Future Proof

Knowing our future by planning today

Future Proof Monitoring Report 2015

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Monitoring Report 2015

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1. Introduction

1.1 Overview

Monitoring development trends in the Future Proof sub-region assists the Future Proof partners in understanding the changing patterns of development. Monitoring provides an effective mechanism to inform Future Proof decision-makers and those who have implementation responsibilities about the consequences of actions, and changes in the community and the environment, in order to determine the effectiveness of the Future Proof Strategy. Specifically, monitoring of the built environment is required to ensure that:

- new trends that may affect the ability to achieve the objective are identified early enough to respond to them;
- the effectiveness of current policies and methods is evaluated so that changes can be made where necessary such as through Regional Policy Statement (RPS) reviews, district plan reviews, and reviews of other council strategies, manuals and guidelines;
- the public, developers and infrastructure providers can be kept informed about trends that may affect or interest them;
- future infrastructure needs are anticipated as early as possible; and,
- the assumptions and information used to determine growth strategies remain accurate and valid.

The information collected in this report is needed to support future reviews/updates of the Future Proof Growth Strategy and Implementation Plan (Future Proof Strategy) and to inform reviews of the Future Proof map and tables contained in the Proposed RPS. The Proposed RPS implements the urban limits and tables for allocating and staging residential and industrial growth which were established in the Future Proof Strategy. One of the hazards of growth planning is that its success is dependent on the validity of the underlying assumptions. For example, if population growth occurs at a faster rate than anticipated, the urban limits and land allocations may become inappropriate. Tracking of growth trends and pressures will therefore help to update Future Proof planning, and to stay relevant to the conditions.

1.2 Guiding principles

The information collected in this report also assists in ascertaining whether the guiding principles established in the Future Proof Strategy (Chapter 3 of the Strategy) are being maintained. The key guiding principles to which this Monitoring Report directly relate are identified below.

A Diverse and Vibrant Metropolitan Centre linked to Thriving Town and Rural Communities and Place of Choice – Live, Work, Invest and Visit

- Maintain the Metropolitan Hamilton City Heart as the vibrant retail, business, arts, and social “heart” of the sub-region with it becoming the primary residential intensification area.
- Promote increased densities in new residential development and more intensive redevelopment of existing urban areas.

- Encourage development to locate adjacent to existing urban settlements and nodes in both the Waikato and Waipa Districts and that rural-residential development occurs in a sustainable way to ensure it will not compromise the Future Proof settlement pattern or create demand for the provision of urban services.
- Ensure commercial and industrial development is located in selected sub-regional areas and that it is not located where it undermines the areas of influence of the Hamilton City Heart, Cambridge, Te Awamutu, Ngaruawahia, Raglan and Huntly.
- Maintain the separation of urban areas by defined greenbelts and open space.
- Recognise and provide for the growth of rural towns and villages within agreed urban limits.
- Ensure a cohesive commercial and retail strategy that supports existing commercial centres, towns and villages within the sub-region is developed so these places remain vibrant and valued.

Affordable and Sustainable Infrastructure

- Encourage development in existing settlements to support existing infrastructure.

Sustainable Resource Use

- Protect versatile and quality farmland for productive purposes through the provision of limited rural lifestyle development around existing towns and villages and encouraging a more compact urban footprint.

1.3 Contents of the Monitoring Report

This monitoring report looks at the first four years of the 50 year Strategy. Development trends take time to respond to new policy initiatives and may not be observed in the current monitoring data.

The Future Proof partners previously prepared a Monitoring Strategy (Future Proof, 2012) which identifies key growth questions that the monitoring work can assist in answering, and a general framework for data collection. Although the Future Proof Strategy has a broad vision, the Monitoring Strategy and this Monitoring Report focus on the growth management aspects, and are guided by the information requirements in Methods 6.8.1 and 6.17.1 of the Proposed RPS. This Monitoring Report mainly focuses on the amount of development activity (subdivision, industrial, commercial and residential activity) and where this development is occurring in the sub-region.

The data which has informed the mapping component of the report has been collected from several sources including:

- The Waikato Regional Council CRS Property Layer. This is a GIS layer constructed from a valuation (rating) database where attributes are stored according to Land Information New Zealand (LINZ) guidelines (LINZS30300).
- Statistics New Zealand.

Other data sources are detailed in the references section of this report.

An update of the Future Proof Strategy is likely to consider the inclusion of the ex-Franklin district area that is now contained within the Waikato District. The data spatially presented on the maps show development in the ex-Franklin district.

The Monitoring Report contains graphical and spatial representations of the data collected to monitor the built environment and is focused primarily on answering the questions in the Future Proof Monitoring Strategy.

1.4 Baseline and Data Range

The year 2009 has been established as the 'baseline', as this is when the Future Proof Strategy was adopted. In some cases historical data has been collected dating back to 2006 to establish trends that may have been occurring prior to, as well as following, the adoption of the Future Proof Strategy.

1.5 Data Selection/Limitations

For monitoring to provide meaningful information, it needs to have good quality data. Every effort has been made to present a consistent set of data between councils and across years. Any limitations of the data and presentation associated with the maps have been explained in the accompanying narrative.

The Waikato Regional Council CRS Property Layer is the main data source for the mapping component of this report. This data source was identified as the best quality data source available to suit the needs of Future Proof. Some of the benefits of using this data are:

- The data can be updated yearly giving Future Proof the ability to track trends over time.
- The data shows newly created valuation records so is an early indicator of development
- Data can be mapped spatially and therefore easily compared/analysed against the future proof land use pattern.
- Attribute coding is undertaken following a national set of rules (Rating Valuations Rules 2008) so coding is applied consistently across New Zealand and the Future Proof sub-region. There is also an auditing process for checking data.

Data for the maps was predominantly collected from the CRS Property Layer using an 'annual difference layers' approach (comparing one year with the previous, to identify where new development has occurred). The approach of using annual difference layers risks introducing artificial differences between the years. Changes to parcels, valuations or their matching attributes might cause changes to CRS properties that are not indicative of development. For example, where an "urban" property exists in the respective layer in one year but did not in the previous year it will be portrayed as new urban development – even if the change is not due to "new development" per se (e.g. unimproved subdivisions, underlying parcels created/dissolved). This is considered to affect a very small amount of data, and therefore the significant majority of data and overall trends are not affected.

In addition, results are dependent on completeness of parcel to valuation matching. This stands at above 97% so implications are considered to be minimal.

Results are also dependent on completeness and accuracy of the various attributes that are being queried. This is predominantly the LINZ valuation category codes which are considered to be suitable for the task, although it is recognised that there will be occasional errors in the coding. This data will be an excellent base for assessing trends over time and can be easily updated in future years. Another advantage of using this data is that it is consistent across the sub-region (collected in the same way) so allows comparison across the sub-region.

Some data was also collected from other sources including Statistics New Zealand.

2. Monitoring Questions

This report aims to answer the following twenty monitoring questions which have been taken from the Future Proof Monitoring Strategy (Future Proof, 2012):

1. Is new urban development (defined as development which is non-rural and has a section size of 2000m^2 or less) within Hamilton City, Cambridge, Te Awamutu/Kihikihi, Pirongia, Huntly, Ngaruawahia, Raglan, Te Kauwhata, Meremere, Taupiri, Horotiu, Matangi, Gordonton, Rukuhia, Te Kowhai and Whatawhata occurring within the identified urban limits?

2. Is new residential (including rural-residential) development being managed in accordance with the timing and population for growth areas as identified in Table 6.1 (Section 6D) of the Proposed RPS?

3. Is new industrial development being located in the strategic industrial nodes identified in Table 6.2 (Section 6D) of the Proposed RPS and in accordance with the indicative timings?

4. Is industrial development outside of the identified strategic industrial nodes (excluding rural based industry) generally occurring within the identified urban limits of settlements and within areas zoned for industrial uses?

5. Is development occurring in areas with high quality soil?

6. Is development adversely affecting the Waikato River, biodiversity, high value landscapes and heritage?

7. Is the location of development resulting in reverse sensitivity issues?

8. Is there progress towards achieving the desired residential development densities as set out below?
    a. 50 households/hectare: Hamilton Central Business District
    b. 30 households/hectare: Hamilton Intensification Areas
    c. 16 households/hectare: Hamilton Greenfield
    d. 12-15 households/hectare: Greenfield development in Cambridge, Te Awamutu/Kihikihi, Huntly, Ngaruawahia, Raglan/Whaingaroa and Te Kauwhata
    e. 8-10 households/hectare: Greenfield in Waikato District rural villages where sewerage is reticulated.

9. Where is significant commercial development occurring in the Future Proof area, with particular focus on retail and office development?

10. Is commercial development occurring in identified commercial centres and/or zoned areas?

11. Is commercial development occurring in industrial areas?

12. Is rural residential growth occurring in and around existing urban areas and in areas zoned for this purpose

13. Is development occurring in areas with sufficient existing or planned infrastructure?

14. What major infrastructure changes and upgrades are occurring in the Future Proof area? Is there alignment between the Future Proof land use pattern and infrastructure investment?

15. Is development occurring in commercial centres with access to a variety of transport modes?

16. What transport trends are occurring with respect to private transport, public transport, walking and cycling and freight movements?

17. Is there evidence of any new conflicts between land use and infrastructure development?

18. Where is population growth occurring and at what rate?

19. What are the employment trends, household and business growth rates within the Future Proof area?

20. What are the property market trends in the Future Proof area?

2.1 Future Proof Land Use Pattern

Question 1

Is new urban development (defined by LINZ as residential) within Hamilton City, Cambridge, Te Awamutu/Kihikihi, Pirongia, Huntly, Ngaruawahia, Raglan, Te Kauwhata, Meremere, Taupiri, Horotiu, Matangi, Gordonton, Rukuhia, Te Kowhai and Whatawhata occurring within the identified urban limits?

Maps 1 and 2 in Appendix 1 show new urban lots created from 2009 to 2013 overlain with the urban limits indicated in the Future Proof Strategy. Analysis of this data shows that between 97% and 99% of new urban development was contained within the identified urban limits.

Notes:

- *The identified urban limits are those which were established in the Future Proof Strategy and are indicative only.*
- *Urban limits for the ex-Franklin district, now contained within the Waikato District, were determined based on urban-related district plan zones and structure plans.*
- *Urban development has been defined as sites 2000m^2 or less, and with a LINZ land use code between 20 and 30 or between 32 and 100, and excludes rural zone codes (LINZ zone code starting with 1 or 2; see Appendix 4 for a summary of LINZ codes)*
- *Urban development is shown by identification of the entire site. The physical development may in fact only be on a portion of the site.*
- *Due to the nature of the CRS data, where an 'urban' property exists in the respective layer in one year but did not in the previous year it will be portrayed as new urban development – even if the change is not due to 'new development' per se (e.g. unimproved subdivisions, underlying parcels created/dissolved, etc). This is only likely to affect a very small amount of data.*

Question 2

Is new residential (including rural-residential) development being managed in accordance with the timing and population for growth areas as identified in Table 6.1 (Section 6D) of the Proposed RPS?

Settlement Type

Table 6.1 in Section 6D of the Proposed RPS and Table 3 in Section 6.3 of the Future Proof Strategy provide population allocations by settlement type for 2006, 2021, 2041 and 2061. The majority of the population has been allocated to Hamilton City, with a staged increase from 60% in 2006 to 63% in 2061. Towns have been allocated 20% of the total population by 2061, and rural villages 5%. The rural environment has been allocated 12% of the total population by 2061, declining from 17% in 2006.

Statistics NZ Census data (at the mesh block unit level) was used to determine the actual population split between Hamilton City, towns, rural villages and the rural environment in 2006 and 2013. As shown in Table 1, 60.3% of the population was concentrated in Hamilton City, 20.3% in towns, 5.4% in rural villages and 14.0% in the rural environment in 2006. The proportions changed marginally in 2013, decreasing in Hamilton City and towns (by -0.3%), and increasing in rural villages (+0.1%) and the rural environment (+0.5%).

The Proposed RPS and Future Proof population allocations expect 88% of the population to be living in urban areas (Hamilton City, towns and rural villages) and 12% in the rural environment by 2061. In 2006, 86% of the population was living urban areas, decreasing to 85.5% in 2013. This trend is contrary to the Proposed RPS and Future Proof population allocations, which represent a shift towards a more concentrated nodal form, with a reduction in dispersed rural development.

Table 1: Proportion of the population living in Hamilton City, towns, rural villages and the rural environment

Settlement Type	2006 Census Population* (%)	2006 Census Population* (Count)	2013 Census Population (%)	2013 Census Population (Count)	Proposed RPS and Future Proof Population allocations – proportion of total population*			
					2006*	2021	2041	2061
City	60.3%	130,623	60.0%	142,779	60%	61%	61%	63%
Towns	20.3%	44,064	20.0%	47,487	19%	20%	21%	20%
Rural Villages	5.4%	11,796	5.5%	13,146	4%	4%	5%	5%
Rural	14.0%	30,189	14.5%	34,383	17%	15%	13%	12%

Source: Statistics NZ

**There is a discrepancy in the methods used to calculate the 2006 population figures. For monitoring purposes, Census 2006 and 2013 data at the mesh block level was used.*

Growth Areas

Section 6.2.3 of the Future Proof Strategy sets out residential growth targets to be achieved over the planning period of the Future Proof Strategy (as per Table 6.1 of the Proposed RPS). These targets are as follows:

Hamilton City: Approximately 50% of growth through regeneration of existing parts of the city (infill).

Waikato District: Approximately 82% of growth in identified areas of Te Kauwhata, Huntly, Ngaruawahia, Raglan, Whaingaroa and various rural villages.

Waipa District: Approximately 80% of growth within urban areas: 40% in Cambridge, 30% in Te Awamutu/Kihikihi, 10% in rural villages and 20% in the rural environment.

Hamilton City

Statistics NZ building consent data was analysed to determine the number of new residential developments located in Greenfields compared to city infill. This data was used as it gave a good indication of residential development in infill areas.

The number of residential building consents granted within Hamilton City has been trending upwards since 2009 with 466 consents granted in 2009 and 835 in 2013 (Table 2). More building consents were granted in Greenfields compared to city infill, particularly in 2010 to 2012 (Table 3 and Figure 1). Figures in 2013 were close to the Future Proof 2061 residential development targets (50% Greenfield and 50% infill) with 56% of the total growth in Greenfields and 44% in infill.

Table 2: Hamilton City – Number of new residential developments since 2009 (based on building consents) located in Greenfields compared to city infill

Zone*	2009	2010	2011	2012	2013
Greenfield	249	404	372	400	378
Infill	217	245	236	260	457

Year ended September
*Greenfield areas include Rotokauri (Burbush and Rotokauri CAUs), Rototuna North (Sylvester, Horsham Downs and Huntington CAUs) and Peacocke. Infill areas include the remainder of Hamilton City
Source: Statistics NZ

Table 3: Hamilton City – Cumulative percentage of new residential developments (based on building consents) located in Greenfields compared to city Infill

Zone*	2009	2010	2011	2012	2013	Future Proof Target by 2061
Greenfield	53% (249**)	59% (653)	59% (1025)	60% (1425)	56% (1803)	50%
Infill	47% (217)	41% (462)	41% (698)	40% (958)	44% (1415)	50%

Year ended September
*Greenfield areas include Rotokauri (Burbush and Rotokauri CAUs), Rototuna North (Sylvester, Horsham Downs and Huntington CAUs) and Peacocke. Infill areas include the remainder of Hamilton City
**Count
Source: Statistics NZ

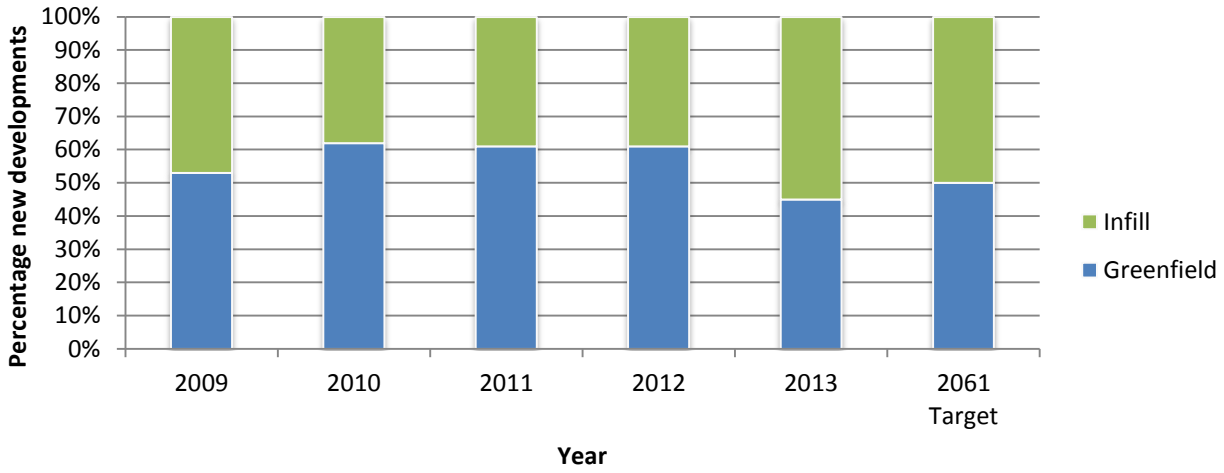

Figure 1 – Percentage of new residential developments (based on building consents) located in Hamilton City Greenfields compared to infill from 2009 to 2013

Waikato District

Statistics NZ Census data at the mesh block level was analysed to determine residential growth in the Waikato District. Population and private occupied dwellings data were used to represent residential growth. The towns and rural villages (urban areas) included in the analysis are listed in Appendix 3.

Table 4 and Figure 2 show that approximately 35% of the population growth in the Waikato District (excluding Franklin) occurred within urban areas between 2006 and 2013. Table 5 shows that approximately 47% of the growth in private occupied dwellings occurred in urban areas between 2006 and 2013. These figures are considerably lower than the Future Proof target of 82% and indicate that the majority of the growth occurred in the rural environment. When Franklin is included in the analysis, 41% of the population growth and 49% of growth in private occupied dwellings occurred in urban areas between 2006 and 2013. The majority of growth still occurred in the rural environment, but to a lesser extent.

Growth in the rural environment can also be seen on Map 5 in Appendix 1, which shows development on high quality soils from 2009 to 2013. In particular, considerable development occurred around Hamilton in the areas of Matangi, Tamahere, Tauwhare, Whatawhata and Lake Rotokauri, and along the northern boarder of the Waikato District.

The Future Proof Strategy seeks to reduce this dispersed rural development. Since implementation in 2009, the Strategy has been embedded in the Proposed RPS and the Waikato District Plan. Changes to new residential development will take time to respond to the policy initiatives; the policy initiatives are discussed below.

Table 4: Waikato District – population growth from 2006 to 2013

Location/Settlement Type	2006-2013 Excluding Franklin	Future Proof Target by 2061*	2006-2013 Including Franklin
Waikato District urban areas	35% (1,689**)	82%	41% (2,391)
Rural environment	65% (3,111)	18%	59% (3,399)

*These targets were established prior to the Waikato District boundary change and do not include Franklin areas
**Count
Source: Statistics NZ

Table 5: Waikato District – growth in private occupied dwellings from 2006 to 2013

Location/Settlement Type	2006-2013 Excluding Franklin	Future Proof Target by 2061*	2006-2013 Including Franklin
Waikato District urban areas	47%	82%	49%
Rural environment	53%	18%	51%

*These targets were established prior to the Waikato District boundary change and do not include Franklin areas
Source: Statistics NZ

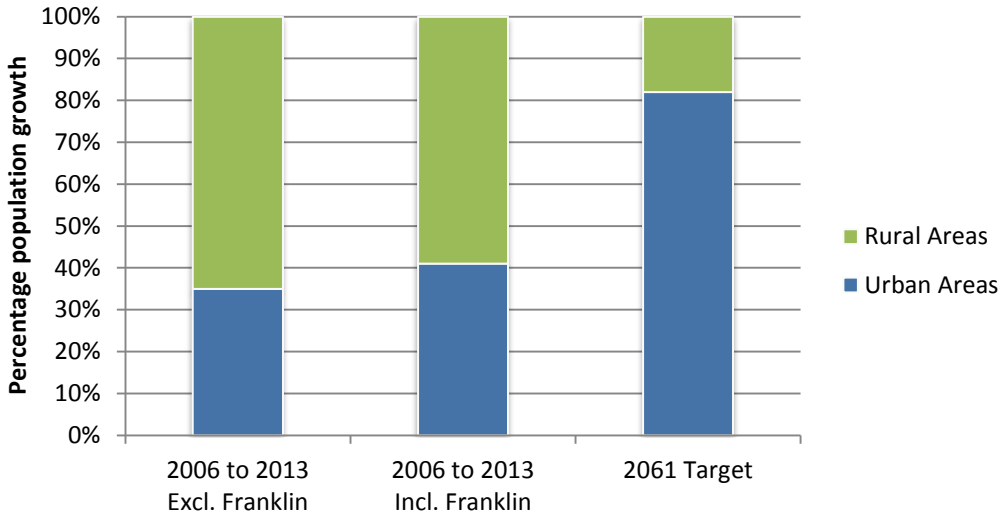

Figure 2 – Waikato District – percentage of population growth in urban and rural areas from 2006 to 2013

Policy changes

In an attempt to align growth with the Future Proof Strategy and the Waikato District Growth Strategy, Waikato District Council has recently adopted Plan Change 2 (February 2014) to the Waikato District Plan. The aim of this is to strongly limit further subdivision potential in rural areas and direct growth towards sustaining and growing the district's townships and identified villages and their services.

Prior to the Plan Change the Waikato District Plan rural subdivision provisions would have enabled the number of certificates of title to reach approximately 20,000 from a base of around 15,000 at that time (Waikato District Council, 2011).

The new regulatory regime provides for rural subdivision to occur in a manner that ensures any newly created titles have a significant rural component. That is, with a minimum lot size of between 8000 m^2 and 1.6 hectares (and maximum of 4 ha), the lots are sufficiently large to ensure rural land uses predominate and residents will experience a degree of rural life. Coupling this with a requirement for the 'parent' lot to be more than 20 hectares to be eligible for subdivision means that rural character and amenity values will not be lost through excessive fragmentation and subsequent development. Under the new rules, this has reduced the potential number of new lots from approximately 5,000 to 2,000 (titles over 20 hectares; Waikato District Council, 2011).

There is also a Country Living Zone where people wanting to own a lifestyle property that is predominantly residential can purchase property. The minimum lot size in this zone is 0.5 hectares. Additionally, there are a number of subdivisions that have consents but do not yet have title. This amounts to a total of 433 additional lots that could yet obtain a title within the Rural and Coastal zones (Waikato District Council Database, 2014).

Legacy titles

The Future Proof Implementation Committee has sought information on the number of titles that have been issued but where no development has occurred (legacy title). For example, these could lots that are currently help as part of a larger farm, stopped roads or reserves. The data shows that there are 1750 vacant lots of less than 4 hectares in area. It is not known whether these will ever be developed (Waikato District Council Database, 2014)

Waipa District

Statistics NZ Census data at the mesh block level was analysed to determine residential growth in the Waipa District. Population and private occupied dwellings data were used to represent residential growth. The towns and rural villages included in the analysis are listed in Appendix 3.

Table 6 and Figure 3 show that Cambridge accounted for half of the population growth in the Waipa District between 2006 and 2013. Growth within Te Awamutu/Kihikihi and the rural villages was considerably lower over this period. The remaining 26% of growth occurred in the rural environment. Total urban growth was 74%, which is in reach of the 80% target.

Table 7 shows that 45% of growth in private occupied dwellings occurred in Cambridge between 2006 and 2013. Growth in Te Awamutu/Kihikihi and the rural environment were similar, while growth in rural villages was considerably lower. Total urban growth was 78% which is just under the 80% target.

Both indicators (population growth and dwellings) show that Waipa District is in a good position to achieve the Future Proof Settlement Pattern targets by 2061.

Table 6: Waipa District – population growth from 2006 to 2013

Location/Settlement Type	2006-2013	Future Proof Target by 2061
Cambridge	51% (2,118*)	40%
Te Awamutu/Kihikihi	16% (654)	30%
Rural Villages	7% (312)	10%
Urban area total	**74% (3,084)**	**80%**
Rural	26% (1,083)	20%

Source: Statistics NZ

*Count

Table 7: Waipa District – growth in private occupied dwellings from 2006 to 2013

Location/Settlement Type	2006-2013 %	Future Proof Target by 2061 %
Cambridge	45	40
Te Awamutu/Kihikihi	23	30
Rural Villages	10	10
Urban area total	**78**	**80**
Rural	22	20

Source: Statistics NZ

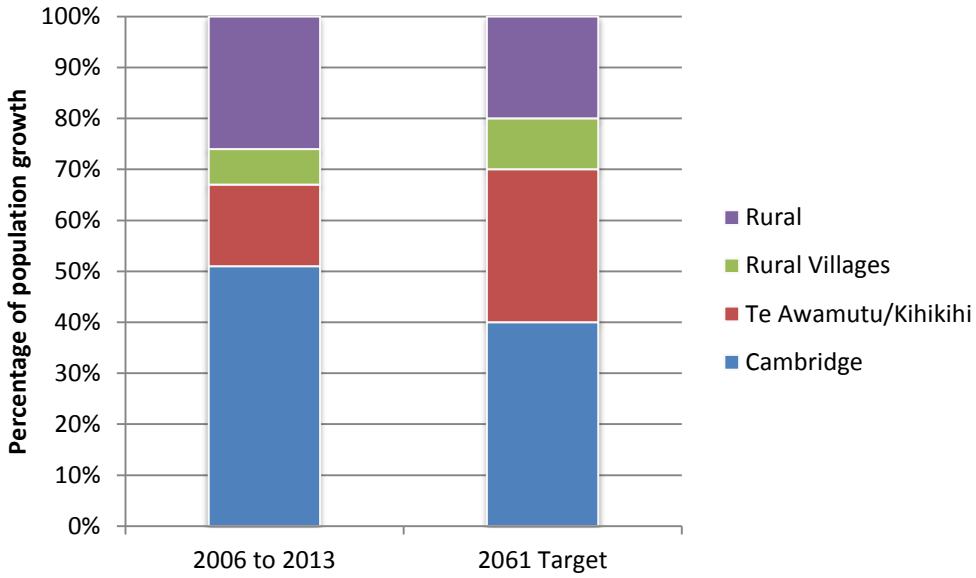

Figure 3 – Waipa District – percentage of population growth in urban and rural areas from 2006 to 2013

Policy changes

In order to align the population growth with the settlement pattern in the Future Proof Strategy and Waipa 2050 Strategy, Waipa District Council has proposed new, tighter rural subdivision rules within the Proposed Waipa District Plan. The Proposed Waipa District Plan was notified in May 2012 and is currently at the appeals stage. The rural subdivision rules do not take immediate effect under the Resource Management Act, so the effectiveness of these rules in reversing the trend of rural-residential subdivision in the rural zone will not be seen immediately and will take some time to occur.

The Operative District Plan Rural Zone rules provide for subdivision with a minimum lot size of 25 hectares and for Long Association Lots (LAH; for people who have owned a property for over 15 years). The Proposed District Plan has removed the LAH mechanism (Note: this is under appeal) and increased the minimum lot size in the rural zone to 40 hectares. The following determination of the potential number of lots that could be created under each scenario fails to consider lots with an existing consent notice restricting further subdivision and lots which are inappropriate for subdivision (e.g. stopped roads), so is likely an overstatement of the development potential:

- LAH subdivision created an average of 31 new lots per year between 2004 and 2009, 55 new lots per year between 2010 and 2012, and 76 new lots granted in 2013 to September 2014. Of those granted, 146 have yet to be proceeded with. There are currently approximately 1040 holdings that have currently been owned over 15 years that may be eligible for an LAH subdivision (Note: this figure includes the 146 approved LAH's not yet proceeded with). Potentially every year a new suite of owners could qualify for an LAH under the Operative District Plan (Waipa District Council Database, 2014).

- Minimum net lot area subdivision – Based on the areas of land on titles in the Rural Zone as at 30 October 2014, 2053 lots of 25 hectares could be generated under the Operative District Plan, or 782 lots of 40 hectares under the Proposed District Plan.

Note this does not take account of any consent notices on titles restricting further subdivision. In addition there are some areas of land in the District that our database does not have a title for – these have not been included in the analysis (Waipa District Council Database, 2014).

Legacy titles

There is difficulty in determining the number of legacy titles. There are a number of titles created for stopped road and road realignments of various sizes that both the operative and the proposed Waipa District Plan rules prevent being used for residential purposes, but are not identified in the databases. As they vary in size it would require a title by title search to identify them and exclude them. Although the GIS database does contain title information, the Waipa District Council rating database records properties and development on them on the basis of lots and holdings, rather than titles. There may be a number of lots on one title, and a number of titles per holding, which means it is not possible to determine precisely which titles do not have a dwelling on them without a property by property search. In the original attempt to do this, the information on development on different lots was found to not be particularly accurate, leading to an analysis of aerial photos to decide if the development was a dwelling or farm related buildings. The original data is not considered to be particularly robust.

