Future Development Strategy

Future urban areas evidence report – for consultation

June 2023

aucklandcouncil.govt.nz

Auckland Future Development Strategy 2023-2053. Future urban areas evidence report – for consultation

© 2023 Auckland Council, New Zealand

June 2023

ISBN 978-1-99-106058-7 (PDF)

Draft strategy for consultation confirmed by the Auckland Council Planning, Environment and Parks Committee, 4 May 2023.

Auckland Council disclaims any liability whatsoever in connection with any action taken in reliance of this document for any error, deficiency, flaw, or omission contained in it.

This document is licensed for re-use under the Creative Commons Attribution 4.0 International licence.

In summary, you are free to copy, distribute and adapt the material, as long as you attribute it to Auckland Council and abide by the other licence terms.



Auckland Council does not give any warranty whatsoever, including without limitation, as to the availability, accuracy, start completeness, currency or reliability of the information or data body temperature(including third party data) made available made available via (the publication and expressly disclaim (to the maximum extent permitted in law) all liability for any damage or loss resulting from your use of, or reliance on the publication or the information and data provided via the publication. The publication, information, and data contained within it are provided on an “as is” basis.

Contents

Executive summary 3
Opportunities and challenges 3
Approach 3
1.0 Introduction 10
1.1 Background and purpose of this report 10
1.2 Future urban areas and future urban zones 10
1.3 Accommodating Auckland's growth 11
1.4 Opportunities and challenges 15
1.5 Implementation 20
2.0 Auckland-wide overview of future urban areas 22
2.1 Large Future Urban Areas (North, North-west and South) 23
2.1.1 Northern FUAs 23
2.1.2 North-western FUAs 31
2.1.3 Southern FUAs 39
2.2 Urban edge and rural and coastal settlement FUAs 53
2.2.1 Overview 53
2.2.2 Live zoned urban edge and Rural and Coastal Settlement FUAs 54
2.2.3 North-western rural and coastal FUAs 59
2.2.4 Southern rural and coastal FUAs 61
References 66
Appendices 68
Appendix 1: Map of FUAs 2017 69
Appendix 2: Information from Auckland Plan 2050 Development Strategy on FUAs 70
Appendix 3: Summary of structure plan requirements from the AUP 73
Appendix 4: Data inputs and assumptions regarding significance of hazard constraints to development for future urban areas 74
Appendix 5: Enabled carbon emissions in greenfield areas report 76

Executive summary

In 2016, around 15,000ha of land was identified for growth in rural areas, referred to as future urban areas (FUAs). It was estimated that this land could accommodate approximately 137,000 homes and 67,000 jobs. These FUAs were seen as a valuable resource that needed to be planned and used efficiently to get the best long-term, sustainable outcomes.

The Future Urban Land Supply Strategy 2017 (FULSS) (Auckland Council, 2017) outlined a coordinated approach to timing and sequencing development in these FUAs over 30 years. This was based on live zoned areas being sequenced first. Infrastructure or environmental constraints were also key considerations for sequencing.

In 2018 the sequencing information for anticipated development readiness of FUAs was included in the Auckland Plan Development Strategy 2050 (Auckland Council, 2018a).

Currently 29% of initial future urban land, identified in the FULSS, has been live zoned[1].

Monitoring (2021-2022) indicated that of 21,607 dwellings consented region wide, 2,408 dwellings were in FUAs, this represented a 0.4% increase from the previous reporting year. This was approximately 11% of all dwellings consented.

Consent information showed that 60% of the dwellings consented in FUAs were for stand-alone houses (Auckland Council, 2022).

Opportunities and challenges

The identification of FUAs provides Auckland with an opportunity to comprehensively plan these areas to achieve well-functioning urban environments. Comprehensive planning enables these areas to provide housing capacity as well as accommodating business and employment land, community facilities, parks and green spaces.

However, planning for these areas also presents challenges. There have been a significant number of private plan changes and fast track consents that challenge the ability to plan comprehensively and achieve good design through structure planning. Development of greenfield areas is more costly to provide infrastructure for and generates greater VKT because of its relative distance from facilities and employment. The council has legislative requirements to reduce greenhouse gas emissions. Additionally, weather events and new information have highlighted natural hazards in some of the FUAs and the need to address these comprehensively.

Approach

The approach proposes changing the timing of ‘development readiness’ for some FUAs, reducing the spatial extent of some and further investigating other areas. At a high level, the basis for this includes:

- some land areas that are prone to significant natural hazard risk, which will increase with ongoing climate change
- poor access to employment and services in some locations, likely to result in high levels of private vehicle usage (at least until frequent public transport infrastructure and services can be provided), with the potential to lead to higher levels of congestion and higher emissions

[1] This includes land zoned straight form a rural zone to an urban zone as part of the AUP decisions.

- significant challenges in funding infrastructure investment to support growth and the need to better align development readiness with the ability to fund infrastructure.
- there is less need for high levels of development capacity in FUAs, given the large uplift in capacity that will be realised through Plan Change 78.

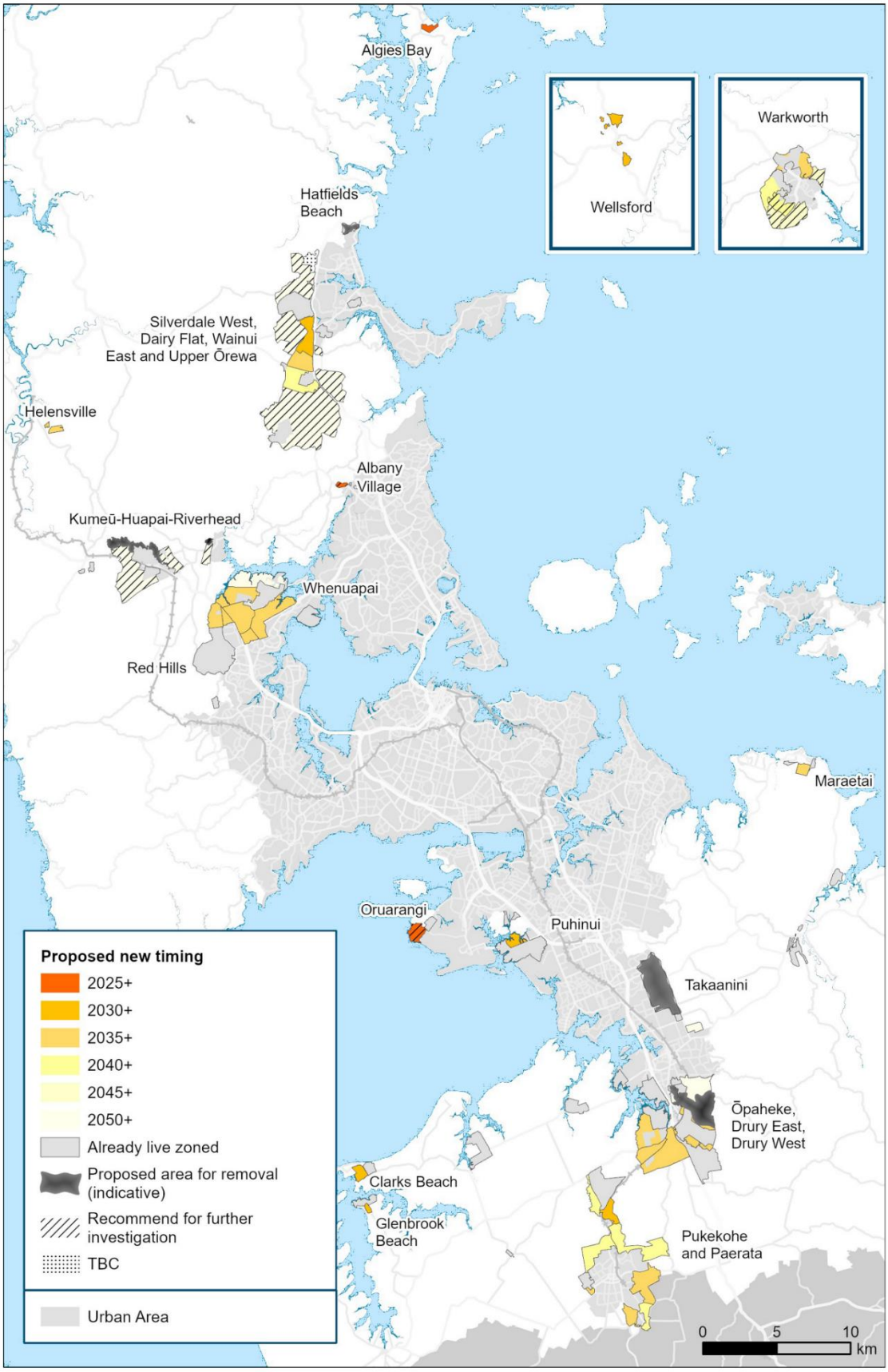
The draft FDS systematically addresses all FUAs, and indicates whether the spatial extent is reduced, whether timing for live zoning is changed, or whether further investigation is required.

The FULSS as a standalone document will be removed, and the information currently contained within it is reframed and sits within the draft FDS. This better integrates strategic approaches and confirms status under the RMA.

Timeframes for sequencing in the draft FDS are broader and more indicative. Critically, the strategy for timing of rezoning is based on infrastructure triggers.

As well as bringing this sequencing information into the draft FDS, the draft FDS recommends that this sequencing strategy is embedded into the Regional Policy Statement. This will provide greater decision-making weight to sequencing strategy on plan change applications. It also recommends that structure planning is strengthened.

The following map and tables illustrate the proposed approach to sequencing of future urban area.



Map of future urban areas with proposed timing and amendments

Sub-region FUA cluster	Future urban areas	Status in 2023	FULSS 2017 timing	FDS New timing	FDS approach
North					
Warkworth	*Warkworth North*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Warkworth North	Partially live zoned	2018-2022	2035+	Timing delay
	Warkworth West	Partially live zoned	2018-2022	2040+	Timing delay
	Warkworth South-central	Future Urban zoned	2028-2032	2040+	Timing delay and recommend for further investigation
	Warkworth South-east	Future Urban zoned	2028-2032	2045+	Timing delay and recommend for further investigation
	Warkworth South-west	Future Urban zoned	2028-2032	2045+	Timing delay and recommend for further investigation
	Warkworth North-east	Future Urban zoned	2033-2037	2045+	Timing delay and recommend for further investigation
Silverdale West, Dairy Flat, Wainui East and Upper Ōrewa	*Wainui East SHA*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Silverdale West (Stage 1)	Future Urban zoned	2018-2022	2030+	Timing delay
	Silverdale West (Stage 2)	Future Urban zoned	2018-2022	2035+	Timing delay
	Silverdale West (Stage 3)	Future Urban zoned	2018-2022	2040+	Timing delay
	Dairy Flat	Future Urban zoned	2033-2037	2050+	Timing delay and recommend for further investigation
	Wainui East	Future Urban zoned	2033-2037	2050+	Timing delay and recommend for further investigation
	Upper Ōrewa	Future Urban zoned	2033-2037	2050+	Timing delay and recommend for further investigation

North FUAs summary table

Sub-region FUA cluster	Future urban areas	Status in 2023	FULSS 2017 timing	FDS New timing	FDS approach
North-west					
Whenuapai	*Scott Point*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Whenuapai	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Whenuapai North (Stage 1)	Future Urban zoned	2028-2032	2035+	Timing delay
	Whenuapai North (Stage 2)	Future Urban zoned	2028-2032	2050+	Timing delay
	Whenuapai Central	Future Urban zoned	2028-2032	2035+	Timing delay
	Whenuapai East	Future Urban zoned	2018-2022	2035+	Timing delay
	Whenuapai West	Future Urban zoned	2028-2032	2035+	Timing delay
	Whenuapai South	Future Urban zoned	2018-2022	2035+	Timing delay
Red Hills	*Red Hills*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Red Hills North	Future Urban zoned	2028-2032	2035+	Timing delay
Kumeū-Huapai and Riverhead	*Kumeū Huapai*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Kumeū Huapai and Riverhead	Future Urban zoned	2028-2032	2050+	Recommend partial removal of Kumeū-Huapai and Riverhead FUA Timing delay for Kumeū-Huapai and Riverhead remainder Recommend further investigation for whole of Kumeū-Huapai and Riverhead

North-west FUAs summary table

Sub-region FUA cluster	Future urban areas	Status in 2023	FULSS 2017 timing	FDS New timing	FDS approach
South					
Ōpaheke, Drury East, Drury West	*Hingaia*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Ōpaheke -Drury (Bellfield Rd)	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Drury South	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Drury West (Bremner Rd)	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Ōpaheke-Drury (Drury East, Gatland Road, Great South Road)	*Partially live zoned*	*2028-2032*	*N/A*	*Infrastructure review*
	Ōpaheke *(previously named as Ōpaheke -Drury)*	Future Urban zoned	2028-2032	2050+	Timing delay Recommend removal of Slippery Creek portion of FUA
	Drury East	Future Urban zoned	2028-2032	2035+	Timing delay

	(previously named as Ōpaheke Drury)				Recommend removal of Slippery Creek portion of FUA
	Drury West (Stage 1)	Partially live zoned	2018-2022	2035+	Timing delay
	Drury West (Stage 2)	Future Urban zoned	2028-2032	2035+	Timing delay
	Drury West (Stage 3)	Partially live zoned	2028-2032	2035+	Timing delay
Pukekohe and Paerata	*Paerata (Wesley)*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Pukekohe (Belmont)	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Paerata South	Future Urban zoned	2018-2022	2030+	Timing delay
	Paerata West	Future Urban zoned	2018-2022	2040+	Timing delay
	Pukekohe North-east	Future Urban zoned	2023-2027	2040+	Timing delay
	Pukekohe North-west	Future Urban zoned	2023-2027	2040+	Timing delay
	Pukekohe East	Future Urban zoned	2023-2027	2035+	Timing delay
	Pukekohe South-east	Future Urban zoned	2023-2027	2040+	Timing delay
	Pukekohe South-west	Future Urban zoned	2023-2027	2035+	Timing delay
Puhinui	*Puhinui (Stage 1)*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Puhinui (Stage 2)	Future Urban zoned	2028-2032	2030+	Timing delay
Takaanini	*Takaanini (Walters Rd)*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Takaanini (Cosgrave Rd)	Future Urban zoned	2023-2027	2050+	Timing delay
	Takaanini	Future Urban zoned	2043-2047	N/A	Recommend removal of Takaanini FUA

South FUAs summary table

Sub-region FUA cluster	Future urban areas	Status in 2023	FULSS 2017 timing	FDS New timing	FDS approach
North	*Hibiscus Coast (Silverdale)*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Hibiscus Coast (Red Beach)	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Hatfields Beach 1	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Albany Village 1	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Waimauku	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Swanson	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Wellsford	Future Urban zoned	2023-2027	2030+	Timing delay
	Algies Bay	Future Urban zoned	2023-2027	2025+	No change
	Albany Village 2	Future Urban zoned	2023-2027	2025+	Recommend for further investigation
	Helensville 1	Future Urban zoned	2023-2027	2035+	Timing delay
	Helensville 2	Future Urban zoned	2028-2032	2035+	Timing delay
	Hatfields Beach 2	Future Urban zoned	2028-2032	N/A	Recommend removal of Hatfields Beach 2 FUA
South	*Maraetai 1*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Oruarangi 1	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Clevedon	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Clevedon Waterways	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Karaka North	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Kingseat	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Clarks Beach 1	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Glenbrook Beach 1	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Patumahoe	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Oruarangi 2	Future Urban zoned	2018-2022	2025+	Timing delay and recommend for further investigation
	Clarks Beach 2	Future Urban zoned	2023-2027	2030+	Timing delay
	Glenbrook Beach 2	Future Urban zoned	2023-2027	2030+	Timing delay
	Maraetai 2	Future Urban zoned	2028-2032	2035+	Timing delay

Urban edge sites and rural and coastal towns FUAs summary table

1.0 Introduction

1.1 Background and purpose of this report

On 4 August 2022 Auckland Council's Planning Committee endorsed strategic direction for the Future Development Strategy (FDS) to reconsider some future urban areas (FUAs) identified in the Auckland region by previous development strategies (PLA/2022/95). The Planning Committee directed that this would particularly be investigated where:

- an area is vulnerable to natural hazard risks;
- does not contribute to council's and government's climate objectives;
- if they contain large areas of elite or prime soils; or
- if their development would not make the best use of existing or committed infrastructure.

This report addresses the opportunities and challenges for planning and delivering growth in FUAs, as part of an overall approach to accommodating growth, Auckland-wide. That is, as part of a quality compact approach to growth where most growth is through intensification within the existing urban area.

The report provides an assessment of the individual FUAs including the large clusters of future urban land in the north, north-west and south. It also addresses the FUAs identified on Auckland's urban edge and in rural and coastal settlements.

In addition to this report, two additional reports provide further evidence on the following topics:

- Overall evidence report (Auckland Council, 2023a)
- Growth scenarios (Auckland Council, 2023b)

If more detail is sought on these topics, reference should be made to these separate reports.

1.2 Future urban areas and future urban zones

The review of the FDS enables a fresh look at the timing of the FUAs as more detailed information becomes available, and the spatial extent of FUAs.

This evidence report uses as a basis for its work the FUAs that were identified as part of the development of the Auckland Unitary Plan (AUP). The future urban zone was applied to approximately 15000ha of greenfield land[2] that was identified as suitable for urbanisation (Auckland Council, 2023c).

The future urban zone is a transitional zone which remains in place until it is rezoned to an appropriate urban zone (e.g. residential or business) (Auckland Council 2017). Since 2016, when the AUP was made operative in part, there have been a number of plan changes that have rezoned land to an urban zone.

In 2015 the council adopted a Future Urban Land Supply (FULSS) and updated this in 2017 taking into account decisions from the AUP. FUAs in the FULSS are shown on in Appendix 1. The primary purpose of the FULSS is to identify the sequencing and timing of future urban land for development readiness over

[2] Greenfield Land identified for future urban development that has not been previously developed (Auckland Council, 2023c).

30 years. It does not determine the location of the Rural Urban Boundary or future urban zoned land. This is identified in the AUP.

The FUAs identified in the FULSS provide the scope for this evidence report[3]. The AUP became operative in part in November 2016, and the FUAs have evolved considerably since then. While the focus for this evidence report is on areas that are still zoned Future Urban, the live zoned areas are important to provide context. Live zoning, as part of the AUP decisions, as well as a number of private plan change requests have resulted in 29% of the land identified in future urban areas being rezoned to a live zone which enables development[4].

These future urban areas are used for monitoring the Auckland Plan Development Strategy. Auckland Council Monitoring of FUAs includes looking on an annual basis at progress in the phases of development: planning, infrastructure and implementation. For this report an understanding of infrastructure delivery for these live zoned areas and how that relates to delivery of infrastructure for areas still zoned as future urban is relevant.

Monitoring also indicated that of 21,607 dwellings consented region wide, 2,408 dwellings were in FUAs. This was approximately 11% of all dwellings consented Auckland-wide. In contrast 83% of dwellings consented were in existing urban areas and 6% in rural areas.

Consent information showed that for future urban areas, 60% of the dwellings consented were for stand-alone houses (Auckland Council, 2022).

1.3 Accommodating Auckland's growth

Auckland is constantly growing and evolving, responding to changing higher order policy direction as well as external events and trends in the region's economy and demography. The direction to reconsider some FUAs is a result of the following:

- new policy / strategic direction and commitments at both a national and regional level
- changes in capacity requirements following the release of the (NPS-UD) and Medium Density Residential Standards (MDRS).
- new information and data, since previous decisions were made, on topics such as such as climate change, natural hazards and risks.

1.3.1 Legislative framework

Since 2020, a range of new legislative and policy considerations have been introduced which provide a significantly different framework for the development of the FDS. These new considerations have been introduced at both the national level, through central government initiatives, and also at the regional level through Auckland Council plans and strategies.

This legislation includes:

- national policy statements under the RMA on urban development, highly productive land, freshwater management and indigenous biodiversity

[3] The sequencing and timing information from the FULSS was also adopted as part of the Auckland Plan Development Strategy 2050. A copy of the information from the Auckland Plan 2050 is included in the report as Appendix 2.
[4] This includes land zoned straight form a rural zone to an urban zone as part of the AUP decisions.

- government policy statements on housing and urban development, and land transport
- national emissions reduction plan (ERP)
- COVID-19 fast track legislation

  as well as council strategies and plans including:

- transport emissions reduction pathway (TERP)
- Te Tāruke-a-Tāwhiri: Auckland's Climate Plan.

More detail on the various legislative and policy contexts is provided in appendix 1 of the Overall evidence report (Auckland Council, 2023a).

1.3.2 FDS legislative requirements

The NPS UD sets out the requirements for the FDS.

The purpose of the Future Development Strategy (FDS), as required by the National Policy Statement on Urban Development (2020) (NPS UD), is to set the high-level vision for accommodating urban growth over the long term and identify strategic priorities to inform other development related decisions.

Regard must be given to the FDS when preparing or changing RMA planning documents. Auckland Council is legally required (as part of the NPS UD) to plan well for growth, and produce a FDS that spatially identifies:

a. the broad locations in which development capacity will be provided over the long term, in both existing and FUAs, to meet the requirements of clauses 3.2 and 3.3; and
b. the development infrastructure and additional infrastructure required to support or service that development capacity, along with the general location of the corridors and other sites required to provide it; and
c. any constraints on development.

Every FDS must include a clear statement of hapū and iwi values and aspirations for urban development[5].

This makes it clear that it is not just about homes and housing, but also about well-located opportunities, for business activity and community facilities, to offer good accessibility to employment and a range of household needs in the urbans setting. These are all relevant matters when considering Auckland's FUAs.

1.3.3 Quality compact and a well-functioning urban environment

The concept of well-functioning urban environments is also fundamental in considering FUAs. Policy 1 of the NPS-UD sets out the minimum requirements for what constitutes a well-functioning urban environment, and it is important to note that this is not just homes:

(a) have or enable a variety of homes that:

(i) meet the needs, in terms of type, price, and location, of different households; and

[5] For further information on FDS requirements see section 1.1 in the Overall Evidence Report (Auckland Council, 2023a).

(ii) enable Māori to express their cultural traditions and norms; and

(b) have or enable a variety of sites that are suitable for different business sectors in terms of location and site size; and

(c) have good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport; and

(d) support, and limit as much as possible adverse impacts on, the competitive operation of land and development markets; and

(e) support reductions in greenhouse gas emissions; and

(f) are resilient to the likely current and future effects of climate change.

In understanding what this means for Tāmaki Makaurau Auckland the draft FDS states that "A well-functioning urban environment for Tāmaki Makaurau as a city and region is one which develops in a quality compact form and follows five principles to guide its growth and development". These principles are:

Principle 1: Support greenhouse gas emission reduction

Principle 2: Adapt to the impacts of climate change

Principle 3: Make efficient and equitable infrastructure investments

Principle 4: Protect and restore the natural environment

Principle 5: Enable sufficient capacity for growth in the right place and at the right time.

These principles are applicable in considering the appropriateness of future urban zoned areas and their role in accommodating growth in the short, medium and long-term.

It is noted that Plan Change 80 (Auckland Council, 2022a)[6] makes an explicit link from the Regional Policy Statement (RPS) to well-functioning urban environments adding references for well-functioning urban environment to policies in Chapter B2 Urban Growth of the AUP, including those relating to: compact urban form, quality built environment, residential growth and intensification, and commercial and industrial growth.

1.3.4 Emphasis on climate change and natural hazards

A major shift in the framework for the FDS, relative to the framework that applied previously, is in the area of climate change. In addition to national level initiatives such as the National Emissions Reduction Plan and the National Adaptation Plan, Auckland Council has introduced two major policy initiatives: Te Tāruke-a-Tāwhiri: Auckland's Climate Plan and the Transport Emissions Reduction Plan. All of these national and regional plans are relevant matters under the NPS UD to inform the FDS and they present a very strong climate change framework.

In addition to these plans, another significant change (since 2022) are the amendments to the RMA around climate change which provide far greater scope for RMA plans to address climate change mitigation and adaptation.

The flood events of early 2023 have underscored the importance of strategic planning. Where development should and should not occur, and how it should occur, to reduce exposure to risk posed

[6] Plan Change 80 is not operative, it is at the stage where further submissions have closed.

by natural hazards. This has led to wider awareness and understanding of the vulnerability of certain areas and communities in Auckland to the effects of climate change and natural hazards more broadly.

Collectively, these documents provide a greater body of research and information available since 2018, to inform council's planning and decision making.

1.3.5 Residential development capacity

The statutory requirement to apply MDRS to Auckland's residential zones has changed the development landscape by substantially increasing residential development capacity.

The draft FDS meets the statutory requirement under the NPS-UD to ensure there is at least sufficient housing and business development capacity to meet demand over the next 30 years. (Auckland Council, 2023d). Therefore, the draft FDS does not focus on identifying significant additional plan enabled development capacity. The focus is rather on the quality aspects of accommodating growth; where and how development take-up occurs.

1.3.6 Parks and green spaces

Parks and green spaces are critical for supporting well-functioning urban environments, particularly when considering more efficient use of the land resource with increased density of development. These not only need to be in the right place, but need to be tailored to support the requirements of each particular community and may include playgrounds, playing fields, walkways, greenways and esplanade reserves. There is also an opportunity to encourage nature-based solutions to manage stormwater flows as well as providing additional greenspace.

1.3.7 Highly productive land

Auckland has just over 100,000 hectares of highly productive land (being LUC classes 1-3) outside of the existing urban area, of which approximately 7-8% is in the FUAs. The National Policy Statement on Highly Productive Land (NPS HPL) seeks to improve the way highly productive land is managed under the RMA[7]. However, it acknowledges that some highly productive land has already been rezoned, the NPS HPL states:

3.5 Identifying highly productive land in regional policy statements and district plans

(6) If highly productive land is the subject of an approved plan change to rezone the land so that it is no longer general rural or rural production zone, the land ceases to be highly productive land from the date the plan change becomes operative, even if the change is not yet included in maps in an operative regional policy statement. If highly productive land is the subject of an approved plan change to rezone the land so that it is no longer general rural or rural production zone, the land ceases to be highly productive land from the date the plan change becomes operative, even if the change is not yet included in maps in an operative regional policy statement.

The wording of the NPS HPL means that land zoned Future Urban is excluded from the directive policies that require regional councils to avoid development on highly productive land. For this reason, the presence of highly productive land is a factor to be considered terms of context for this report but is not a determining factor.

[7] For further information on the NPS HPL see the FDS Overall Evidence Report 1 (Auckland Council, 2023a).

1.4 Opportunities and challenges

While the identification of FUAs presents opportunities to plan comprehensively, there are also often interrelated opportunities and challenges including process issues and improvements, cost and provision of infrastructure, addressing climate change through reducing greenhouse gas emissions. The following sections look at the opportunities and challenges in more detail.

1.4.1 Comprehensive planning

The identification of FUAs provides Auckland with an opportunity to comprehensively plan these areas to achieve well-functioning urban environments. Comprehensive planning sets a vision for an area that guides development of communities to provide a full range of land uses that a community needs, including a range of dwelling types, jobs and social infrastructure and providing better overall development capacity for the required infrastructure investment.

Comprehensive planning responds to its physical environment, including natural and catchment boundaries and designs for walkable neighbourhoods and access to public transport. It works with both opportunities and constraints that might be present.

Connections are also considered: how do communities fit together in their wider context? For FUAs this means looking at the relative benefits from building communities in areas closer to the existing urban area where less distance needs to be travelled to get to other places. This could leverage growth off and maximising the use of existing infrastructure. Similarly, there are benefits of developing at scale which need to be considered.

1.4.2 Future urban business land

Business land supports potential development of a well-functioning urban environment. FUAs indicate additional business land to support more sustainable communities. The draft FDS confirms that about 1400 hectares of additional greenfield land for business activities are required in the long term. This includes approximately 1000 hectares of land for land extensive business activities and 400 hectares of land enabling business activity and mixed use in centres and business areas.

Accommodating business and industrial activities is particularly important for creating additional employment opportunities for current and future residents[8]. Employment and business activity needs to be located with easy access to public transport. Communities based on walkable distances between homes and jobs help to reduce both the need to use private vehicles and the distance needing to be travelled. Provision of commercial and industrial land supports the development of a well-functioning urban environment.

In greenfield areas, group 1 (land extensive industrial) business sites have seen an increase from 1601 hectares to 1800 hectares, in the period 2007-2017. The increase was mostly in the South and North, while the availability of this land decreased in the North-West. Table 1 below provides information about the group 1 business land initially identified in greenfield areas (2007 onwards), alongside the planned area in 2020. Note the list of areas initially identified in 2007, is wider than the future urban areas that form part of this report.

[8] For further information on employment and jobs see the FDS Overall Evidence report (Auckland Council 2023X)

Location	Identified from 2007 onwards	Planned area 2020
North		403.4ha
Silverdale	226ha	350ha
Warkworth	-	57ha
North-West		302ha
Whenuapai	382ha	302ha
Kumeū	54ha	0ha
South		1,095ha
Drury South	338ha	285ha
Drury West & Drury-Ōpaheke	-	236ha
Pukekohe-Paerata	94ha	229ha
Glenbrook	112ha	0ha
Takaanini*	25ha	40ha
Ardmore Airport	17ha	0ha
Hingaia Stage 2	50ha	0ha
Waiuku	65ha	75ha
Auckland Airport/Kirkbride	203ha	203ha
Favona	35.5ha	27ha

Key
Not initially identified
Increase
No Change
Decrease
Site no longer planned

*this business area is live zoned and is not part of the Takaanini Future Urban area

Table 1 – Business land in greenfield areas, adapted from Auckland Council 2020 business land information

1.4.3 Efficient provision of infrastructure

Providing infrastructure in FUAS (i.e. outside the existing urban area) integrates suitably sized infrastructure from the beginning. Because it is a clean slate, there is an opportunity to design with the context, use the land efficiently and maximise development – and the investments council makes. For existing communities on the urban / FUA interface, greenfield development may enable additional critical mass and additional economic support for their local neighbourhoods.

Additional critical mass can mean the difference in making services and viable facilities and commercial developments that support a well-functioning urban environment, such as active and public transport, libraries, community halls, schools, emergency services, as well as retail and commercial services.

Timeframes for when infrastructure can be provided are also important considerations in planning. While the previous FULSS used indicative timeframes from which areas would be development ready, this led to an expectation that areas would be ready for development from the first year of the stated period. Often the timing of release of an area is dependent on the provisions of infrastructure. However, infrastructure is a complex relationship between infrastructure providers, demand, funding, achieving ownership of the land needed for the infrastructure, designations / resource consents and the physical works. The timing of infrastructure cannot be predicted with certainty, the approach to the timing of 'development readiness' of FUAs is proposed as being framed in terms of the provision of key infrastructure as a trigger, rather than a particular date. In addition, as the costs of infrastructure are better understood, some areas may be assessed as being prohibitively expensive to service.

1.4.4 Cost and provision of infrastructure

Typically, brownfield development demonstrates lower costs when compared to greenfield development (Auckland Council, 2023a)[9]. As part of the development of the draft FDS, the council developed and assessed four alternative growth scenarios these showed that in terms of land use and infrastructure integration, particularly transport, is fundamental to spatial planning. The report stated as a key finding (Auckland Council, 2023a) that:

"Scenarios that focused on growth within the existing urban area and specifically within the walkable catchments of the rapid and frequent transit networks performed better against transport criteria specifically but also environmental, social, economic and cultural criteria.

More intensive compact urban forms perform better in terms of the least monetary cost of infrastructure over time, as they result in more efficient use of existing services and new infrastructure. More expansive urban forms require the greatest amount of new infrastructure with the highest costs."

1.4.5 Natural hazards and climate change

As our climate changes, the frequency and severity of hazards will worsen. Where and how we plan for growth and change to adapt to these hazards has become increasingly important. The FUAs have been reviewed using the most up to date region-wide data for flooding, coastal inundation and sea-level rise, coastal erosion and instability to understand the likely extent of these hazards and level of constraint to development they present.

In FUAs, the council has a greater ability to require future zoning patterns that avoid hazardous locations. Future development also presents an opportunity to deliver positive environmental and community resilience outcomes. For example, future urban areas can allow water sensitive design (WSD) principles to be applied at the catchment scale, allowing for WSD to be fully integrated with land use planning and zoning during the structure planning stage (including the incorporation of rules into relevant planning documents). Holistic water sensitive design approaches aim to integrate water management and development, to improve water quality, ecological health, natural hazard resilience, water supply security and amenity values.

1.4.6 Private plan changes, SHAs and Fast track consenting

Since 2016, when the AUP became operative in part, there have been a significant number of private plan changes and fast track consents, throughout Auckland's FUAs, that challenge the ability to plan comprehensively and achieve good design through structure planning. This came on top of a number of Special Housing areas that led to plan changes, and increased pressure to provide infrastructure to more areas.

Private plan changes usually result from a desire to enable development beyond or in advance of what the zoning or current provisions allow. These have been largely based around land ownership patterns rather than any thorough, robust and integrated planning rationale. That has led in some cases to a relatively scattered pattern of live zoning in some areas, and isolated pockets of development. In addition, other RMA processes such as Special Housing Areas or fast track resource consent

[9] For further information on infrastructure see the Overall Evidence Report (section 4.8).

applications have also led to discrete pockets being developed with little integration or comprehensive planning across the whole FUA.

