auckland, which is about half of the rate of growth in real household expenditure increases. It is possible some areas can be served by increasing trading rates where centre productivities are low, which is also explored as an option here.

The rates of floorspace supply through time were then applied to the estimated spend totals at each centre calculated at each point in time in stage 5. This shows the increases in floorspace demand within each centre through time and by retail category. Lastly,

¹⁵⁶ The City Centre and Auckland Airport accounted for high shares of international tourist spend.

additional floorspace requirements were aggregated to regional totals to provide high-level results.

7.3 Results

7.3.1 Growth in retail spend, 2012-2031 (medium)

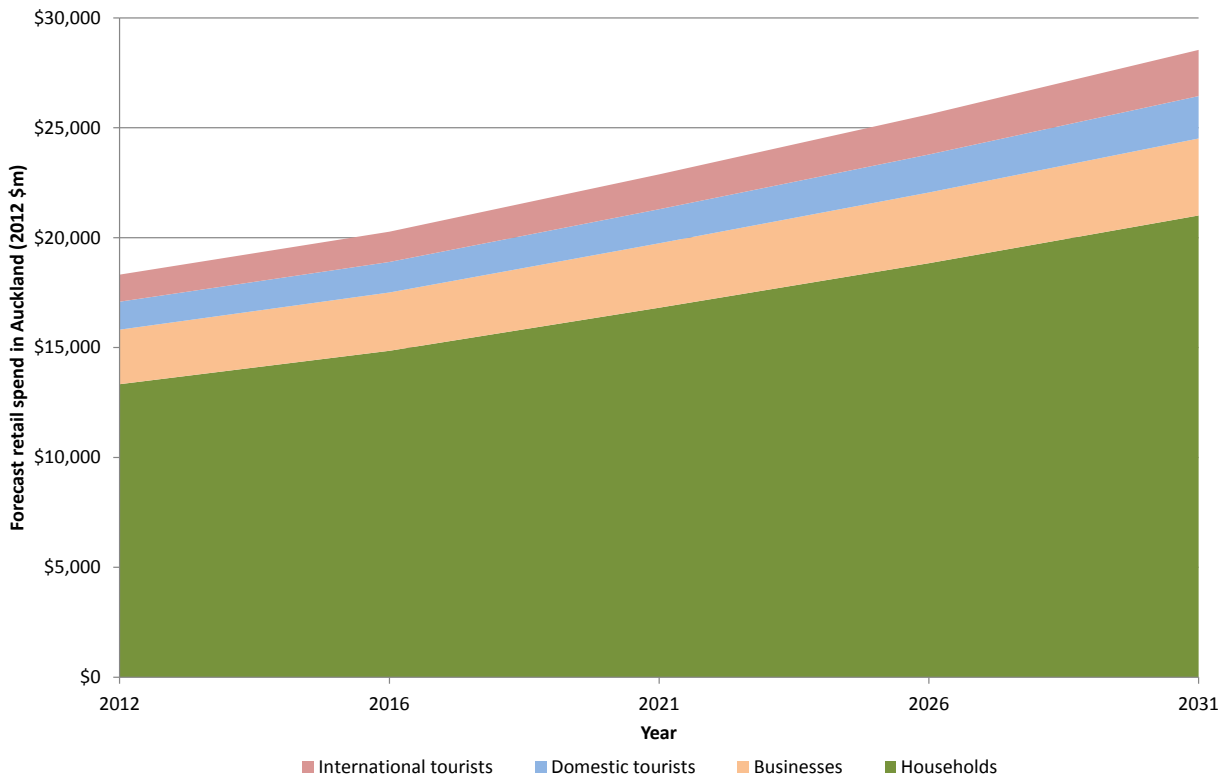
Spending on retail in Auckland is forecast to increase by 56 per cent between 2012 and 2031 (see Figure 52). This amounts to an additional \$10.2bn spend¹⁵⁷, equating to an annual average growth rate of 2.4 per cent. Households are expected to account for three-quarters (75%) of this growth, with a further 10 per cent from businesses, and the remaining 15 per cent from domestic and international tourists. Auckland is forecast to have an additional 191,000 households by 2031, amounting to a 37 per cent increase in the number of households (average annual growth rate of 1.7%). This is greater than the rate of population growth expected across the same period, with fastest growth occurring in the number of single-person households. Real increases in household expenditure contribute to a faster household spending annual growth rate of 2.4 per cent per year, than that of growth in the number of households.

Spending growth from domestic and international tourists is forecast at 2.2 and 2.9 per cent per year. This is driven by a combination of visitor night forecasts, which are higher for international tourists, and real increases in spend per visitor night, which are greater for domestic tourists.

Spending growth is slower for businesses at an annual average rate of 1.8 per cent per year. Growth in the number of employees is expected to slow through time following demographic shifts in the population and consequent changes in the labour force and participation rates.

¹⁵⁷ All spend values are expressed in 2012 dollar values.

Figure 52. Forecast retail spend in Auckland by component of growth, 2012-2031 (medium)



Core retail forms the largest component of growth, with a forecast net spend increase of \$4.2bn (41% of total spend increase). Households account for 71 per cent of this increase, with 17 per cent from tourism and 13 per cent from businesses. Food and liquor makes up the next largest share (36%) with a net increase of \$3.7bn. The remaining \$2.3bn of growth is spread across the food hospitality and household services (\$1.5bn) and trade (\$841m) retail categories (Table 17).

Table 17. Forecast growth in retail spend demand by growth component and retail type, 2012-2031 (medium)

		2012-2031 change				
		Core	Trade	Food and liquor	Food hospitality and household services	Total retail
Component of growth						
Households	Net (2012 \$m)	\$2,960	\$610	\$3,020	\$1,080	\$7,680
	Percentage	58%	57%	59%	55%	58%
	Growth rate	2.4%	2.4%	2.5%	2.3%	2.4%
Tourism - domestic	Net (2012 \$m)	\$310	\$30	\$130	\$190	\$660
	Percentage	52%	52%	52%	52%	52%
	Growth rate	2.2%	2.2%	2.2%	2.2%	2.2%
Tourism - international	Net (2012 \$m)	\$390	\$80	\$310	\$90	\$870
	Percentage	71%	71%	71%	71%	71%
	Growth rate	2.9%	2.9%	2.9%	2.9%	2.9%
Businesses	Net (2012 \$m)	\$520	\$120	\$260	\$110	\$1,020
	Percentage	43%	43%	35%	49%	41%
	Growth rate	1.9%	1.9%	1.6%	2.1%	1.8%
Total	Net (2012 \$m)	\$4,180	\$840	\$3,720	\$1,480	\$10,220
	Percentage	56%	55%	56%	55%	56%
	Growth rate	2.4%	2.3%	2.4%	2.3%	2.4%

Source: RIMU Retail Growth Model, 2013.

Growth in the share of retail demand being met online has a significant effect on the net increase in spend to be met through physical retail stores. While the forecast share of total household and business spend to be met online is at around eight per cent in 2021 and 10 per cent in 2031 (see section 7.2.2 for the value range used in the model and Appendix 9 for the estimation of the share of sales online), the share of spending net increases met online will be higher. This is because online spending has higher growth rates, meaning that a greater share of the net increase will be online to increase the overall share (i.e. base + net growth) of spending online.

Table 18 shows that once the share of online spend is removed, there is a forecast of between \$8.8bn and \$9.4bn net increase in sales through physical retailers in Auckland between 2012 and 2031¹⁵⁸. This equates to an annual average growth rate of between 2.1 and 2.2 per cent, and a percentage increase of between 48 and 51 per cent. The share of net sales increases from core retail becomes between 35 and 38 per cent, with food and liquor retail accounting for between 37 and 38 per cent (due to the effect of changes in the share of core retail).

¹⁵⁸ When cross referenced, the household and business core and food and liquor components in Tables 17 and 18 do not equate to an average of around 10 per cent of sales being met online (once floorspace sustained by online shopping has been accounted for). This is because the 2012 base level of household and business online spending was not included in the 2012 base level of spending through Auckland stores.

Table 18. Forecast growth in retail sales through physical Auckland retailers by retail type, 2012-2031 (medium)

Share of household and business core and food and liquor spend online ¹	Change	2012-2031 change				
		Core	Trade	Food and liquor	Food hospitality and household services	Total retail
2021 = 7.2% and 2031 = 8.0%	Net (2012 \$m)	\$3,570	\$840	\$3,520	\$1,480	\$9,410
	Percentage	48%	55%	53%	55%	51%
	Growth rate	2.1%	2.3%	2.3%	2.3%	2.2%
2021 = 7.8% and 2031 = 9.5%	Net (2012 \$m)	\$3,350	\$840	\$3,440	\$1,480	\$9,110
	Percentage	45%	55%	52%	55%	50%
	Growth rate	2.0%	2.3%	2.2%	2.3%	2.1%
2021 = 8.5% and 2031 = 11.2%	Net (2012 \$m)	\$3,090	\$840	\$3,360	\$1,480	\$8,780
	Percentage	41%	55%	51%	55%	48%
	Growth rate	1.8%	2.3%	2.2%	2.3%	2.1%

1 These represent the shares of spend online input into the model (to reflect that not all online sales result in a direct reduction in physical floorspace), whereas the share of actual spend through transactions online are slightly higher.

7.3.2 Geographic origin of forecast household spend in Auckland

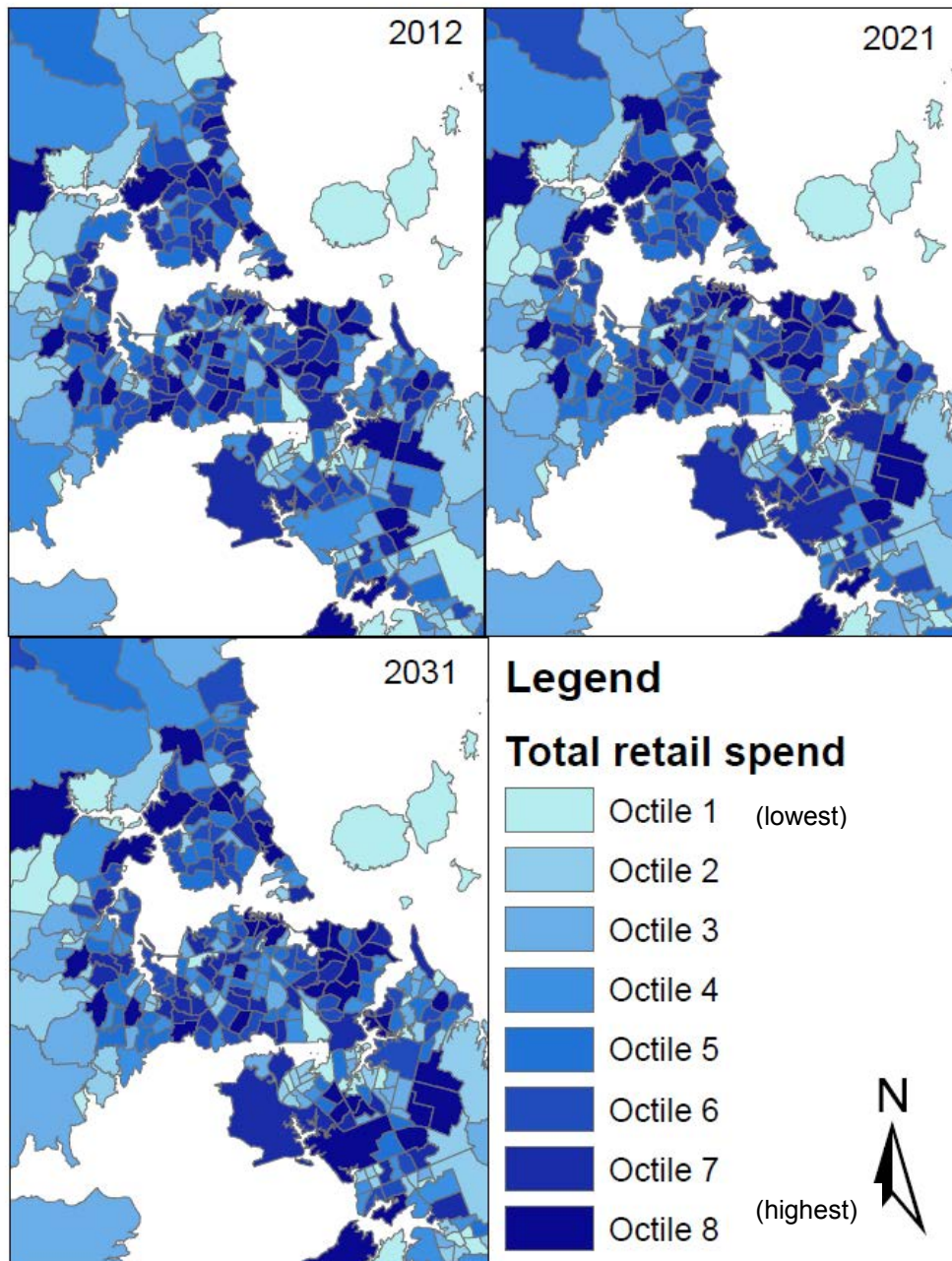
The geographic origin of household spend has a large impact on the destination of demand for retail. This section displays the spatial patterns in Auckland household spending power through time by neighbourhood (Census Area Unit). These include the share of household spend that occurs online. The influence of household spend origin is explored through three maps that are discussed below, which show:

- The geographic distribution of household spend origin through time to identify where spend is coming from and how this is likely to change through time (Figure 53);
- Changes in the regional *share* of spend from each neighbourhood through time to more clearly identify the spatial shifts in the pattern of spend origin (Figure 54); and
- The net changes in spend from each neighbourhood area to identify where the largest spending growth is likely to occur (Figure 55).

Figure 53 shows the distribution of total household spend by neighbourhood across Auckland. Areas have been divided into octiles of total neighbourhood spend, with a map for each of the years 2012, 2021 and 2031. It should be viewed in combination with Figure 54 which shows the change in each CAUs share of total Auckland household spend

between 2012 and 2031¹⁵⁹. Variable patterns of demand exist across Auckland across all years with localised concentrations of demand within each of the broad geographical sub-regions of Auckland¹⁶⁰.

Figure 53. Geographic distribution of current and forecast household spend by census area unit in Auckland, 2012, 2021 and 2031



¹⁵⁹ That is, the share of Auckland household spend in each CAU in 2031, minus its share in 2012. As such, this should not be confused with net growth in spend, which is discussed later within the section.

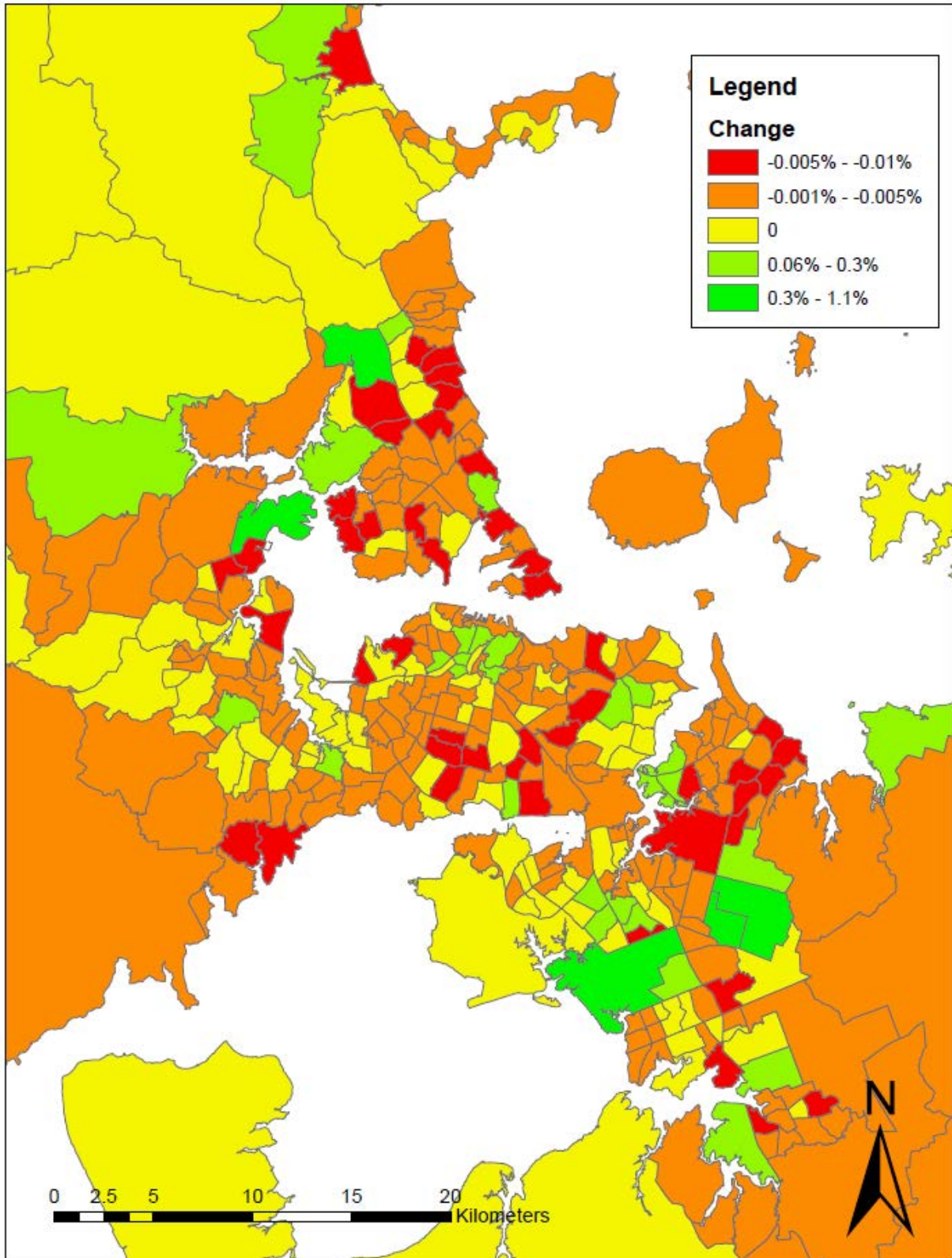
¹⁶⁰ These should be viewed with consideration for the land area size of the CAU, where larger urban CAUs may contain more households therefore, increasing their total spend. This effect is somewhat mitigated where CAUs in denser areas are designed to be geographically smaller, and correspondingly larger in rural areas, to represent more even numbers of households.

In 2012, a greater density of spending power was present on the North Shore and the isthmus, with more scattered pockets in southern and western Auckland. Through time, growth in some suburbs across Auckland have caused gradual shifts in the spatial patterns of total demand. By 2031, greater demand (relative to the rest of Auckland) in parts of south Auckland has emerged, particularly around the Manukau area; demand in eastern isthmus (relative to other CAUs) CAUs remains high; along with pockets of growth in some of the outer suburbs such as Albany.

Figure 54 shows the changes in the spatial distribution of total household spend through time between 2012 and 2031, which drives the underlying changes in the spatial distribution in Figure 53. It shows changes in the share of regional spend coming from each CAU through time and therefore, the positive increases in share will balance the negative increases in share as it shows a redistribution of the total. Furthermore, while some areas may have a net increase in spend, they may experience a decrease in their regional share of spend if spend in the rest of the region has grown faster.

The main areas of growth include suburbs around Manukau in southern Auckland, the City Centre, eastern isthmus and Pakuranga, and many of the outer urban areas from growth in urban expansion (particularly in the northern areas).

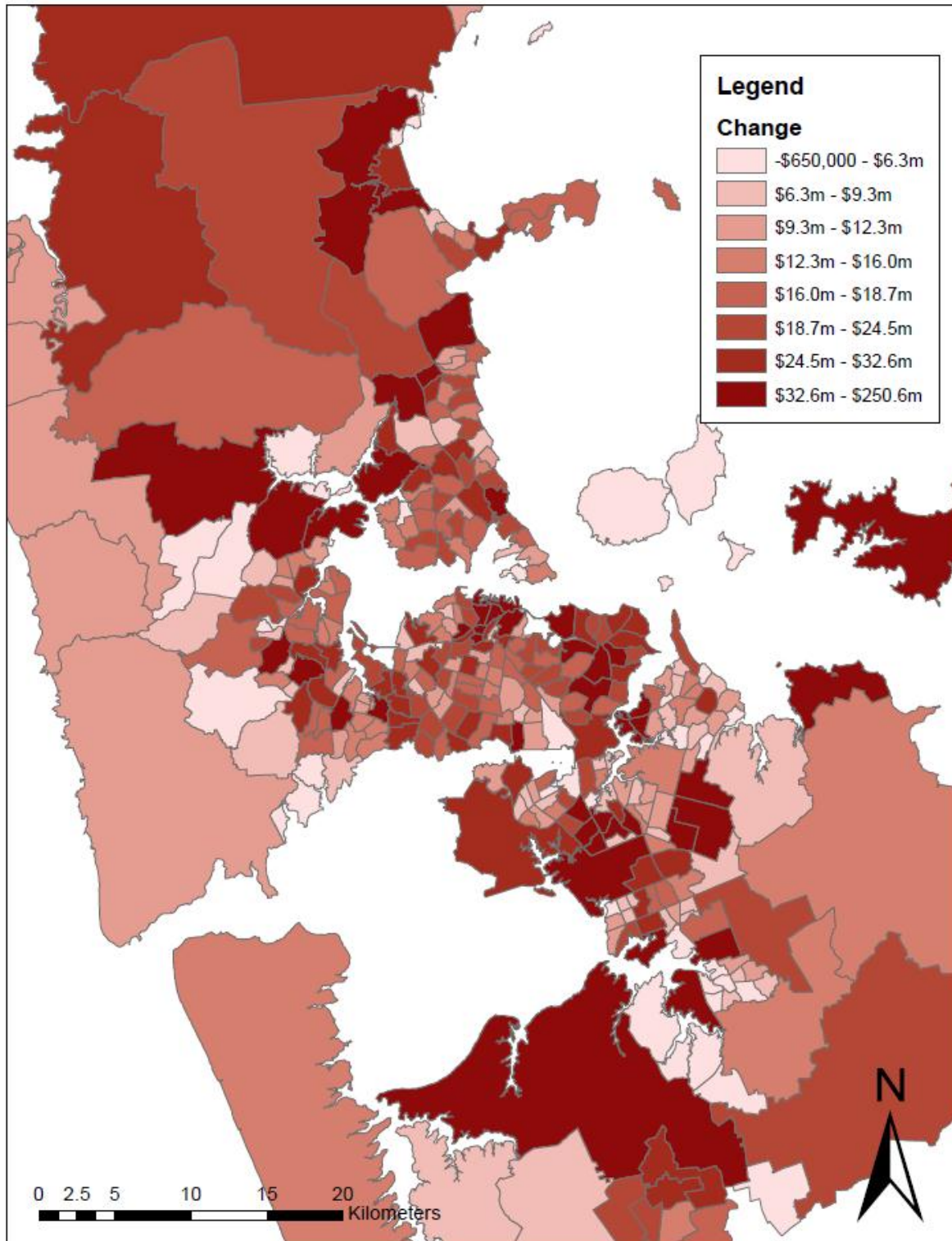
Figure 54. Change in CAU share of regional household spend, 2012-2031



Growth in household spend is forecast to vary geographically across Auckland. Figure 55 shows the net increase in household spend by CAU between 2012 and 2031, which generally correspond to patterns of population growth. The highest areas of growth are

forecast in the northern rural areas and suburban fringe area as Auckland expands geographically, areas on the eastern isthmus, particularly around Glen Innes, the City Centre, parts of western Auckland, and parts of southern Auckland, some of which is also driven by urban expansion. These patterns of growth are likely to have a large effect on the main centres within these locations.

Figure 55. Forecast net changes in total Auckland CAU household retail spend, 2012-2031 (medium)

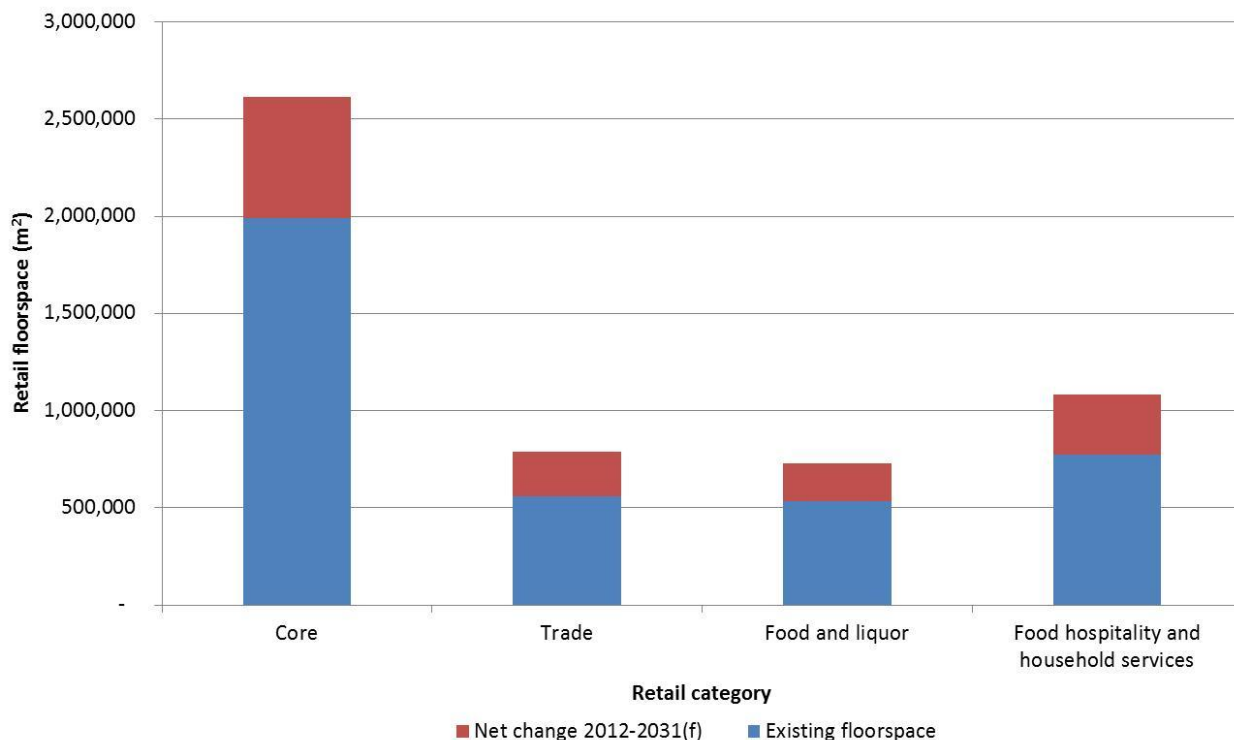


7.3.3 Growth in retail floorspace demand, 2012-2031 (medium)

Demand for retail floorspace by households, businesses and tourism is forecast to increase by 35 per cent between 2012 and 2031. This amounts to an additional 1.4 million m² of floorspace, equating to an annual average growth rate of 1.6 per cent. This compares to a forecast sales annual growth rate of 2.1 per cent in spend in Auckland stores across the same period. This scenario reflects the current spatial economic structure of activity across Auckland, incorporating the existing productivity differentials between locations. An alternative scenario is presented in section 7.3.6 where a more centres-based approach is followed with relative increases in the importance of larger centres. Here, a greater share of demand is met through increased productivity in existing floorspace within wider centre areas, with an overall reduction the forecast floorspace growth of 193,000 m², amounting to a demand for an additional 1.2 million m² of retail floorspace by 2031.

Figure 56 shows the distribution of floorspace growth across retail categories under a medium online spending scenario (7.8% by 2021 and 9.5% by 2031). The largest share (46%) of growth is forecast in core retail, with a net increase in floorspace of 627,000 m². The next largest increase is forecast in food hospitality and household services (+309,000 m²; 23%), with the remaining 31 per cent in trade (227,000 m²) and food and liquor (196,000 m²). Trade and food hospitality and household services have the highest forecast annual growth rates in floorspace at 1.8 per cent each. Core retail floorspace is expected to grow slower at 1.5 per cent per year, due largely to the impact of online spend.

Figure 56. Forecast Auckland retail floorspace and net change by retail category, 2012-2031



Source: RIMU Retail Growth Model, 2013.

The growth in retail floorspace demand is shown through time and by online spending scenario in Table 19. Growth is expected to slow over time, with a faster forecast overall growth rate of between 1.6 and 1.8 per cent from 2012 to 2021, and a slower annual rate of between 1.4 and 1.6 per cent between 2021 and 2031. There is a forecast demand of between 609,000 m² and 654,000 m² of floorspace over the next nine years out to 2021, of which between 44 and 47 per cent is for core retail. As the share of core retail demand being met online increases, the share of floorspace demand growth as core retail is forecast to range from 43 and 49 per cent between 2021 and 2031. A further 681,000 m² to 767,000 m² of floorspace demand is forecast between 2021 and 2031, of which food hospitality and household services accounts for the next largest share (22-24%; 166,000 m²).

Table 19. Forecast Auckland retail floorspace growth by retail category, 2012-2031 (medium)

Retail category	Share of internet spend online in 2031	Base floorspace (m2)	Forecast floorspace (m2)					Change					
								2012-2021		2021-2031		2012-2031	
			2012	2016	2021	2026	2031	Net	growth rate	Net	growth rate	Net	growth rate
Core	8.00%	1,989,000	2,127,000	2,299,000	2,478,000	2,672,000	310,000	1.6%	373,000	1.5%	683,000	1.6%	
	9.50%		2,121,000	2,280,000	2,442,000	2,616,000	291,000	1.5%	336,000	1.4%	627,000	1.5%	
	11.20%		2,113,000	2,258,000	2,400,000	2,553,000	269,000	1.4%	295,000	1.2%	564,000	1.3%	
Trade	8.00%	561,000	608,000	670,000	730,000	788,000	109,000	2.0%	118,000	1.6%	227,000	1.8%	
	9.50%		608,000	670,000	730,000	788,000	109,000	2.0%	118,000	1.6%	227,000	1.8%	
	11.20%		608,000	670,000	730,000	788,000	109,000	2.0%	118,000	1.6%	227,000	1.8%	
Food and liquor	8.00%	533,000	571,000	625,000	679,000	735,000	92,000	1.8%	110,000	1.6%	202,000	1.7%	
	9.50%		571,000	623,000	675,000	729,000	90,000	1.7%	106,000	1.6%	196,000	1.7%	
	11.20%		570,000	621,000	671,000	723,000	88,000	1.7%	102,000	1.5%	190,000	1.6%	
Food hospitality and household services	8.00%	775,000	837,000	918,000	998,000	1,084,000	143,000	1.9%	166,000	1.7%	309,000	1.8%	
	9.50%		837,000	918,000	998,000	1,084,000	143,000	1.9%	166,000	1.7%	309,000	1.8%	
	11.20%		837,000	918,000	998,000	1,084,000	143,000	1.9%	166,000	1.7%	309,000	1.8%	
Total	8.00%	3,858,000	4,144,000	4,512,000	4,886,000	5,279,000	654,000	1.8%	767,000	1.6%	1,421,000	1.7%	
	9.50%		4,136,000	4,491,000	4,845,000	5,217,000	633,000	1.7%	726,000	1.5%	1,359,000	1.6%	
	11.20%		4,128,000	4,467,000	4,799,000	5,148,000	609,000	1.6%	681,000	1.4%	1,290,000	1.5%	

Source: RIMU Retail Growth Model, 2013.