Notes:

- *The identified urban limits are those which were established in the Future Proof Strategy*
- *Urban limits for the ex-Franklin district, now contained within the Waikato District, were determined based on urban-related district plan zones and structure plans*
- *Statistics NZ Census data at the mesh block unit level was used to calculated the 2006 and 2013 population figures. Unrounded 2006 and 2013 Census usually resident population data for Waipa and Waikato Districts was provided by Statistics NZ.*

Question 3

Is new industrial development being located in the strategic industrial nodes identified in Table 6.2 (Section 6D) of the Proposed RPS and in accordance with the indicative timings?

Maps 3 and 4 in Appendix 1 show industrial development within urban areas from 2009 to 2013 overlain with strategic industrial nodes (Proposed RPS) and industrial zones (district plans). The strategic industrial nodes are located inside the urban limits and include Rotokauri, Ruakura, Te Rapa North, Horotiu North, Hamilton Airport, Huntly and Rotowaro. The industrial zones are based on the Operative District Plans for Hamilton and Waikato, and the Proposed Plan for Waipa.

In 2013, only two industrial developments occurred in strategic industrial nodes out of a total of 24 (Table 8 and Figure 4). This is compared to five (total 21) in 2012, six (total 27) in 2011 and 23 (total 378) in 2010. More industrial developments occurred in industrial zones than strategic industrial nodes (also see Question 4). These results are expected, considering the strategic industrial nodes are long-term and some have recently been implemented. Now that the zoning and infrastructure provisions are in place, more development will occur in the nodes.

Table 8: Number of new industrial developments in urban areas

Location of industrial developments	2009 Baseline*	2010	2011	2012	2013	Total
Number in strategic industrial nodes	105	23	6	5	2	36
Number in industrial zones	1301	277	16	9	10	312
Number outside industrial areas (nodes/zones)	351	79	5	7	12	103

*Baseline figure showing total titles existing at 2009

Source: Waikato Regional Council Database

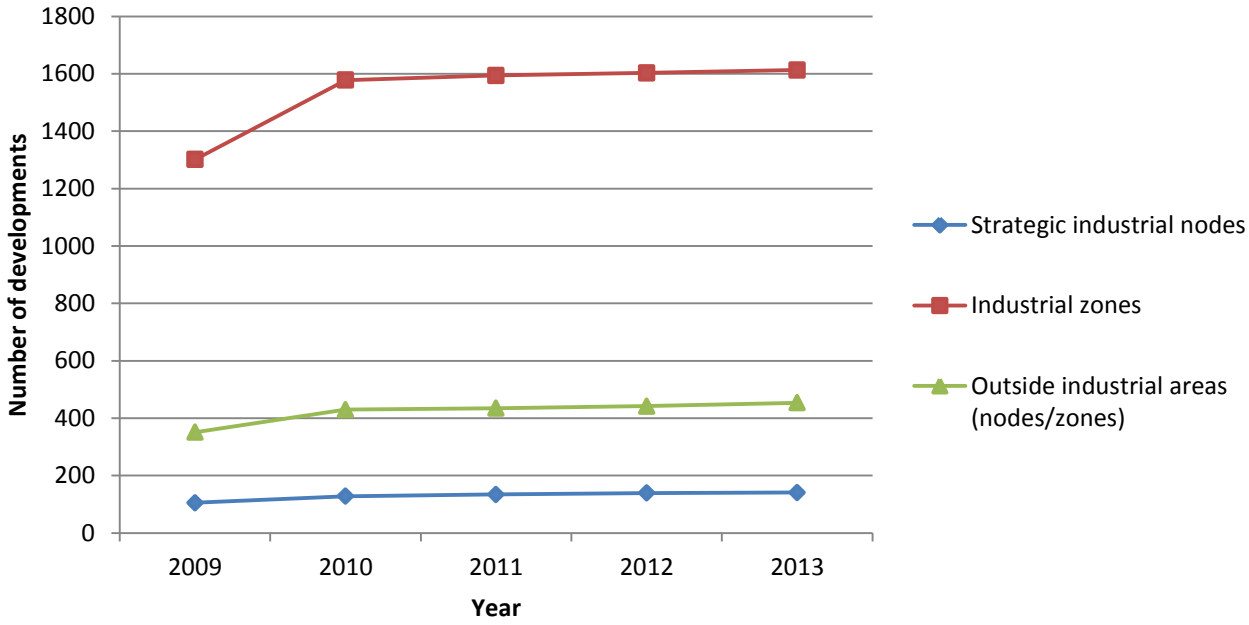

Figure 4 – Cumulative number of industrial developments in urban areas from 2009 to 2013

Table 6.2 of the Proposed RPS indicates land allocation and staging periods from 2010 to 2021, 2021 to 2040, and 2041 to 2061. Given that we are only a few years into the first period, this part of Question 3 will be addressed at a later date.

Notes:

- *The strategic industrial nodes are those that were established in the Future Proof Strategy and subsequently included in the Proposed RPS. Hautapu and the proposed first stage (80 hectares) of Ruakura have also been shown on the map, as these are two areas of additional interest to the Future Proof partners.*
- *Industrial development has been defined as sites 100 m^2 or larger and having a LINZ VNZ category code beginning with "I" but not "IV" (Industrial but not Industrial Vacant; see Appendix 5 for a summary of LINZ VNZ codes).*
- *In areas where strategic industrial nodes and industrial zones overlap, an industrial development is counted as being in the node and zone.*
- *Development is shown by identification of the entire site. The physical development may in fact only be on portion of the site.*
- *The map shows new industrial development as including subdivision and building. Due to the nature of the source data new building data alone is not available.*

Question 4

Is industrial development outside of the identified strategic industrial nodes (excluding rural based industry) generally occurring within the identified urban limits of settlements and within areas zoned for industrial uses?

In 2013, 10 industrial developments occurred in industrial zones out of a total of 24. This is compared to 9 (total 21) in 2012, 16 (total 27) in 2011 and 277 (total 378) in 2010. The remaining industrial developments occurred outside of industrial zones and strategic industrial nodes; this equates to a total of 103 developments from 2010 to 2013. According to Map 4, most of this development occurred in areas of Frankton (Hamilton City), Ruakura (Waikato District), Cambridge, Te Awamutu and Huntly, and occurred in zones appropriate for the purpose:

- Frankton: the area around Commerce Street and King Street in Frankton is zoned Commercial in the Operative District Plan. Service industry and light industry are permitted activities in this zone. In the Proposed District Plan this area is now zoned Industrial, but is currently under appeal. The area is subject to a 'Frankton Neighbourhood Plan', which will highlight the issues and actions in which to form the foundation of key projects and partnerships to transform the Frankton area.
- Ruakura: the industrial developments identified on Map 4 around Ruakura in the Waikato District are existing developments (sub-station and abattoir).
- Cambridge: the industrial area know as 'Carters Flat' in Cambridge is zoned Industrial in the Operative District Plan. This has since changed to Commercial in the Proposed District Plan.
- Te Awamutu: the area around State Highway 3 and Park Road is zoned General and Town Centre in the Operative District Plan and Commercial in the Proposed District Plan. New industrial developments in these areas include small businesses such as glaziers, mechanics and builders.
- Huntly: the area round Hakanoa Street and Park Ave is zoned Business, Light Industrial and Living in the Operative District Plan. New industrial developments in these areas include panel housing construction, a warehouse and yard.

Of the development occurring outside the industrial nodes/zones in 2013, 50% is within the urban limits. The data used for this mapping exercise does not differentiate between urban and rural industry so some visual interpretation is required to determine how much of the remaining 50% is actually rural industry. In general, it can be assumed that industrial development located away from urban centres is rural industry. It can be seen from Maps 3 and 4 that where urban based industrial development is occurring outside of the identified strategic industrial nodes and industrial zones it is generally occurring within the identified urban limits of settlements. The industrial development outside of the urban settlements is generally located well into the rural area and is assumed to be rural based industry.

Notes:

- *The industrial zones are based on the Operative District Plans for Hamilton City and Waikato District, and the Proposed Plan for Waipa District.*

Question 5

Is development occurring in areas with high quality soil?

Map 5 in Appendix 1 shows development overlain with areas of high quality soils within the Future Proof sub-region. 'Development' includes all developments except primary, outdoor recreation (e.g. the Department of Conservation) and water supply reserves.

In 2010 there were 1111 new developments outside of urban areas on high quality soils (Table 9). This decreased markedly in the following three years with 314 new developments in 2011, 423 in 2012 and 405 in 2013. This may be due to the global financial crisis and the downturn in the market. Alternatively, proposed changes to the Waipa District Plan and Waikato District Plan may have caused developers to progress more developments in 2010.

Table 9: Number of developments outside of urban areas on high quality soils

	2009 Baseline*	2010	2011	2012	2013
Number	10915	1111	314	423	405
Percentage	73%	75%	74%	75%	85%

*Baseline figure showing total titles existing at 2009

Developments exclude primary (not mining), outdoor recreation (e.g. Department of Conservation) and water supply reserves

Source: Waikato Regional Council Database

A large amount of the development on high quality soils is centred around Tamahere/Matangi, Te Kowhai/Whatawhata and Buckland/Waiuku within the Waikato District. As shown on Map 5, a significant part of the sub-region is denoted as being high quality soil. The Future Proof Strategy contains strategies and actions to limit non-productive development outside urban limits. The Proposed RPS contains provisions relating to the protection of high class soils from inappropriate subdivision, use and development. As discussed in Question 2, Waikato District Council has recently adopted Plan Change 2 which tightens the rules around rural subdivision and will reduce the amount of development and fragmentation on high class soils. Waipa District Council's Proposed District Plan (notified in May 2012) also has more restrictive rules around rural subdivision and was discussed in more detail in Question 2. Hamilton City Council's Proposed District Plan contains provisions which aim for a more compact city. All of these policy changes will further limit the future ability to develop on high quality soils outside of urban limits.

Notes:

- *LRI soil classes 1, 2 and 3 have been used to define high quality soils.*
- *Entire properties are mapped however buildings may only be located on a small portion of the property.*
- *Percentage calculations in the table on Map 5 are based on property numbers rather than area.*

Question 6

Is development adversely affecting the Waikato River, biodiversity, high value landscapes and heritage?

Information to answer this question data was collected through talking with council and NZTA staff working in the fields of compliance monitoring, planning and ecology. A total of 12 staff from Hamilton City Council, Waipa District Council, Waikato Regional Council, Waikato District Council and NZTA were interviewed to determine what they and their colleagues' experiences had been with regard to the adverse affects of developments (since 2009) on the Waikato River, biodiversity, high value landscapes and heritage.

It is acknowledged that many of the adverse effects identified have not been quantified through robust scientific monitoring and that evidence collected is in most cases anecdotal. Where there is evidence to support the adverse effects this is detailed.

In most cases mitigation requirements were deemed adequate to off-set the effects of consented development activities. However, many of those people interviewed identified adverse effects to biodiversity and the Waikato River that continue to be a problem, despite mitigation measures.

There was concern about the negative effects caused by the additional quantity, quality and speed of storm water runoff from impervious surfaces, particularly in areas of new subdivision. Excess sediment runoff from new building sites was also seen as a problem. The following adverse effects were identified as a result:

- Storm water ponds can increase the water temperature downstream, thus affecting aquatic life. Warm water conditions are often 'hot spots' for invasive species.
- In many cases developers dig out important wetland/seep areas to construct storm water ponds.
- Sediment runoff is deposited downstream in the Waikato River and provides a fertile substrate on which weeds flourish. This can have follow-on affects such as reduction in whitebait spawning habitat.
- Faster storm water runoff can lead to stream bank erosion which is then often repaired by installing erosion control structures such as rock rip-rap; this reduces in-stream habitat for aquatic life.
- The speed of storm water runoff creates flood like conditions during moderate rainfall events which is not a natural environment for aquatic life. Biodiversity is reduced as a result as only the most tolerant species survive.

There has been a lot of research on these issues throughout the world and they are well documented. A study on ecological values of Hamilton urban streams found that despite the effects of storm water runoff, some urban streams in Hamilton City support a range of fish species, including the threatened longfin eel and giant kokopu. The same study also recommended that although high value aquatic sites exist within the city's current storm water network, it is important to protect existing ecological values to avoid degradation from future development (Collier et al, 2009).

A study on the influences of catchment and corridor imperviousness on urban stream macro-invertebrate communities within Hamilton streams found that storm water influences in combination with upstream land management and riparian conditions (to moderate water temperature) were important factors influencing macro-invertebrate communities (Collier and Clements, 2010).

Hamilton City Council (as part of their comprehensive storm water discharge consent) has initiated an on-going ecological monitoring programme on streams within the city. Of particular interest to Future Proof will be the results on streams in the north of Hamilton where there is a lot of Greenfield development occurring.

Within the rural environment some negative effects to biodiversity were identified:

- The development and intensification of peat pasture through drainage is not well managed. There are currently no district plan rules around peat land management. Excessive peat drainage, particularly near wetlands or peat lakes results in the lowering water levels in those lakes and drying out of the wetland margin, thus affecting the entire ecosystem of the area.
- The clearance of native scrub along riparian margins as a result of farming intensification was seen as a threat to biodiversity. The scrub is not protected as a significant natural area (SNA) but provides important functions such as riparian shading.
- Many councils have rules to protect SNAs, however in most cases simply protecting the SNA and allowing development around them is not going to protect them long term. For example, protecting patches of vegetation within a gully system will not be sustainable unless the entire gully system is protected.
- Erosion caused by inappropriate land use and the conversion of steep land to pasture for grazing.

Some of the staff interviewed highlighted that many of the effects on the environment from development can be difficult to measure. Individual events such as scrub clearance may not have a significant measurable impact but cumulatively the impacts are more significant. Another example of this is the lowering of the Waikato River bed through sand abstraction. Ecologists know from anecdotal evidence that this lowers water levels which then affects wetlands on the margins of the river. However, it is virtually impossible to link this impact to single activities or events.

Staff interviewed felt there were inconsistencies on how biodiversity mitigation is applied and that guidelines were required. In many cases mitigation measures applied of offset the loss of ecosystems have not been adequate to replace the ecosystem that was lost. For example, replanting to mitigate for loss of habitat is very common but the newly planted areas are rarely ever as ecologically significant as the original habitat.

There were no adverse effects identified in relation to high value landscapes and heritage. The only point to note was that the council's definition of a heritage building is sometimes different to the public's opinion of what constitutes a heritage building that should be protected and this is where conflict arises.

Question 7

Is the location of development resulting in reverse sensitivity issues?

This question is also related to Question 17 – 'Is there evidence of any new conflicts between landuse and infrastructure development?' This section therefore aims to answer both of these questions.

Information to answer this question was collected through talking with council and NZTA staff working in the fields of compliance monitoring, planning and ecology. A total of 12 staff from Hamilton City Council, Waipa District Council, Waikato Regional Council, Waikato District Council and NZTA were interviewed to determine what they and their colleagues' experiences had been with reverse sensitivity issues associated with new development (since 2009).

The following commonly occurring reverse sensitive issues and/or conflicts were identified:

- Residential development within historic market gardening areas has led to an increase in complaints about mud on roads in the Pukekohe area. Council staff are working with market gardeners to try and reduce the amount of mud left on roads. Reverse sensitivity issues between market gardeners and residential developments are likely to continue into the future as Auckland Council residential development spreads south from Auckland into market gardening areas of Pukekohe and Tuakau.
- Complaints in relation to dust and vibration during construction of new roads and areas where there is large scale earthworks such as new sub divisions are common. In situations where the public are kept well informed of the earthworks timeline and potential effects there are generally less complaints.
- In some districts, asphalt surfacing and upgrading of roads has created public expectations for the same work to be undertaken elsewhere. This is not strictly a reverse sensitivity issue but an unforeseen circumstance of development that then puts additional pressure on councils.
- The development of a new school near Cambridge has resulted in an un-anticipated increase in traffic volumes on certain roads as people travel from out of zone to drop their children at the new school instead of their local school.
- Many residential developments are undertaken with one or two access points to a main road so that speed limits can be kept higher on the main road and traffic flow maintained. In same cases residents have put pressure on councils to lower these speed limits.
- New residential development in north Hamilton has resulted in re-occurring complaints about noise from a helicopter, required by a nearby horticultural operation at certain times of year. This horticultural operator has since ceased operating.
- Within Hamilton City there are occasional reverse sensitivity issues around noise from commercial activity in the CBD impacting on inner city living.

2.2 Density Targets for Future Proof Area

Question 8

Is there progress towards achieving the desired gross (excluding roads) residential development densities as set out below?

a. 50 households/hectare: Hamilton Central Business District
b. 30 households/hectare: Hamilton Intensification Areas (Infill)
c. 16 households/hectare: Hamilton Greenfield
d. 12-15 households/hectare: Greenfield development in Cambridge, Te Awamutu/Kihikihi, Huntly, Ngaruawahia, Raglan/Whaingaroa and Te Kauwhata
e. 8-10 households/hectare: Greenfield in Waikato District rural villages where sewerage is reticulated.

Each Future Proof council has been working in a slightly different way to give effect to the Future Proof density provisions.

Hamilton City

Residential development densities for Hamilton City will be reported at a later date and will be determined in conjunction with the monitoring of the Hamilton City Council's Proposed District Plan (PDP).

Hamilton City Council's Operative District Plan 2012 makes provision for a variety of densities of residential development. This includes the Residential Zone, Special Character Zones and High Density Residential areas. Additionally, in the Greenfield/structure plan areas there are provisions in place for a variety of densities.

In the Rototuna Structure Plan there is specific reference to the Proposed RPS densities for Greenfield areas. This makes provision for 16 dwellings per hectare (dph) across the Structure Plan area. These are to be achieved via a number of residential zones including medium and high density residential areas identified within the growth cell. The Rototuna provisions introduce a maximum site size for the first time as a mechanism to achieve the average density across the growth cell of 16 dph which is in accordance with the Future Proof target. The Rotokauri Structure Plan area also includes provisions for higher density housing.

From 1 July 2013 Hamilton City Council also introduced a 1/3 reduction in development contribution charges for residential units in Rototuna medium density zones with net site area of less than 350m^2 per unit, and a 2/3 reduction for attached dwellings in the infill high density zones.

Hamilton City Council's PDP was notified in 2012. It includes objectives and policies which seek to ensure a range of housing types and densities to meet the needs of all communities. The policies refer to the Future Proof and Proposed RPS density targets, being: 16 dph for Greenfield development (excluding identified large lot residential areas), 30 dph for identified intensification areas, and 50 dwellings per hectare in Hamilton City.

Higher density development is provided for within and close to the Central City, suburban and neighbourhood centres, tertiary education facilities and the hospital and in areas serviced by passenger transport. The RPS density targets are to be achieved by managing lot sizes in existing developed areas and subdivision yields in structure plan areas.
There are four proposed residential zones in the PDP that promote opportunities for different dwelling densities - General Residential, Residential Intensification, Medium-Density and Large Lot Residential.

The residential zones assist in creating a compact city. The Central City Zone also contributes significantly to the residential strategy by providing opportunities for higher-density living in the Central City. There are also a number of special character zones that are intended primarily for residential purposes and provide for a particular type of residential character and amenity.

Waikato and Waipa Districts
Map 6 in Appendix 1 shows the density of residential development in the Waikato and Waipa districts in 2013. Table 10 shows how residential densities have changed over time from 2009 to 2013.

Densities shown are net densities and were calculated by taking the total area of the residential properties (excludes roads and greenspace) and dividing that by the count of residential properties. To calculate gross density, 20% was added to the total area of the residential properties as this is the estimated area of roads and greenspace. It was not possible to calculate gross density excluding roads (due to data limitations) as per the Future Proof figures; however the figures in Table 10 give an indication of density and shows changes over time.

Within the large towns, gross densities ranged from 7.2 to 10.2 lots per hectare in 2013, but this is expected to change over time as more intensive Greenfield developments occur in these areas. The target density for large towns is 12-15 lots per hectare. Most of the rural villages had a gross density of between 6.0 and 9.7 lots per hectare which is approaching the target density of 8 to 10 houses per hectare. The exception is Eureka with a density of 3 lots per hectare.

Table 10: Net and Gross Densities (lots per hectare) of residential development between 2009 and 2013

	2009		2010		2011		2012		2013	
Location	**Net* Density**	**Gross** Density**	**Net Density**	**Gross Density**	**Net Density**	**Gross Density**	**Net Density**	**Gross Density**	**Net Density**	**Gross Density**
Large Towns										
Cambridge	11.8	9.8	11.8	9.8	11.8	9.9	11.9	9.9	11.9	9.9
Te Awamutu	11.6	9.7	11.7	9.8	11.7	9.8	11.8	9.8	11.6	9.7
Raglan	11.2	9.3	11.3	9.4	11.3	9.4	11.3	9.4	11.3	9.4
Huntly	11.0	9.1	11.0	9.1	11.3	9.4	11.3	9.4	11.3	9.4
Ngaruawahia	11.4	9.5	11.5	9.6	11.5	9.5	11.5	9.6	11.6	9.6
Tuakau	11.6	9.6	11.7	9.8	12.0	10.0	11.9	9.9	12.3	10.2
Pokeno	7.9	6.6	7.9	6.6	7.8	6.5	9.0	7.5	8.6	7.2
Te Kauwhata	9.9	8.2	9.9	8.3	9.9	8.3	10.0	8.3	10.0	8.3
Rural Villages										
Matangi	10.1	8.5	10.1	8.5	10.1	8.5	10.1	8.5	10.1	8.5
Taupiri	7.1	5.9	7.1	6.0	7.0	5.9	6.9	5.8	7.2	6.0
Eureka	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Gordonton	8.0	6.7	8.0	6.7	8.0	6.7	7.3	6.0	7.3	6.0
Maramarua	9.0	7.5	9.0	7.5	10.0	8.3	10.0	8.3	10.0	8.3
Meremere	11.6	9.6	11.6	9.7	11.6	9.7	11.6	9.6	11.6	9.7
Horotiu	7.6	6.4	8.3	6.9	7.9	6.5	7.6	6.4	7.6	6.4
Te Kowhai	9.4	7.9	9.4	7.9	8.6	7.2	8.6	7.2	8.6	7.2
Port Waikato	11.3	9.4	11.3	9.4	11.6	9.7	11.6	9.7	11.6	9.7
Whatawhata	9.0	7.5	9.0	7.5	9.3	7.7	9.3	7.7	7.6	6.3

*Net residential densities are the number of rateable properties per hectare within each identified residential area (excludes roads, green space, non-residential property). Rateable properties are used in lieu of compatible dwelling data across the study area.

**Gross residential densities have been calculated by adding 20% to the residential area to account for roads and green space.

Source: Waikato Regional Council Database, 2014

Waikato District Council is giving effect to the higher density provision in the Future Proof Strategy through the development of structure plans for selected towns and villages. The Te Kauwhata and Tamahere Structure Plans are now operative and they are currently in the process of developing a structure plan for Ngaruawahia (and surrounds) and for Tuakau. Developers are then required to adhere to minimum lot sizes.

The Waikato District Plan refers to the Waikato District Growth Strategy (which has also informed Future Proof). Of specific relevance is reference to the Future Proof settlement pattern and increasing "*the density of development within the district to ensure that most efficient use is made of infrastructure, services and facilities which will help reduce the demand for land which in turn will reduce the need for travel and the travel distances".*

The Waipa Proposed District Plan allows for a range of minimum net lot areas ranging from 500m^2 to 1000m^2 depending on area specific amenity values which equates to 12 to 15 per hectare. The rules in the PDP also provide for compact housing in specific areas, and retirement villages that enables a greater density of residential use.

Notes:

- *Residential densities shown are the number of rateable properties per hectare within residential areas (areas do not include roads, green space, etc.).*
- *Properties are used in lieu of dwellings due to reliable dwelling data not being available.*
- *The identified urban limits are those which were established in the Future Proof Strategy.*
- *Urban limits for the ex-Franklin district, now contained within the Waikato District, were determined based on urban-related district plan zones and structure plans.*
- *Residential development has been defined as having a LINZ VNZ category code starting with RA, RC, RD, RF, RH or RR (see Appendix 5 for a summary of LINZ VNZ codes).*

2.3 Commercial Development in Future Proof Area

Question 9

Where is significant commercial development occurring in the Future Proof area, with particular focus on retail and office development?

Building consent information from Statistics NZ showing newly consented commercial building floor areas from 2006 to 2013 (year ending September) was analysed to answer this question. For the purpose of this analysis, commercial buildings include shops, restaurants, taverns and office and administration buildings.

This data used for analysis within districts is based on Census Area Unit (CAU) boundaries which have a slightly different alignment to the Future Proof urban limits boundaries. The following census area unit boundaries were used and are illustrated in the CAU map (Figure 5):

- Huntly = Huntly West and Huntly East CAUs
- Te Kauwhata = Te Kauwhata CAU
- Ngaruawahia = Ngaruawahia CAU
- Tuakau = Tuakau, Opuawhanga CAUs
- Cambridge = Hautapu, Swayne, Cambridge North, Cambridge West, Cambridge Central, Lemington West and Lemington East
- Te Awamutu/Kihikihi = Kihikihi, Kihikihi Flat, Te Awamutu West, Te Awamutu Central, Te Awamutu East, Te Awamutu South.

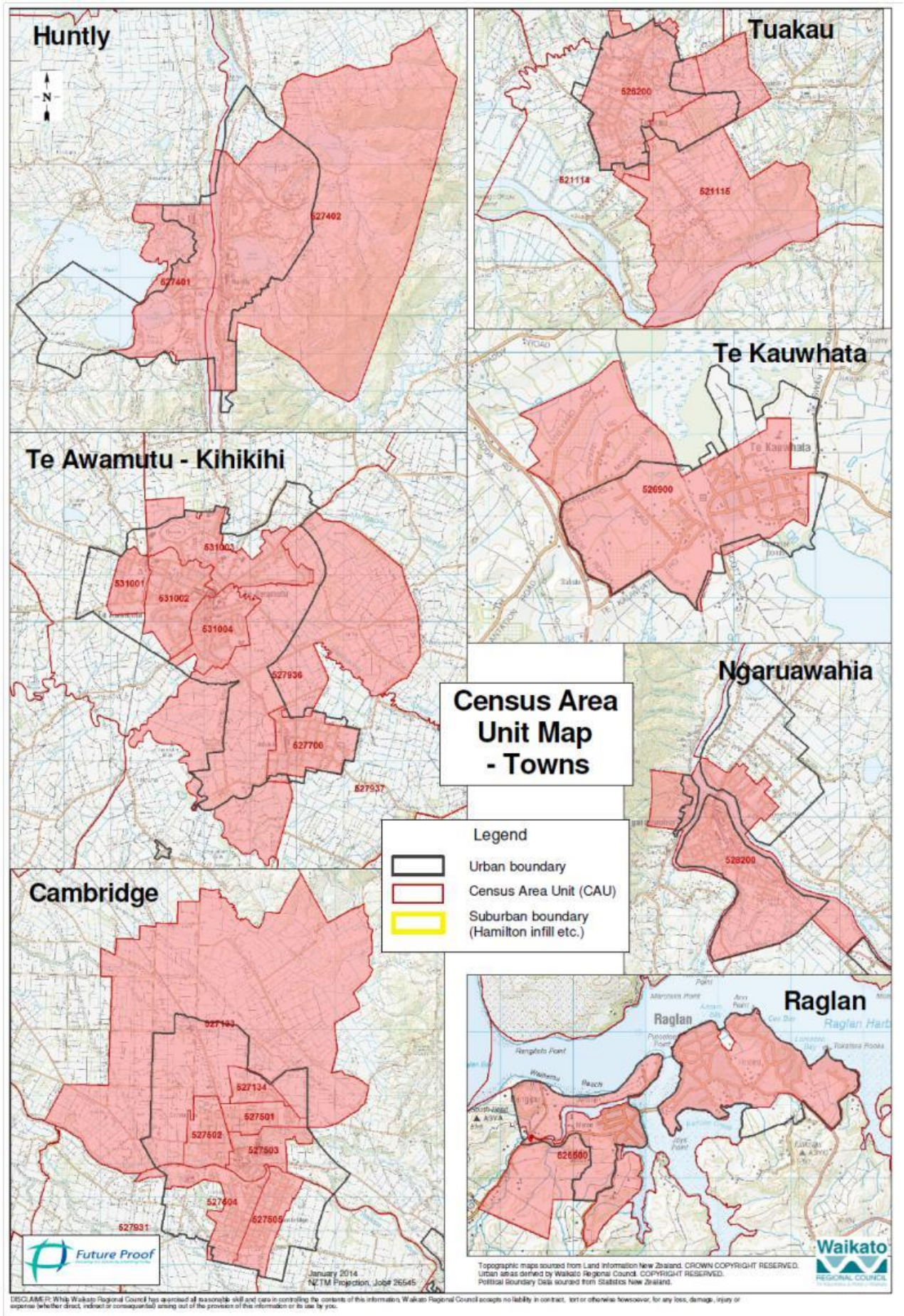

Figure 5 - Census Area Unit map: shaded areas represent the census area units that were used in data analysis

Future Proof Sub-Region Overview

Across the Future Proof sub-region the amount of new commercial floor space has fluctuated from 2006 to 2013 (Figure 6). Hamilton City experienced more significant commercial development in 2006 and 2009 compared to other years, while Waipa District growth peaked in 2011 at 14,836m^2 (new floor area) and has decreased to 1,364m^2 (new floor area) in 2013. There has been very little new commercial floor space in the Waikato District since 2009. The new floor space in the 2009 year was predominantly in the ex-Franklin District area.