This piecemeal pattern of development may result in missed opportunities for linkages and key connections, particularly beyond the plan change area but also between discrete development areas. For instance, considering the opportunities of comprehensive planning based on walkable neighbourhoods, that takes account of infrastructure networks and linkages. Opportunities are often interrelated for example designing for stormwater on a catchment basis, may suggest solutions that are more efficient, cost effective and have greater environmental and social benefits (e.g. connecting areas through walking and cycling paths).

Live zoning does not necessarily lead to immediate development, and there often are lengthy lead in times until development begins on the ground, this could be for a number of reasons including market factors, or timing of the delivery of infrastructure. Development of greenfield areas is more costly to provide infrastructure for and has greater VKT because of its relative distance from facilities and employment. The council has legislative requirements to reduce greenhouse gas emissions. Additionally, weather events and new information have highlighted natural hazards in some of the FUAs and the need to address these comprehensively.

1.4.7 Structure plans

Structure plans are an important method for establishing the pattern of land use and the transport and services network within a defined area. As with plan changes there are some aspects of structure planning processes that impact on achieving planning outcomes.

The AUP requires that before any area of the future urban zone is rezoned as being ready for urban development, a structure plan will be completed.

Structure plans provide a more detailed examination of the opportunities and constraints relating to the land including its suitability for various activities, infrastructure provision, geotechnical issues and natural hazards. They should identify, investigate and address the potential effects of urbanisation and development on natural and physical resources in the structure plan area and in neighbouring areas, particularly those that have been scheduled in the AUP in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage and special character (see Appendix 3 for a summary of the AUP requirements for structure planning).

While the FDS determines sequencing and timing for when FUAs will be ready for development to commence, structure plans provide the next level of detail needed to effectively integrate land uses with infrastructure provision.

Structure plans provide an opportunity to update and provide more information on factors such as specific infrastructure solutions which may change over time, to ensure the efficient and logical roll out of local infrastructure to these areas. This may result in an alternative staging and timing proposal for subsequent plan changes and infrastructure provision. A more detailed examination may also lead to proposing changes to address matters such as natural constraints (e.g. by reducing areas/reducing development yields).

While there may be an assumption that the whole of the FUA is suitable for urban development, it is not until a detailed structure plan is developed that up to date information on relevant matters and the related development implications is more fully understood.

The NPS-UD seeks to achieve well-functioning urban environments, but private plan changes may not necessarily achieve this at a broader scale, including ensure they give effect to the wider vision for the

area. Currently, the majority of re-zoning of Auckland's future urban land is through private plan changes. These private plan changes are required to prepare their own structure plan, however these are often smaller in scale and area than council structure plans and less likely to be integrated with the wider surrounding FUA, urban or rural context. Often, subsequent plan changes have also relied on general zone and Auckland-wide standards of the AUP, and do not always respond to the specifics of the area by introducing targeted place-based rules.

There are key gaps (for example clear pathways for implementation) and inconsistencies in how different structure plans address certain matters. For example, in relation to hazard management, Appendix 1 (AUP) is limited to "*measures to manage natural hazards and contamination*", which does not reflect the significance of the issue. Likewise, there is no direction or requirement for structure plans to consider enabled, operational greenhouse gas emissions, and embodied carbon or greenhouse gas emissions from land use change. This is largely a result of the Resource Management Act 1991 preventing councils from considering emissions in decision making when the AUP was developed. This restriction has since been removed through amendments to the RMA gazetted in 2022. The effects of climate change are a matter in section 7 of the RMA to which particular regard shall be had. This concept is also embedded in the NPS-UD in both the definition of well-functioning urban environments and Objective 8 of the NPS-UD.

The lack of direction in relation to emissions is now a noticeable gap. Therefore, direct, indirect and embodied greenhouse gas emissions from urban development need to be accounted, avoided and reduced through a pathway that aligns with the requirements of the well-functioning urban environment definition (NPS UD) as well as decarbonisation pathways set in the ERP or Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan. A specific review of the AUP may be required to address these requirements.

1.4.8 Considering urban form

Auckland's urban form is a critical matter for the FDS. Urban form has a very strong influence on urban efficiency of land, infrastructure, energy and travel - and therefore in long-term sustainability. It is a key influence on Auckland being a well- functioning urban environment, a core objective of the NPS UD. Urban form is the spatial arrangement of business and community activities as reflected in land use, their relationship to the physical context in which they are located. It is concerned with all aspects of the urban environment, major ones being the design and structure of urban communities the infrastructure and connections needed, and the interrelationships within and between communities and business areas as well as other places. This requires consideration of how communities and business areas grow over time and to ensure that growth occurs in a sustainable manner including the efficient roll out of infrastructure. Accordingly, a key issue is the degree to which the growth provided for in the FDS will contribute positively to maintaining or enhancing those efficiencies in the urban economy.

This has important implications. urban form is relevant at regional, sub-regional and local scales. The urban form outcomes are key considerations in structure planning, private plan changes and the review of the FUAs. Such consideration is often required at several levels, from the micro-scale such as transport connections between subdivisions, to the more macro scale of how an FUA develops and integrates with the wider urban area.

Quality city form and design supports liveability, provides location opportunities for business, and is an important part of creating an attractive world-class city. It supports economic growth, as well as local economic development and employment (Auckland Council, 2018b).

Such outcomes are affected by both timing and the location of urban development, with urban form at any point in time important. This means the sequence of development which the FUAs enable is a key consideration, as well as the long-term outcome.

At the regional level there is an opportunity through Plan Change 80 (Auckland Council, 2022a) to strengthen the RPS council's approach to urban growth and form (RPS section B2.2). Plan Change 80 addresses NPS UD requirements which direct Auckland Council to, among other things, make decisions that contribute to well-functioning urban environments.

1.4.9 Fiscal challenges

The COVID-19 pandemic and high levels of inflation have contributed and exacerbated fiscal challenges. Plan changes to the AUP that are unanticipated or brought forward ahead of time can generate significant funding challenges and financial risks for council and disrupt existing and planned infrastructure work programmes.

Challenges with fiscal constraints are having an impact on implementation of council's first plan change for an FUA (PC 5: Whenuapai Plan Change – notified September 2017) responding to the need for business land in the north- west. This plan change was withdrawn by council in June 2022, due to issues around infrastructure provision and funding, it was not possible to provide the infrastructure needed. The strategic approach of the plan change is now being overtaken by a series of individual fast track consents and plan changes which do not provide the surety of integrated development, as was the case through the original plan change in a way that would provide for environmental, social, economic and cultural outcomes.

The likely outcome of a series of individual consents will increase pressure on funding and financing to deliver the needed infrastructure, while decreasing efficiencies in provision.

1.5 Implementation

The implementation of the FDS through subsequent processes including structure plans, plan changes, designations, and resource consent applications, together with funding for necessary infrastructure will be key determinants of the overall success of the strategy.

1.5.1 Improving plan change and structure plan

The focus should be on giving stronger statutory weight to Regional Spatial Strategies (RSSs), through clearly defined legal linkages between plans to enable the RSS to be given greater weight in plan change and consent decisions. This should apply to all stages of development from development of plans to their implementation. Greater weight for other levels of planning including structure planning also needs to considered as part of RMA reforms.

1.5.2 Combining the FDS and FULSS

The revised draft FDS will replace the FDS (2018) and the FULSS. These were previously two separate documents, and combining these into a single document allows a comprehensive integrated approach to and view of Auckland-wide growth, showing the distribution of brownfield and greenfield development. This better integrates strategic approaches and confirms status under the RMA.

1.5.3 Timeframes and sequencing of FUAs

Timeframes for sequencing in the draft FDS are broader and more indicative. Critically, the strategy for timing of rezoning is based on infrastructure triggers.

As well as bringing this sequencing information into the draft FDS, the draft FDS recommends that this sequencing strategy is embedded into the RPS. This will provide greater decision-making weight to sequencing strategy on plan change applications. It also recommends that structure planning is strengthened.

1.5.4 FUA amendments

Recommendations to amend specific FUS areas are set out in the following sections (sections 2.1 and 2.2).

2.0 Auckland-wide overview of future urban areas

All the FUAs identified in the 2018 Development Strategy (and associated FULSS), have been reviewed to understand their status since 2018, including whether or not they have been live zoned, partially live zoned or had any dwellings consented within them. This has been followed by additional assessment relating to infrastructure; natural hazards and the natural environment; economic (including business and employment); and social / cultural matters. This assessment has been carried out to determine if the sequencing and boundaries of each FUA remain appropriate given new data, policy, and plans (including asset management plans and the adoption of Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan) available since the development of the FULSS.

Assessments relating to infrastructure: have been carried out on all FUAs, including land that has been live zoned and/or sequenced from 2018 onwards. These assessments have been supported with information from asset owners and have primarily focused on the timing of critical infrastructure investments. In many cases this has resulted in sequencing amendments to FUAs and/or more granular staging to better reflect when infrastructure will be available to service development. This means in some cases large stages of FUAs have been separated and renamed into multiple smaller areas, with amended names and timeframes.

Assessments relating to other matters, such as natural hazards and the natural environment; vehicle kilometres travelled (VKT)/CO_2 emissions reduction; urban form including business; and social / cultural matters have been carried out on FUAs sequenced from 2023 onwards. This is because these matters assessed whether the boundaries of FUAs remained appropriate. Therefore, live zoned areas were not considered within scope. The assessment of these matters was carried out on the boundaries of each stage of the FUA identified within the FULSS, not the more granular staging proposed in the draft FDS following infrastructure considerations (see maps at the in the following sections on individual FUA sections).

Appendix 4 provides an explanation of the datasets used and assumptions regarding significance of hazard constraints to development. Appendix 5 describes the analysis undertaken to estimate VKT and CO_2 emissions from greenfield areas and rank the relative performance of the FUAs.

Where the assessment of these matters identified potentially significant constraints to development, the FDS has proposed to remove entire FUAs, or adjust their boundaries. If the assessment demonstrated moderate constraints, or a need for further data (e.g. detailed VKT/CO_2 modelling, updated catchment modelling, better understanding of relationship between existing and future land uses i.e. need for business land and adjacent residential land to support this), these areas have been highlighted as requiring further investigation by council to determine the appropriate management response i.e. in terms of infrastructure provision or zoning etc.

The maps and tables below provide a summary of the region wide maps and tables for the approach to each of the FUAs.

Information on FUAs reflects publicly available information as at 31 March 2023.

Sections 2.1 and 2.2 address each of the FUAs within the large (northern, north-western and southern) areas and urban edge sites and rural and coastal settlements.

2.1 Large Future Urban Areas (North, North-west and South)

2.1.1 Northern FUAs

Overview

The north includes the following large FUAs: Warkworth, Wainui, Silverdale-Dairy Flat and Upper Orewa. Together these areas comprise a land area of 4,813 hectares.

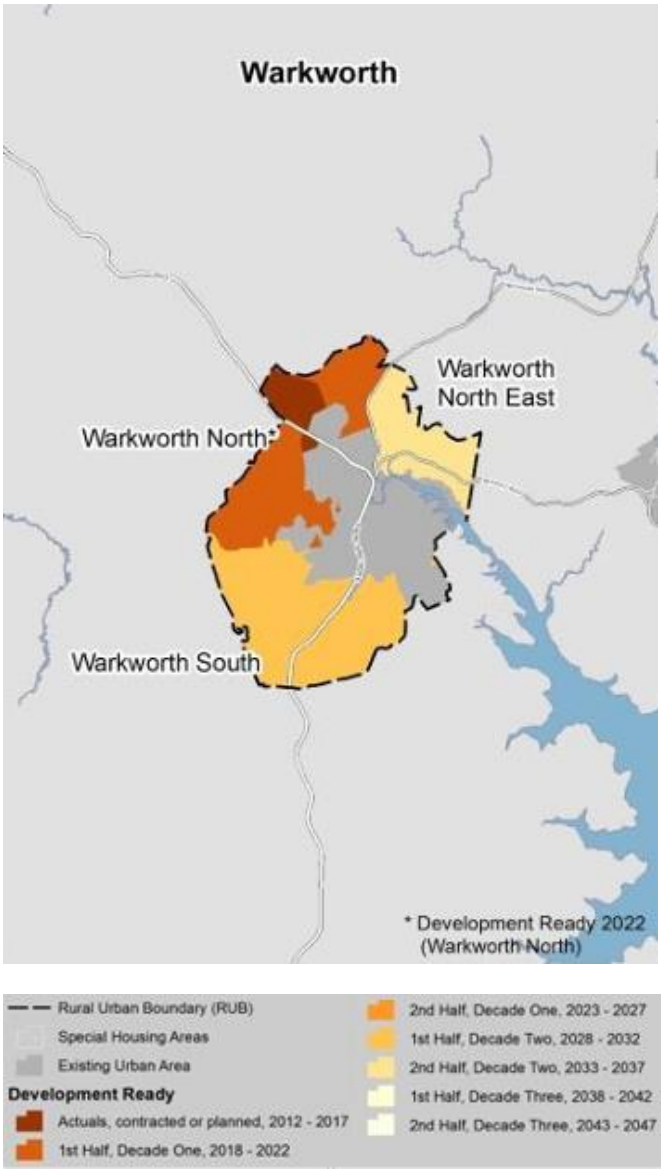
Table 2 provides a summary of information for the north.

Sub-region FUA cluster	Future urban areas	Status in 2023	FULSS 2017 timing	FDS New timing	FDS approach
North					
Warkworth	*Warkworth North*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Warkworth North	Partially live zoned	2018-2022	2035+	Timing delay
	Warkworth West	Partially live zoned	2018-2022	2040+	Timing delay
	Warkworth South-central	Future Urban zoned	2028-2032	2040+	Timing delay and recommend for further investigation
	Warkworth South-east	Future Urban zoned	2028-2032	2045+	Timing delay and recommend for further investigation
	Warkworth South-west	Future Urban zoned	2028-2032	2045+	Timing delay and recommend for further investigation
	Warkworth North-east	Future Urban zoned	2033-2037	2045+	Timing delay and recommend for further investigation
Silverdale West, Dairy Flat, Wainui East and Upper Ōrewa	*Wainui East SHA*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Silverdale West (Stage 1)	Future Urban zoned	2018-2022	2030+	Timing delay
	Silverdale West (Stage 2)	Future Urban zoned	2018-2022	2035+	Timing delay
	Silverdale West (Stage 3)	Future Urban zoned	2018-2022	2040+	Timing delay
	Dairy Flat	Future Urban zoned	2033-2037	2050+	Timing delay and recommend for further investigation
	Wainui East	Future Urban zoned	2033-2037	2050+	Timing delay and recommend for further investigation
	Upper Ōrewa	Future Urban zoned	2033-2037	2050+	Timing delay and recommend for further investigation

Table 2 – Northern FUAs

Warkworth

FULSS 2017 map



FDS new map

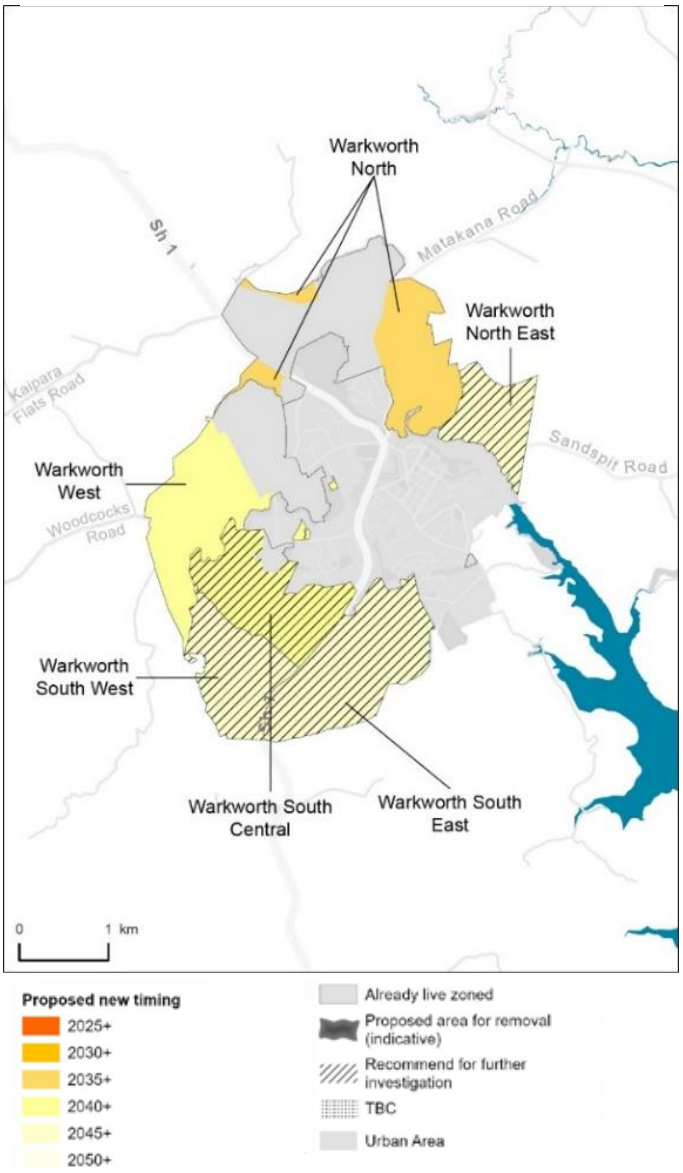


Figure 1 - Warkworth

Current picture of growth

As of 31 March 2023, approximately 270ha of future urban land has been live zoned in Warkworth. This mostly occurred in Warkworth North. This includes the business area in Warkworth North which was live zoned as part of the AUP process and several private plan changes. A moderate delay is anticipated due to delivery of wastewater servicing and the required transport infrastructure including State Highway extensions and arterial road upgrades.

A small amount of residential development has happened in Warkworth in the past five years, most of this is clustered in the Woodcocks Road area which is located on the southwestern edge of the existing urban Warkworth. The remaining future urban zoned land is mostly located in the south and northeast.

Approximately 8.2ha of land in Warkworth South is currently subject to a plan change. It is located adjacent to existing urban area of Warkworth. Table 3 below outlines the plan changes that have been made operative or are in progress in Warkworth.

Plan Change	Land Area	Proposed development	Status
Plan Change 25 Warkworth North	99ha	Rezone approximately 99ha of Future Urban land to a mix of business and residential zone land.	Operative in part on 12 November 2021
Plan Change 40 Warkworth – Clayden Road	102ha	Rezone approximately 102ha of Future Urban land and Light Industry Zone land.	Fully operative on 11 June 2021
PC72: McKinney Road, Warkworth	8.2ha	Rezone approximately 8.2ha of Future Urban land to Residential – Mixed Housing Suburban Zone and enable approximately 150 to 200 dwellings to be built.	In progress - Appeals closed March 2023

Table 3 – Plan changes in Warkworth

Considerations

Infrastructure

Transport infrastructure is not planned to support development in Warkworth North before 2035+, Warkworth West and South Central before 2040+ and Warkworth South Central, South East and North East before 2045+. There is no rapid transit network planned so this area would not contribute to vehicle kilometres travelled (VKT) reduction. Distance from the existing urban area, lack of rapid transit and lower opportunities for mode shift mean strategic outcomes are unlikely to be achieved. Wastewater infrastructure upgrades such as a new pipeline, pump station, wastewater treatment plant, outfall pipe and ancillary works are also required to support future growth.

Natural hazards and natural environment

Warkworth North East FUA has moderate hazard constraints, including approximately 8% of the FUA within the 1% AEP floodplain, and a small section at the southern end of the FUA bordering the Mahurangi River that is at risk of coastal inundation. The whole FUA is in an area of moderate-risk slope instability.

Watercourses in the area tend to be of high natural and ecological value. To the south of the North East FUA, the Mahurangi River is scheduled as a “Natural Stream Management Area” and is bordered on its northern edge by a mixture of kauri, podocarp broadleaf forest and kahikatea forest which are also scheduled as Significant Ecological Areas (SEAs). These SEAs run along the southern border of the FUA and also extend north into the FUA along two of the tributaries of the Mahurangi River. There are also patches of the same forest types (although not scheduled) extending further along the westernmost tributary.

Warkworth South FUA has moderate hazard constraints, including approximately 25% of the FUA within the 1% AEP floodplain, and small to moderate areas of the FUA containing some risks of settlement, liquefaction and slope instability. There are terrestrial SEAs along the western and southern boundaries of the Warkworth South FUA comprising puriri forest (to the west) and large fragments of kauri, podocarp, broadleaf forest along the southern boundary and extending within the FUA in some places. There is also an area of unscheduled kanuka scrub/forest within the FUA along a tributary of the Mahurangi River running south from Woodcocks Road.

Warkworth North East is about 80% Land Use Capability (LUC) Class 3 (approximately 159 ha) and Warkworth South is about 85% LUC 3 (approximately 421 ha), and both have smaller areas of LUC 4 and 5[10].

Emissions/VKT reduction

There is potential for higher VKT and CO_2 emissions per household at 2048 in the Warkworth FUA than other FUAs and existing urban areas, due to Warkworth being relatively distant from high quality existing or planned public transport, a wide range of jobs, education and other services compared to other FUAs.

Urban form including business

While a large proportion of Warkworth North has been live zoned, a range of infrastructure is still required to support anticipated growth. More specifically, the Matakana link road project currently under construction will connect Matakana Road and State Highway 1 to provide more efficient and safe local transport connection.

The upgrade of Hill Street is also a critical part of the local network given its role in providing access to the existing town centre and the wider region for residents in Warkworth North.

The opening of Ara Tūhono - Pūhoi to Warkworth motorway will allow traffic travelling further north and freight traffic to bypass Warkworth township, creating opportunity for a safer and more walkable local urban environment. It will also provide more direct and efficient access to the northern light industrial area in Warkworth.

The potential for a southwestern interchange between Woodcocks Road and Wyllie Road will need to be considered along with the approach to the Warkworth south FUA. A series of infrastructure including local link roads will be required to connect the area with the rest of Warkworth.

Warkworth North East presents some similar issues. The area is some distance away from the existing urban Warkworth and primarily relies on Sandspit Road to provide access to the town centre and the wider region. The growth in this area will require significant investment in road upgrades and creating new linkages.

The Warkworth structure plan (Auckland Council, 2019) identifies three new areas for industrial land. These will add to the employment opportunities within Warkworth. These areas are all located on arterial roads and mostly adjacent to motorway interchanges for good freight transport access. They are on mostly flat land (but also include some areas of sloping land) and contain relatively few Green Network areas. The three business areas are:

- the business area in Warkworth North is already live zoned as part of the AUP process. It adjoins the existing Light Industry zoned land along Hudson Road and it is yet to be developed
- in the south there is a small extension of the established Morrison Drive/Glenmore Drive light industrial area
- a new industrial area is proposed in the south western edge of the Future Urban zone near the potential southwestern motorway interchange, bordered to the west by the Rural Urban Boundary (RUB) and the Ara Tūhono – Pūhoi to Warkworth alignment, to the north by Woodcocks Road, and to

[10] The Land Use Capability (LUC) classification system is the main database used in New Zealand to describe the productive capability of land. The LUC assigns land to a class between 1 and 8, class 1 being the most productive and versatile, and class 8 having severe limitations to productive use.

the east by the right branch of the Mahurangi River. Most of the land within this proposed industrial area is flat and therefore lends itself to enabling larger building platforms for Heavy Industry.

A potential new local centre is also proposed in Warkworth South East next to the proposed southern bus interchange along the existing State Highway 1.

Social and cultural

The West Mahurangi Harbour Outstanding Natural Landscape (ONL) borders the southern edge of Warkworth North East (and overlaps in part) as does the Mahurangi River southern escarpment - a High Natural Character area. The Combes/Daldy historic heritage lime works site is also located in the southwestern corner of Warkworth North East.

The West Mahurangi Harbour ONL also borders the southern edge of Warkworth South. There are no other areas identified for their natural, cultural or historic heritage or sites of significance to mana whenua in this part of the FUA.

Options

Options for the Warkworth FUAs include:

1. Maintain existing FUA boundaries and sequencing.
2. Maintain existing FUA boundaries and change sequencing.
3. Identify that the FUAs are not suitable for development. Initiate a council-led plan change to rezone the FUAs to an appropriate zone that is not future urban nor urban.
4. Identify that further investigation is needed to determine if the FUAs are suitable for development.
5. All options were considered, but based on the considerations, a hybrid of ‘option 2 and 4’ is recommended.

The future of Warkworth

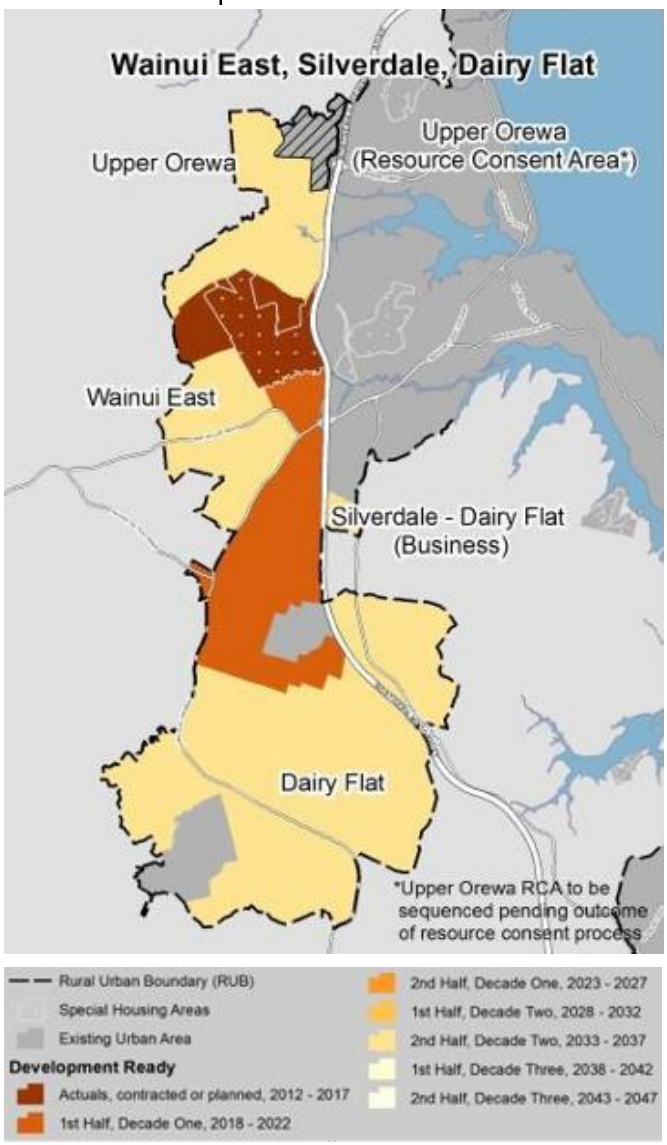
The existing FUA boundaries are retained, but the sequencing is delayed for infrastructure reasons:

- North (2035+)
- West (2040+)
- South-central (2040+)
- South-east (2045+)
- South-west (2045+)

Warkworth South-central, South-east, South-west and North-east are recommended for further investigation due to the lack of planned infrastructure and potential for higher VKT/CO_2 emissions, the presence of moderate hazard constraints, the need to further understand the role of Warkworth as a rural node and the impact any changes might have on business land capacity.

Silverdale-Dairy Flat, Wainui East, Upper Orewa

FULSS 2017 map



FDS new map

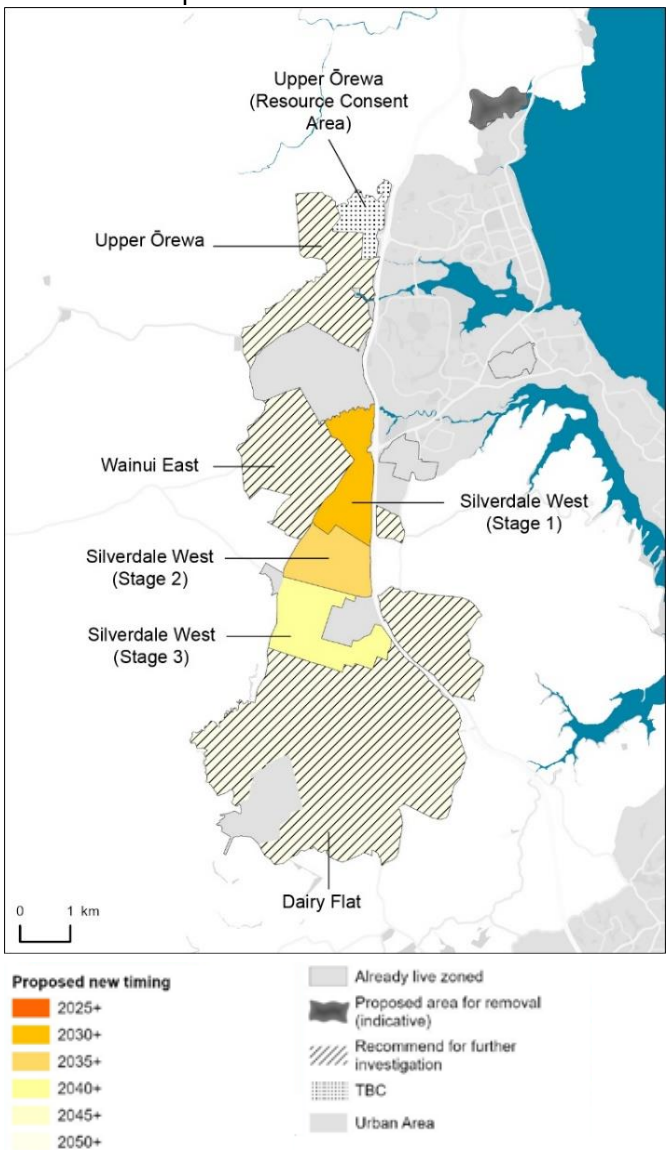


Figure 2 – Silverdale-Dairy Flat, Wainui East, Upper Orewa

Current picture of growth

As of 31 March 2023, approximately 320ha of land has been live zoned in Silverdale-Dairy Flat. This includes the Special Housing Area known as Milldale (or Wainui precinct in the AUP), approximately 41ha of business plus residential land located on the corner of Hibiscus Highway and SH1, a small pocket of light industrial land at the intersection of Dairy Flat Highway and Kahikatea Flat Road, and a large reserve (Green Road Park) at the southern end of the FUA.

Currently there are no plan changes in the Silverdale-Dairy Flat and Wainui East area.

Most of the recent residential building consent activities in the live zoned area are concentrated in the Milldale (or Wainui) area and a small cluster just south of the Hibiscus Coast bus station. A moderate delay is anticipated for the delivery of transport infrastructure such as the Wainui Improvements.

Some individual building consents for housing are scattered across the currently future urban zoned land, such as the Dairy Flat area. These housing developments are on large land sections with on-site

wastewater system and are generally consistent with the rural characteristics of these FUAs. Therefore, they are not considered as part of the urban development.

Considerations

Infrastructure

Transport infrastructure is not planned to support development in Silverdale West (Stage 1) until 2030+, Silverdale West (Stage 2) until 2035+ and Silverdale West (Stage 3) until 2040+.

Further transport infrastructure is not planned to support development in Dairy-Flat, Upper Orewa and Wainui East before 2050+.

Rapid transit, frequent transit routes, key arterials and upgrades and provision of active modes are required to support development and achieve strategic outcomes. The Army Bay Wastewater Treatment Plant upgrade is also required to support development.

Natural hazards and natural environment

Upper Orewa, Wainui East and Dairy Flat have moderate hazard constraints, including approximately 15-20% of each FUA within the 1% AEP floodplain, and a very small section along the southern boundary of the Upper Orewa FUA bordering the Orewa River that is at risk of coastal inundation and erosion. Some parts of the FUAs are also subject to moderate- or high-risk slope instability.

Watercourses in these FUAs are generally heavily modified and degraded due to the surrounding rural production and countryside living land uses and lack of overhead vegetation. However, portions of the Orewa River in the Upper Orewa FUA, Rangitopuni Stream in the Dairy Flat FUA and Weiti Creek in the Wainui East FUA extend through forest SEAs, and therefore have higher natural character and ecological values. These SEAs border and/or extend slightly into each of the FUAs (and three small SEAs are wholly within the Upper Orewa FUA) and are a mixture of kauri, podocarp, broadleaved forest, kahikatea, pukatea forest and mānuka, kānuka scrub.

Dairy Flat is about 23% LUC 3 (approximately 348 ha), Upper Orewa contains around 13% (34 ha) LUC 3 and Wainui East has no LUC 1 to 3.

Emissions/VKT reduction

There is potential for higher VKT and CO_2 emissions per household at 2048 in these three FUAs than other southern FUAs and existing urban areas, due to their relative distance from high quality existing or planned public transport, a wide range of jobs, education and other services.

Urban form including business

The development of the local road network in the Milldale area is progressing in a staged manner and is being managed by the developer.

A structure plan was prepared in 2020 for the Silverdale West Dairy Flat Industrial Area. Given the imminent exhaustion of light industrial land in the North Shore, Silverdale and the Highgate Business Park, the Silverdale West Dairy Flat area is considered to be the next suitable area for industry in the north nearest to urban Auckland (Auckland Council, 2020). The area is bounded by SH1 to the east and Dairy Flat Highway to the west. Its proximity to an existing motorway interchange at Silverdale and the existing Silverdale industrial area and relatively flat typography makes it an ideal location for industrial land use.

The existing motorway interchange at Silverdale will need to be upgraded to provide access into the Silverdale West Dairy Flat area.

The Dairy Flat area (southern part of the FUA) and Upper Orewa area (northern part of the FUA) have poor connectivity to the surrounding urban areas and are relatively far from a motorway interchange. Significant infrastructure investment will be required to improve their accessibility to existing urban areas.