These figures represent the forecast demand for retail floorspace if current patterns of relative productivities between different geographical locations prevail into the future¹⁶¹. However, there are large productivity differentials between geographical locations and within centres. Section 6 establishes conceptually how these occur within the wider context of the Auckland commercial property market and strategic operation across retail networks. While the nature of the relationships between areas are expected to broadly hold, the rate of change within Auckland's property market occurs at differential rates across areas, resulting in changes to the spatial structure of the market. As land scarcity and demand for different uses increase through time, a greater range of locations become market viable for more intensive types of developments, thus changing the geographic configuration of different types of activities in Auckland's spatial economy. For example, areas such as Otahuhu or Onehunga are currently not market attractive for high intensity office development, with firms choosing instead to locate in more accessible and expensive locations such as Newmarket or the CBD. Yet, in a few decades, as capacity is runs out in these more accessible locations and overall regional office demand increases, the price signals are likely to make areas such as Otahuhu and Onehunga more viable locations for intensive developments. The same applies within the retail sector itself, and the retail sector in relation to other sectors.

These processes cause changes in the sub-regional and local patterns within the market, but the broader regional patterns such as density and price gradients outward from the City Centre still hold true. For example, it is likely to hold true that areas such as Newmarket will always be more expensive locations than more suburban locations such as Manukau, however, the size of the price differential between these places may change;

¹⁶¹ This assumes the current relative floorspace productivity differentials between areas will hold into the future because the annual rate of floorspace productivity increase of 0.5 per cent has been applied equally across all areas.

and the density of use within these major centres in outer areas relative to their surrounding area suburban areas (including other smaller centres within their catchments) may increase¹⁶².

On this basis it is likely that many of the centres (particularly larger centres) currently trading at lower productivities will increase in relative demand. As such, a share of the sales within these locations (i.e. the location as the destination of sales) is likely to be met by the market through increases in trading across existing floorspace instead of all through the provision of new floorspace. Many of Auckland's larger centres have central retail hubs within them with high volumes of activity, but also contain substantial volumes of floorspace in the areas surrounding these hubs¹⁶³, which are likely to be trading at significantly lower rates. There is therefore, likely to be scope for productivity increases on this existing floorspace to absorb some of the additional sales growth for retail within these centre areas.

If demand growth were continued to be met within the same extent in centres as in the current market, the productivity increases described above would consequently lower the overall regional demand for retail floorspace. However, if the predominant share of demand increases were met through floorspace expansion into new areas (such as outward from centres or other locations away from centres), then is it likely the quantum of floorspace to meet demand would be greater.

An analysis of the demand forecast to occur at each of the general centre areas is provided in section 7.3.6.

7.3.4 Share of forecast floorspace as large format retail

Limited information exists on the share of past retail floorspace growth as LFR. The main information sources include the Statistics New Zealand (2000-2012) *Business*

¹⁶² This effect is well established in the empirical economic, geography and urban growth literature where, as cities expand geographically and grow in population and employment size, the relative importance of major suburban regional centres increases, and correspondingly their relative density (Gjestland et al. 2006). Part of this effect is driven also by transport where travel cost pressures limit or slow the outward geographical expansion of cities, and increase the favourability of major suburban centres relative to CBD areas as easier commuting destinations (a similar effect to supply-demand price signals, which too are interrelated with transport). This is also reflected in compact urban growth strategies across many western economies where the role of major centres relative to the rest of the urban area is enhanced. These types of effects are enhanced in cities where overall land shortages or constraints apply.

¹⁶³ An example would be Manukau where there is approximately an additional 100,000 m² of retail floorspace around the edge of the centre outside of the Supa Centa and shopping mall.

Demographic dataset, Auckland Council building consent information and, for this study, the CBRE Ltd database of shopping centre floorspace stock through time. It has been outlined in section 6.1.3 the second two sources suggest substantial changes to the structure of floorspace supply through time, with an increased share of new floorspace supply as LFR. However, it is difficult to determine from these sources the share of floorspace growth within each retail category as LFR due to information gaps of previous data¹⁶⁴.

The Market Economics Ltd (2008) report prepared for Auckland City Council in 2008 undertook an estimate of past floorspace growth as LFR and SFR through analysing employment information through time. Employment information was obtained by size group and fine industry division at the national level, then optimised using more accurate measures of employment at the regional level to get an estimate within each sector of floorspace by format type. This represents the best estimation of shares of future floorspace growth by format currently available, and as such, the divisions within each category have been applied within this report.

Table 20 and Figure 57 display the estimated share of net floorspace growth as LFR in Auckland through time and by retail category¹⁶⁵. Overall, LFR is estimated to account for just over half (52%) of floorspace growth out to 2031. The share is higher in food and liquor and trade, where it is estimated to account for 83 and 79 per cent respectively. As such, there is an estimated additional 669,100 to 744,300 m² of LFR floorspace forecast in Auckland between 2012 and 2013, around half of which is in core retail. This equates to an annual average growth rate of between 2.0 and 2.2 per cent, which is faster than forecast retail floorspace growth over time as LFR makes up an increasing share of floorspace supply.

¹⁶⁴ It is identified as an area of further work to identify the share of retail building consents that have been constructed, and within these the share as LFR. While nearly all the consents issued for new retail development contained floorspace greater than 450 m², there is no information as to whether these are multiple shops aggregated together, or whether they are LFR.

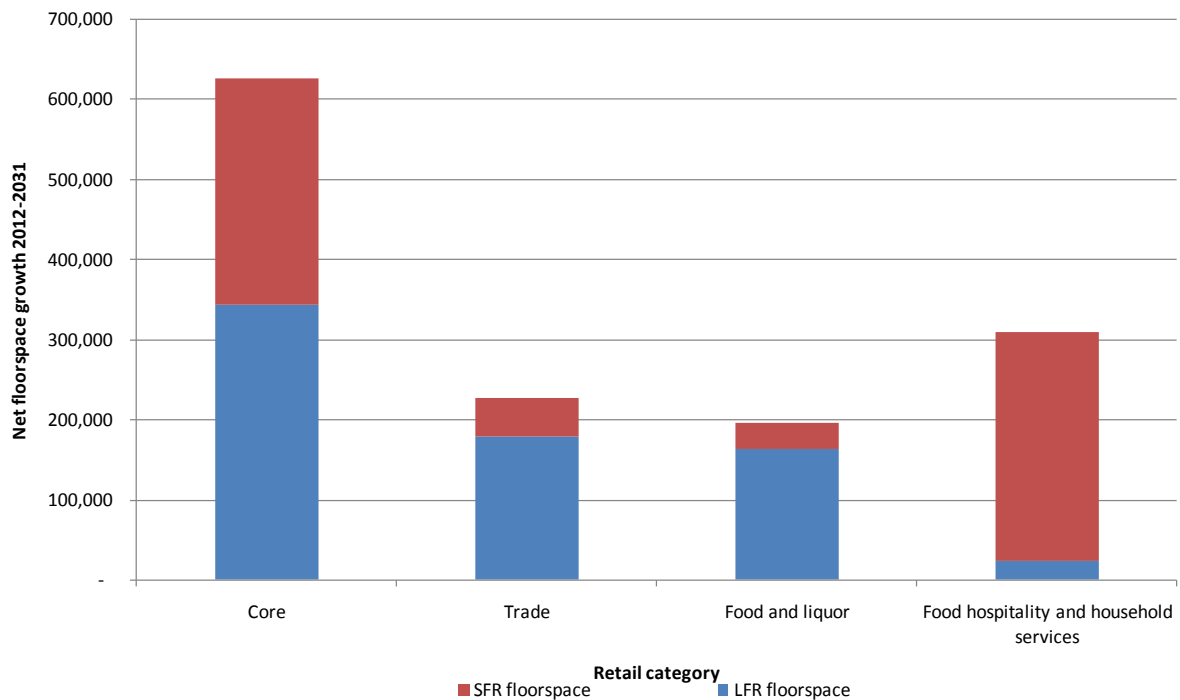
¹⁶⁵ This has been prepared based on a current floorspace productivity spatial structure (see section 7.3.3).

Table 20. Estimated LFR share of forecast retail floorspace growth (existing structure scenario), 2012-2013

Retail category	Share of internet spend online in 2031		Base floorspace (m2)	Forecast floorspace (m2)		Change						
	2012	2013		2021	2031	2012-2021		2021-2031		2012-2031		
	12.60%	15.30%	18.00%	2012	2021	2031	Net	growth rate	Net	growth rate	Net	growth rate
Core	12.60%	15.30%	18.00%	713,300	883,200	1,087,600	169,900	2.4%	204,400	2.1%	374,300	2.2%
	15.30%	18.00%			872,800	1,056,900	159,500	2.3%	184,100	1.9%	343,600	2.1%
	18.00%				860,700	1,022,400	147,400	2.1%	161,700	1.7%	309,100	1.9%
Trade	12.60%	15.30%	18.00%	306,900	392,700	485,500	85,800	2.8%	92,800	2.1%	178,600	2.4%
	15.30%	18.00%			392,700	485,500	85,800	2.8%	92,800	2.1%	178,600	2.4%
	18.00%				392,700	485,500	85,800	2.8%	92,800	2.1%	178,600	2.4%
Food and liquor	12.60%	15.30%	18.00%	404,800	481,200	572,600	76,400	1.9%	91,400	1.8%	167,800	1.8%
	15.30%	18.00%			479,600	567,600	74,800	1.9%	88,100	1.7%	162,800	1.8%
	18.00%				477,900	562,700	73,100	1.9%	84,700	1.6%	157,900	1.7%
Food hospitality and household services	12.60%	15.30%	18.00%	-	10,900	23,500	10,900		12,600	8.0%	23,500	0.0%
	15.30%	18.00%			10,900	23,500	10,900		12,600	8.0%	23,500	0.0%
	18.00%				10,900	23,500	10,900		12,600	8.0%	23,500	0.0%
Total	12.60%	15.30%	18.00%	1,426,900	1,769,900	2,171,200	343,000	2.4%	401,300	2.1%	744,300	2.2%
	15.30%	18.00%			1,757,800	2,135,500	330,900	2.3%	377,700	2.0%	708,600	2.1%
	18.00%				1,744,100	2,096,000	317,200	2.3%	351,900	1.9%	669,100	2.0%

Source: RIMU Retail Growth Model (2013) and Market Economics Ltd (2008) LFR share estimates.

Figure 57. Net change in retail floorspace by retail type, 2012-2031 (medium internet sales scenario)



Source: RIMU Retail Growth Model, 2013.

7.3.5 Comparison of regional retail demand forecasts to other sources

Table 21 compares the retail floorspace forecast in this study to other previous forecasts on Auckland retail floorspace. It summarises the total floorspace demand and rate of growth

in this model, the Thompson (2011) study and the earlier Market Economics Ltd (2008) study¹⁶⁶.

Table 21. Comparison of previous Auckland retail floorspace demand forecasts

Retail category	Current study						
	Net change			Average annual growth rate			Annual average rate of demand
	2012-2021	2021-2031	2012-2031	2012-2021	2021-2031	2012-2031	2012-2031
Core	291,000	336,000	627,000	1.5%	1.4%	1.5%	32,984
Trade	110,000	118,000	227,000	2.0%	1.6%	1.8%	11,972
Food and Liquor	90,000	106,000	196,000	1.7%	1.6%	1.7%	10,329
Food Hospitality and Household Services	142,000	166,000	309,000	1.9%	1.7%	1.8%	16,243
Total	633,000	726,000	1,359,000	1.7%	1.5%	1.6%	71,528
Retail category	Thompson (2011)						
	Net change			Average annual growth rate			Annual average rate of demand
	2011-2021	2021-2031	2011-2031	2011-2021	2021-2031	2011-2031	2011-2031
Core	614,500	660,125	1,274,625	4.2%	3.1%	3.7%	63,731
Trade	81,875	92,000	173,875	4.6%	3.5%	4.1%	8,694
Food and Liquor	139,840	82,205	222,045	2.2%	1.1%	1.7%	11,102
Food Hospitality and Household Services	115,500	86,000	201,500	2.6%	1.6%	2.1%	10,075
Total	951,715	920,330	1,872,045	3.5%	2.5%	3.0%	93,602
Retail category	Market Economics Ltd (2008)						
	Net change			Average annual growth rate			Annual average rate of demand
	2011-2021	2021-2026	2011-2026	2011-2021	2021-2026	2011-2026	2011-2026
Core	368,000	203,000	571,000	2.3%	2.1%	2.2%	38,067
Trade	138,000	73,000	211,000	2.1%	1.9%	2.0%	14,067
Food and Liquor	110,000	61,000	171,000	2.2%	2.1%	2.2%	11,400
Food Hospitality and Household Services	124,000	70,000	194,000	2.6%	2.4%	2.5%	12,933
Total	740,000	407,000	1,147,000	2.1%	2.1%	2.2%	76,467

Source: Thompson (2011), Market Economics Ltd (2008) and RIMU Retail Growth Model (2013).

With an average annual growth rate of 3.0 per cent, the Thompson (2011) study contains the highest forecasts at an additional 952,000 m² floorspace between 2011 and 2021, and 1.9million m² by 2031¹⁶⁷. As the base and end years differ between forecasts, comparisons are more easily made between the average annual additional floorspace forecast. Accordingly, the Thompson (2011) study forecasts an average additional 94,000 m² of floorspace per year between 2011 and 2031. This is around 30 per cent higher than the forecasts in this report.

The Market Economics Ltd (2008) study forecasts an additional 740,000 m² of floorspace between 2011 and 2021, and 1.1 million m² between 2011 and 2026. This equates to an annual average of 76,000 m² out to 2026, which is around seven per cent higher than this study.

¹⁶⁶ The Market Economics Ltd (2008) study has a 2007 base, however, the 2011 forecast value from the study is used as the base for comparison between the studies.

¹⁶⁷ The floorspace in the Thompson (2011) study has been converted from net trading area to gross floor area using the conversion factors outlined in the Tansley (2009) evidence to generate alignment with forecasts from the other studies.

It is also important to compare the rate of growth within the forecasts. In this respect, the difference between this study and the Thompson (2011) study becomes larger where the former has an annual average growth rate of 1.6 per cent, compared to 3.0 per cent for the latter. The Thompson (2011) study has a significantly lower base (see section 5.3.1), meaning it forecasts retail floorspace demand will increase by 81 per cent between 2011 and 2031. This is over double the forecast 35 per cent increase in the current study across a similar period (2012-2031).

Growth rates are more similar between the current study and the Market Economics Ltd (2008) study, which forecasts a growth rate of 2.2 per cent over the 2011 to 2026 period. This compares to 1.6 per cent in the current study. There is closer alignment in the annual rate of supply due to differences in the bases of the forecasts.

Lower growth rates are expected in the current study to any forecasts conducted prior to 2009. Studies such as the Market Economics Ltd (2008) forecasts were constructed during a period of strong growth, while subsequent forecasts have been revised down due to the global financial crisis¹⁶⁸. The basis for high forecasts (of nearly 3.0 per cent annually¹⁶⁹) in the Thompson (2011) study, constructed during the financial crisis, are unclear. The Thompson (2011) study forecasts a compound annual growth rate (CAGR) of 1.7 per cent in the number of households, yet a CAGR of 4.0 per cent in household spend. This implies a 2.2 per cent annual real increase in household expenditure, which is well above the 1.0 per cent observed historically.

Greater differences are apparent between the forecasts when analysing the distribution of floorspace across categories. The share of forecast floorspace as core retail in the current study (46%) is similar to that in the Market Economics Ltd (2008) study (50%), but below that in the Thompson (2011) study (68%). The share of floorspace demand as core is highest in the Thompson (2011) study despite assuming even higher shares of online spend¹⁷⁰. Accordingly, the annual average rate of new core floorspace demand in this study (33,000 m²) is closer to that in the Market Economics Ltd (2008) (38,000 m²), than the Thompson (2011) study (64,000 m²).

¹⁶⁸ Downward revisions in economic forecasts are also seen in the Economic Futures Model (2010-2012) where Auckland regional employment and GDP forecasts have progressively decreased with updated versions of the model across the last few years.

¹⁶⁹ When net trading area rather than gross floor area (GFA) is used in the Thompson (2011) study, floorspace growth rates are 2.9 per cent per annum.

¹⁷⁰ The Thompson (2011) study assumed 15 per cent of sales would occur online in 2021.

The average annual rate of trade floorspace demand in the current study (12,000 m²) compares to 14,100 m² in the Market Economics Ltd (2008) study and 8,900 m² in the Thompson (2011) study. Similar rates of food and liquor floorspace are forecast in this study (10,300 m²) to the Thompson (2011) study (11,100 m²) and the Market Economics Ltd (2008) study (10,300 m²). Larger differences also exist in the food hospitality and household services category with less floorspace demand forecast in the other studies. Part of this difference may be driven by differences in alignment between categories.

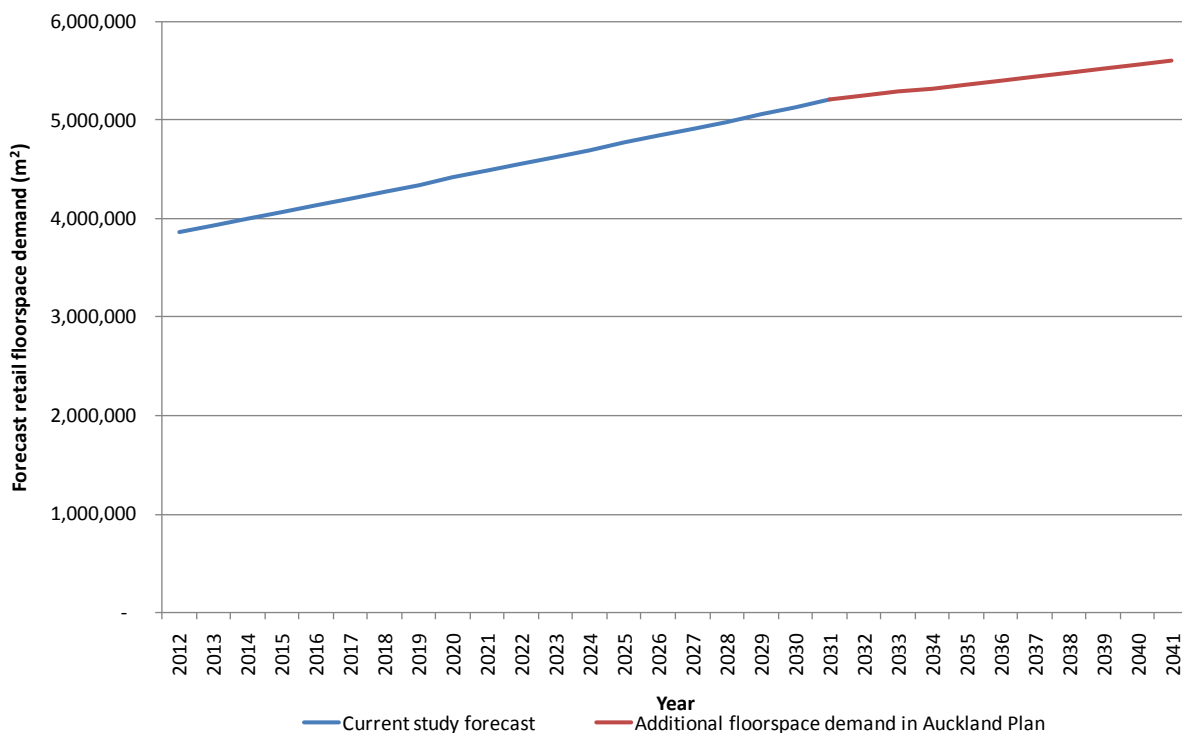
Overall, the required floorspace required to meet the forecast demand in this study is closer to that forecast in the Market Economics Ltd (2008) study, albeit lower following the global financial crisis. If part of the demand is met through greater increases in floorspace productivity across existing centres (see section 7.3.3), the forecast floorspace may reduce further.

Figure 58 compares the retail floorspace forecast in this study with the broad estimates in the Auckland Plan. The Auckland Plan states that an additional 1.813 million m² of retail and hospitality floorspace is going to be required between 2011 and 2041 to cater for growth¹⁷¹. If this target is correct, then an additional 386,000 m² of floorspace is required between 2031 and 2041 (above the 2031 value forecast within this study), which would represent a substantially slower annual growth rate past 2031¹⁷². While a significant slowdown in growth is expected after 2031 due to demographic change, it is unclear to what extent this is likely to occur and therefore, align with the anticipated demand in the Auckland Plan.

¹⁷¹ However, it is unclear exactly which retail categories are included within the broad forecasts in the Auckland Plan.

¹⁷² In effect, it is likely the Auckland Plan average annual growth rate is marginally slower than the current study across the whole forecast period. However, no further information is available to make this assessment.

Figure 58. Current study forecast demand for retail floorspace and Auckland Plan floorspace, 2012-2041



Source: Auckland Council (2011) and RIMU Retail Growth Model (2013).

7.3.6 Geographical destination of forecast retail demand

7.3.6.1 Spend

There is a forecast net increase of \$9.1bn of spend¹⁷³(see Table 18 all sources combined) that will flow to physical stores across Auckland between 2012 and 2031. This subsection explores how these flows of spend may occur geographically across Auckland in relation to the destination of spend under the following conditions:

- i. Current geographical spending patterns from each neighbourhood area persist through time.
- ii. No new major centres or significant retail developments occur.
- iii. Existing centre growth occurs proportionately to catchment demand growth without major expansion substantially disproportionate to other centres.
- iv. Relative accessibility of neighbourhoods to different retail areas across Auckland remains constant through time¹⁷⁴.

¹⁷³ This is total spend, less the assumed mid-range of internet spending.

¹⁷⁴ This does not assume congestion will not increase, rather, that it will not have disproportionately large impacts in some areas than others to the extent households are deterred from accessing a particular centre.

A major new retail development or expansion would mean conditions two and three above would not hold. If this occurs, then section 8.3 provides a framework through which to test the effects of new major retail development across the centres network.

Importantly, the forecast spending here should not be applied strictly at the existing centre boundary per se, but represents a base case situation with sales occurring within the broad centre location. This would therefore, capture the natural outward geographical expansion of centres (if allowed), or an alternative development scenario where demand is met through out of centre growth near to the centre. Secondly, the centre areas referred to here are those in the Fairgray (2012 and 2012a) study as they capture the existing functional trading areas, and are the level at which data is available (see Appendix 4).

Table 22 shows the forecast sales growth across different geographical locations in Auckland¹⁷⁵. Results have been presented for individual metropolitan centres and the City Centre, with other locations aggregated to their broad geographical area within Auckland. Sales growth in centres are ultimately driven by population spending growth within their respective catchments. The City Centre is forecast to have the largest increase of sales at \$960m accounting for 11 per cent of the sales growth, with the largest increases in core (\$342m), food and liquor (\$298m) and food hospitality and household services (\$264m). The next largest increases are forecast across several of the metropolitan centres, which collectively account for 31 per cent of the net sales growth. The largest net increases are forecast to occur in Manukau (\$515m), Albany (\$477m) and Botany (\$444m), with the greatest contributions from core retail, which accounts for 61 per cent of the sales growth across metropolitan centres. Newmarket is also forecast to have a significant growth in core retail sales. Sales at metropolitan centres are forecast to increase by 64 per cent, which is faster than the 50 per cent sales forecast across the region overall.

¹⁷⁵ The total sales increase of \$9.091bn in Table 22 is 0.2 per cent below that of \$9.110bn in Table 18 due to an acceptable calibration error within the model within the spatial disaggregation stage.

Table 22. Forecast sales growth by geographical location and retail type across Auckland, 2012-2031

Geographical area	Net change 2012-2031 (\$m)					Percentage change 2012-2031				
	Core	Trade	Food hospitality			Core	Trade	Food hospitality		
			Food and liquor	and household services	Retail total			Food and liquor	and household services	Retail total
Metropolitan centres										
Albany	296	22	134	26	477	71%	67%	67%	62%	69%
Botany	247	23	146	27	444	73%	55%	66%	65%	69%
Henderson	130	6	52	11	198	64%	50%	46%	49%	57%
Manukau	320	36	130	29	515	75%	60%	63%	59%	69%
Mt Wellington/Sylvia Park	205	19	70	21	315	67%	51%	48%	54%	60%
New Lynn	101	22	62	15	201	61%	54%	46%	48%	54%
Newmarket	260	6	49	29	344	65%	62%	57%	56%	63%
Papakura	35	3	41	9	88	56%	45%	39%	43%	45%
Takapuna	64	5	8	25	102	62%	55%	59%	52%	58%
Westgate	81	13	59	10	163	77%	75%	70%	60%	73%
Total	1,740	155	750	202	2,847	69%	58%	57%	56%	64%
Town centres										
Northern rural	36	23	114	17	190	32%	62%	52%	53%	47%
North Shore	39	9	119	22	188	23%	52%	43%	48%	37%
Western	1	3	24	4	32	16%	42%	39%	42%	38%
Isthmus	176	40	329	76	621	29%	51%	47%	53%	40%
Eastern	22	8	80	18	127	27%	52%	48%	50%	42%
Southern incl rural	81	41	239	47	408	30%	52%	53%	54%	46%
Total	356	124	905	183	1,566	28%	53%	48%	52%	42%
Other centres/areas										
City centre	342	57	298	264	960	49%	63%	68%	58%	57%
Northern rural	8	11	24	10	52	35%	65%	61%	58%	55%
North Shore	94	81	175	35	385	27%	50%	44%	51%	40%
Western	15	35	119	21	189	18%	50%	44%	46%	40%
Isthmus	63	40	222	92	417	32%	52%	48%	53%	46%
Southern and eastern	124	63	121	43	352	41%	56%	49%	55%	47%
Out of centre	604	273	818	627	2,322	29%	56%	53%	54%	44%
Total	3,347	838	3,431	1,476	9,091	45%	55%	52%	54%	50%
Northern rural	44	34	137	27	242	33%	63%	53%	55%	49%
North Shore	494	116	435	108	1,152	48%	53%	49%	53%	49%
Western	227	56	254	44	582	57%	53%	48%	49%	52%
Isthmus	1,147	184	1,031	497	2,859	48%	55%	52%	56%	51%
South and east	830	174	756	174	1,934	56%	55%	54%	55%	55%

Source: RIMU Retail Growth Model, 2013.

In total, centres on the isthmus area are forecast to have the largest increases in sales (\$2.9bn). The inclusion of the City Centre serving a regional catchment, and several other major centres (e.g. New Lynn and Sylvia Park) positioned near the isthmus boundaries and serving sub-regional catchments substantially beyond the isthmus area contribute to this high level of spend. A significant share of the sales at these centres is also likely to be driven by household spending at the workplace where the isthmus has large net inflows of commuters¹⁷⁶. The next largest overall share of sales increase is forecast to occur in the southern and eastern Auckland area (\$1.9bn). This coincides with the large household spending growth forecast for these broad areas.

The growth in core retail sales is further concentrated within large centres, with over half (52%) of the core retail spending growth forecast to occur in metropolitan centre areas¹⁷⁷. The shares of net spend increases in other retail types are considerably lower in

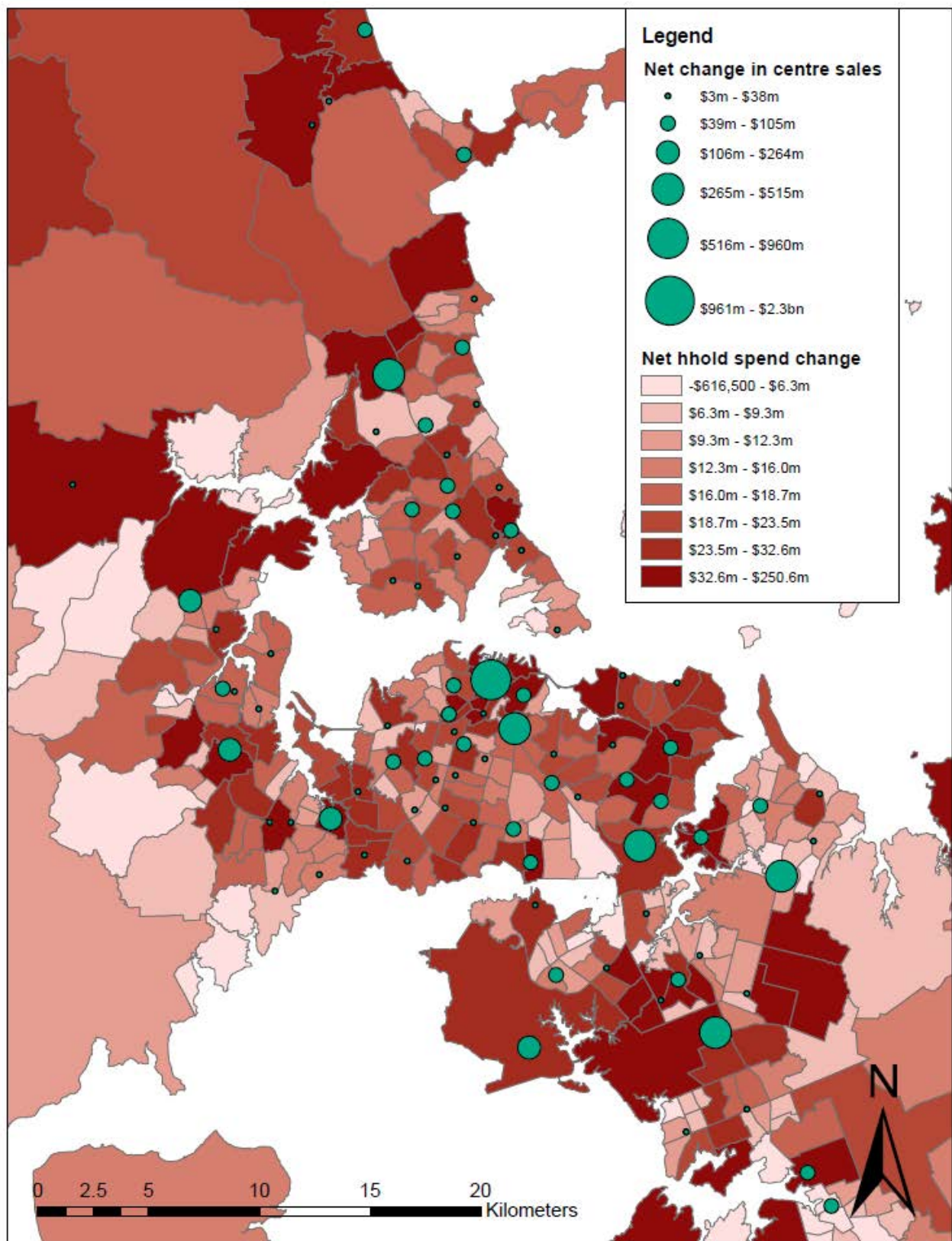
¹⁷⁶ This is observed through the Statistics New Zealand (2006) Census Journey to Work dataset.