As would be expected, most commercial growth between 2009 and 2013 within the sub-region occurred within Hamilton City, although in 2011 the Waipa District experienced more commercial growth than Hamilton City. There was a lull of activity in Hamilton that year, whilst there was activity associated with a new retail area next to PaknSave in Te Awamutu, Waipa. It is important to note that the floor area for consented commercial activities is counted at the time of the first consent so it may show up in the monitoring results earlier than when the building activity occurs.

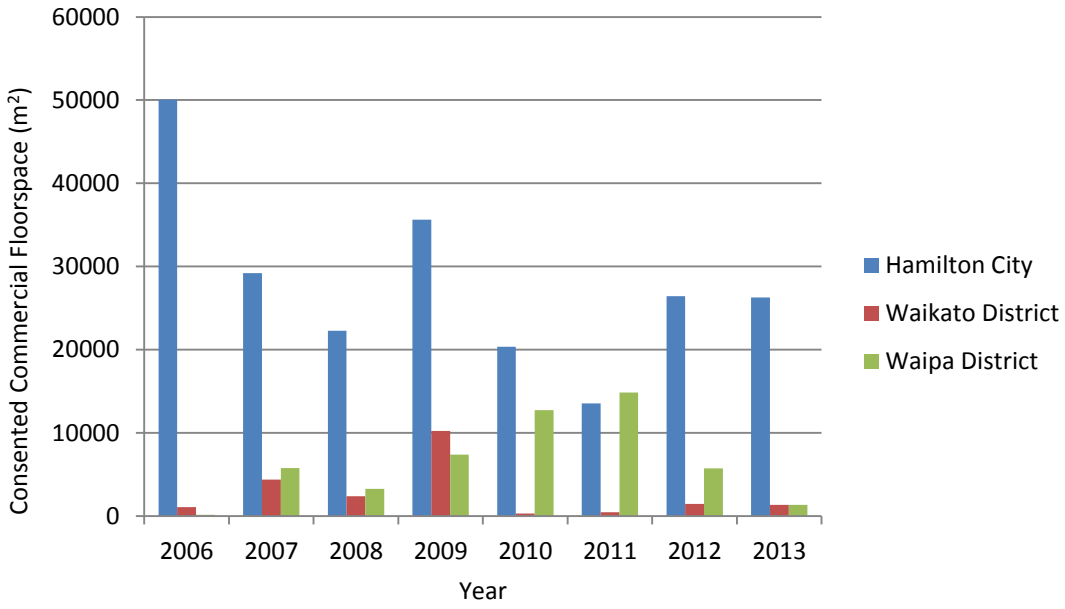

Figure 6 - Consented commercial floor space in Hamilton City, Waikato District and Waipa District

Hamilton City

Significant commercial development continues to occur within Hamilton City. Figure 7 shows the distribution of retail consents in Hamilton City from 2000 to 2012. As can be observed, a large percentage of new retail and commercial floor space that has been consented has been located to the north of the city away from the CBD. This trend has continued since the adoption of the Future Proof Strategy in 2009, and in 2012 50% of retail consents were granted for The Base/Te Rapa. The Hamilton Proposed District Plan introduces a hierarchy of business centres. This seeks to give effect to the RPS which calls for the Central City to be recognised and enhanced as the primary retail, economic, business and social centre of the Future Proof area.

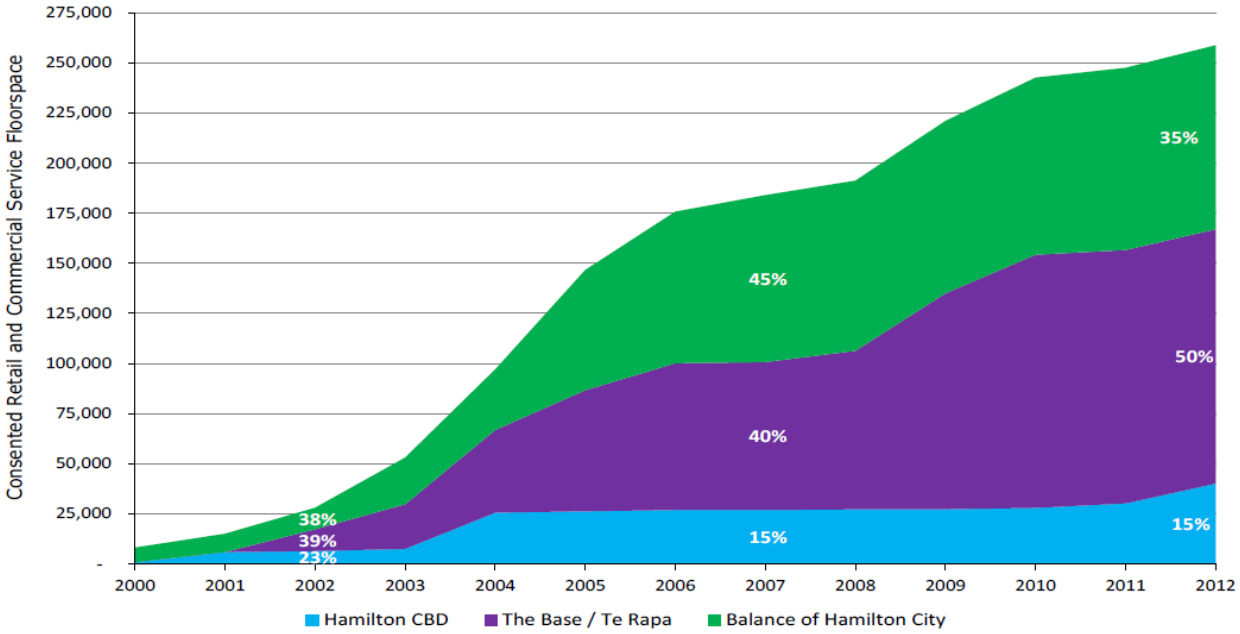

Figure 7 - Distribution of retail consents in Hamilton City

Source: Hamilton City Council, 2013a

As at 2013, Te Rapa had 29% of all commercial rateable floor space in Hamilton, up from 24.9% in 2009. Hamilton CBD had 12.4% in 2013, up from 12.2% in 2009 and Hamilton's other main commercial centre, Chartwell had 1.2% in 2013, up from 1% in 2009. This is shown in Table 11, along with comparisons with the CBD periphery and Frankton.

Table 11: Total commercial rateable floor area in Hamilton

Year	4002		4003		4180		4041		4212		Total
	CBD core		CBD periphery		Te Rapa		Frankton		Chartwell		
	Floor area	% of all comm	Floor area	% of all comm	Floor area	% of all comm	Floor area	% of all comm	Floor area	% of all comm	
1995	305,130	13.8%	375,540	17.0%	397,230	17.9%	194,940	8.8%	31,590	1.4%	2,213,510
1998	318,967	13.7%	380,230	16.4%	444,484	19.1%	195,813	8.4%	31,590	1.4%	2,324,347
2000	344,142	13.7%	358,082	14.2%	549,009	21.8%	202,592	8.0%	32,860	1.3%	2,519,162
2003	369,245	13.3%	401,836	14.5%	650,557	23.5%	206,620	7.5%	33,195	1.2%	2,770,135
2006	394,363	12.3%	410,745	12.8%	806,080	25.1%	221,310	6.9%	33,353	1.0%	3,216,718
2009	393,579	12.2%	413,204	12.8%	804,601	24.9%	221,596	6.9%	33,557	1.0%	3,225,752
2013	387,498	12.4%	387,920	12.4%	904,661	29.0%	208,574	6.7%	36,013	1.2%	3,117,413

Source: Hamilton City Council, 2013a

Questions 10 and 11

Is commercial development occurring in identified commercial centres and/or zoned areas?
Is commercial development occurring in industrial areas?

Maps 7 and 8 in Appendix 1 show commercial development overlain with commercial centres, strategic industrial nodes and industrial zones.

In 2009, 53% of commercial development occurred within areas zoned for commercial purposes. Percentages were similar in 2010 and 2011, but increased markedly in 2012 and 2013 which saw a much larger proportion of commercial development situate in commercial zones (Table 12 and Figure 8).

A small number of commercial developments occurred in strategic industrial nodes or industrial zones from 2009 to 2013 (1-10%). Some commercial development will situate in industrial zones/nodes as it is not uncommon for industrial activity to have an ancillary commercial outlet attached.

An analysis was undertaken to look at the types of commercial development occurring outside of the commercial and industrial areas in 2013. The types of development found are still consistent with the Future Proof Strategy and included childcare centres, shops next to suburban centres (e.g. Peachgrove Road shops) and development at the Hamilton Airport.

Table 12 – Number of new commercial developments in commercial centres/zones and industrial areas

Location of commercial developments	2009 Baseline*	2010	2011	2012	2013
Number in commercial centres/zones	1759	441	56	66	110
% in commercial centres/zones	53%	58%	49%	85%	75%
Number in strategic industrial nodes	35	9	5	0	1
% in strategic industrial nodes	1%	1%	4%	0%	1%
Number in industrial zones	252	54	7	1	14
% in industrial zones	8%	7%	6%	1%	10%

*Baseline figure showing total titles existing at 2009

Source: Waikato Regional Council Database

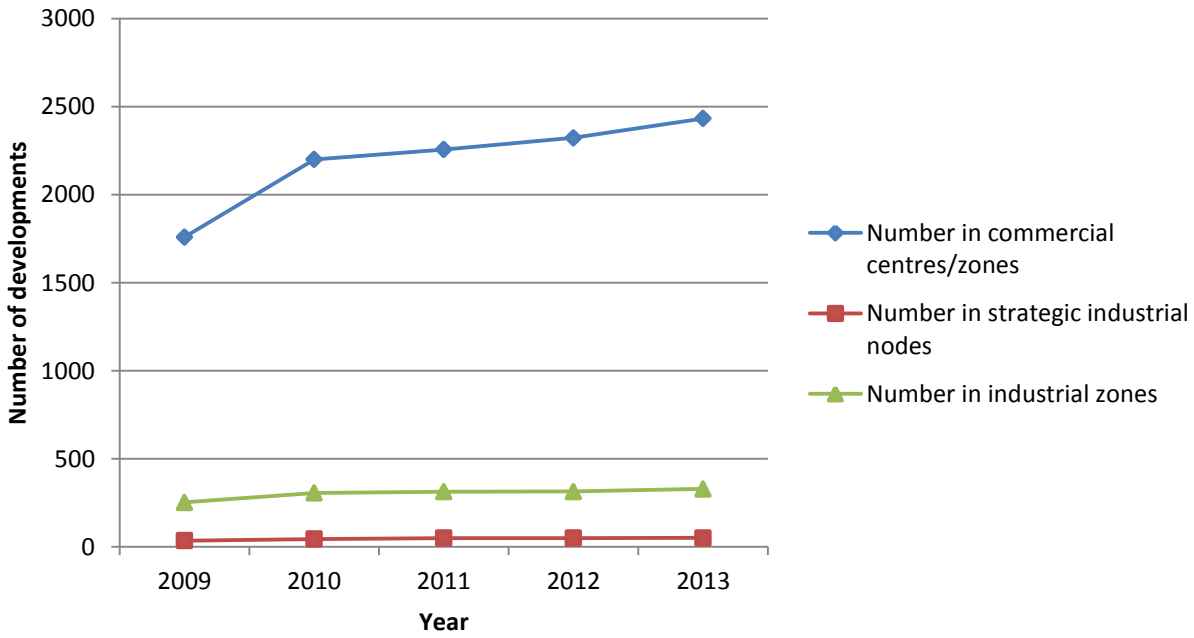

Figure 8 – Cumulative number of commercial developments in commercial centres/zones and industrial areas from 2009 to 2013

Notes:

- *Commercial areas, including the Commercial Centres identified in the Proposed RPS, have been identified based on district plan zoning.*
- *With the exception of the CBD, Chartwell and Te Rapa North, commercial zones in Hamilton City have not been identified on the map.*
- *Commercial development has been defined as having a LINZ VNZ category code starting with C but not CV (Commercial but not Commercial Vacant; see Appendix 5 for a summary of LINZ VNZ codes).*
- *Development is shown by identification of the entire site. The physical development may in fact only be on portion of the site.*

2.4 Rural Residential Development in Future Proof Area

Question 12

Is rural residential growth occurring in and around existing urban areas and in areas zoned for this purpose?

Map 9 in Appendix 1 shows lifestyle property development within the Future Proof sub-region overlain with the rural residential zone boundaries and Future Proof urban limits.

In 2010 there were 682 new lifestyle developments within the Future Proof sub-region (Table 13). The number of new lifestyle developments decreased markedly in the following three years with only 234 new lifestyle developments in 2011, 182 in 2012 and 208 in 2013. This is likely to be due to the global financial crisis but may also be due to developers progressing their subdivisions before District Plan changes/provisions to restrict rural subdivision.

Cumulative figures from 2009 to 2013 show a steady increase in the percentage of lifestyle properties outside rural residential zones (Table 14 and Figure 9). This trend is contrary to the Proposed RPS and Future Proof population allocations, which represent a shift towards a more concentrated nodal form, with a reduction in dispersed rural development. However, this is likely to change in the future with the introduction of policy changes to restrict rural subdivision within Waikato District. There will still be large numbers of consents granted under the previous planning regime, which are currently being implemented or will be implemented in upcoming years. This is discussed in more detail in Question 2.

Table 13 – Number of new rural residential (lifestyle) properties

Location of lifestyle properties	2009 Baseline*	2010	2011	2012	2013
Number of lifestyle properties	9985	682	234	182	208
Number of lifestyle properties outside rural residential zones	7815	590	186	162	184

*Baseline figure showing total titles existing at 2009

Table 14 – Cumulative number of rural residential (lifestyle) properties outside rural residential zones

Location of lifestyle properties	2009 Baseline*	2010	2011	2012	2013
Total number of lifestyle properties outside rural residential zones	7815	8405	8591	8753	8937
% of lifestyle properties outside rural residential zones	78.3%	78.8%	78.8%	79.0%	79.2%

*Baseline figure showing total titles existing at 2009

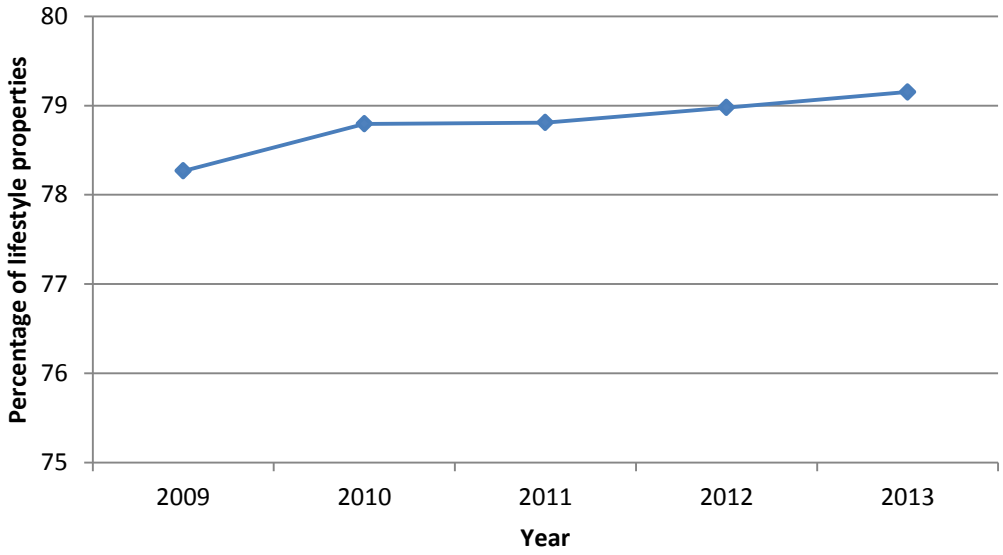

Figure 9 – Cumulative percentage of lifestyle properties outside rural residential zones from 2009 to 2013

Notes:

- *Lifestyle development has been defined as 4 hectares or less and having a LINZ VNZ category code beginning with LI or Li (see Appendix 5 for a summary of LINZ VNZ codes).*
- *Development is shown by identification of the entire site. The physical development may in fact only be on portion of the site.*

2.5 Infrastructure

Question 13

Is development occurring in areas with sufficient existing or planned infrastructure?

Residential development is predominantly occurring within the urban limits and in accordance with the Future Proof settlement pattern. However, Maps 3, 4, 7 and 8 show that some industrial and commercial development occurred outside of areas zoned for that purpose. To determine whether there is sufficient existing or planned infrastructure within these areas research was undertaken to determine whether any new infrastructure or infrastructure upgrades were planned to help service the new out of zone development.

An initial review of each district's Long Term Plans and the Waikato Regional Land Transport Programme has found that there is good alignment between programmed infrastructure works and the Future Proof settlement pattern.

The Future Proof Sub-Regional Infrastructure Overview (to be completed in 2015) will further investigate whether there are any additional infrastructure requirements to service the Future Proof land use pattern.

The purpose of the Overview is to identify and document the strategic infrastructure issues and challenges facing the sub-region and to achieve an alignment between land uses contained in the current settlement pattern and future infrastructure needs.

Question 14

What major infrastructure changes and upgrades are occurring in the Future Proof area? Is there alignment between the Future Proof land use pattern and infrastructure investment?

The Future Proof Sub-Regional Infrastructure Overview (to be completed in 2015) will investigate this question and will be reported at a later date.

Question 15

Is development occurring in commercial centres with access to a variety of transport modes?

GIS mapping was undertaken to overlay Commercial Centres within the Future Proof sub-region with walkways/cycleways and bus routes. Overall development appears to be occurring in commercial centres with access to a variety of transport modes.

Map 10 in Appendix 1 illustrates the location of Commercial Centres compared with the regional bus routes and the cycle network. Within most of the small towns and rural villages there is also a network of footpaths and walkways allowing foot access to commercial areas.

Within Hamilton City there is a comprehensive network of walking and cycle ways (shown on Map 11 in Appendix 1). However, some purpose built cycle ways and cycle lanes are not joined up so cyclists must also commute along roads.

Hamilton City also has a comprehensive bus network linking all of the Commercial Centres to bus routes.

Question 16

What transport trends are occurring with respect to private transport, public transport, walking and cycling and freight movements?

Bus Patronage

The Waikato Regional Council collates information on bus patronage data through the electronic ticketing system. Public transport patronage has increased steadily since 2002/03 and continued to increase throughout the implementation of the Future Proof Strategy (2009 onwards). Figure 10 shows the total public transport patronage numbers for rural bus services (all services outside of Hamilton) and urban bus services (services within Hamilton) between the 2002/03 financial year and the 2011/12 financial year.

The total patronage for the region in the 2011/12 financial year was 5.1 million. This is a 4% increase from the previous year (2010/2011). The total patronage for Hamilton City increased 2.5% from 2010/11 to 2011/12 up from a 1.1% increase the previous year. The total patronage for rural services in the 2011/12 financial increased 23.3% from 2010/11.

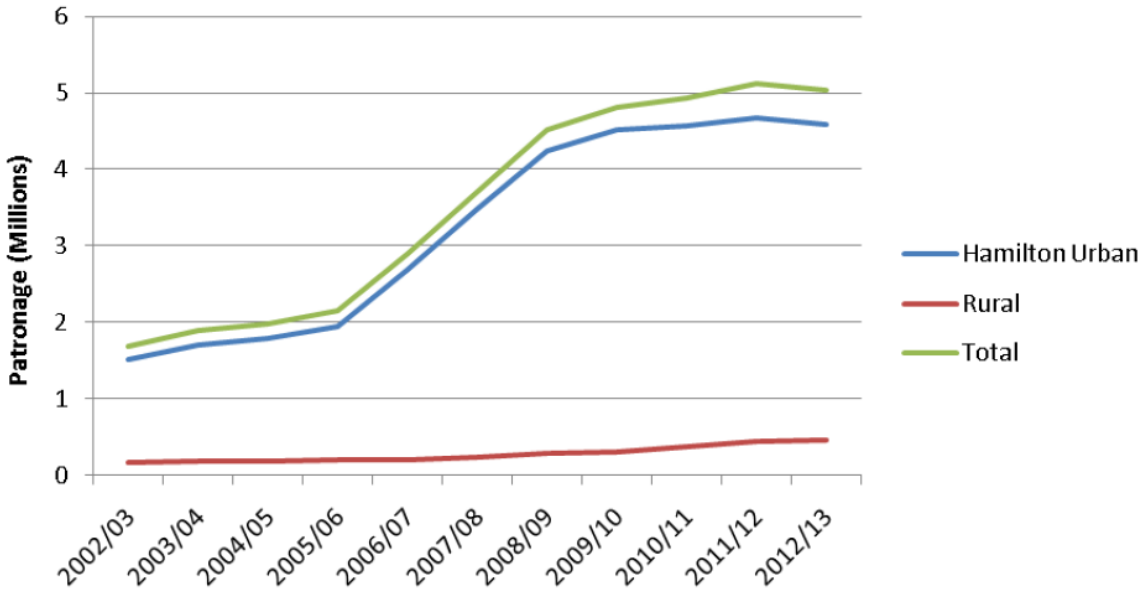

Figure 10 - Annual Waikato passenger transport patronage 2002/03 to 2012/13
Source: Waikato Regional Council, 2013

Cycling

No baseline data is currently available for the Future Proof sub-region on cycling trends. At a district level, Hamilton City has an annual counting programme for pedestrians and cyclists and the Waikato Regional Council has recently undertaken research on rural cycling patterns in Waipa.

The annual Hamilton City cycle count was undertaken in 2013 at central city and suburban intersections. There are currently 22 location points for the central city cordon and seven count locations for the suburban intersection counts.

Figure 11 shows the total number of cyclists at suburban intersections in the city had increased 4% from 2012 to 2013 with 1165 cyclists in 2013 compared to 1119 in 2012. There has been an increasing trend since 2008 of 9%.

The total number of cyclists entering and exiting the city was 1578 in 2013 compared to 1959 in 2012, which is an annual decrease of 19%. The total number of cyclists entering and exiting the city since 2008 has increased by 22%; however, there is a suspected anomaly in the 2012 cyclist count due to miscounting at one location. This is thought to have overstated the 2012 counts by approximately 400. If this is true then it would mean that the cyclist numbers in 2013 have increased by 1.2% from 2012 instead of a decrease.

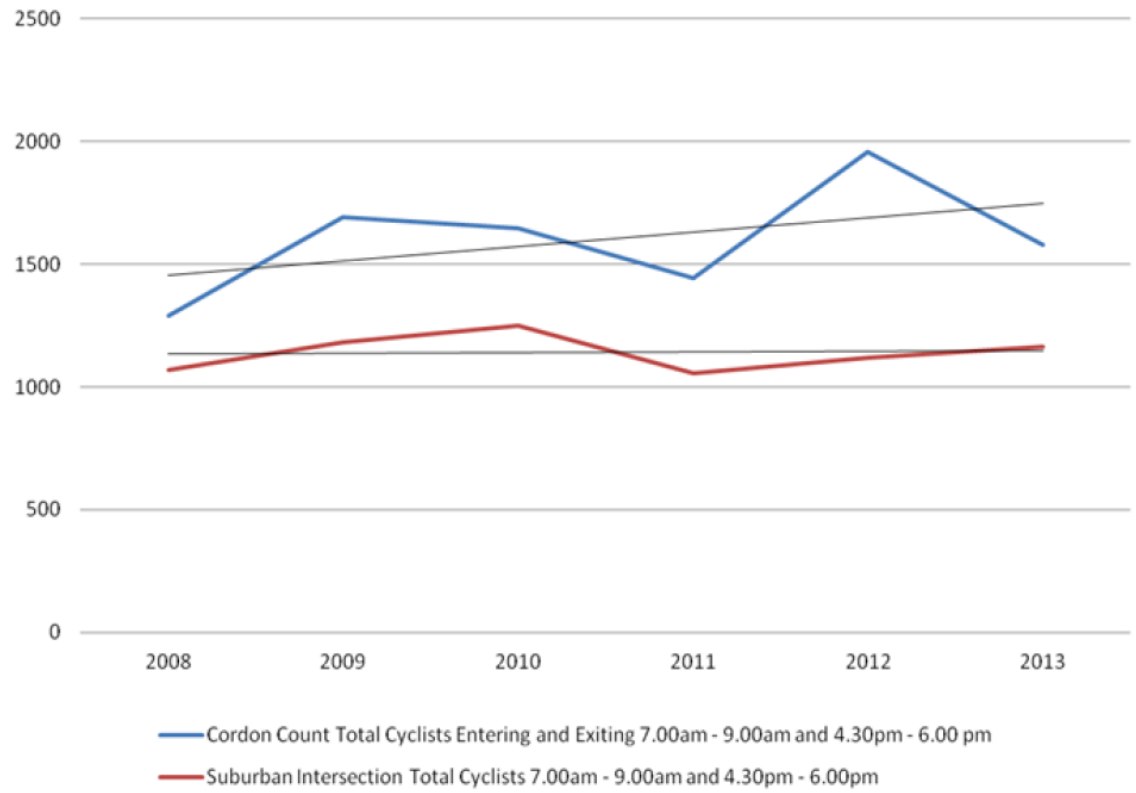

Figure 11 - Trends in cycle use 2008 to 2013 in Hamilton City
Source: Waikato Regional Council, 2013

Development of Walking and Cycle Trails

The development of walking and cycling trails in the sub-region continues to progress rapidly.

The Waikato River Trails were opened in November 2011 and cover about 100km of previously inaccessible Southern Waikato land. The trails comprise five sections: Karapiro, Arapuni, Waipapa, Maraetai and Whakamaru. For most cyclists, the entire journey takes three to four days, and walkers five to seven days. The Waikato River Trails has a shuttle service to transport customer's bikes and bags between sections (Waikato River Trails website, accessed January 2015).

The Te Awa River Ride is being built in seven sections, with the full 70km expected to be completed in 2015. The sections through Hamilton City and between Cambridge and the start of the rowing course at Lake Karapiro have been completed. The current status of the seven sections is as follows (Te Awa website, accessed January 2015):

- Section A, Ngaruawahia to Horotiu: construction is currently underway on this section.
- Section B, Horotiu to Hamilton Equestrian Centre: construction is complete and this section opened in December 2013.
- Section C, Hamilton: a walkway already exists through much of Hamilton City. Te Awa will enhance the existing trail and develop additional connections to key features within the City.
- Section D, Hamilton to Avantidrome: construction is expected to be completed by mid-2015.
- Section E, Avantidrome to Leamington: this section was opened in April 2014.

- Section F, Cambridge to Mighty River Domain: this section links Leamington to the Mighty River Domain at Lake Karapiro and was completed in 2010.
- Section G, Mighty River Domain to Horahora: the remaining trail will be progressed from mid-2015.

The location of walking and cycle trails in the Future Proof sub-region is illustrated on Map 10 in Appendix 1. This is based on information held by the Waikato Regional Council.

Hamilton City council has also been increasing its network of walking and cycling trails across Hamilton City and now has a comprehensive network covering most of the city. Map 11 in Appendix 1 shows a detailed view of cycling and walking trails within Hamilton City.

Private Transport

Census travel to work data for 2013 is scheduled to be released by Statistics NZ early 2015. This information will be reported at a later date when the data is available.

Freight Movements

The Ministry of Transport (2014) National Freight Study identified that approximately 50 tonnes of freight is moved per year for each member of the population. The movement of freight plays a vital role in New Zealand's economy. The Study projects that New Zealand's freight task will increase by about 50% over the next 30 years, which will mean an extra 137 million tonnes (or an extra 13 billion tonne/km) of freight moved by 2042.

Since 2006/07 the freight modal split has remained broadly unchanged with road continuing to move around 70% of the freight task (in terms of tonne-km). Rail has increased its proportion of the freight task since 2006/7 by 1% to 16% and coastal shipping has moved from 15% of the total freight task to 14% (tonne-km).