The recommended approach is to develop future urban land southwards from the live zoned area by the Silverdale interchange. Given the need for business land in the north and the Silverdale West Dairy Flat area has been identified as a suitable location for industrial land use, it is logical to be the next future urban to unlock. It complements the existing business area in Silverdale and can take advantage of existing services in the nearby existing urban area.

Apart from the local centre live zoned (yet to be developed) in Milldale, a larger centre is also proposed in the Dairy Flat area (Auckland Council, 2022c). The timing for development of this land is 15-30 years.

Social and cultural

The Sunnyside Road, Coatesville ONL borders and slightly overlaps the southwestern corner of the Dairy Flat FUA, and the Wainui Road ONL borders the north western boundary of the Wainui East FUA. There are no other areas identified for their natural, cultural or historic heritage or sites of significance to mana whenua in the Silverdale-Dairy Flat, Wainui East, Upper Orewa FUAs.

Options

Options for the Silverdale-Dairy Flat, Wainui East, Upper Orewa FUAs include:

1. Maintain existing FUA boundaries and sequencing.
2. Maintain existing FUA boundaries and change sequencing.
3. Identify that the FUAs are not suitable for development. Initiate a council-led plan change to rezone the FUAs to an appropriate zone that is not future urban nor urban.
4. Identify that further investigation is needed to determine if the FUAs are suitable for development.

All options were considered, but based on the considerations, a hybrid of ‘option 2 and 4’ are recommended.

The future of Silverdale-Dairy Flat, Wainui East, Upper Orewa

The existing FUA boundaries are retained, but the sequencing is delayed for infrastructure reasons:

- Silverdale West (Stage 1) (2030+)
- Silverdale West (Stage 2) (2035+)
- Silverdale West (Stage 3) (2040+)
- Upper Orewa, Wainui East and Dairy Flat (2050+)

Upper Orewa, Wainui East and Dairy Flat are recommended for further investigation due to the significantly delayed timing of planned infrastructure, potential for higher VKT/CO_2 emissions, the presence of moderate hazard constraints, the need to further understand the relationship of these Wainui East and Dairy Flat to the Silverdale West Industrial Area, and Upper Orewa to the rest of the FUA, and the impact any changes might have on planned infrastructure such as rapid transit.

2.1.2 North-western FUAs

Overview

Sub-region FUA cluster	Future urban areas	Status in 2023	FULSS 2017 timing	FDS New timing	FDS approach
North-west					
Whenuapai	*Scott Point*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Whenuapai	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Whenuapai North (Stage 1)	Future Urban zoned	2028-2032	2035+	Timing delay
	Whenuapai North (Stage 2)	Future Urban zoned	2028-2032	2050+	Timing delay
	Whenuapai Central	Future Urban zoned	2028-2032	2035+	Timing delay
	Whenuapai East	Future Urban zoned	2018-2022	2035+	Timing delay
	Whenuapai West	Future Urban zoned	2028-2032	2035+	Timing delay
	Whenuapai South	Future Urban zoned	2018-2022	2035+	Timing delay
Red Hills	*Red Hills*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Red Hills North	Future Urban zoned	2028-2032	2035+	Timing delay
Kumeū-Huapai and Riverhead	*Kumeū Huapai*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Kumeū Huapai and Riverhead	Future Urban zoned	2028-2032	2050+	Recommend partial removal of Kumeū-Huapai and Riverhead FUA Timing delay for Kumeū-Huapai and Riverhead remainder Recommend further investigation for whole of Kumeū-Huapai and Riverhead

Table 4 – North-western FUAs

Whenuapai and Red Hills

FULSS 2017 map

FDS new map

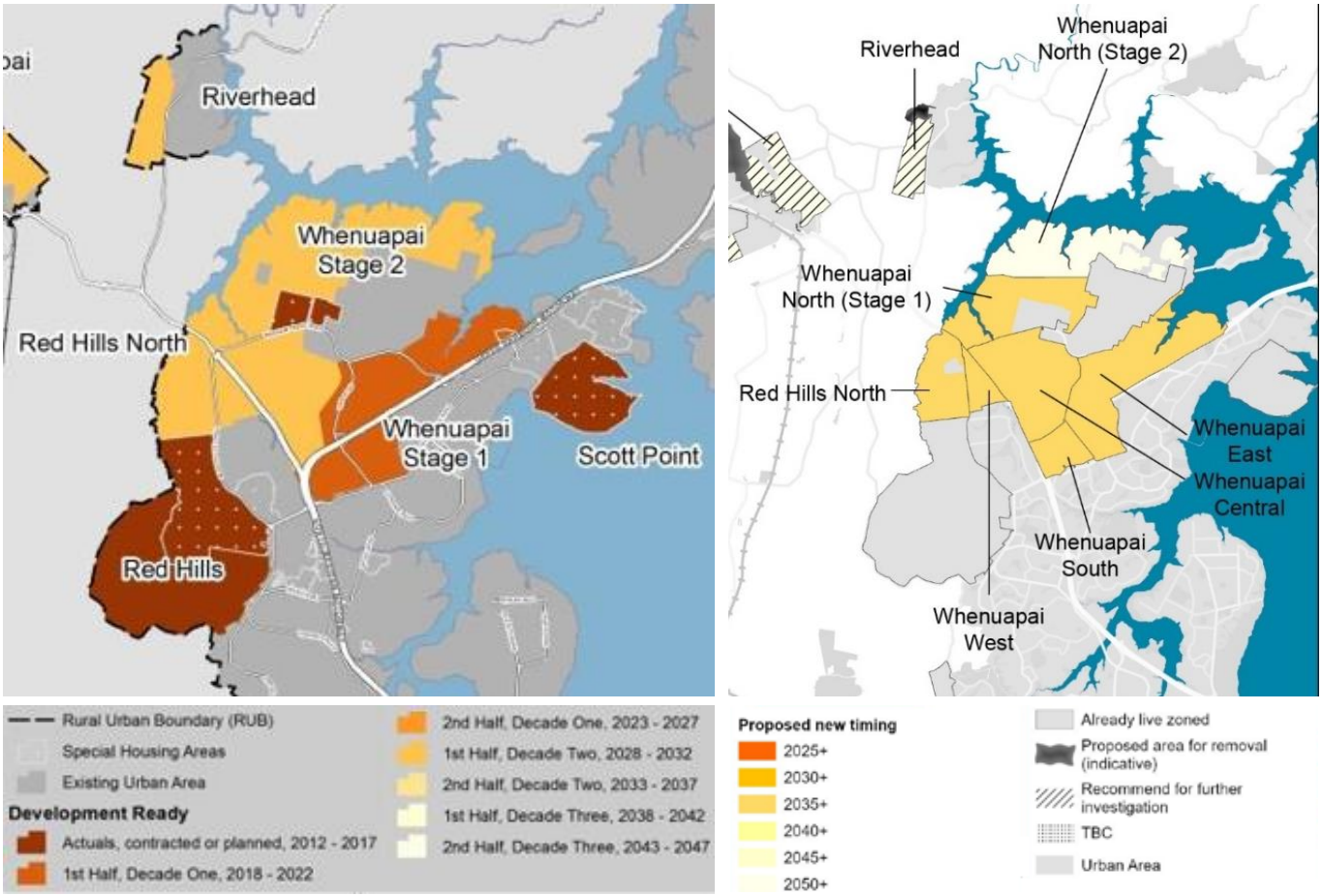


Figure 3 – Whenuapai and Red Hills

Current picture of growth

Two Special Housing Areas on Brigham Creek and Totara Roads were live zoned through the AUP, these included residential and business land.

Approximately 152ha in Scott Point was identified as Special Housing Area and subsequently live zoned through the AUP.

As of 31 March 2023, approximately 255ha of land has been live zoned in Whenuapai and Scott Point. A moderate delay is anticipated due to the delivery of required transport infrastructure. 1,090ha is still future urban zoned.

Parts of Red Hills were live zoned in 2018 as a Special Housing Area. A moderate delay is anticipated due to the delivery of required transport infrastructure such as arterial upgrades. Water and wastewater infrastructure is underway and stormwater management is anticipated to be delivered by the developer.

Auckland Council is working with the major landowner in the Red Hills area on a master plan for over 200 hectares of the live zoned land. Approximately 590ha of land has been live zoned in Red Hills. 190ha is still future urban zoned.

Plan Change 5: Whenuapai was a council-initiated plan change seeking to rezone approximately 360 hectares of mostly Future Urban zoned land to a mix of business and residential zones. It was withdrawn in June 2022 due to issues around infrastructure provision and funding.

Approximately 57.2ha of land is subject to plan change. Table 5 below outlines the two plan changes that are currently in progress which are located along Brigham Creek Road and the Special Housing Area that has been developed.

Plan Change	Land Area	Proposed development	Status
PC 69: Spedding Block	52ha	Rezone land at 23-27 & 31 Brigham Creek Road and 13 & 15-19 Spedding Road, Whenuapai from Future Urban Zone to Business – Light Industry Zone	Decision to approve reissued on 16 December 2022. Appeal period closed on 21 February 2023.
PC 86 (Private): 41-43 Brigham Creek Road	5.2ha	rezone land at 41 -43 Brigham Creek Road, Whenuapai from Future Urban Zone to Residential Mixed Housing Urban	Further submissions closed December 2022

Table 5 – Plan changes in Whenuapai and Red Hills

Considerations

Infrastructure

Rapid transit, frequent transit routes, key arterials and upgrades and the provision of active modes are required to support development and achieve strategic outcomes. Transport infrastructure is not planned to support development in Whenuapai North Stage 1 until 2035+ and North Stage 2 until 2050+, Whenuapai East, Central, West and South until 2035+ and Red Hills North until 2035+. Water supply and wastewater infrastructure upgrades such as a reservoir, watermain and pump station projects are also required to support future growth.

Natural hazards and natural environment

Whenuapai North (Stage 2) has mostly moderate hazard constraints, including approximately 10% of the FUA within the 1% AEP floodplain, there is some risk of coastal inundation along the north and eastern boundary. However, a large area of the FUA adjacent to the estuary is susceptible to coastal erosion, extending up to 35m into the site in places. A site-specific coastal hazard assessment was undertaken for this site as part of the evidence gathering for AUP Plan Change 5 in 2017. This report found that although coastal erosion is confined to the boundary of the site, it can be significant in those locations. There is a small proportion of the Whenuapai North (Stage 2) FUA subject to high-risk slope instability, and some small portions along the western boundary where liquefaction damage is possible.

The Red Hills FUA has a small portion (approximately 15%) within the 1% AEP floodplain associated with the Ngongetepara Stream extending slightly into the western border of the site. This FUA is not at risk of coastal erosion, but there is a very small section of this FUA, at the northern tip, which will be subject to coastal inundation. Red Hills FUA also has small areas of the FUA vulnerable to liquefaction, and there may be some settlement risks in localised areas.

Watercourses in the area tend to be heavily modified and degraded due to the surrounding rural land uses and little vegetation cover. Whenuapai North (Stage 2) FUA borders a significant ecological area – marine (SEA-M). The SEA-M is scheduled as a muddy, mangrove-lined inlet, which is an important habitat for threatened and coastal fringe birds and important migratory pathway for native fish. There is

also one terrestrial SEA within the FUA, which is a broadleaved/scrub forest along Totara Creek near the southwestern edge. Red Hills FUA has a relatively high proportion of watercourses, which also tend to have a higher proportion of overhead coverage, however, they are still highly modified and degraded. There are no SEAs or other notable non-scheduled biodiversity areas within the FUA, although from aerial photography there does appear to be some riparian shrubs and trees along the Ngongetepara Stream on the western boundary and the Totara Creek in the south eastern corner, plus some existing tall trees/shelter belts along property boundaries.

Both Whenuapai North (Stage 2) and Red Hills FUAs are almost entirely LUC 1 and LUC 2 (totalling 1,156 ha and 197 ha respectively for each FUA).

Emissions/VKT reduction

There is potential for higher VKT and CO_2 emissions per household at 2048 in the Whenuapai and Red Hills FUAs than southern FUAs and existing urban areas, due to distance from high quality existing or planned public transport, a wide range of jobs, education and other services compared to the southern FUAs and existing urban areas.

Urban form

Modelling and analysis for the structure plan on the topic of regional business land demand suggested that locations such as Whenuapai are expected to become more attractive as supply in central locations is exhausted (Auckland Council, 2016). Providing additional business land in Whenuapai is important for the north west as it represents a significant resource of business land (approximately 400 ha) which will help to address an imbalance.

The future urban land between SH16 and SH18 is identified for business land use as indicated on the Whenuapai Structure Plan. Providing additional business land in Whenuapai will be beneficial to the north west particularly given its proximity to the Westgate (the node for the north west), which has a range of complementary business and industrial activities. It is also important for the supply of land to the wider north-west sub-region, to help address the imbalance. The upgrade of Trig Rd and Brigham Creek Rd will be critical in unlocking the area.

The live zoned areas in Red Hills are progressing slowly. The small pocket of housing development on the southern end of Red Hills is currently disconnected with the rest of the area as there is no internal road connection and the only access into the existing urban area is via Red Hills Rd which is a narrow two-lane road. The northern part of Red Hills is in a better position to be developed earlier due to its proximity to Westgate. Fred Taylor Dr and Don Buck Rd will become critical arterials for accommodating future growth.

Currently there are two local centres in the live zoned areas, one in Red Hills (yet to be developed) and one within the Whenuapai Village SHA on Brigham Creek Road. A smaller neighbourhood centre is also proposed in the structure plan to be located along Trig Road to the south of State Highway 18.

Social and cultural

There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua in the Whenuapai and Red Hills FUAs.

Options

Options for the Whenuapai and Red Hills FUAs include:

1. Maintain existing FUA boundaries and sequencing.

2. Maintain existing FUA boundaries and change sequencing.
3. Identify that the FUAs are not suitable for development. Initiate a council-led plan change to rezone the FUAs to an appropriate zone that is not future urban nor urban.
4. Identify that further investigation is needed to determine if the FUAs are suitable for development.

All options were considered, but based on the considerations, ‘option 2’ is recommended.

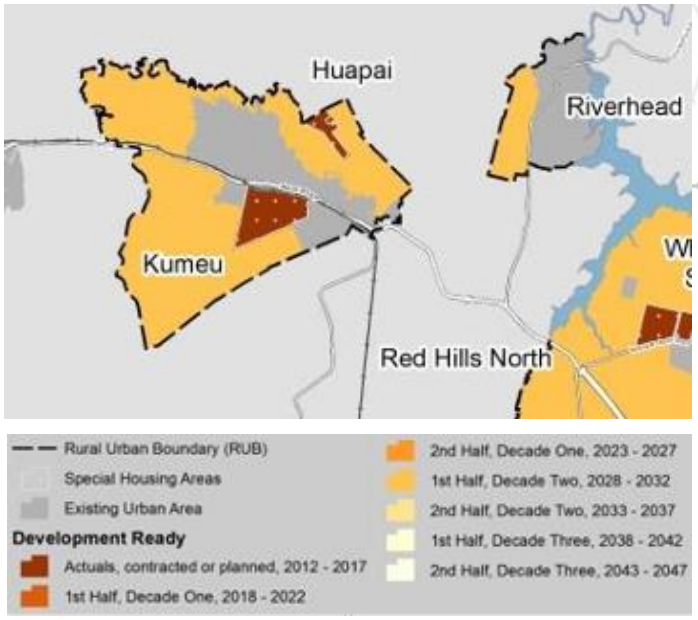
The future of Whenuapai and Red Hills

The existing FUA boundaries are retained, but the sequencing is delayed for infrastructure reasons:

- Red Hills North (Stage 1) (2035+)
- Whenuapai North (Stage 1), Whenuapai Central, Whenuapai East, Whenuapai South, Whenuapai West (2035+)
- Whenuapai North (Stage 2) (2050+)

Kumeū-Huapai-Riverhead

FULSS 2017 map



FDS new map

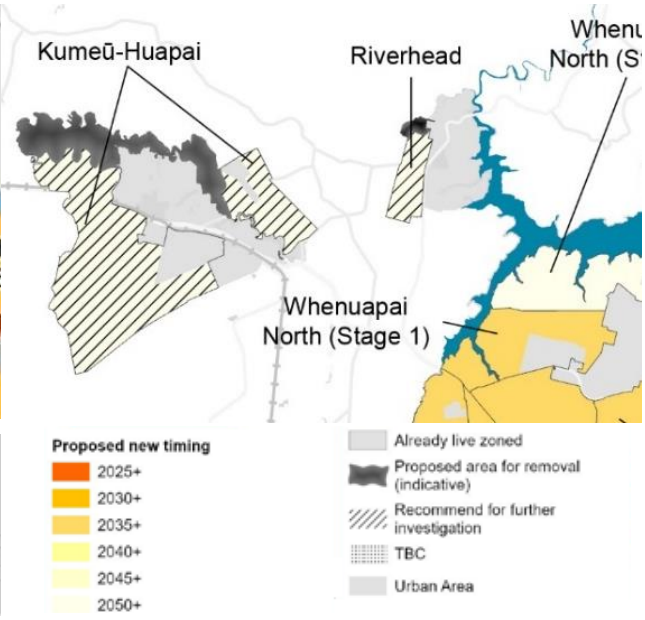


Figure 4 - Kumeū-Huapai-Riverhead

Current picture of growth

As of 31 March 2023, approximately 87ha of land has been live zoned in Kumeū-Huapai. This includes two Special Housing Areas: Huapai Triangle which is just south of the existing town centre and Huapai 2 precinct approximately 1.1km north of the town centre.

Most of the recent residential consent activities have occurred within the two live zoned areas. A minor delay is anticipated due to transport infrastructure delivery including road re-alignment and State Highway intersection signalisation.

As of 31 March 2023 there are no plan changes in the Kumeū-Huapai area.

As of 31 March 2023 a plan change request was lodged[11] for the Riverhead FUA which seeks to rezone approximately 80.5 hectares of land located generally to the west of the existing Riverhead urban area from Future Urban Zone (FUZ) to a mix of residential zones with a small Business - Local Centre and a Business - Neighbourhood Centre. The rezoning is proposed to provide capacity for approximately 1500-1800 dwellings. A recent resource consent was granted for a 422 unit retirement village via the COVID-19 Recovery (Fast-track Consenting) Act 2020.

Considerations

Infrastructure

Transport infrastructure is not planned to support development in Kumeū-Huapai before 2050+. Rapid transit, frequent transit routes, key arterials and upgrades and provision of active modes are required to support development and achieve strategic outcomes.

[11] The Riverhead South private plan change was lodged 6 July 2022. The Planning, Environment and Parks Commitee rejected the request at its 4 May 2023 meeting (Resolution number PEPCC/2023/61).

Transport infrastructure is not planned to support development in Riverhead before 2050+. There is no rapid transit network planned so this area would not contribute to VKT reduction. Safety and road upgrades are required to support development. Distance from the existing urban area, lack of rapid transit and lower opportunities for mode shift mean strategic outcomes are unlikely to be achieved.

Natural hazards and natural environment

The Kumeū-Huapai part of this FUA has significant hazard constraints associated with flooding due to approximately 30% of the FUA covered by the 1% AEP floodplain, particularly around the north and east of Huapai and northern Kumeū, where the floodplain extends well beyond the watercourse edges. Due to the FUA's location in the upper section of the Kaipara- Kumeū floodplain, an increase in impervious area could also impact flooding downstream of the FUA from Kumeū all the way through to Parakai or require significant flood mitigation (e.g. stopbanks, floodwater retention devices etc).

The Riverhead section of this FUA has isolated patches of floodplain throughout the site, and a floodplain that encompasses the site's northern border, due to a permanent stream along this boundary. None of this FUA is at risk of coastal inundation or erosion. However, there are some geohazards present (possible liquefaction damage and high risk of slope instability in the northern portion of the FUA) and softer soils with risks of settlement relating to the Puketoka geological formation.

While some watercourses in this FUA are modified and degraded, the FUA contains a high proportion of high ecological value watercourses. This includes proportionally higher overhead vegetation coverage / riparian planting, particularly in the northern portion of Kumeū, where the FUA abuts the Kumeū River. The FUAs contains several natural wetlands, particularly in Kumeū. These natural wetlands tend to be located in lifestyle blocks and/or adjacent to the northern SEA-T. As such, they are vegetated and likely in a higher ecological condition than natural wetlands in other FUAs. There are fragments of kahikatea forest, puriri forest, kauri, podocarp, broadleaved forest and kanuka scrub/forest SEAs abutting and in some places extending into the northern edge of the Kumeū and Huapai portions of the FUA, and a smaller patch of broadleaved scrub/forest on the northern boundary of the Riverhead portion. There is also a small area of tawa, kohekohe, rewarewa, hīnau podocarp forest and a larger area of kauri, podocarp, broadleaved forest SEA to the south west.

The Kumeū-Huapai-Riverhead FUA is almost 99% LUC 1 to 3 (1,595 ha in total) with a very small patch of LUC 4 in the southwestern corner of the Kumeū-Huapai part of this FUA.

Emissions/VKT reduction

There is potential for higher VKT and CO_2 emissions per household at 2048 in the Kumeū-Huapai-Riverhead FUA than southern FUAs and existing urban areas, due to distance from high quality existing or planned public transport, a wide range of jobs, education and other services compared to the southern FUAs and existing urban areas.

Urban form

The rail line that cuts through Kumeū-Huapai presents physical barrier for the Huapai Triangle development to be connected with the existing urban area north of Main Road. The development currently relies on Station Road as the only crossing point over the rail line onto SH16 and Main Road.

Huapai 2 Precinct is currently surrounded by future urban zoned land and relatively disconnected from the existing urban area of Kumeū-Huapai, with only one connecting road to the town centre.

Improving the transport network will play a key part in alleviating the pressure on the area's already congested roads, particularly through the State Highway 16 urban area. Less traffic on this section of road (SH16 Main Road) will enable it to become part of a revitalised town centre, providing more transport choice and reducing the severance of one side of Kumeū-Huapai from the other.

Upgrading of existing local roads that feed off SH16 Main Road will become critical in considering future growth. Access Road and Station Road are the two main routes for the southern part of Kumeū-Huapai as they provide crossing over the rail line and will provide a direct connection via Tawa Road to the new Alternative State Highway.

As Kumeū River presents a physical barrier for alternative routes into the town centre from the northern part of Kumeū-Huapai, upgrade of Oraha Road becomes critical in providing more efficient and safe connection, especially considering the potential of development of future urban land to the west of Huapai 2 development. This would enable residential development to the north to be better integrated with the existing urban area of Kumeū-Huapai.

Social and cultural

The Taylor Road, south of Helensville ONL borders and slightly overlaps the northern boundary of the Kumeū-Huapai FUA. There are no other areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua in the Kumeū-Huapai-Riverhead FUAs.

Options

Options for the Kumeū-Huapai-Riverhead FUAs include:

1. Maintain existing FUA boundaries and sequencing.
2. Maintain existing FUA boundaries and change sequencing.
3. Identify that some or all of the FUAs are not suitable for development. Initiate a council-led plan change to rezone the FUAs to an appropriate zone that is not future urban nor urban.
4. Identify that further investigation is needed to determine if the FUAs are suitable for development.
5. All options were considered, but based on the considerations, a hybrid of 'option 2, 3 and 4' are recommended.

The future of Kumeū-Huapai-Riverhead

Kumeū-Huapai is **recommended to be partially removed** due to parts of the FUA not being suitable for development. The reasons for this partial removal are:

- Significant hazard constraints, including approximately 30% of FUA covered by a 1% AEP floodplain. Portions of the Kumeū-Huapai FUA proposed for removal are parcels entirely or mostly within this floodplain extent and have few appropriate land uses.
- Potential for higher VKT and CO_2 emissions than other FUAs (in the south) due to Kumeū-Huapai FUA being relatively distant from high quality existing or planned public transport, a wide range of jobs, education and other services compared to other FUAs.

The remaining parts of the Kumeū-Huapai-Riverhead FUA boundaries are retained, but the sequencing is delayed for infrastructure reasons until 2050+, and the **remainder of the FUA is recommended for further investigation** due to the lack of planned infrastructure and potential for higher VKT/CO_2 emissions and the presence of moderate hazard constraints (in particular potential for downstream flooding effects from Kumeū-Huapai FUA and the floodplain extent in the Riverhead FUA mostly along the northern boundary associated with a tributary of the Rangitopuni Stream).

2.1.3 Southern FUAs

Overview

Sub-region FUA cluster	Future urban areas	Status in 2023	FULSS 2017 timing	FDS New timing	FDS approach
South					
Ōpaheke, Drury East, Drury West	*Hingaia*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Ōpaheke -Drury (Bellfield Rd)	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Drury South	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Drury West (Bremner Rd)	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Ōpaheke-Drury (Drury East, Gatland Road, Great South Road)	*Partially live zoned*	*2028-2032*	*N/A*	*Infrastructure review*
	Ōpaheke (previously named as Ōpaheke -Drury)	Future Urban zoned	2028-2032	2050+	Timing delay Recommend removal of Slippery Creek portion of FUA
	Drury East *(previously named as Ōpaheke Drury)*	Future Urban zoned	2028-2032	2035+	Timing delay Recommend removal of Slippery Creek portion of FUA
	Drury West (Stage 1)	Partially live zoned	2018-2022	2035+	Timing delay
	Drury West (Stage 2)	Future Urban zoned	2028-2032	2035+	Timing delay
	Drury West (Stage 3)	Partially live zoned	2028-2032	2035+	Timing delay
Pukekohe and Paerata	*Paerata (Wesley)*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Pukekohe (Belmont)	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Paerata South	Future Urban zoned	2018-2022	2030+	Timing delay
	Paerata West	Future Urban zoned	2018-2022	2040+	Timing delay
	Pukekohe North-east	Future Urban zoned	2023-2027	2040+	Timing delay
	Pukekohe North-west	Future Urban zoned	2023-2027	2040+	Timing delay
	Pukekohe East	Future Urban zoned	2023-2027	2035+	Timing delay
	Pukekohe South-east	Future Urban zoned	2023-2027	2040+	Timing delay
	Pukekohe South-west	Future Urban zoned	2023-2027	2035+	Timing delay
Puhinui	*Puhinui (Stage 1)*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Puhinui (Stage 2)	Future Urban zoned	2028-2032	2030+	Timing delay
Takaanini	*Takaanini (Walters Rd)*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Takaanini (Cosgrave Rd)	Future Urban zoned	2023-2027	2050+	Timing delay

	Takaanini	Future Urban zoned	2043-2047	N/A	Recommend removal of Takaanini FUA

Table 6 – Southern FUAs

Takaanini and Cosgrave Road

FULSS 2017 map



FDS new map

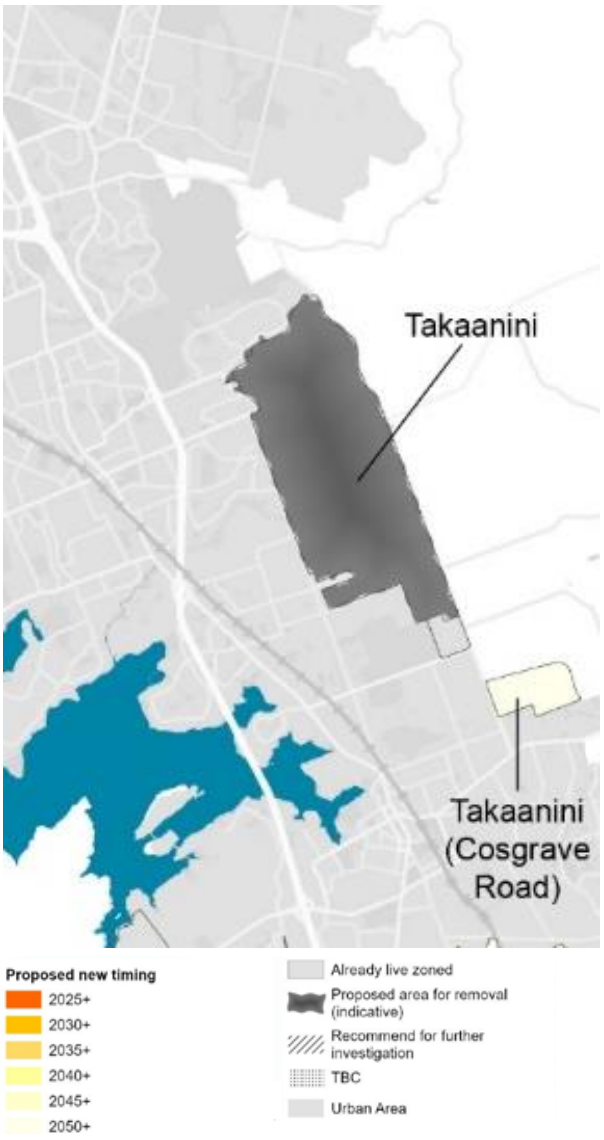


Figure 5 – Takaanini and Cosgrave Road

Current picture of growth

A small proportion (20ha) of Takanini was live zoned through the AUP. The special housing area of Takanini Strategic Area accounts for the cluster of development at the southern end of Takanini.

There is 648ha land still future urban zoned.

Considerations

Infrastructure

Infrastructure is not expected to be available to support growth until at least 2050+. Due to flooding constraints and works required to provide appropriate stormwater infrastructure, significant costs are anticipated.

Natural hazards and natural environment

The floodplain in the Takaanini FUA is significant in extent, particularly south of the Papakura Stream, with more than 50% of the FUA exposed to a 1 in 100-year event, including known issues relating to both extent and depth. Development and the associated increase in impervious surfaces also poses risks of exacerbating downstream flooding effects within the existing urban area. The FUA is not exposed to coastal inundation or coastal erosion risks. However, the FUA has a significant proportion of alluvium / colluvium geological formations, typically overlain by peat / peaty loam in the south. This poses settlement risks for development and infrastructure, resulting in ongoing hazard risks and / or likely incurring significant costs to appropriately mitigate. As a result of this geology a significant portion of the FUA (south of Papakura Stream) is also in an area where liquefaction damage is possible.

The floodplain extent within the Cosgrave Road FUA is significant, with ~80% of the area currently exposed to flooding in a 1 in 100-year event. Auckland Council is developing a business case for stormwater infrastructure to manage this risk. The FUA is not exposed to coastal inundation or coastal erosion risks. The Cosgrave Road FUA also has a significant proportion (~90%) of alluvium / colluvium geological formations, typically overlain by peat / peaty loam., which pose settlement risks and would be likely to incur significant costs to mitigate.

Watercourses in this FUA are mostly likely to be in poor health and have low existing ecological value. This is supported by aerial photography analysis, which demonstrates that much of the portion of the Papakura Stream that transects the FUA west to east has low overhead coverage / vegetated riparian margins. This is except for areas to the west through lifestyle blocks, the headwaters of the tributaries in the northern most part of the FUA north of Ranfurly Road, which appear to have some native kanuka/manuka scrub vegetation along them, as well as a small remnant of taraire/tawa podocarp forest along the tributary in the northernmost corner, which is scheduled as an SEA. There are a few other very small non-scheduled areas of kanuka scrub also in the northern section of the FUA. There is a single notable tree (magnolia) near the centre of the southern portion of the FUA, which would need to be protected in line with the AUP.

There are a number of modified watercourses running through the Cosgrave Road FUA in a grid-like pattern, with a piped watercourse (drain) running along part of the southern boundary and due to the existing rural land uses, it is considered likely that these waterbodies will have lower natural value. There are no SEAs or other notable non-scheduled biodiversity areas within the FUA.

Approximately 90% of the Takaanini FUA is classified as LUC 1 to 3 (about 621 ha), with a small area of LUC 4 in the northern corner of the site, and about 80% of the Cosgrave Road FUA is LUC 1 to 3 (about 45 ha).

Emissions/VKT reduction

While there is potential for higher VKT and CO_2 emissions per household at 2048 in the Takaanini FUAs than existing urban areas, these FUA are likely to have slightly lower VKT and CO_2 emissions compared to the FUAs in the north and north west, due to being closer to high quality existing or planned public transport, a wide range of jobs, education and other services.

Urban form including business

This area is adjacent to the existing urban area of Takaanini, including to employment and business areas. While this could be seen as creating an urban edge along Mill Road, there is potential for this boundary to be crossed, exacerbating environmental issues.

Social and cultural

An historic heritage site (Alfriston Hall, including World War I Memorial) is adjacent to the eastern boundary of the Takaanini FUA. A modified Ridgeline Protection overlay borders and slightly overlaps the northern boundary of the Takaanini FUA. The Rings/Kirikiri redoubt historic heritage site is just over 400 m to the southeast of the Cosgrave Road FUA. There are no other areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of the Takaanini or Cosgrave Road FUAs.

Options

Options for Takaanini and Cosgrave Road include:

1. Maintain existing FUA boundaries and sequencing.
2. Maintain existing FUA boundaries and change sequencing.
3. Identify that part or all of the FUA is not suitable for development. Initiate a council-led plan change to rezone the FUA to an appropriate zone that is not future urban nor urban.
4. Identify that further investigation is needed to determine if the FUAs are suitable for development.
5. All options were considered, but based on the considerations, a hybrid of ‘option 2, 3 and 4’ are recommended.