¹⁷⁷ Part of this effect is driven by an assumption that the share of core spend in metropolitan centres will increase by 10 per cent out to 2031. This is outlined in sections 4 and 7.2.3, and is due to observed changes in patterns of retail employment by location across the last decade.

metropolitan centres than core retail at between 14 and 22 per cent. Approximately one-quarter (26%) of the food and liquor net increase is forecast to occur around town centres, which overall are forecast to contain 17 per cent of spending growth. Areas outside the defined trading centres in the Fairgray (2012) study are forecast to account for 26 per cent of total spending growth, with higher shares in the food hospitality and household services (42%) and trade (33%) retail categories. A concentration of spending growth in the food hospitality and household services category is observed in the City Centre and its fringe area, reflecting the significance of these areas as major food hospitality entertainment destinations.

Figure 59 maps the forecast sales net increase in different centres across Auckland. Each dot represents a centre/area, with its size proportional to the forecast net increase in sales. These are overlaid upon the forecast net household spending increases within each neighbourhood CAU area. Additional maps for each retail type (core, trade, food and liquor, and food hospitality and household services) are included in Appendix 10, which show visually the patterns by retail type described above.

Figure 59. Forecast net increase in total sales through centre areas across Auckland, 2012-2031



7.3.6.2 Floorspace

The total regional floorspace forecast to meet this increase in retail sales equates to 1.36m m² (where mid rates of internet spend have been applied). This assumes that retail floorspace is supplied by the market in a similar way to the existing spatial structure of floorspace relative to spend. That is, the relative productivity differentials between areas hold constant through time, with an overall annual productivity increase of 0.5 per cent applied across all centres equally at the regional level. However, a range of scenarios are possible, including larger relative increases in productivity on existing floorspace as relative demand for certain locations (such as larger centres) increases. These are discussed below.

Soft agglomeration scenario: Expansion around existing centres

Table 23 shows the forecast net increase in floorspace by location if the current rate of supply relative to demand remained consistent through time. This would reflect a scenario where the market continued to deliver the existing rates of floorspace, and does not incorporate the effect of more localised land constraints within centre areas. As these forecasts reflect the broad location of demand, rather than strongly linked to centre boundaries, it is likely that this type of growth would either result in significant geographical expansion of effective centre boundaries, or the development of out of centre retail in areas within proximity of the centres. This also does not take account of the any demand increases for land from other sectors competing for locations around centres.

Table 23. Forecast floorspace by growth by geographical location and retail type across Auckland (existing structure scenario), 2012-2031

Geographical area	Net change 2012-2031 (m2)					Percentage change 2012-2031				
	Core	Trade	Food and liquor	Food hospitality and household services	Retail total	Core	Trade	Food and liquor	Food hospitality and household services	Retail total
Metropolitan centres	387,000	47,000	40,000	48,000	523,000	53%	44%	42%	41%	50%
Town centres										
Northern rural	13,000	13,000	11,000	7,000	44,000	20%	50%	39%	40%	32%
North Shore	8,000	4,000	9,000	8,000	30,000	12%	39%	30%	34%	22%
Western	-	2,000	3,000	2,000	7,000	5%	30%	27%	29%	24%
Isthmus	33,000	18,000	26,000	25,000	102,000	17%	37%	32%	39%	26%
Eastern	5,000	4,000	7,000	7,000	23,000	15%	38%	33%	37%	27%
Southern incl rural	28,000	20,000	27,000	28,000	103,000	18%	38%	40%	40%	30%
Total	88,000	61,000	82,000	77,000	308,000	17%	40%	35%	38%	28%
Other centres/areas										
CBD	49,000	12,000	11,000	44,000	115,000	35%	48%	53%	44%	41%
Northern rural	3,000	6,000	3,000	5,000	17,000	23%	52%	46%	44%	41%
North Shore	18,000	28,000	8,000	10,000	64,000	31%	71%	63%	74%	51%
Western	1,000	9,000	6,000	4,000	20,000	11%	68%	61%	64%	51%
Isthmus	13,000	14,000	14,000	27,000	68,000	20%	38%	35%	38%	32%
Southern and eastern	6,000	5,000	8,000	6,000	24,000	18%	38%	31%	37%	28%
Out of centre	61,000	47,000	24,000	87,000	219,000	18%	42%	39%	40%	30%
Total	627,000	227,000	196,000	309,000	1,359,000	32%	41%	37%	40%	35%
Northern rural	16,000	18,000	14,000	12,000	60,000	20%	50%	41%	42%	34%
North Shore	102,000	39,000	25,000	30,000	196,000	31%	38%	35%	38%	33%
Western	55,000	17,000	15,000	12,000	98,000	43%	39%	33%	34%	40%
Isthmus	202,000	58,000	59,000	109,000	428,000	33%	40%	36%	41%	36%
South and east	190,000	49,000	60,000	59,000	358,000	39%	40%	38%	40%	39%

Source: RIMU Retail Growth Model, 2013.

Under this scenario, over one-third (38%) of the floorspace increase is forecast in and around metropolitan centre areas, and a further 308,000 m² (23%) around town centres. The share of core retail (62%) forecast to locate in metropolitan centres is even higher, reflecting the increasing relative role of larger centres for core retail.

Hard agglomeration scenario: Greater intensification of centres and surrounding land in existing retail use

Table 24 presents a different scenario where growth is more focussed within the existing effective trading area of centres¹⁷⁸ and a greater planning enforcement of a centres-based strategy¹⁷⁹. This reflects the situation described in section 7.3.3 where the relative role of larger centres increases through time as a combination of increasing urban density, spatial agglomeration economics of retail supply-demand, transport efficiency effects and increasing land scarcity. Larger centres become increasingly important, with corresponding increases in demand for their location, and therefore, the efficiency at which their space is used. A share of the increased demand is met through greater relative increases in the productivity of space across these centres rather than translating immediately into floorspace increases within these centres. As described in section 7.3.3, many of the larger centres in Auckland contain a central area with high volumes of activity and spending, as well as significant amounts of floorspace surrounding these areas that is likely to be trading at much lower productivities. Therefore, it is likely that many of the spending increases in these centres will see increases in trade across these areas as a first response under an enforced centres-based strategy rather than the outward expansion of the centre or construction of further floorspace within the centre.

To construct the scenario in Table 24, the following assumptions were made¹⁸⁰:

- i. Metropolitan centres that are dominant within their respective suburban areas will increase their productivity to the rate at which Botany is currently trading. These include Albany, Manukau, Sylvia Park, Newmarket, Takapuna and Westgate. Large anticipated household spending growth within their catchments also supports this assumption.
- ii. Other metropolitan centres will increase their productivity by 20 per cent, and include Henderson, New Lynn and Papakura.

¹⁷⁸ This refers to the area across which retail trading (floorspace) occurs within a centre. It is not a reference to the residential catchment of the centre.

¹⁷⁹ It should be noted that a share of the increased sales in this scenario are anticipated to be met on land that is already in existing retail use on the edges of centres (see Appendix 4), but is not specifically zoned as a centre per se.

¹⁸⁰ These are net of the overall annual regional 0.5 per cent productivity increase.

- iii. The productivity of urban town centres will increase by 20 per cent. Other rural town centres were assumed to increase in line with the regional base growth as land constraints to centre expansion are likely to be lower in rural areas.
- iv. The City Centre will increase its productivity to match that of St Lukes (increased by 20 per cent), which is currently trading at a higher productivity than the City Centre.

Table 24. Forecast floorspace by growth by geographical location and retail type across Auckland (centres-focussed scenario), 2012-2031

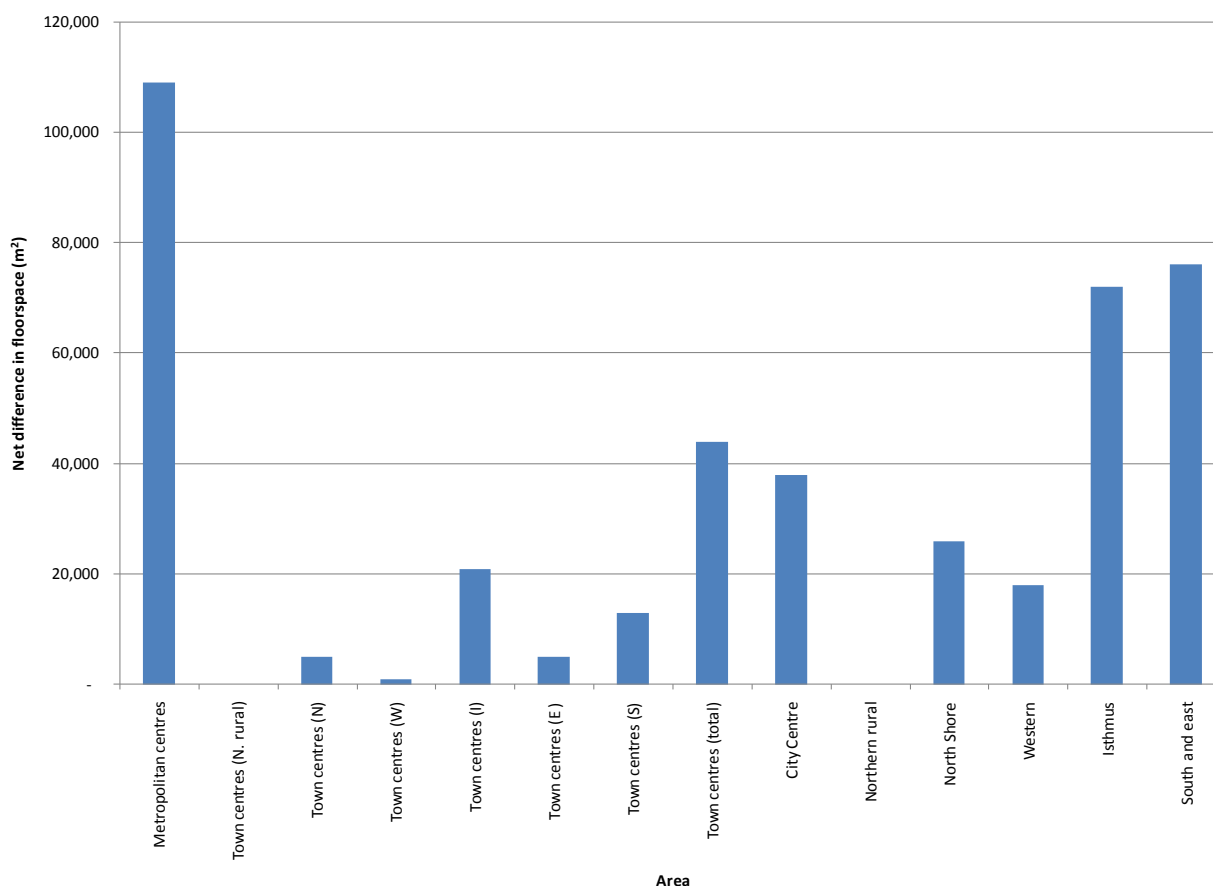
Geographical area	Net change 2012-2031 (m2)					Percentage change 2012-2031					
	Core	Trade	Food hospitality			Retail total	Core	Trade	Food hospitality		Retail total
			liquor	and household services					liquor	and household services	
Metropolitan centres	307,000	36,000	32,000	39,000	414,000	53%	43%	41%	41%	50%	
Town centres											
Northern rural	13,000	13,000	11,000	7,000	44,000	20%	50%	39%	40%	32%	
North Shore	7,000	3,000	8,000	7,000	25,000	12%	39%	30%	34%	22%	
Western	-	2,000	2,000	2,000	6,000	5%	30%	27%	29%	24%	
Isthmus	26,000	15,000	20,000	20,000	81,000	17%	37%	32%	39%	26%	
Eastern	4,000	3,000	5,000	6,000	18,000	15%	38%	33%	37%	27%	
Southern incl rural	25,000	18,000	23,000	23,000	90,000	18%	39%	40%	40%	30%	
Total	76,000	53,000	70,000	65,000	264,000	17%	40%	35%	38%	28%	
Other centres/areas											
CBD	33,000	8,000	7,000	29,000	77,000	35%	48%	53%	44%	41%	
Northern rural	3,000	6,000	3,000	5,000	17,000	23%	52%	46%	44%	41%	
North Shore	18,000	28,000	8,000	10,000	64,000	31%	71%	63%	74%	51%	
Western	1,000	9,000	6,000	4,000	20,000	11%	68%	61%	64%	51%	
Isthmus	13,000	14,000	14,000	27,000	68,000	20%	38%	35%	38%	32%	
Southern and eastern	6,000	5,000	8,000	6,000	24,000	18%	38%	31%	37%	28%	
Out of centre	61,000	47,000	24,000	87,000	219,000	18%	42%	39%	40%	30%	
Total	518,000	205,000	172,000	272,000	1,166,000	30%	40%	37%	40%	34%	
Northern rural	16,000	18,000	14,000	12,000	60,000	20%	50%	41%	42%	34%	
North Shore	85,000	37,000	21,000	26,000	170,000	29%	37%	34%	38%	33%	
Western	43,000	15,000	13,000	10,000	80,000	42%	38%	33%	34%	38%	
Isthmus	170,000	48,000	49,000	88,000	356,000	33%	40%	35%	40%	36%	
South and east	143,000	40,000	50,000	48,000	282,000	37%	40%	38%	40%	38%	

Source: RIMU Retail Growth Model, 2013.

The amount of new floorspace required to meet spending growth is approximately 14 per cent less under the centres-focussed hard agglomeration scenario (than the soft agglomeration scenario) where greater shares of demand are met across existing floorspace, amounting to a net difference of 193,000 m². Under this scenario, over one-third (36%) of the floorspace growth is forecast to occur in and around metropolitan centres, amounting to an additional 414,000 m². This is down from 523,000 m², with nearly half of the efficiency gain occurring within Manukau, which is likely to reflect the large amount of floorspace within the centre located in the area surround the mall and supa centre on a combination of centre zoned, light industrial and general business zoned land (in the Proposed Auckland Unitary Plan). Under this scenario, the greatest shares of floorspace demand still occur on the isthmus and southern and eastern Auckland at 356,000 m² and 282,000 m² respectively. Figure 60 below shows the net difference in floorspace by area between the hard and soft agglomeration scenarios. Each bar

represents the additional floorspace within the soft agglomeration scenario within each area relative to the hard agglomeration scenario.

Figure 60. Net difference in forecast floorspace between hard and soft agglomeration scenarios by area, 2012-2031



Source: RIMU Retail Growth Model, 2013.

The alignment of future retail floorspace growth to either scenario is dependent upon a combination of demand within the wider commercial property market and the level of enforcement of planning rules. However, even in the absence of planning enforcement, it is likely that retail will continue to increase its productivity in existing areas due to the competition for land use from other sectors constraining the dispersal of retail; and the general Auckland land scarcity causing land prices to rise in key nodes (meaning retail will need to trade at higher rates) in response to constraints in supply. Supply constraints from land scarcity will also indirectly reinforce this situation where the density of households (and therefore, spend) will also consequently increase in the catchment areas centres serve. The rate at which price signals will flow through the commercial land market will depend also upon development capacity, of which a study is currently being undertaken within RIMU.

Part 4 – Evaluating economic effects of retail location

8 Evaluating the economic effects of retail location

8.1 Introduction and context

“Urban form concerns the manner in which the City is arranged in relation to the surrounding landscape. [It] has a major bearing on resource use, social and economic well-being and environmental quality (para 94: *Stirling v Christchurch City Council* [2010] NZEnvC 401)”. This is because “[t]he location of activity is a core influence on urban efficiency, sustainability, amenity and well-being, especially because of the cost and efficiency of spatial interactions (p3: Gardner-Hopkins and Fairgray, 2011)”. Retail is a major driver of urban form as it influences the land use patterns of other activities, which together with retail, have a key impact on how households and businesses interact across space.

Strategic land use policy direction is an important tool to influence urban form to achieve spatial management of retail location. It is, therefore, crucial that the effects of retail location are understood and evaluated in relation to their impact on urban form policy objectives and outcomes. This section develops a framework through which to consider the economic effects¹⁸¹ of retail location, building off the retail supply-demand calculations in earlier sections of the report. It begins by providing a brief overview of how the economic effects of retail have been considered in relation to the Resource Management Act 1991 (RMA) by the courts to provide guidance on how these issues may be considered within the Auckland retail setting¹⁸². The section then identifies a way to quantify and evaluate these effects (including gravity/ spatial interaction modelling) and outlines guiding principles in application. This framework can be applied by planners, policymakers and analysts when considering the effect of potential new retail location¹⁸³.

¹⁸¹ Retail location also has many other potential effects including social and transport/travel and on the natural environment, which are beyond the scope of this section.

¹⁸² Importantly, this section is not intended to be a comprehensive documentation of key retail case law. Rather, it aims to draw upon the considerations of the economic effects of retail development discussed in relation to significant retail cases for guidance in assessment of retail effects within the Auckland context.

¹⁸³ Examples for application by planners, policymakers and analysts include, but are not limited to, the development of retail location policy, the assessment of plan changes that would affect the ability of retail to locate in specified areas and assessment of resource consents for retail developments.

8.2 Resource Management Act and retail economic effects

Retail is a major driver of urban form and spatial efficiency for households and businesses. Patterns of retail development affect the time and money resources households use in accessing retail to meet their needs¹⁸⁴. It also influences other patterns of land use, particularly the vitality and viability of centres, which play an important social role for households (in their provision of social infrastructure) and as commercial centres for businesses (including the productivity effects from agglomeration economies).

Key Resource Management Act provisions

The starting point under the RMA in terms of the economic effects of retail location is sections 5 and 7 which contain the purpose and principles of the legislation. In terms of the impact of retail location on household and community enablement, and the efficient and sustainable use of resources the RMA provides:

“In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while –

- (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonable foreseeable needs of future generations; and
- (b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment (RMA, s5(2))”.

“In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to –

- (b) the efficient use and development of natural and physical resources:
- (c) the maintenance and enhancement of amenity values:
- (f) maintenance and enhancement of the quality of the environment:
- (g) any finite characteristics of natural and physical resources: (RMA, s7)”.

‘Environment’ and ‘amenity’ have been defined broadly under section 2(1) of the RMA as:

“**environment** includes –

- (a) ecosystems and their constituent parts, including people and communities; and

¹⁸⁴ The New Zealand Household Travel Survey 2009-2012 showed that over 40 per cent of private vehicle trips involved shopping. The shopping component of trips alone amounted to approximately 92 million hours and 2.9 billion vehicle kilometres per year travelled by New Zealand households in total (Ministry of Transport, 2013).

- (b) all natural and physical resources; and
- (c) amenity values; and
- (d) the social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) or which are affected by those matters (RMA, s2(1))”.

“**amenity values** means those natural or physical qualities and characteristics of an area that contribute to people’s appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes (RMA, s2(1))”.

The RMA also defines effects in section 3 as:

“In this Act, unless the context otherwise requires, the term **effect** includes-

- (a) any positive or adverse effect; and
- (b) any temporary or permanent effect; and
- (c) any past, present, or future effect; and
- (d) any cumulative effect which arises over time or in combination with other effects regardless of the scale, intensity, duration or frequency of the effect, and also includes-
- (e) any potential effect of high probability; and
- (f) any potential effect of low probability which has a high potential impact (RMA, s3)”.

The wide nature of the definition of effects is important within the retail context given the nature of impacts, the way in which they occur, and the timeframes over which they occur. Effects that occur cumulatively over time (section 3(d)) reflect broadly the nature of urban development where urban form (and its effects) emerge through the aggregation across time of smaller individual decisions or developments. These effects can be difficult to assess or measure.

Effects occurring over different timeframes, and potential as well as actual effects, have been considered relevant by the courts in the evaluation of retail cases. In *St Lukes Group Limited v North Shore City Council* [2001] NZRMA 412 (the Wairau Valley retail case) the Environment Court considered appeals to the retail provisions in the proposed North Shore City District Plan. The Court stated:

"It is therefore understandable in our view that the Council should wish to assess the effects of large retail proposals within the identified area on a discretionary activity footing, so that it can weigh the actual and potential effects of such developments, including of course cumulative effects." (para 60)

Reference to consideration of cumulative effects of retail development reflects the nature of how urban form in centres develops through time.

Also relevant when considering applications for resource consent is section 104(3)(a)(i) of the RMA which directs the Council, in its assessment of effects, to disregard the effects of trade competition. This is discussed in further detail below.

Consideration of retail effects (community enablement and distributional effects)

The effects on community enablement (s5 and s7) through retail development has largely been considered by the court in terms of the potential effects of proposed retail on existing retail, and consequent impact on the community. These are usually termed 'distributional' impacts which relate to any changes in the way retail is distributed across the city (including across different centres), and the effects on communities in how they change their travel patterns to access the new distribution of retail, and changes in the amenity they receive from retail and other land uses it supports.

While the trade competition impact on existing retail is to be disregarded (section 104(3)(a)(i)), the consequent changes in amenity for households that arise from changes to the urban landscape are potential effects of community enablement and can be relevant under sections 5 and 7 of the RMA. It is important here to distinguish between effects on existing retail as a result of trade competition from the entry of a new player into the marketplace and those which represent an impact on community enablement from the effect on the retail/centre. This has been subject to discussion in the courts where generally proponents of out-of-centre retail growth have claimed any effects on existing retail are merely trade competition, and should be disregarded.

Conversely, it has been argued that retail distributional effects occur where retail influences the location of other land uses and plays a key role in supporting the viability of centres. The provision of social and other infrastructure is reliant upon a centre location, and therefore retail, which are key aspects of community enablement and amenity, which are considered as effects under the RMA.

The broader community economic and social impacts (which can be considered) were discussed in the Discount Brands litigation. The High Court's decision to set aside the decision not to notify on the basis of insufficient information (upheld by the Supreme Court in *Westfield (New Zealand) Limited v North Shore City Council* [2005] NZSC 17) provides a useful description of amenity impacts from effects to a centre where:

“Such effects might include the loss of investment in roading and other infrastructure as well as the loss of amenity which could result from the closure or serious decline in the attractiveness or viability of the centre as a whole. Loss of employment opportunities on a significant scale might also qualify as adverse effects for these purposes. So too the possibility that important community services associated with shopping centres might cease

to be appropriately located to serve persons attracted to the shopping centre (para 89).”

The Supreme Court made the following comments in relation to the potential effect of the proposed activity on amenity values of existing centres:

“...But, as Randerson J said, significant economic and social effects did have to be taken into account. Such effects on amenity values would be those which had a greater impact on people and their communities than would be caused simply by trade competition. To take a hypothetical example, suppose as a result of trade competition some retailers in an existing centre closed their shops and those premises were then devoted to retailing of a different character. That might lead to a different mix of customers coming to the centre. Those who had been attracted by the shops which closed might choose not to continue to go to the centre. Patronage of the centre might drop, including patronage of facilities such as a library, which in turn might close. People who used to shop locally and use those facilities might find it necessary to travel to other centres, thereby increasing the pressure on the roading system. The character of the centre overall might change for the worse. At an extreme, if the centre became unattractive it might in whole or part cease to be viable.

The Court of Appeal considered that only "major" effects needed to be considered, since only then would the effect on the environment be more than minor, in terms of s 94(2)(a)). But in equating major effects with those which were "ruinous" the Court went too far. A better balance would seem to be achieved in the statement of the Environment Court, which Randerson J adopted, that social or economic effects must be "significant" before they can properly be regarded as beyond the effects ordinarily associated with trade competition on trade competitors. It is of course necessary for a consent authority to first consider how trading patterns may be affected by a proposed activity in order that it can make an informed prediction about whether amenity values may consequentially be affected." (paras 119 and 120)

Enabling people to provide for their social, economic and cultural wellbeing from retail centres is viewed more broadly than just the amenity value from retail. This is an important effect within the context of a centres-based growth strategy where the urban development trajectory is founded upon the wider social and economic role centres play as well as their effect on spatial efficiency in travel. In the Wairau Valley retail case the Environment Court, referring to the concerns of the Council, stated that:

“The concern would not be with economic effects on individual trade competitors within the centre, but with the continuing viability of the centre itself as a collective physical resource of public benefit and interest – having regard to the centre’s

community function and status, its level of importance to the people within the surrounding area associated with it, and the co-ordinated provision of infrastructure such as street facilities, amenity improvements, other utilities, and transport services (including parking) (para 16).”

As noted above, section 3 of the RMA also defines effects as occurring through time. This is an important aspect of distributional effects because they can often only manifest in the future, and in cases can be difficult to anticipate. The significance and complexities involved in measuring or calculating distributional effects was highlighted in the Environment Court decision relating to the refusal of an application for resource consent for a large-scale retail centre in Christchurch (*Stirling v Christchurch City Council*[2010] NZEnvC 401, upheld on appeal). The Court stated:

"We accept the evidence of the retail distribution experts that except in the case of a very large retailing activity a prediction of a significant adverse effect upon the function, vitality and amenity of existing centres would be rare. Thus, in many instances, retail distribution effects may only become apparent in the long term and may differ considerably from those anticipated before the activity established. Whether retail distribution effects are predicted is, not in small part, a function of the size of catchment that the retail spend is to be drawn from. The difficulty in assessing the potential effects of a proposed retail activity is that in many instances the effects of incremental change may be difficult to predict with any degree of confidence. The retail market will usually respond (competitively) to new entrants. Secondly, the marketplace and wider economy in which the proposed retail activity is set is not static." (para 129)

Linkages between the retail, infrastructure and functional roles of centres has also been discussed in retail cases where centres-based opponents have argued that councils have no mandate to direct retail into certain locations, namely centres. It has been argued this direction represents an *allocation* of resources (reflecting the previous Town and Country Planning Act 1977 legislation), rather than the *management of effects* under the RMA, and therefore, a centres-based planning policy was outdated. However, the courts ruled that the linkage between centres and infrastructure (and ultimately, retail) and its effects on community enablement and well-being meant it was within Council’s mandate to pursue a centres-based policy. The Court has confirmed that retail distribution effects can be addressed with the objective of consolidating a town centre or supporting an existing pattern of retail development (the centres-based approach).

Substantial argument on the demonstration of the significance of these distributional impacts has occurred to determine what is considered more than a minor effect. However,

this argument often arises from considering only the net quantitative effect on consumer spending flows when evaluating the distributional impacts, without taking into account the wider effects on the centre (and therefore, community enablement) or the alignment of the development with planning objectives. When effects are thus considered narrowly in net quantitative terms without alignment to strategic land use directions, it can lead to situations where overall urban form outcomes are not captured or under-stated in the analysis.

Similarly, if effects are considered from proposals in isolation or without proper understanding of the process of distributional effects, the overall impact may be underestimated. The process of the proposed Hamilton District Plan retail provisions leading up to the Te Rapa large format retail case in Hamilton (*Kiwi Property Management Limited v Hamilton City Council* (2003) 9 ELRNZ 249) provides an illustrative example where the future retail distributional effects on the central city retail area from construction of a substantial large format retail development on the Te Rapa site (due to the retail provisions) were not fully anticipated¹⁸⁵. However, empirical observation through time of Hamilton city centre has seen a decline in the central area retailing, potentially a significant adverse impact of the development¹⁸⁶.

When considering an application for resource consent and potential retail effects, the Environment Court in *Bunnings Limited v Hastings District Council* [2011] NZEnvC 330 considered that any positive social or economic effects which might arise such as greater consumer choice and employment opportunities could be relevant as a positive effect under Part 2.

Relevance of policy direction for retail location in plans

When considering an application for resource consent the Council is required under section 104(1)(b) to have regard to any relevant planning provisions. In some cases, the Courts have placed considerable weight on the policy direction of the relevant regional or district planning documents where guidance about retail distribution and location has been set out in relevant objectives and policies.

¹⁸⁵ Expert witnesses described the presence of “flow on” and “consequential effects” (paras 70 to 72) that should be considered, however, the Te Rapa ‘The Base’ large format retail development still occurred. The Hamilton City Council is now seeking to re-establish the primacy of the CBD (Hamilton City Council and UrbanismPlus Ltd, 2008).

¹⁸⁶ In other cases, it has been argued that large retail developments will draw from correspondingly large catchment areas and therefore, the effects will be spread thinly across a wide geographic area, having insignificant impacts on any individual centre. These analyses fail to consider the differential impacts across different centres, a fundamental principle of distance decay effects, which are historically well established in the urban economic literature.

Understanding the linkages between retail and other activities and land uses provides insight on the role of retail in achieving centres-based urban form outcomes. This, coupled with the recognised need to consider the cumulative development of urban form through time, means it is important to consider not only the net impact on retail distribution, but the amenity effects that arise from this and the general alignment of development to urban form outcomes.

Providing clear guidance in the objectives and policies of a regional or district plan is important in the context of retail location because the potential for effects on community enablement should be captured through the urban form strategic objectives of the city or district plan or regional policy statement. In preparing or changing any district plan, a Council must not have regard to trade competition or the effects of trade competition (section 74(3) of the RMA).

The High Court decision of *Stirling v Christchurch City Council* (2011) 16 ELRNZ 798 (HC) considered the Environment Court's approach to the assessment of retail distribution effects and the interpretation of the key objectives and policies in the City Plan seeking a centres-based approach. The Courts accepted the evidence of the experts that by itself the proposed development would not affect retail distribution or create specific retail distribution effects that would be of concern (the effects were minor). However, the proposed development cut across the policy of the City Plan which sought to preserve the central city and district centres, and overall the purpose of promoting sustainable management would be better served by refusing the application for consent. The High Court upheld the Environment Court's decision to refuse resource consent for the proposed large format retail development.

A key outcome demonstrated in the Stirling decision is that retail needs to be considered within its wider context at the plan preparation stage because a proposal may be unlikely to generate more than minor effects when considered individually, but in combination with other development, has substantive effects on urban form¹⁸⁷. As cities and urban form emerge as a combination of individual decisions, it is therefore, crucial to consider the alignment of each decision to the plan as it is difficult to demonstrate the effect of divergence of individual decisions.

¹⁸⁷ This also means that attribution of effects to any single development is very difficult to demonstrate.

8.3 Framework for evaluation

Section 8.2 provides guidance on the interpretation of retail economic impacts through drawing upon the considerations of several major retail court cases. It is important that the distributional effects are interpreted within this wider context to reflect the cumulative nature of city development where effects on urban form arise over the longer-term through the cumulative impact of many individual decisions in aggregate. Therefore, it is crucial to consider the effect of individual retail developments within their wider context, having regard to their alignment with city planning objectives and cumulative urban form outcomes. As such, the following principles provide guidance on what should be considered when assessing retail location for resource consent applications and when drafting relevant plan provisions (as appropriate)¹⁸⁸¹⁸⁹:

- **Actual and potential effects** should be considered such as the wider economic effects on existing commercial centres. It is often difficult to anticipate changes to consumer patterns and spatial flows of spending, meaning potential effects should also be considered to achieve the purposes of the RMA. This includes any positive social or economic effects which might arise such as greater consumer choice and employment opportunities.
- Changes in **community enablement** from effects on other existing retail. Consideration should be given as to the effect on existing retail centres which act as important social and community hubs for their respective catchments (but excluding trade competition or the effects of trade competition). A household amenity index illustrating the spatial patterns of community enablement changes may be applied.
- When considering an application for resource consent, under section 104(1)(b), whether the proposal **aligns with the city plan objectives**, policies and land use strategic direction. The city plan objectives reflect the outcomes sought for community well-being as well as the sustainable and efficient management of physical, transport and social infrastructure across the city, of which retail plays a key role in sustaining.
- Section 5 matters of **sustainable management and efficient resource use**. In the context of retail location this relates to the retail impact on other land uses where retail influences the provision of other infrastructure requiring sustainable and efficient management. It also includes the efficient

¹⁸⁸ This is not an exhaustive list of retail economic effects where additional effects that should also be considered may exist. The order of the list does not reflect the prioritisation of effects as this will be determined by individual cases and in some cases by the court.