Whilst the modal split has remained fairly constant, there have been some significant changes in the volumes carried of particular commodities. Figure 12 shows that since 2006/07 there have been significant changes for a number of primary products including a large increase in the movement of export logs and a decrease in the movement of aggregates.

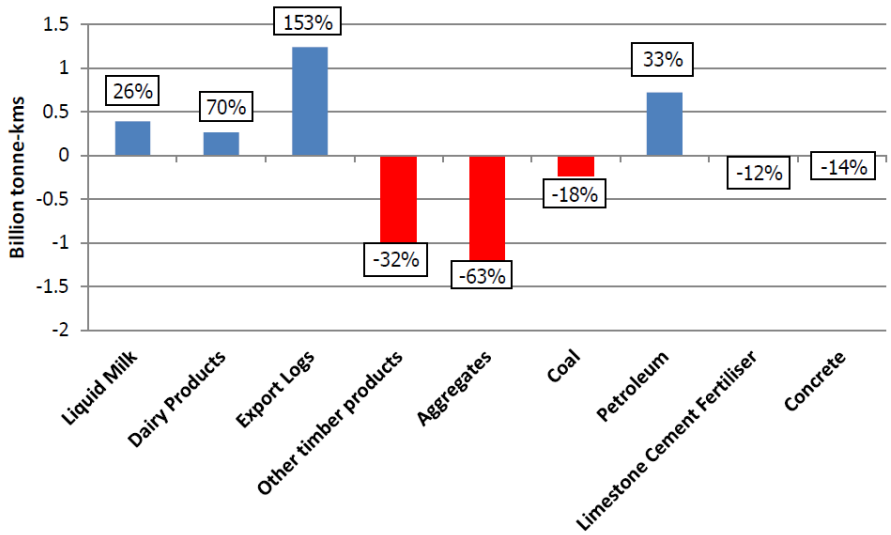

Figure 12 - Changes in flows of selected key commodities 2006/07 to 2012 (billion tonne-kms)
Source: Ministry of Transport, 2014

The following is a summary in terms of the findings for the Waikato region:

- The region has approximately 32% of the nation's freight task.
- Freight flows originating in the Waikato region are projected to grow from about 30 million tonnes to 50 million tonnes by 2042 as shown on Figure 13. This is the third highest level of growth in New Zealand, below Auckland and Canterbury.
- Rail has a high share, 52% of the freight traffic between Waikato and Bay of Plenty which reflects the movements of logs and timber products and of dairy products.
- Freight forecasts show that freight flows originating from the Waikato are expected to reach 50 million tonnes by 2042, in comparison with the 2008 forecast which predicted that the 50 million tonne mark would be reached by 2031. This shows that the forecast freight increase is now predicted to occur at a slower rate over a longer time period.
- There are substantial flows in both directions between Auckland and Waikato and Bay of Plenty and the Freight Demand Study notes that this 'golden triangle' is predicted to continue to have high freight activity.

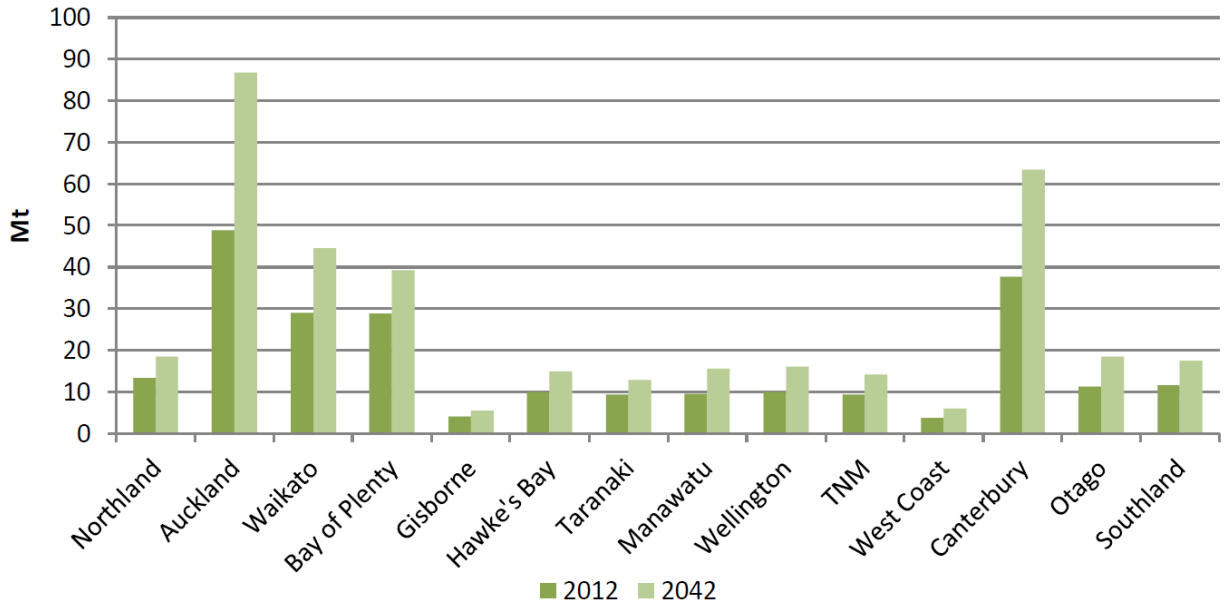

Figure 13 - Changes in freight flows by destination regions 2012 and 2042 (Mt/million tonnes)
Source: Ministry of Transport, 2014

Question 17

Is there evidence of any new conflicts between landuse and infrastructure development?

This question is answered as part of Question 7.

2.6 Population Distribution/Growth

Question 18

Where is population growth occurring and at what rate?

Map 12 in Appendix 1 shows population growth across the sub-region from 2006 to 2013 (Statistics NZ Census data). Between 2006 and 2013, north Hamilton experienced the largest population growth. Certain other areas of Hamilton City and rural areas of north west Waikato have experienced population decline.

Usually resident population counts from the 2013 census show Hamilton City to be the 4th largest city in New Zealand with a population of 141,615, up 8.5% from 129,588 in 2006. Waikato District is the 7th fastest growing district in New Zealand with a 10.1% increase in population from 57,585 in 2006 to 63,378 in 2013. Waipa District is the 9th fastest growing district with a population increase of 9.8%, up from 42,501 in 2006 to 46,668 in 2013.

For further information on how the 2013 census population figures compare with the Future Proof population projections and a more detailed break down of population changes in the Future Proof sub-region's towns and rural villages refer to Question 2.

Future Proof contracted the University of Waikato to undertake a review of demographic, households and labour force projections for the Future Proof sub-region for the period 2013 to 2063 (Jackson et al., 2014). The medium variant population projections show:

- Hamilton City's population is projected to grow to 190,744 in 2033 (+29.5%) and to 221,390 in 2063 (+50.3%). The majority of the growth occurs prior to 2033.
- The population of the Waikato District is projected to grow to around 82,733 in 2033 (+27.5%) and to 94,862 in 2063 (+46.1%). The majority of the growth occurs prior to 2040.
- The population of the Waipa District is projected to grow to around 55,384 in 2033 (+19.4%), and to decline to 51,758 by 2063 (+11.5% over 2013-2063; -6.5% over 2033-2063).

Notes:

- *CAU areas have been used to define the areas, together with population estimates collected from Statistics NZ.*
- *To provide population data between census dates, Statistics NZ estimates the population, using the most recent census data as a base (in this case 2006). The estimated resident population is updated regularly for population change due to births, deaths and net migration (arrivals less departures) of residents. The estimate gives the best measure of the population that usually lives in an area, for a limited range of variables (age, sex, ethnicity) and limited geographic areas.*

2.7 Economic Trends

Question 19

What are the employment trends, household and business growth rates within the Future Proof area?

Business demography statistics from 2006 to 2013 were obtained from Statistics NZ and data was sorted to show employment figures for industrial, commercial and retail sectors in specified areas throughout the Future Proof sub-region.

The data provided by Statistics NZ was broken into 19 sectors of employment (labelled A to S). For the purpose of this analysis these were grouped into 3 sectors - industrial, commercial and retail as shown in Table 15.

This data is based on CAU boundaries which have a slightly different alignment to the Future Proof settlement pattern. The following census area unit boundaries were used and are illustrated in the 'Census Area Unit map' (page 27):

- Huntly = Huntly West and Huntly East CAUs
- Te Kauwhata = Te Kauwhata CAU
- Ngaruawahia = Ngaruawahia CAU
- Tuakau = Tuakau, Opuawhanga CAUs
- Cambridge = Hautapu, Swayne, Cambridge North, Cambridge West, Cambridge Central, Lemington West and Lemington East CAUs
- Te Awamutu/Kihikihi = Kihikihi, Kihikihi Flat, Te Awamutu West, Te Awamutu Central, Te Awamutu East, Te Awamutu South CAUs.

Table 15: Employment sector groupings

Industrial	Commercial	Retail
A Agriculture, Forestry and Fishing	H Accommodation and Food Services	G Retail Trade
B Mining	J Information Media and Telecommunications	S Other Services
C Manufacturing	K Financial and Insurance Services	
D Electricity, Gas, Water and Waste Services	L Rental, Hiring and Real Estate Services	
E Construction	M Professional, scientific and Technical Services	
F Wholesale Trade	N Administrative and Support Services	
I Transport, Postal and Warehousing	O Public Administration and Safety	
	P Education and Training	
	Q Health Care and Social Assistance	
	R Arts and Recreation Services	

Employment Trends

Figures 14 to 16 graphically show the distribution of industrial, commercial and retail employment activity within Hamilton City, and Waipa and Waikato Districts.

Since 2006 there has been a slight increase in commercial based employment and a decrease in industrial employment within Hamilton City. Employment in retail has remained fairly constant with only small fluctuations between 2006 and 2013.

Industrial employment in the Waikato District generally decreased from 2006 to 2010, and then increased, peaking in 2013. Commercial employment generally increased from 2006 to 2013, peaking in 2012. Retail employment remained fairly constant throughout the monitoring period. Employment across all three employment sectors increased slightly in the Waipa District from 2006 to 2013.

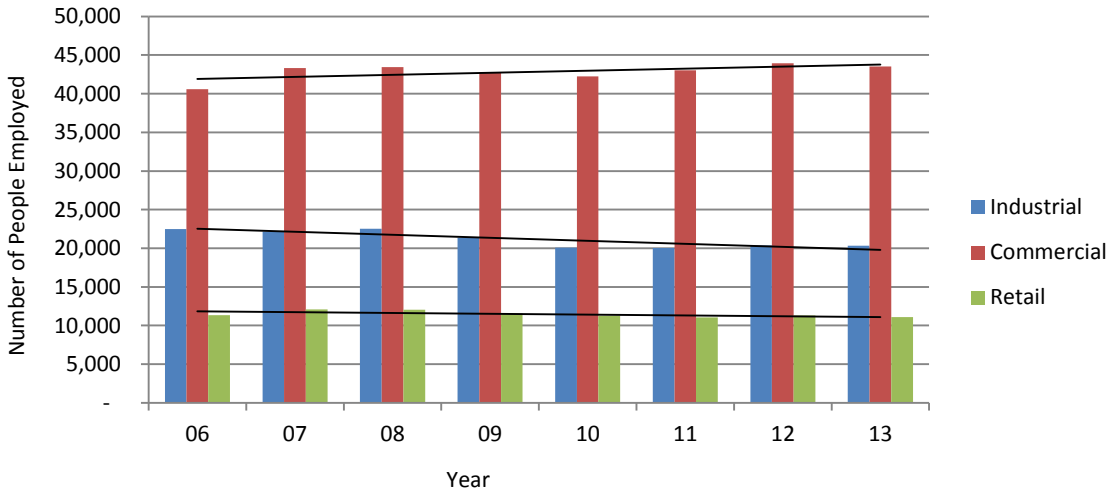

Figure 14 - Employment trends in Hamilton City from 2006 to 2013

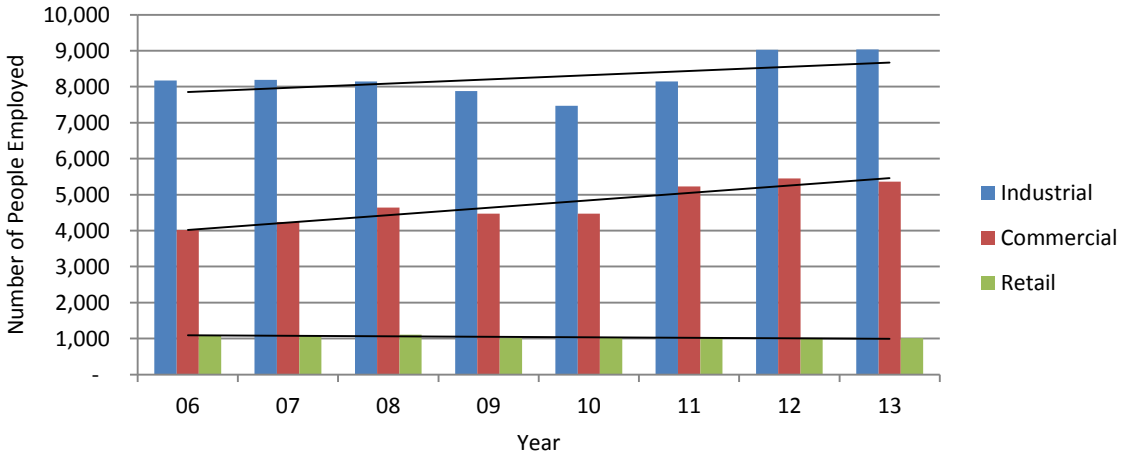

Figure 15 - Employment trends in Waikato District from 2006 to 2013

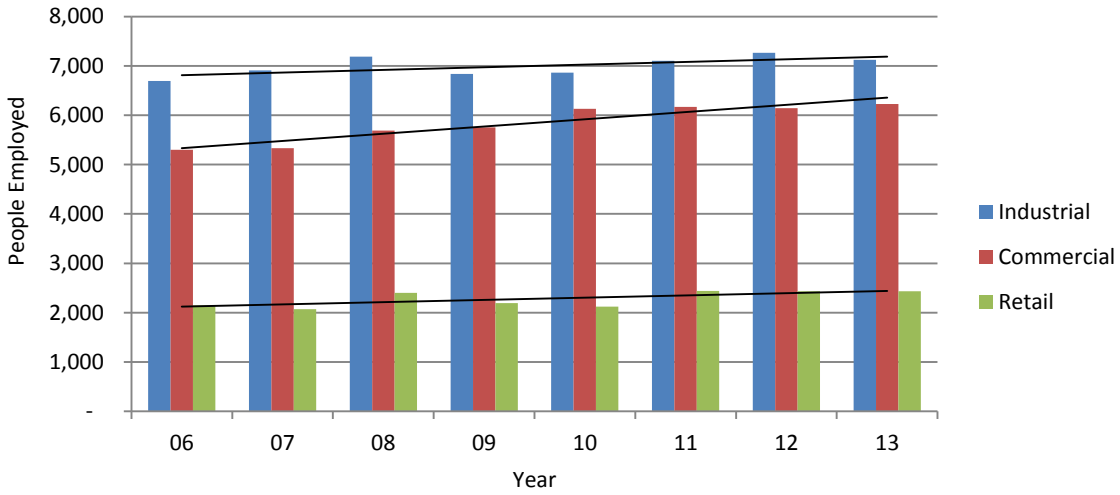

Figure 16 - Employment trends in Waipa District from 2006 to 2013

Hamilton City

The largest employment areas (CAU areas) within Hamilton City are Hamilton Central, Te Rapa and Frankton (Frankton Junction). Figures 17, 18 and 19 illustrate the employment trends for Te Rapa, Frankton and Hamilton Central from 2006 to 2013.

Te Rapa is the largest industrial sector employer in Hamilton City, followed by Frankton. Both areas have experienced a downward trend in industrial employment since 2009, probably a result of the poor economic climate. However, employment in the retail and commercial sectors in Te Rapa have increased since 2010. This is likely to be a result of development at The Base.

Hamilton central has experienced a downward trend in employment in the industrial, commercial and retail sectors from 2006 to 2013. Employment in retail was down 26.2% between 2006 and 2013 and down 17.3% between 2009 and 2013. Commercial employment was down 6.85% between 2006 and 2013 and 3.7% between 2009 and 2013. However, Hamilton Central continues to have the largest number of employees in the commercial and retail sectors.

Frankton has experienced a gradual downward trend in industrial and retail employment since 2006. Commercial employment was considerably higher in 2007 compared to other years, and showed an upward trend from 2010 to 2013.

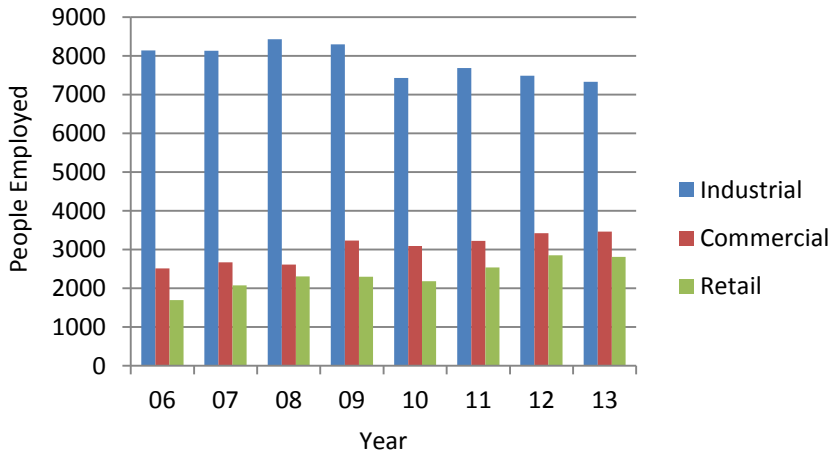

Figure 17 - Employment in Te Rapa from 2006 to 2013

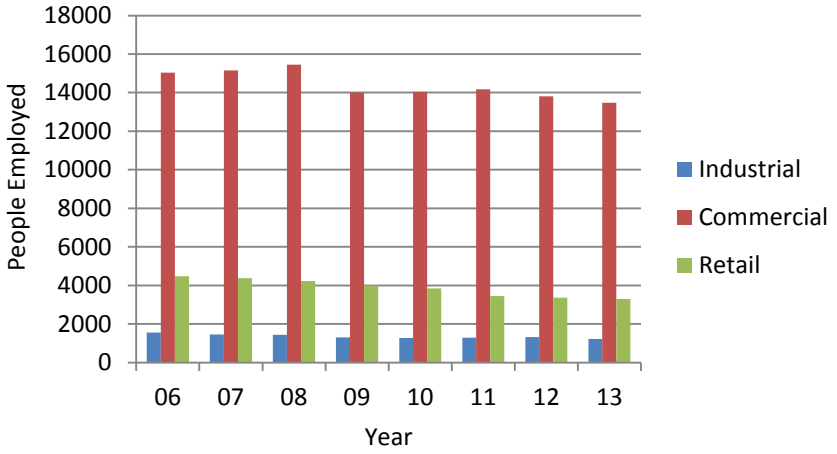

Figure 18 - Employment in Hamilton Central from 2006 to 2013

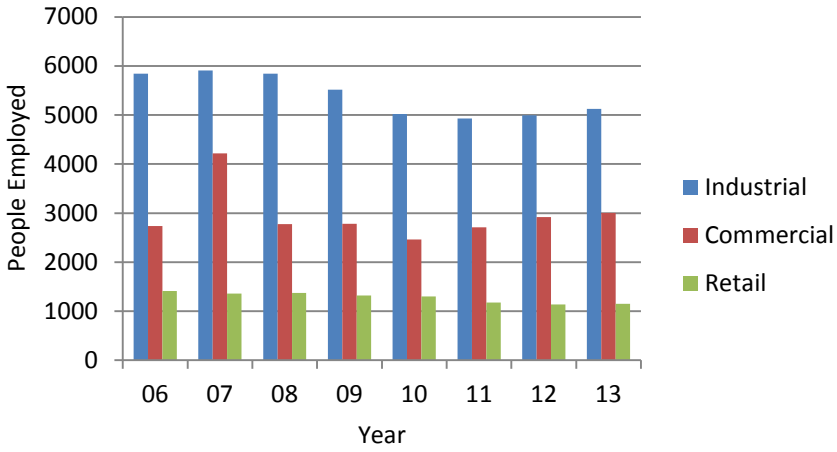

Figure 19 - Employment in Frankton from 2006 to 2013

Waikato District

Figure 20 illustrates the employment trends for each of the main Waikato District towns between 2006 and 2013.

Within the Waikato District, the town of Huntly had the largest workforce employed in the industrial, commercial and retail sectors with an Employment Count (EC) of 2159 in 2013. Ngaruawahia had the next largest overall workforce with an EC of 979, followed by Tuakau (EC 496) and Te Kauwhata (EC 364).

Tuakau's employment was primarily industrial based, while in Ngaruawahia a large proportion of the workforce was employed in the commercial sector. Huntly and Te Kauwhata had a large number of people employed in both the industrial and commercial sectors. The retail sector was the smallest employment sector in all four Waikato District towns.

Industrial employment declined in Ngaruawahia throughout the monitoring period, and from 2006 to 2011 in Te Kauwhata and 2006 to 2010 in Huntly. Employment in the commercial sector trended upward in all four Waikato District towns. Retail employment was variable, peaking in 2012 in Te Kauwhata and Huntly, 2008 in Ngaruawahia, and 2006 in Tuakau.

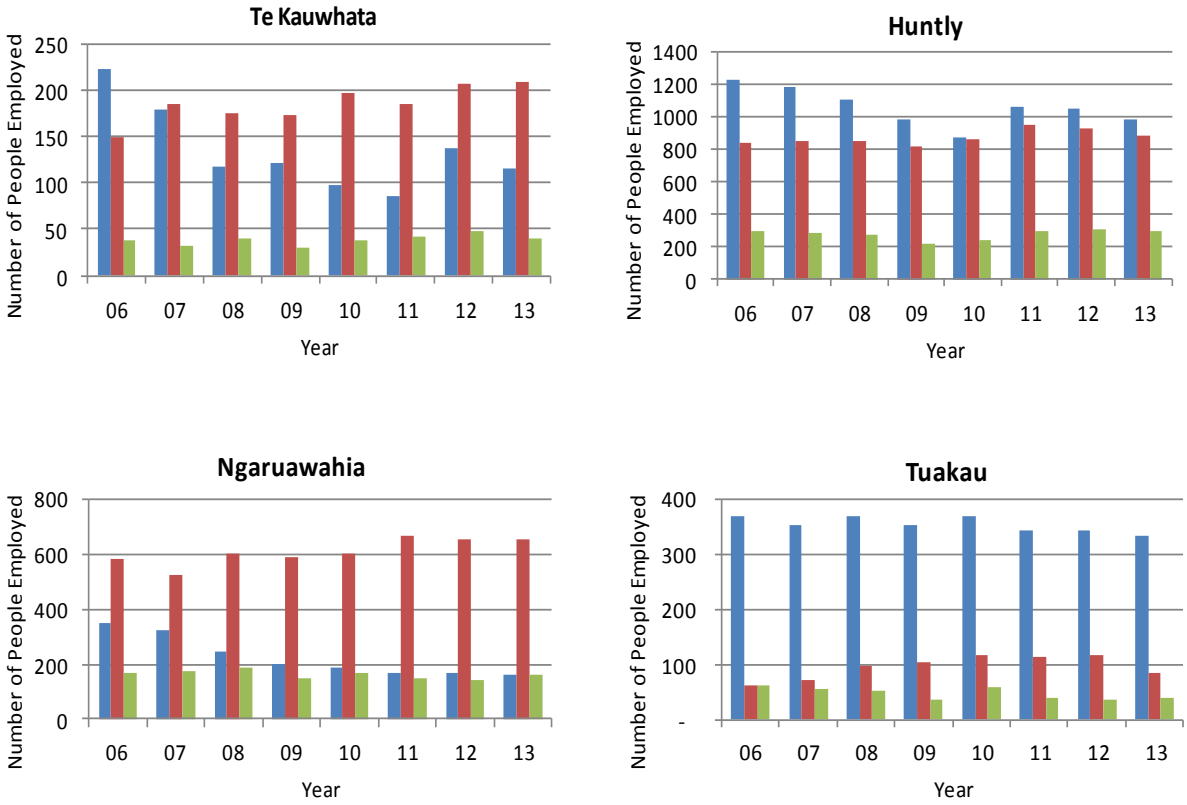

Figure 20 - Employment trends in the main Waikato District towns

Legend: Industrial Commercial Retail

Waipa District

Figures 21 and 22 illustrate the employment trends for Te Awamutu/Kihikihi and Cambridge between 2006 and 2013.

The commercial sector employed the highest number of people in Cambridge and Te Awamutu/Kihikihi, followed by the industrial sector and retail sector. Cambridge had a slightly larger workforce employed in the commercial sector with 2,585 employees compared to Te Awamutu's 2,379. Both towns experienced an increase in the number of employees in the commercial sector from 2006 to 2010.

The number of people employed in the industrial sector in Te Awamutu has decreased slightly since 2009 from 1,608 to 1442 employees. This is in contrast to Cambridge which has seen an increase from 1,769 to 2,142 employees since 2009.

Retail employment was highest in 2011 to 2013, but was still a much smaller employment sector than the industrial and commercial sectors.

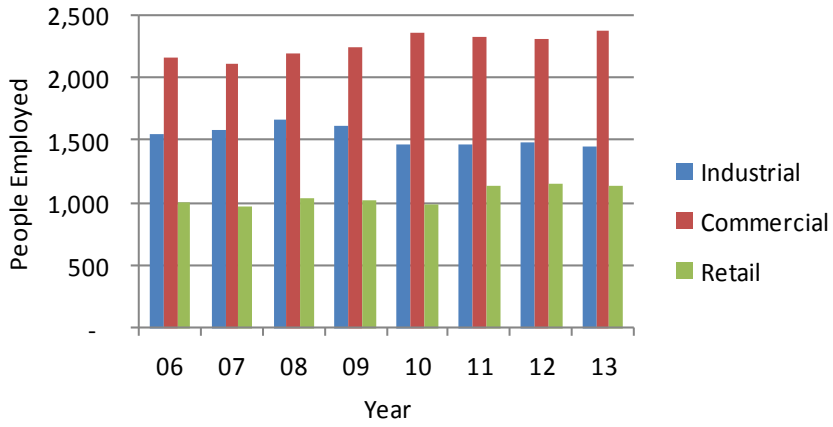

Figure 21 - Employment in Te Awamutu/Kihikihi from 2006 to 2013

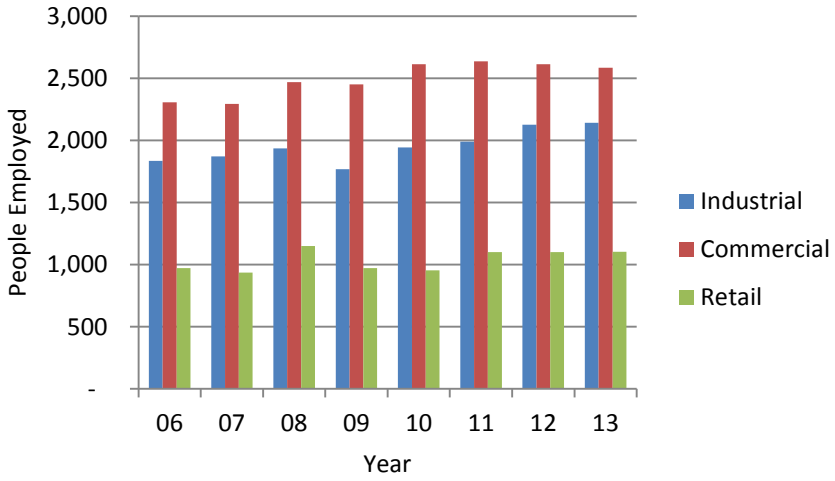

Figure 22 - Employment in Cambridge from 2006 to 2013

Labour Force Projections

Labour force projections undertaken by the University of Waikato were conducted under four scenarios (Jackson et al., 2014). Scenario one is a business as usual projection (2013 labour force participation rates forever). Scenario two attempts to capture the impact of an increase in female labour force participation. Scenario three aims to examine the effects of rising labour force participation rates amongst older residents, while scenario four combines scenarios two and three.

The medium variant labour force projections show:

- Between 2013 and 2063, Hamilton City's labour force is projected to grow by between 35% (Scenario one) and 58% (Scenario four). Under Scenarios one and two, Hamilton City's labour force is projected to peak in 2053, while under Scenarios three and four this peak occurs in 2058.
- For the Waikato District all four scenarios project positive growth (between 40% and 65%). Under Scenarios two, three and four this growth is continuous but slowing, while under Scenario one the labour force is projected to peak in 2058.
- A different trend is projected for the Waipa District as the workforce increases initially under all four scenarios but begins to decline from 2028.