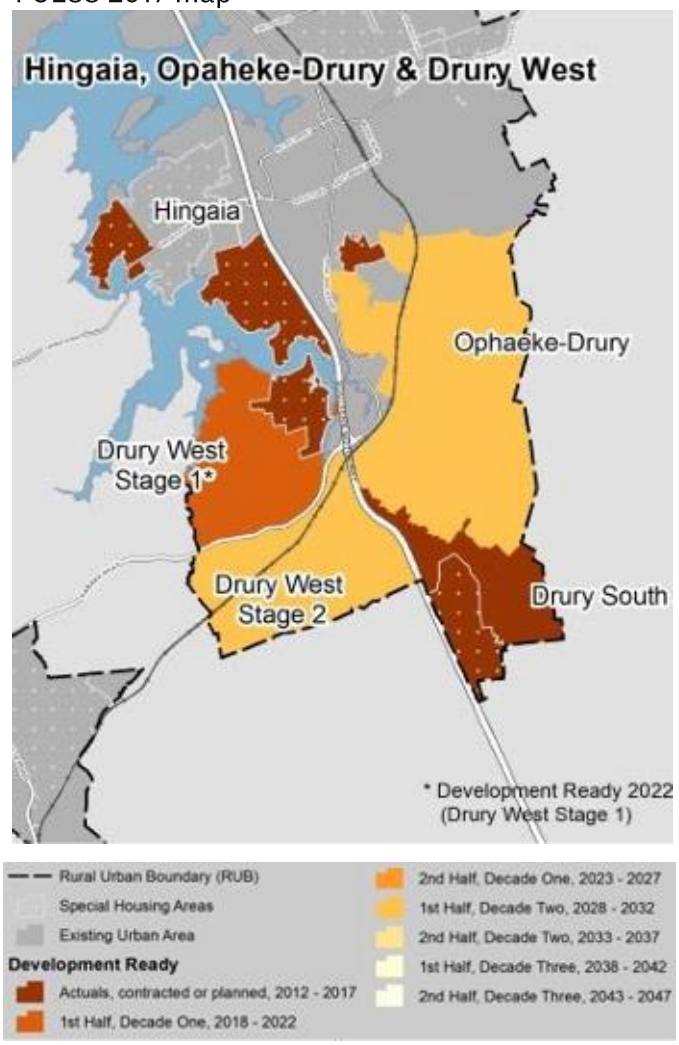
The future of Takaanini and Cosgrave Road

The whole of Takaanini is recommended for removal due to significant floodplain extent within the FUA, particularly a large area north of the Papakura Stream and the entire area south of the stream, with more than 50% of the FUA exposed to the 1% AEP floodplain. The FUA also has significant settlement risks (and potential dewatering) due to the underlying geology and peat soils, and areas where liquefaction damage is possible.

The Cosgrave Road FUA boundary is retained, but the sequencing is delayed for infrastructure reasons to 2050+.

Ōpaheke-Drury

FULSS 2017 map



FDS new map

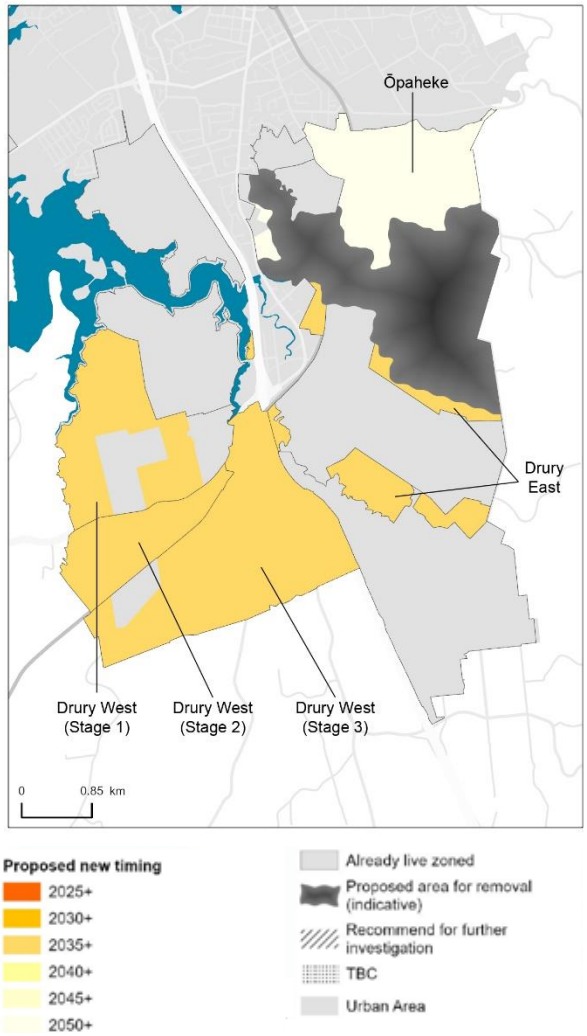


Figure 6 - Ōpaheke-Drury

Current picture of growth

A small proportion of Drury West and Ōpaheke-Drury and all of Drury South industrial area were live zoned through the AUP.

Most of the building activities are clustered around the north east portion of Drury West. Part of this area formed the Bremner Road Special Housing Area.

Several plan changes were made operative and subsequently live zoned since the FULSS.

As of 31 March 2023, approximately 1,375ha of land has been live zoned in Drury-Ōpaheke, Drury West, Drury South.

A moderate delay is anticipated for the delivery of wastewater services and transport infrastructure such as rail station construction, State Highway upgrades and arterial road improvements.

The table below outlines the plan changes that have been made operative or are in progress in Drury-Ōpaheke, Drury West, Drury South.

Plan Change	Land Area	Proposed development	Status
PC 6: Auranga B1 Drury West	83.05ha	Rezone Future Urban zoned land to residential zone	Fully Operative February 2020
PC 46: Drury South	366ha	Rezone land from Light Industry to Mixed Use and rezone a further 20 hectares of land from Heavy Industry to Light Industry.	Fully Operative October 2021
PC 48: Drury Centre Precinct	95ha	Rezone land from Future Urban to Metropolitan Centre zone, Mixed Use zone and Informal Recreation zone.	Fully Operative on 16 December 2022
PC 49: Drury East Precinct	184ha	Rezone land from Future Urban to Mixed Use zone, Terrace Housing and Apartment Buildings zone, Mixed Housing Urban zone, and Mixed Housing Suburban zone.	Fully Operative on 16 December 2022
PC 50: Waihoehoe Precinct	48.9ha	Rezone land from Future Urban to Terrace Housing and Apartment Buildings zone.	Fully Operative on 16 December 2022
PC 51: Drury 2 Precinct	33.65ha	Rezone land from Future Urban Zone to Town Centre zone, Terrace Housing and Apartment Buildings zone and Mixed Housing Urban zone.	Fully Operative on 16 December 2022
PC 52: 520 Great South Road, Papakura	4.63ha	Rezone the land from Future Urban zone to Mixed Housing Urban zone.	Fully Operative December 2021
PC 58: 470 and 476 Great South Road and 2 and 8 Gatland Road, Papakura	6.1ha	Rezone land from Future Urban zone to Mixed Housing Suburban and Neighbourhood Centre zone.	Fully Operative March 2022
PC61: Waipupuke	56ha	Rezone Future Urban Zoned land to Neighbourhood Centre zone, Terrace Housing and Apartment Buildings zone, and Mixed Housing Urban zone.	Fully Operative on 16 December 2022
PC 76 (Private): Kohe	30.6ha	Rezone land from Future Urban Zone to Mixed Housing Urban Zone.	Decision notified March 2023

Table 7 – Plan changes in Ōpaheke-Drury

Considerations

Infrastructure

Infrastructure is not expected to be available to support growth in Ōpaheke until at least 2050+. Ōpaheke cannot be serviced with the rapid transit network. There are significant flood constraints and costs anticipated in the FUA due to required stormwater infrastructure.

Infrastructure is not expected to be available to support growth in Drury East, Drury West (Stage 1), Drury West (Stage 2) and Drury West (Stage 3) until onwards of 2035+. There are significant flood constraints and costs anticipated in the FUA due to stormwater infrastructure. Significant transport infrastructure such as rail stations, key arterials and a frequent transit network are required to support growth in these FUAs. Bulk wastewater and water supply transmission infrastructure is also required.

Natural hazards and natural environment

Approximately 25% of the Drury West (Stage 2) FUA is exposed to flooding in a 1 in 100 year event, with the flood extent being wide in some parts, and development may exacerbate downstream flooding effects. A minor portion of the FUA is exposed to coastal inundation in the north, adjacent to Ngakaroa Creek within the Ngakaroa Reserve. The FUA is not prone to coastal erosion / instability. A moderate proportion of the FUA is subject to a high risk of slope instability.

The floodplain extent within the Ōpaheke-Drury FUA is significant, with approximately 38% of the area exposed to flooding in a 1 in 100 year event, particularly around Ōpaheke. Floodplains in the area are wide in extent and deep, posing significant risks to development. The western section of the FUA is subject to minor coastal inundation exposure, but is not prone to coastal erosion / instability. The FUA includes small pockets of alluvium / colluvium geology, where there are settlement risks and also areas subject to high risk slope instability and possible liquefaction damage. The Drury fault line runs along the eastern boundary of the FUA. Recent studies demonstrate that this fault may be active.

The Drury West (Stage 2) FUA and Ōpaheke-Drury FUA both have a relatively high proportion of watercourses, compared to other FUAs. All watercourses in these FUAs have very little vegetation cover and freshwater habitats have been highly modified and degraded, with the majority of watercourses having no-low (<10%) overhead coverage, apart from some reaches within the Slippery Creek catchment in the Ōpaheke-Drury FUA, which have more coverage. There are small pockets of natural wetlands identified within the Drury West (Stage 2) FUA, particularly in the southern portion, where there are noticeable clusters of larger wetlands. There are few small isolated natural wetlands identified in the southernmost portion of the Ōpaheke-Drury FUA and adjacent to some reaches within the Slippery Creek catchment. However, these are predominantly located within pastoral land uses and are degraded as a result of stock access. There are no terrestrial SEAs or other notable non-scheduled biodiversity areas within the Drury West (Stage 2) FUA, but there are two small fragments of kahikatea forest SEAs in the northern half of the Ōpaheke-Drury FUA and no other notable non-scheduled biodiversity areas. There are two notable trees (kahikatea) in the north western portion of the Ōpaheke-Drury FUA, which would need to be protected in line with the AUP.

Almost 95% of the Drury West (Stage 2) FUA is classified as LUC 1 to 3 (approximately 755 ha), with a small patch of LUC 4 in southwestern corner. Approximately 99% of the Ōpaheke-Drury FUA is classified as LUC 1 to 3, which accounts for a total area of 1,133ha.

Emissions/VKT reduction

While there is potential for higher VKT and CO_2 emissions per household at 2048 in the Drury West (Stage 2) and Ōpaheke-Drury FUAs than existing urban areas, these FUAs are estimated to have the lowest VKT and CO_2 emissions compared to the rest of the FUAs, due to being closer to high quality existing public transport, a wide range of jobs, education and other services.

Urban form including business

The Drury Opāheke Structure Plan indicates that a large area of centre land will eventually be required for the future population of Ōpaheke-Drury (Auckland Council, 2019b). This includes centres of different sizes to create a hierarchy of centres as the area develops over time.

The centre located east of SH1 near the existing Drury Village to support the increasing population and consolidate Drury around the Drury east railway station. This centre would serve the Drury – Ōpaheke structure plan area and also surrounding areas. The new railway station is critical to supporting a multi-modal transport network and anchoring Drury as a strategic centre. Connections between development areas (both for residential and commercial development) are critical to avoid isolated disjointed pockets of development.

Another large centre is also needed in West Drury, to the west of State Highway 1. It will primarily serve the western part of the Ōpaheke-Drury FUA. Additional smaller centres are also proposed to service local areas.

The other key area is the industrial business land on the south-eastern edge of Drury. While the

residential development is being progressed, a large area of new industrial business land is needed in Drury – Ōpaheke to meet future demand and provide job opportunities in close proximity to the new communities being built. The proposed industrial business land could provide about 3800 jobs. It is important to provide for business activities in the south to reduce south to north commuting and freight movement which affects congestion across Auckland as a whole.

Social infrastructure must also be provided to support the new communities, in the form of an integrated community centre and library (approximately 6000m2) and a separate facility such as a leisure centre (approximately 2500m2).

One primary school has already been built in Drury West, additional schools are required to ease the pressure on existing schools and support the creation of a cohesive community.

Social and cultural

There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of the two FUAs but there are three settlement sites approximately 250 m to the east of the boundary of the Ōpaheke-Drury FUA, one approximately 290 m to the north east, and the Ballards Cone pa site approximately 1.2 km to the south east. The Ponga Road Outstanding Natural Landscape is 1-2 km to the east of the Ōpaheke-Drury FUA. The West Ramarama and Bombay ONLs and the Ingram Road III and Raventhorpe tuff rings (Outstanding Natural Features) are approximately 2-3 km to the south of the Drury West (Stage 2) FUA. The Shepherds Bush Redoubt site is 1.6 km to the south.

Options

Options for Ōpaheke-Drury include:

1. Maintain existing FUA boundaries and sequencing.
2. Maintain existing FUA boundaries and change sequencing.
3. Identify that part or all of the FUAs are not suitable for development. Initiate a council-led plan change to rezone the FUAs to an appropriate zone that is not future urban nor urban.
4. Identify that further investigation is needed to determine if the FUAs are suitable for development.
5. All options were considered, but based on the considerations, a hybrid of ‘option 2 and 3’ are recommended.

The future of Ōpaheke-Drury

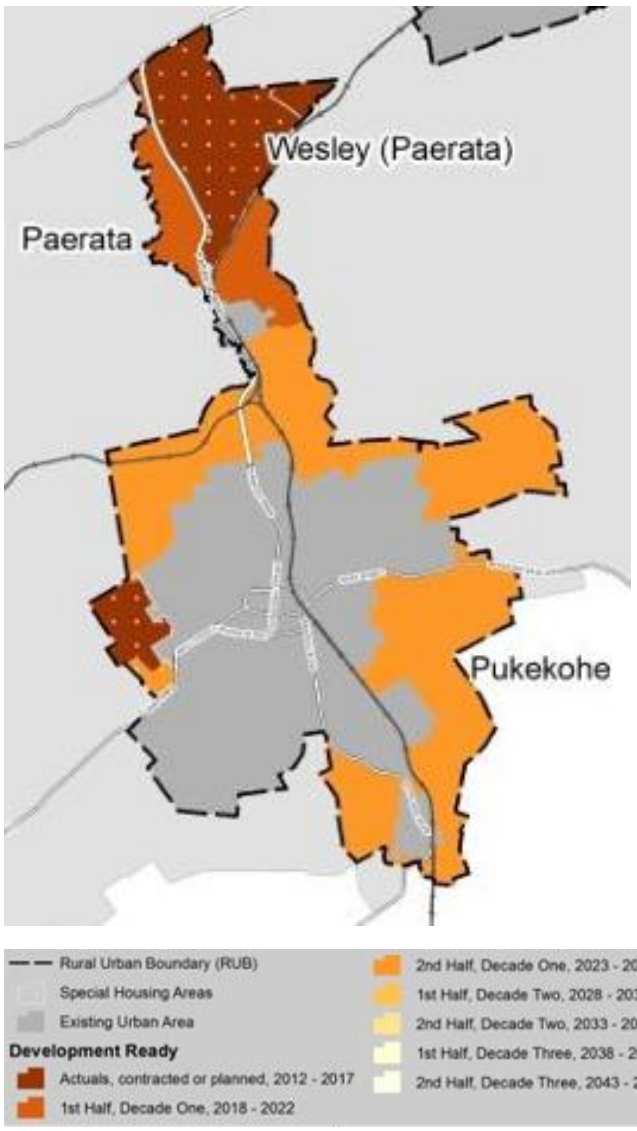
The Ōpaheke-Drury FUA is **recommended for partial removal** (of the area associated with the Slippery Creek floodplain and some land to east adjacent to the floodplain) due to significant hazard constraints (flooding, settlement risks, instability, liquefaction and the Drury fault line). The remaining parts of the FUA are to be renamed Ōpaheke (north of Slippery Creek) and Drury East (for land not live zoned).

A portion of the FUA to east of the Slippery Creek floodplain has been included to be removed. Although this area is not subject to the same level of natural hazard constraint, retaining it for development while removing areas of land within Slippery Creek to the North, South and West could result in poor urban form outcomes, result in reverse sensitivity effects, and a reduced ability to service the area with infrastructure.

The Drury West (Stage 2) FUA boundary is retained, but the sequencing is delayed for infrastructure reasons to 2035+.

Pukekohe-Paerata

FULSS 2017 map



FDS new map

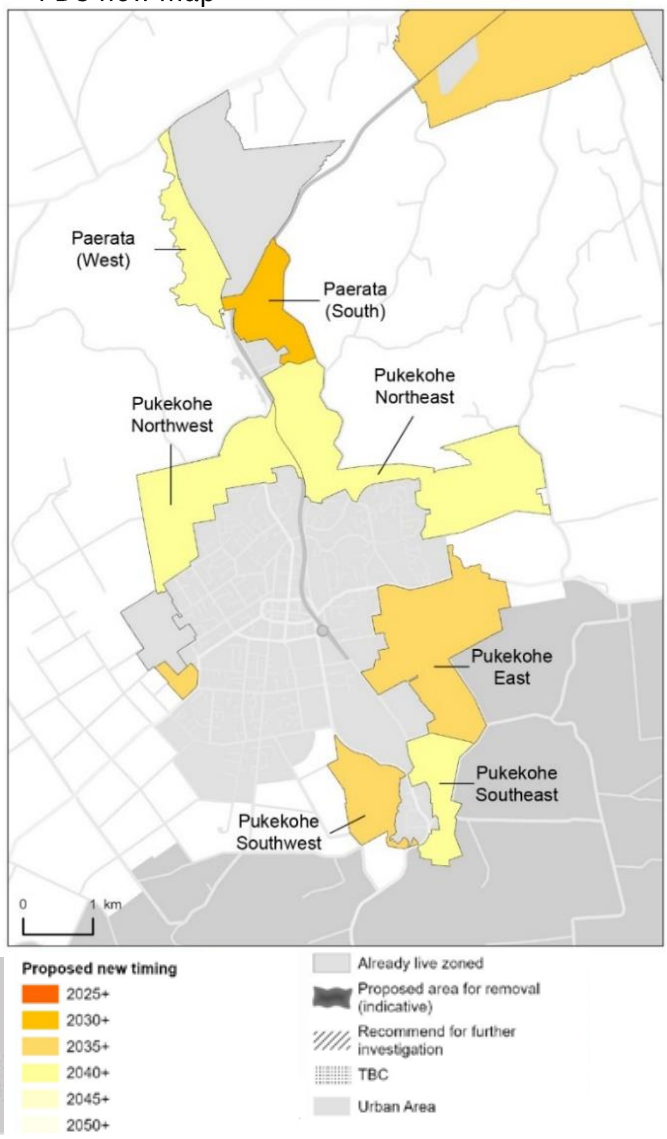


Figure 7 - Pukekohe-Paerata

Current picture of growth

Parts of Paerata and Pukekohe were live zoned through the AUP. As of 31 March 2023, approximately 387ha of land has been live zoned in Pukekohe Paerata. 1,316ha is still future urban zoned.

The table below outlines the plan changes that have been made operative or are in progress in Pukekohe Paerata. A minor delay is anticipated for the delivery of transport infrastructure such as rail station construction.

Plan Change	Land Area	Proposed development	Status
PC 6: Auranga B1 Drury West	7.8ha	Rezone land from the Future Urban Zone to the General Business Zone.	Further submissions closed February 2023

Table 8 – Plan change in Pukekohe-Paerata

Considerations

Infrastructure

Transport infrastructure is not expected to be available to support development in Paerata South until 2030+, Pukekohe East and Pukekohe South-west until 2035+ and Paerata West, Pukekohe North-west, Pukekohe North-east, Pukekohe South-east until 2040+. A railway station, rail electrification, key arterials and upgrades and safety improvements are required to support development and achieve strategic outcomes. A transmission wastewater pumpstation and water pumpstation are also required to support development.

Natural hazards and natural environment

Due to being sequenced in the 2017 FULSS for development prior to 2023, the Paerata FUAs were not subject to natural hazards and natural environment assessments as part of this project.

The information discussed here relates to the Pukekohe North-west, Pukekohe North-east, Pukekohe East, Pukekohe South-east and Pukekohe South-west portions of the Pukekohe FUA only.

A moderate proportion of the FUA is exposed to flooding in a 1 in 100 year event (~22%). However, floodplain extents are typically narrow. The FUA is not exposed to coastal inundation or coastal erosion / instability. A small-moderate proportion of the FUA is identified as a high risk of slope instability and there is a small area of alluvium / colluvium geology where settlement risks exist.

The FUA has a high proportion of watercourses, which due to the existing rural land uses, tend to have lower natural value. There do not appear to be many known natural wetlands associated with those watercourses. There are some isolated pockets of natural wetland in the north-east and southern portion of the FUA, most of which are unfenced and therefore likely to be damaged by stock. There are two notable totara trees and nine small remnant forest SEAs (kahikatea, puriri or taraire/tawa dominated) dotted around the Pukekohe FUA, with a cluster in the northeastern parcel of the FUA (adjacent to William Andrew Road) and another cluster in the southern parcel west of Buckland.

Approximately 70-75% of the FUA is classified as LUC 1 to 3, comprising a total of 830 ha.

Emissions/VKT reduction

While there is potential for higher VKT and CO_2 emissions per household at 2048 in the Pukekohe FUA than existing urban areas, this FUA is likely to have slightly lower VKT and CO_2 emissions compared to the FUAs in the north and northwest, due to being closer to high quality existing or planned public transport, a wide range of jobs, education and other services.

Urban form including business

Development in the live zoned areas is progressing in stages. A local centre is live zoned as part of the SHA. The pace of development reflects the developer's schedule. Delivery has slowed down especially in Paerata since 2019, probably due to market changes. Changes in consenting numbers for future urban areas are shown in its monitoring of the Development Strategy (Auckland Council, 2022).

The location of the live zoned Wesley SHA at Paerata in conjunction with a new Paerata railway station (to be constructed) provides an opportunity the future urban growth to take advantage of this to focus growth. The Wesley development will benefit from existing and planned infrastructure upgrades including the Paerata railway station, Pukekohe railway station upgrades as well as rail electrification and several arterial upgrades.

As a rural node Pukekohe is anticipated to have significant future growth in employment as well as residential growth. The Pukekohe-Paerata Structure Plan proposes approximately 95ha (net developable) of land to be zoned Light Industry (Auckland Council, 2019c).

The location of proposed new Light Industry zone areas takes into account of a range of factors, including good access to the existing and proposed road network, relatively flat land, proximity to existing business areas, and proximity to existing "less sensitive" activities.

Social and cultural

There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of the Pukekohe FUA, but there are three historic heritage sites close to the western edge of Pukekohe East (within the existing town of Pukekohe). The Ponga Road Outstanding Natural Landscape is 1-2 km to the east of the Ōpaheke-Drury FUA. The Pukekohe East tuff ring Outstanding Natural Feature abuts the boundaries of Pukekohe East and Pukekohe North-east portions of the FUA and the West Ramarama and Bombay ONLs are close to the northern boundary of Pukekohe North-east. There are also the Ingram Road III and Raventhorpe tuff ring outstanding natural features (ONFs) are just over 1 km to the east.

Options

Options for Pukekohe-Paerata include:

1. Maintain existing FUA boundaries and sequencing.
2. Maintain existing FUA boundaries and change sequencing.
3. Identify that part or all of the FUAs are not suitable for development. Initiate a council-led plan change to rezone the FUAs to an appropriate zone that is not future urban nor urban.
4. Identify that further investigation is needed to determine if the FUAs are suitable for development.
5. All options were considered, but based on the considerations, 'option 2' is recommended.

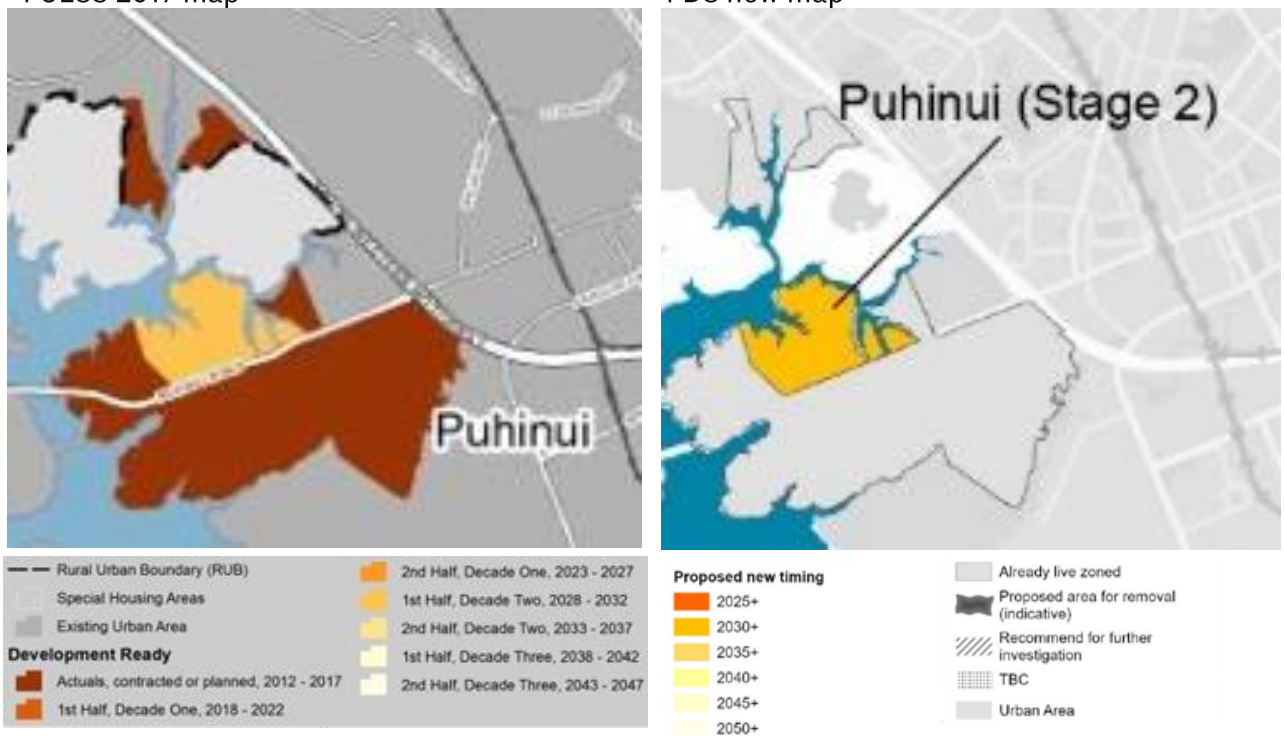
The future of Pukekohe and Paerata

The existing FUA boundaries are retained, but the sequencing is delayed for infrastructure reasons until:

- Paerata South (2030+)
- Pukekohe East, Pukekohe South-west (2035+)
- Paerata West, Pukekohe North-east, Pukekohe North-west, Pukekohe South-east (2040+)

Puhinui

FULSS 2017 map



FDS new map

Figure 8 - Puhinui

Current picture of growth

Parts of Puhinui FUA (409ha) were live zoned Business - Light Industry Zone through the AUP. There are 70ha land still future urban zoned. As the area was predominantly planned for business activity, only a small amount of residential dwelling yield was anticipated.

Considerations

Infrastructure

Transport infrastructure is not expected to be available to support development in Paerata South until 2030+. Rapid Transit and state highway and key arterial upgrades are required to support development and achieve strategic outcomes.

Natural hazards and natural environment

This FUA is located on the edge of an estuary that feeds into the Manukau Harbour. The 1% AEP floodplain encroaches slightly into the edge of the site, where it borders the estuary but only represents about 5% of the total area of the FUA. The FUA has minor exposure to coastal inundation along the northern boundary. This area is also susceptible to coastal erosion and instability. The FUA has some exposure to geotechnical hazards, including a moderate proportion of slope instability and a high prevalence of the Puketoka geological formation where there may be some settlement risks in localised areas.

The Puhinui FUA has a low proportion of watercourses relative to other FUAs. Of the few watercourses in the area, the significant majority have no-low (<10%) overhead coverage. There are no identified

natural wetlands or potential barriers to the passage of fish. There are no terrestrial SEAs or other notable non-scheduled biodiversity areas within the FUA, however, there are a number of mangrove forests on the tributaries of the Waokauri Creek (an inlet of the Manukau Harbour) which are all mangrove forests scheduled as a marine SEA.

Approximately 95% of the FUA is classified as LUC 1-3, comprising a total of 122ha.

Emissions/VKT reduction

Puhinui was not included in one of the clusters of FUAs assessed for CO_2 emissions, as it is not in the same MSM zone as any of the other FUAs (see Appendix 5). However, given the overall finding that the FUAs are likely to result in higher transport-related emissions than the existing urban areas, but less than rural areas, it is likely to have slightly lower VKT and CO_2 emissions compared to the FUAs in the north and northwest, in line with the other large FUAs in the south, due to being closer to high quality existing or planned public transport, a wide range of jobs, education and other services

Urban form including business

A large proportion of Puhinui has been live zoned. The live zoned land provides for predominately land extensive industrial activities such as light industrial and airport related activities. The Puhinui precinct was created via the AUP to manage the transition from rural to urban development, while recognising the cultural, spiritual and historical values and relationships that Te Ākitai Waiohua have with the land and sea in Puhinui as part of the Māori cultural landscape.

Social and cultural

There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of the Puhinui FUA, but there are a number of ONFs and sites and places of significance to mana whenua immediately to the north, and between 1-2 km to the east and south of the FUA. These include the Crater Hill ONF, Pukaki Lagoon volcano ONF and urupā, Kohuora and Kohuora explosion crater ONF, Wiri North Stonefield and Wiri lava cave ONF, Puhinui volcanic explosion craters ONF, Maunga Matukutureia, Puhinui fish traps and the Matukuturua lava field and tuff ring ONF.

Options

Options for Puhinui include:

1. Maintain existing FUA boundaries and sequencing.
2. Maintain existing FUA boundaries and change sequencing.
3. Identify that part or all of the FUA is not suitable for development. Initiate a council-led plan change to rezone the FUA to an appropriate zone that is not future urban nor urban.
4. Identify that further investigation is needed to determine if the FUAs are suitable for development.
5. All options were considered, but based on the considerations, ‘option 2’ is recommended.

The future of Puhinui

The existing FUA boundaries are retained, but the sequencing is delayed for infrastructure reasons until 2030+.

2.2 Urban edge and rural and coastal settlement FUAs

2.2.1 Overview

The following table summarises the status of all the urban edge and Rural and Coastal Settlement FUAs in terms of whether they have been live zoned, or partially live zoned or are still zoned as Future Urban. The final column provides an overview of the FDS approach with more detail below.

Those urban edge and Rural and Coastal Settlement FUAs that were already live zoned have been reviewed to understand the current status of any planned infrastructure to support the development. The remaining non-live zoned FUAs have been assessed in more detail against natural environment, natural hazard, highly productive land, CO_2 emissions, social and cultural considerations.

Given the scale of the rural and coastal settlement FUAs, boundary adjustments have not been considered. Instead, options for each FUA included:

- maintaining the area and its sequencing
- maintaining the area but changing its sequencing
- identify that part or all of the FUA is not suitable for development. Initiate a council-led plan change to rezone the FUA to an appropriate zone that is not future urban nor urban.
- indicating that further investigation is needed to determine if the FUA is suitable for development.

Sub-region FUA cluster	Future urban areas	Status in 2023	FULSS 2017 timing	FDS New timing	FDS approach
North	*Hibiscus Coast (Silverdale)*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Hibiscus Coast (Red Beach)	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Hatfields Beach 1	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Albany Village 1	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Waimauku	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Swanson	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Wellsford	Future Urban zoned	2023-2027	2030+	Timing delay
	Algies Bay	Future Urban zoned	2023-2027	2025+	No change
	Albany Village 2	Future Urban zoned	2023-2027	2025+	Recommend for further investigation
	Helensville 1	Future Urban zoned	2023-2027	2035+	Timing delay
	Helensville 2	Future Urban zoned	2028-2032	2035+	Timing delay
	Hatfields Beach 2	Future Urban zoned	2028-2032	N/A	Recommend removal of Hatfields Beach 2 FUA
South	*Maraetai 1*	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Oruarangi 1	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Clevedon	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Clevedon Waterways	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*

	Karaka North	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Kingseat	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Clarks Beach 1	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Glenbrook Beach 1	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Patumahoe	*Live zoned*	*2012-2017*	*N/A*	*Infrastructure review*
	Oruarangi 2	Future Urban zoned	2018-2022	2025+	Timing delay and recommend for further investigation
	Clarks Beach 2	Future Urban zoned	2023-2027	2030+	Timing delay
	Glenbrook Beach 2	Future Urban zoned	2023-2027	2030+	Timing delay
	Maraetai 2	Future Urban zoned	2028-2032	2035+	Timing delay

Table 9 - Urban edge and rural and coastal settlement FUAs

2.2.2 Live zoned urban edge and Rural and Coastal Settlement FUAs

The following table summarises the infrastructure consideration of the urban edge and Rural and Coastal Settlement FUAs that were already live zoned from 2012-2017. As stated above, as live zoned areas they have been reviewed to understand the current status of any planned infrastructure to support the development.