¹⁸⁹ This is not to suggest Council is planning retail developments, but it is important that Council understands these effects to anticipate future needs using a more sophisticated approach than number of households per square metre of retail development.

use of land itself through considering both the short and long-term opportunity cost of other land uses¹⁹⁰.

- **Current and future effects, including their cumulative impact** on urban form should be considered. The effects of retail location typically occur through time and become manifest in the future as both the result of large individual developments, but also the aggregate effect of many individual developments on urban form resulting from a certain development trajectory.
- In the plan preparation process the Council can consider the **land use opportunity cost**. While this is captured in the third point above, consideration should also specifically include the displacement of other land uses and associated economic growth and employment opportunities (RMA section 32(2)), including both short and long-term effects of industry sector growth or constraints¹⁹¹.

This section outlines a framework through which to evaluate the effects of retail location, which can be applied when calculating distributional effects from new retail. It identifies the estimated trade effect on other existing retail and provides an indication of the likely spatial patterns of changes in amenity experienced by households. The latter assumes that centre retail size corresponds with the amenity value of a centre for households and therefore, any changes would be applied across the catchment as the index reflects actual community spatial patterns of centre access.

The following summarise the key stages of analysis outlined in this section:

- i. Stage 1 – Evaluate existing provision of retail within identified potential locations for retail growth.
- ii. Stage 2 – Identify land for potential intensification, development or redevelopment of retail within the site.
- iii. Stage 3 – Estimate the potential dollar value of sales on new retail floorspace.
- iv. Stage 4 – Evaluate the trade impact of new retail on existing retail elsewhere.
- v. Stage 5 – Calculate changes in amenity for households as a result of changes to the spatial distribution of retail (e.g. changes in community enablement).

¹⁹⁰ Importantly, this does not reflect a laissez-faire approach where land is allowed to go to the highest land use bidder. An entirely market-led approach to land use would not in aggregate result in the greatest value of land use for the city because the market alone cannot manage the externalities of land use, which themselves by nature occur across wider spatial scales than the land parcel in question. Travel effects of a retail development are a key example where patterns of consumer access can occur across sub-regional scales. Secondly, the short-term spatial economic land use structures that would result from the market do not necessarily reflect longer-term optimal spatial economic structures. Rather, local authority involvement through planning is an important factor to ensure the most efficient and sustainable management of land uses to achieve the purpose of the Act in both the short and long-term. Therefore, it is important that consideration is given to the planning objectives of the area under consideration.

¹⁹¹ For example, this should include the economic effect of constraining growth in a certain industry sector at the regional level (including flow-on effects) where the sector is constrained through retail displacing other land uses, including the cumulative impact of the development trajectory across a range of locations.

The first phase (stages 1 to 4) in determining the effects of new retail development on community enablement and resource use efficiency is understanding the impact on existing and future patterns of retail development¹⁹². Distribution effects identify the trade effect on retail where new retail captures a certain share of the market, with a component of consumer spending flows redirected from other retail. Gravity modelling is used as the key methodology within this framework to determine the trade impact. It is driven off calculations of spend and floorspace by location using inputs from earlier stages of analysis in sections 5 to 7 of the report. These are outlined in turn below.

Once the trade impact across existing retail is calculated, it is important to understand the effect on community enablement and resource efficiency as a result of changes in the retail distribution (stage 5). This section develops a household amenity index to illustrate the potential spatial patterns of changes in amenity, and by proxy, an indication of travel patterns¹⁹³. It is important that effects are not limited the household catchment area, but also take account of effects from amenity changes in other retail household catchment areas due to shifts in trade in other centres from new retail development.

8.3.1 Evaluation of existing retail provision and identification of potential for new retail

8.3.1.1 Identify capacity for additional retail floorspace (stages 1 and 2)

Identify existing retail floorspace (stage 1)

The first stage of assessment identifies the net additional floorspace potential of locations for retail growth and involves a site evaluation to determine the extent of existing retail and other existing land uses within the identified areas. This should be undertaken on a property parcel basis. Land areas can be obtained from the rating database¹⁹⁴ and the extent of ground cover calculated using a combination of aerial photographs and a geographic information systems (GIS) building footprint database. Types of existing land uses can be identified through Google Streetview tools and verified by site visits to capture

¹⁹² Understanding the trade impact on existing retail centres was identified by the courts as a major deficiency in the original resource consent proposal assessment for the Discount Brands centre. It was identified as a key first stage in understanding the impacts of a new retail development (*Westfield (New Zealand) Limited v North Shore City Council* [2005] NZSC 17).

¹⁹³ This is an indication only of travel patterns as it describes the average distance across which retail is accessed relative to the household location and does not account for multi-destination trips.

¹⁹⁴ Land areas in the rating database were cross-checked against the mapped areas through using a GIS land area measurement tool.

any land use, business changes or new development. In cases of major or new retail developments (not seen in the aerial photos or building footprint files), building consent information should be sought to determine the total floorspace area. This means more accurate information is obtained on major retail developments (e.g. malls and multi-level, large format complexes) where floorspace exceeded that of the building footprint¹⁹⁵.

Identify further development potential (stage 2)

Areas with the potential for further development of retail were considered through the following criteria and do not necessarily reflect market uptake:

- i. Vacant sites.
- ii. Sites containing non-retail land uses (i.e. would constitute a land use change).
- iii. Under-developed retail sites.

The last of these criteria can be initially identified on a subjective basis through site investigation where retail or household sector¹⁹⁶ land uses appeared either relatively low density, ad-hoc development (i.e. not part of a specific complex or disjointed at a smaller scale from adjacent/surrounding shops/outlets) or dated developments. Subsequently, to assist this assessment, floorspace to land area ratios may be calculated through information collected during stage one. These can be compared to site cover ratios obtained from more recent large format or other retail developments within Auckland where the full site is covered to reflect more recent development patterns¹⁹⁷. Any gap in this ratio means a site can potentially accommodate more retail floorspace and therefore, may be included within the assessment for potential new retail land. Any significant existing core retail floorspace should be subtracted to ensure a net effect is calculated.

¹⁹⁵ The approach taken is to use gross floor area (GFA) and not net tradable area to capture the full floorspace requirements of retailers.

¹⁹⁶ The household sector refers to goods and services primarily purchased by households. Retail is a sub-set of this, with the sector also including services (e.g. hair dressers, dry-cleaners, etc) and hospitality. A large share of the non-retail component of the sector tends to agglomerate with retail land uses, forming an important component of retail/services centres and therefore, occupying the same types of sites as retail.

¹⁹⁷ Comparisons yielded an average ratio of 40 per cent, meaning that the average floor area equated to 40 per cent of the land area. Values ranged from 29 per cent, up to 120 per cent, but these appeared as outliers, with most developments concentrated around 40 per cent. These were verified by building consent information and included both ground cover only and multi-level developments (including those where car parking was accommodated on the roof of retail outlets). As such, the average reflects a range of different retail densities. This makes the assumption that new retail will follow most recent retail development patterns, which may alter beyond the short-term, or in response to any parking provision planning rule changes.

Through applying this ratio (40 per cent), a floorspace value in relation to the total land area can be obtained (known as a floor area ratio (FAR))¹⁹⁸.

At this stage of the assessment, FAR value of 0.4 can be changed to reflect other potential development scenarios the market may deliver. A value of 0.4 is used here for the purposes of the worked example. It is an area of further research to develop a database of FARs by development type and location across Auckland.

It is also important that any FAR application takes account of specific site development controls if conducted at a very small scale or on a few selected sites (as opposed to a broader geographic area). Examples include minimum setback distances where individual property parcels may be subject to development buffers where different land uses or significant natural features occur on adjacent land parcels. The business land capacity modelling currently being undertaken by the Land Use and Built Environment team within RIMU will incorporate individual site controls within the capacity calculations.

Land where retail developments are recent and covered the full site (either in established car parking or buildings) or are entirely covered in large format retail (including parking) are deemed not to contain any further capacity for retail development.

8.3.1.2 Estimate retail type floorspace distribution (stage 2)

Lastly, it is necessary to estimate how the new floorspace is likely to be distributed across different retail categories. This is important because the sales per m² differ between categories, and the share of floorspace across categories generally corresponds to centre size to reflect the geographical patterns of retail supply by type. For example, core retail has a greater propensity to locate in larger centres, meaning larger developments are likely to have higher shares of their floorspace as core retail than smaller developments. In some cases information on the expected tenant mix may be available from a proposed development on a specific site; or the proposal may contain information on the type of building proposed for construction, such as a supermarket or warehouse. If available, this information should be used during this stage of the assessment.

If no development information is available (such as in the case of zoning change without a specific development proposal), then information should be sought from sections 5 to 7 of this study for retail categories in the following ways:

¹⁹⁸ This therefore, assumes the ability for site amalgamation to accommodate large stores. By nature, the areas identified for assessment contained areas with either large sites or contiguous smaller sites of under-developed areas where site amalgamation for larger developments could potentially occur.

Supermarkets

The presence or expansion of a supermarket is likely to be a significant component of any retail development, although it is difficult to accurately anticipate in the absence of individual major retail chain operation information. While major operators typically conduct marginal analysis to balance revenue from population spending growth against additional operating costs (conducted across the whole store network), some information is available from earlier stages of the analysis to guide this assessment. Maps of forecast net spending growth from each CAU (Figures 76 to 79) provide the geographical patterns of demand growth, while the current floorspace supply base in section 5 (section 5.3.2.2 and accompanying Appendix 5) identifies the location of all existing supermarkets. Stage 5 of the model in section 7 also estimates the anticipated destination of food and liquor sales across Auckland based on existing shopper patterns. Together, these pieces of information should broadly indicate the most likely locations for new or expanded supermarket development across Auckland when viewed in combination geographically.

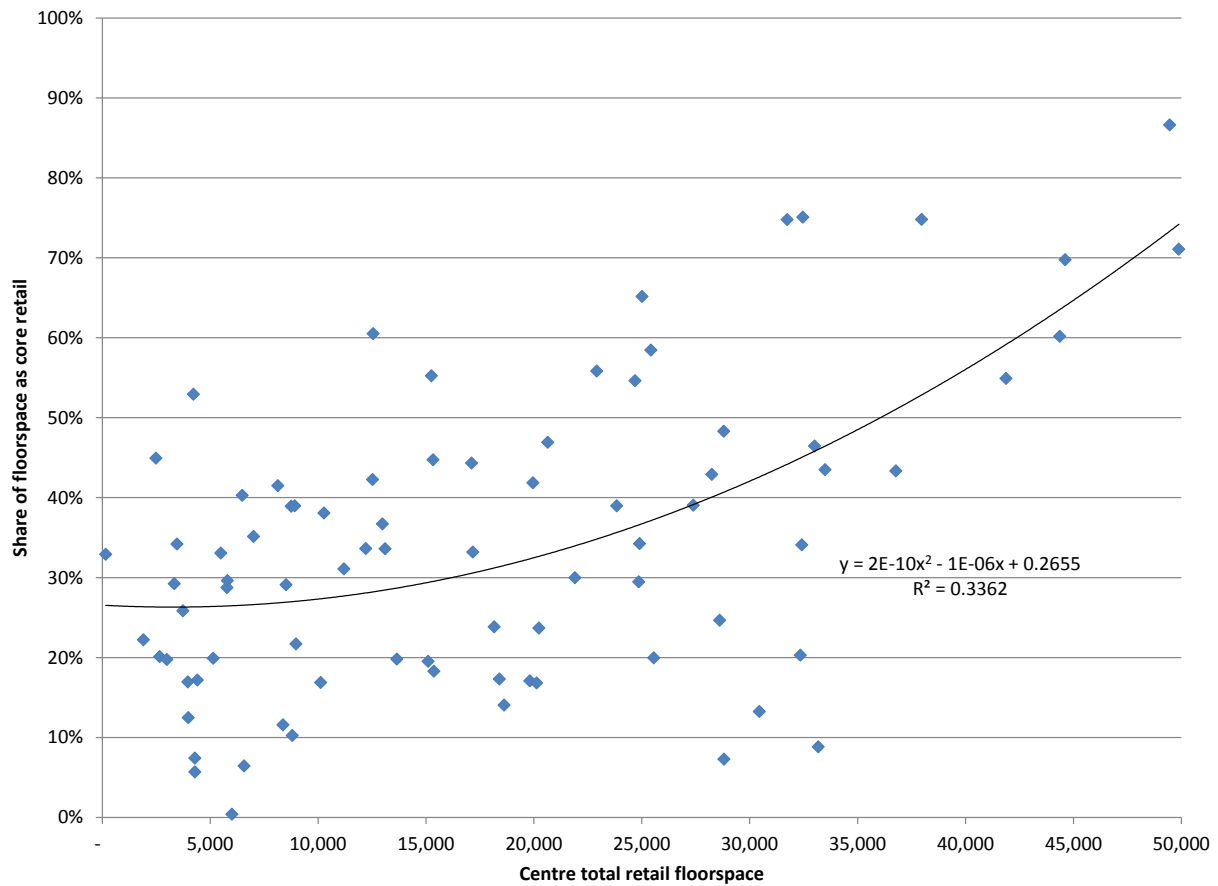
Core retail

The share of floorspace as core retail varies significantly by centre, but is generally higher for larger centres, and lower for smaller centres¹⁹⁹. In the first instance, information on the expected type of development, such as anchor/key tenants, format, size and positioning of stores (e.g. corner block of shops vs. integrated mall development), etc should be used to estimate the potential floorspace as core retail. However, if no information is available, then the following information on the existing relationship between centre size and share of floorspace as core retail may be used to make some adjustment to the share of floorspace as core retail.

The floorspace productivity component of the forecasting model contains the total floorspace for each of approximately 100 centres, then estimates its distribution across retail types. Figure 61 illustrates this relationship for centres with up to 50,000 m² of total floorspace, with the share of floorspace in larger centres ranging from 50 to 80 per cent (with an average of 62 per cent). While substantial variation is present, the trend line equation can be used to make some level of adjustment to the expected share of floorspace as core retail.

¹⁹⁹ It is important to note also that this is partly driven by the economics of retail supply and household demand where, on average, larger catchment sizes are required to sustain core retail than smaller consumable goods and services.

Figure 61. Estimated share of retail floorspace as core retail by Auckland centre size, 2012



Source: RIMU Retail Growth Model, 2013.

Trade, food hospitality and household services, and other floorspace

The remaining share of floorspace should be distributed across the remaining retail categories of trade, food hospitality and household services and non-supermarket food and liquor floorspace. This should be guided by the level of spending demand for each category at the surrounding centre spending destinations.

Consideration should also be given to the nature, specific location and type of area when estimating the share of floorspace by category as these may lend themselves to certain types of retail development. For instance, smaller individual blocks of shops along major arterial routes have a greater tendency to attract smaller food shops and food hospitality and household services than core or trade retail.

8.3.2 Estimating dollar value of retail sales (stage 3)

Once the range of potential floorspace by retail type has been estimated, it is necessary to estimate the dollar value of sales to occur for each retail type. Sections 6.3 and 7 (floorspace productivity component of the model outlined in section 7.2) illustrate the relationship between retail demand and floorspace supply varies significantly geographically within the context of the wider Auckland commercial property market (see Figure 44). The ratios between supply and demand also vary by retail centre type. Therefore, it is important to incorporate these differences when estimating the potential value of sales on the estimated floorspace.

The ratios of floorspace per \$1,000 sales from the floorspace productivity component of the retail forecast model developed in section 7.2 should be applied here to estimate the level of sales on the potential floorspace. This component of the model presents the supply-demand ratios at the individual centre level. These should be used to guide the likely ratios for the proposed retail site taking into account both its geographical location as well as the type of centre/retail development.

User training on running the model should be sought from the Research, Investigations and Monitoring Unit (RIMU) to ensure that appropriate ratios of floorspace per \$1,000 sales are selected for the potential retail development. As above, this process requires the analyst to examine these patterns across the existing information within the model and therefore, requires an objective and trained assessment.

The estimated sales value of new retail development provides an estimate of the total activity size of the centre/development, and forms the key input into the model assessment of the trade impact on other centres in the following stage.

8.3.3 Gravity/spatial interaction modelling (stage 4)

Gravity or spatial interaction modelling²⁰⁰ is the core technique used here to calculate the trade impact on existing retail from new retail development. At a high level, it operates off

²⁰⁰ Spatial interaction models is the term used within the economic geographic literature to reflect the advancement in retail modelling from earlier entirely gravity-driven models, to those which capture the interactions of demand and supply spatially. The latter builds off some of the core gravity principles within the former, but are calibrated and more complex to reflect consumer patterns.

the principles of retail centre attractiveness as a function of centre size where larger centres attract spend from wider geographic areas, and the frequency of visitation to a centre decreases with household distance from the centre (i.e. theory of distance decay). Earlier gravity models related the household spending flows from each neighbourhood area inversely to distance from each centre. While this forms the basis of subsequent more advanced modelling, greater information is available to calibrate the spatial spending flows within the model. This is crucial to capture in a large urban economic setting where consumers meet their needs across a range of different centres and centre types²⁰¹. For instance, the Fairgray (2012 and 2012a) study demonstrates this relationship holds true, but with large variability and catchment overlap within the Auckland setting.

As such, a customised spatial interaction model (Market Economics Ltd, 2012) has been constructed to calculate the trade impact of new core retail development in Auckland²⁰². It represents an advancement in retail modelling as it uses the Marketview Ltd electronic origin-destination spending flow matrices from the Fairgray (2012) study to calibrate the spending patterns to those actually occurring in the Auckland market. It is therefore, built off a more accurate picture of how Auckland households meet their needs across a range of different centres and centre types, as well as implicitly capturing any local variation in distance decay effects of centres. The latter can result from any local differentiation²⁰³ within the centre hierarchy where a centre's catchment may differ to what is expected given the centre size, as well as differences in densities of demand that occur naturally across urban areas²⁰⁴.

At this stage, only a core retail model has been developed due to funding and time constraints. It is important to use a separate model for each retail type given differences in the spatial distance effect curves between retail types (refer to the Fairgray 2012 study). Consequently, the construction of other spatial interaction models for the remaining retail types are identified as areas of further research. These should be developed consistently with the core retail model using actual Auckland spending flows data.

²⁰¹ Moreover, some earlier gravity models did not recognise the overlap in centre catchments, thus allocating household spend to the closest centre within each level of the centre hierarchy (Birkin et al. 2002).

²⁰² Market Economics Ltd (2012) constructed a customised core retail spatial interaction model for Auckland Council for this research.

²⁰³ Onehunga is a illustrative example within the Auckland context where the centre catchment is considerably larger than suggested by the size of retail activity within the centre. The presence of Dressmart as a major regional attractor (a factory outlet mall) differentiates it from other centres across Auckland, drawing from a significantly wider geographic area.

²⁰⁴ This can be observed in Auckland where higher residential densities (in income and dwellings) generally exist closer to the CBD, along with a greater density of centres in the network.

The estimated dollar value sales from the new retail development developed in the above stages form the core input to the spatial interaction model. The model also requires the user to identify a beta value, which represents the coefficient for the retail distance decay effect²⁰⁵. This should be selected based on a combination of the centre type, and the beta values of geographically proximate centres relative to their respective centre types. Sensitivity testing using a range of different sales estimates and beta values for the potential development should be conducted by users within the model.

Once the estimated sales value for each location is submitted to the model, the trade impacts across other centres are calculated as outputs. These are output as net impacts with both absolute numbers (in terms of a dollar value of trade) and relative impacts (in terms of a percentage impact on the centre) on the centre. The dollar value impact on centre is a function of the total core retail size of the centre as well as the distance of the centre from the new core retail development. As such, dollar value impacts may be larger on some of the larger centres located further from the new developments.

Trade effects are calculated through time where the model takes into account spending power growth from household, business and tourism spend. The same household forecasts by CAU and household type as in section 7 are used in the model.

8.3.4 Changes in amenity to households (stage 5)

Trade effects on other centres from changes in the retail landscape are not in themselves justification for the positive or negative impact assessment of new retail. It is the changes in amenity for households that arise from any shifts from trade effects in the distribution of retail that form the retail impact assessment (community enablement and efficiency of resource use, sections 5 and 7 of the RMA). The spatial distribution of retail is also a major influence of household travel time and efficiency as needs are met across a range of different centres and centre types²⁰⁶.

²⁰⁵Users need to receive training on the use of the model from RIMU. Specifically, they should be tested on their ability to identify appropriate beta and sales values for the potential development.

²⁰⁶ The effects of large format and out-of-centre retail are discussed in Market Economics (2008), Auckland City Council (2010) and Fairgray (2007). The focus here is on travel cost and time efficiency impacts as households access retail, however, a much wider range of effects are present, such as a loss of social amenity from town centres if their viability is eroded by out-of-centre development, which does not typically support as large a range of social infrastructure.

Consequently, this stage establishes the conceptual basis for the development of an amenity index to measure any changes in access to retail for households. An amenity index is currently being developed within RIMU, with further exploration of mathematical formulas undergoing analysis and testing. The purpose is to provide a spatial index to map household catchment areas of lower or higher relative amenity across Auckland, and patterns of change in amenity through changes in the spatial distribution of retail. It should be used as a tool to identify the spatial patterns of household amenity change and the spatial extent (across household catchments) of amenity change for households because it draws off the patterns of household centre access.

The index assumes that amenity from a particular centre is a function of centre size and distance to the centre, where amenity declines with distance (i.e. accessibility of retail decreases with greater distances). While it is not a travel calculation per se (due to multipurpose and multi-destination trips and different frequencies of travel to different centre types), it considers the quantum of retail and its geographical positioning relative to each household catchment.

Inputs of sales within each centre to the index should reflect the base situation included in the spatial interaction model; and changes to amenity should reflect the trade impact output on those centres from the model. An important intermediate stage is to determine any change in a centre's floorspace size from a trade impact. The index does not imply that a trade impact will directly result in an amenity decrease as the overall size and retail offering of the centre may not change.

The index should have two calculations of household amenity to reflect the existing situation and the new potential situation with the trade impact on existing centres (and the presence of the new development). The existing value should be subtracted from the new value so that the index shows the *change* in amenity between the two different retail distributions.

At a high level the household amenity index can be expressed as:

$$HA\Delta_i = HA_i^2 - HA_i^1$$

where $HA\Delta_i$ represents the change in amenity in household catchment i , and superscripts 1 and 2 denote the existing and changed retail landscapes respectively. The equation can subsequently be expressed as an index value for each household catchment relative to the Auckland average by dividing by the average amenity value across all Auckland household catchments. This can be displayed using a graduated and contrasting colour

scale through GIS to show patterns of higher and lower amenity relative to the Auckland average.

Figures 62 and 63 below provide illustrative examples of mapped outputs from the amenity index (using core retail) from hypothetical scenarios of expanding Sylvia Park and Constellation Drive retail areas respectively²⁰⁷. Neighbourhood areas shaded red and orange suggest negative net changes in amenity, while green areas show positive changes (yellow is neutral). The circles indicate the net trade impact on existing centres, where the size of the circle is a function of the overall centre size and distance from the new retail development²⁰⁸.

²⁰⁷ These examples have been generated for the purposes of illustration of the technique and do not suggest any planned or supported expansion of the retail areas.

²⁰⁸ There is also a trade impact on the existing retail in Sylvia Park and Constellation Drive retail areas as while the overall sales would increase, they would lessen on average across the existing retail initially.

Figure 62. Examples of patterns of change in household core retail amenity and distribution of dollar value impact on core retail centres (Sylvia Park expansion)

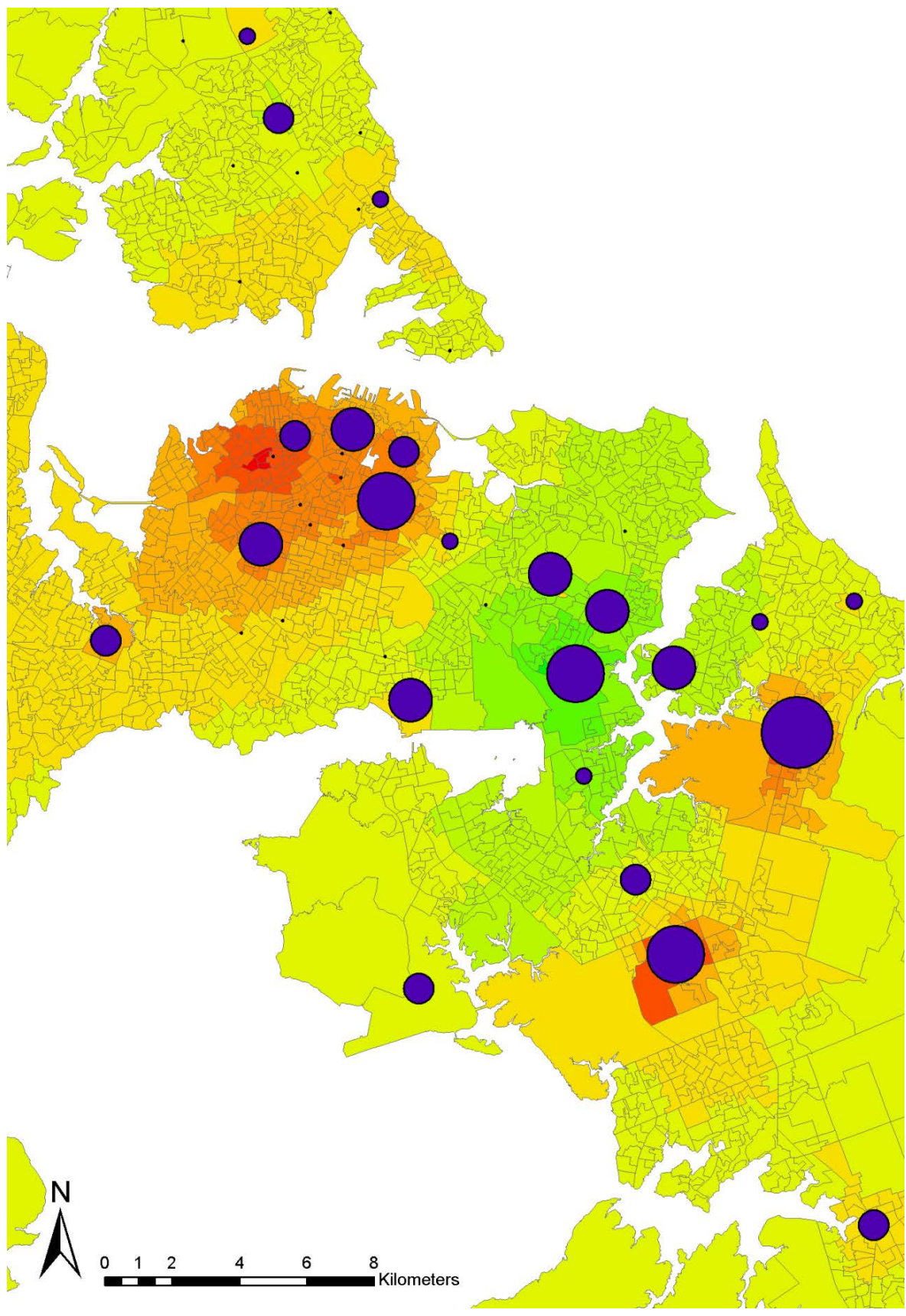
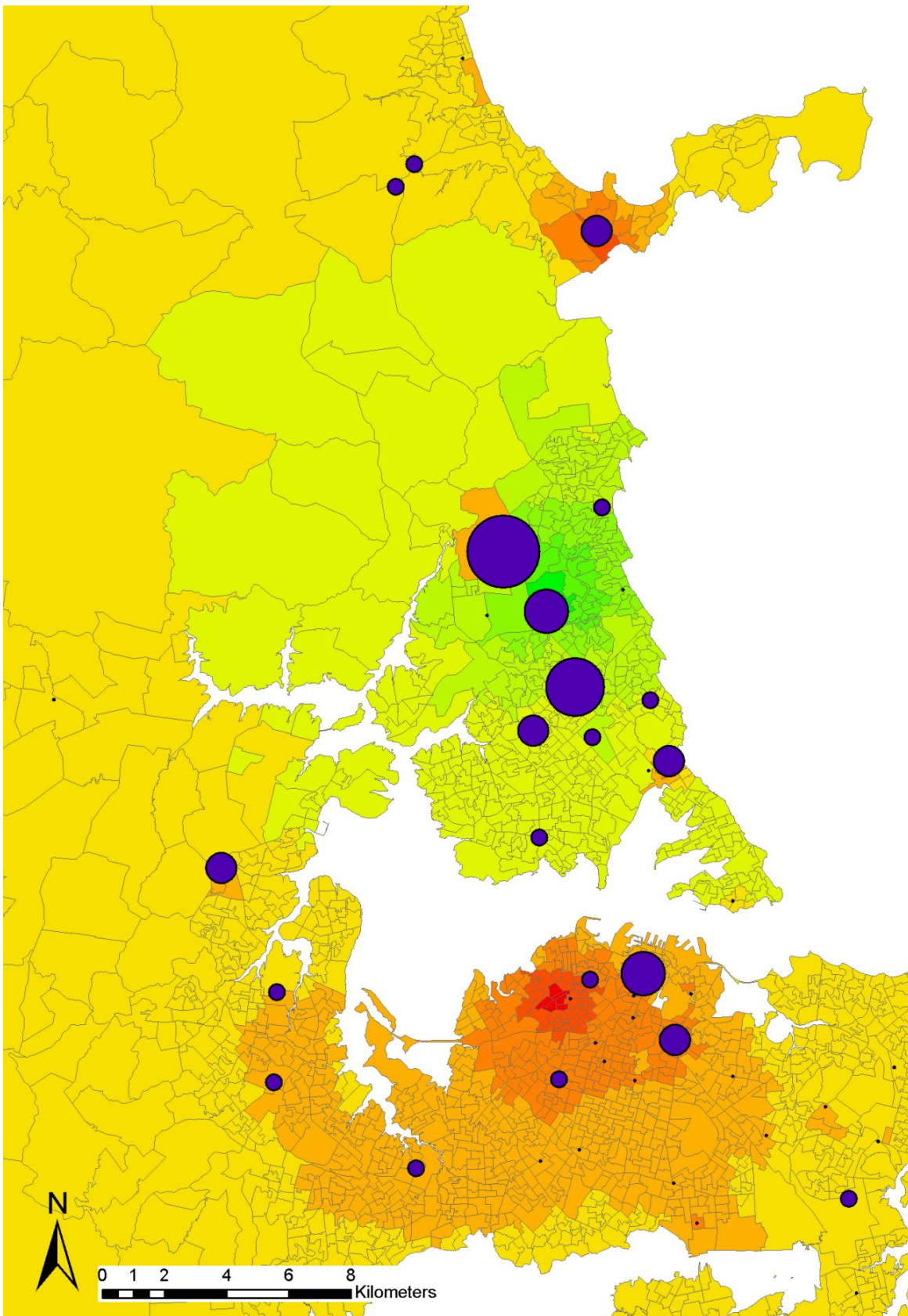


Figure 63.Examples of patterns of change in household core retail amenity and distribution of dollar value impact on core retail centres (Constellation Drive retail expansion)



8.3.5 Household shopper survey

If time and resources are available, a household shopper survey may be conducted to gain further information on the potential role and function of a new retail development. Information could be collected on likely household spending levels in the new retail, and catchment serviceability, providing further guidance on the beta and sales values required to be input to the spatial interaction modelling.