Question 20

What are the property market trends in the Future Proof Area?

A quarterly analysis of property values published by Quotable Value New Zealand show an overall increase in median house prices across the sub-region over the last three years (Table 16). Of mention is the Waikato District town of Tuakau where the median house price increased 25.3%, and the Hamilton City suburbs of Chartwell and Flagstaff where there was an increase of 25.0% and 37.6%, respectively.

Some towns and suburbs have experienced small decreases in the median house price in the last three years: the Hamilton City suburbs of Fairview Downs, Melville and Silverdale decreased by between 1.6% and 9.9%; and the Waikato District towns of Huntly and Raglan decreased by 5.1% and 2.3%, respectively.

A recent commercial property investor confidence survey from Collier's quarterly shows increased confidence in Hamilton City's commercial property market. Matt Snelgrove from Hamilton City's Colliers' office said confidence was growing because of big developments such as the $20million PriceWaterhouseCooper Centre, the $30million Project Grantham, and their respective successes in scoring major tenants, indicating confidence in the city amongst large office occupiers.

The Hamilton Economic Indicator Report (December 2013) produced by Hamilton City Council showed a slight increase in the number of non-residential building consents issued since 2010 (approximately 63 to 69) within Hamilton City, however the total value of building consents in 2011, 2012 and 2013 was considerably lower than 2010. This is illustrated on the bar graph in Figure 23. The total floor area of building consents was close to 80,000m^2 in 2010, dropping to just below 60,000m^2 in 2011 and gradually increasing again to approximately 70,000m^2 in 2013 (Figure 24).

Table 16 – Quotable Value Report on House Prices – September 2014

Location	Estimate of average value at market peak 31/10/07 ($)	Price change in year since market peak (%)	Median price in 3 months to 30/06/14 ($)	No. of sales in 3 months to 30/06/14	Median price change in 3 years to 30/06/14 (%)
Hamilton City					
Bader	257,800	-7.4	253,500	6	12.3
Beerescourt	434,950	-2.1	433,000	11	15.8
Chartwell	364,100	-2.0	380,000	33	25.0
Claudelands	353,000	0.2	344,000	11	9.6
Dinsdale	331,250	-3.7	315,000	39	13.5
Enderley	269,200	-5.5	276,000	12	16.2
Fairfield	339,200	-0.9	319,000	20	12.9
Fairview Downs	317,350	-1.7	237,500	8	-9.9
Fitzroy	317,200	-1.6	312,500	5	4.7
Flagstaff	475,700	3.2	534,000	59	37.6
Forest Lake	321,500	0.3	292,250	6	1.1
Frankton	296,450	-6.2	262,000	25	5.2
Glenview	332,500	-2.5	308,000	31	8.8
Hamilton East	330,750	0.0	346,000	51	11.3
Hillcrest	366,300	0.7	354,250	14	14.6
Huntington	533,550	0.1	514,000	33	19.8
Maeroa	316,450	-2.5	289,000	17	7.4
Melville	295,100	-5.2	264,500	30	-1.6
Nawton	297,850	-4.8	274,000	31	22.0
Pukete	368,600	3.2	354,500	18	10.8
Queenwood	458,450	-1.8	449,500	10	10.4
Rototuna	485,600	1.9	468,500	14	13.2
Rototuna North	467,400	4.6	509,500	24	20.2
Saint Andrews	371,750	5.2	352,000	19	23.3
Silverdale	328,050	0.7	315,000	9	-4.6
Waikato District					
Huntly	209,850	-12.8	166,500	24	-5.1
Ngaruawahia	244,800	-10.5	209,000	8	14.8
Raglan	455,950	-7.7	395,500	18	-2.3
Tuakau	317,750	7.0	402,250	12	25.3
Waipa District					
Cambridge	396,450	4.7	393,000	42	9.2
Kihikihi	245,950	-3.9	260,000	8	22.1
Leamington	361,850	0.4	330,000	37	4.4
Te Awamutu	304,450	-3.4	284,500	56	1.4

Source: Quotable Value New Zealand, 2014

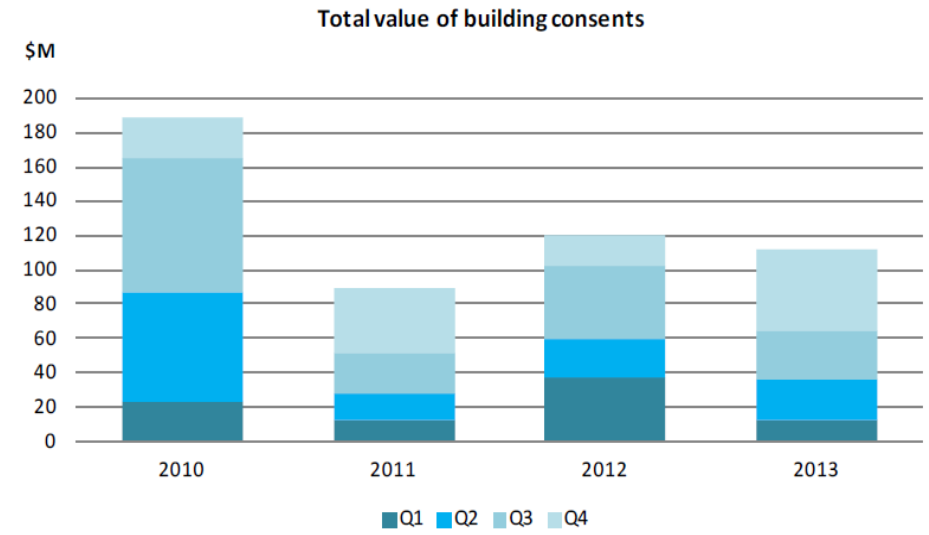

Figure 23 - Total value of non-residential building consents in Hamilton City
Source: Hamilton City Council, 2013b

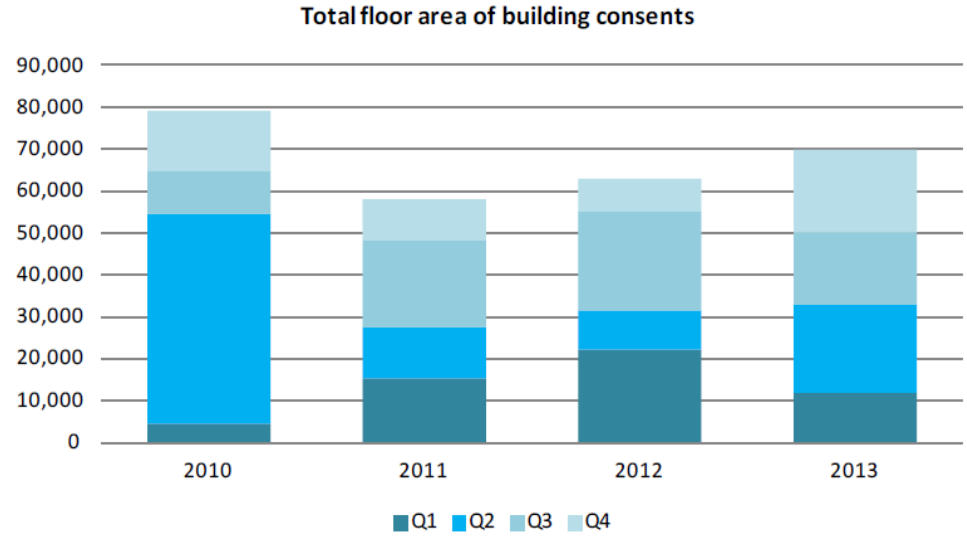

Figure 24 - Total floor area of non-residential building consents in Hamilton City
Source: Hamilton City Council, 2013b

3. Next Steps

- The monitoring questions will be revisited and monitored on a cyclical basis, depending on the availability of the data. Key questions will be revisited more frequently.

- The monitoring will inform updates of the Future Proof Strategy.

- A number of the monitoring questions in the Future Proof Monitoring Strategy were difficult to answer or are not clear in what they are asking. Future monitoring will address this, with possible changes to the questions and analysis.

References

Collier, K.J., B.T.M.A. Aldridge, B.J. Hicks, J. Kelly, A. Macdonald, B.J. Smith & Tonkin J. (2009). *Ecological values of Hamilton urban streams (North Island, New Zealand): constraints and opportunities for restoration*. New Zealand Journal of Ecology 33(2): 177-189.

Collier, K.J. & Clements, B.L. (2010). *Influences of catchment and corridor imperviousness on urban stream macroinvertebrate communities at multiple spatial scales*. Hydrobiologia, published online 24 December 2010.

Future Proof. (2012). *Future Proof Built Environment Monitoring Strategy.*

Hamilton City Council. (2013a). *Hamilton City Proposed District Plan, Section 42A Hearing Report*. Introduction and Strategic Review, September 2013.

Hamilton City Council. (2013b). *Hamilton Economic Indicator Report*. December 2013.

Jackson, N.O., Cameron, M. and Cochrane, B. (2014). *2014 Review of Demographic, Households and Labour Force Projections for the Waikato Region for the Period 2013-2063*. Commissioned Report. University of Waikato, National Institute of Demographic and Economic Analysis.

Ministry of Transport. (2014). *National Freight Demand Study*. March 2014. Submitted by Deloitte in association with Richard Paling Consulting, Murray King & Francis Small Consulting, and Cooper Associates. ISBN: 978-0-478-07260-0.

Quotable Value New Zealand. (2014). *Property Report*. New Zealand Herald, 8 September 2014.

Te Awa website. (Accessed January 2015). http://te-awa.org.nz/the-route/

Waikato District Council. (2011). *Waikato District Plan – Plan Change 2: District Wide Growth and Rural and Coastal Subdivision*. November 2011.

Waikato Regional Council. (2013). *Annual Regional Transport Monitoring Report 2012/13*. Policy Series 2013/10.

Waikato River Trails website. (Accessed January 2015). http://www.waikatorivertrails.com/includes-getaway-packages.

Bibliography

Future Proof. (2009). *Future Proof Growth Strategy and Implementation Plan 2009*.

Hamilton City Council. (2014). *Proposed District Plan*. Appeals Version, September 2014.

Statistics New Zealand. *Census of Population and Dwellings*. www.stats.govt.nz.

Waikato District Council. (2009). *Waikato District Growth Strategy.*

Waikato District Council. (2014). *Plan Change 2: District Wide Growth and Rural and Coastal Subdivision*. Operative 21 February 2014.

Waikato District Council. (2014). *Waikato District Plan*. February 2014.

Waikato Regional Council. (2012). *Proposed Waikato Regional Policy Statement.* November 2012.

Waikato Regional Council. *Waikato Regional Land Transport Programme 2012/13 – 2014/15*. Policy Series 201/208.

Waipa District Council. (2009). *Waipa District Growth Strategy – Waipa 2050*. Adopted by Waipa District Council 30 June 2009.

Waipa District Council. (2014). *Proposed Waipa District Plan*. Appeals Version, 14 July 2014.

Appendix 1 – Maps

Map 1

Urban Development 2009-2013
Regional Overview

Legend

- 2012 to 2013
- 2011 to 2012
- 2010 to 2011
- 2009 to 2010
- 2009 (Baseline)
- Urban areas
- Future Proof project area

Year	Total urban lots	Lots in urban limits	% inside urban limits	Annual growth	Growth since 2009
2009 (Baseline)	70455	69084	98%		
2009 to 2010	4048	3996	99%	6%	6%
2010 to 2011	1008	975	97%	1%	7%
2011 to 2012	891	886	99%	1%	8%
2012 to 2013	893	887	99%	1%	10%

New urban lots from June CRS_PROPERTY snapshots by WRC overlaid with urban area limits as defined for Future Proof.

Pukekohe, Buckland, Waiuku, Pokeno, Tuakau, Mercer, Meremere, Port Waikato, Te Kauwhata, Huntly, Taupiri, Ngaruawahia, Gordonton, Morrinsville, Horotiu, Eureka, HAMILTON, Whatawhata, Raglan, Matangi, Tamahere, Rukuhia, Cambridge, Pirongia, Te Awamutu, Kihikihi

Firth of Thames

0 5 10 15 20 25
Kilometres

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Waikato Regional Council
Te Kaunihera ā Rohe o Waikato

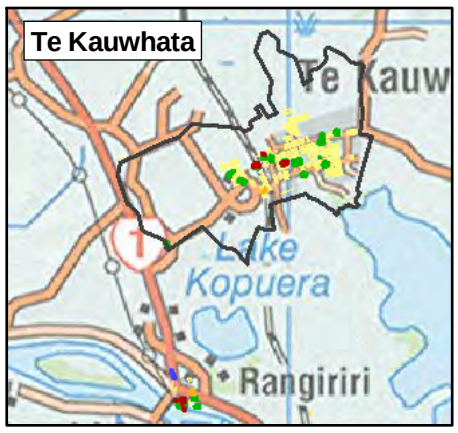
Urban Development 2009-2013
Urban Settlements

N

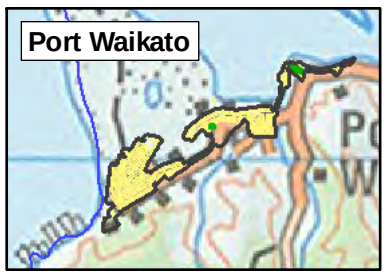
Legend

- 2012 to 2013
- 2011 to 2012
- 2010 to 2011
- 2009 to 2010
- 2009 (Baseline)
- Urban areas
- Future Proof area

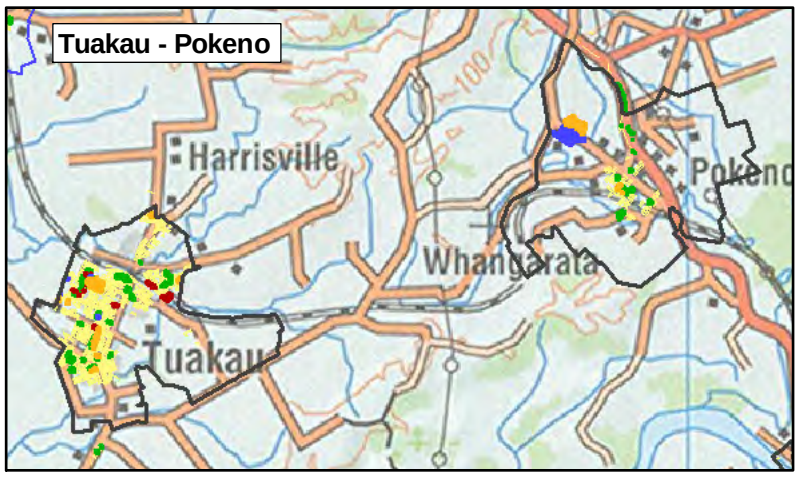
Te Kauwhata



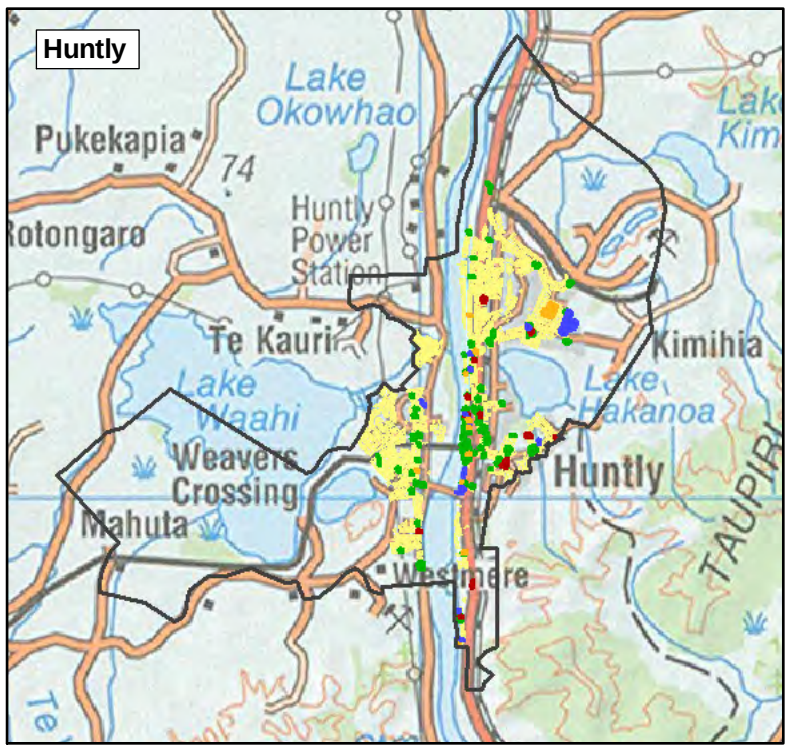
Port Waikato



Tuakau - Pokeno

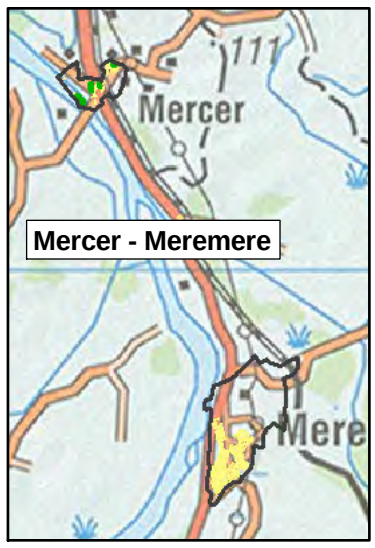


Huntly

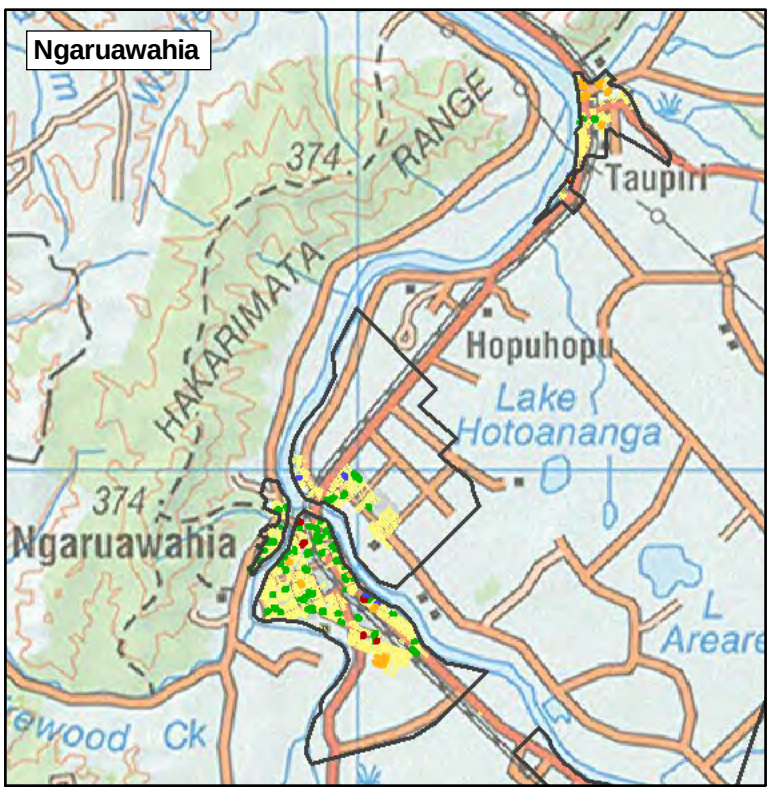


Raglan

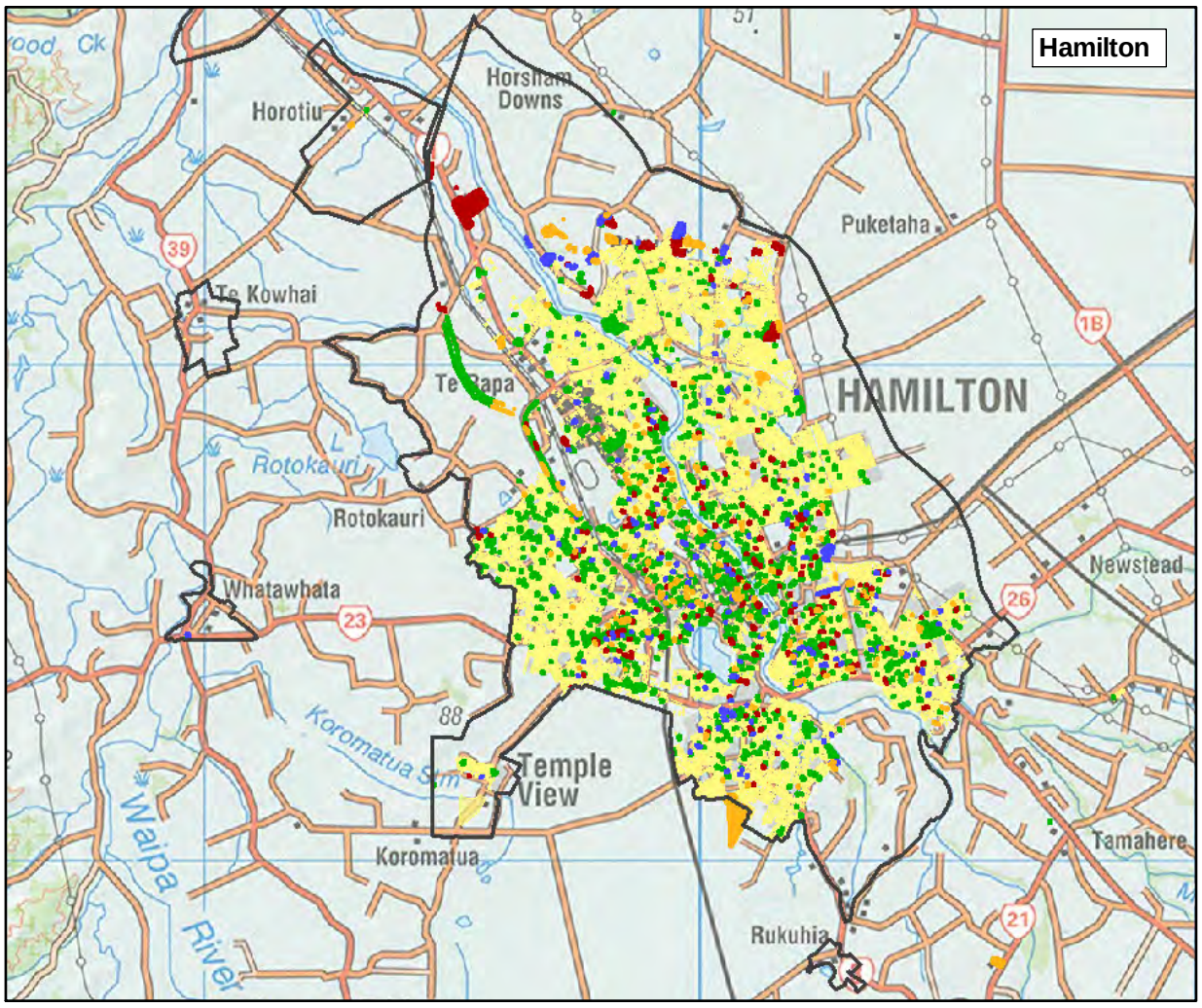
Mercer - Meremere



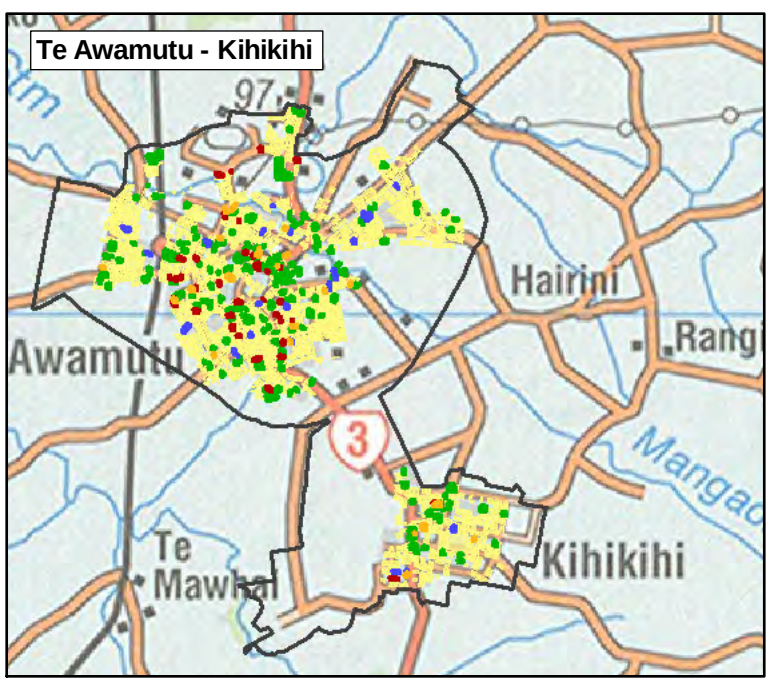
Ngaruawahia



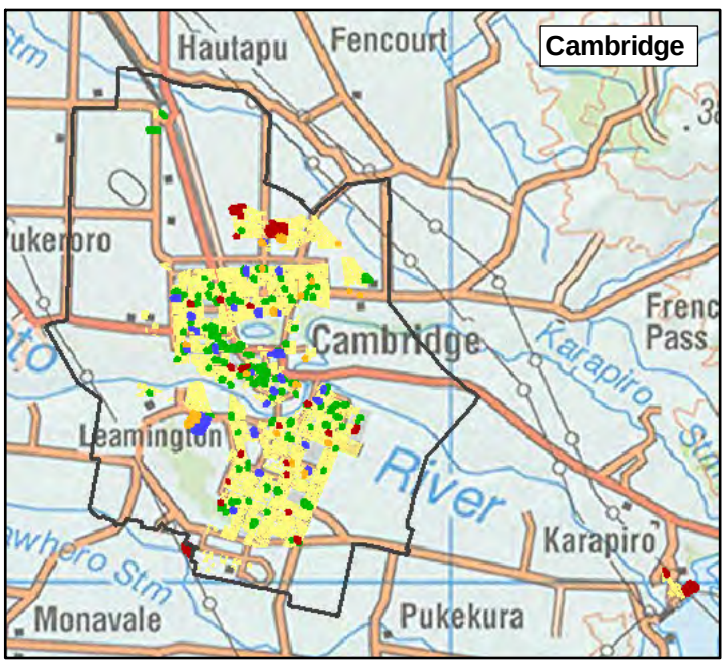
Hamilton



Te Awamutu - Kihikihi



Cambridge



Gordonton

Matangi

Pirongia

Maps are inset at various different scales

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Map 3

Industrial Development 2009-2013 Regional Overview

Industrial Devlopment (number of properties in urban areas)				
	Total count (urban)	In strategic industrial nodes	In industrial zones	Outside industrial area *
2009	1758	105	1301	351
2010	378	23	277	79
2011	27	6	16	5
2012	21	5	9	7
2013	24	2	10	12
Total	450	36	312	103

* Count of industrial properties inside urban limits but outside of industrial nodes or zones. Total includes development 2010 onward

Legend

- 2012 to 2013
- 2011 to 2012
- 2010 to 2011
- 2009 to 2010
- 2009 (Baseline)
- Strategic industrial node
- Industrial zone
- Urban area
- Future Proof project area

0 5 10 15 20 25

Kilometres

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Industrial Development
2009-2013 Industrial Areas

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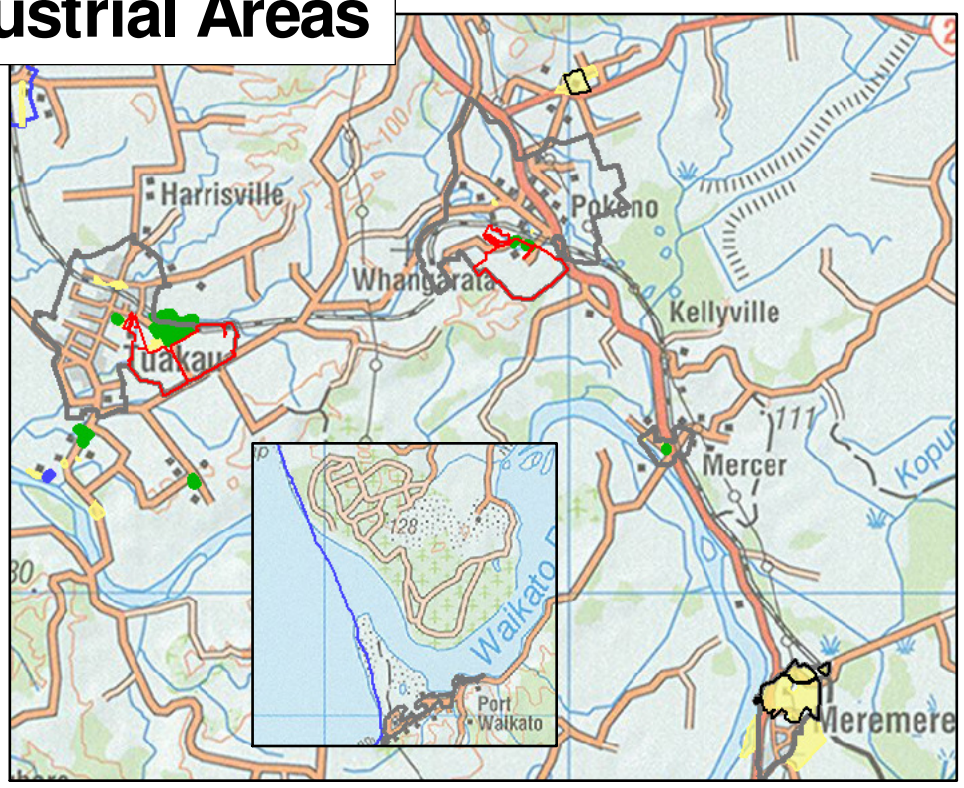