Rural and Coastal Settlements	Infrastructure consideration
North	
Hibiscus Coast (Silverdale)	Complete. Enabled growth can be serviced by Hibiscus Coast Bus Station.
Hibiscus Coast (Red Beach)	Complete. Enabled growth can be serviced by Hibiscus Coast Bus Station.
Hatfields Beach 1	Complete. No bulk transport infrastructure projects planned to support this development.
Albany Village 1	Complete. No bulk transport infrastructure projects planned to support this development.
North-west	
Waimauku	Unserviced by Watercare, intention that this area would be serviced independently. Stormwater issues downstream of Waimauku Railway Station area. Stormwater management needs to be assessed and carefully planned for during plan change and structure planning processes to ensure that it is not exacerbated. No bulk transport infrastructure projects planned to support this development. The area will be car-dependent so further development will likely increase emissions.
Swanson	Complete. No bulk transport infrastructure projects planned to support this development. The area will be car-dependent so further development will likely increase emissions.
South	
Maraetai 1	Significant delay anticipated due to wastewater servicing. Beachlands-Maraetai servicing is needed to support future growth. As the issue is the Wastewater Treatment Plant (WWTP) all Maraetai areas are subject to constraint.
Oruarangi 1	Complete. No bulk transport infrastructure projects planned to support this development. The area will be car-dependent so further development will likely increase emissions.
Clevedon	Complete. No bulk transport infrastructure projects planned to support this development. The area will be car-dependent so further development will likely increase emissions.
Clevedon Waterways	Precinct Plan operative, development not yet occurring. No bulk transport infrastructure projects planned to support this development. The area will be car-dependent so further development will likely increase emissions.
Karaka North	Unserviced by Watercare currently.

	No bulk transport infrastructure projects planned to support this development. The area will be car-dependent so further development will likely increase emissions.
Kingseat	Anticipated delay due to the South-West Wastewater Upgrade needed to support future growth. No bulk transport infrastructure projects planned to support this development. The area will be car-dependent so further development will likely increase emissions.
Clarks Beach 1	Complete. No bulk transport infrastructure projects planned to support this development. The area will be car-dependent so further development will likely increase emissions.
Glenbrook Beach 1	Precinct Plan operative, some development occurring. No bulk transport infrastructure projects planned to support this development. The area will be car-dependent so further development will likely increase emissions.
Patumahoe	Complete. No bulk transport infrastructure projects planned to support this development. The area will be car-dependent so further development will likely increase emissions.

Table 10 - Live zoned urban edge and Rural and Coastal Settlement FUAs

Northern rural and coastal FUAs

Wellsford

Current picture of growth

The Wellsford FUA comprises six land parcels, four around the north of the existing town and two to the south. No land has been live zoned in Wellsford FUA.

There has been no residential consent activity in the FUA. Some new housing development has occurred on the northern residential area of the existing urban and some scattered across the southern part.

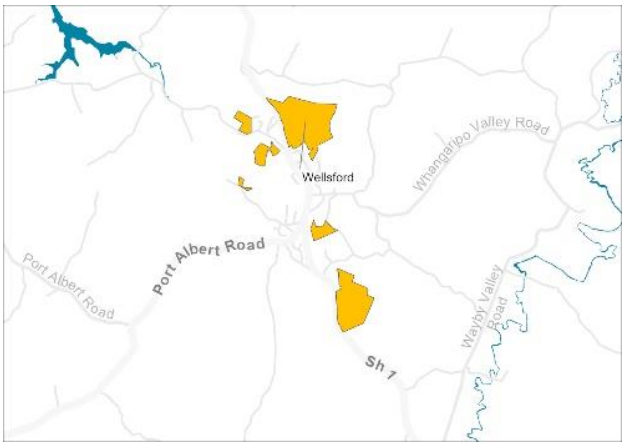


Figure 9 - Wellsford

Considerations

Wellsford is approximately 20 km north of Warkworth, and is close to Auckland's northern boundary. No bulk transport improvements are planned to support development at Wellsford and as there is no rapid transit network planned, this area would not contribute to VKT reduction. Distance from the existing urban area, lack of rapid transit and lower opportunities for mode shift mean strategic outcomes are unlikely to be achieved. Upgrades of the Wellsford Wastewater and Water Treatment Plants are also needed to support future growth.

Overall, the FUA has minor exposure to flooding, associated with tributaries of the Oruawharo River in the northern section of the FUA, as well as small, isolated sections of floodplain within the smaller sections of this FUA. The two southernmost sections of this FUA are within the Hoteo catchment, and this floodplain extends slightly into the eastern boundary of each site. None of the Wellsford FUA sections are at risk of coastal inundation or erosion. However, there is some exposure to geotechnical hazards, including a moderate proportion of slope instability and a high prevalence of the Puketoka geological formation where there may be some settlement risks in localised areas.

There are no SEAs or other notable non-scheduled biodiversity areas within the FUA itself but there are two small remnants of kauri forest SEA between 1-200m from two of the smaller northern sections of FUA to the west of State Highway 1, behind Rodney College and Wellsford School. The FUA is mostly LUC 4 with small patches of LUC 3 along the eastern edges of the southern portions of the FUA,

comprising approximately 10 hectares in total. There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of this FUA.

There is potential for higher VKT and CO_2 emissions per household at 2048 in the rural and coastal FUAs than all the larger FUAs and existing urban areas, due to these settlements being relatively distant from high quality existing or planned public transport, a wide range of jobs, education and other services. compared to other FUAs.

The future of Wellsford

The existing FUA boundaries are retained, but the sequencing is delayed for infrastructure reasons to be no earlier than 2030+.

Algies Bay

Current picture of growth

No land has been live zoned in Algies Bay FUA.

There has been no residential consent activity in the FUA. Most of the recent housing development has occurred in the nearby area of Snells Beach with much less in the Algies Bay area.



Figure 10 – Algies Bay

Considerations

There is minimal to no delay anticipated in providing infrastructure to service growth in Algies Bay. No bulk transport improvements are planned to support development and as there is no rapid transit network planned, this area would not contribute to VKT reduction. Distance from the existing urban area, lack of rapid transit and lower opportunities for mode shift mean strategic outcomes are unlikely to be achieved. An upgrade of the Snells Beach Wastewater Treatment Plant is required to support future growth.

Algies Bay FUA has minor exposure to flooding, with only 5% coverage of floodplain associated with small streams that drain directly into Algies Bay. These sections of floodplain do not extend far past the banks of the streams and are small in extent. The FUA has very low exposure to geotechnical hazards, no exposure to coastal inundation and only a very small portion (0.1km^2) in the northeastern corner of this FUA would be within the area susceptible to coastal erosion.

There are two SEAs crossing through the middle of the FUA which are scheduled for their kauri, podocarp, broadleaved forest and tawa, kohekohe, rewarewa, hīnau podocarp forests. Both have streams running through them, making the watercourses in this FUA of higher natural character and value. Aerial imagery also suggests there are a number of large natural wetlands in the FUA, currently surrounded by pasture. The FUA is approximately half LUC 3 (~17 ha) and the rest LUC 4. There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of this FUA. However, the Te Kapa River headwaters (Mahurangi) ONL is approximately 250 m to the southwest.

There is potential for higher VKT and CO_2 emissions per household at 2048 in the rural and coastal FUAs than all the larger FUAs and existing urban areas, due to these settlements being relatively

distant from high quality existing or planned public transport, a wide range of jobs, education and other services.

The future of Algies Bay

- Due to size of the FUA boundary changes were not deemed appropriate, options considered included sequencing review or reconsideration of the FUA.

The existing FUA boundaries are retained, sequencing remains as 2025+.

Hatfields Beach 2

Current picture of growth

Most of the land in Hatfields Beach is still future urban zoned.

There is no residential consent activity in the FUA and only a small amount of housing development in the existing urban area.

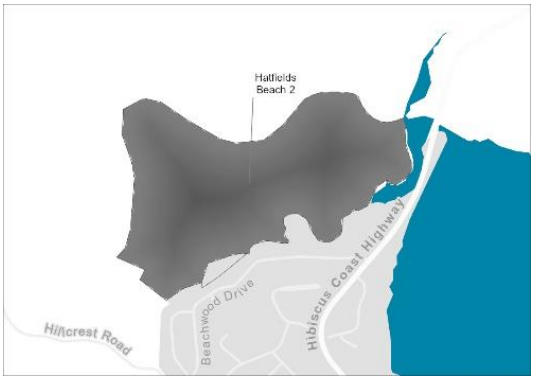


Figure 21 – Hatfields Beach 2

Considerations

There is uncertainty over timing and feasibility of providing infrastructure to service growth in the Hatfields Beach FUA. There are significant flood and coastal inundation constraints and substantial costs anticipated due to the required stormwater infrastructure.

Approximately 30% of this FUA is located within a 1 in 100 year floodplain. This floodplain, associated with the Otanerua Stream, is wide in extent and will incur significant costs to appropriately mitigate flood risk.

Approximately 30% of this FUA is vulnerable to coastal inundation and a significant portion of the eastern side of this FUA is at risk of coastal inundation. Due to the low-lying nature of areas abutting the coast, mean high water springs is likely to extend into the site under a high emissions scenario (resulting in 2m SLR), meaning within 150 years all of the area subject to coastal inundation will be the new intertidal area and therefore under water daily. A significant proportion of the FUA consists of alluvium / colluvium geology, where settlement risks may be present. Approximately 50% of the FUA has been identified as vulnerable to liquefaction damage. There is also a small area identified as being high risk of slope instability.

There are four SEAs bordering and in places extending slightly into the FUA: the smaller Hatfield Reserve on the southern boundary, a mangrove forest and scrub SEA in the northeastern corner, a kānuka scrub/forest SEA to the west and a much larger SEA to the north scheduled for kauri, podocarp, broadleaved forest. The Otanerua Stream runs along the southern and eastern boundary of the FUA, with the river mouth entering / exiting into Hatfield Bay in the northern portion of the FUA. While reasonably well vegetated on some stretches, it is not protected as a significant ecological area. Aerial imagery also suggests there are scattered natural wetlands within the FUA. The FUA is just over half LUC 4 and the rest is LUC 5. There are no areas identified for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of this FUA. However, it is almost completely surrounded by the Mahurangi-Waiwera ONL which abuts most of the FUA's northern boundary.

There is potential for higher VKT and CO_2 emissions per household at 2048 in the rural and coastal FUAs than all the larger FUAs and existing urban areas, due to these settlements being relatively distant from high quality existing or planned public transport, a wide range of jobs, education and other services.

The future of Hatfields Beach 2

The whole of the Hatfields Beach 2 FUA is recommended for removal due to significant hazard constraints, including approximately a third of the FUA vulnerable to flooding and coastal inundation, as well as large parts of the FUA where settlement risks may be present and/or liquefaction damage is possible.

Albany Village 2

Current picture of growth

The Albany Village FUA is on the periphery of the existing Albany Village local centre. Most of the land is still zoned future urban.

There is no residential consent activity in the FUA and only a small amount of housing development in the immediate existing urban area.

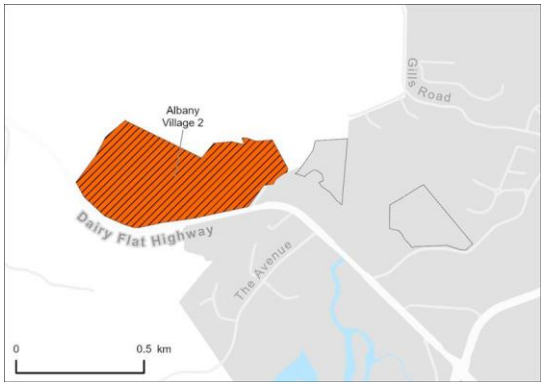


Figure 32 – Albany Village 2

Considerations

No bulk transport improvements are planned to support development at Albany Village 2 and as there is no rapid transit network planned, this area would not contribute to VKT reduction. Relative distance from the existing urban area, lack of rapid transit and lower opportunities for mode shift mean strategic outcomes are unlikely to be achieved.

Albany Village 2 FUA has minor exposure to flooding, with a few sections of 1% AEP floodplain located within the eastern half of this FUA, associated with tributaries of Lucas Creek. These sections of floodplain do not extend far past the banks of the streams and are small in extent proportionally across the FUA. The FUA has no exposure to coastal inundation or erosion. The entire FUA is identified as having a high risk of slope instability, but no settlement or liquefaction damage likely.

A watercourse surrounds the southern portion of the FUA, adjacent to the Dairy Flat Highway. However, this watercourse does not enter the developable area, except in some discrete instances. Another watercourse enters the site in the north. This watercourse is surrounded by vegetation, which is scheduled as a significant ecological area for its broadleaved scrub/forest. There are two SEAs within the FUA, which appear to be remnant forests associated with larger SEAs to the north and south, which are scheduled for their kauri, podocarp, broadleaved forest and taraire, tawa, podocarp forests. There is a single notable tree (English oak) near the centre of the western half of the FUA, which would need to be protected in line with the AUP. The FUA does not have any land classified as LUC 1-3; it is mostly LUC 4 with a small patch of LUC 5 in the western corner and patches of LUC 6 along the northern boundary. There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of this FUA. However, there are three historic heritage sites in Albany Village between 15-400 m to the southeast.

There is potential for higher VKT and CO_2 emissions per household at 2048 in the rural and coastal FUAs than all the larger FUAs and existing urban areas, due to these settlements being relatively

distant from high quality existing or planned public transport, a wide range of jobs, education and other services.

The future of Albany Village 2

The existing FUA boundaries are retained, but the sequencing is delayed for infrastructure reasons until 2025+

The whole of Albany Village 2 FUA is recommended for further investigation due to the lack of planned infrastructure and potential for higher VKT/ CO_2 emissions, the presence of moderate hazard constraints, and the need to further understand the relationship between Albany Village 2 and its proximity to the existing urban area and the Albany node.

2.2.3 North-western rural and coastal FUAs

Helensville 1 and 2

Current picture of growth

Most of the land in Helensville is future urban zoned.

There is no residential consent activity in the FUA. A Special Housing Area (SHA) to the north of the FUA has been progressing with development, anticipated yield is approximately 60 dwellings.

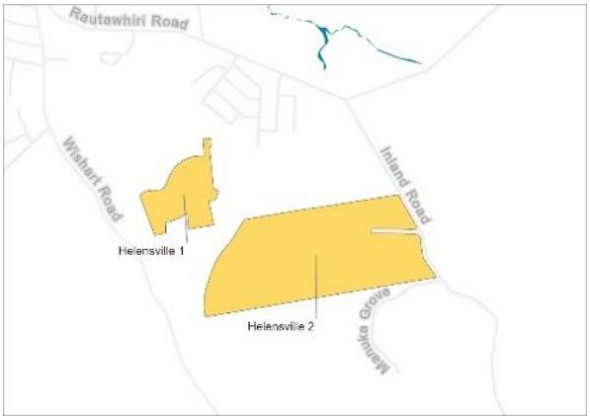


Figure 43 – Helensville 1 and 2

Considerations

No bulk transport improvements are planned to support development at Helensville 1 and 2 and as there is no rapid transit network planned, this area would not contribute to VKT reduction. Relative distance from the existing urban area, lack of rapid transit and lower opportunities for mode shift mean strategic outcomes are unlikely to be achieved. Upgrade of the Helensville Wastewater Treatment Plant and Water Treatment Plant are required to support future growth.

Helensville 1 and 2 FUAs have minor exposure to flooding, with sections of 1% AEP floodplain following a tributary of the Awaroa Stream (Helensville 1) and the Rakauwhatia Creek (Helensville 2), both of which drain into the Kaipara River and ultimately the Kaipara Harbour. The sections of floodplain within Helensville 1 do not extend far past the banks of the streams and are small in extent proportionally across the FUA. While the floodplain within Helensville 2 also does not extend far past the boundaries of the creek and tributary, it drains into an extensive floodplain that encompasses a significant portion of the Helensville and Parakai townships. Therefore, while the FUA has a small portion (approx. 5%) of exposure, development still presents risks (largely associated with downstream flooding effects). Neither of the Helensville FUAs have exposure to coastal inundation or erosion, settlement issues or risk of liquefaction or slope instability.

There are no SEAs or other notable non-scheduled biodiversity areas within Helensville 1 FUA. However, there is a large remnant of kauri, podocarp, broadleaved forest SEA approximately 200m to the southwest of the FUA across Wishart Road, and a more extensive area of kauri, podocarp, broadleaved forest SEA including some regenerating kanuka/manuka scrub and exotic forest further to the south along Wishart Road. The FUA is mostly surrounded by exotic forest with what appears to be (from aerial

imagery) patches of manuka/kanuka scrub within the FUA boundary. Helensville 2 FUA has the same forest SEAs to the west and southwest, but also has more of the same type of forest SEAs directly to the south with one extending into the FUA from the southern boundary associated with the Rakauwhatia Creek. This watercourse is primarily surrounded by exotic forest. While not resulting in significant ecological values, this forest does provide some benefit to the health of the watercourse. Helensville 1 and 2 FUAs do not have any land classified as LUC 1-3; they are mostly LUC 4 with the western third of Helensville 2 being LUC 5. There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within or very near to the boundaries of these FUAs. However, there are a number of historic heritage sites in Helensville around 1 km to the northwest.

There is potential for higher VKT and CO_2 emissions per household at 2048 in the rural and coastal FUAs than all the larger FUAs and existing urban areas, due to these settlements being relatively distant from high quality existing or planned public transport, a wide range of jobs, education and other services.

The future of Helensville 1 & 2

The existing FUA boundaries are retained, sequencing is delayed for infrastructure reasons to be no earlier than 2035+.

2.2.4 Southern rural and coastal FUAs

Maraetai 2

Current picture of growth

A proportion of land in Maraetai is live zoned with the rest still future urban zoned.

Development in the live zoned area is progressing and there is no residential consent activity in the FUA.

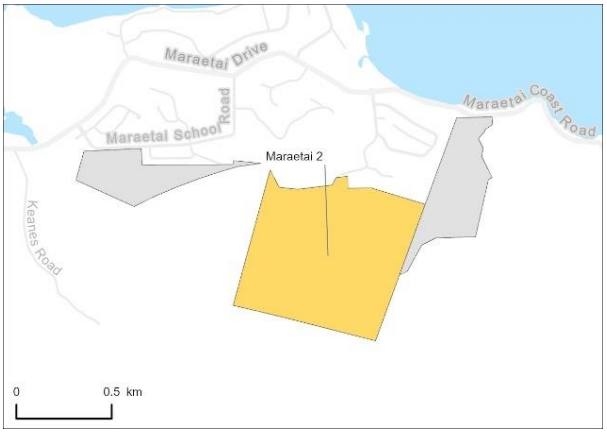


Figure 54 – Maraetai 2

Considerations

No bulk transport improvements are planned to support development at Maraetai 2 and as there is no rapid transit network planned, this area would not contribute to VKT reduction. Relative distance from the existing urban area, lack of rapid transit and lower opportunities for mode shift mean strategic outcomes are unlikely to be achieved. Beachlands Maraetai Wastewater servicing is required to support future growth.

This FUA has a minor risk of flooding due to a few small sections of 1% AEP narrow and small floodplain mostly associated with small streams that flow directly to Maraetai beach. The southernmost section of floodplain is associated with Te Puru stream, which ultimately discharges at Kelly's Beach, west of Maraetai Beach. There is no risk of coastal inundation or coastal erosion, no settlement risks, or areas where liquefaction damage is possible.

The Maraetai 2 FUA includes two unnamed watercourses. The first extends into the site along the southern boundary, while the second runs through the centre of the site, south to north. The portion of the southern watercourse within the FUA is wholly within indigenous forest, comprised of tairaire, tawa and podocarp forest or kānuka scrub, making it of higher ecological value. This vegetation is not protected as a significant ecological area. However, the other watercourse, which has a much larger extent within the FUA appears to be of a lesser ecological condition, primarily surrounded by low lying exotic shrub. There are no SEAs within the FUA, but there is a remnant of kauri, podocarp, broadleaved forest SEA abutting the northern boundary of the FUA, and another fragment of taraire, tawa, podocarp forest SEA abutting the western boundary. The FUA is entirely within LUC 6. There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of this FUA. However, the Waiomanu (Maraetai) Pa and the Maraetai-Umupuia Coast Road ONL are just under 700 m to the northeast. Omana Regional Park ONL is also just over 1 km to the northwest.

There is potential for higher VKT and CO_2 emissions per household at 2048 in the rural and coastal FUAs than all the larger FUAs and existing urban areas, due to these settlements being relatively distant from high quality existing or planned public transport, a wide range of jobs, education and other services.

The future of Maraetai 2

The existing FUA boundaries are retained, sequencing is delayed for infrastructure reasons to no earlier than 2035+

Clarks Beach 2

Current picture of growth

The live zoned proportion of Clarks Beach (SHA) is progressing with some residential development, very minimal development within the future urban zoned land.

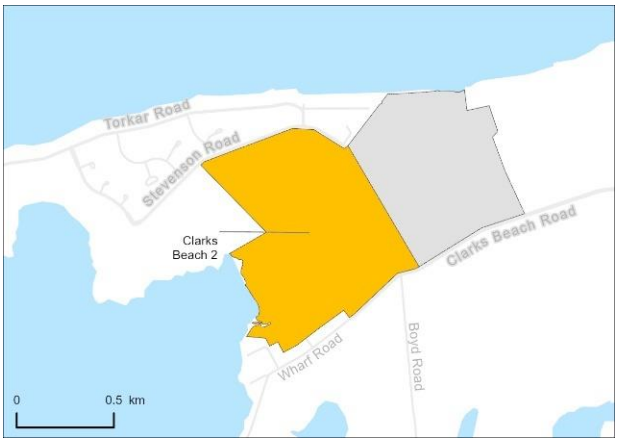


Figure 65 – Clarks Beach 2

Considerations

There is minimal delay anticipated in providing infrastructure to service growth in Clarks Beach. No bulk transport improvements are planned to support development and as there is no rapid transit network planned, this area would not contribute to VKT reduction. Distance from the existing urban area, lack of rapid transit and lower opportunities for mode shift mean strategic outcomes are unlikely to be achieved. An upgrade of the South-West Wastewater Treatment Plant is required to support future growth.

The Clarks Beach 2 FUA has moderate exposure to flooding, with approximately one-fifth of the FUA located within a 1% AEP floodplain. These sections of floodplain are associated with small streams that flow directly into Waiuku River (and ultimately the Manukau Harbour), as well as some isolated sections of floodplain throughout the site. While many of these floodplains are narrow in extent and do not extend far past the banks of streams, there are pockets of wider, more significant flood exposure. There is some risk of coastal inundation in the southwestern corner of this FUA, where the site borders the Waiuku River, and a small area in the middle of the western boundary. The southwestern boundary of the FUA is also an area susceptible to coastal erosion. The FUA is not in an area with high risk of slope instability or where liquefaction damage is likely, however, there may be some settlement risks in localised areas.

The watercourses in this FUA appear degraded, including channelisation and lacking riparian vegetation. No natural wetlands have been identified in the FUA. There are no SEAs within the FUA, but there is a narrow area of coastal broadleaved forest SEA just over 100 m to the west and a large marine SEA scheduled due to its significant wading bird area in the Manukau Harbour about 150 m to the north of the FUA. The FUA is about two thirds LUC 1 and one third LUC 2, comprising around 73 ha in total. There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of this FUA. However, Waitete Pa is just under 500 m to the south.

There is potential for higher VKT and CO_2 emissions per household at 2048 in the rural and coastal FUAs than all the larger FUAs and existing urban areas, due to these settlements being relatively

distant from high quality existing or planned public transport, a wide range of jobs, education and other services.

The future of Clarks Beach 2

The existing FUA boundaries are retained, sequencing is delayed for infrastructure reasons to no earlier than 2030+.

Glenbrook Beach 2

Current picture of growth

Both live zoned land and future urban zoned land in Glenbrook Beach are part of the Glenbrook SHA (anticipated yield approximately 800 dwellings). Housing development on the live zoned land is progressing.

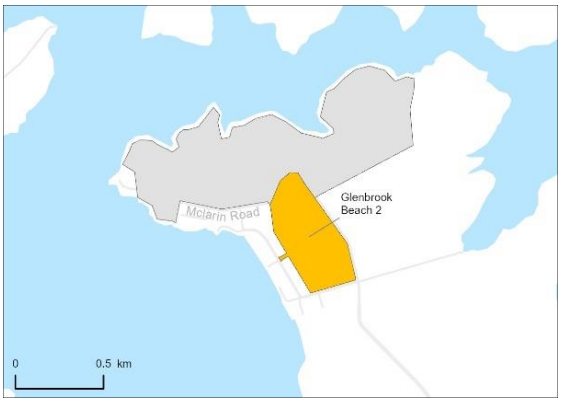


Figure 76 – Glenbrook Beach 2

Considerations

There is minimal delay anticipated in providing infrastructure to service growth in Glenbrook Beach. No bulk transport improvements are planned to support development and as there is no rapid transit network planned, this area would not contribute to VKT reduction. Distance from the existing urban area, lack of rapid transit and lower opportunities for mode shift mean strategic outcomes are unlikely to be achieved. Upgrade of the South-West Wastewater Treatment Plant is required to support future growth.

A moderate portion (approx. 15%) of the Glenbrook 2 FUA is at risk of flooding exposure during a 1 in 100 year event. The flood plain is mostly in the southwestern section of this FUA, associated with the Waiuku River, which tends to be proportionally wide in extent in this location. There is also a small section in the northern part of the FUA. The FUA has no exposure to coastal erosion, however, the southwestern section of this FUA is at risk of coastal inundation, where the FUA borders Waiuku River. The coastal inundation risk extends approximately 140m into the FUA in the southwestern corner of the site, and would also be below the mean high water springs line, meaning within 150 years all of the area subject to coastal inundation will be the new intertidal area and therefore under water daily. The FUA is not in an area with high risk of slope instability or where liquefaction damage is likely, however, there may be some settlement risks in localised areas.

The watercourses that are within the site are degraded, lacking riparian vegetation and channelised in parts. There are no SEAs within the FUA, but there is a small, narrow area of coastal broadleaved forest that is not a SEA abutting the western boundary, which is part of the Glenbrook Beach Beachfront Reserve and a large marine SEA covering the Waiuku River inlet about 150 m to the west of the FUA. The FUA is about 70% LUC 2 and 30% LUC 1, comprising around 19 ha in total. There are no areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of this FUA or very nearby.

There is potential for higher VKT and CO_2 emissions per household at 2048 in the rural and coastal FUAs than all the larger FUAs and existing urban areas, due to these settlements being relatively

distant from high quality existing or planned public transport, a wide range of jobs, education and other services.

The future of Glenbrook Beach 2

The existing FUA boundaries are retained, sequencing is delayed for infrastructure reasons to earlier than 2030+.

Oruarangi 2

Current picture of growth

Parts of Oruarangi have been live zoned with the rest still future urban zoned.

There has been no residential consent activity in both the live zoned land or the future urban zoned land.

No residential consenting activity has occurred in the immediate existing urban area as it is predominately industrial.

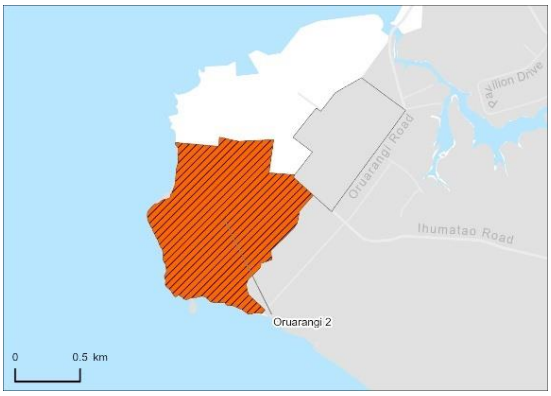


Figure 87 – Oruarangi 2

Considerations

There are no bulk transport infrastructure projects planned to support this area which will be car-dependent so further development will likely increase emissions. Relative distance from the existing urban area, lack of rapid transit and lower opportunities for mode shift mean strategic outcomes are unlikely to be achieved.

A moderate portion (approx. 30%) of the FUA is at risk of flooding exposure during a 1 in 100 year event. The flood plain is mostly associated with the Maungataketake quarry, and streams along the eastern boundary and in the northern part of the FUA. The western and southern boundaries of the FUA are exposed to coastal erosion and at risk of coastal inundation. The coastal inundation risk extends between 150-180m into the FUA in the north-western corner of the site, meaning within 150 years all of the area subject to coastal inundation will be the new intertidal area and therefore under water daily. Approximately one quarter of the FUA is identified as having a high risk of slope instability (associated with Maungataketake quarry in the southern half of the FUA), as well as a small area along the south eastern boundary where liquefaction damage is possible, but there are no soft soils or areas where settlement is likely.

The watercourses that are within the site are degraded, lacking riparian vegetation and channelised in parts. There are no SEAs within the FUA, but there is a large terrestrial SEA abutting the northern boundary comprising a mixture of pūriri and taraire forest, exotic grassland and woodland and a large marine SEA (part of the Manukau Harbour) scheduled for a significant wading bird area adjacent to the western boundary of the FUA. The FUA is about 40% LUC 2 (in the northern part of the FUA) and 10% LUC 1 (along the south-eastern boundary), comprising a total area of around 50 hectares.

The area adjacent to Oruarangi 2 was recently the subject of major protest about development. This stems from the initial Crown confiscation of land across the peninsula and the subsequent injustices and impacts this has had on mana whenua, who have an unbroken history of occupation of the area since European arrival.

There are a number of areas identified in the AUP for their natural, cultural or historic heritage or sites of significance to mana whenua within the boundary of this FUA or very nearby: the Ihumatao Mission Station historic heritage site, including Māori settlement, Ellett Homestead, stone walls and structures, and fig tree lies on the western coastal edge of the FUA; the Maunga Taketake site of significance to mana whenua is in the southern half of the FUA; and the Rennie Homestead historic heritage site is in the northeastern corner of the FUA. In addition, the Otuataua/Puke Taapapa (Pukeiti) site of significance to mana whenua lies adjacent to the northern boundary of the FUA, and this area is also identified as the Otuataua lava flows ONF and Pukeiti scoria cone and lava field (Puketapapa) ONF. Te Puna Wai a Hape site of significance to mana whenua lies adjacent to the Otuataua/Puke Taapapa (Pukeiti) site around 500m to the north of the FUA.

There is potential for higher VKT and CO_2 emissions per household at 2048 in the rural and coastal FUAs than all the larger FUAs and existing urban areas, due to these settlements being relatively distant from high quality existing or planned public transport, a wide range of jobs, education and other services.

The future of Oruarangi 2

The existing FUA boundaries are retained, but the sequencing is delayed for infrastructure reasons to no earlier than 2025+.

The whole of Oruarangi 2 FUA is recommended for further investigation due to the lack of planned infrastructure and potential for higher VKT/ CO_2 emissions, the presence of moderate hazard constraints, and the need to further understand the relationship between Oruarangi 2 and the surrounding environment.

Any future work including investigations must be done in collaboration with mana whenua.

References

Auckland Council. (2015). Future Urban Land Supply Strategy 2015.

Auckland Council. (2016). *Whenuapai Structure Plan.* https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/place-based-plans/Documents/whenuapai-structure-plan-september-2016.pdf

Auckland Council. (2017). *Future Urban Land Supply Strategy 2017.* https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/topic-based-plans-strategies/housing-plans/Pages/future-urban-land-supply-strategy.aspx

Auckland Council. (2018a). *Auckland Plan Development Strategy 2050.* https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/auckland-plan/development-strategy/Pages/default.aspx

Auckland Council. (2018b). *Auckland Plan 2050.* https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/auckland-plan/Pages/default.aspx

Auckland Council. (2019a). *Warkworth Structure Plan.* https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/place-based-plans/structure-plans/A%20copy%20of%20the%20Warkworth%20Structure%20Plan/warkworth-structure-plan.pdf

Auckland Council. (2019b). *Drury Opāheke Structure Plan.* https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/place-based-plans/drurystructureplandocument/drury-opaheke-structure-plan.pdf

Auckland Council. (2019c). *Pukekohe-Paerata Structure Plan.* https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/place-based-plans/structure-plans/Documents/pukekohe-paerata-structure-plan-2019.pdf

Auckland Council. (2020). *Silverdale West Dairy Flat Industrial Area Structure Plan.* https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/place-based-plans/Silverdale%20West%20Dairy%20Flat%20Industrial%20Area%20Structu/silverdale-west-dairy-flat-industrial-area-structure-plan-april-2020.pdf

Auckland Council. (2022d). Auckland Plan 2050 Development Strategy Monitoring Report 2022. https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/auckland-plan/about-the-auckland-plan/Documents/ap-ds-monitoring-report.pdf

Auckland Council. (2022a). Proposed Plan Change 80: RPS Well-Functioning Urban Environment, Resilience to the Effects of Climate Change and Qualifying Matters. https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/auckland-unitary-plan-modifications/Pages/details.aspx?UnitaryPlanId=146

Auckland Council. (2022b). *Proposed Plan Change 78 to the Auckland Unitary Plan (Operative in part) section 32 evaluation report (economy matters).* https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/auckland-unitary-plan-modifications/Pages/details.aspx?UnitaryPlanId=140

Auckland Council. (2022c). *Draft Spatial Land Use Strategy – Dairy Flat and Silverdale Future Urban Zones.* https://akhaveyoursay.aucklandcouncil.govt.nz/spatial-land-use-strategy-dairy-flat-and-silverdale

Auckland Council. (2023a). Future Development Strategy consultation draft – Overall evidence report.

Auckland Council. (2023b). Future Development Strategy consultation draft – growth scenarios evidence report.

Auckland Council. (2023c). *Auckland Unitary Plan (Operative in Part).* https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/unitary-plan/Pages/default.aspx

Auckland Council. (2023d). Future Development Strategy – consultation draft.