The development of a specific household shopper survey is outside the scope of this report, however, this can be done in consultation with RIMU.

Part 5 – Conclusions and next stages of analysis

9 Conclusions and next stages of analysis

9.1 Summary

Retail is a major driver of urban form and how the city expands, with its spatial distribution having a large impact on travel and time efficiency for households and businesses. It also influences other patterns of land use, particularly those contributing to the vitality and viability of centres, which play an important social amenity role for the communities they serve (in their provision of social infrastructure), and as commercial centres for businesses (including the productivity effects from agglomeration economies). The spatial management of retail location therefore plays a core role in achieving the strategic land use and sustainable resource management objectives and policies of city plans and the RMA.

Substantial discussion on retail has occurred in Auckland given its pivotal role in urban planning outcomes. The Auckland Environment Court Change 6 hearings provided greater guidance to retail location in Auckland by promoting a centres-plus policy approach in the regional policy statement; and recognised the need to accommodate different types of retail supply in response to changes in the structure of demand for retail. Population growth and urban expansion will increase the demand for retail in Auckland. It is important sufficient space is provided to accommodate additional retail growth, including the ability to cater for consumer preferences for a range of different retail formats, while at the same time managing its effects to achieve the best urban form outcomes.

The establishment of Auckland Council's centralised Research, Investigations and Monitoring Unit (RIMU) which brings together specialist expertise has enabled the construction and analysis of this comprehensive economic evidence base for retail in Auckland. It provides the spatially integrated empirical evidence required to understand Auckland's retail sector now and into the future in the development of land use policy for the Proposed Auckland Unitary Plan and subsequent retail assessment in Auckland.

As New Zealand's largest urban economy, Auckland has a highly complex spatial economic structure. Within this operates a multifaceted hierarchy of retail centres and locations as part of Auckland's wider commercial property market. The spatial interrelationships that consequently occur across this urban structure add a further layer of complexity where households, businesses and tourists meet their retail needs across a

range of different centres and centre types. The spatial patterns of spending flows differ by neighbourhood as well as by retail type.

In 2012 there were 93,000 employees in Auckland's retail and household services sector, accounting for 14.5 per cent of the region's total employment. Retail employment grew by 17,800 employees since 2000, but declined between 2008 and 2010 following a slowdown in consumer spend during the global financial crisis. Centres contain nearly two-thirds of Auckland's retail employment, with core retail particularly concentrated into larger centres. Significant variation exists in the spatial patterns of employment location by retail type and across levels of the centre hierarchy. The spatial structure has changed through time (2000-2012) with larger centres playing greater relative roles, along with increasing shares of retail employment locating along arterial road corridors and outside of centres. The establishment of Albany, Sylvia Park and Botany have contributed substantially to growth in the share of retail employment in larger centres.

A preceding study (Fairgray, 2012) established the basis for identifying detailed spending flows for each retail type between neighbourhoods and centres across Auckland. It provides important information for understanding and challenging assumptions about spatial patterns of consumer spending and the areas which centres serve. Large centres play a key role in meeting household demand, particularly within the core retail category. Along with the city centre, the sub-regional centres of Newmarket, Albany, Botany and Manukau make up the five largest centres of core spend. Major core retail centres play a large relative role for households in their catchment areas, meeting a high share of their retail needs. This is particularly true for the larger centres in the outer suburban locations which are dominant retail locations.

Detailed household access patterns are identified when observing the areas which these centres serve. Large catchment overlaps are present, with many larger centres serving geographically extensive areas. Overall, 80 per cent of household spend (at centres) occurs within 13 kilometres road network distance, and 50 per cent within five kilometres. Significant variation exists between retail categories where the distance within which 80 per cent of spend occurs ranges from nine kilometres for food and liquor retail to 27 kilometres for medical services.

Understanding the existing retail supply base is critical to determining how Auckland's retail market is currently operating in the supply of retail floorspace to household and other demand. It is also key to understanding the appropriate level of floorspace supply to different levels of demand across Auckland. This research spatially integrates new information, including primary field research, within a GIS system to provide an empirical robust calculation of the existing supply base.

Approximately 3.9 million m² of retail floorspace was identified (7.79m² per household), significantly exceeding previous estimates of Auckland regional floorspace from other sources. This study estimates core retail accounts for half of the floorspace, followed by food hospitality and household services, trade, and food and liquor retail. Large format retail accounts for over one-third of floorspace, with over 1.4 million m² identified within Auckland. Approximately two-thirds of retail floorspace is located within centres and a further 17 per cent along the arterial road corridors. The share of floorspace in centres is higher for small format retail at 72 per cent, than 53 per cent for large format retail. There is a substantial quantum of retail floorspace located around the edges of several large metropolitan centres.

It was suggested by some expert witnesses during the Change 6 hearings that Auckland was currently significantly underserved by retail, and that substantially more space (relative to demand growth) should be provided going forward to cater for this latent demand. No evidence was found to support this argument, with this research concluding retail supply and demand are largely currently in balance within Auckland. The retail sector has contracted across a range of indicators in response to changes in spend from the global financial crisis, whereas no change in supply would be expected in the presence of a large pent up demand; and retail supply has also responded to growth in demand over the last two decades both in the quantum and structure of supply and on a widespread geographic basis. Within this, a large and increasing share of floorspace has gone into centre locations.

Floorspace productivity varies geographically across Auckland, reflecting differences in rents/land values, underlying land use opportunity costs (driving the urban spatial economic structure) and the success of certain retail locations. Auckland's retail sector should therefore be considered within the context of Auckland's wider commercial property market. The construction of an empirical supply base has enabled the supply-demand ratios to be calculated and evaluated geographically across Auckland, creating a better understanding of how the sector operates within the wider urban economic context. Generally, more central and accessible locations of higher value trade at higher rates, and outer suburban locations at lower productivities. Therefore, when calculating future demand, less floorspace per unit of demand is required in more productive, central locations, and more per unit of demand in other locations. Furthermore, any analysis of community accessibility to retail should take into account the geographically extensive areas served by larger centres.

Demand for retail floorspace will grow substantially in Auckland over the next 20 years to meet the needs of the anticipated growth in households, businesses and tourism. The

RIMU Retail Growth Model developed as part of this research incorporates the geographical variances in supply-demand ratios, spatial spending flows, and empirical retail supply evidence (from the previous stages) with forecast spending growth to identify the level of future retail floorspace demand across Auckland.

Spending in Auckland is forecast to increase by 56 per cent between 2012 and 2031, amounting to an additional \$10.2 billion of spend. Households are expected to account for three-quarters of this growth, driven by a combination of new household formation and real increases in expenditure across existing households. Growth in online sales is expected to account for an increasing share of spend, meaning that the increase in spend through physical retailers is expected to be between 48 and 51 per cent (a net increase of \$8.8bn to \$9.4bn).

Patterns of urban residential growth (including household compositional changes) influence the origin of spend. Areas of highest net forecast spending growth include the northern rural areas and suburban fringe area as Auckland expands geographically, areas on the eastern isthmus, particularly around Glen Innes, the City Centre, parts of western Auckland, and parts of southern Auckland, some of which is also driven by urban expansion. These patterns of growth are likely to have a significant effect on the main centres within these locations.

Demand for retail floorspace (in physical stores) is forecast to increase by 35 per cent between 2012 and 2031, amounting to an additional 1.4 million m² of floorspace. Core retail has the largest forecast increase, but is expected to grow slower due to the impact of online sales. These figures represent the current underlying differentials between areas within the commercial property market. However, it is likely that a greater share of demand will be met through increases in productivity within larger dominant centres, including the substantial quantum of existing retail floorspace surrounding some metropolitan areas that is likely to be currently trading at lower rates. This would reduce overall floorspace demand by 193,000 m², resulting in a forecast net increase in floorspace demand of 1.2 million m² by 2031.

If current spatial spending flows prevail into the future, the City Centre is forecast to have the largest sales increase, accounting for 11 per cent of sales growth. The next largest increases are expected to occur across several of the metropolitan centres, with the greatest contribution from core retail. Isthmus centres are expected to have the largest increase in sales, a significant component of which will be driven by household spend at the workplace and the sub-regional catchments of large centres serving areas significantly beyond the isthmus area.

Auckland's large size and consequent complex urban hierarchy mean growth will need to be accommodated across a range of different centres and centre types, and other types of location. Approximately one-third of floorspace demand is expected to occur in and around metropolitan centres.

The spatial management of retail is a core lever for urban planners to influence urban form to achieve strategic land use objectives, with retail being at the centre of many major urban land use court cases. It is therefore crucial that the effects of retail location are understood and evaluated in relation to their impact on urban form policy objectives.

The effects of retail location have been evaluated on the basis of community enablement, and sustainable and efficient resource management through the RMA. Distributional impacts on other retail centres include the current, future, actual and potential effects on changes to centre amenity as a result of retail impact. Patterns of retail distribution have a significant impact on spatial efficiency for households and businesses as it affects the time and dollar resources used in accessing retail, and influences the vitality and viability of centres, which play an important social role for households, and commercial role for businesses.

Increasingly, the effects of retail have been evaluated more widely in relation to its alignment with city planning objectives and its wider spatial urban economic context. This is important as urban form develops incrementally through time with the cumulative aggregation of individual decisions or developments. Therefore, the effects of urban form emerge through time (without clear attribution to any individual decision). It means the alignment of retail to urban planning objectives is crucial as planning objectives are unlikely to be achieved if effects are evaluated only upon single applications without considering their effect of alignment to planning direction or wider context.

This research develops a framework for assessment of retail location. It provides an initial quantitative methodology for assessing retail distributional effects using empirically calibrated spatial interaction modelling and building off the evidence base established in previous stages of the report. The following principles provide guidance on the interpretation of results and assessment of retail location:

- Actual and potential effects.
- Changes in community enablement and amenity from effects on other retail.
- Alignment with city planning and policy objectives, and the land use strategic direction.
- Sustainable management and efficient resource use.
- Current and future effects, including their cumulative impact on urban form.
- Land use opportunity costs.

9.2 Further Auckland retail research

Managing retail location is a core lever for planners and policy makers to achieve the city planning strategic land use direction. It influences the location and viability of other land use activities and infrastructure investment through its effect on centres; and affects the spatial efficiency of households and businesses as they meet their needs across the urban spatial economy. It is therefore critical that further research and evaluation is undertaken on retail for Auckland to ensure optimal urban outcomes are achieved.

Within the time available, research undertaken in the current study has generated a substantial component of the evidence base. It has identified how Auckland's retail sector is currently operating, including spatially integrated supply and demand side analysis; has calculated future demand for retail in Auckland; and has outlined a framework for evaluation of retail location.

There are a range of areas of further research that need to be undertaken and are outlined in this section. Newly available data, information and technologies are rapidly generating important and innovative opportunities for retail research in Auckland. Coupled with the advantages of a centralised research unit (RIMU) (see section 1.7), this creates an opportunity to front foot retail research and therefore, urban planning objectives. It also aligns with other leading edge RIMU urban land use research, collectively forming an evidential base to support policy and strategy development.

The following areas provide an overview of the next key stages of research, including further research to improve this evidence base, expanding the evidence base, and key outputs sought from other research to integrate with the retail evidence base.

9.2.1 Improvements to current evidence base

1. **Additional calibration of the RIMU Retail Growth Model inputs:** The model uses a range of information inputs from different sources. Further research or calibration of the following inputs would improve the accuracy of the model.
 - a. Further research should be undertaken to forecast tourism retail expenditure. Current forecasts extend only into the short-term and the level of expenditure is estimated from these visitors based on effective guest nights (refer to section 7.2.1). While some calculation based on the share of visitor nights in commercial vs. other accommodation has been incorporated, the potential structural difference in spend

between visitor nights in Auckland and the rest of New Zealand warrants further investigation. Auckland Tourism Events and Economic Development (ATEED) are currently conducting research in this area, which should be used to inform the model once complete.

- b. The share of floorspace within each retail type is estimated within the model using spend and geographic differential ratios. A field survey identifying the retail type of small format retail (SFR) (LFR is already identified) would provide further accuracy to these distributions.
 - c. Food hospitality and household services were not captured within the LFR fieldwork due to subsequent changes in the analysis framework. Additional fieldwork may be undertaken to identify LFR in this category.
 - d. The model includes four retail categories (core, food and liquor, trade, and food hospitality and household services) to reflect the divisions used within the Proposed Auckland Unitary Plan. Further development of the model could be undertaken to calculate additional breakdowns of retail types within these categories. This would necessitate collaboration with data providers to obtain customised data to reflect the additional categories.
 - e. Change in the residential population growth forecasts is expected to occur over the next three years as the region responds to the planning process, and through the release of updated census data. The spatial household projections used in the model represent the best information currently available, but should be updated as new information becomes available.
2. **Construction of a technical report providing more detailed outlines of model calculations:** A further technical report should be prepared to outline in greater detail the mathematical construction of the RIMU Retail Growth Model, including the analysis and assessment of data inputs. It should also act as a manual to enable future updates of the model when new inputs become available.
3. **Identification of retail building consents constructed:** Understanding the level of consented for retail floorspace actually constructed will create a better picture of the rate of floorspace supply through time. Information available for this study only identified the quantum of floorspace consented,

without providing information on whether floorspace has actually been constructed.

9.2.2 Application of current retail evidence base

4. **Evaluation of potential sites for retail location, including spatial interaction modelling:** The Auckland Unitary Plan submission and hearing process is likely to require the evaluation of selected sites to potentially accommodate retail growth in the future. This would involve the implementation of the framework established in section 8.3, of which spatial interaction modelling forms a significant component. Consequently, the development of further spatial interaction models for the food and liquor²⁰⁹, trade, and food hospitality and household services retail sectors is required. These are significant undertakings and should be developed consistently with the model already developed for the core retail category. As such, it should use the supply and demand side inputs established in this retail economic evidence base.
5. **Definition and prioritisation of corridors:** This research has identified the location of retail supply in relation to the corridor areas surrounding key arterial routes across Auckland. Further research needs to be undertaken from a policy perspective to identify areas as corridor locations, and the prioritisation from a strategic urban development approach of these locations across Auckland (including the prioritisation of sites within individual corridors). Definition should occur in collaboration with land use, transport infrastructure and economic workstreams to ensure any identification/prioritisation framework captures the functional role of corridors across these areas.

9.2.3 Integration of retail economic evidence base

6. **Alignment with urban business capacity modelling:** RIMU is currently undertaking advanced modelling to understand the capacity for growth on commercial land across Auckland as the next stage of the Capacity for Growth study (Fredrickson and Balderston, 2013 and 2013a). It is essential that integration occurs with the retail economic evidence base and policy workstream to determine the extent to which future retail growth can be accommodated in areas where it is provided for. It will also therefore, identify

²⁰⁹ The development of a 'food and liquor' spatial interaction model is of greatest priority to understand the effect of supermarket location.

the pressure for development across different types of locations, including within and outside of centres.

The current retail evidence base also needs to be integrated as an input to the Auckland Growth Model (Owen, 2012). Specifically, this includes the existing supply base and demand forecasts by location. An interactive process needs to occur where retail demand forecasts need to be recalibrated against spatial population projections as an output of the growth model, including any updated forecasts following the release of 2013 Census information. The spatial household projections by household type used in the RIMU Retail Growth Model need to be integrated with the Auckland Growth Model dwelling capacity allocation by location.

- 7. Incorporation of retail evidence base with Sustainable Pathways 2:** The current retail supply and future demand components of the evidence base should be incorporated into the Sustainable Pathways 2 model. This research will be used as a multidisciplinary model tool to assist planners and strategy developers generate optimal land use decisions for Auckland.
- 8. Understanding the retail land use trade-offs with other commercial sectors:** The current retail economic evidence base demonstrates that retail needs to be evaluated within the context of Auckland's wider commercial property market. It is critical for planners and policymakers to understand the trade-offs in land use decisions between retail and other commercial sectors, to achieve optimal longer-term outcomes for Auckland. Further research and evaluation is required to understand these effects, including the longer-term land use needs of different sectors of the economy. This research should be incorporated as part of the Spatial Efficiency in Land Use Planning Evidence Base project (Fairgray, 2012) within the framework of spatial efficiency for Auckland.
- 9. Identifying the optimal location for retail development patterns across Auckland:** Research to date has been primarily concerned with evaluating proposed locations for retail development and predominantly reactive in nature. If retail is front footed as a key lever for achieving land use strategic direction, then it is important to identify the longer-term optimal development pattern for retail. This includes the most efficient distribution of activity across centres and centre types, and other retail locations from an amenity perspective as well as a spatial efficiency approach (where the ease at which households and businesses can meet their needs across the urban form are evaluated).
- 10. Preparation of a retail location strategy for Auckland:** The land use strategic direction needs to identify and prioritise the location for retail development through time across Auckland. This should take into account

the land use opportunity costs of other sectors, the spatial efficiency effects of urban form and the amenity value of retail and other land uses for households and businesses. As such, items 6 and 7 above form key components of this area of research.

11. Understanding the effectiveness of planning and policy tools in the management of retail location: While it is important to identify the optimal urban form for retail location, it is paramount to understand the effectiveness of planning and policy tools in achieving the form. Further research needs to be conducted in this area to enable effective tools and policies to be developed. This research should have a multifaceted focus to include an evaluation of the effectiveness of previous policy/tools, as well as investigating international approaches as trends in New Zealand's retail sector typically lag what is occurring internationally, thus providing an opportunity to learn and adopt the most effect approaches for retail management.

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Part 6 – Appendices

Appendix 1 – Glossary of key terms and definitions

The following is a list of key terms and categorisations, and their definitions, that are referred to throughout the document.

- **Census Area Unit (CAU):** Census area units are statistical geographical land divisions at which data is available, and are aggregations of meshblocks. Urban CAUs approximate the size of suburbs (usually 3,000 to 5,000 people), while rural CAUs are larger to account for lower population densities across rural areas.
- **Compound annual growth rate (CAGR):** The CAGR is the annual average growth rate²¹⁰. It is the “rate at which something (e.g. revenue, savings, population [, *retail sales*]), grows over a period of years, taking into account the effect of annual compounding (Stratton, no date)”.
- **Corridor buffer areas:** A series of arterial roads were identified in the Bonis (2013) study (see section 1.5). The corridor buffer areas include the land buffer area of 400 metres on either side of the road centreline.
- **Floor area ratio (FAR):** The floor area ratio is the ratio between the floorspace (GFA) on a property parcel and the land area of the property parcel. The floorspace may be spread over multiple storeys, meaning the measure does not necessarily relate to site coverage.
- **Gross floor area (GFA):** GFA is a measure of the total floorspace of a retail store including trading area and storage area.
- **Large format retail (LFR):** Retail is large format where the gross floor area (GFA) of a single store is greater than or equal to 450 m². As well as standalone stores, it includes individual stores that are 450 m² or greater that make up part of a larger building. If a building is larger than 450 m² and is made up on several individual stores, only the stores that individually have 450 m² or greater GFA are counted as LFR. Car parking or other land on the same property parcel surrounding the retail store is not included within this measure.

²¹⁰ For simplicity, this has been referred to as an annual average growth rate. This should not be confused with ‘average annual change’ which is the total percentage change across the period divided by the number of years, which would be above the growth *rate* because it does not represent a compounded rate.

- **Meshblock (MB):** A meshblock is the smallest geographical land division at which official statistical data is collected.

- **Net trading area:** Net trading area is a measure of the floorspace of a retail store across which goods are displayed and traded. It excludes storage area not accessible to customers and any indoor common customer circulation area such as that in shopping malls.

- **Proposed Auckland Unitary Plan zones:** Land in Auckland has been zoned to different commercial, residential and other uses. The land zones in the Proposed Auckland Unitary Plan can be viewed in the online GIS viewer at www.aucklandcouncil.govt.nz.

- **Resource Management Act (RMA) 1991:** The purpose of the RMA is to “promote the sustainable management of natural and physical resources (s5(1))”.

- **Retail categories:** The retail sector has been divided into the following categories in this study in relation to those identified in the Proposed Auckland Unitary Plan. Categories relate to the type of product or service sold, and include:
 - **Core:** Durable and comparison goods such as household appliances, clothing, footwear, stationery, etc.
 - **Trade (trade suppliers):** Garden centres, landscaping, DIY materials and hardware, etc.
 - **Food and liquor retail:** supermarkets, specialised food, other food and liquor purchased for consumption not on the retail premises (excluding prepared meals).
 - **Food hospitality and household services:** restaurants, takeaway food, bars, clubs taverns, etc and household services that occupy storefront locations such as drycleaners, travel agents, hair dressers, etc.

- **Small format retail (SFR):** Retail is small format where individual stores are less than 450 m² in GFA. A retail development or complex may contain a mixture of both SFR and LFR. Car parking or other land on the same property parcel surrounding the retail store is not included within this measure.

Appendix 2 – Summary of Auckland Environment Court Change 6 evidence on the interaction between retail, land use, urban form and transport

This appendix has been prepared by Kiely McFarlane (Analyst, RIMU) and summarises the main points raised on retail as a driver of urban form in the evidence presented during the 2009 Auckland Environment Court Change 6 hearings²¹¹. In particular, the linkages between retail and major transport infrastructure, as well as other land uses, are examined. A number of expert witnesses are not included in this summary as their evidence did not relate directly to retail relationships, or was similar to/summarised evidence provided by other experts. These were Fiona Shilton, James Baines, John Small, Matt Bonis, Vern Warren, Philip Donnelly and Mike Foster.

²¹¹ This appendix summarises the points made by expert witnesses involved in the hearings and does not signal any agreement or disagreement within this study on any of the points.

Submitter	Position statement	Evidence on:
<p>Steve Abley, managing director of Abley Transportation Consultants Ltd, on behalf of ARC</p>	<p>“The overriding conclusion of my assessment is that locating development primarily in High Density Centres and then in Intensive Corridors is the preferred planning option for delivering sustainable transport outcomes.”</p>	<p>Evidence on:</p> <ul style="list-style-type: none"> - the linkage between retail and major transport infrastructure and roading changes - the linkage between retail and other land uses <ul style="list-style-type: none"> • The location of land uses such as housing, retail, and offices in close proximity to each other, provides benefits in terms of reduced travel lengths and the number of vehicle trips to and from these activities. It also provides other benefits in terms of supporting sustainable transport modes such as walking, cycling and public transport. The location of commercial activity requires particular attention within the fabric of a city’s urban area because the vehicle trip generation of these activities can be high and significantly higher than typical vehicle trip generation of other activities such as industrial or residential land uses. • High density, compact growth is advocated because of its efficiency and safety benefits for ‘sustainable transport modes’ • Residential, industrial and commercial “activities should be placed in such a manner as to minimise as far as possible the mobility reliance upon car based travel and to facilitate as best as possible accessibility by more sustainable modes. This typically means locating major trip generating activities where they can be accessed by walking or cycling, and secondly where they can be well serviced by public transport.” • In instances where car-based travel is undertaken to a ‘centres based’ commercial activity, it tends to result in one vehicle trip to a shopping centre, then followed by multiple walking trips within the shopping centre to other commercial activities. The effect of the centres based approach is that travel is linked via sustainable modes even if the original trip to the centre was via a private motor vehicle. The consequence is that overall, travel is more efficient and this reduces the environmental impacts of transportation. • Transfund New Zealand Research Report 209 ‘Trips and Parking Related to Land Use Volume 1’ illustrates the economy of scale centres provide via a decreasing vehicle trip generation rate as the size of the centre increases. • Dispersed retailing outlets are not compact because they typically provide for a large number of single use car parks that are typically not well located e.g. adjacent to a surrounding residential catchment. The result is that dispersed retail activities often have more significant effects in terms of transport and make less efficient use of land. This then means they are difficult to support with an efficient public transport system. • Highly dispersed retail activity complicates the management of heavy vehicles that service such facilities, and potentially increases the number of heavy vehicles required to service these activities.

		<p>Furthermore, the increase in vehicles on the network then further hinders the promotion of more sustainable transport modes and results in increasing reliance on the private motor vehicle.</p> <ul style="list-style-type: none"> • The explanation of corridors policy contains an assumption that investment in transport infrastructure will encourage high intensity development along transport corridors. Therefore, the nature of development along the corridors will vary depending on the transport user groups that they serve (public transport users, freight, pedestrians, etc). • Retail and transport in intensive corridors: “Some Commercial Activities such as large format retail do not fit easily with the nature of the other land uses that are envisaged to locate within an Intensive Corridor such as residential, business, recreational, other retail and hospitality. This is because large format stores, because of their physical size are often major trip generators and present the greatest potential to diminish the movement function and safety of a Corridor. Additionally because of their size they also tend to have the greatest areas of parking that do not easily support the compact mixed use environment expected of Intensive Corridors.” • The efficiency and safety of the road network, particularly Corridors, requires minimising conflicts between various road users. It is especially important to manage queuing and manoeuvring of vehicles through the control of access to and from Commercial Activities. These may be in the form of grouping of activities such as a Town Centre or limiting access to Corridors via Limited Access Road (LAR) designations, the acquisition of link strips and other land use controls such as the spacing of accesses in City and District Plans.
Paul Durdin, principal transportation engineer for Abley Transportation Consultants Ltd, on behalf of ARC.	Mr Durdin summarises the transport corridor model and scenario testing results that are referred to in Mr Abley’s evidence.	<ul style="list-style-type: none"> • Used a simulation model of a theoretical transport corridor to test scenarios and demonstrate the effect that varying the number of access points has on the operation of a theoretical transport corridor from a mobility perspective. • Modelling results show that a reduction in the number of access points along the hypothetical transport corridor is a very beneficial technique to improve journey times and journey time reliability. This work highlights the benefits of access management techniques in changing patterns of retail along main transport corridors.
Brett Harries, Managing Director of Traffic Design Group Ltd, on behalf of Progressive Enterprises Ltd	Supports the ‘centres-plus’ position and disagrees with the ‘centres and corridors’ position: “From a transportation planning perspective, intensification within centres results in the ability to enhance travel by non-car modes,	<ul style="list-style-type: none"> • The transportation advantages of High Density Centres are that: <ul style="list-style-type: none"> (ii) the mix of activities that are anticipated within a centre allow multiple purposes to be fulfilled per trip undertaken (iii) the higher intensity of development within a centre enables shorter travel distances between activities, which means reduced travel demand (iv) the combination of mixed uses and higher

<p>and Westfield Ltd.</p>	<p>whereas this is less able to be achieved on corridors without higher levels of assessment, control and management.”</p>	<p>intensity therefore enables a high degree of efficiency and convenience of travel that can occur by non-car modes</p> <p>(v) the generation of demand for non-car travel modes then provides a focus for passenger transport services and interchanges, and enhances the viability of passenger transport infrastructure</p> <ul style="list-style-type: none"> • Where the corridors accommodate arterial roads, it is of substantial importance to the region that the movement function of the arterials is preserved, if not enhanced. ...Because Intensive Corridors may comprise substantial portions of the road network, the extent that commercial growth is enabled along corridors must be managed and controlled in order to ensure the viability and effectiveness of the corridors. • Dispersed activities generally require separate access driveways and a self-contained parking resource. This increases the number of traffic demand foci, thereby reducing the ability to adequately and economically accommodate those demands. In comparison to centres (where access and parking resources can be shared), dispersed development increases the areas and/or facilities required to accommodate access, circulation and parking. • Uses the example of New North Road (between Hendon Avenue and Mt Albert Village) to “confirm the undesirability, from a transportation efficiency perspective, of establishing high traffic generating retail activities along an arterial road that sits within an Intensive Corridor.” • Uses a study of Westgate Shopping Centre to demonstrate how retail centres can result in transport efficiencies: compares the trip making characteristics of an integrated centre with that which would occur if the same level of development were dispersed. The results “demonstrate that there is a transportation efficiency in providing business activities within an integrated centre, rather than providing for these activities in a dispersed, individual pattern. Over the period of the survey, each vehicle movement through the shopping centre driveways resulted in 1.8 to 2.0 ‘vehicle-equivalent movements’ within the centre (i.e.: the occupants of each vehicle visited, on average, 1.9 individual activities within the centre)... these ratios mean that if the activities within the Westgate Shopping Centre were dispersed along a corridor, then they would generate almost twice as much travel on the road network than presently occurs with these activities located in an integrated centre.” • “the case study analysis of the Westgate Shopping Centre clearly demonstrates that there is a significant transport efficiency gain by pursuing a policy of integrated commercial development. These transportation efficiencies are able to be achieved because an integrated centre is able to accommodate cross-trips between activities by walking rather than
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		<p>driving, and because larger centres generally have the critical mass available to enable them to be well served by public transport, thereby reducing reliance on travel by car.”</p>
<p>Derek McCoy, principal engineer for Sinclair Knight Merz Ltd, on behalf of The Warehouse Ltd</p>	<p>“I consider that the provisions of Proposed Change 6 should provide for the establishment of Large Format Retail in existing centres, along transport corridors and in other locations where appropriate.”</p>	<ul style="list-style-type: none"> • LFR has a number of unique transportation characteristics, which in large part, determine the sites and locations that are appropriate for the development of LFR: predominantly car-based trips, multi-purpose trips, surface level car parking with easy street access and which is road freight oriented. The first three characteristics are supported by evidence from shopper interview surveys. • For an average weekday in the Auckland Region, the proportion of home based shopping related car trips on the network is less than 9% of all home based trips. Even if travel behaviour associated with shopping trips was significantly altered, there would only be minor changes to travel patterns within the entire region • The characteristics of LFR, in terms of goods sold and customers’ expectations, mean that travel by private motor vehicle to these facilities is highly desirable and a well-established travel behaviour. This behaviour is unlikely to change significantly in the future. In recent work undertaken for the ARC, the public transport mode share of home-to-shopping trips on weekdays was found to be 4.2%. Even if this proportion could be significantly increased, the number of trips by public transport for shopping purposes would still be minor. • LFR typically requires servicing from large vehicles and hence access for these vehicles is an important consideration in the location of these activities. • Transport corridors link growth centres and carry significant numbers of existing shopping trips. They are therefore important potential locations for LFR, and should not be excluded. • Well-situated LFR with transport connections of a high standard can reduce the overall demand for travel, by encouraging multi-purpose trips. Such locations will provide increased opportunities for people to make linked trips, thereby increasing the efficient use of the transport network. In Auckland, transport corridors are predominantly the arterial routes that run radially from the Auckland City Centre. These routes also form the backbone of the passenger transport network for bus services. Therefore, permitting LFR on these routes would facilitate access by public transport and provide the desired alternative means of travel without needing to change the operational characteristics of the existing passenger transport network. • Cites research from Transfund Report No 209, comparing trip rates in the 1970s and 90s: “Thus the major changes in vehicle trips and peak hours have been in the following land uses: <ul style="list-style-type: none"> • Shopping centres, because of the increased number of establishments, have generally