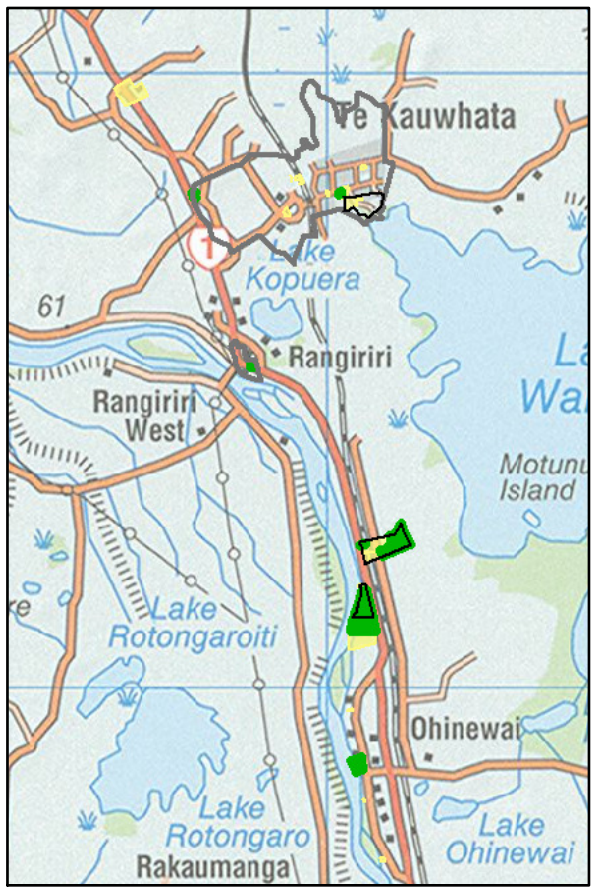

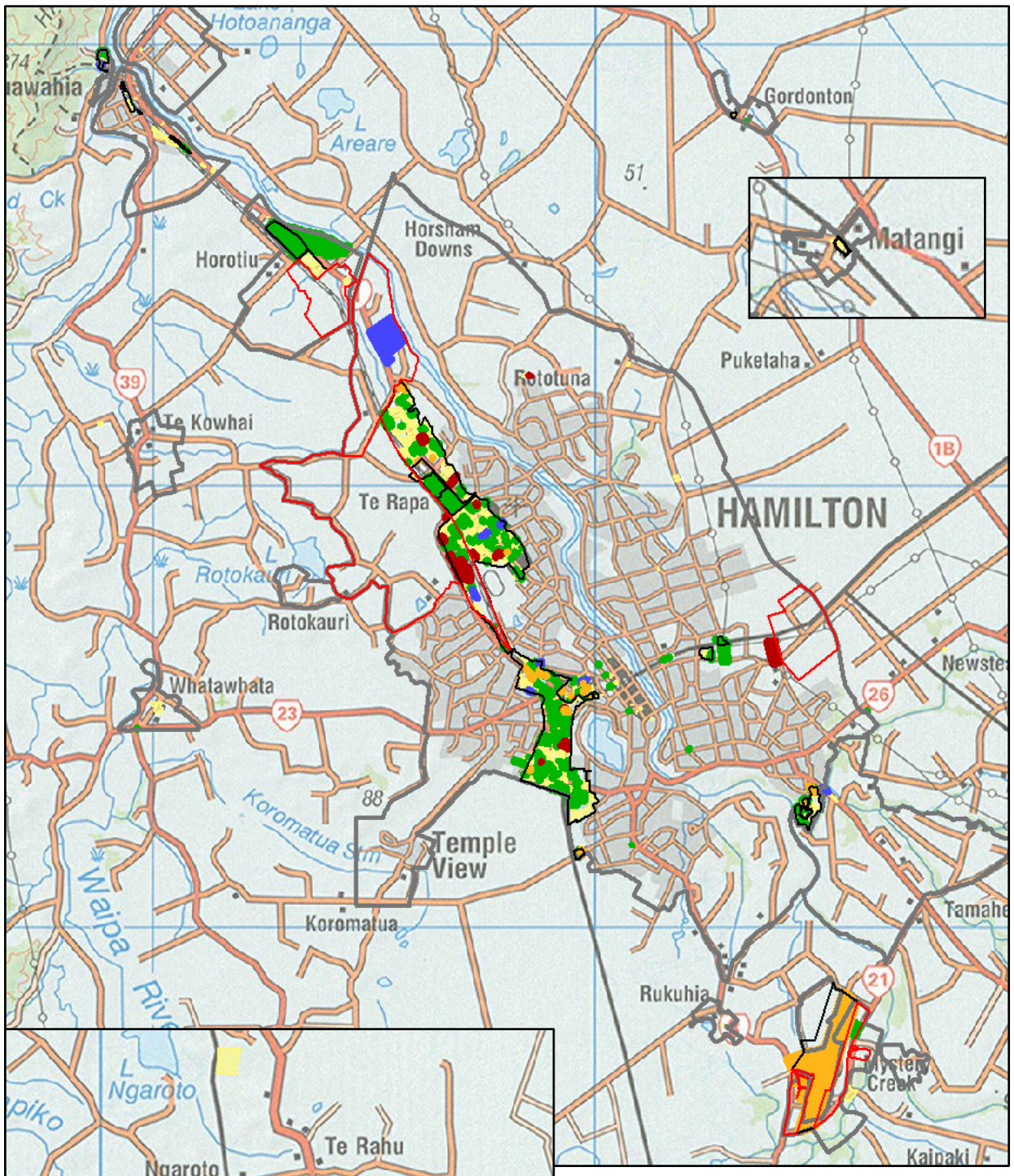

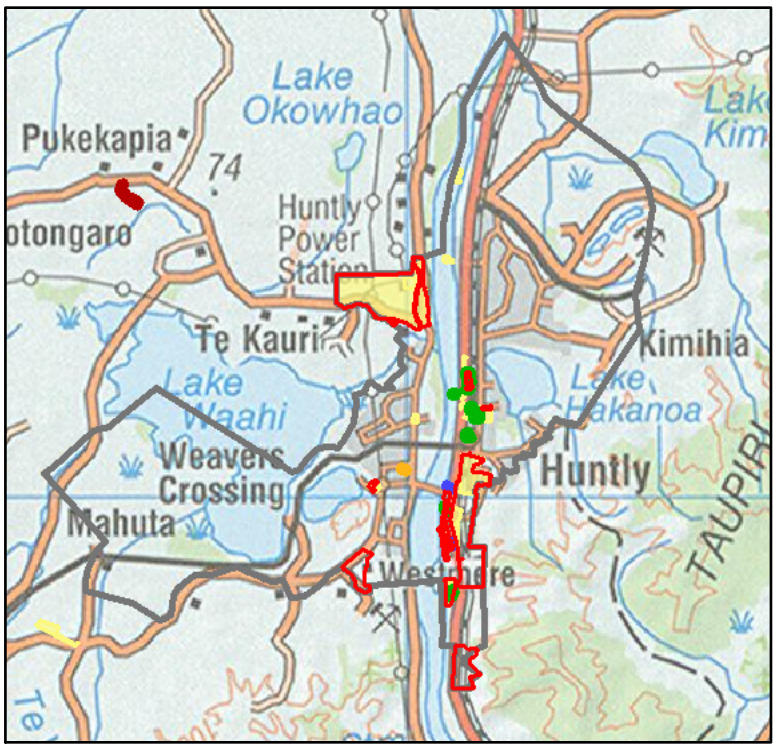

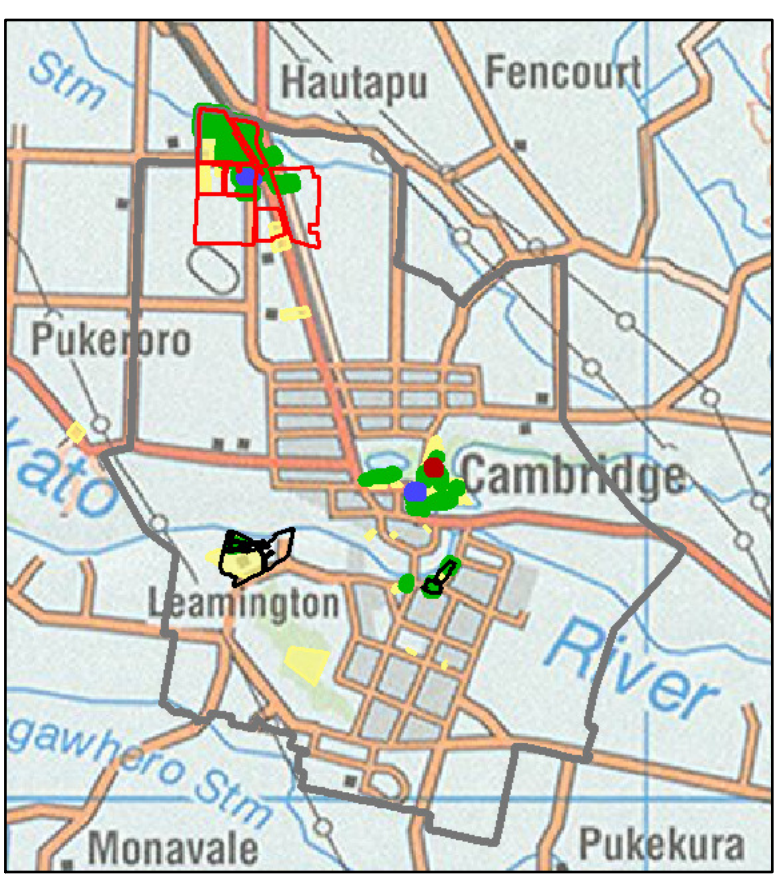

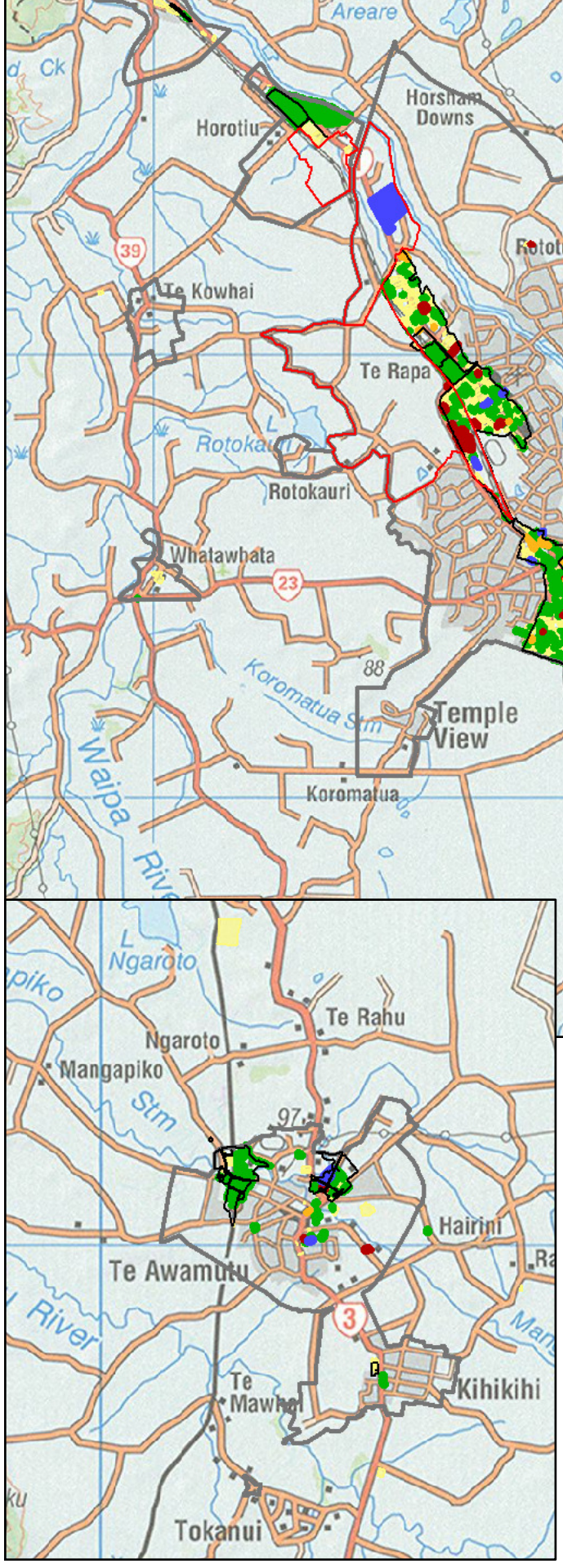

Legend

- 2012 to 2013
- 2011 to 2012
- 2010 to 2011
- 2009 to 2010
- 2009 (Baseline)
- Strategic industrial node
- Industrial zone
- Urban area
- Future Proof project area

Maps are inset at various different scales

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NZTM Projection, Job# 26545

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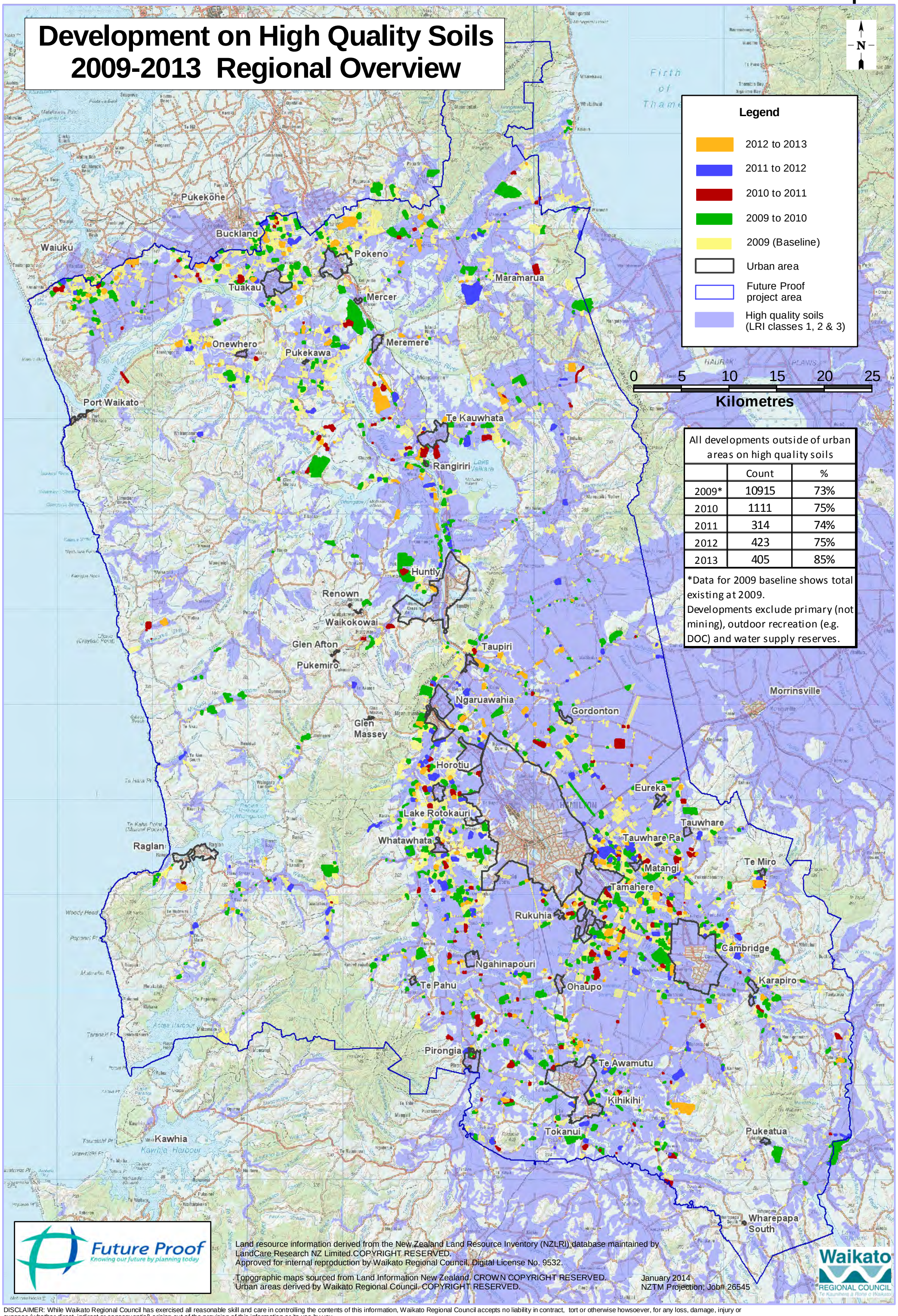
Map 5

Development on High Quality Soils 2009-2013 Regional Overview



All developments outside of urban areas on high quality soils		
	Count	%
2009*	10915	73%
2010	1111	75%
2011	314	74%
2012	423	75%
2013	405	85%

*Data for 2009 baseline shows total existing at 2009.
Developments exclude primary (not mining), outdoor recreation (e.g. DOC) and water supply reserves.

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Map 6

Residential Development Densities 2013 Waikato and Waipa

Residential Density
Count of properties per Ha

- 15 and over
- 10 to 15
- 5 to 10
- 0 to 5
- Urban limit
- Future Proof project area

Firth of Thames

Pukekohe
Buckland
Waiuku
Pokeno
Tuakau
Mercer
Maramarua
Meremere
Onewhero
Pukekawa
Port Waikato
Te Kauwhata
Rangiriri
Huntly
Renown
Waikokowai
Glen Afton
Pukemiro
Taupiri
Ngaruawahia
Glen Massey
Gordonton
Morrinsville
Horotiu
Eureka
HAMILTON
Lake Rotokauri
Whatawhata
Raglan
Tauwhare
Tauwhare Pa
Matangi
Te Miro
Tamahere
Rukuhia
Cambridge
Karapiro
Ngahinapouri
Te Pahu
Ohaupo
Pirongia
Te Awamutu
Kihikihi
Tokanui
Pukeatua
Kawhia
Wharepapa South

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0 5 10 15 20 25
Kilometres

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Te Kaunihera ā Rohe o Waikato

Commercial Development 2009-2013 Regional Overview

Count of Commercial Developments

- 2012 to 2013 (147)
- 2011 to 2012 (78)
- 2010 to 2011 (115)
- 2009 to 2010 (764)
- 2009 (Baseline, 3322)
- Commercial centre/zone
- Strategic industrial node
- Industrial zone
- Urban area
- Future Proof project area

Commercial Devlopment			
	% in commercial centres/zones	% in strategic industrial nodes	% in industrial zones
2009*	53%	1%	8%
2010	58%	1%	7%
2011	49%	4%	6%
2012	85%	0%	1%
2013	75%	1%	10%
Total	61%	1%	7%

*Baseline

0 5 10 15 20 25

Kilometres

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Te Kaunihera ā Rohe o Waikato

Commercial Development 2009-2013 Commercial Areas

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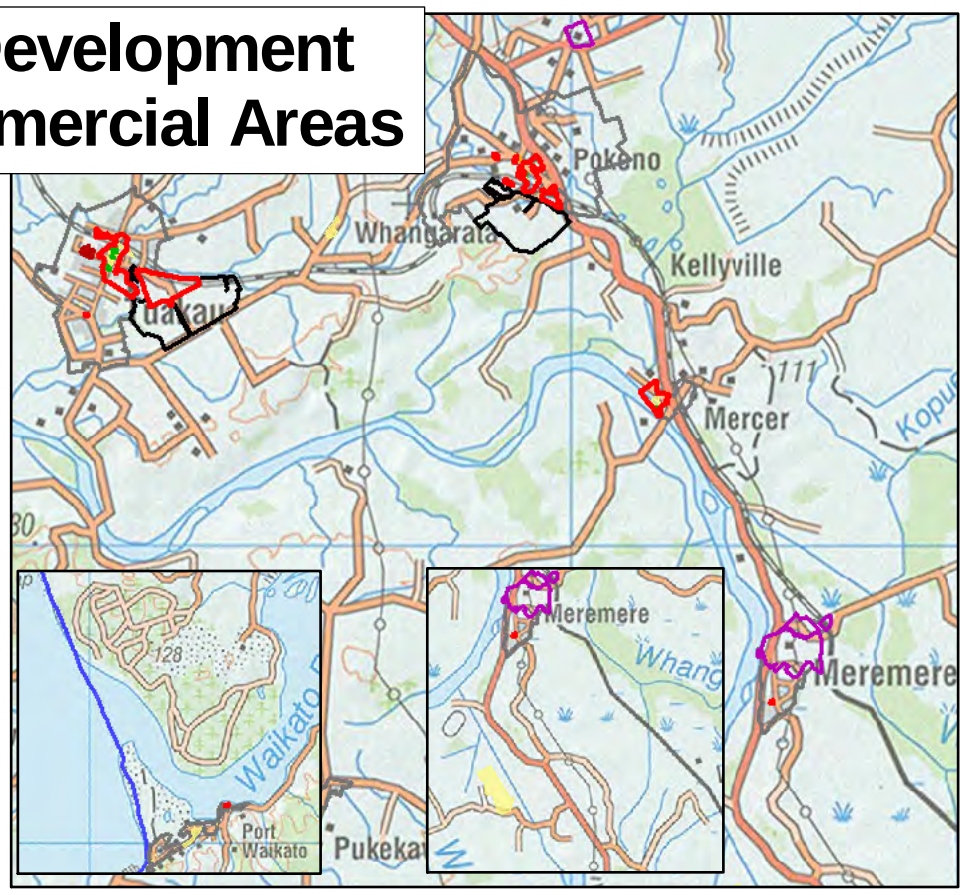