Appendices

The following appendices are included:

Appendix 1: Map of FUAs 2017

Appendix 2: Information from Auckland Plan 2050 Development Strategy on FUAs

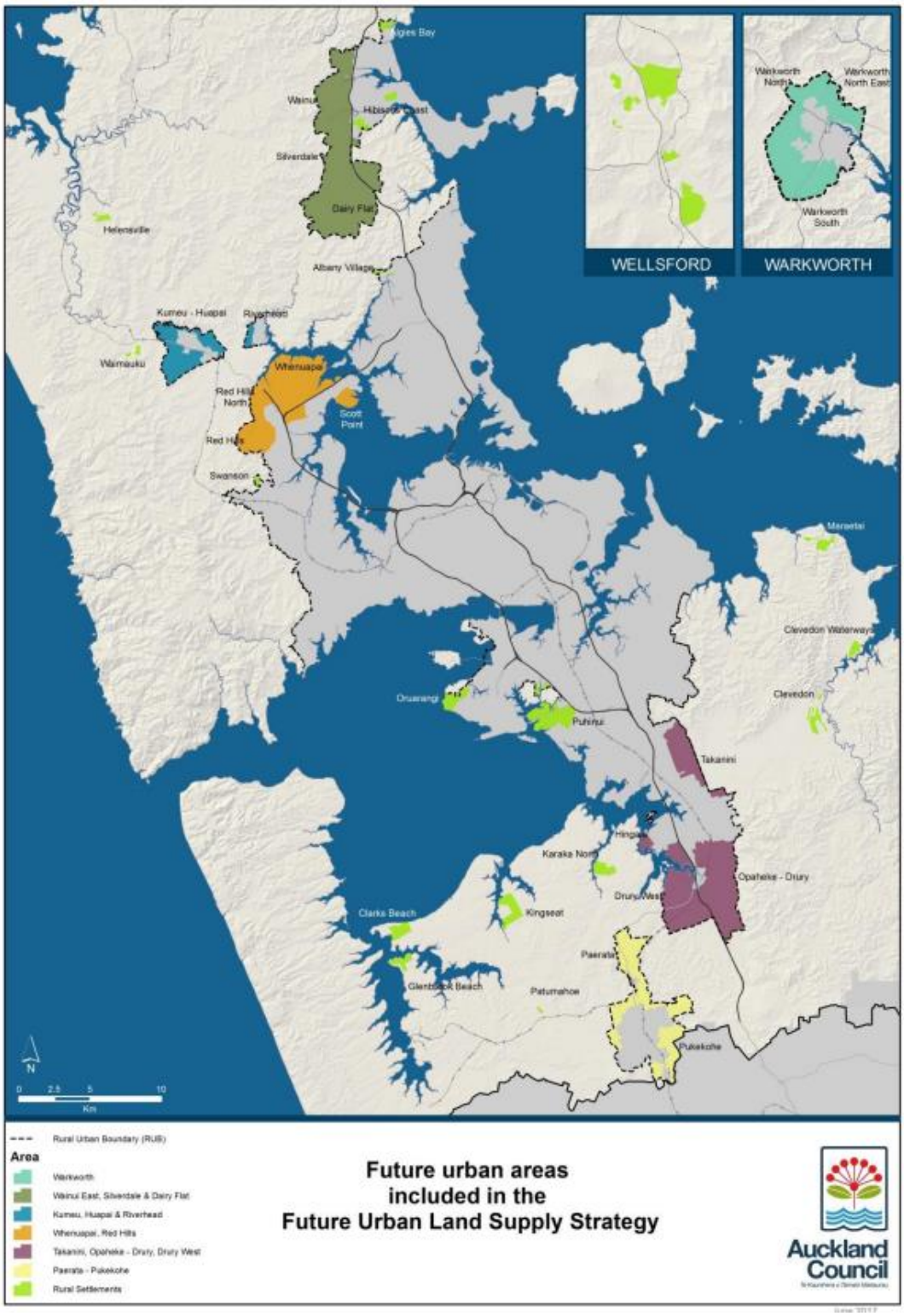
Appendix 3: Summary of structure plan requirements from the AUP

Appendix 4: Data inputs and assumptions regarding significance of hazard constraints to development for future urban areas

Appendix 5: Enabled carbon emissions in Greenfield Areas Report

Appendix 1: Map of FUAs 2017

Map of FUAs that formed the areas sequenced in the FULSS (Auckland Council, 2017)



Appendix 2: Information from Auckland Plan 2050 Development Strategy on FUAs

This appendix includes copies of the capacity and timing of future urban areas, as set out in the Auckland Plan 2050 Development Strategy. This information aligns with information in the FULSS and is provided here for context.

Proposed timing – development ready	Area^	Anticipated dwelling capacity for each area (approx.)	Anticipated dwelling capacity subtotals (approx.)	Anticipated Employment (jobs) (approx.)#
Actuals, contracted or planned 2012 - 2017	Live zoned areas and SHAs			
	Warkworth North	Business	31,590	15,350
	Wainui East	4,500		
	Whenuapai	1,150		
	Scott Point	2,600		
	Red Hills	3,600 (SHA) + 7,050 (live zone)		
	Puhinui	Business		
	Kumeū Huapai	1,400		
	Hingaia	3,070		
	Wesley (Paerata)	4,550		
	Belmont (Pukekohe)	720		
	Drury South	1,000		
	Bremner Rd (Drury West)	1,350		
	Bellfield Rd (Opaheke)	300		
	Walters Rd (Takanini)	300		
Decade One 1st half 2018 – 2022	Warkworth North*	2,300	14,300	27,250
	Paerata (remainder)	1,800		
	Whenuapai (Stage 1)	6,000		
	Silverdale West / Dairy Flat (business land)	Business		
	Drury West Stage 1*	4,200		
Decade One 2nd half 2023 – 2027	Pukekohe	7,200	7,700	
	Cosgrave Rd, Takanini	500		
Decade Two 1st half 2028 - 2032	Kumeū Huapai Riverhead	6,600	36,900	21,350
	Warkworth South	3,700		
	Whenuapai (Stage 2)	11,600		
	Drury West (Stage 2)	5,700		
	Opaheke Drury	7,900		
	Red Hills North	1,400		
	Puhinui	Business		
Decade Two 2nd half 2033 – 2037	Silverdale Dairy Flat (remainder)	20,400	29,400	
	Wainui East (remainder)	7,400		
	Warkworth North East	1,600		
Decade Three 1st half 2038 – 2042				50
Decade Three 2nd half 2043 – 2047	Takanini+ Yet to be determined new growth areas	4,500	4,500	
Total		124,390		64,000

^Refer sequencing maps for staging/areas

Anticipated employment figures do not include anticipated employment in centres

* Drury West (Stage 1) and Warkworth North development ready from 2022

+Significant flooding and geotech constraints – further technical investigations required
Further information: Refer Future Urban Land Supply Strategy (2017)[294]

Note: for information on total anticipated growth, population and dwellings and feasible development capacity see the anticipated growth in population and dwellings (2018-2048)

Auckland Plan 2050 – Anticipated development and employment capacities and timing for future urban areas – rural settlements

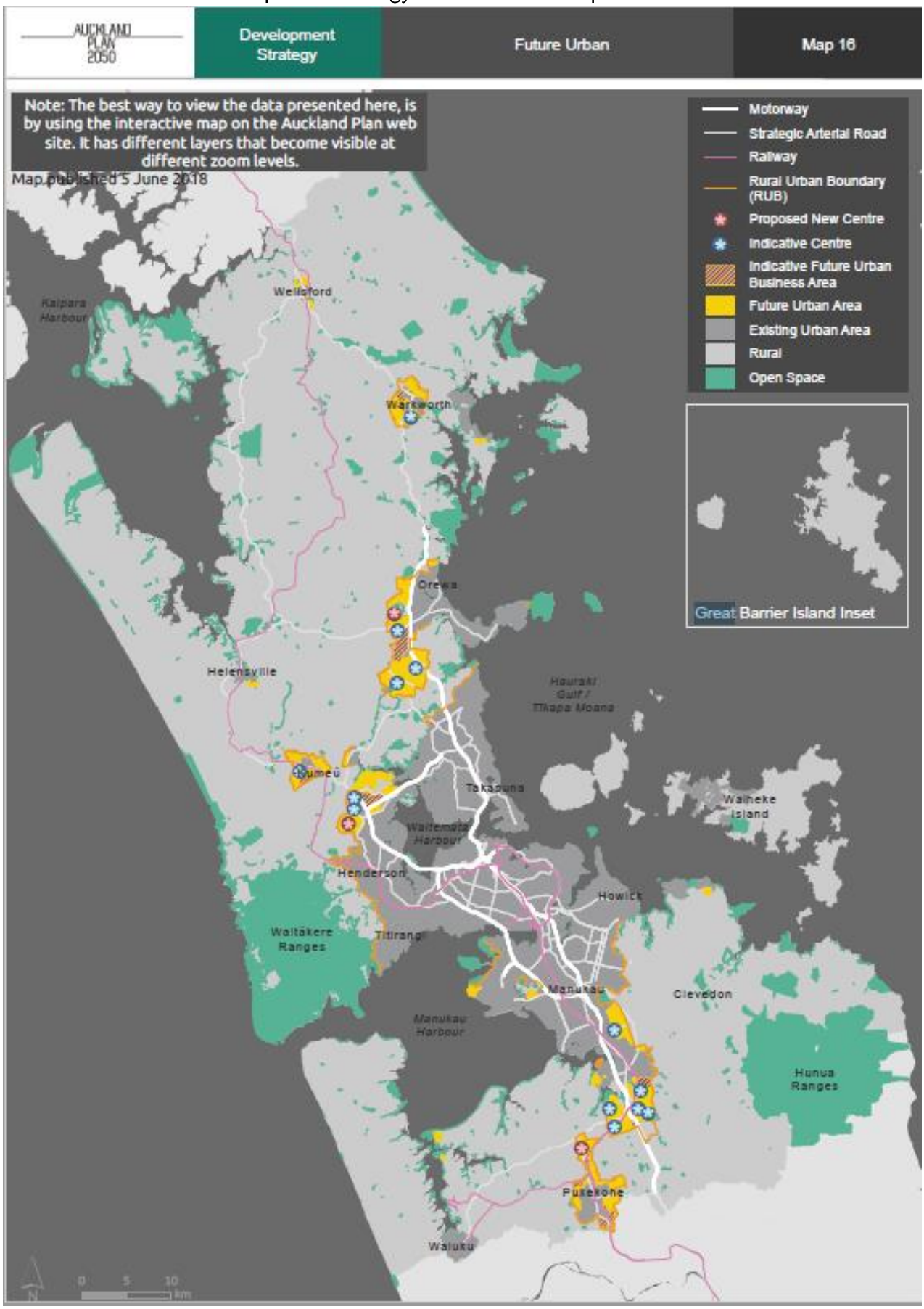
Proposed timing – development ready	Area	Anticipated dwelling capacity for each area (approx.)	Anticipated dwelling capacity subtotals (approx.)	Anticipated Employment (jobs) (approx.)
Actuals, contracted or planned 2012 - 2017	Live zoned areas and SHAs			
	Hatfields Beach 1	9	8,236	1,000
	Hibiscus Coast (Silverdale)	963		
	Hibiscus Coast (Red Beach)	570		
	Albany Village 1	4		
	Waimauku	231		
	Swanson	290		
	Maraetai 1	110		
	Ōruarangi 1	480		
	Clevedon Waterways	350		
	Clevedon	1041		
	Karaka North	744		
	Kingseat	1,842		
	Clarks Beach 1	650		
	Glenbrook Beach 1	843		
	Patumahoe	109		
Decade One 1st half 2018 – 2022	Ōruarangi 2	258	258	2,100
Decade One 2nd half 2023 – 2027	Wellsford	832	2,717	
	Algies Bay	455		
	Albany Village 2	450		
	Helensville 1	72		
	Clarks Beach 2	701		
	Glenbrook Beach 2	207		
Decade Two 1st half 2028 – 2032	Hatfields Beach 2	671	1,250	0
	Helensville 2	362		
	Maraetai 2	217		
Decade Two 2nd half 2033 – 2037				
Decade Three 1st half 2038 – 2042				
Decade Three 2nd half 2043 – 2047				
Total		12,461		3,100

Further information: Refer Future Urban Land Supply Strategy (2017)[295]

For more information: Development areas provide further detail on sequencing and timing of development areas.

Note: for information on total anticipated growth, population and dwellings and feasible development capacity see the anticipated growth in population and dwellings (2018-2048)

Auckland Plan 2050 Development Strategy – Future urban map



Appendix 3: Summary of structure plan requirements from the AUP

Appendix 1 of the AUP requires a structure plan to identify, investigate and address the following matters:

- urban growth (e.g, future supply and projected demand for residential and business land, phases and timing for the staged release of land in coordination with infrastructure, the location, type and form of the urban edge, linkages and integration with existing urban-zoned and/or rural-zoned land adjoining the structure plan area and, opportunities to improve access to landlocked parcels, including Māori land)
- natural resources (e.g, the protection, maintenance and enhancement of natural resources, integration of green networks with open space and pedestrian and cycle networks, measure to manage natural hazards and contamination and the location of mineral resources)
- natural and built heritage (the existence of natural and physical resources that have been scheduled in the AUP in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage and special character)
- use and activity (e.g, contribution to a compact urban form and the efficient use of land)
- urban development (e.g, a desirable urban form at the neighbourhood scale)
- transport networks (e.g, integration of land use and development with the local and strategic transport network including public transport network and active modes)
- infrastructure (e.g, location and protection of existing and planned infrastructure)
- feedback from stakeholders.

Appendix 4: Data inputs and assumptions regarding significance of hazard constraints to development for future urban areas

Criterion	Assumptions	Geomaps Data Layer used
Flooding: the extent that a future urban area is exposed to flooding in a 1 in 100-year weather event, adjusted for climate change.	Flood exposure assessments have considered the proportional extent of the 1% AEP floodplain within a future urban area to determine the likelihood of requiring significant engineering solutions to enable avoidance. Where there are large areas of contiguous flood extent, avoidance is considered less likely and/or requiring significant mitigation. Where flood extent is limited to the margins of watercourses, avoidance is considered more likely, as a result of esplanade reserve and yard requirements. The assessment has also considered potential downstream flooding effects. Flood risk has not formed part of this assessment, including depth or velocity, due to a lack of available data at the time of assessment.	1% AEP (Annual Exceedance Probability) adjusted to a 3.8˚C climate scenario
Coastal inundation: the extent that a future urban area is exposed to coastal inundation in a 1 in 100-year weather event, adjusted for climate change.	Assessment of coastal inundation considered the extent to which a future urban area would be exposed to coastal inundation in a 1% AEP weather event. Where the coastal inundation extent covered a large part of the future urban area, this was considered to be a significant constraint to development. In particular, where the mean high water springs line covers the same extent meaning the area will not just be inundated during extreme events, but also on a more frequent basis in the future.	1% AEP + 2m sea level rise
Coastal Erosion: the extent that a future urban area is exposed to coastal erosion and instability, adjusted for climate change.	As coastal erosion results in permanent physical loss of land (and structures on it), future urban areas that contain larger amounts of coastline and land within the susceptible area were considered to have a significant constraint to development.	Areas Susceptible to Coastal Instability and Erosion 2130 RCP 8.5 H+
Geohazards: the extent to which a future urban area has geotechnical limitations, including slope instability, liquefaction potential or settlement as a result of geological formations/softer soils.	It has been assumed that many geotechnical limitations can be appropriately mitigated, therefore, generally geohazards were considered to be more of a minor to moderate constraint to development. However, if a future urban area contains large extents of a combination of geohazards (i.e. high landslide susceptibility and/or areas potentially vulnerable to liquefaction and/or peat and soft soils prone to settlement issues) then it was considered to have significant constraints to development. High landslide susceptibility is identified as Class D: Class D - High Hazard: 20% or more of slopes fail in the Geomaps data layer.	Rain induced landslide susceptibility 1997 Liquefaction vulnerability areas 2021 (Level A Basic Assessment) GNS Geological Maps

Criterion	Assumptions	Geomaps Data Layer used
	Liquefaction vulnerability is identified as 'Liquefaction Damage is Possible' in the Geomaps data layer. Peat soils and alluvium / colluvium geological formations which pose settlement risks to development and infrastructure were identified using the GNS Geological Maps.	

Appendix 5: Enabled carbon emissions in greenfield areas report

Ranking the relative performance of Future Urban Areas - Transport Enabled Carbon Emissions

Findings Summary

Analysis of this data suggests there is strong support for the hypothesis that locations further away from the central business district (CBD), are generally less carbon efficient in terms of travel than locations closer in. However, there is significant variation at the Future Urban Area (FUA) level, and between otherwise similar urban locations, including at the same radial distance.

That is to say, a location's distance from the CBD is a strong indicator of likely vehicle kilometres travelled (VKT) and CO_2 emissions (CO_2e), this alone appears to be too simplistic a measure to capture all of the interrelated factors that account for variations in those same transport related emissions, based on data from this particular model run (ATAPv2 transport system, I11v6 land use), at this particular time (2048). This is potentially unsurprising, as while the CBD is a regionally important employment location and location of important amenities, and is the 'best' location, it is not the only location with (or the potential for) at least some of these features, including more localised, smaller scale substitutes, that could enable people to live 'more locally' and reduce their VKT.

This is not to say that some locations more distant perform worse than locations close in, but that overall there is a lot of noise in the data, and it is likely that local conditions, including the availability of high quality public transport (PT), proximity (accessibility) to a wide range of jobs, education and other services, play a significant role in terms of modelled (and actual) transport outcomes, in addition to radial distance.

The ranking of Future Urban Areas has focussed on relative performance (amongst Future Urban Areas) against a range of variables. The final ranking is based on normalised (per capita) variables. Locations that are 'well located' (relative to the amenities mentioned above) seem to perform best. For example, Takaanini performs well (Ranked 4th) as it is close to a wide range of employment areas, schools and has both existing rail transport and a planned high frequency bus corridor on Mill Road.

A focus on ensuring a good mix of land uses and amenities, and prioritising areas with good public transport options (aspects which are captured in the model's outputs and relative performance) should be maintained through strategic and more detailed planning to ensure the most carbon efficient lifestyle opportunities are available to these areas' future residents – the size and scale of Auckland, and its evolving polycentricity means even with a well functioning city centre and high quality PT enabling ready access around the region, high amenity local offers will remain important to reduce the need for movement of people over long distances, which is the driver of VKT, irrespective of transport mode or propulsive energy source.

Background

This report adds to the research undertaken for TERP[1], which outlines a pathway to reduce transport emissions by 64% relative to 2016 by 2030. A key means to achieve this is reducing distance travelled (the indicator being vehicle kilometres travelled, or VKT) in light vehicles.

One of the Key Actions identified is 'Build up not out' which alongside other actions to improve sustainable modes, reduce VKT, and enhance intensification in areas with good proximity and services, includes Action 6.2 which states:

> **"6.2 Reduce the scale of planned urban expansion.**
>
> 6.2.1 Defer live-zoning, or potentially revoke previous zoning decisions, if they are likely to be fundamentally detrimental to light vehicle VKT reduction targets"

Research quoted[2] in background reports for TERP based on findings from Melbourne and Sydney identified that people who live in greenfields areas generate approximately four times the transport emissions of people who already live in developed and well served urban areas.

This paper largely confirms, (with some caveats), that this pattern of greater VKT and therefore transport emissions per capita from greenfields areas (which tend to be further outlying) relative to existing urban areas is generally appears to hold true in Auckland in the future based on the scenario modelled (effectively current plans or business as usual). However, the very high per capita level of emissions from greenfields residents (400% more) relative to residents in more central locations does not appear to be as great (findings[3] suggest between -2% and +65% more) as reported in Sydney and Melbourne[4].

This paper also summarises key factors that relate to transport use (and spatial planning) that may account for some of the differences in findings, including the degree to which our model incorporates aspects of them compared to the approach used by the Australian researchers:

- The further that people live from their frequented travel destinations, the less likely they are to accomplish that travel through active means, whether it is by walking or cycling.
- Areas with poor or no transit services are reliant on private vehicle travel.
- The more people living or working in a particular area, the more viable public transport becomes to that place.

---

[1] Transport Emissions Reductions Pathway: https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/Pages/transport-emissions-reduction-pathway.aspx

[2] Trubka, R., Newman, P., & Bilsborough, D. (2010). The costs of urban sprawl–predicting transport greenhouse gases from urban form parameters. Environment Design Guide, 1-16.

[3] The closest comparison would be CO2 per Car per HH+Empl*0.5 Origin, which is 25% worse across all FUAs relative to all urban areas - See Figure 10 for other potential relative comparisons. Exact comparisons are not possible as the method is not the same.

[4] perhaps reflecting a combination of the sheer scale of these cities, the more intensive built form and option rich and mature transport systems particularly PT, and in particular the more distinct variation between these factors on the fringes of these cities and their more developed cores, particularly when compared to Auckland which is much smaller, has a much 'flatter' density gradient, and only a nascent PT system with relatively incremental improvements planned in current model runs. Recent announcements around major expansion of future RTN networks may amend these findings in future model runs, including reducing VKT potential by providing high quality alternatives along their corridors, including in more distant areas.

- The easier it is to walk or cycle in an area the more likely it is that they will do that.
- The closer that a development is to the CBD then all these factors come into play providing increased amenity and economy for less car dependent travel.

These factors should be kept in mind when considering the reasons for modelled differences between FUAs as a whole and urban areas, and FUAs between themselves, and the potential solutions/intractable problems to solving transport emissions problems though built form.

However, the main focus of this paper is to identify which of our current planned FUAs areas could be priorities for further investigation (including potential improvements to emissions), based mainly on their performance relative to other FUAs.

To do so, this paper explores data provided by Auckland Forecasting Centre (AFC) from the Macro Strategic Model (MSM) run undertaken for the Auckland Transport Alignment Project version 2 (ATAPv2), utilising Auckland Plan 2050 informed development assumptions as used for the 2021 LTP (i11v6 land use).

This scenario was chosen as it represents current BAU land use and transport planning assumptions, including agreed/funded greenfields supporting transport projects, and provides for the development of most[5] FUA areas to have commenced by 2048, in accordance with The Future Urban Land Supply Strategy [6].

Macro Simulation Model

The purpose of this assessment is not to definitively determine the carbon cost of Greenfields but to rank existing 'Future Urban Area'[7] Greenfields areas against each other to help inform priority or reconsideration discussions for the new Future Development Strategy.

Most comparisons are undertaken on a 'normalised' basis, where gross transport emissions modelled for the MSM zone (and the Greenfields, rural or existing urban development it is a proxy for) are converted to a per household or similar basis.

The MSM model calculates estimated inter-zone[8] non-active mode[9] trips by persons and households for a range of purposes (journey to work, education, other) across a range of times (AM peak, Interpeak, PM peak, other), and modes (Public Transport (PT), Car), for both trips originating in the zone, and those where the zone is the destination. The model also calculates trip length and volume of Heavy Commercial Vehicles (HCV) (i.e., trucks) in much the same way but these trips are largely 'business to business', and to and from key business or transport nodes (eg port, airport, industrial areas, and regional entry and exit points).

[5] Takaanini excepted, commencement is 2048+ in the FULSS

[6] FULSS: https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/topic-based-plans-strategies/housing-plans/Documents/future-urban-land-supply-strategy.pdf

[7] Future Urban Areas are those Greenfields identified in the Future Urban Land Supply Strategy (2017)

[8] Intra-zone trips are not calculated in the model, as the origin and destination of these journeys (zone centroids) are the same, so theoretical trip length for such trips is zero.

[9] Active mode (walking, cycling, scooting etc) trips are exogenously determined as a proportion of all trips, based on location type, trip purpose and time dependent. For example, AM peak journey to work trips to a nearby town centre have a higher active mode share than other purpose trips by rural residents to their nearest subregional centre). Remaining trips are then available to be allocated between PT and Car by the model based on purpose, time of day, overall modelled time cost and network availability/congestion.

These modelled trips are then run through an assumed fleet emissions profile[10], to calculate CO_2e as a function of vehicle mix (embedded in the fleet profile), trip volumes, speed and distance (generated by the MSM model), as shown on Figure 1. Note that the Car (and total) fleet CO_2e curve trends downwards over time, reflecting assumed increases in efficiency, particularly of electrification, despite increased fleet size. Conversely, the HCV CO_2e trend is slightly upwards reflecting currently assumed limitations on the feasibility of widespread electrification for HCVs.

These figures are collated across a modelled 24Hr period (a weekday) to generate CO_2e totals for Cars and HCVs with trips that either have an origin or destination in the relevant zone (noting the regional totals for origin and destination values are equal, with a small number of 'boundary' zones standing in for RoNZ representing key entry and exit points to and from the region). Emissions from PT trips in 2048 are assumed to be zero (as the PT fleet is assumed to be fully electric by that point[11]), but PT trips are not irrelevant or ignored as the level or proportion of PT (and Active) modal share is still calculated (leaving a share or remainder for Cars) and so this affects the net emissions profile. Locations with poor PT mode share will all else being equal, perform worse on a normalised CO_2e basis than other areas with better PT mode share.

Given that PT mode share is a function of its availability, accessibility, frequency, price, travel time cost and attractiveness, these factors cannot be ignored when considering why some areas perform better than others, all else being equal. It is also true that some FUAs may not be feasibly provided with a high quality PT service even if BAU plans reflected in the model run being assessed, were amended.

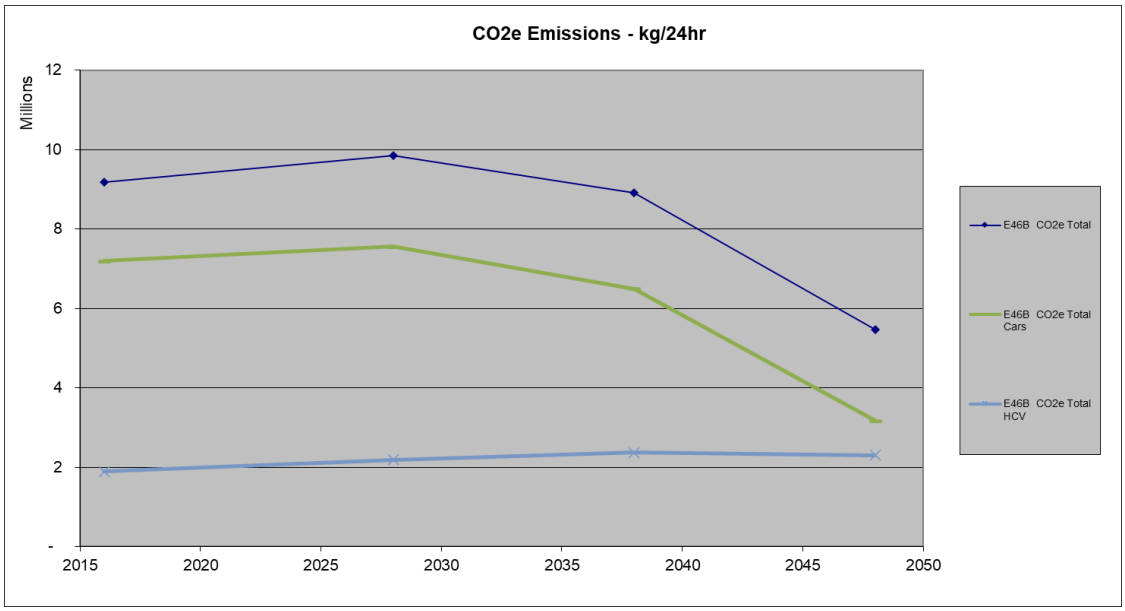


Figure 1: Summarised Fleet Emissions Profile, Source AFC, pers comm.

[10] Based on NZTA's Vehicle Emissions Prediction Model (VEPM) https://www.nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/environment-and-sustainability-in-our-operations/environmental-technical-areas/air-quality/vehicle-emissions-prediction-model/ , itself informed by MoT's Vehicle Fleet Emissions Model v3 (VFEM3) https://www.transport.govt.nz/statistics-and-insights/transport-outlook/sheet/updated-future-state-model-results

[11] Note that the PT emissions profile is assumed to be zero by 2048, reflecting policy decisions by Auckland transport to have a fully electric fleet by 2044.

Limitations and Assumptions

All models are simplifications of the real world and are therefore subject to assumptions and limitations. Models about the future are particularly fraught, as these assumptions and limitations are stretched out (projected) on the basis of current knowledge and assumptions about future conditions, which may not come to pass. IF <x> conditions exist THEN it is reasonable to assume that <y> will occur.

Strategic models are most useful for testing hypotheses, particularly on a comparative (i.e. one model run vs another) basis – they are less useful (though are very often tasked) with definitively determining a single future from the set of infinite potential futures.

The MSM model has been in use for a long time, and is based on globally accepted software and conceptual frameworks, is endorsed, reviewed and funded by Ministry of Transport, NZTA/WK, Auckland Transport and Auckland Council and continues to be used as a key tool across almost all of Auckland's transportation decision making processes.

For the purposes of this assessment (relative location comparison), most assumptions and limitations can be ignored *as they apply equally across all locations*, even as some of them change over time, but some key ones do need to be highlighted:

- VKT, population, employment, mode share and ultimately relative CO_2e performance are a function of the relative availability and accessibility of land, jobs, infrastructure and services
    - some locations inputs may not have been optimised for one or more of these factors and so poor performance could be addressed by improving these factors. However the inputs reflect current plans – addressing one or more of these issues would imply adjustments regionally to address specific locational issues, which may not be desirable, practical, or commercially feasible.
- Presented data is a snapshot in time – some locations may be quite early in their development cycles and (modelled) travel behaviour may change as a result of further development (eg a FUA develops with stage 1 mostly residential, stage 2 mostly employment, but at the time of assessment, only Stage 1 residential development is underway, with PT services expected later, leading to long Car commutes (high VKT and low population) for early residents)
    - In particular this impacts the assessment of Takaanini, which is not scheduled to be 'development ready' until 2048+ in the FULSS, and is therefore essentially still a rural area in the modelled scenario (which extends only to 2048) with very low levels of existing development at this time.
- Detail of future development and the human decisions and behaviours it attempts to capture is extremely complex, nuanced and changeable. Different incentives and opportunities may result in different outcomes, however our models reflect current assumptions about these factors and their interactions, in the absence of definitive proof of alternatives being passed back from the future.
- 'Loose' fit between the FUA boundaries and MSM zones – this is a common issue in almost all geographic analyses where the 'data' geography does not match perfectly with the 'study area' geography. These geographies show a complex many to many relationship. A pre-existing Rural/Urban/Greenfields classification previously utilised for developing and assessing growth scenarios has been applied to this analysis. This MSM zone classification is based on a best fit approach whereby 'most' of the expected growth/ change/ development/ land area in the zone under the Auckland Plan can be attributed to one of

these 3 classes. Many smaller FUAs are located entirely in Rural or Urban classed MSM zones. Many Larger FUAs cross aver several MSM zones which contain some FUA, some existing urban development and some expected to remain rural areas. This detail however matters little to the model as all development potential and travel choices are effectively centralised to figures at the centroid of the MSM zone (the model doesn't care about our F/U/R categorisation), but it does mean that it is not possible to be absolutely definitive about differences in outcomes can be totally attributable to differences between 'brownfields' and 'greenfield' development typologies at the MSM level.

The limitations above are a key reason why this assessment focusses on *relative* performance of grouped FUA locations against each other, at the latest possible time period to be included in a broad assessment against a range of other criteria, and should not be used alone to definitively rule any FUA location in or out of the FDS. Absolute values are of course important but given the potential for these values to change over time, highly dependent on land use and transport system modelled scenarios, a more indicative approach to the results has been taken particularly as the assessment itself may eventually result in amendments to proposed timing, land use or transport systems.

It is also important to note that 'Greenfields' are not *necessarily* worse performing locations than 'brownfields' from an emissions perspective, simply by being greenfields or new development areas. As highlighted by the Australian research - *location, proximity and accessibility matters for all locations* – the difference between brownfields and greenfields areas is more to do with the high likelihood that greenfields are (typically) more distant, lower density, and have fewer options closer to them than brownfields areas, (resulting in high car mode share and VKT), because that is the nature of normal urban growth and development patterns. All brownfields' areas were greenfields once, they just happen to be closer to the urban centre, and so were developed sooner.

Relative distance to the centre matters, but, as the model's results highlight, local factors can and do play a part, and while generally locations that are further away from most destinations will require longer trips on average to reach those destinations, not everyone travels to and from the CBD twice per day at peak, and certainly not for all journey purposes – people live complex and diverse lives. The mix of amenities, and opportunities relative to the population being served is important to get right, including in more central areas, which do have a basic geometric advantage of being able to access the widest range of destinations and amenities, in the shortest distance by way of the greatest mix of modal opportunities prioritising active, and then PT, and only then SOV.

Overcoming this simple geometric reality in more distant, less option rich locations (which is a characteristic of many greenfield and rural areas) would require disproportionately more effort/intervention/expenditure to achieve. This is not impossible, but, there is an opportunity cost, especially when public investment resources are limited, which they almost always are, and where the alternative of more development in locations that already have these natural advantages exists.

Many existing urban areas also require considerable investment and in a financially challenged funding environment (which is a more or less permanent constraint!) may suggest more cost effective approaches to achieving well functioning urban environments should be prioritised. This however is an area for further research, and likely, much further discussion, submission and litigation.