		<p>experienced moderate increases of between 30% and 50% in trip making.</p> <ul style="list-style-type: none"> Residential trips have experienced a significant increase (+80%), due to increased car ownership and more people at home or running businesses from home.”
<p>John Burgess, director of Traffic Planning Consultants Ltd, on behalf of the National Trading Company</p>	<p>Greater recognition needs to be given to fundamentally different types of retail activity (particularly the large supermarket)... when determining where such activities might be best located. I believe that in many cases a large supermarket (and other LFR) may not automatically be best suited to an intense Commercial Centre location.</p>	<ul style="list-style-type: none"> It is important to recognise the fact that there are different fundamental aspects and characteristics of retail activities which need to be carefully considered when determining the appropriate location for these activities, including specific design and operational requirements and differing potential effects. specific traffic and parking characteristics of large format/high traffic generating retail activities (including supermarkets): <ul style="list-style-type: none"> supermarket sizes and types: In the larger supermarkets where main-order shopping predominates, a high proportion of customer visits are sole-purpose trips (for supermarket shopping only), customers do not visit other shops or other activities during the supermarket trip, and customers have "home" as their next destination. supermarkets that cater predominantly for top-up or small-order shopping are generally able to be appropriately located within and as an integral part of an established retail centre, where site sizes are smaller, traffic generation levels (including service vehicle numbers) are lower and customers can easily combine their trip to the supermarket with other retail or business activities. Mode of transport for supermarket shopping: Most supermarket customers (customer surveys suggest as many as 96%) travel by car to do their bulk shopping, as it is simply not feasible to purchase bulky goods or large volumes of groceries and travel by foot or public transport. Consequently, supermarkets will continue to require a high level of car parking provision and a high standard of vehicle access from the primary road network in order to service that parking. This requires safe and efficient access to be provided directly from the route without conflicting with other vehicle and pedestrian activity. Car parking requirements: Because of the emphasis on the need to travel by private vehicle for the majority of bulk supermarket customers, the supermarket requires large areas of car parking that are conveniently located, preferably on the same level (from an operational and economic point of view) to enable bulky purchases to be easily carried between the store and the vehicle. As supermarket customers tend to make

		<p>sole-purpose trips by car, it is unlikely that there will be much sharing of car parks, so that a supermarket tends to need its own dedicated car parking area.</p> <ul style="list-style-type: none"> ○ High traffic generation levels: Supermarkets have a relatively high level of customer turnover (although some other large format retail activities have somewhat lower levels). The high volumes of vehicle movements generated require a high standard of vehicle access, from a convenience, an operational and a safety point of view. An activity whose customers do not visit any other retail or commercial activity as part of that trip would be better located outside of the centre in order to avoid the unnecessary addition of vehicle trips and parking demand into the centre that adds to the general congestion and infrastructure demands. The flexibility for the location of large format retail activities would allow appropriate separation between vehicle-oriented environments (e.g. a large supermarket) and pedestrian-oriented environments (e.g. centres) to be recognised and catered for. ○ Goods servicing: Servicing of a supermarket generally involves significant numbers of large delivery vehicles throughout the day (including B-trains and semi-trailers), and requires large, exclusive and secure yard areas for truck queuing, unloading using fork-hoists, product storage, and pallet stacking. ○ Convenience shopping: Many supermarket shopping trips are "pass-by" trips, whereby customers who are already passing the store simply divert into the site to make the purchase before proceeding on with the original journey (normally proceeding home). The percentage of customers who fall into the "pass-by" category varies from site to site depending on the amount of traffic passing the site, but research that I have undertaken suggests that as much as 35% of total customers could potentially be "pass-by" traffic at some busy locations. Locating a supermarket on a major arterial route (particularly a main commuter route) such that it is convenient for a significant proportion of its customers to simply call in at the supermarket on the way past must be an efficient arrangement insofar as total vehicle travel is concerned.
Tim Heath, Director of Property	"my evidence indicates the impacts from ongoing 'out-of-centre' retail development... to be	<ul style="list-style-type: none"> ● Evidence is based upon two models: <ul style="list-style-type: none"> - Retail Market Simulation Model, which is a method for evaluating the trade competition impacts of new retail development on existing

<p>Economics Ltd, on behalf of ARC</p>	<p>potentially significant, and will likely result in a significant reduction in the potential trading levels of existing centres.”</p> <p>A centres-plus approach “is considered a balanced and prudent approach as it recognises that while retail development will occur ‘out-of-centre’, particularly in Intensive Corridors where appropriate, any new retail development will complement rather than compromise the existing network.”</p>	<p>centres</p> <ul style="list-style-type: none"> - Property Economics' Retail Expenditure Model, which forecasts retail expenditure to 2041, which is then used as an input into the Retail Market Simulation Model. <p>Results of the modelling process showed that:</p> <ul style="list-style-type: none"> • The current retail land requirement in the region is estimated at 690 hectares, and this is forecast to increase to 1030 hectares by 2021 and 1640 hectares by 2041. As a cautionary note, as the region intensifies, commercial land prices increase and land opportunities for retail activity diminishes it is anticipated that retail activity will in some instances be accommodated in multi-storey buildings, or in buildings with underground car parks, as is evident in some of the existing retail malls. This may reduce demand for land by as much as 20-30%, indicating that 1,230 hectares may be a more realistic requirement by 2041, as compared with the estimated 1640 hectares. • The retail market simulation model was used to assess the percentage trading impact of out-of-centre retail development scenarios on existing centres in the region: <ul style="list-style-type: none"> ○ The trading impact across the assessed centres in the region under the 50% Scenario (50% new residential development occurs in out of centre locations) is estimated to range between 3% to 38%. Importantly, 15 centres are projected to incur impacts over 15%, and of these, 9 have estimated impacts over 20%. ○ The trading impact across the region under the 75% Scenario (75% new residential development occurs in ‘out of centre’ locations) is estimated to range between 4% to 58%. The wider range is a reflection of the increased proportion of retail development attributed to ‘out-of-centre’ locations. There are 20 centres estimated to incur impacts over 20%, and of these 10 centres have estimated trade impacts above 30%. ○ The likely result of high trade impacts will be store closures in the centre, loss of community function, loss of community economic and social investment and potentially community disenfranchisement.
<p>Phil Osborne, economic consultant for Property Economics Ltd, on behalf of the ARC</p>	<p>A centres-plus approach is required to cater for the positive externalities that are undoubtedly present in existing retail centres. It is extremely important that the community’s best interests are</p>	<ul style="list-style-type: none"> • The economic argument for local government intervention is based on the fact that the market fails to consider significant community benefits achieved through the locating of retail activity. These failures conceal the true value of retail centres and if unchecked are likely to result in an inefficient use of resources. • Potential loss to the community (externalities) of

	<p>served by the location and agglomeration of retail activities that allow not only for efficiencies in land and infrastructure but also for social values of vibrancy and community.</p>	<p>‘decentralised’ retail activity: decline in retail centre function and amenity, and adverse effects on the roading network, public transport provision, resource productivities, land efficiencies, community facilities and centre infrastructure.</p> <ul style="list-style-type: none"> ○ The agglomeration of retail into centres provides an environment that will facilitate the agglomeration of other commercial activities and allow for the productivity gains identified above. Current research shows a clear link between vibrancy and local amenity, and skilled employment and business locational decisions. ○ there is a direct relationship between use of community facilities and other activity such as retail. Simply put the greater the level of activity and accessibility in a centre the greater the utilisation of such public assets. Not only is profile important for these types of facilities but they are located to make good use of multi-use trips. ○ From an economic point of view the private costs linked with retail travel are, for the most part, considered in individual decisions. If there are travel savings for an individual shopping in-centre these will create a competitive advantage for that retail location. Similarly if a centre has superior public transport facilities this provides an incentive for the market to frequent this retail. However, it is fundamental to note that not all [transport efficiency] benefits are considered in individual retail decisions.
<p>Mark Tansley, statistical and retailing consultant, director of Marketplace New Zealand Limited, engaged by ARC.</p>	<p>I consider that future Regional commercial needs cannot be met by directing commercial development solely to high density centres and intensive corridors.</p>	<ul style="list-style-type: none"> ● Over a period of 11½ years (1996-2007), supermarket trading space increased by 35%, general merchandise (GM) outlet trading space by 65%. The latter was comprised of about a 95% increase in stores above 500m² GFA, and a 39% increase in smaller GM outlets. ● It is apparent from the findings discussed that many of the important Centres zoned for commercial activity have been and are incapable of accommodating any, or (for those that have growth potential) proportionately more, larger retail components. In most cases, the economics of urban intensification (and of a diminishing supply of suitable commercial land) will make it increasingly uneconomic or impractical for such Centres to accommodate likely future large store development.
<p>John Mackay, principal consultant for Boffa Miskell Ltd, on behalf of ARC</p>	<p>If large format retail is enabled to locate outside centres or carefully managed Intensive Corridors it would have seriously adverse effects on the amenity and viability of such centres. The consequent weakening of a</p>	<ul style="list-style-type: none"> ● Retail is rarely successful above ground level. The department-store has been replaced by large-format stores like “The Warehouse,” and although these have sometimes been located up in the air, as at the Westfield mall in Henderson, it is significantly cheaper for them at ground level with extensive parking. ● Most smaller retailers require the passing foot traffic generated by strong town centres, but some larger

	<p>centre, whether by the actual loss of such anchor stores, or by the cumulative sapping of vitality and street life, would result in inefficiencies in the allocation of resources and have significant environmental, economic and social costs.</p>	<p>retailers (such as “Pak N Save” supermarkets and “The Warehouse”) are attractors in their own right, and find it cheaper to locate on standalone sites away from town centres.</p> <ul style="list-style-type: none"> • Out-of-centre location can offer cheaper development costs for large-format retailers, and this might in turn lead to lower consumer prices for their goods. In the bigger picture however, savings in product prices are likely to be offset by higher overall transport costs, and by the loss of the vigorous market economy of other retailers and services that is generated by strong centres. • If high concentration activities like offices and retail are dispersed outside centres, then existing centres suffer and the use of cars increases. This is particularly so when the retailer is servicing people’s daily or regular needs, such as a supermarket. Most town centres in Auckland have only one supermarket and they are very vulnerable to large new out-of-centre supermarkets. There are plenty of examples of town centres being drastically affected by the loss of their supermarket – Glen Eden, Glendene, Te Atatu Peninsula, are recent examples from Waitakere City. • Retail of course is a vital component for the viability of a strong town centre. Those shops that people need to access regularly for their needs – supermarkets and convenience department stores like The Warehouse – generate high concentrations of people, who are also likely to access other shops and community facilities as part of the same visit to a centre. It is not by accident that such stores form the “anchors” for a shopping mall. They receive a subsidised rent from the mall owner, in order to attract shoppers who can then be led past the smaller shops, which pay a much higher rent. • Retail in corridors: Larger format retail, on the other hand, carries a risk of degrading the pedestrian environment, requiring large areas of car parking, subtracting from the vitality of nearby centres, and causing friction in the transport function of the corridor.
<p>Doug Fairgray, principal consultant for Market Economics, on behalf of Progressive Enterprises Ltd and Westfield</p>	<p>I support the priority afforded to High Density Centres as the most appropriate focus for retail growth, because this focus will result in land use patterns that are consistent with the objectives for a compact city, which will enhance sustainability and efficiency, enhance amenity, and will contribute to economic, social and environmental wellbeing.</p>	<p>Main benefits likely from concentrating retail and related commercial activity in the High Density Centres and limiting such activity in the Intensive Corridors:</p> <ul style="list-style-type: none"> • enhanced social amenity • enhanced functional amenity (opportunity for price comparisons and multi-purpose visits) • consumer travel efficiency • reduced displacement of other activities in general business areas • enhanced efficiency of corridor functioning as places for living and business activity • enhanced efficiency of corridors in their transportation role
<p>Vaughan Smith,</p>	<p>I consider that it is important that</p>	<p>The basis for TWL’s position on Proposed Change 6</p>

<p>Director of Bentley & Co. on behalf of The Warehouse Ltd (TWL)</p>	<p>adequate and appropriate provision is made for LFR development out-of-centre as well as within existing commercial centres.</p>	<p>specifically, derives from the following five features of the Auckland retail market:</p> <ul style="list-style-type: none"> • The dynamic nature of the business environment: Given the changeable and evolving nature of the retail business environment, I consider that the provisions of the statutory planning documents should incorporate flexibility in order to enable all existing and evolving retail formats to establish in appropriate locations. • Retail supply/demand: combination of latent demand and demand from a growing population can only be satisfied by further development of larger stores in suitable locations throughout the region. • Location of Retail Supply: In order to efficiently serve the increase in population, supporting activities (such as retail) should be located so that they are conveniently accessed by the growing population. In order to maintain its reputation as the provider of a wide range of goods at discount prices, TWL's operational model requires: large sites in locations that are convenient to access; large buildings of functional design and low-cost construction; and good levels of parking with ready access to the store entrance. These operational characteristics suggest that the most suitable locations for these car-focused activities are likely to be the periphery of centres and on, or adjacent to, transport corridors. • Competition and choice: inadequate provision for additional retail development in the context of a growing population will act to protect existing operators while adversely affecting the choice available to consumers and competition required to ensure economic efficiency. • Out-of-centre locations: the potential for the outwards growth of existing commercial centres in Auckland is severely constrained by zoning. Intensive residential development is primarily expected to be accommodated within and around those centres, potentially 'squeezing out' other uses. In addition to retail, an increase in community facilities and commercial services required to serve an increasing population, and the incorporation of other places of employment such as offices, will contribute further to the competition for development land within centres.
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Appendix 3 – Meshblock alignment to Proposed Auckland Unitary Plan centres, and arterial road corridor areas

The maps contained in this appendix illustrate the meshblocks included within the employment analysis of each Unitary Plan centres and arterial road corridor buffer areas. These are contained on Disc 1, with the maps (Figures 64 and 65) below providing an illustrative example. The exact boundaries of centres and corridors have been overlaid to show the relative alignment of meshblocks.

While some significant geographical differences appear between the boundaries of meshblocks and centre zones, the actual employment count differences are likely to be considerably smaller as it is predominantly non-commercial zoned area included within these differences, while employment would be concentrated into the commercial zoned land.

Figure 64. Meshblocks used to approximate the Proposed Auckland Unitary Plan Henderson metropolitan centre (April 2013) for the economic evidence base employment analysis

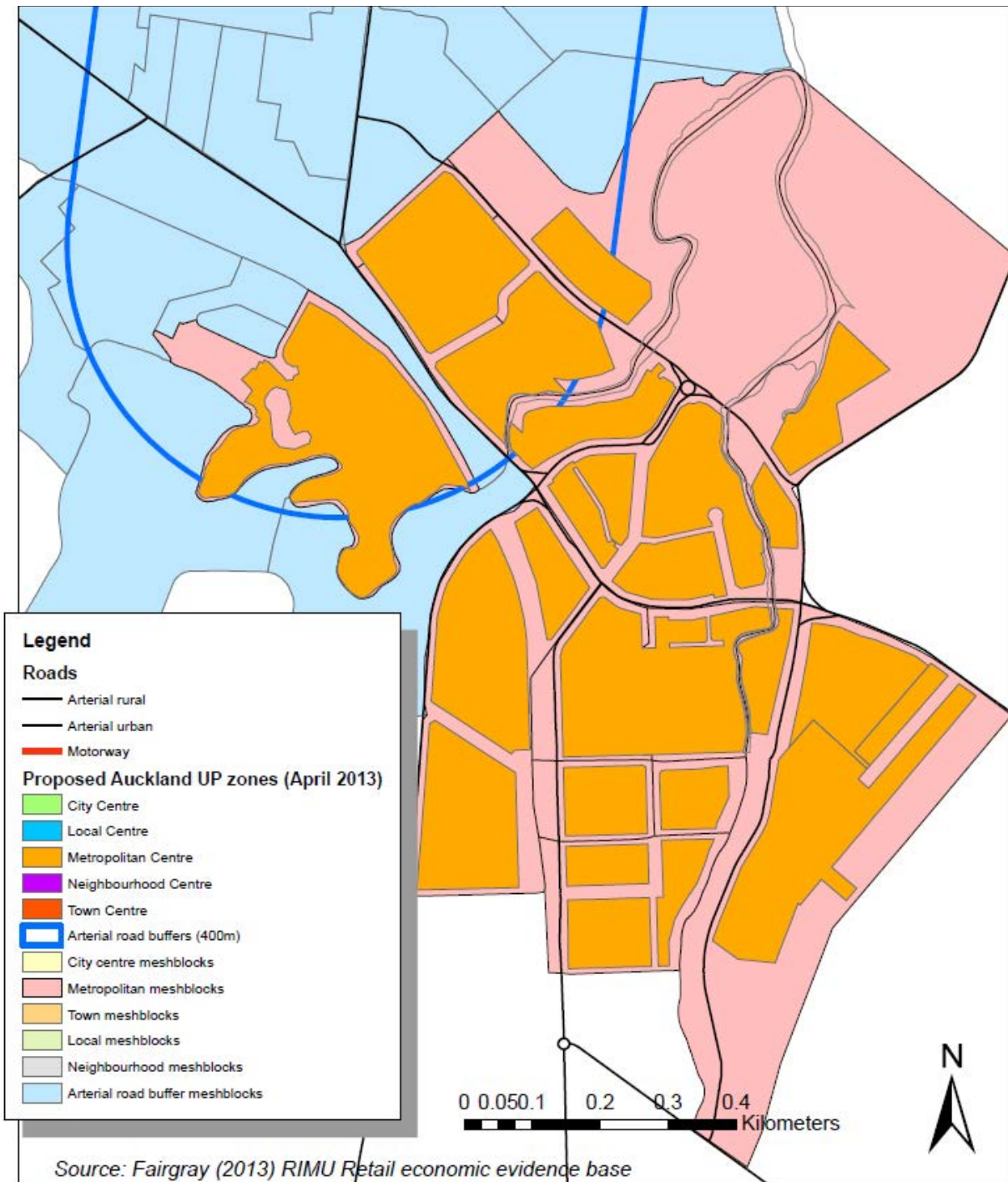
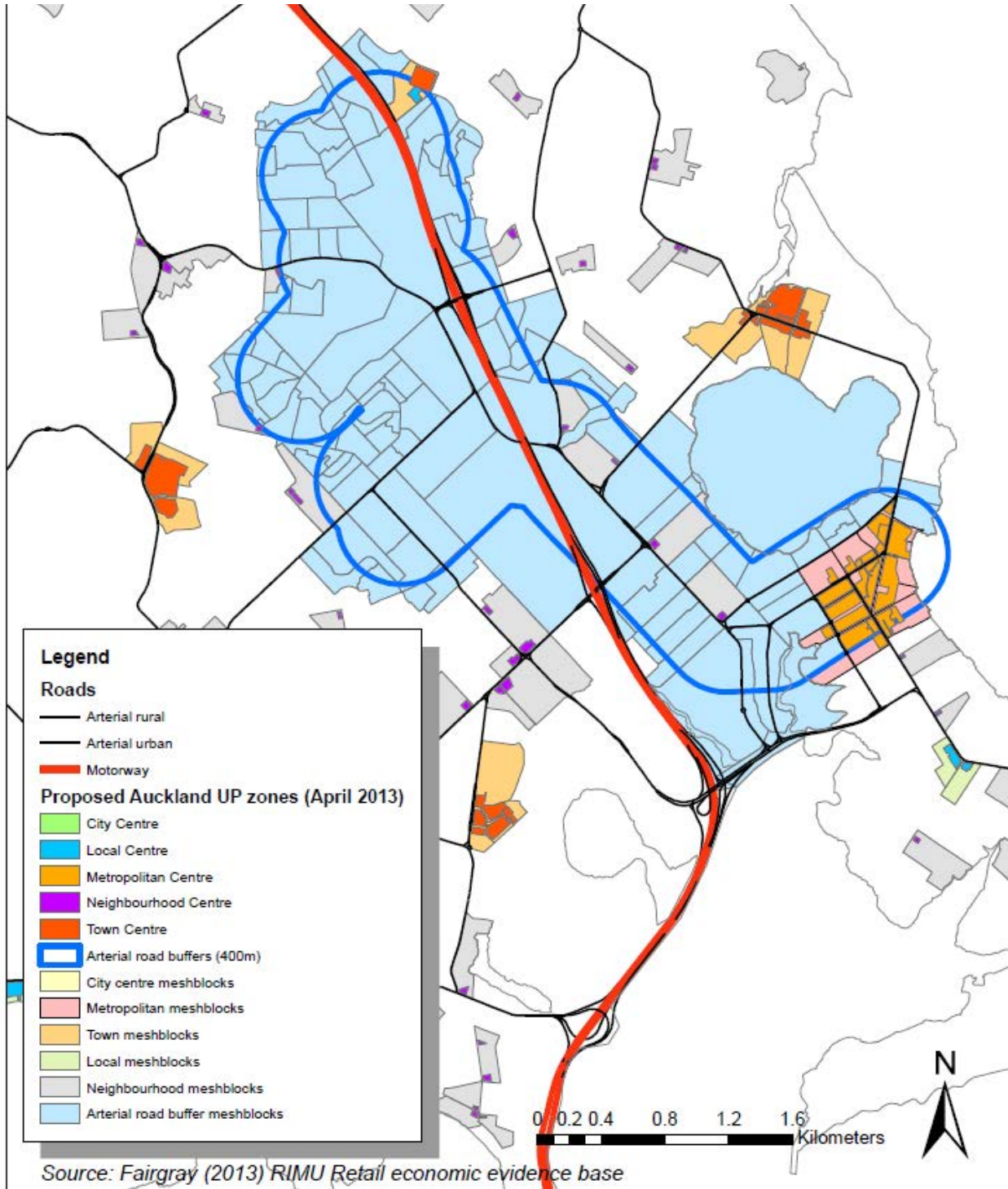


Figure 65. Meshblocks used to approximate the Wairau Valley arterial corridor buffer area for the economic evidence base employment analysis



Appendix 4 – Alignment between Proposed Auckland Unitary Plan and Fairgray (2013) centres

The current study analyses information on retail centres at different levels of spatial resolution due to data availability and the spatial definition of centres during previous research. In particular, it draws upon a detailed study on spending flows (Fairgray, 2012 and 2012a) which uses the centres defined in the Auckland Growth Model (Owen, 2012), which are necessarily defined at the meshblock level (due to data availability and the spatial resolution upon which the model has been constructed). These represent the natural trading boundaries of retail areas (i.e. the extent of local agglomerations of retail), which in some cases are wider than how centres are defined in the Proposed Auckland Unitary Plan at the zoning boundary level. Due to the availability of data and other research at the wider meshblock level (and not at the specific zoning boundary level), it has been necessary to conduct analysis at this level around understanding the urban economic functioning of Auckland.

While some significant geographical differences appear between the boundaries of meshblocks used to define the Fairgray (2012) centres, and Proposed Auckland Unitary Plan centre zones, the actual retail sales differences are likely to be considerably smaller as it is predominantly non-commercial zoned area included within these differences, while retail sales would be concentrated into the commercial zoned land. Meshblocks to define the Fairgray (2012) centres were selected on the basis to capture the effective trading area of centres.

The level at which specific pieces of analyses have been conducted are outlined throughout the report. Any tables presenting floorspace supply information for specific Proposed Auckland Unitary Plan centres and zones has been conducted specifically at the zoning level.

The maps contained within this appendix show the spatial alignment between each of the centres contained in the Fairgray (2012) study and the Proposed Auckland Unitary Plan centres. These are contained on Disc 1, with the maps (Figures 66 and 67) below providing an illustrative example.

Figure 66. Centres sales study meshblock boundaries and Proposed Auckland Unitary Plan (April 2013) zones – Albany

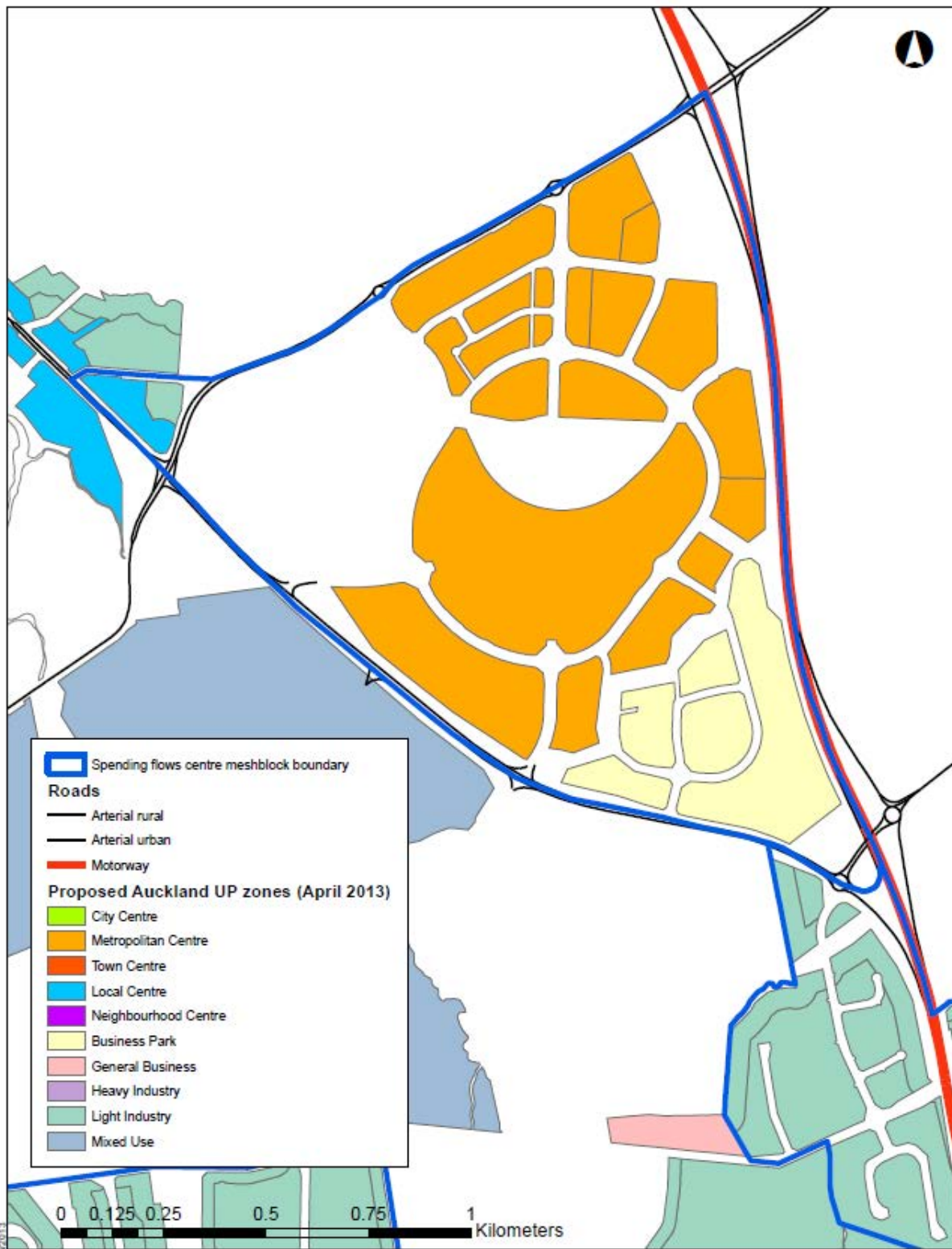
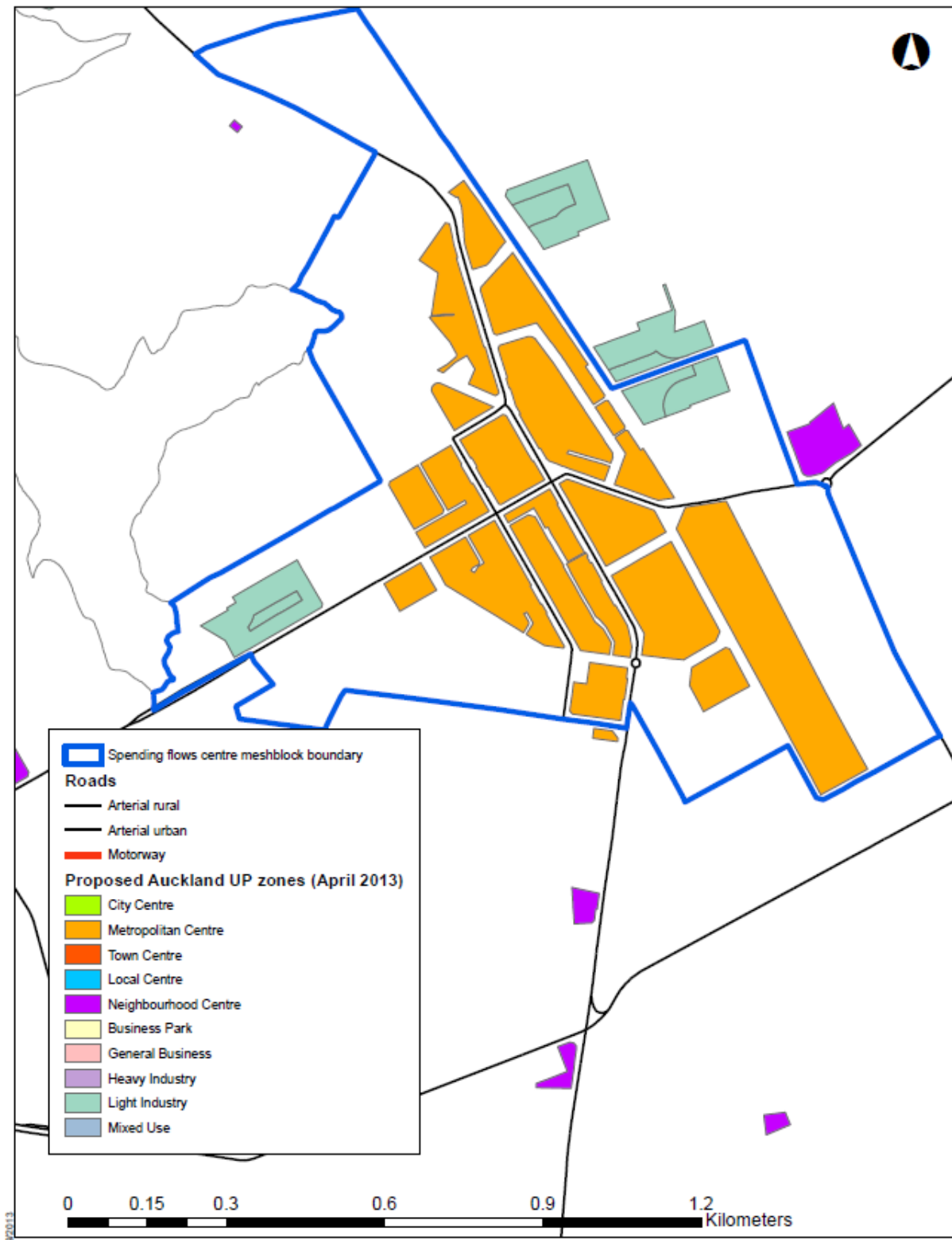


Figure 67. Centres sales study meshblock boundaries and Proposed Auckland Unitary Plan (April 2013) zones - Papakura



Appendix 5- Total retail floorspace supply by area in Auckland

Disc 1 contains a full set of detailed maps of total retail supply (i.e. LFR and SFR) in Auckland in 2012/2013. Each map shows the amount of retail floorspace contained within each meshblock, and the building footprint of buildings containing large format retail. These are overlaid with Proposed Auckland Unitary Plan centre and other business zones (i.e. Business Park, Mixed Use, General Business, Light Industrial and Heavy Industrial), and areas contained within a 400 metre buffer zone of corridors identified within the Planz Consultants Ltd report (Bonis, 2013). A full set of maps exists containing a zoomed in view of each individual centre and surrounds, as well as sub-regional maps to illustrate broader patterns of floorspace supply at a regional/sub-regional level. Figures 68 and 69 provide illustrative examples of the maps contained on the disc.