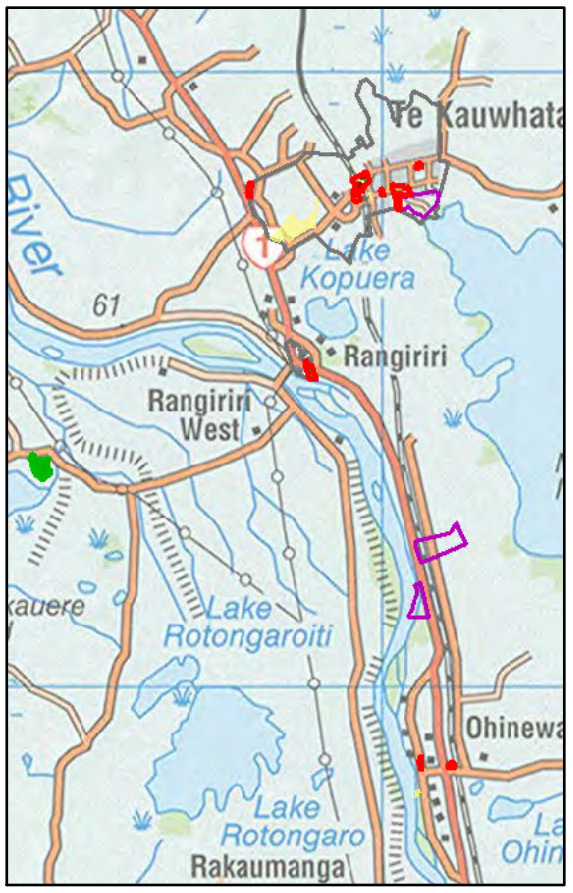

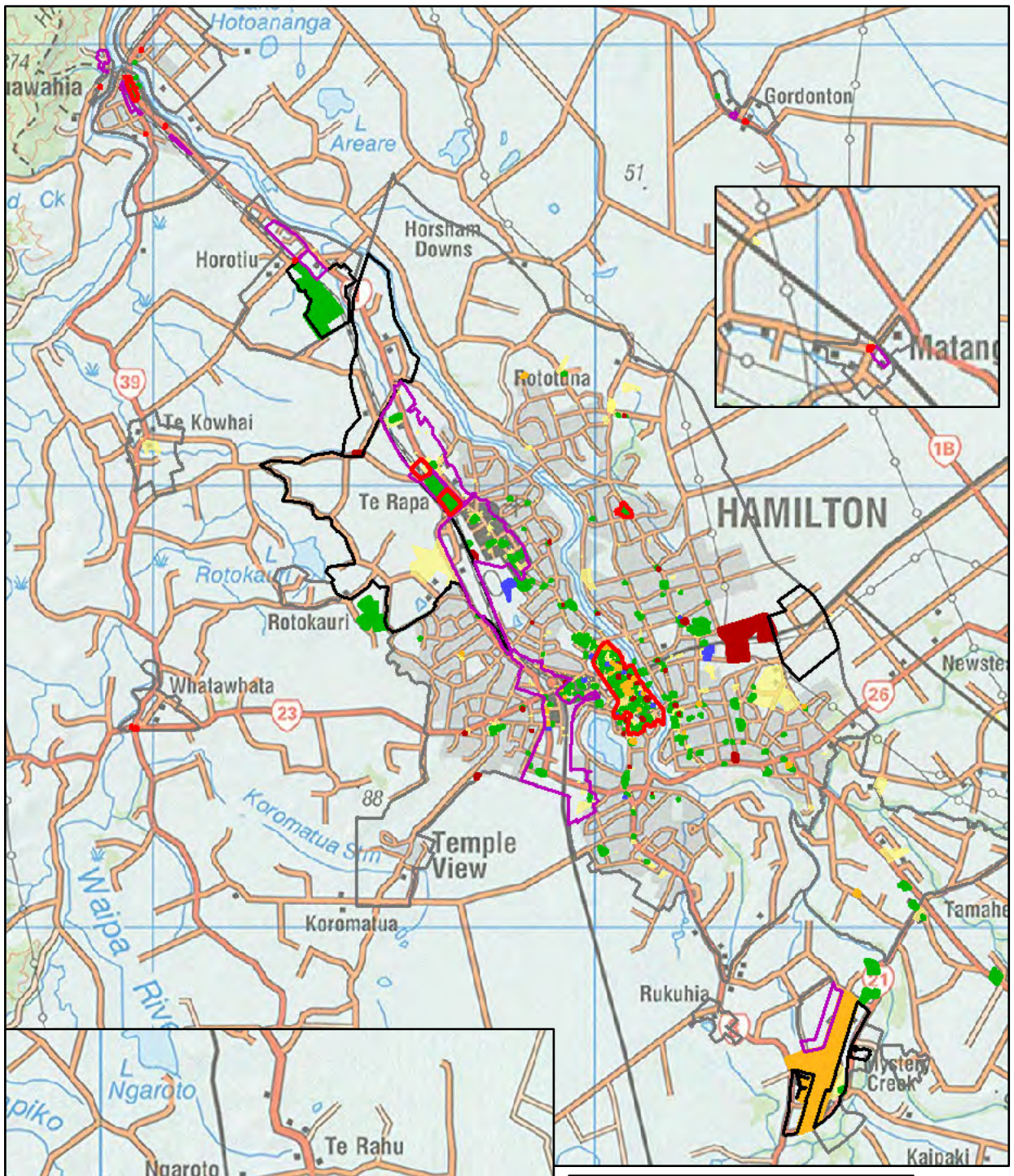

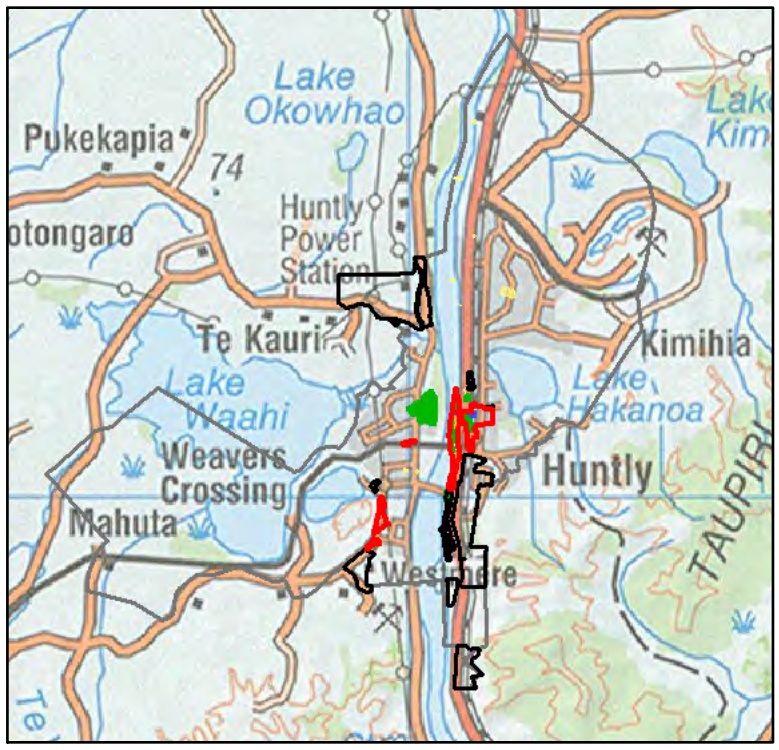

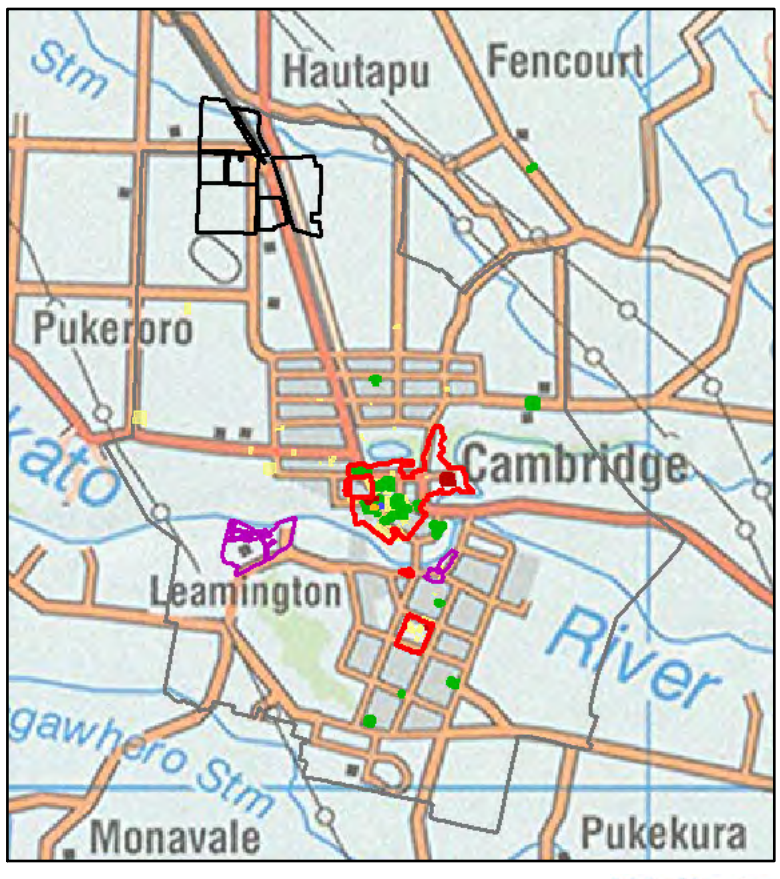

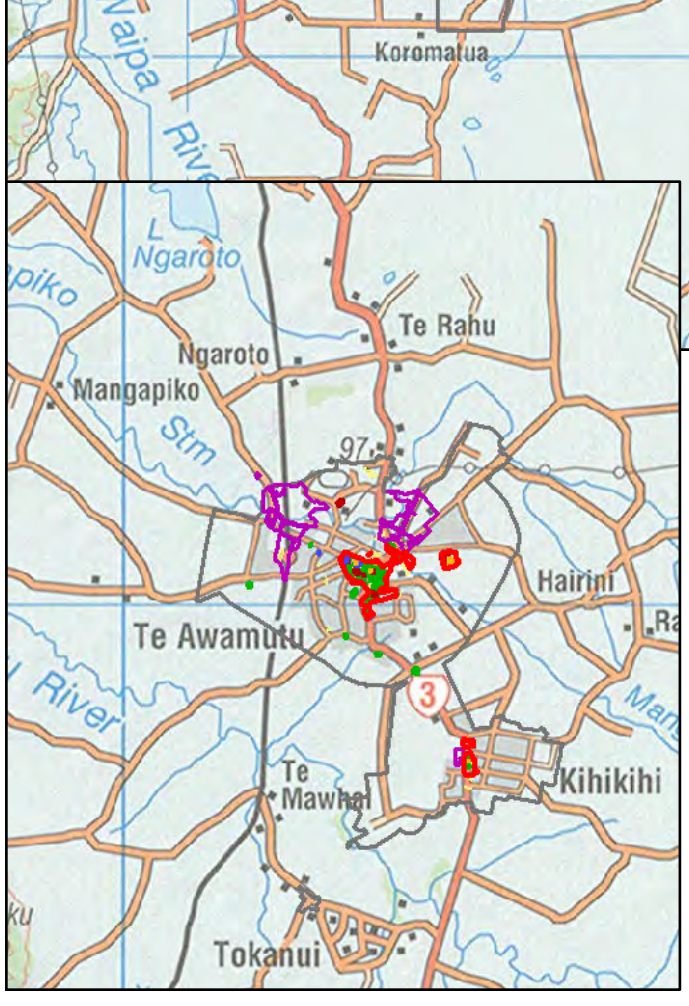

Count of Commercial Developments

- 2012 to 2013 (147)
- 2011 to 2012 (78)
- 2010 to 2011 (115)
- 2009 to 2010 (764)
- 2009 (Baseline, 3322)
- Commercial centre/zone
- Strategic industrial node
- Industrial zone
- Urban area
- Future Proof project area

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Maps are inset at various different scales

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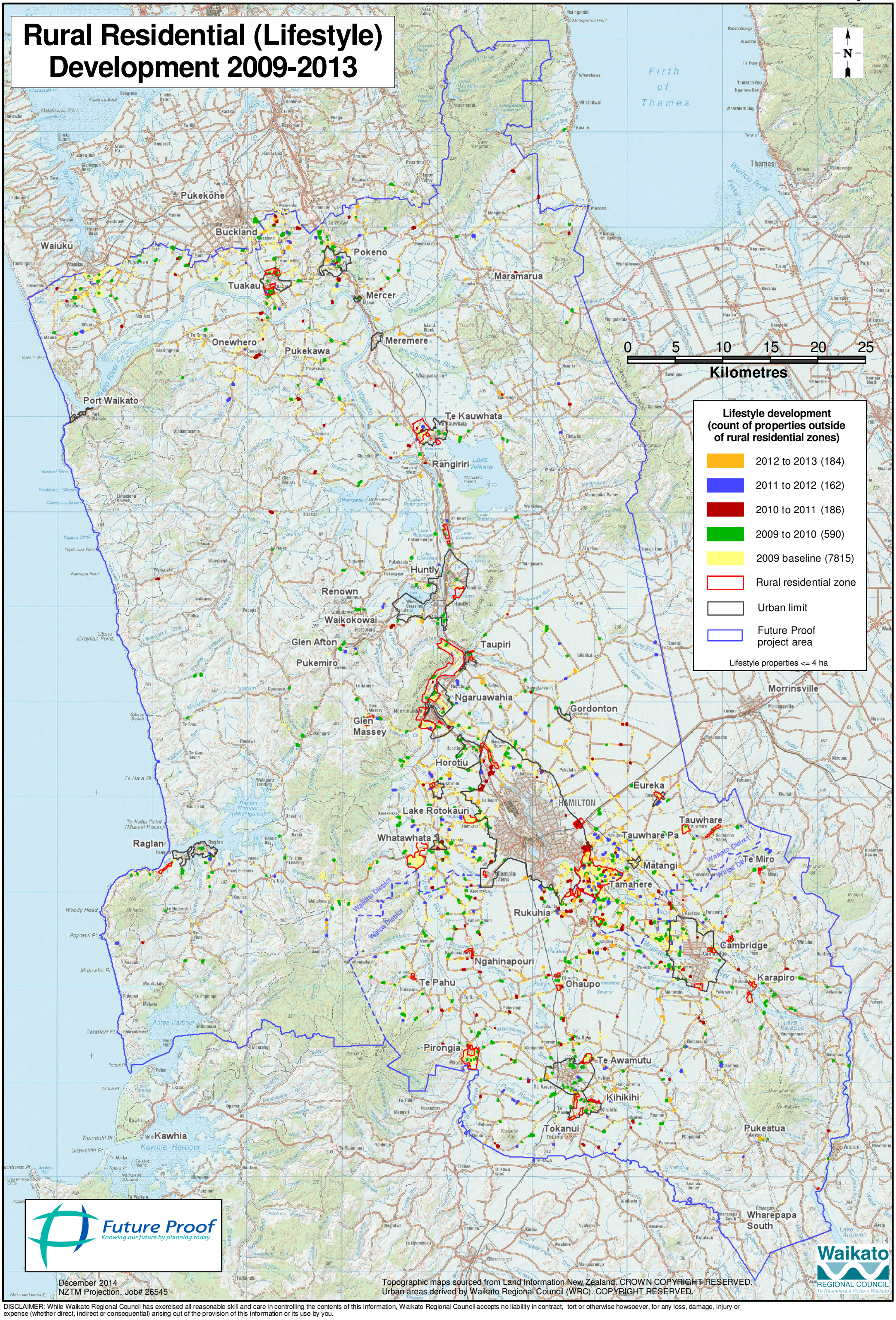
Map 9

Rural Residential (Lifestyle) Development 2009-2013



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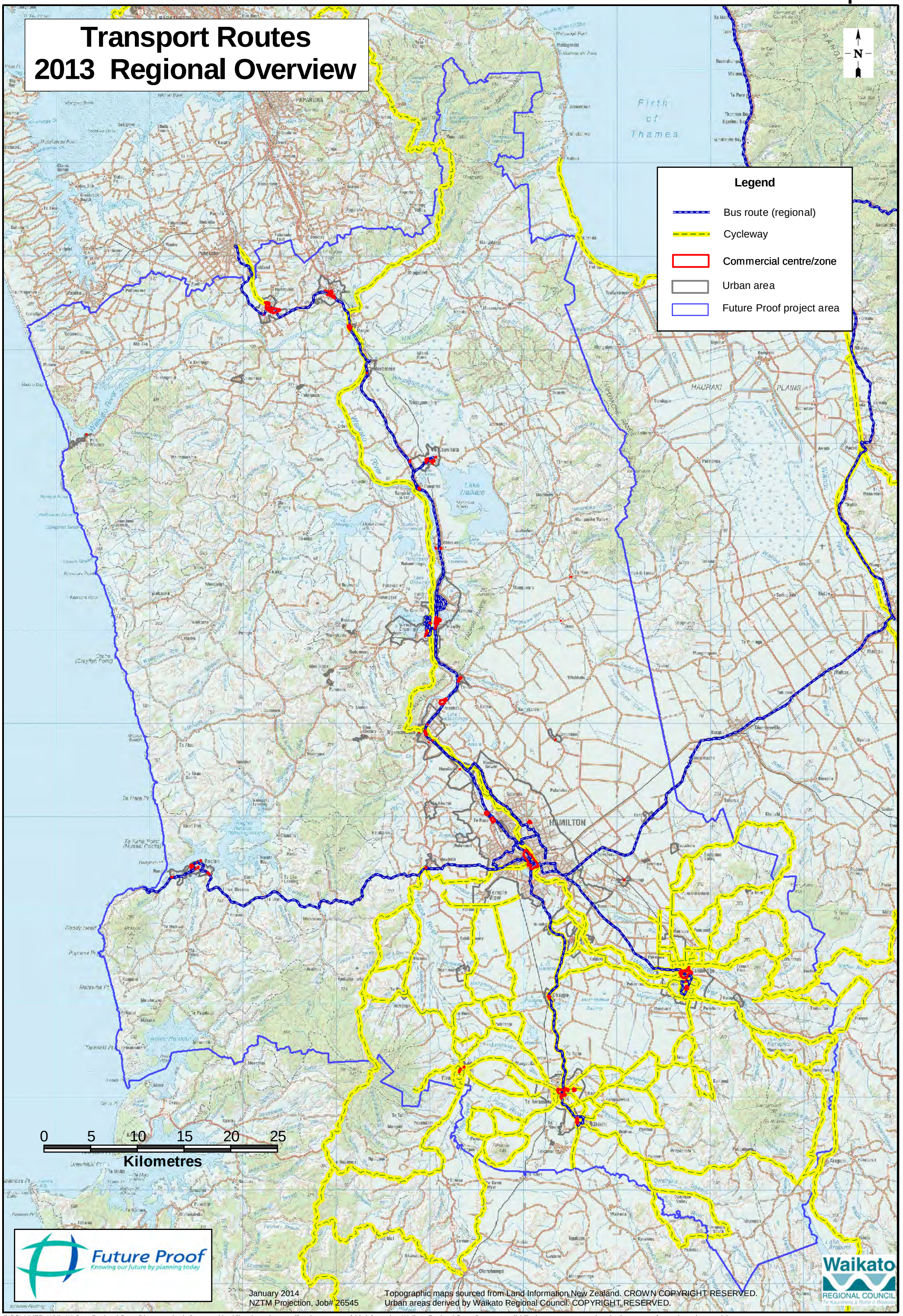
Map 10

Transport Routes
2013 Regional Overview



Map 11

Te Awa River Ride

Te Rapa North

Rototuna Structure Plan

Rototuna Structure Plan

Rotokauri Structure Plan

The Base

Chartwell

Wintec

Ruakura Structure Plan

CBD

Waikato University

This section of Wairere to be completed 2014

Hostpital

Hamilton Gardens

Peackocke Structure Plan

Te Awa River Ride

KEY

Commercial Centres

Existing Walking & Cycleways

- On Road
- Off Road
- Off Road Parks
- Walk Parks

N

Plan No. Draft version 1

Hamilton City Council
Te kaunihera o Kirikiriroa

GIS & CAD Services

HAMILTON
Walking & Cycling Map

Population Growth 2006-2013

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Hamilton Inset

1565 1233 -94 -288 2040 -151 -200 16 -32 -105 -208 -414 -33 -35 67 -252 -135 -220 -71 -157 142 23 38 42 -184 -56 -30 -152 246 -190 84 -193 -5 -128 -105 -352 -284 16 -194 -57 -25 -228 -419 -25 67

0 1 2 3 4 5
Km

Pukekohe
Buckland
Waiuku
Pokeno
Tuakau
Mercer
Meremere
Onewhero
Pukekawa
Port Waikato
Te Kauwhata
Rangiriri
Waikato District
Huntly
Renown
Waikokowai
Glen Afton
Pukemiro
Glen Massey
Ngaruawahia
Taupiri
Whitikahu
Gordonton
Morrinsville
Horotiu
Te Kowhai
Hamilton City
Eureka
Tauwhare
Tauwhare Pa
Raglan
Whatawhata
Templeview
Tamahere
Tamahere
Te Miro
Rukuhia
Ngahinapouri
Airport
Cambridge
Te Pahu
Ohaupo
Karapiro Village
Pirongia
Waipa District
Te Awamutu
Kihikihi
Pukeatua
Arapuni

103 -7 -58 -52 182 8 -16 -42 -6 -62 -209 43 98 -145 79 0 -57 -23 56 -123 107 -52 -33 129 197 215 46 177 481 96 -4 63 94 -45 99 75 9 -52 0 -60 44 -30 138 -14 47 18 -16 -21

Population Change

- -500 to -300
- -300 to -100
- -100 to 0
- 0 to 100
- 100 to 200
- 200 to 500
- 500 to 1000
- 1000 and over

0 5 10 15 20 25
Kilometres

Cambridge / Te Awamutu Inset

711 46 158 -25 368 56 Cambridge -25 -29 116 Te Awamutu -140 Kihikihi -66

0 1 2 3 4 5
Km

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Area unit boundaries and population estimates sourced from Statistics New Zealand.
Urban Footprint derived by Waikato Regional Council. COPYRIGHT RESERVED.

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Te Kaunihera a Rohe o Waikato

Appendix 2 – Map Production User Guide

Future Proof Map Production User Guide

This document records workflows used to create maps for Future Proof. It is intended for use by WRC Spatial Information staff so that they can replicate map production processes and for any other person wanting to know about the maps, data sources, data derived and analyses used, assumptions made, alternatives trialled, and any other information that might be useful in understanding or repeating the process. It is suitable for sharing with other organisations but may contain WRC document links that will not be directly accessible outside of WRC.

Contents

Background

Future Proof is a project between sub-region partners Waikato District, Hamilton City Council, Waipa District and Waikato Regional Council. Monitoring development trends within the sub-region assists the Future Proof partners in understanding the changing patterns of development. Monitoring provides an effective mechanism to inform Future Proof decision-makers and those who have implementation responsibilities about the consequences of actions, and changes in the community and the environment, in order to determine effectiveness of the implementation of Future Proof actions.

Further project information can be found in:
EWDOCS n2970976 v1 Future Proof Monitoring Report - Updated November 2013 - Draft (2).docx

Introduction

Mapping tasks for Future Proof were commenced by Waikato Regional Council's (WRC) Spatial Information team in 2012. Numerous questions were posed by Future Proof which required one or more maps by way of answering the question. Over time these questions and maps evolved as project requirements were refined and as understanding of data issues and alternatives increased. Over time the map numbering system was changed, questions/maps were added or removed and the approach to answering those questions changed in turn.

This guide has been largely reconstructed from working notes recorded at the time of map creation but does not attempt to record every change over time as those changes were numerous. It is intended to be an accurate record of the workflows used to create the final version maps as adopted by the project in December 2014. Any subsequent changes or exceptions should be noted and dated accordingly.

A general description of the mapping process is outlined here then a detailed description of each map is provided in the appendices.

Data used to answer questions

The project team considered what data was ideally required to answer the questions being posed and balance that against what suitable data was available within project constraints. For most maps the main data used was from the CRS Property data set maintained by WRC. Considerations included:

- Which benchmark year to adopt: 2009 was chosen
- Consistent annual snapshots were required: WRC takes an annual snapshot of CRS Property data each year at June as part of its rating processes.
- CRS Property layers are updated in GIS every night via automated processes. The data are the result of matching CRS Parcel and Valuation data using VRN (Valuation Rating Number) as unique identifier.
- CRS Property data includes valuation and/or land-use codes that can be filtered on to answer the map questions. In some cases these codes were not the optimum data to answer some questions but given their completeness and consistency across the sub-region they were deemed to be most suitable.
- Alternative data such as building consents might provide more concise results in answering some questions. However such consents data is not in a consistent form

across all Future Proof councils nor available as an annual snapshot. The work required to bring these data into a suitable state was deemed beyond the scope or resources of this project. For particular maps these alternative data have been used as noted on those maps.

Some of the questions originally posed were unspecific and needed refining before suitable data and analysis could be chosen for the corresponding map. For example “Has urban development mostly occurred within urban limits?” This question must be far more specific in order to map the answers:

- What developments are to be included – residential, commercial, industrial etc.?
- How do we define these developments that are “urban”
- First we must also spatially define the urban limits so that the appropriate spatial filters can be applied
- How are the results to be presented – as annual growth across the project area; broken down by urban area? Other?

Some iteration and trial and error occurred before final selection.

Foremost in choosing the data/analyses for each map is the requirement that the process is repeatable and comparable from year to year. This best supports the project goal of monitoring development trends.

CRS Property layers

WRC saves an annual snapshot of these layers at June each year as part of the rating system procedures. They are stored as GeoMedia MS Access databases in corporate data folders such as:

\\ew\gis_store\Corporate_Data\SNAPSHOT\2009_JUNE\PROPERTY

In order to better access and analyse the data for Future Proof the required snapshots were brought into Oracle. Data for each year was created as a standard GIS layer, with the base table created in GIS_DATASTORE schema and its corresponding GIS view in GIS_ALL schema as follows:

- CRS_PROPERTY_FUTUREPROOF_2009
- CRS_PROPERTY_FUTUREPROOF_2010
- CRS_PROPERTY_FUTUREPROOF_2011
- CRS_PROPERTY_FUTUREPROOF_2012
- CRS_PROPERTY_FUTUREPROOF_2013
- (base tables of the same name in GIS_DATASTORE)

In addition a layer was created representing the changes from year to year; this was done using simple MINUS logic in Oracle from one table to the next:

- CRS_PROP_FUTUREPROOF_2009_2010
- CRS_PROP_FUTUREPROOF_2010_2011
- CRS_PROP_FUTUREPROOF_2011_2012
- CRS_PROP_FUTUREPROOF_2012_2013
- (base tables of the same name in GIS_DATASTORE)

Base layers

A number of baseline features were defined, usually to overlay with the CRS Property data in order to map the answer to a question. The main baseline features reside in the following

GeoMedia warehouses: (additional features may reside in warehouses within other job folders).

\\ew\gis_store\GISWork\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements\23411_defined_baseline_features.mdb

- Defined_Area_Commercial: *Commercial areas, defined largely from district zone data; may overlap urban areas*
- Defined_Area_Industrial: *Industrial areas, defined largely from district zone data; may overlap urban areas*
- Defined_Area_Sub_Urban: *Sub-urban features including greenfield, future greenfield areas and infill; supplied in shapefile from Dylan*
- Defined_Area_Urban_Village: *Urban and Rural Village features initially refined for maps 1 and 2 but used across all maps; sourced mostly from shapefile from Dylan*
- Villages: *Towns, collections of rural villages etc, used to derive development statistics; derived from existing individual features. Bryan Oct 2013.*

Attributes include things like name of town, source of data and other details useful for identifying the data and applying filters to answer map questions.

\\ew\gis_store\GISWork\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements\23411.mdb

- Futureproof_Outline: *This is the project area boundary created by merging the three council areas of Hamilton, Waikato and Waipa*
- Several other minor features exist including map labels and features that have been superseded

A few other data connections exist across the maps again containing various labels used on maps as well as many superseded features (typically these were layers trialled for suitability but rejected for other better layers).

All layers used on maps are detailed in the maps appendices.

Analyses

Most maps use a similar approach in analysing and presenting the data. Typically the analysis for each map can be broken down into the following steps:

- Define the query criteria for the map and apply it to the baseline year (2009) and each other year of change (or base year in some cases). In most cases a filter is applied to VNZ_CATEGORY_CODE of the CRS Property data. For example the filter used to identify residential properties is:
    - vnz_category_code like 'RA%' or vnz_category_code like 'RC%' or vnz_category_code like 'RD%' or vnz_category_code like 'RF%' or vnz_category_code like 'RH%' or vnz_category_code like 'RR%'
- Apply a spatial filter as necessary to the above query. This might be urban boundaries to show urban development, or commercial zones for commercial development etc. Usually this requires a spatial intersection query – see the next bullet point.
- Often the map has accompanying tables showing statistics such as percentage growth within towns or similar. This requires an analytical merge query with inbuilt functional attributes to provide the required statistics, and in which case a spatial intersection is required to feed into the analytical merge.
- The analytical merge results are displayed in a data window and copied to Excel. For each map one or more worksheet is prepared with the data, and any further analysis

and a final table is prepared that is pasted directly into the GeoMedia layout. See \\ew\gis_store\GISWork\GIS_Jobs\requests_26500_26999\26545_future_proof\Map statistics tables.xlsx

- The process is repeated for each year required, thus building up a collection of appropriately named queries.

Appendix 1

All Maps

All maps share some common setup which is outlined here. Individual map characteristics follow.

Future Proof Monitoring Report – Map Numbers (as of 20 August 2014, Michelle White)

Map 1: Urban development 2009-2013 regional overview
Map 2: Urban development 2009-2013 urban settlements
Map 3: Industrial development 2009-2013 regional overview
Map 4: Industrial development 2009-2013 industrial areas
Map 5: Development on high quality soils 2009-2013 regional overview
Map 6: Residential development densities 2013 regional overview
Map 7: Residential development densities 2013 Hamilton
Map 8: Commercial development 2009-2013 regional overview
Map 9: Commercial development 2009-2013 commercial areas
Map 10: Rural residential (lifestyle) development 2009-2013
Map 11: Transport routes 2013 regional overview
Map 12: Hamilton walking and cycling map (produced by HCC)
Map 13: Population growth 2006-2013

Job folders
As at January 2015 an ongoing job folder for Future Proof work was created:
\\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future Proof
Final versions of all key workspaces, maps and data files are stored (or referenced) here for ongoing work. It is the culmination of all of the previous work. Workspaces are set to read-only.

The Future Proof work spans a number of months and was not continuous (numerous changes and iterations have occurred over the project). The key work spans two main Inforeq jobs, 23411 and 26545 (there may be other smaller requests also).

All significant work on the project should be found within these job folders:
\\ew\gis_store\GISWork\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements
\\ew\gis_store\GISWork\GIS_Jobs\requests_26500_26999\26545_future_proof

Sub-folders exist beneath these where appropriate. All GeoMedia related work files have been named appropriately under these folders and sub-folders.

Workspace
Typically a separate GeoMedia workspace has been created for each map, though sets of related maps share some workspaces.
See folder \\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future Proof\final geomedia workspaces jan 2015
Associate map PDF files are in \\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future Proof\final maps jan 2015

Data, Connections
Generally, all maps share a common default set of warehouse connections. These include the three default Oracle connections and at least the two main MS Access warehouses created for Future Proof:

- GIS_ALL
- GIS_IMAGES
- GIS_PHOTOS
- "23411"
  \\ew\gis_store\GISWork\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements\23411.mdb
- "23411_defined_baseline_features"
  \\ew\gis_store\GISWork\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements\23411_defined_baseline_features.mdb

Warehouse 23411 contains features developed at the early stages of the project, some of which are still being used on the maps.
Warehouse 23411_defined_baseline_features contains the key baseline features that were eventually defined in order to answer the bulk of the questions. See individual maps for details.

Map Window Legends
Each map has one or more map legends saved and named for that map or workspace. For example the workspace for maps 1 and 2 has a single saved map legend "map1_2_urban". Often the maps that share the same workspace are two different scale views of the same data; a regional overview and a more detailed view of towns. If re-using a shared named legend to reproduce a map, care needs to be taken to ensure that the appropriate set of labels is used for each map. Specifically on the detailed map the urban_label is turned off whereas it is turned on for the regional map.

Library
The named legends referred to above are all stored in a master GeoMedia library
\\ew\gis_store\GISWork\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements\23411_Futureproof_library_master.mdb
It has been copied to the final workspaces folder.

This library also holds all warehouse connections and key queries used across the maps. It would be an important resource should other workspaces or map files become lost or corrupt.

Queries
Several queries are reused across multiple maps, such as label queries, but most are specific to the map/workspace for which they are created. These should exist in the library. Refer to each map for details.

Layout
Each map shares common content such as the Future Proof logo and Waikato Regional Council logo, as well as standard map margin items like job number, date, scale bar, disclaimers etc., albeit that items can be positioned differently to suit each map.

A standard layout template (at A3 portrait) has been created containing these items, as well as several legend items that are reused across the maps:
\\ew\gis_store\GISWork\GIS_Jobs\requests_26500_26999\26545_future_proof\future_proof_blank_layout.glt
It has been copied to the final workspaces folder.

Typically the layout window will contain one or more map sheet named with the appropriate map number, plus a “blank” sheet containing the template items.

Tables
Some maps contain data tables that show statistics relevant to the map. A single Excel spreadsheet is used to prepare the data for all tables across the maps:
EWDOCS_n2972579_v1_Future_Proof_Map_statistics_tables.xlsx

This DM document contains a worksheet for each final map that contains tabular data. Over time there have been multiple versions of tables and tables that have been discarded. A spreadsheet of the same name under job 26545 contains most of these previous iterations.

Maps 1 and 2 - Urban

Map 1: Urban development 2009-2013 regional overview
Map 2: Urban development 2009-2013 urban settlements

Future Proof Question
Q1. Is new urban development (defined as development which is non-rural and has a section size of 2000m^2 or less) within Hamilton City, Cambridge, Te Awamutu/Kihikihi, Pirongia, Huntly, Ngaruawahia, Raglan, Te Kauwhata, Meremere, Taupiri, Horotiu, Matangi, Gordonton, Rukuhia, Te Kowhai and Whatawhata occurring within the identified urban limits?

Notes:

- Criteria used to determine urban development is somewhat different to more specific development in other maps. It includes all development including residential, commercial, industrial etc. that is of urban nature. It uses query criteria defined early in the project (land use and zone codes) as opposed to the more refined criteria (using VNZ codes) typically used in later questions – see query criteria below.

Workspace
\\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future_Proof\final_geomedia workspaces jan 2015\26545_Futureproof_Monitoring_Map1_2_Urban.gws

Connections
Default connections plus:
23411_results1
\\ew\gis_store\GISWork\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements\23411_results1.mdb

Warehouse 23411_results1 was created early in the project when different analysis options were being trialled. The connection remains closed because these trial results were discarded in favour of others; the results are saved should they be required for comparison in future.

Other warehouses/connections may exist but were not used on the final maps.