Identifying locations of Interest

MSM zones have been classified against a number of spatial categories (e.g. business areas, Auckland Plan areas, greenfields, rural areas etc))..

Like many of these other spatial categorisations, the relationship between FUAs (our 'study areas' and MSM zone boundaries (our 'data areas') is not perfectly coincident , so MSM classifications are only a proxy for identifying specific FUAs, using a 'best fit' (not a perfect fit) approach, as indicated in Figure 2.

This map also highlights that a number of FUAs are not within MSM zones identified as greenfields and the boundary between rural and urban zoning is not always reflected in the MSM classification. MSM zones identified as green fields are not entirely FUAs either. This categorisation fuzziness also makes it difficult to definitely assign an MSMs zone results to the 'form' (or perhaps more correctly, age) of urban development. To compensate for this issue, only the larger FUAs are considered (as smaller ones are 'lost' in otherwise urban or rural classified zones) and several MSM zones are grouped by the FUA they correlate to, and compared en-masse with rural and urban categories for the final ranking assessment. This fuzziness also limits the utility of complex or deeper statistical analysis, with this analysis focussing instead on broad relativities between broad area types, between FUAs, and broader spatial patterns.

Appendix 1 and 2 contain tables showing the many to many relationship between FUAs and MSM zones and MSM zones and FUAs.

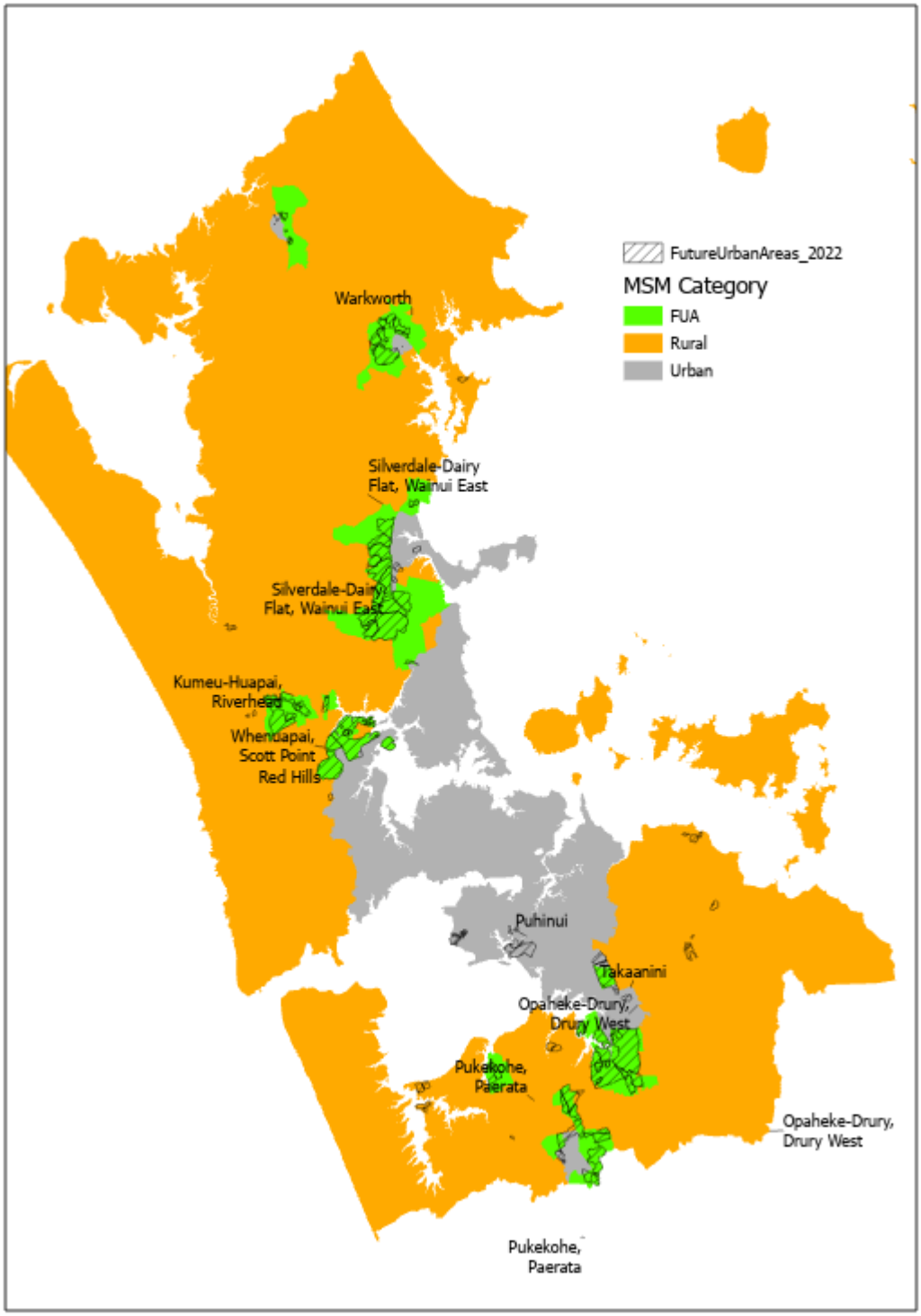


Figure 2: FUA boundaries as at 2022, and MSM Zone Classifications as used in this paper

Variables

The following variables have been obtained from the model and used in the assessment of relative performance between FUAs. The abbreviations for each variable shown in the first column have been used in Figures 7, 8, 10 and 11.

Variable	Source	Description
Pop	Model	**Population** in Households in Private Dwellings in zone(s)
HH	Model	**Households** in Private Dwellings in zone(s)
Emp	Model	**Employment** in zone(s)
VKT_Car_24hr_by_Orig	Model	**Vehicle Kilometres Travelled by Cars** for all trip purposes in a 24 period (weekday) summed to the origin zone of each trip
CO2e_Car_24hr_by_Orig	Model	**CO2 equivalent (kg) emitted by Cars** for all trip purposes in a 24 period (weekday) summed to the origin zone of each trip
VKT_HCV_24hr_by_Orig	Model	**Vehicle Kilometres Travelled by HCV** for all trip purposes in a 24 period (weekday) summed to the **origin zone** of each trip
CO2e_HCV_24hr_by_Orig	Model	**CO2 equivalent (kg) emitted by HCV** for all trip purposes in a 24 period (weekday) summed to the **origin zone** of each trip
VKT_Car_24hr_by_Dest	Model	**Vehicle Kilometres Travelled by Cars** for all trip purposes in a 24 period (weekday) summed to the **destination zone** of each trip
CO2e_Car_24hr_by_Dest	Model	**CO2 equivalent (kg) emitted by Cars** for all trip purposes in a 24 period (weekday) summed to the **destination zone** of each trip
VKT_HCV_24hr_by_Dest	Model	**Vehicle Kilometres Travelled by HCV** for all trip purposes in a 24 period (weekday) summed to the **destination zone** of each trip
CO2e_HCV_24hr_by_Dest	Model	**CO2 equivalent (kg) emitted by HCV** for all trip purposes in a 24 period (weekday) summed to the **destination zone** of each trip
VKT per Car per HH Origin	Derived	VKT Car Origin /HH – Normalise Origin Car VKT to resident Households
CO2 per Car per HH Origin	Derived	CO2e Car Origin/HH– Normalise Origin Car CO2 to resident Households
VKT per Car per HH+Empl*0.5 Origin	Derived	VKT Car Origin/(HH+Emp*0.5) – Normalise Car VKT to resident Households and Half of Employment
CO2 per Car per HH+Empl*0.5 Origin	Derived	CO2 Car Origin/(HH+Emp*0.5) – Normalise Car CO2 to resident Households and Half of Employment
VKT per HCV per Emp Dest	Derived	VKT HCV Dest/Emp – Normalise Destination HCV VKT to resident Employment
CO2 per HCV per Emp Dest	Derived	CO2 HCV Dest/Emp – Normalise Destination HCV CO2 to resident Employment
VKT per HCV per HH+Empl*0.5 Dest	Derived	VKT Car Origin/(HH+Emp*0.5) – Normalise Car VKT to resident Households and Half of Employment
CO2 per HCV per HH+Empl*0.5 Dest	Derived	CO2 Car Origin/(HH+Emp*0.5) – Normalise Car CO2 to resident Households and Half of Employment
Car Origin/Dest VKT Ratio	Derived	Car VKT Origin/Car VKT Dest – These ratios indicates the relative balance between MSM origin and destination trips. A value of 1 indicates balance, a value of less than one indicates less origin

Variable	Source	Description
		than destination VKT, and greater than one indicates more origin than destination VKT
Car OD CO2 Ratio	Derived	Car CO2 Origin/Car CO2 Dest
HCV OD VKT Ratio	Derived	HCV VKT Origin/HCV VKT Dest
HCV OD CO2 Ratio	Derived	HCV CO2 Origin/HCV CO2 Dest

Overall position at 2048

This paper focusses on one point in time, being 2048. This timeframe is the effective policy horizon of the Auckland Plan 2050 and ATAPv2.

The maps and graphs below show the regional picture in terms of total zone Population, Households (HHs), Employment, VKT and CO_2e at 2048.

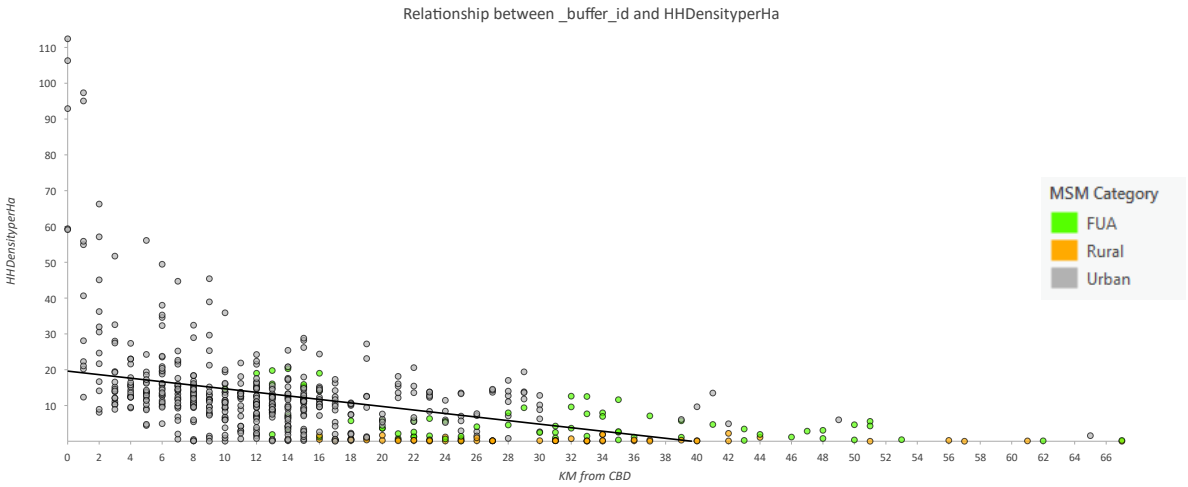
All maps below classify MSM zones into 10 quantiles or 'deciles' (where 10% of MSM zones are in each 'bin' – a median is the divider for a 2 bin quantile (50% in in each bin, or half of values are greater than and half are less than the median), and quartiles are a 4 bin quantile; 5th and 95th percentiles would require a 20 bin quantile, or 'ventiles' to determine and so on) for the indicated variable. In Figure 3 for example, the bottom 10% of all MSM zones have less than or equal to 278 households at 2048, and the top 10% have more than 2516 and less than or equal to 5262 households.

Figures 3 and 4 below highlight the considerably different patterns of Household and Employment in 2048, and Figure 5 shows the relative balance or ratio (HH/Emp) – while almost all locations have a mix, many locations are largely residential, some are entirely employment, and only a few have a balance.[12]

This is because for the most part, existing bulk employment areas concentrate in a few locations either set aside by zoning, and/or are naturally advantageous to this use, and remain the main employment areas, albeit with some additions in FUAs and general expansion of distributed employment in line with population.

Conversely, residential development is much more spatially widespread reflecting the greater number of and more diverse range of preferences of households and the less constrained locational requirements needed for residential development. It is also true that residential development is generally denser where there are a greater number of amenities accessible from that location, and aside from zoning/regulatory constraints (e.g. covenants, parkland, SCA, viewshafts etc) and amenity quirks (e.g. eastern coastal proximity and views), generally follows a classic bid rent curve from the centre (CBD) outwards as indicated in Figure 3a below, which graphs radial distance of the MSM zone centroid from the edge of the City Centre Zone in km against the gross density of HH in the MSM zone at 2048. The densest zones are close to the CBD, and reduces by distance. This graph also shows that FUAs start popping up at >12km and some rural class zones from >20km from the CBD respectively, amongst (generally denser) existing urban area classified zones.

[12] Of note is that relative specialisation occurs mainly in the urban or peri urban areas – more isolated urban areas tend to have a ratio closer to 1 as only people with work in that location would live there, and only employment with specific spatial requirements (farming, population servicing industries etc) would locate so far from the bulk of labour and consumer markets.



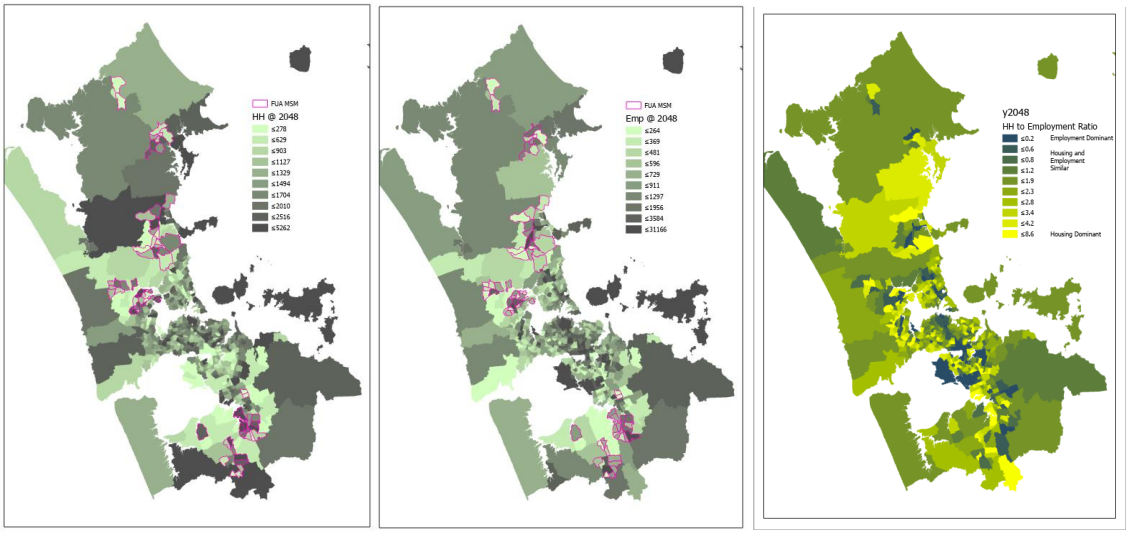


Figure 3a (top): Radial distance of the MSM zone centroid from the edge of the City Centre Zone in km against the gross density of HH in the MSM zone (total HH/gross MSM zone area in Ha) at 2048

Figure 3 (left): Total Households at 2048 by MSM Zone

Figure 4 (centre): Total Employment at 2048 by MSM Zone

Figure 5 (right): HH:Empl Ratio at 2048 indicating relative blanace of households and employment by MSM zone.

Interzone travel for journey to work (JTW, between the zone where the HH is and the zone where the Employment is) is a necessity for working members of most households, and while journeys to work are not the only purpose for trips, they are a significant driver of AM and PM peaks, and therefore also the 24hr VKT and therefore CO_2e. Other modelled trips, some of which incorporate the interpeak and other periods in the 24hrs modelled, include journeys to education (JTE), pleasure, and other purposes, inter-business travel, HCV and delivery vehicles. As noted above intrazonal travel is not modelled in terms of VKT (because for the strategic transport model, the trip length is zero) but the assumed share of interzone trips will impact the how many trips are needed beyond the origin zone to other zones, and therefore VKT and CO2e. The greater the potential for trip purposes to be met in or as close as possible to the origin zone the lesser the travel distance required, and therefore VKT and CO2e, all else being equal.

Figure 6 shows total modelled CO2e from cars originating in each zone, or gross emissions. Figure 7 shows the effect of 'normalisation' on those results, converting 'gross emissions' into 'emissions per

x' ((x in the figure being, HH plus half of Employment). Some locations distant from the main urban area have high gross values but some do not. Some areas just have very few households, and even if they make long trips this does not add up to as much CO_2e as a more populous zone even if their trips are shorter. Conversely some areas have high gross CO2e but also contain a lot of HH and Emp. This shows a highly mixed spatial pattern – distant areas tend to have high gross CO2e levels (but not all), but so do many central areas.

To account for this, the figure on the right is the same CO_2e data, but 'normalised' by the sum of all households, plus half of the employment in the zone[13], giving a distinctly different, more spatially organised pattern.



Figure 6: (left) 'Gross' CO2e emitted from cars going on trips originating in the zone in a 24 Hr period

Figure 7: (right) 'Normalised' CO2e emitted from cars going on trips originating in the zone in a 24Hr period, normalised by total Households plus Employment x 0.5

Summary results at Generalised Area Level

The summary data below highlights that on almost all measures, FUAs performed (collectively) slightly worse than the whole urban area, but better than Rural Areas[14] (see Figures 8 to 10).

In general, the pattern of Urban, FUA, Rural is one of increasing distance from the centre, but also decreasing provision of all transport options and reduced local employment options. While for many

[13] The use of HH and half of zone employment is commonly used to 'normalise' trips and trip data in exploring transport model results such as this. For Car based Origin trips, using all households make sense, but the purpose and function of trips relating to employment (ether origin or destination) is highly variable depending on industry and workplace – without knowledge of these specifics and to account for the mix of activities in any given zone, 50% of employment is used. The formula is *Co2e/(HH+Empl*0.5)*

[14] Out of Region data covers a small number of zones modelled to represent boundary regions/highway crossing points and some specific nearby settlements and can be ignored for present purposes.

rural people, work trips may be 'intrazonal', most other trip purposes will require either a trip to the nearest settlement, or potentially much further depending on the amenity, product or service sought. FUA residents will generally be adjacent to the urban area and its services and amenities, and may have new services and amenities developed within the FUA over time. Urban residents have the most access to the most jobs, services and amenities, and therefore the least distance to travel, on average, for the things they need or want.

A similar spatial pattern and reasons for this exist for HCVs as well.

Figure 8 below highlights the gross figures by generalised location, and Figure 9 highlights the normalised figures across the same generalised locations. The ratios highlight that the urban area is a destination for more trips than originate there (<1), and the rural and FUA have more origins than destinations (<1) confirming that the urban area is most likely the destination of trips originating from these locations[15].

Figure 10 compares the normalised values in Figure 9 against the urban area results, showing that on most measures FUA perform worse than Urban, and Rural performs worse than both FUA and Urban on all measures. For example, for 'VKT Car per HH+Empl*0.5', FUAs in aggregate show 31% more VKT than Urban, and Rural shows 75% more than Urban.

Figure 11 graphs the variables in Figure 9.

MSM Category	Population	Households	Employment	VKT Car 24hr by Origin	CO2e Car 24hr by Origin	VKT HCV 24hr by Origin	CO2e HCV 24hr by Origin	VKT Car 24hr by Dest	CO2e Car 24hr by Dest	VKT HCV 24hr by Dest	CO2e HCV 24hr by Dest
Urban	1868142	661882	836253	32166288	2190883	2934754	1850984	32511204	2214638	2982122	1876774
FUA	247653	98380	58614	4977110	324441	372340	212682	4852840	315878	345762	198013
Rural	143651	59598	40734	4156425	268636	359550	208006	4083437	263837	343868	199801
Out of region	16804	7318	2336	380109	24890	45162	25652	343234	22392	40039	22747
Total Auckland	**2276250**	**827178**	**937937**	**41679932**	**2808850**	**3711806**	**2297324**	**41790715**	**2816745**	**3711791**	**2297335**

Figure 8: Main Variables by top level location

MSM Category	VKT per Car per HH by Origin	CO2e Car per HH by Origin	VKT Car per HH+Empl *0.5 by Origin	CO2 Car per HH+Empl *0.5 by Origin	VKT HCV per Empl by Dest	CO2e HCV per Empl by Dest	VKT HCV per HH+Empl *0.5 by Dest	CO2 HCV per HH+Empl *0.5 by Dest	Car Origin/Dest VKT Ratio	Car OD CO2 Ratio	HCV OD VKT Ratio	HCV OD CO2 Ratio
Urban	48.60	3.31	29.78	2.03	3.57	2.24	2.76	2.05	0.99	0.99	0.98	0.99
FUA	50.59	3.30	38.98	2.54	5.90	3.38	2.71	2.47	1.03	1.03	1.08	1.07
Rural	69.74	4.51	51.98	3.36	8.44	4.91	4.30	3.30	1.02	1.02	1.05	1.04
Out of region	51.94	3.40	44.79	2.93	17.14	9.74	4.72	2.64	1.11	1.11	1.13	1.13
Total Auckland	**50.39**	**3.40**	**32.16**	**2.17**	**3.96**	**2.45**	**2.86**	**2.17**	**1.00**	**1.00**	**1.00**	**1.00**

Figure 9: Derived Variables by Top Level Location

[15] The transport model also produces highly detailed OD trip matrices from zone to zone, but exploration of this extreme detail is well beyond the scope of this paper, but the general finding is consistent with both expectations (see discussion in first section), and previous scenario analysis.

MSM Category	VKT per Car per HH by Origin	CO2e Car per HH by Origin	VKT Car per HH+Empl *0.5 by Origin	CO2 Car per HH+Empl *0.5 by Origin	VKT HCV per Empl by Dest	CO2e HCV per Empl by Dest	VKT HCV per HH+Empl *0.5 by Dest	CO2 HCV per HH+Empl *0.5 by Dest
Urban	0%	0%	0%	0%	0%	0%	0%	0%
FUA	4%	0%	31%	25%	65%	51%	-2%	21%
Rural	44%	36%	75%	66%	137%	119%	56%	61%
Out of region	7%	3%	50%	45%	381%	334%	71%	29%
Total Auckland	4%	3%	8%	7%	11%	9%	4%	6%

Figure 10: Derived Variables relative to 'Urban' results

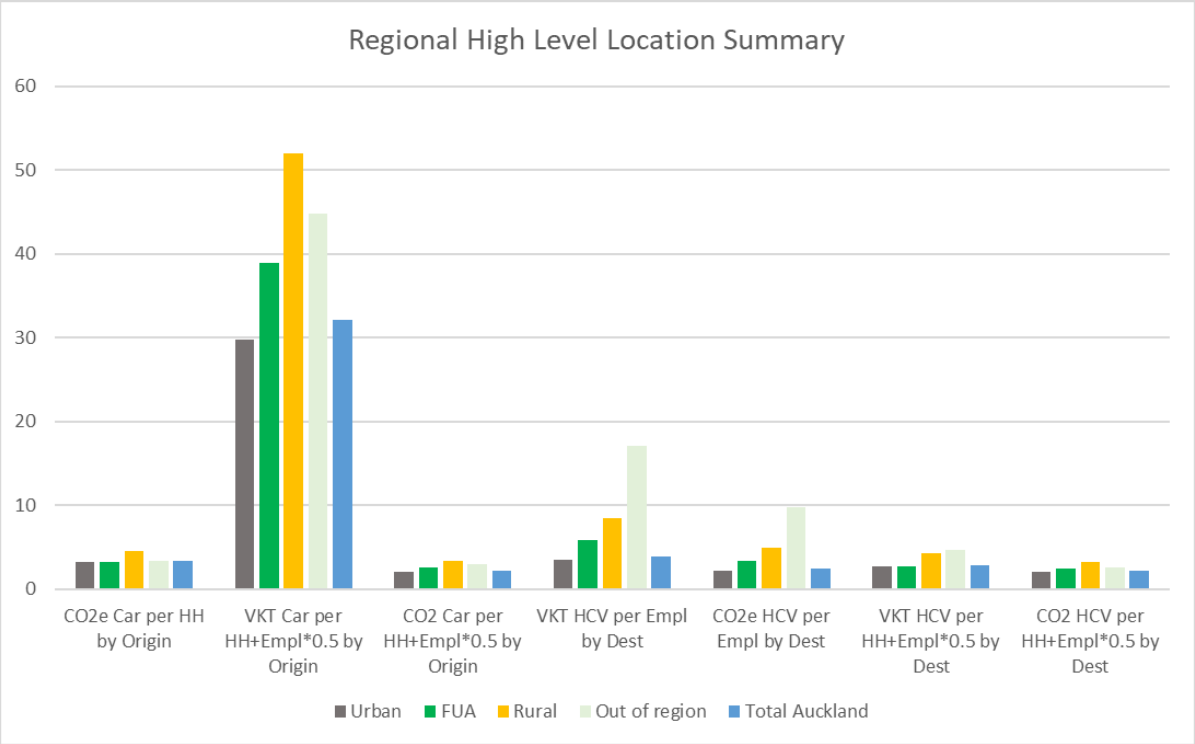


Figure 11: Graph of Key Variables by Top Level Location (Data from Figure 9)

FUA Cluster position at 2048

This section explores the FUA group data looking at the clusters of Future Urban Areas within the FUA category. This section primarily looks to explore relative performance of each FUA based MSM Zone cluster against the other identified FUA MSM zone clusters.

The methodology is a repeat of the Urban/Rural/Future Urban

These FUA clusters are shown on Figure 12 below, and MSM zone concordances are included in the appendices:

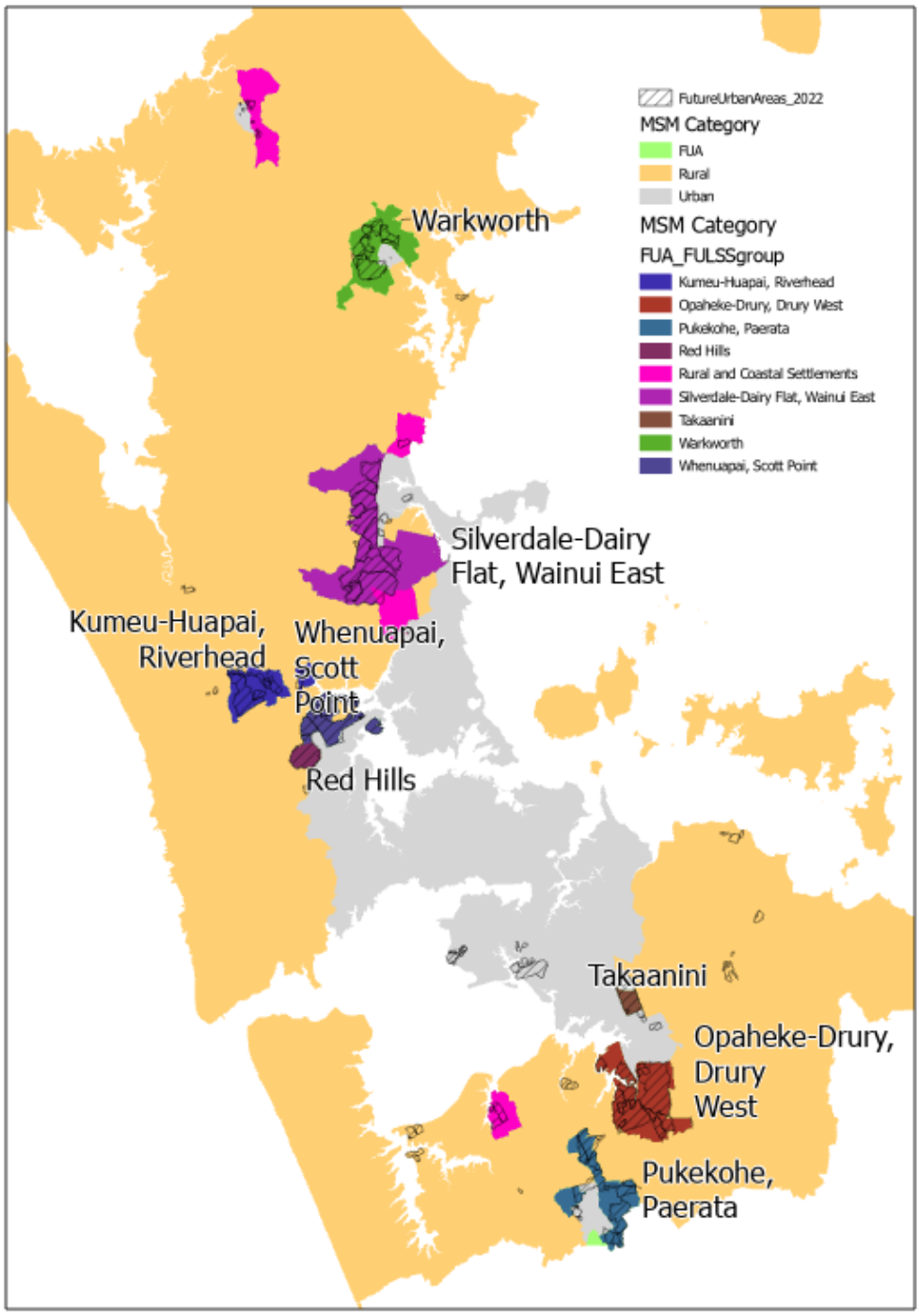


Figure 12: MSM Zone based FUA clusters (data area proxies) overlaid with FULSS Areas (study areas).

Figure 13 below provides the gross data for each cluster. The Proportion of FUA table shows how each FUA cluster performs for each variable relative to the total of all FUAs (as a percentage), and the final table converts this into a ranking for each variable.

Figure 14 provides VKT and CO_2e normalised to Households and Employment (and a combination) for both origin and destination trips. These figures have a similar format to those used for the area classifications above.

Note that the ranking is consistently applied from 1 = 'best' performing to 9 = 'worst' performing. The ordinality of the variable (whether a high or a low figure is 'best') is accounted for by utilising ascending or descending rank approaches[16].

[16] Depending on the particular variable, a lower value may be 'best', while larger numbers are (relatively) 'worse'. These variables are ranked in Ascending order (Smallest to largest). For example, the gross data in Figure 10 shows that estimated total VKT by car (4th column) from the FUA clusters range from around 15,000 in Takaanini to over a million in Silverdale-Dairy Flat/Wainui East and Opaheke-Drury/Drury West, hence their rankings as 1 (best) and 8/9 (worst) respectively. For other variables, larger numbers are considered good (i.e. population, HH and employment), and are ranked in Descending order (largest to smallest).For these three variables, FUAs with the higher population, household and employment numbers are ranked best (e.g. Opaheke-Drury with c. 62,000 is ranked 1 versus Takaanini with 975 population ranked 9).