Figure 68. Total retail floorspace by meshblock in Otahuhu, 2012

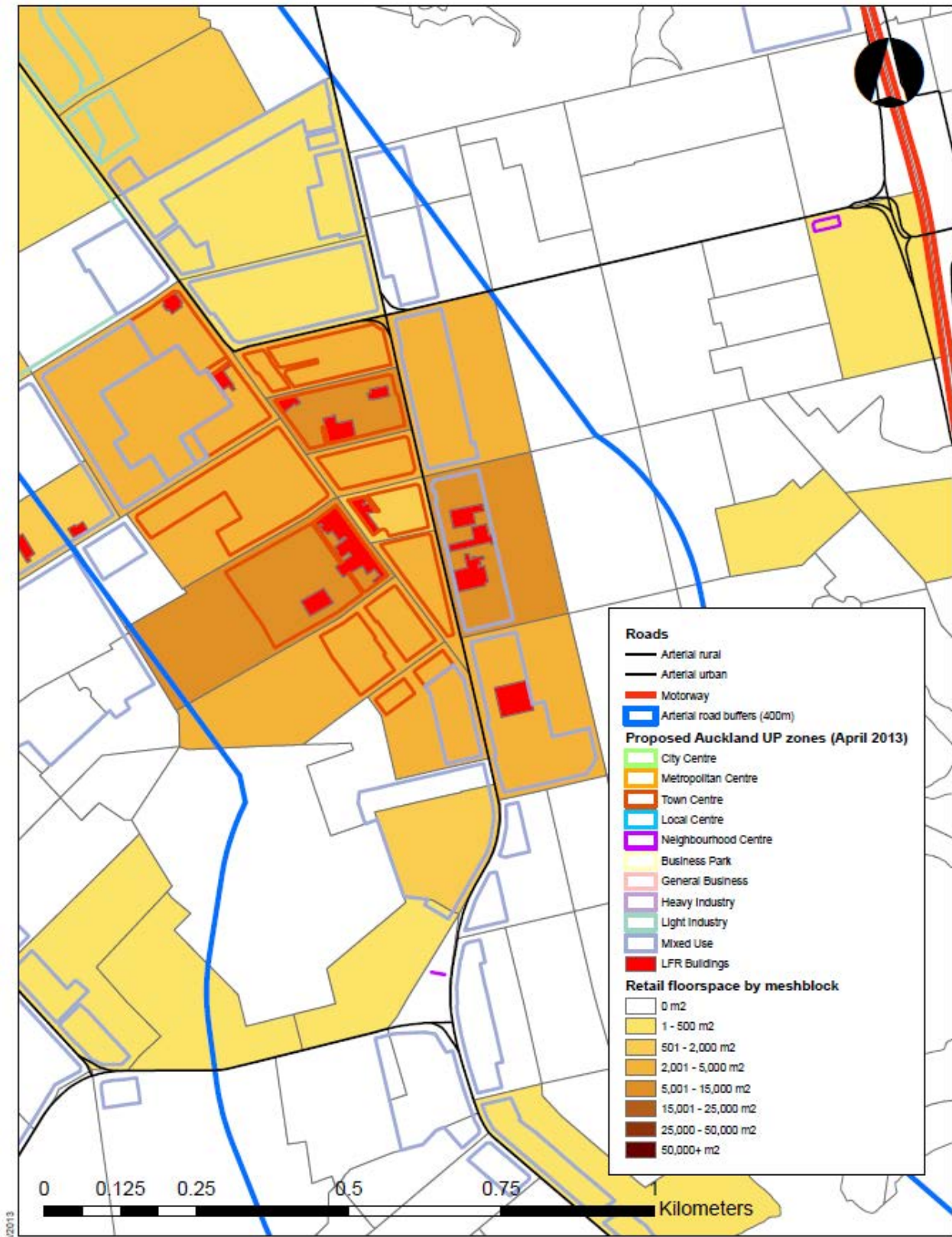
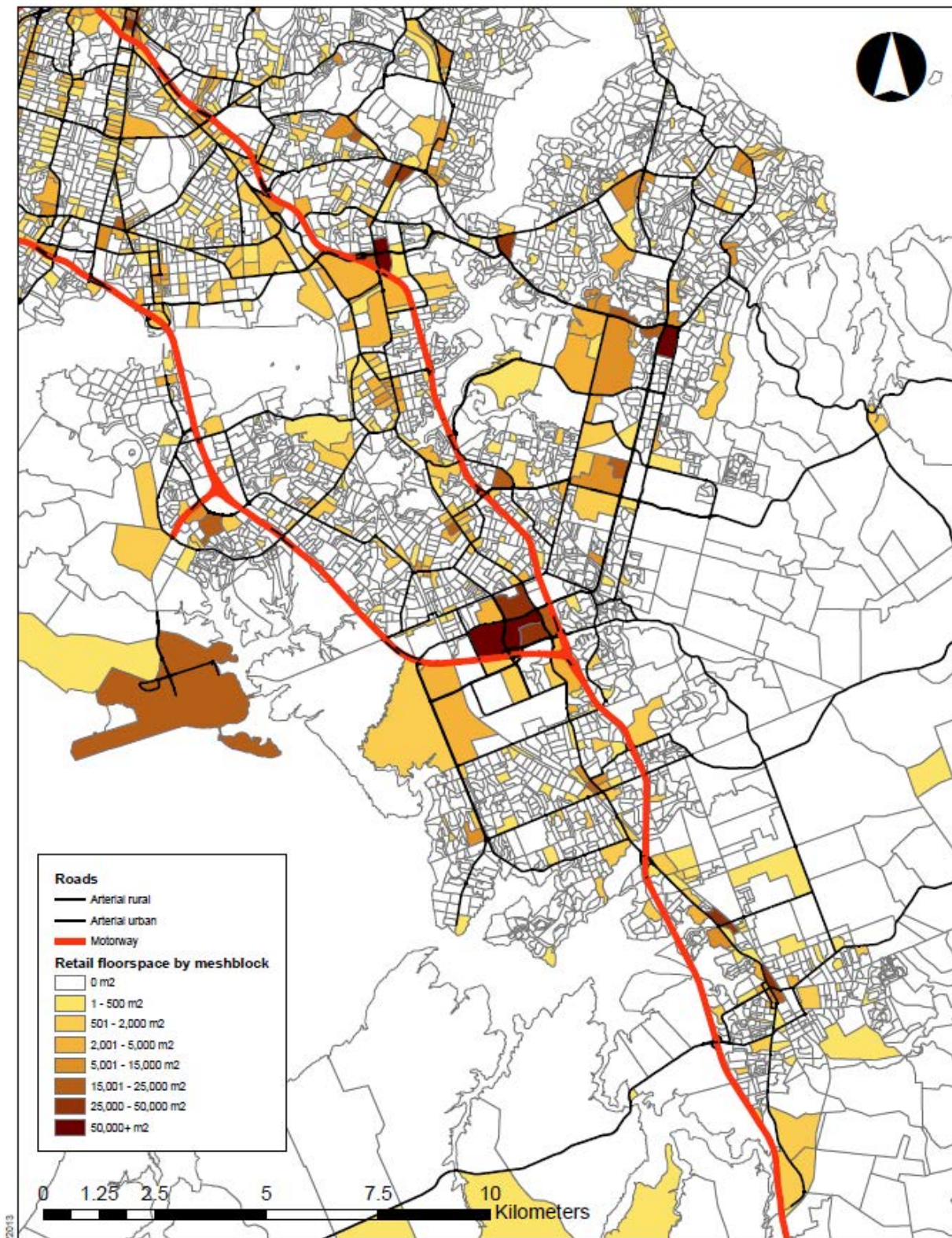


Figure 69. Total retail floorspace by meshblock in southern and eastern Auckland, 2012



Appendix 6 – Large format retail floorspace maps for Auckland

Disc 2 contains a full set of detailed maps of large format retail supply in Auckland in 2012/2013 from the Fairgray, et al. (2013) study. Each map shows the quantum of LFR floorspace contained within each Auckland meshblock along with the footprints of buildings containing LFR uses. These are overlaid with Proposed Auckland Unitary Plan centre and other business zones (i.e. Business Park, Mixed Use, General Business, Light Industrial and Heavy Industrial), and areas contained within a 400 metre buffer zone of corridors identified within the Planz Consultants Ltd report (Bonis, 2013). A separate set of maps exists for each retail type, containing a zoomed in view of each individual centre and surrounds, as well as sub-regional maps to illustrate broader patterns of LFR floorspace supply at a regional/sub-regional level. Figures 24 to 26 in section 5.4 provide illustrative examples of the maps contained on the disc.

Appendix 7 – Spatial patterns of retail building consents across Auckland 1991-2012

Further to the regional level analysis in section 6.1.3.3, building consent data were examined on a geographical basis. Specifically, the geographical coverage of activity in the land/developer markets was investigated.

Building consents were grouped into five time periods: 1991-1995, 1996-2000, 2001-2005, 2006-2010 and 2011-2012 (first quarter). These were colour coded accordingly and displayed spatially through the GIS system, thus identifying the spatial patterns of consented floorspace within each time period²¹². Figures 70 and 71 illustrate this information where each point represents an individual consent, with the size of the consented retail floorspace corresponding to the size of each point (on a non-linear scale).

²¹² It should be realised that some earlier consents have unfortunately been obscured by the more recent overlays within the maps.

Figure 70. Geographic distribution of retail building consents in Auckland (metropolitan area focus), 1991-2012

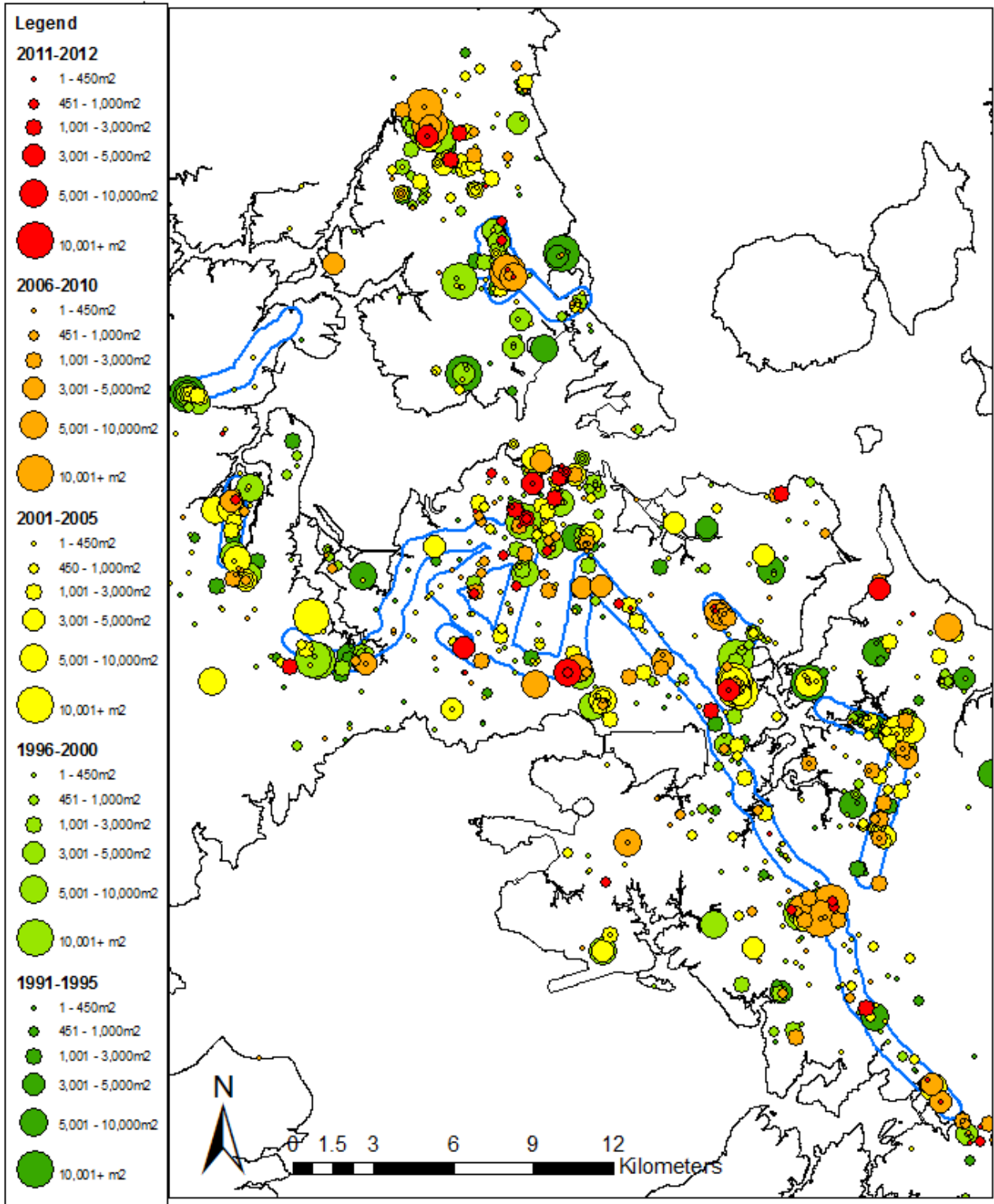
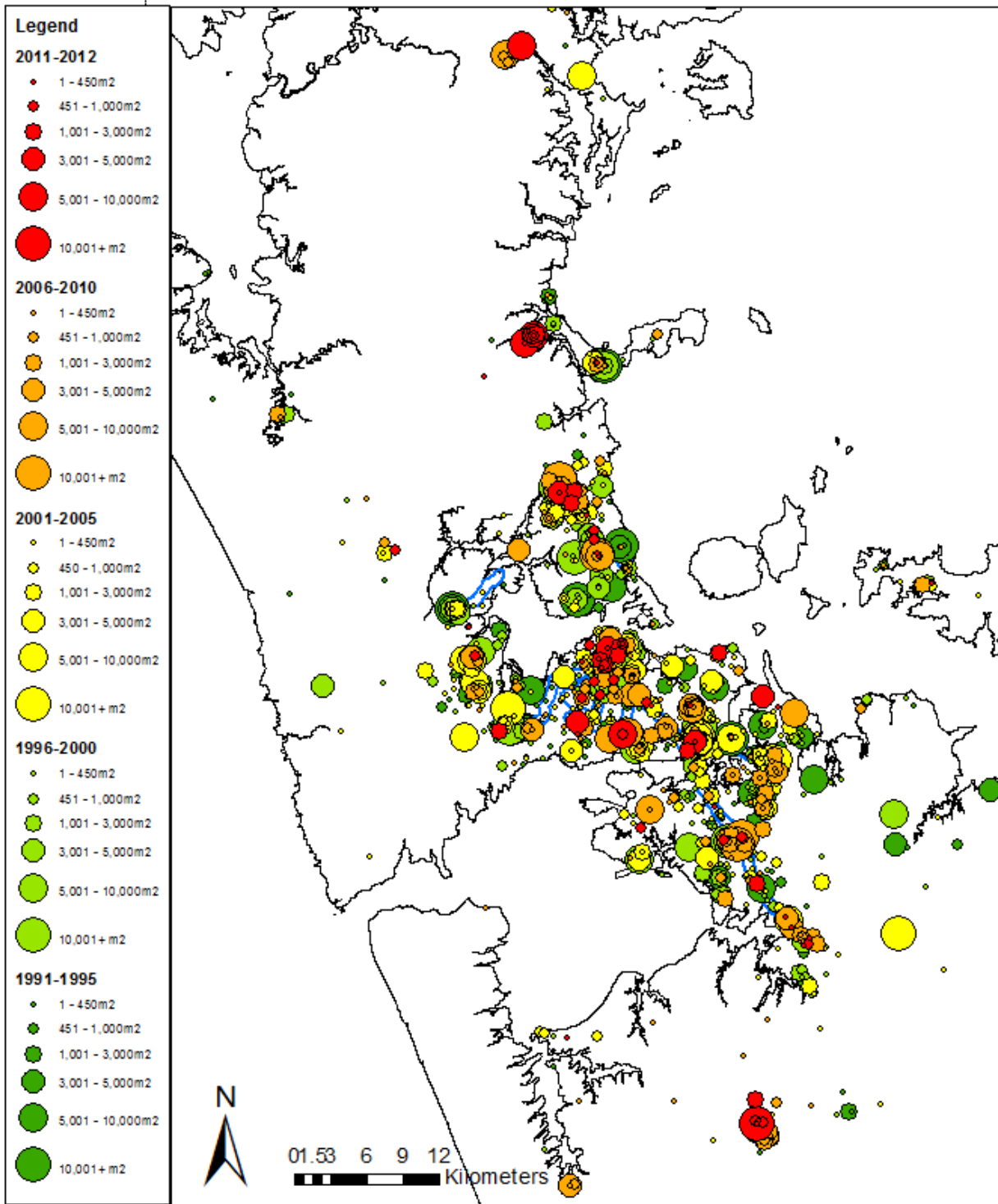


Figure 71. Geographic distribution of retail building consents in Auckland (wider rural area focus), 1991-2012



Consents for retail floorspace are widespread across Auckland with no substantial spatial gaps. It is important to consider these within the context of Figures 39 and 40, which illustrate the geographic scale of areas which major centres serve; as well as the regional average distance bands of sub-regional centres (of 6kms road network distance for 50% of spend and 8kms for 60%) identified within the Fairgray (2012) study. This suggests the market has been able to respond to demand across the region broadly, with no major

areas of absolute constraint. Any differences in the *rate* of this response are discussed further in relation to the parameters of Auckland's commercial property market in section 6.3.

Consented floorspace is geographically widespread across all time periods. Clusters of major consented floorspace correspond predominantly with significant shopping centre development, or development of major LFR agglomerations (including mega centres). Many of the largest centres/agglomerations show earlier development (in the initial establishment of the centre), along with continued subsequent development through time. Examples include Albany, Manukau, Sylvia Park, Botany, New Lynn, Lincoln Road/Henderson corridor and the Wairau Valley area. This has mainly occurred either as expansions to existing shopping centre structures, new shopping centres adjacent to existing malls/centres (e.g. the Gateway centre at Albany and the Apex Centre at Sylvia Park), or the construction of individual large LFR stores within close proximity to these existing developments (e.g. New Lynn and Lincoln Road major hardware stores).

More recently, substantial development has occurred in rural/satellite centres, including Pukekohe, Silverdale and Warkworth. Growth in these areas has likely been in response to significant population growth in their surrounding areas as Auckland geographically expands. The Fairgray (2012a) study shows their catchment areas as primarily serving households in these rural areas and surrounding residential development outside of the main Auckland urban metropolitan areas.

There are also a few major town centres that have been consented/constructed in earlier years, which have shown little further expansion. These include Milford, Birkenhead and to some extent Highland Park.

Appendix 8 – Calculation of Auckland centre average retail rents

Relationships between Auckland centre average retail rentals and sales were analysed as part of this research. This appendix outlines how average centre rentals were calculated.

Retail rental data was purchased across 50-60 Auckland centres and major retail areas from Colliers International Ltd, a professional commercial real estate firm. Table 25 below provides a list of the centres and areas included in the data order. High, medium and low rentals (per m² of retail floorspace) were obtained for each of strip²¹³, large format and shopping centre retail areas for each centre. These were obtained from the Colliers International Ltd database from valuations and sales data they have undertaken. In addition to rental data, operational (opex) expenses relating to any type of shopping centre or retail complex management function were also obtained.

Table 25. Centres and retail areas for which retail rental information was obtained

City Centre				
Metropolitan centres				
Albany	Henderson	New Lynn	Papakura	Takapuna
Botany	Manukau	Newmarket	Sylvia Park	Westgate
Town centres				
Avondale	Glenfield	Onehunga	Pukekohe	
Birkenhead	Highland Park	Otahuhu	Remuera	
Browns Bay	Howick	Otara	Royal Oak	
Devonport	Hunters Corner	Pakuranga	Silverdale	
Eden Terrace	Mangere	Panmure	St Lukes	
Eden Valley	Manurewa	Papatoetoe	Stoddard	
Ellerslie	Milford	Parnell	Takanini	
Glen Eden	Mt Albert	Ponsonby	Te Atatu	
Glen Innes	Northcote	Pt Chevalier	Three Kings	

²¹³ Strip retail refers to retail which has a street frontage or retail in a block of smaller shops with purpose car park frontage.

Other centres/areas

Airport	East Tamaki	Penrose
Albany Industrial	Eastridge	Rosebank
Barrys Point Road	Kingsland	Wairau Road
Clendon	Lincoln Road	
Constellation Drive Industrial	Lunn Ave	

The data was further verified through other sources across many of the larger centres. Information from approximately 800-900 retail lease and sale (where rental returns are mentioned) advertisements were obtained across Auckland centres²¹⁴. These were viewed in relation to the Colliers International Ltd data, considering the quality and positioning of the retail offer of each advertisement within each centre.

Where a particular retail type/format was not present within a centre (or where valuation records were not available), the rental data were estimated based on what the catchment could viably support. The associated opex expenditure was also estimated. Specifically, for open centres, \$50 per m² opex was used; for smaller enclosed centres with less intensive management, \$100 per m² opex was used; for large enclosed centres (i.e. sub-regional or regional centres), \$200 per m² opex was used; and for LFR, \$50 per m² opex was used.

Retail floorspace from section 5 was then allocated across the following categories within the GIS system:

- i. LFR (in a mega centre or managed complex)
- ii. LFR (standalone/not in a mega centre or managed complex)
- iii. Strip retail
- iv. Retail on a side road within the centre
- v. Shopping centre
- vi. Supermarket floorspace

The quantum of floorspace within each category was extracted through GIS spatial selections, then multiplied by the midpoint rentals obtained for each category within each centre to give an estimated total rent for the centre. Supermarket floorspace (as well as spend in the comparison) was excluded from these calculations as they trade at substantially different rates to other retail and typically own the sites (which would

²¹⁴ The data sources for these advertisements include Barfoot and Thompson Ltd, Bayleys Real Estate Ltd, Berryman Nationwide Real Estate Ltd, CBRE Ltd, Colliers International Ltd, Harcourts Real Estate Ltd, James Law Realty Ltd, Professionals Real Estate Ltd, Raywhite Ltd and Trademe.

therefore, skew the exploration of the relationship between sales productivity and rent). Opex values were also applied to floorspace within managed retail shopping centres or complexes. Floorspace categorised as located on side roads or non-central within the centre, was multiplied by a differential of half the strip retail midpoint rental rate. The strip retail rate was used because it was predominantly strip retail or within blocks of shops with similar store-front qualities to strip retail. The differential is an assumption guided by that observed within the property market live rental data (used to triangulate the Colliers International Ltd data) as well as discussions with property market professionals.

Finally, the total estimated rental from the centre was divided by the total centre retail floorspace (used in the calculation) to give an overall centre average. An overall average is required to make comparisons with sales data as spend information was available for the centre as a whole only. In most cases, data privacy restrictions prevented sales information being obtained at the specific shopping centre/retail complex level (e.g. individual mall or mega centre).

Appendix 9 – Internet-based retail sales in New Zealand, Australasia and internationally

Information on the past, current and future share of retail spend as internet-based was collated from different countries to guide estimates of current and future shares of Auckland household and business spend occurring online. A range of different estimates exist, with newly developing information and measurement methodologies in this area. Collection methods include both analysis of national accounts and retail sector macro data, and consumer survey-based information.

Table 26 summarises the information from each source by country, showing:

- i. The current share of retail sales occurring online.
- ii. Past growth rates of internet sales or shares of spend online.
- iii. Forecast future growth rates for online sales and shares of spend occurring online.

Table 26. International rates of past, current and future retail spend online

Country	Current and past spend	Forecast spend	Source
United Kingdom	6% of current sales as online.	14% CAGR in online sales 2012-2017. Max market share of 20%. Other forecasts range from 9.9 to 13.9% CAGR.	eMarketer (2013)
	13.5% of 2013 sales as online.	23% of sales as online by 2016. 11% CAGR in online sales 2013-2016.	NewMedia (2013)
	12.7% of 2012 sales as online: - food (3.7% online) - non-food (19.2%)	12% of sales as online by 2013/2014. 21.5% of sales as online by 2018: - food (9.5% online) - non-food (32.1%)	Centre for Retail Research (2013 and 2013a)

	<p>9.7% of sales as online:</p> <ul style="list-style-type: none"> - food (3.4% online) - non-food (7.7%) - department stores (8.0%) - textiles, clothing and footwear (10.0%) - household goods (4.6%) - other stores (7.5%) - non-store (66%) 		Office for National Statistics (2013)
Other Europe		10.5% CAGR in online sales (short-term)	Forrester (2013) cited in Lomas (2013)
China		6.9% CAGR in online sales to 2016.	NewMedia (2013)
U.S.A.		10.0% CAGR in online sales (short-term)	Forrester (2013) cited in Lomas (2013)
	2007-2010 10-20% CAGR in online sales.	11% of sales as online in 2015 (15% from grocery category). 10% of sales as online in 2017.	Internet Retailer (2013)
		5.4% CAGR in online sales to 2016.	NewMedia (2013)
Canada	7% sales as online.	10% of sales as online by 2018.	Forrester (2013)
Australia	3.4% CAGR in online sales.		Australian Bureau of Statistics (2013)
	14.2% CAGR in online sales 2011-2012, compared to 3.3% CAGR in total retail sales. 9% of sales as online.		Roy Morgan (2012)
	4.9% of sales as online in January 2012 to 6.2% in June 2013.		NAB Group Economics (2012-2013)
	7% of 2013 sales as online.	9.8% of sales as online in 2017.	PR Newsletter (2013)
	6.3% of 2012 sales as online.		PWC and Frost & Sullivan (2012)
New Zealand	5.1% of 2011 sales as online. 5.9% of 2012 sales as online. 35% of online sales to international retailers.	14.3% CAGR in online sales to 2016.	PWC and Frost & Sullivan (2012)

	22% of 2012 online sales as grocery category (16% in 2011), with Progressives as only main player.		Euromonitor (2013)
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The highest rates of online spending are in the UK, with estimates ranging from between 9.7 to 13.5 per cent in 2012. Shares are higher in the non-food category (between 7.7 and 19.2 per cent), and lower for food (3.4 to 3.7 per cent). These are driven by high rates of internet access and shares of consumers making purchases online. Shares of online spend are lower in the U.S.A. and Canada, with current estimates around 6 to 7 per cent of sales respectively. Canada's growth in online spending has been slower due to higher shipping costs and times.

Australia and New Zealand are generally suggested as lagging Europe and the U.S.A., although comparable results are suggested to the latter. Estimates of Australian shares of spend online range from 6.2 to 9 per cent, and New Zealand at 5.9 per cent, although less information is available in New Zealand.

Reports pointed to very fast growth rates in online spend across nearly all countries, with rates considerably higher than the total retail sector. Growth rates ranged from 3.4 per cent up to 20 per cent, and showed large variability in estimates within countries between different sources. This is likely the result of newly developing methodologies to measure online spend, where consistency has not yet been established. Fast growth was driven largely through the expansion of mobile internet technology, increasing the ability of consumers to make purchases, as well as growth in the number and range of internet sales offering by retailers. Countries with higher growth have generally corresponded with those with greatest internet and mobile device technology access rates. Part of this growth has been driven by physical retailers developing their online stores as well as growth in the number of online only stores. Fastest growth has occurred in the core retail categories of smaller durable and comparison items, with slower growth in consumable, perishable or larger items.

High growth in internet sales is expected to continue over the short to medium term and slow as the market matures. Compound annual growth rates (CAGR) are predominantly forecast in the double digits, with reports expecting the growth to taper off once the market share reaches around 20 per cent. Higher shares are expected in the UK (at above 20 per cent) and within some individual retail categories. One source predicts 32.1 per cent of non-food retail sales to occur online in the UK by 2018.

The rate of internet access and technology use have been shown to be important drivers of growth (and within that, the conversion rate of online browsing to sales). Demographic age structures affect these drivers, where older age brackets have both lower existing use rates and take-up rates of technology and online shopping. The largest shares of growth over the short to medium term are likely to come from increased activity from existing online consumers. This is heightened in New Zealand where lower rates of technology and online purchasing currently exist relative to the UK and U.S.A.

Over the next three to five years (2016-2018), the share of sales occurring online is forecast to reach between 21.5 and 23 per cent in the UK, and around 10-11 per cent in the U.S.A. and Canada. In Australia, a single-source estimate puts the share of sales online at 9.8 per cent in 2017.

It is likely that New Zealand will follow similar trends, but lag that of the U.S.A. and UK over the longer term. Growth in New Zealand is likely to be slower due to lower rates of technology use and online purchasing, which is limited by an ageing population demographic structure²¹⁵. The total market share of online spending is also likely to be limited (relative to the UK) in the medium to longer-term due to higher international shipping costs from New Zealand's geographical remoteness, where approximately 35 per cent of New Zealand's online spend is currently from international retailers (PWC and Frost & Sullivan, 2012). Part of the short-term fast growth in online sales is likely to be seen as a way for physical retailers to maintain sales growth in a range of product categories as the consumer spending in the economy recovers (Infometrics Ltd, 2012).

Currently 5.9 per cent of New Zealand's retail spend is online, of which 20-25 per cent is in the grocery category. It is likely that the balance occurs from the core retail category, with only minor shares from the food hospitality and household services, and trade categories. Therefore, when comparing these estimates to total business and household spend, this equates to nine per cent of core retail and three per cent of food and liquor retail spend currently occurring online.