Queries

Query name	Data used	Criteria	Notes
urb_dev_2009	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2009	AREA_SQM <= 2000 and (LAND_USE_CODE between 20 and 30 or LAND_USE_CODE between 32 and 100) and ZONE_CODE NOT like '1%' and ZONE_CODE NOT like '2%'	map 1 and 2, urban development for 2009
urb_dev_2009_2010	GIS_ALL.CRS_PROP_FUTURE_PROOF_2009_2010		... for 2009 to 2010
urb_dev_2010_2011	GIS_ALL.CRS_PROP_FUTURE_PROOF_2010_2011		... for 2010 to 2011
urb_dev_2011_2012	GIS_ALL.CRS_PROP_FUTURE_PROOF_2011_2012		... for 2011 to 2012
urb_dev_2012_2013	GIS_ALL.CRS_PROP_FUTURE_PROOF_2012_2013		... for 2012 to 2013

Q1_urban_limits	Defined_Area_Urban_village	Feature_Name = 'Urban Limit' OR Feature_Name = 'Rural Village / Urban Limit'	Selects the desired urban locations
Spatial Intersection of urb_dev_2009 and Q1_urban_limits	Uses the above queries as input	touch	The results count is used in the spreadsheet (by simply copying the count from the map legend) for each respective year.
Spatial Intersection of urb_dev_2009_2010 and Q1_urban_limits			
Spatial Intersection of urb_dev_2010_2011 and Q1_urban_limits			
Spatial Intersection of urb_dev_2011_2012 and Q1_urban_limits			
Spatial Intersection of urb_dev_2012_2013 and Q1_urban_limits			

Other queries may exist but are (probably) not being used.

Map Legend

- Map1_2_urban – see GeoMedia library

Layout

Two map sheets exist in the layout window:

- map1 provides the regional overview
- map2 provides the detailed urban settlements view
- map1 and map2 layers are essentially the same apart from some urban labels turned off in map2

The “blank” sheet contains common map margin and legend items for use on the maps.

Tables

Map1 includes the table in worksheet “map1and2 Urban” of DM2972579

Feature counts are copied from the map legend entries to the columns showing total urban lots and lots in urban limits; percentages are calculated in columns to the right; the resulting table is copied into map1.

Maps 3 and 4 - Industrial

Map 3: Industrial development 2009-2013 regional overview
Map 4: Industrial development 2009-2013 industrial areas

Future Proof Question
Q3. Is new industrial development being located in the strategic industrial nodes identified in Table 6.2 (section 6C) of the RPS and in accordance with the indicative timings?
And
Q4. Is industrial development outside of the identified strategic industrial nodes (excluding rural based industry) generally occurring within the identified urban limits of settlements and within areas zoned for industrial uses?

Notes:

- This question was expanded to include both Strategic Industrial Nodes and Industrial Zones – distinctly different areas as defined by the FP councils. Each is defined in the "Defined_Area_Industrial" layer within the 23411_defined_baseline_features connection.

Workspace
\\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future Proof\final geomedia workspaces jan 2015\26545_Futureproof_Monitoring_Map3_4_Industrial.gws

Connections
Default connections
Other warehouses/connections may exist but were not used on the final maps.

Queries

<table>
<tr><th>Query name</th><th>Data used</th><th>Criteria</th><th>Notes</th></tr>
<tr><td>strategic_industrial_node</td><td rowspan="2">Defined_Area_Industrial</td><td>Feature_Name = 'Strategic Industrial Node'</td><td rowspan="2">Industrial areas defined largely from district zone data; may overlap urban areas.
Two features – zones & nodes</td></tr>
<tr><td>industrial_zone</td><td>Feature_Name = 'Industrial zone'</td></tr>
<tr><td>industrial_2009_1000m</td><td>GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2009</td><td rowspan="5">vnz_category_code like 'I%' and not vnz_category_code like 'IV%' AND GEOMETRY_AREA_SQM >= 1000;</td><td rowspan="5">VNZ industrial code, excluding vacant, per year
Query was updated in 2014 to include new graphic area attribute so as to filter by properties 1000 sqm or more</td></tr>
<tr><td>industrial_2009_2010_1000m</td><td>GIS_ALL.CRS_PROP_FUTURE_PROOF_2009_2010</td></tr>
<tr><td>industrial_2010_2011_1000m</td><td>GIS_ALL.CRS_PROP_FUTURE_PROOF_2010_2011</td></tr>
<tr><td>industrial_2011_2012_1000m</td><td>GIS_ALL.CRS_PROP_FUTURE_PROOF_2011_2012</td></tr>
<tr><td>industrial_2012_2013_1000m</td><td>GIS_ALL.CRS_PROP_FUTURE_PROOF_2012_2013</td></tr>
<tr><td colspan="2">Spatial Query of industrial_2009_1000m and industrial_zone</td><td rowspan="3">Touch (simple spatial query) using the above queries as input</td><td rowspan="3">Simple spatial query of each year's industrial development that touch each of the industrial zone and strategic industrial node queries</td></tr>
<tr><td colspan="2">Spatial Query of industrial_2009_1000m and strategic_industrial_node</td></tr>
<tr><td colspan="2">Spatial Query of industrial_2009_2010_1000m and industrial_zone</td></tr>
</table>

Spatial Query of industrial_2009_2010_1000m and strategic_industrial_node		
Spatial Query of industrial_2010_2011_1000m and industrial_zone		
Spatial Query of industrial_2010_2011_1000m and strategic_industrial_node		
Spatial Query of industrial_2011_2012_1000m and industrial_zone		
Spatial Query of industrial_2011_2012_1000m and strategic_industrial_node		
Spatial Query of Industrial_2012_2013_1000m and industrial_zone		
Spatial Query of Industrial_2012_2013_1000m and strategic_industrial_node		

Other queries may exist but are (probably) not being used.

Map Legend

- Map3_4_industrial – see GeoMedia library

Layout

Two map sheets exist in the layout window:

- Map3 shows regional overview of industrial development including a table showing percentage of development within and outside the two industrial boundaries
- Map4 shows a detailed view of industrial development in the industrial areas. Same content as map3 except that town labels are not displayed on map4.

The “blank” sheet contains common map margin and legend items for use on the maps.

Tables

Map3 includes the most recent table in worksheet “map3and4 Industrial” of DM2972579
The count of features is returned from the spatial queries and copied from the data window into the spreadsheet and the final table is a summary of those data.

Map 5 - Soils

Map 5: Development on high quality soils 2009-2013 regional overview

Future Proof Question
Q5. Is development occurring in areas with high quality soil?

Workspace
\\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future Proof\final geomedia workspaces jan 2015\26545_Futureproof_Monitoring_Map5_Soils.gws

Connections
Default connections plus
\\ew\gis_store\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements\23411_results_q2.mdb
Other warehouses/connections may exist but were not used on the final maps.

Queries

Query name	Data used	Criteria	Notes
quality_soils	GIS_ALL.LAND_RESOURCE_INVENTORY	LUC like '1%' or LUC like '2%' or LUC like '3%'	LUC in 1-3 value range
devt_09	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2009	land_use_code not in ('10','11','12','13','14','15','16','17','19','50','53','55','59','64')	For each year – All developments, excluding primary (not mining), outdoor recreation (e.g. DOC) and water supply reserves.
devt_10	GIS_ALL.CRS_PROP_FUTURE_PROOF_2009_2010		
devt_11	GIS_ALL.CRS_PROP_FUTURE_PROOF_2010_2011		
devt_12	GIS_ALL.CRS_PROP_FUTURE_PROOF_2011_2012		
devt_13	GIS_ALL.CRS_PROP_FUTURE_PROOF_2012_2013		
devt_09_non_urban	Inputs are from the queries above and Defined_Area_Urban_Village (baseline feature)	NOT Touch	For each year – All development from above that is outside of the urban areas
devt_10_non_urban			
devt_11_non_urban			
devt_12_non_urban			
devt_13_non_urban			
devt_09_non_urban and quality_soils	Inputs are from the queries above and Quality soils	Touch	For each year – All development from above that is outside of the urban areas AND Is inside quality soils
devt_10_non_urban and quality_soils			
devt_11_non_urban and quality_soils			
devt_12_non_urban and quality_soils			
devt_13_non_urban and quality_soils			

Other queries may exist but are (probably) not being used.

Map Legend

- Map5_soils – see GeoMedia library

Layout

Two map sheets exist in the layout window:

- Map5 shows regional overview of development on high quality soils, including one table

The “blank” sheet contains common map margin and legend items for use on the maps.

Tables

Map5 includes the table in worksheet “map5 Soils” of DM2972579 (update 16 Dec)

The count of features is returned from the spatial queries and copied from the data window into the spreadsheet and the final table is a summary of those data.

Maps 6 and 7 – Residential Density

Map 6: Residential development densities 2013 regional overview
Map 7: Residential development densities 2013 Hamilton

Note that map7, residential densities in Hamilton, was instead produced by HCC using alternative building consent data, December 2014.

Future Proof Question

Q8. Is there progress towards achieving the desired residential development densities as set out below?

a. *50 households/ha: Hamilton Central Business District*
b. *30 households/ha: Hamilton Intensification Areas*
c. *16 households/ha: Hamilton Greenfield*
d. *12-15 households/ha: Greenfield development in Cambridge, Te Awamutu/Kihikihi, Huntly, Ngaruawahia, Raglan/Whaingaroa and Te Kauwhata*
e. *8-10 households/ha: Greenfield in Waikato District rural villages where sewerage is reticulated.*

Workspace

\\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future_Proof\final_geomedia workspaces jan 2015\26545_Futureproof_Monitoring_Map6_Residential_Densities.gws

Connections

Default connections plus
\\ew\gis_store\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements\23411_results_q2.mdb
23411_results9 contains features created for analysis iterations trialled in this map
\\ew\gis_store\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements\23411_results9.mdb
The 23411_results9 warehouse also contains the feature class q9_area which contains all urban settlements for this map with the added AreaHa attribute required for the density statistics.

Other warehouses/connections may exist but were not used on the final maps.

Queries

Query name	Data used	Criteria	Notes
res09	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2009	vnz_category_code like 'RA%' or vnz_category_code like 'RC%' or vnz_category_code like 'RD%' or vnz_category_code like 'RF%' or vnz_category_code like 'RH%' or vnz_category_code like 'RR%'	For each year – All residential properties excluding vacant land and large blocks Criteria provided by Michael Spurr, HCC
res10	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2010		
res11	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2011		
res12	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2012		
res13	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2013		

Spatial Intersection of res09 and q9_area Spatial Intersection of res10 and q9_area Spatial Intersection of res11 and q9_area Spatial Intersection of res12 and q9_area Spatial Intersection of res13 and q9_area	Inputs are from the queries above and q9_area (feature in 23411_results9)	Touch	For each year – Intersect all residential properties from above with the required residential areas (towns and suburbs)
Merge of Spatial Intersection of res09 and q9_area Merge of Spatial Intersection of res10 and q9_area Merge of Spatial Intersection of res11 and q9_area Merge of Spatial Intersection of res12 and q9_area	Analytical merge of the spatial intersection queries Merge is by attribute on TOWN	Each query includes the four functional attributes below (as well as the merged intersection geometry) TOWN FIRST(Input.Name) Town_Area_ha ROUND(FIRST(Input.AreaHa), 2) CountProp COUNT(Input.PARCEL_ID1) Graphic_area_ha Graphic_area_ha ROUND(AREA(Output.IntersectionGeometry, 1)/10000, 0)	The functional attributes are then output to worksheet *map9density* to use in tables for the map(s) TOWN is the town name; Town_Area_ha is area in hectares of the town; CountProp is the number of properties in the town; Graphic_area_ha is the area in hectares of the merged property geometries
Merge of Spatial Intersection of res13 and q9_area	As per the other merge queries above but has an additional attribute	DensityB ROUND(Output.CountProp/IF(Output.Graphic_area_ha=0, 1, Output.Graphic_area_ha), 1)	Final map requirements were to show just the densities for 2013 using this method “DensityB”
Join of q9_area and Merge of Spatial Intersection of res13 and q9_area	Join of q9_area feature and the merge query for 2013	TOWN = TOWN	Join back to the town area feature so as to display towns-by-density thematically

Other queries may exist but are (probably) not being used.

Map Legend

- Map6_res_density – see GeoMedia library

Layout

As at December 2014 a single final map sheets exist in the layout window, map6_res_dev_density. Numerous previous versions were tried and discarded. Map 7 (residential densities in Hamilton) was discarded in favour of HCC producing the map using their own building consent data.

The “blank” sheet contains common map margin and legend items for use on the maps.

Tables

Residential density tables were requested to be removed from the map – so no table now appears on map6.

Some time in 2014 Michelle Hodges, HCC asked for the density data. Rather than attempt to create additional tables at WRC, the raw data were sent so that she or other FP project people could create their own tables for the report. These data were sent from:
\\ew\gis_store\GISWork\GIS_Jobs\requests_26500_26999\26545_future_proof\Maps December 2013\map9densities.xlsx

Maps 8 and 9 - Commercial

Map 8: Commercial development 2009-2013 regional overview
Map 9: Commercial development 2009-2013 commercial areas

Future Proof Questions

Q9. Where is significant commercial development occurring in the Future Proof area, with particular focus on retail and office development?

Q10. Is commercial development occurring in identified commercial centres and/or zoned areas

Q11. Is commercial development occurring in industrial areas?

Workspace

\\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future Proof\final geomedia workspaces jan 2015\26545_Futureproof_Monitoring_Map8_9_Commercial.gws

Connections

Default connections.
Other warehouses/connections may exist but were not used on the final maps.

Queries

Query name	Data used	Criteria	Notes
Commercial_2009	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2009	vnz_category_code like 'C%' and not vnz_category_code like 'CV%'	For each year – All commercial properties excluding vacant land
Commercial_2009_2010	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2010		
Commercial_2010_2011	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2011		
Commercial_2011_2012	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2012		
Commercial_2012_2013	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2013		
Spatial Query of Commercial_2009 and Defined_Area_Commercial	Spatial query of each commercial property query above and Defined_Area_Commercial (baseline feature)	Touch	For each year – Spatial (touch) query of all commercial properties from above with the defined commercial boundaries These are simple spatial overlays so as to get a count of records from the map legend and copy those statistics into the tables
Spatial Query of Commercial_2009_2010 and Defined_Area_Commercial			
Spatial Query of Commercial_2010_2011 and Defined_Area_Commercial			
Spatial Query of Commercial_2011_2012 and Defined_Area_Commercial			
Spatial Query of Commercial_2012_2013 and Defined_Area_Commercial			
Industrial_strategic_node	Defined_Area_Industrial (baseline feature)	Feature_Name = 'Strategic Industrial Node'	Industrial areas, defined largely from district zone data; may overlap urban areas

Industrial_zone	Defined_Area_Industrial (baseline feature)	Feature_Name = 'Industrial zone'	Industrial areas, defined largely from district zone data; may overlap urban areas
Spatial Query of Commercial_2009 and Industrial_strategic_node	Spatial query of each commercial property query above and Industrial_strategic_node query	TOUCH	For each year – Spatial (touch) query of all commercial properties from above with the industrial strategic nodes These are simple spatial overlays so as to get a count of records from the map legend and copy those statistics into the tables
Spatial Query of Commercial_2009_2010 and Industrial_strategic_node			
Spatial Query of Commercial_2010_2011 and Industrial_strategic_node			
Spatial Query of Commercial_2010_2011 and Industrial_strategic_node			
Spatial Query of Commercial_2010_2011 and Industrial_strategic_node			
Spatial Query of Commercial_2009 and Industrial_zone	Spatial query of each commercial property query above and Industrial_zone query	TOUCH	For each year – Spatial (touch) query of all commercial properties from above with the industrial zones These are simple spatial overlays so as to get a count of records from the map legend and copy those statistics into the tables
Spatial Query of Commercial_2009_2010 and Industrial_zone			
Spatial Query of Commercial_2010_2011 and Industrial_zone			
Spatial Query of Commercial_2011_2012 and Industrial_zone			
Spatial Query of Commercial_2012_2013 and Industrial_zone			

Other queries may exist but are (probably) not being used.

Map Legend

- Map8_9_commercial – see GeoMedia library

Layout

Two map sheets exist in the layout window:

- Map8 shows regional overview of commercial development including one table showing percentage development in certain areas
- Map9 shows a detailed view of commercial development within the selected commercial areas

The “blank” sheet contains common map margin and legend items for use on the maps.

Tables

One table is added to map8 from worksheet “map8and9 Commercial” of DM2972579. Data include the latest counts of commercial properties *(vnz_category_code like 'C%' and not vnz_category_code like 'CV%')* with the final table presenting these as percentages in each of the identified zones/areas.

Map 10 – Rural Residential (Lifestyle)

Map 13: Rural Residential (Lifestyle) Development 2009-2013 Regional Overview

Future Proof Question

Q12. Is rural residential growth occurring in and around existing urban areas and in areas zoned for this purpose?

Notes:

- This question was refined to require the counts of lifestyle development (properties) occurring outside of rural residential zones

Workspace

\\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future_Proof\final_geomedia workspaces jan 2015\26545_Futureproof_Monitoring_Map10_Lifestyle.gws

Connections

Default connections plus:
23411_results_q2
\\ew\gis_store\GISWork\GIS_Jobs\requests_23000_23499\23411_futureproof_GIS_requirements\23411_results_q2.mdb
Waikato DC
\\ew\gis_store\GISWork\GIS_Jobs\requests_26500_26999\26545_future_proof\ta_data
Waipa DC
\\ew\gis_store\GISWork\GIS_Jobs\requests_26500_26999\26545_future_proof\ta_data

Data from the two TA warehouses/connections were used to define rural residential zones but remain closed and were not used on the final maps.

Queries

Query name	Data used	Criteria	Notes
lifestyle09	GIS_ALL.CRS_PROPERTY_FUTURE_PROOF_2009	upper(VNZ_CATEGORY_CODE) like 'LI%' AND GEOMETRY_AREA_SQM <= 40000; *property area attribute added in Dec14 to enable filtering by properties 4Ha or less*	lifestyle CRS property 2009
lifestyle10	GIS_ALL.CRS_PROP_FUTURE_PROOF_2009_2010		res or lifestyle 2009 to 2010
lifestyle11	GIS_ALL.CRS_PROP_FUTURE_PROOF_2010_2011		res or lifestyle 2010 to 2011
lifestyle12	GIS_ALL.CRS_PROP_FUTURE_PROOF_2011_2012		res or lifestyle 2011 to 2012
lifestyle13	GIS_ALL.CRS_PROP_FUTURE_PROOF_2012_2013		res or lifestyle 2012 to 2013
Spatial Query of lifestyle09 and rural_res_zone	Intersects each of the res lifestyle queries with the map4 village query	NOT TOUCH	For each year – All lifestyle properties outside of rural residential zones These are simple spatial overlays so as to get a count of records from the map legend and copy those statistics into the tables
Spatial Query of lifestyle10 and rural_res_zone			
Spatial Query of lifestyle11 and rural_res_zone			

Spatial Query of lifestyle12 and rural_res_zone			
Spatial Query of lifestyle13 and rural_res_zone			

Other queries may exist but are (probably) not being used.

Map Legend

- Map10_lifestyle – see GeoMedia library

Layout

A single map sheet exists in the layout window, map10_lifestyle. Counts of properties outside of the rural residential zones are added to the layout legend.
The "blank" sheet contains common map margin and legend items for use on the maps.

Tables

Final version of map10 does not include any separate tables however worksheet "map10 Lifestyle" in DM2972579 stores the counts shown the map legend together with other statistics included in earlier versions.

Map 11 – Transport Routes

Map 11: Transport routes 2013 regional overview

Future Proof Question
Q15. Is development occurring in commercial centres with access to a variety of transport modes?

Map11 shows regional bus and cycle routes overlaid with zoned commercial areas. Map12, "Walking & Cycling 2014 Vs Commercial Centres_Map12" was produced by HCC using alternative data for Hamilton City.

Workspace
\\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future_Proof\final_geomedia workspaces jan 2015\26545_Futureproof_Monitoring_Map11_12_tracks.gws
It is apparent that this is not the exact workspace used to produce map11, however the layout is similar and all required map layers are present.

Connections
Multiple warehouses/connections exist, some of which will not be in use; these should be reassessed when the map is next reproduced.

Queries
Queries exist but are (probably) not being used; this map shows features from both Oracle corporate layers and project layers.

Map Legend
- Map11_transport – see GeoMedia library

Layout
"Map11 transport" is not the exact layout used to produce map11 but is close. This should be revised to suit requirements when the map is next reproduced.
The "blank" sheet contains common map margin and legend items for use on the maps.

Tables
No tables are included in map11.

Map 13 – Population Growth

Map 13: Population growth 2006-2013

Future Proof Question

Q18. Where is population growth occurring and at what rate?

Notes:

- Unlike previous maps that estimate population using a factor of residential properties, this map uses area unit population estimates from Statistics NZ.

Workspace

\\ew\gis_store\GISWork\GIS_Jobs\requests_ongoing\Future Proof\final geomedia workspaces jan 2015\26545_Futureproof_Monitoring_Map13_population.gws

Connections

Default connections plus:
future_proof_2012population
\\ew\gis_store\GISWork\GIS_Jobs\requests_26500_26999\26545_future_proof\future_proof_2012population.mdb

The following data (population statistics) is attached to the above warehouse:
\\ew\gis_store\GISWork\GIS_Jobs\requests_26500_26999\26545_future_proof\Stats_2012_area_unit_pop_gm.xls

Queries

Query name	Data used	Criteria	Notes
join_au12_pop	GIS_ALL.POL_2012_AREA_UNITS Future_proof_2012population (pop_estimate)	AU12=ID	Join of Area Unit (2012) with population data from 2006 to Census 2013
Functional Attributes of join_au12_pop	Functional attribute PopChange2006to2013 *Other functional attributes exist for other yearly ranges but these were not shown on the final map*	Input.Census2013-Input.2006	Produces population change for the given years which is then mapped thematically using selected ranges

Other queries may exist but are (probably) not being used.

Map Legend

- Map13_population – see GeoMedia library

Layout

A single final map sheet exists in the layout window, “map13 population”; other older maps also exist but were not used.

Tables

No tables are included in map13; the legend shows thematic ranges of change in population (NZ Statistics area unit).

Appendix 3 – Waikato and Waipa Districts Towns and Rural Villages

Waikato District Rural Villages

Glen Massey
Glen Afton
Pukemiro
Waikokowai and Renown
Matangi
Taupiri
Eureka
Gordonton
Tamahere
Tauwhare
Tauwhare Pa
Rangiriri
Maramarua
Meremere
Horotiu
Te Kowhai
Whatawhata
Lake Rotokauri

Waikato District Towns

Huntly
Ngaruawahia
Raglan and Whaingaroa
Te Kauwhata

Waipa District Rural Villages

Pirongia
Ohaupo
Ngahinapouri
Te Pahu
Rukuhia
Karapiro
Te Miro
Pukeatua

Waipa District Towns

Cambridge
Te Awamutu / Kihikihi

Appendix 4 – Summary of LINZ Land Use Codes

Primary level use codes
The primary level is a division into 10 broad categories of use.

0 Multi-use at the primary level
1 Rural industry
2 Lifestyle
3 Transport
4 Community services
5 Recreational
6 Utility services
7 Industrial
8 Commercial
9 Residential

Secondary level use codes
The secondary level provides further refinement within the primary level categories.

0	**Multi-use at primary level**		**5**	**Recreational**	
	Vacant or intermediate	0		Multi-use within recreational	0
	Rural industry	1		Entertainment	1
	Lifestyle	2		Active indoor	2
	Transport	3		Active outdoor	3
	Community services	4		Passive indoor	4
	Recreational	5		Passive outdoor	5
	Utility services	6		Vacant	9
	Industrial	7	**6**	**Utility services**	
	Commercial	8		Multi-use within utility services	0
	Residential	9		Communications	1
1	**Rural industry**			Electricity	2
	Multi-use within rural industry	0		Gas	3
	Dairy	1		Water supply	4
	Stock finishing	2		Sanitary	5
	Arable farming	3		Other	6
	Store livestock	4		Post boxes	7
	Market gardens and orchards	5		Vacant	9
	Specialist livestock	6	**7**	**Industrial**	
	Forestry	7		Multi-use within industrial	0
	Mineral extraction	8		Food, drink, and tobacco	1
	Vacant	9		Textiles, leather, and fur	2
2	**Lifestyle**			Timer products and furniture	3
	Multi-use within lifestyle	0		Building materials other than timber	4
	Single unit	1		Engineering, metalworking, appliances, and machinery	5
	Multi-unit	2		Chemicals, plastics, rubber, and paper	6
	Vacant	9		Other industries, including storage	7
3	**Transport**			Depots and yards	8
	Multi-use within transport	0		Vacant	9
	Road transport	1	**8**	**Commercial**	
	Parking	2		Multi-use within commercial	0
	Rail transport	3		Retail	1
	Water transport	4		Services	2
	Air transport	5		Wholesale	3
	Vacant	9		Offices	4
4	**Community services**			Car parking	5
	Multi-use in community services	0		Vacant	9
	Educational	1	**9**	**Residential**	
	Medical and allied	2		Multi-use within residential	0
	Personal & property protection	3		Single unit excluding bach	1
	Religious	4		Multi-unit	2
	Defence	5		Public communal unlicensed	3
	Halls	6		Public communal licensed	4
	Cemeteries and crematoria	7		Special accommodation	5
	Vacant	9		Communal residence dependent on other use	6
				Bach	7
				Car parking	8
				Vacant	9

Appendix 5 – Summary of LINZ Valuation NZ Category Codes

Code	Top level category	Second level category	Code	Top level category	Second level category
AI	Arable	Irrigated	MC	Mining	Coalfield
AN	Arable	Non Irrigated	MG	Mining	Gas
CA	Commercial	Accommodation (hotels, motels, etc)	ML	Mining	Limestone Quarry
CC	Commercial	Cinema / Hall	MO	Mining	Oilfield
CE	Commercial	Elderly (residential care homes / retirement villages)	MP	Mining	Precious Metal
CH	Commercial	Health Operations (private hospitals, surgery, clinics)	MR	Mining	Rock/Shingle
CK	Commercial	Educational Uses (commercial as opposed to Min of Education)	MX	Mining	Mixed/Other
CL	Commercial	Liquor (including bars / taverns)	OA	Other	Assembly (halls, etc)
CM	Commercial	Motor Vehicle sales or service	OE	Other	Educational
CO	Commercial	Office	OH	Other	Health/Medical
CP	Commercial	Parking	OM	Other	Maori Sites
CR	Commercial	Retail	OP	Other	Passive Reserve
CS	Commercial	Service Station	OR	Other	Religious
CT	Commercial	Tourist Activities	OS	Other	Sporting
CV	Commercial	Vacant	OV	Other	Vacant
CX	Commercial	Multiple/Other	OX	Other	Multiple/Other
DF	Dairying	Factory and Town combined	PF	Pastoral	Fattening
FE	Forestry	Exotic	PG	Pastoral	Grazing
FI	Forestry	Indigenous	PR	Pastoral	Run
FP	Forestry	Protected	PS	Pastoral	Stud
FV	Forestry	Vacant	RA	Residential	Apartment
HB	Horticulture	Berry	RB	Residential	Vacant Block Lanf
HC	Horticulture	Citrus	RC	Residential	House Converted to Flats
HF	Horticulture	Flower	RD	Residential	Dwelling (house)
HG	Horticulture	Glasshouse	RF	Residential	OYO - flats bought individually for occupation
HK	Horticulture	Kiwifruit	RH	Residential	Home & Income
HM	Horticulture	Market Garden	RM	Residential	Vacant Block land suitable for multi-unit dwelling
HP	Horticulture	Pipfruit	RN	Residential	Multiple Dwellings on one section
HS	Horticulture	Stonefruit	RP	Residential	Car Park
HV	Horticulture	Vines	RR	Residential	Purpose built flats often specifically for rental
HX	Horticulture	Other/Mixed	RV	Residential	Vacant Site zoned for residential use.
IF	Industrial	Food processing and/or food storage	SA	Specialist	Aquaculture
IH	Industrial	Heavy Manufacture	SD	Specialist	Deer
IL	Industrial	Light Manufacture	SH	Specialist	Horses
IN	Industrial	Noxious/Dangerous	SP	Specialist	Poultry
IS	Industrial	Service	SS	Specialist	Pigs
IV	Industrial	Vacant	SX	Specialist	Other
IW	Industrial	Warehouse	UC	Utility Assets	Civic
IX	Industrial	Other/Mixed	UE	Utility Assets	Energy
LB	Lifestyle	Bare Land - presubdivision	UG	Utility Assets	Generating & processing sites or plants
LI	Lifestyle	Improved	UP	Utility Assets	Postboxes
LV	Lifestyle	Vacant	UR	Utility Assets	Rail Network Corridors
			UT	Utility Assets	Telecommunication Networks