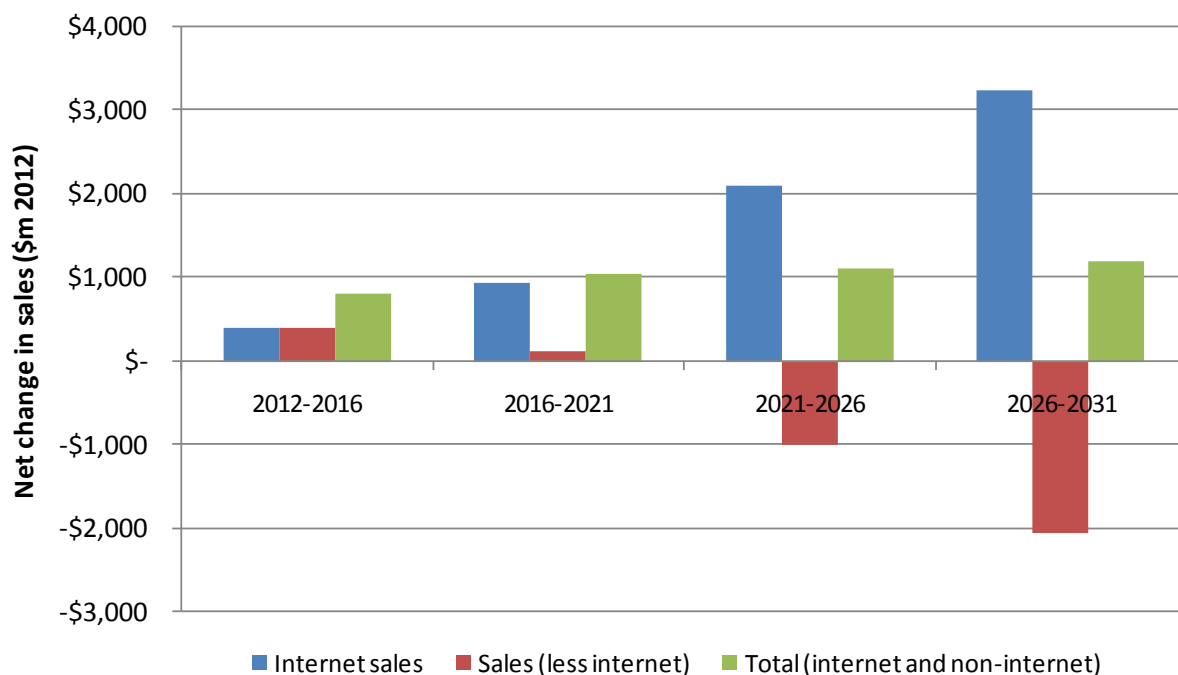
The above table summarises what has occurred in online spending trends internationally, and includes a forecast for online spending in New Zealand over the short-term. However, growth in online spend has occurred very rapidly and very recently (and even more so in New Zealand), corresponding with the introduction of new shopping channel technologies. While trends in New Zealand's retail sector typically lag that of international locations such as Australia, the United Kingdom and the U.S.A., a high level of uncertainty exists in the

²¹⁵ Lower traffic congestion and a good supply of physical shops accessible to New Zealand consumers (relative to other countries) may also slow the growth in online sales.

future growth of online spend. Therefore, a range of online spending growth scenarios for Auckland have been triangulated with growth in Auckland's retail sector overall to understand the net effect within the context of the wider sector growth.

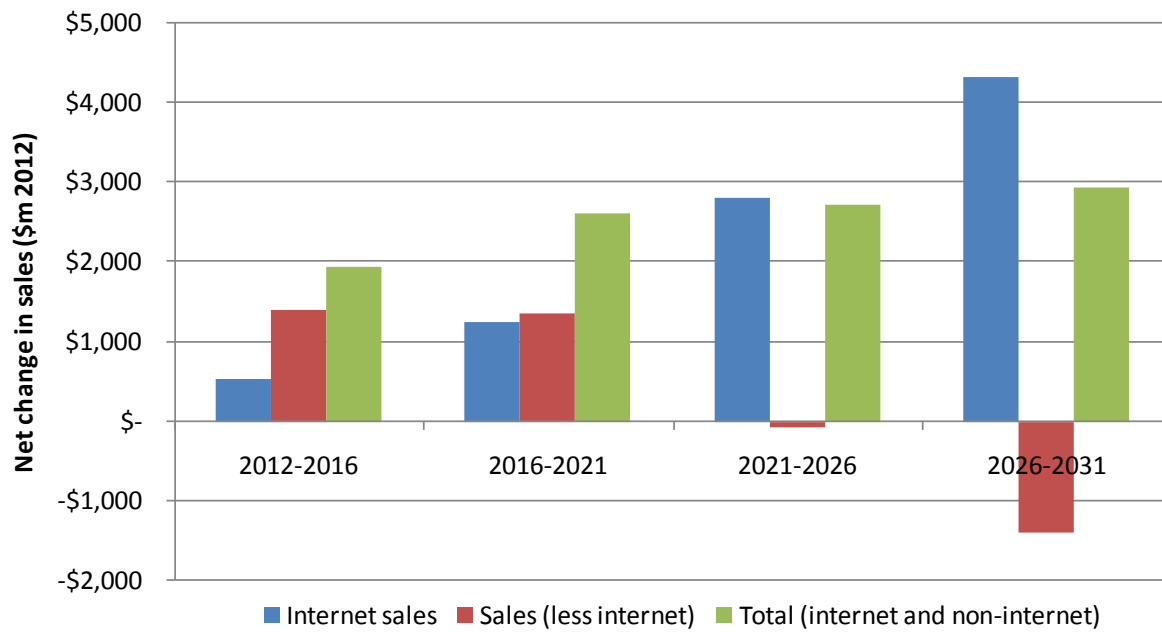
Figures 72 and 73 below illustrate the effect for core and total retail respectively of a scenario where the compound annual growth rate (CAGR) of 14.3 per cent (from the above table) out to 2031 is applied to Auckland's retail sector. It demonstrates that online sales growth would outstrip growth in the retail sector overall, with the effect stronger in core retail where it would assume that online sales growth would be equivalent to nearly three times the total core retail growth (implying a decrease in current sales growth in stores). This scenario would also mean that online spending would account for 16 per cent of sales by 2021 and 49 per cent by 2031. Part of this effect is amplified by total sales (online and in stores) slowing slightly over the medium to longer-term, which contrasts with a continued rapid growth in online sales.

Figure 72. Net growth in core retail sales by channel with a 14.3 per cent CAGR in online sales 2012-2031



Source: RIMU Retail Growth Model, 2013.

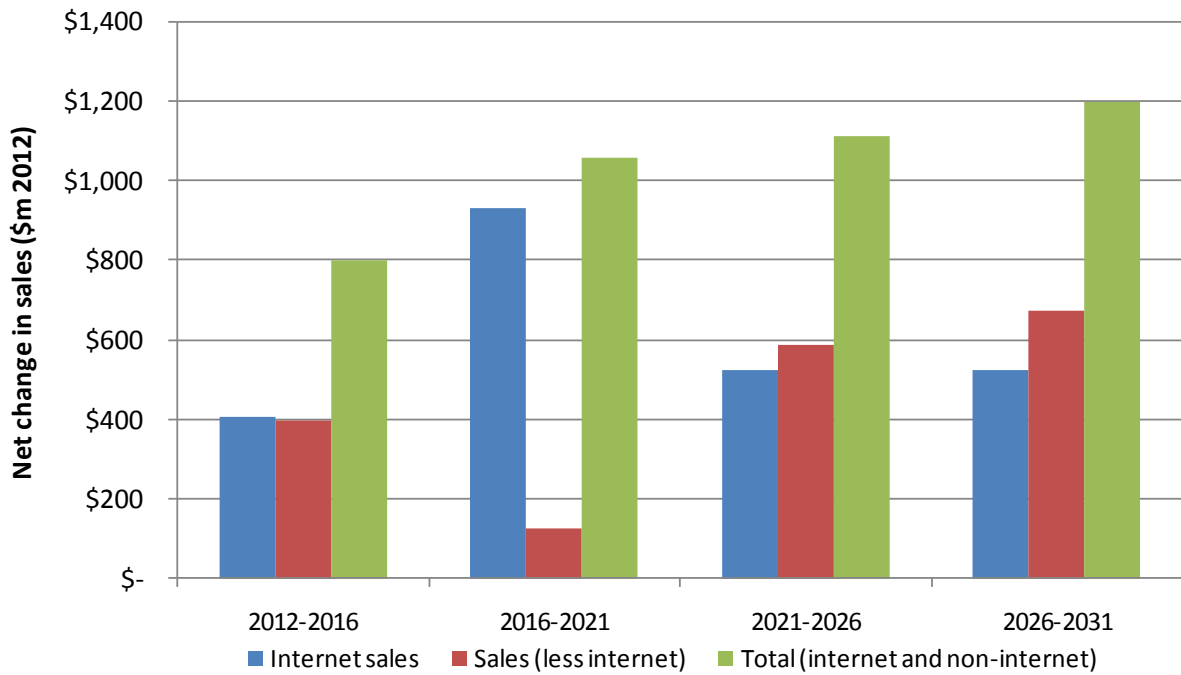
Figure 73. Net growth in total retail sales by channel with a 14.3 per cent CAGR in online sales 2012-2031



Source: RIMU Retail Growth Model, 2013.

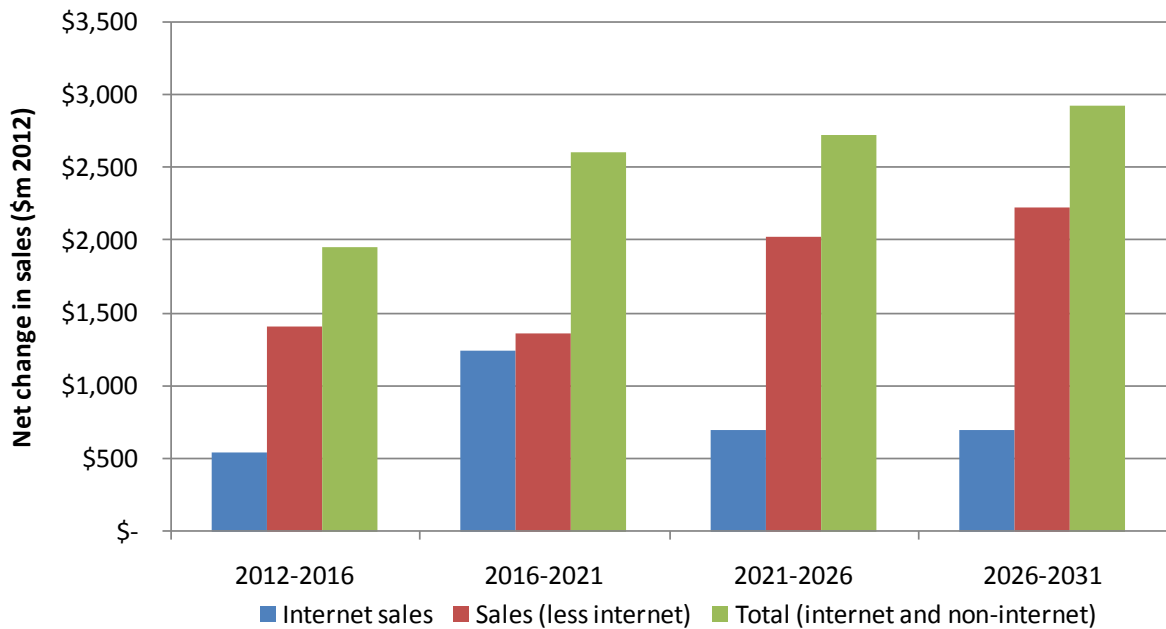
Another scenario is tested in Figures 74 and 75 below where a CAGR of 14.3 per cent in online sales is assumed out to 2021, with a maximum share of 20 per cent of retail sales applied at 2031. In this scenario, nearly all core retail growth in the short to medium-term would be in online sales, with very little sales growth through stores. This is unlikely as it would mean the share of sales occurring online in 2021 would be 16 per cent, which is above the levels of online sales forecast for Australia (9.8% in 2017).

Figure 74. Net growth in core retail sales by channel with a 14.3 per cent CAGR in online sales 2012-2021 and 20 per cent of total sales online at 2031



Source: RIMU Retail Growth Model, 2013.

Figure 75. Net growth in total retail sales by channel with a 14.3 per cent CAGR in online sales 2012-2021 and 20 per cent of total sales online at 2031



Source: RIMU Retail Growth Model, 2013.

The tested scenarios above guided by short-term forecasts and recently observed growth in Table 26 do not appear to triangulate well with the patterns of forecast growth in Auckland's retail sector. However, international experience suggests it is likely that online

sales will continue to increase their market share in the short to medium-term as rates of technology uptake and retailer's online offerings increase. It should also be noted that not all online sales will result in a decrease in floorspace²¹⁶. Furthermore, significant growth in online spending has emerged relatively recently, meaning that trends are not yet well established or understood, leading to a paucity of information in this area.

Because of these factors, a range has been used in the model to test the effect of online spending. It is assumed that online spending growth will occur faster in the short to medium-term, and become closer to total sales growth in the medium to longer-term. To reflect this and set online sales growth within the context of total retail sales growth (online and through stores), the following scenarios have been tested in the model²¹⁷:

- Online sales growth rate double that of non-internet sales 2012 to 2021 and online sales growth rate 1.5 times that of non-internet sales between 2021 and 2031. This would mean online sales would grow at 4.6 per cent CAGR to 2021, and 3.2 per cent CAGR to 2031. The share of sales online would equal 7.2 per cent in 2021 and 8.0 per cent in 2031.
- Online sales growth rate 2.5 times that of non-internet sales 2012 to 2021 and online sales growth rate double that of non-internet sales between 2021 and 2031. This would mean online sales would grow at 5.6 per cent CAGR to 2021, and 4.1 per cent CAGR to 2031. The share of sales online would equal 7.8 per cent in 2021 and 9.5 per cent in 2031.
- Online sales growth rate three times that of non-internet sales 2012 to 2021 and online sales growth rate 2.5 times that of non-internet sales between 2021 and 2031. This would mean online sales would grow at 6.6 per cent CAGR to 2021, and 4.9 per cent CAGR to 2031. The share of sales online would equal 8.5 per cent in 2021 and 11.2 per cent in 2031.

The tested scenarios of online sales growth are more conservative than forecast short to medium-term forecasts in Table 26. However, it is prudent from a planning perspective to take this approach rather than assume very little growth through stores based on short-term, recent trend information with large uncertainty.

It is important that growth in online sales is monitored going forward and growth assumptions updated as greater certainty in online sales growth trends occur. Council could work with key retailers to establish better information into the future within this area.

²¹⁶ A share of online spending is still serviced by the same floorspace as purchases made within the physical store. An example includes some internet-based grocery sales where a personal shopper (employed by the supermarket) selects items off the shelves from inside the supermarket rather than a wholesale distribution centre.

²¹⁷ The share of sales occurring online is likely to be higher than these scenarios, but these values have been run through the model to reflect that not all online sales growth will result in a direct reduction in need for physical floorspace growth in stores.

Appendix 10 – Forecast net sales increases by Auckland centre and retail category, 2012-2031

The following maps (Figures 76 to 79) show the forecast sales net increase in different centres across Auckland. Each dot represents a centre/area, with its size proportional to the forecast net increase in sales. These are overlaid upon the forecast net household spending increases within each neighbourhood CAU area. A different map is provided for each retail type. It should be noted these maps do not contain the net increase in spend forecast to occur across Auckland outside of these defined centre areas. The outer rural areas containing the centres of Pukekohe, Waimauku, Helensville, Warkworth, Matakana and Wellsford have also been excluded from these maps in order to increase the visibility of patterns on the urban area.

Figure 76. Forecast net increase in core sales through centre areas across Auckland, 2012-2031

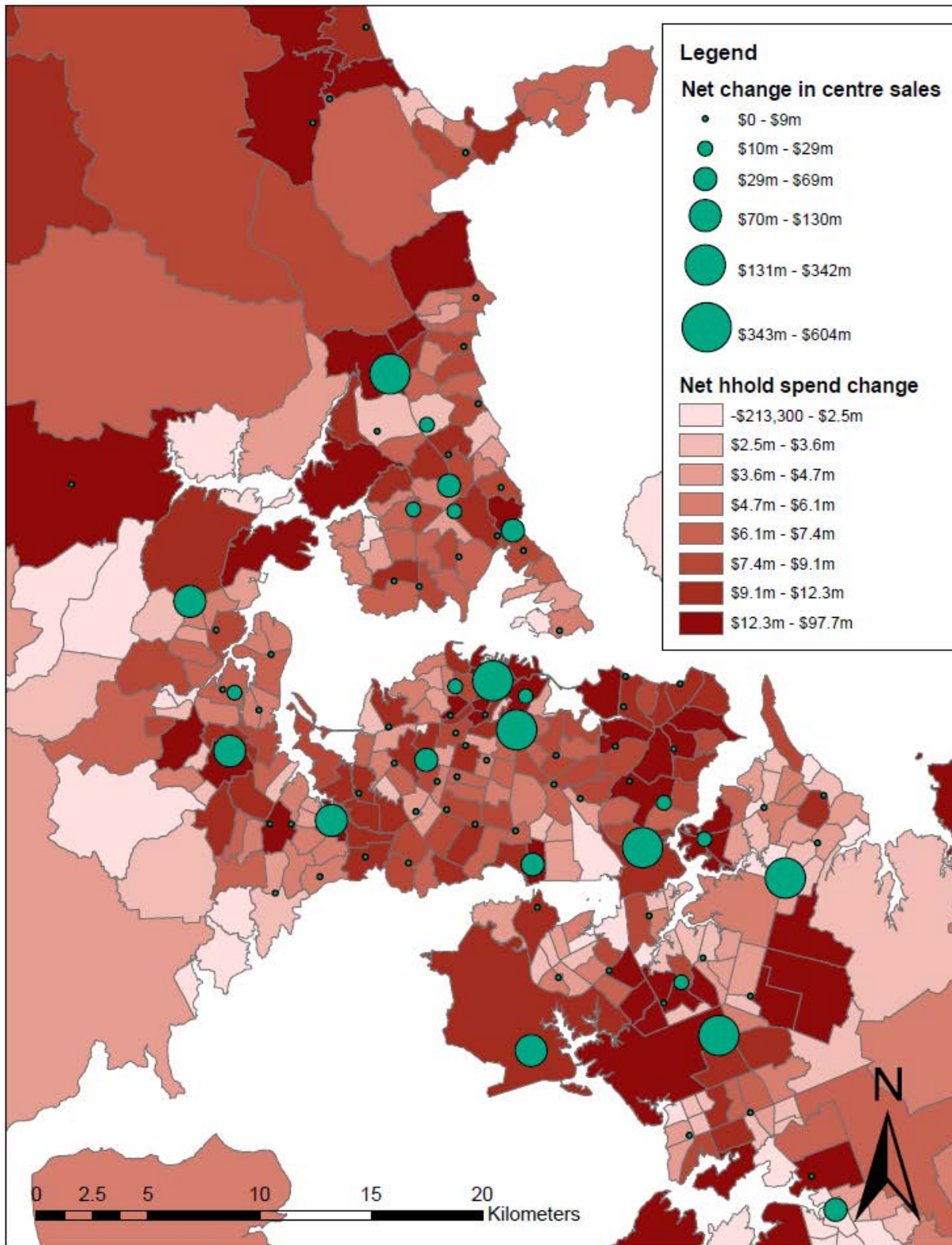


Figure 77. Forecast net increase in trade sales through centre areas across Auckland, 2012-2031

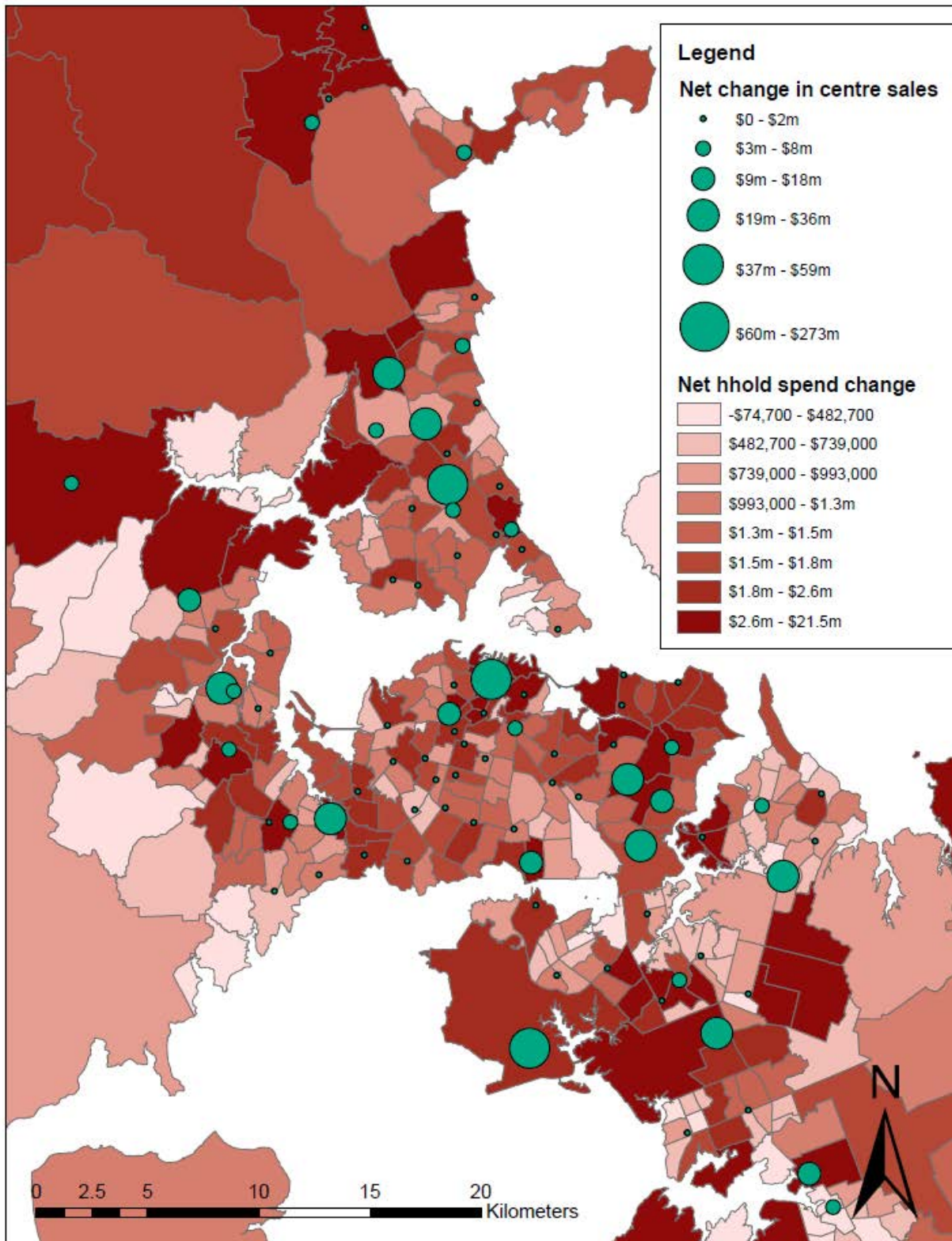


Figure 78. Forecast net increase in food and liquor sales through centre areas across Auckland, 2012-2031

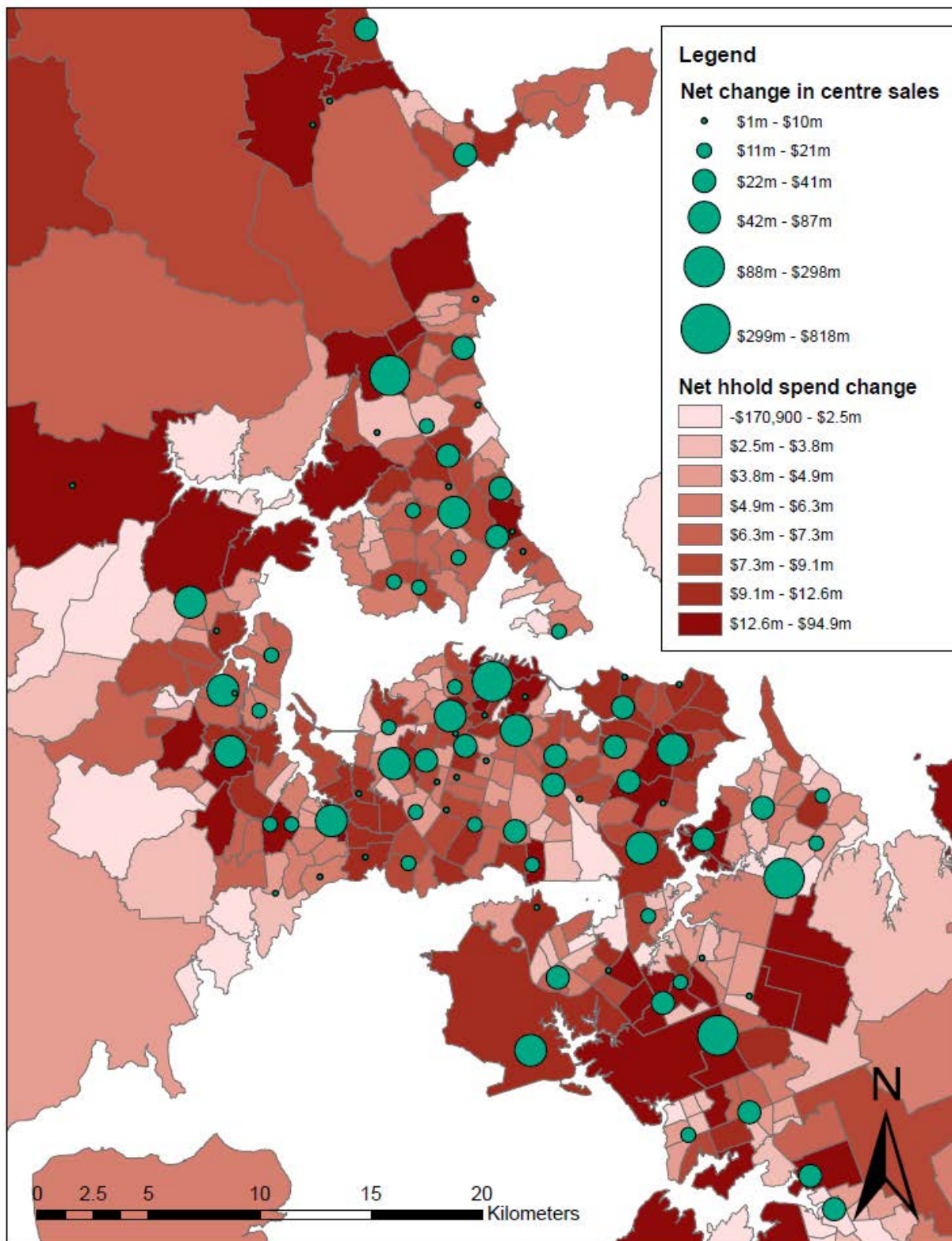
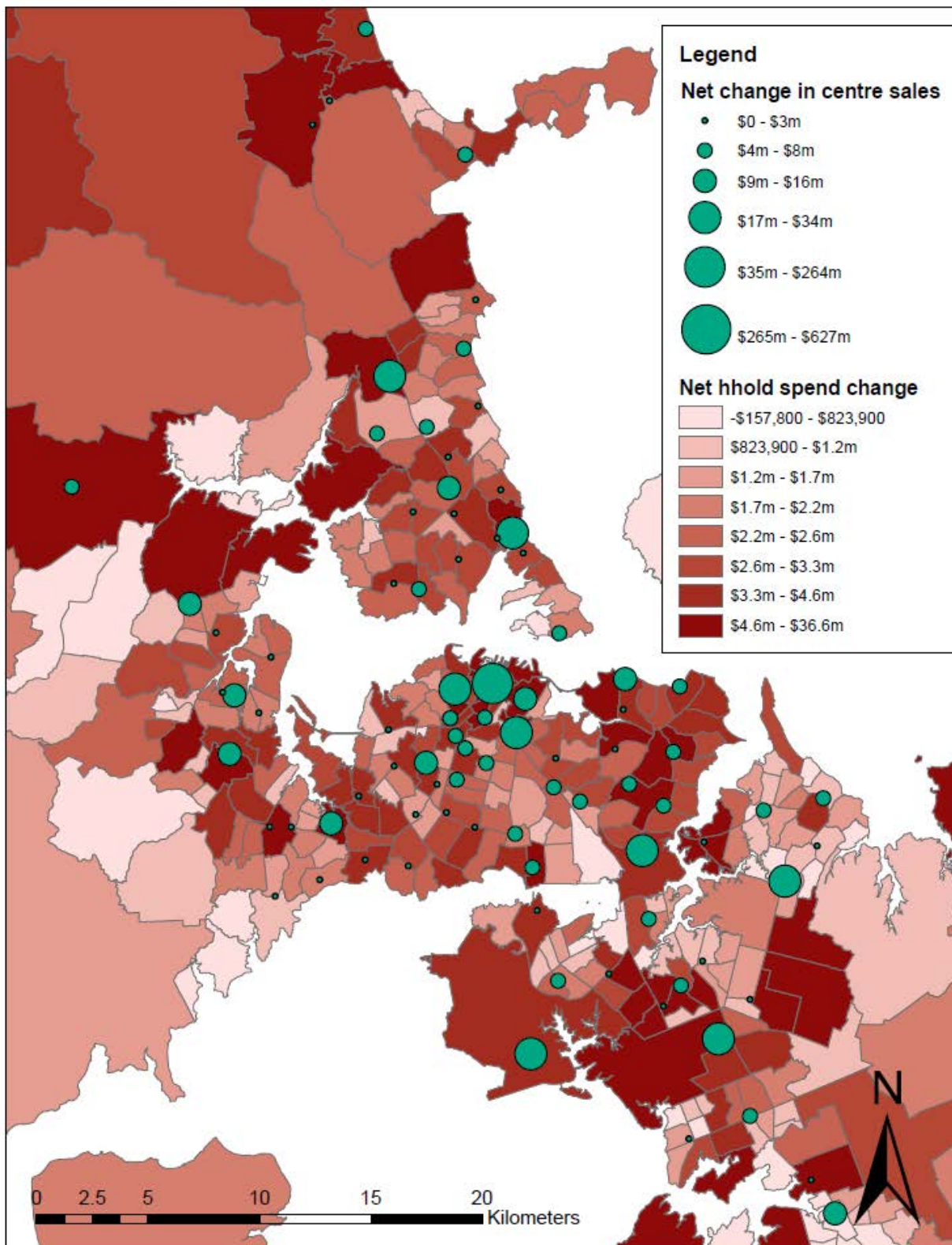


Figure 79. Forecast net increase in food hospitality and household services sales through centre areas across Auckland, 2012-2031



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email research@aucklandcouncil.govt.nz
or visit www.aucklandcouncil.govt.nz