Gross Data

FUA Cluster	Population	Households	Employment	VKT Car 24hr by Origin	CO2e Car 24hr by Origin	VKT HCV 24hr by Origin	CO2e HCV 24hr by Origin	VKT Car 24hr by Dest	CO2e Car 24hr by Dest	VKT HCV 24hr by Dest	CO2e HCV 24hr by Dest
Kumeu-Huapai, Riverhead	21652	9172	4890	458771	29214	51063	28759	454762	28993	43783	24830
Opaheke-Drury, Drury West	62731	24563	15251	1156151	76700	61415	36876	1144120	75282	58232	34859
Pukekohe, Paerata	32386	12464	4619	536860	34667	50383	28520	499088	32057	32562	18475
Red Hills	17455	7371	1486	261800	17074	1610	902	249890	16298	2331	1299
Rural and Coastal Settlements	11504	4574	1971	266978	17049	16179	9141	247954	15818	15279	8821
Silverdale-Dairy Flat, Wainui East	41798	15698	14106	1065693	69580	64569	36823	1019153	66756	64226	36658
Takaanini	975	373	264	15760	1042	954	585	16059	1056	1158	711
Warkworth	14567	6655	4791	355767	23358	45931	25738	377860	24830	43280	24279
Whenuapai, Scott Point	44476	17467	11166	855911	55540	80015	45215	840581	54575	84716	47974
Grand Total	247653	98380	58614	4977110	324441	372340	212682	4852840	315878	345762	198013

as a Proportion of total FUA Clusters

FUA Cluster	Sum of Pop	Sum of HH	Sum of Emp	Sum of VKT_Car_24hr_by_Orig	Sum of CO2e_Car_24hr_by_Orig	Sum of VKT_HCV_24hr_by_Orig	Sum of CO2e_HCV_24hr_by_Orig	Sum of VKT_Car_24hr_by_Dest	Sum of CO2e_Car_24hr_by_Dest	Sum of VKT_HCV_24hr_by_Dest	Sum of CO2e_HCV_24hr_by_Dest
Kumeu-Huapai, Riverhead	9%	9%	8%	9%	9%	14%	14%	9%	9%	13%	13%
Opaheke-Drury, Drury West	25%	25%	26%	23%	24%	16%	17%	24%	24%	17%	18%
Pukekohe, Paerata	13%	13%	8%	11%	11%	14%	13%	10%	10%	9%	9%
Red Hills	7%	7%	3%	5%	5%	0%	0%	5%	5%	1%	1%
Rural and Coastal Settlements	5%	5%	3%	5%	5%	4%	4%	5%	5%	4%	4%
Silverdale-Dairy Flat, Wainui East	17%	16%	24%	21%	21%	17%	17%	21%	21%	19%	19%
Takaanini	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Warkworth	6%	7%	8%	7%	7%	12%	12%	8%	8%	13%	12%
Whenuapai, Scott Point	18%	18%	19%	17%	17%	21%	21%	17%	17%	25%	24%

0 = Decending, 1 = Ascending

Clusters Rank Position	0	0	0	1	1	1	1	1	1	1	1

FUA Cluster	Sum of Pop	Sum of HH	Sum of Emp	Sum of VKT_Car_24hr_by_Orig	Sum of CO2e_Car_24hr_by_Orig	Sum of VKT_HCV_24hr_by_Orig	Sum of CO2e_HCV_24hr_by_Orig	Sum of VKT_Car_24hr_by_Dest	Sum of CO2e_Car_24hr_by_Dest	Sum of VKT_HCV_24hr_by_Dest	Sum of CO2e_HCV_24hr_by_Dest
Kumeu-Huapai, Riverhead	5	5	4	5	5	6	6	5	5	6	6
Opaheke-Drury, Drury West	1	1	1	9	9	7	8	9	9	7	7
Pukekohe, Paerata	4	4	6	6	6	5	5	6	6	4	4
Red Hills	6	6	8	2	3	2	2	3	3	2	2
Rural and Coastal Settlements	8	8	7	3	2	3	3	2	2	3	3
Silverdale-Dairy Flat, Wainui East	3	3	2	8	8	8	7	8	8	8	8
Takaanini	9	9	9	1	1	1	1	1	1	1	1
Warkworth	7	7	5	4	4	4	4	4	4	5	5
Whenuapai, Scott Point	2	2	3	7	7	9	9	7	7	9	9

Figure 13: FUA at Cluster Level – Raw Data, Proportion of total FUA and Rank (note ascending vs descending depending on Variable)

Normalised Data												
FUA Cluster	VKT per Car per HH Origin	CO2 per Car per HH Origin	VKT per Car per HH+Empl *0.5 Origin	CO2 per Car per HH+Empl *0.5 Origin	VKT per HCV per Emp Dest	CO2 per HCV per Emp Dest	VKT per HCV per HH+Empl *0.5 Dest	CO2 per HCV per HH+Empl *0.5 Dest	Car Origin/Dest VKT Ratio	Car OD CO2 Ratio	HCV OD VKT Ratio	HCV OD CO2 Ratio
Kumeu-Huapai, Riverhead	50.02	3.19	39.49	2.51	8.95	5.08	3.77	2.50	1.01	1.01	1.17	1.16
Opaheke-Drury, Drury West	47.07	3.12	35.92	2.38	3.82	2.29	1.81	2.34	1.01	1.02	1.05	1.06
Pukekohe, Paerata	43.07	2.78	36.34	2.35	7.05	4.00	2.20	2.17	1.08	1.08	1.55	1.54
Red Hills	35.52	2.32	32.27	2.10	1.57	0.87	0.29	2.01	1.05	1.05	0.69	0.69
Rural and Coastal Settlements	58.37	3.73	48.02	3.07	7.75	4.48	2.75	2.85	1.08	1.08	1.06	1.04
Silverdale-Dairy Flat, Wainui East	67.89	4.43	46.84	3.06	4.55	2.60	2.82	2.93	1.05	1.04	1.01	1.00
Takaanini	42.25	2.79	31.21	2.06	4.39	2.69	2.29	2.09	0.98	0.99	0.82	0.82
Warkworth	53.46	3.51	39.31	2.58	9.03	5.07	4.78	2.74	0.94	0.94	1.06	1.06
Whenuapai, Scott Point	49.00	3.18	37.13	2.41	7.59	4.30	3.68	2.37	1.02	1.02	0.94	0.94
Grand Total	50.59	3.30	38.98	2.54	5.90	3.38	2.71	2.47	1.03	1.03	1.08	1.07
as a Proportion of total FUA Clusters												
FUA Cluster	VKT per Car per HH Origin	CO2 per Car per HH Origin	VKT per Car per HH+Empl *0.5 Origin	CO2 per Car per HH+Empl *0.5 Origin	VKT per HCV per Emp Dest	CO2 per HCV per Emp Dest	VKT per HCV per HH+Empl *0.5 Dest	CO2 per HCV per HH+Empl *0.5 Dest	Car Origin/Dest VKT Ratio	Car OD CO2 Ratio	HCV OD VKT Ratio	HCV OD CO2 Ratio
Kumeu-Huapai, Riverhead	99%	97%	101%	99%	152%	150%	139%	101%	98%	98%	108%	108%
Opaheke-Drury, Drury West	93%	95%	92%	94%	65%	68%	67%	95%	99%	99%	98%	98%
Pukekohe, Paerata	85%	84%	93%	92%	120%	118%	81%	88%	105%	105%	144%	144%
Red Hills	70%	70%	83%	83%	27%	26%	11%	81%	102%	102%	64%	65%
Rural and Coastal Settlements	115%	113%	123%	121%	131%	132%	101%	115%	105%	105%	98%	96%
Silverdale-Dairy Flat, Wainui East	134%	134%	120%	120%	77%	77%	104%	119%	102%	101%	93%	94%
Takaanini	84%	85%	80%	81%	74%	80%	85%	85%	96%	96%	77%	77%
Warkworth	106%	106%	101%	102%	153%	150%	177%	111%	92%	92%	99%	99%
Whenuapai, Scott Point	97%	96%	95%	95%	129%	127%	136%	96%	99%	99%	88%	88%
0 = Decending, 1 = Ascending												
Clusters Rank Position	1	1	1	1	1	1	1	1	0	0	0	0
FUA Cluster	**VKT per Car per HH Origin**	**CO2 per Car per HH Origin**	**VKT per Car per HH+Empl *0.5 Origin**	**CO2 per Car per HH+Empl *0.5 Origin**	**VKT per HCV per Emp Dest**	**CO2 per HCV per Emp Dest**	**VKT per HCV per HH+Empl *0.5 Dest**	**CO2 per HCV per HH+Empl *0.5 Dest**	Car Origin/Dest VKT Ratio	Car OD CO2 Ratio	HCV OD VKT Ratio	HCV OD CO2 Ratio
Kumeu-Huapai, Riverhead	**6**	**6**	**7**	**6**	**8**	**9**	**8**	**6**	7	7	2	2
Opaheke-Drury, Drury West	**4**	**4**	**3**	**4**	**2**	**2**	**2**	**4**	6	5	5	4
Pukekohe, Paerata	**3**	**2**	**4**	**3**	**5**	**5**	**3**	**3**	2	1	1	1
Red Hills	**1**	**1**	**2**	**2**	**1**	**1**	**1**	**1**	3	3	9	9
Rural and Coastal Settlements	**8**	**8**	**9**	**9**	**7**	**7**	**5**	**8**	1	2	4	5
Silverdale-Dairy Flat, Wainui East	**9**	**9**	**8**	**8**	**4**	**3**	**6**	**9**	4	4	6	6
Takaanini	**2**	**3**	**1**	**1**	**3**	**4**	**4**	**2**	8	8	8	8
Warkworth	**7**	**7**	**6**	**7**	**9**	**8**	**9**	**7**	9	9	3	3
Whenuapai, Scott Point	**5**	**5**	**5**	**5**	**6**	**6**	**7**	**5**	5	6	7	7

*Figure 14: FUA at Cluster Level – **Normalised** and other derived values, proportion and derived Rank (note ascending vs descending rank order depending on variable).*

Overall Rank at Group Level

Figure 15 shows an overall normalised rank for each FUA (2nd column) based on summing the ranks of the normalised variables (shown in Figure 14 above). A rank showing the result with all variables from the model is also shown (1st column) and this is graphically presented in Figure 16. As can be seen, the inclusion of all variables versus only considering normalised variables does affect the ranking order slightly, but does not appear to create significant inversions (i.e. making worst performers best).

The FUAs ranked 1 to 4 perform the best in terms of VKT and CO_2e overall, it is notable that they are all in the south apart from Red Hills which is in the northwest. The FUAs ranked 5 to 9 perform worse than the other FUAs as they are estimated to have higher VKT and CO_2e overall and are those

located in the northwest, north and the rural and coastal settlements. This largely reflects their distance from both existing and planned PT, their generally greater distance from the CBD, as well as the presence of fewer employment opportunities and/or services and amenities, hence needing to travel longer distances, which is especially true for the rural and coastal settlements, including many that are not explicitly included in this assessment.

Rank Position		
FUA Cluster	Overall ALL Variables Rank	Overall Normalised Variables Only Rank
Opaheke-Drury, Drury West	4	1
Red Hills	1	2
Pukekohe, Paerata	3	3
Takaanini	2	4
Whenuapai, Scott Point	8	5
Silverdale-Dairy Flat, Wainui East	9	6
Kumeu-Huapai, Riverhead	6	7
Warkworth	7	8
Rural and Coastal Settlements	5	9

Figure 15: Overall Rank position of FUA Groups

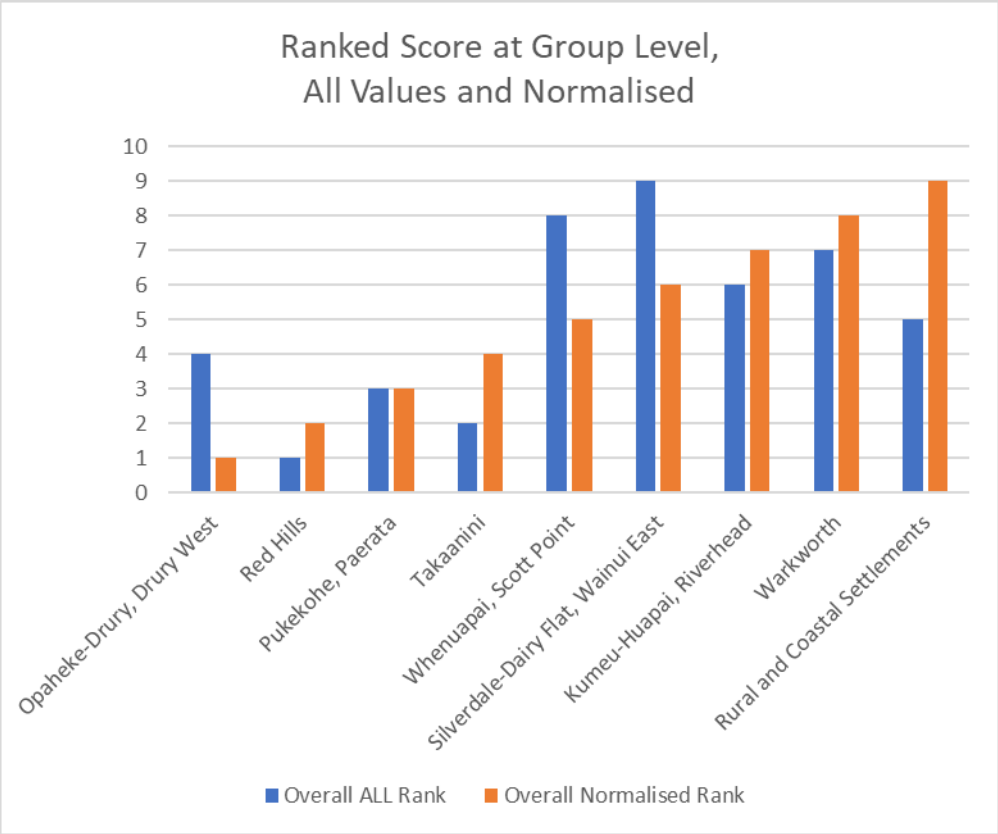


Figure 16: Graphical representation of Figure 15 above.

Appendix 1: FUA Classified MSM Zones

Zone	MSM_Local_Board	MSM_Category	MSM_Town/MetroCentre 1	MSM_RTN / FTN	MSM_Area Classification	MSM_Business Area	MSM_Area notes	_buffer_label	_buffer_id	FUA_Area	FUA_Area_Ha	FUA_Regional_A	FUA_FULSSgroup	FUA_FUZorLive2022	_FUA_intersectcount	FUA_name_concatenated	SP_PlanTitle	SP_YearAdopte	_SP_intersectcount	CO2e_Car_Orig_perHH	CO2e_Car_Dest_perHH	CO2e_Car_Orig_perHHplusEmpldiv2	CO2e_Car_Dest_perHHplusEmpldiv2	CO2e_Car_24hr_by_Dest	CO2e_Car_24hr_by_Orig	CO2e_HCV_24hr_by_Dest	CO2e_HCV_24hr_by_Orig	Emp	HH	Pop	VKT_Car_24hr_by_Dest	VKT_Car_24hr_by_Orig	VKT_HCV_24hr_by_Dest	VKT_HCV_24hr_by_Orig
3	Rodney	FUA	Rural Settlement		Rural settlement		Wellsford	67km to 68kr	67	Wellsford	15.642644	North	Rural and Coastal Settlements	FUZ	3	Wellsford,Wellsford,Wellsford			0	2.7292419	2.8555957	2.4192	2.5312	791	756	1028	1218	71	277	622	12349	11896	1841	2204
4	Rodney	FUA	Wellsford Town Centre		Rural settlement		Wellsford	62km to 63kr	62	Wellsford	6.234634	North	Rural and Coastal Settlements	FUZ	3	Wellsford,Wellsford,Wellsford			0	12.548077	13.653846	4.7889908	5.2110092	1420	1305	1686	1754	337	104	245	22172	20429	3039	3166
9	Rodney	FUA			Rural node		Warkworth N	51km to 52kr	51	Warkworth N	95.93764	North	Warkworth	Live Zone	3	Warkworth North,Warkworth North East,Warkworth North East	Warkworth Structure F	0	1	2.345521	2.3948812	2.1032787	2.147541	1310	1283	1938	2510	126	547	1031	20429	20068	3488	4524
10	Rodney	FUA			Rural node		Warkworth N	51km to 52kr	51	Warkworth N	10.999181	North	Warkworth	FUZ	4	Warkworth North,Warkworth North,Warkworth North,Warkworth North	Warkworth Structure F	0	1	2.6410473	2.7347973	2.2240398	2.3029872	3238	3127	3308	3974	444	1184	2649	48771	47005	5779	6952
11	Rodney	FUA			Rural node		Warkworth N	53km to 54kr	53	Warkworth N	7.2603035	North	Warkworth	FUZ	7	Warkworth North,Warkworth North,Warkworth North,Warkworth North,Warkworth Nor	Warkworth Structure F	0	1	13.845902	15.12459	3.581849	3.9126378	4613	4223	9460	11270	1748	305	650	71645	65668	17147	20345
12	Rodney	FUA			Future Urban Area		Warkworth N	50km to 51kr	50	Warkworth N	93.27102	North	Warkworth	Live Zone	9	Warkworth North,Warkworth South,Warkworth South,Warkworth South,Warkworth Sou	Warkworth Structure F	0	1	4.1292876	4.7124011	2.7134807	3.0966623	3572	3130	4804	5052	791	758	1589	53621	46948	8443	8894
13	Rodney	FUA			Rural node		Warkworth N	50km to 51kr	50	Warkworth N	4.4923153	North	Warkworth	FUZ	4	Warkworth North,Warkworth North,Warkworth North East,Warkworth North East	Warkworth Structure F	0	1	3.0576923	3.125	2.6685315	2.7272727	975	954	193	277	91	312	659	14973	14735	335	490
14	Rodney	FUA			Rural node		Warkworth S	47km to 48kr	47	Warkworth S	420.21185	North	Warkworth	FUZ	3	Warkworth South,Warkworth South,Warkworth South	Warkworth Structure F	0	1	2.6867978	2.752809	2.3987461	2.4576803	3920	3826	1118	617	342	1424	3204	60326	58805	1996	1113
15	Rodney	FUA			Rural node		Warkworth S	48km to 49kr	48	Warkworth S	420.21185	North	Warkworth	FUZ	4	Warkworth South,Warkworth South,Warkworth South,Warkworth North	Warkworth Structure F	0	1	3.2070588	3.3891765	2.4786325	2.6193853	7202	6815	3458	2038	1249	2125	4785	108095	102538	6092	3613
18	Rodney	FUA			Future Urban Area		Hatfields Bea	33km to 34kr	33	Hatfields Bea	0.8742282	North	Rural and Coastal Settlements	Live Zone	2	Hatfields Beach,Hatfields Beach			0	2.8936006	2.7424827	2.5495924	2.4164402	3557	3753	2205	2799	350	1297	2947	54968	58366	3876	5065
31	Rodney	FUA			Future Urban Area		Upper Orewa	31km to 32kr	31	Wainui East	221.7928	North	Silverdale-Dairy Flat, Wainui East	FUZ	2	Wainui East,Upper Orewa			0	3.6125882	3.3342377	3.2725485	3.0203981	6145	6658	2380	1975	383	1843	4843	94942	103214	4240	3557
32	Rodney	FUA			Future Urban Area		Wainui East	31km to 32kr	31	Wainui East	221.7928	North	Silverdale-Dairy Flat, Wainui East	FUZ	1	Wainui East			0	3.6789264	3.4095427	3.2971047	3.0556793	3430	3701	1705	1451	233	1006	2634	53158	57652	3032	2616
33	Rodney	FUA			Future Urban Area		Wainui East (	28km to 29kr	28	Wainui East	221.7928	North	Silverdale-Dairy Flat, Wainui East	FUZ	5	Wainui East,Wainui East,Wainui East,Wainui East,Wainui East	Silverdale West Dairy	0	1	3.1736037	3.0021345	2.590302	2.4503484	8439	8921	504	160	1266	2811	7275	127385	135224	863	246
34	Rodney	FUA		Dairy Flat Ra	RTN Catchment		Wainui East	25km to 26kr	25	Silverdale We	240.02432	North	Silverdale-Dairy Flat, Wainui East	FUZ	3	Silverdale West,Postman Road,Wainui East	Silverdale West Dairy	0	1	376.5	391.70833	4.266289	4.4386213	9401	9036	1179	373	4188	24	55	143158	137630	2045	628
36	Hibiscus and	FUA		Dairy Flat Ra	RTN Catchment		Dairy Flat Ea	21km to 22kr	21	Dairy Flat Ea	279.13766	North	Silverdale-Dairy Flat, Wainui East	FUZ	1	Dairy Flat East			0	3.8509852	3.4919951	3.4476295	3.1262404	5671	6254	3093	2328	380	1624	4163	86123	95187	5547	4184
39	Rodney	FUA			Future Urban Area		Wainui East	26km to 27kr	26	Wainui East	331.62045	North	Silverdale-Dairy Flat, Wainui East	FUZ	1	Wainui East	Silverdale West Dairy	0	1	3.3654947	3.2354865	2.564486	2.4654206	3957	4116	2625	3034	764	1223	3047	59621	62290	4568	5340
40	Rodney	FUA		Dairy Flat Ra	RTN Catchment		Silverdale	22km to 23kr	22	Silverdale We	240.02432	North	Silverdale-Dairy Flat, Wainui East	FUZ	3	Silverdale West,Postman Road,Dairy Flat	Silverdale West Dairy	0	1	9.9577465	9.8507042	3.5174129	3.479602	3497	3535	13526	12522	1300	355	985	52502	53135	23843	21684
41	Rodney	FUA			Future Urban Area		Dairy Flat	22km to 23kr	22	Dairy Flat	881.69464	North	Silverdale-Dairy Flat, Wainui East	FUZ	2	Dairy Flat,Dairy Flat	Silverdale West Dairy	0	1	2.9970209	2.7130089	2.6910388	2.4360232	2732	3018	568	422	229	1007	2767	41400	45895	998	747
42	Rodney	FUA			Future Urban Area		Silverdale Da	23km to 24kr	23	Dairy Flat	2.3907657	North	Silverdale-Dairy Flat, Wainui East	FUZ	4	Dairy Flat,Postman Road,Dairy Flat,Silverdale West	Silverdale West Dairy	0	1	18.766871	19.118609	3.7063813	3.7758481	9349	9177	7613	9889	3974	489	1371	142464	140225	13215	17557
43	Rodney	FUA			Future Urban Area		Dairy Flat	23km to 24kr	23	Dairy Flat	609.51385	North	Silverdale-Dairy Flat, Wainui East	FUZ	1	Dairy Flat			0	3.8651685	3.5655431	3.3560976	3.095935	952	1032	217	288	81	267	731	14820	16118	374	503
44	Rodney	FUA			Future Urban Area		Dairy Flat	22km to 23kr	22	Dairy Flat	881.69464	North	Silverdale-Dairy Flat, Wainui East	FUZ	4	Dairy Flat,Dairy Flat,Dairy Flat,Dairy Flat			0	3.4253731	3.152452	3.0585436	2.8148501	2957	3213	725	988	225	938	2581	46126	50280	1249	1708
45	Rodney	FUA			Future Urban Area		Dairy Flat	20km to 21kr	20	Dairy Flat	881.69464	North	Silverdale-Dairy Flat, Wainui East	FUZ	2	Dairy Flat,Dairy Flat			0	2.4074519	2.2836538	2.1428189	2.032629	3800	4006	768	1078	411	1664	4629	58178	61695	1262	1821
46	Rodney	FUA			Future Urban Area		Dairy Flat	20km to 21kr	20	Dairy Flat	881.69464	North	Silverdale-Dairy Flat, Wainui East	FUZ	3	Dairy Flat,Dairy Flat,Dairy Flat			0	2.8250919	2.6260727	2.4840101	2.309019	6426	6913	1755	2315	672	2447	6717	99276	107148	2990	3978
69	Rodney	FUA	Rural Settlement		Rural settlement		Albany Villag	17km to 18kr	17	Albany Villag	4.7486534	North	Rural and Coastal Settlements	Live Zone	4	Albany Village,Albany Village,Dairy Flat,Albany Village			0	4.0878939	3.9635158	2.960961	2.8708709	2390	2465	1833	1990	459	603	1547	35341	36532	2790	3189
142	Rodney	FUA			Future Urban Area		Kumeu	23km to 24kr	23	Kumeu	567.3581	North-West	Kumeu-Huapai, Riverhead	FUZ	1	Kumeu			0	2.648	2.5937778	2.3438238	2.2958301	2918	2979	243	172	292	1125	2579	45431	46478	442	288
143	Rodney	FUA			Future Urban Area		Huapai	24km to 25kr	24	Kumeu	83.36499	North-West	Kumeu-Huapai, Riverhead	FUZ	2	Kumeu,Kumeu			0	2.7554745	2.685219	2.4784571	2.4152647	2943	3020	171	133	245	1096	2598	46918	48222	309	231
144	Rodney	FUA	Kumeu-Huapai Town Centr		Metro and town centre		Huapai	22km to 23kr	22	Huapai	43.869205	North-West	Kumeu-Huapai, Riverhead	FUZ	4	Huapai,Kumeu,Kumeu,Kumeu			0	2.2058824	2.1792453	2.0111308	1.9868454	3927	3975	6266	6391	349	1802	4005	61662	62494	11290	11434
145	Rodney	FUA	Kumeu-Huap	Kumeu Town	Metro and town centre		Huapai	20km to 21kr	20	Huapai	43.869205	North-West	Kumeu-Huapai, Riverhead	FUZ	7	Huapai,Huapai,Huapai,Huapai,Huapai,Huapai,Huapai			0	2.5793226	2.5727867	2.1591644	2.1536931	4330	4341	3329	3686	655	1683	3992	67080	67301	5873	6576
147	Rodney	FUA	Rural Settlement		Rural settlement		Riverhead	18km to 19kr	18	Riverhead	8.144364	North-West	Kumeu-Huapai, Riverhead	FUZ	2	Riverhead,Riverhead			0	2.9468733	2.876591	2.5189215	2.4588458	5198	5325	3028	1887	614	1807	4737	81684	83901	5325	3408
151	Rodney	FUA			Future Urban Area		Kumeu	22km to 23kr	22	Kumeu	567.3581	North-West	Kumeu-Huapai, Riverhead	FUZ	1	Kumeu			0	3.152648	3.0778816	2.8085106	2.7419056	2964	3036	1481	2349	236	963	2188	47046	48236	2706	4302
152	Rodney	FUA	Kumeu-Huap	Kumeu Town	Metro and town centre		Kumeu	21km to 22kr	21	Kumeu	69.31368	North-West	Kumeu-Huapai, Riverhead	Live Zone	2	Kumeu,Kumeu			0	9.3936782	9.6451149	3.3605757	3.4505269	6713	6538	10312	14141	2499	696	1553	104941	102139	17838	24824
158	Henderson-N	FUA			Future Urban Area		Red Hills live	16km to 17kr	16	Red Hills	590.4786	North-West	Red Hills	Live Zone	1	Red Hills			0	2.5761813	2.4267117	2.3542631	2.2176691	5033	5343	54	46	391	2074	4873	78578	83593	98	82
159	Henderson-N	FUA			Future Urban Area		Red Hills live	15km to 16kr	15	Red Hills	590.4786	North-West	Red Hills	Live Zone	1	Red Hills			0	2.3144947	2.2160904	2.1141816	2.024294	6666	6962	67	55	570	3008	7085	100796	105016	118	95
160	Henderson-N	FUA			Future Urban Area		Red Hills live	15km to 16kr	15	Red Hills	590.4786	North-West	Red Hills	Live Zone	1	Red Hills			0	2.1011673	2.0622568	1.8567335	1.8223496	1590	1620	712	459	203	771	1812	24263	24726	1277	821
161	Henderson-N	FUA			Future Urban Area		Red Hills live	15km to 16kr	15	Red Hills	590.4786	North-West	Red Hills	Live Zone	1	Red Hills			0	2.0744401	1.9822134	1.8755211	1.7921382	3009	3149	466	342	322	1518	3685	46253	48465	838	612
163	Henderson-N	FUA		Westgate No	RTN Catchment		Red Hills Nor	16km to 17kr	16	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	3	Whenuapai,Red Hills,Red Hills	Whenuapai Structure	2016	1	9.1681957	9.559633	2.8730235	2.9956876	3126	2998	25951	21123	1433	327	813	48428	46525	45679	37447
165	Upper Harbor	FUA		Westgate No	RTN Catchment		Whenuapai S	14km to 15kr	14	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	2	Whenuapai,Red Hills	Whenuapai Structure	2016	1	7.481405	7.7758264	2.6936954	2.7997024	7527	7242	6052	4724	3441	968	2400	115063	110630	10493	8271
166	Upper Harbor	FUA		Trig Road RT	RTN Catchment		Whenuapai S	13km to 14kr	13	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	1	Whenuapai	Whenuapai Structure	2016	1	16.59751	17.485477	2.9531192	3.1111111	4214	4000	786	687	2227	241	575	64068	60705	1338	1167
168	Upper Harbor	FUA		Westgate No	RTN Catchment		Whenuapai S	16km to 17kr	16	Whenuapai	31.427029	North-West	Whenuapai, Scott Point	Live Zone	3	Whenuapai,Whenuapai,Red Hills	Whenuapai Structure	2016	1	2.2986322	2.2332827	2.0883673	2.0289955	5878	6050	2489	1820	530	2632	6573	91141	94061	4526	3243
169	Upper Harbor	FUA			Future Urban Area		Whenuapai S	15km to 16kr	15	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	1	Whenuapai	Whenuapai Structure	2016	1	2.5421826	2.4238411	2.2911639	2.1845076	8418	8829	3399	2221	761	3473	8609	130318	136322	6085	3843
170	Upper Harbor	FUA			Future Urban Area		Whenuapai S	14km to 15kr	14	Whenuapai	55.37415	North-West	Whenuapai, Scott Point	Live Zone	2	Whenuapai,Whenuapai	Whenuapai Structure	2016	1	2.6311755	2.5238501	2.3917925	2.2942315	2963	3089	644	475	235	1174	2916	46222	48115	1151	826
171	Upper Harbor	FUA			Future Urban Area		Whenuapai S	13km to 14kr	13	Whenuapai	55.37415	North-West	Whenuapai, Scott Point	Live Zone	5	Whenuapai,Whenuapai,Whenuapai,Whenuapai,Whenuapai	Whenuapai Structure	2016	1	2.6688228	2.5433376	2.4185229	2.3048066	3932	4126	2836	2118	320	1546	3832	61195	64195	5093	3694
172	Upper Harbor	FUA			Future Urban Area		Whenuapai L	14km to 15kr	14	Whenuapai	16.814331	North-West	Whenuapai, Scott Point	Live Zone	3	Whenuapai,Whenuapai,Whenuapai	Whenuapai Structure	2016	1	2.6717364	2.6248416	2.2913043	2.251087	2071	2108	1315	5207	262	789	2006	32127	32588	2363	9275
174	Upper Harbor	FUA		Westgate RT	RTN Catchment		Whenuapai S	13km to 14kr	13	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	1	Whenuapai	Whenuapai Structure	2016	1	2.2021627	2.1198872	1.9797126	1.9057481	4509	4684	1792	3173	478	2127	5505	68355	71263	3195	5680
176	Upper Harbor	FUA		Hobsonville I	RTN Catchment		Whenuapai S	13km to 14kr	13	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	1	Whenuapai	Whenuapai Structure	2016	1	5	4.9807692	2.9030007	2.8918353	2072	2080	21	92	601	416	1119	32007	32080	37	159
177	Upper Harbor	FUA		Hobsonville I	RTN Catchment		Whenuapai S	12km to 13kr	12	Whenuapai	3.6082573	North-West	Whenuapai, Scott Point	FUZ	2	Whenuapai,Whenuapai	Whenuapai Structure	2016	1	2.779476	2.6404658	2.5042623	2.3790164	3628	3819	19	73	302	1374	3692	55688	58992	34	126
180	Upper Harbor	FUA		Hobsonville I	RTN Catchment		Hobsonville/	10km to 11kr	10	Whenuapai-S	151.92422	North-West	Whenuapai, Scott Point	Live Zone	1	Whenuapai-Scotts Point			0	2.7145833	2.59875	2.4237351	2.3203125	6237	6515	2670	3502	576	2400	6436	95969	100435	4722	6284
534	Franklin	FUA			Future Urban Area		Takaanini	24km to 25kr	24	Takanini	463.18558	South	Takaanini	FUZ	1	Takanini			0	3.5078125	3.6796875	2.1690821	2.2753623	471	449	289	223	158	128	329	7145	6797	464	360
535	Franklin	FUA			Future Urban Area		Takaanini	25km to 26kr	25	Takanini	463.18558	South	Takaanini	FUZ	1	Takanini			0	4.2204082	2.3877551	1.9899329	1.9630872	585	593	422	362	106	245	646	8914	8963	694	594
548	Papakura	FUA			Future Urban	Hingaia Road	Hingaia	28km to 29kr	28	Hingaia	78.72145	South	Opaheke-Drury, Drury West	Live Zone	1	Hingaia			0	2.9610967	2.8747684	2.5910196	2.5154806	7759	7992	3802	2382	771	2699	7018	116776	117918	6394	3755
549	Papakura	FUA			Future Urban	Hingaia Road	Hingaia	29km to 30kr	29	Hingaia	78.72145	South	Opaheke-Drury, Drury West	Live Zone	2	Hingaia,Hingaia			0	2.6722689	2.5371687	2.4264123	2.3037417	7850	8268	1535	1765	627	3094	8258	116115	120646	2533	2832
550	Papakura	FUA	Drury Train S	RTN Catchme	Drury Industr		Drury Opahel	31km to 32kr	31	Opaheke/Dru	4.6287084	South	Opaheke-Drury, Drury West	Live Zone	6	Opaheke/Drury,Opaheke/Drury,Opaheke/Drury,Drury West,Drury West,Opaheke/Drury	Drury Structure Plan	0	1	3.3854095	3.4177564	2.256422	2.2779817	4966	4919	7858	7540	1454	1453	3620	74327	73278	13106	12416
551	Franklin	FUA			Future Urban	Boundary Roa	Drury Opahel	32km to 33kr	32	Opaheke/Dru	1104.0483	South	Opaheke-Drury, Drury West	FUZ	1	Opaheke/Drury	Drury Structure Plan	0	1	3.6346389	3.5911873	2.4678994	2.438396	5868	5939	195	167	1545	1634	4422	88531	89271	306	260
554	Franklin	FUA	Drury Train S	RTN Catchment			Drury Opahel	34km to 35kr	34	Drury West	737.1265	South	Opaheke-Drury, Drury West	FUZ	3	Drury West,Drury South,Opaheke/Drury	Drury Structure Plan	0	1	2.6808511	2.656535	2.0832595	2.0643637	6992	7056	10144	11075	1510	2632	6614	106119	106759	16898	18453
555	Franklin	FUA	Drury Train S	RTN Catchment			Drury Opahel	33km to 34kr	33	Opaheke/Dru	1104.0483	South	Opaheke-Drury, Drury West	FUZ	1	Opaheke/Drury	Drury Structure Plan	0	1	2.2239488	2.1489945	1.9857172	1.9187921	4702	4866	2330	2609	525	2188	5524	70776	72601	3860	4257
556	Franklin	FUA			Future Urban	Drury South	Drury South L	36km to 37kr	36	Drury West	737.1265	South	Opaheke-Drury, Drury West	FUZ	4	Drury West,Drury South,Drury South,Opaheke/Drury	Drury Structure Plan	0	1	15.519634	16.39267	3.4493091	3.6433455	12524	11857	6034	8779	5347	764	1992	192022	181374	9979	14946
557	Franklin	FUA	Drury West T	RTN Catchment			Drury West S	35km to 36kr	35	Drury West	737.1265	South	Opaheke-Drury, Drury West	FUZ	1	Drury West	Drury Structure Plan	0	1	2.5460798	2.3961486	2.117849	1.993135	1742	1851	424	556	294	727	1739	27249	28768	735	964
558	Franklin	FUA			Future Urban Area		Drury West S	35km to 36kr	35	Drury West	737.1265	South	Opaheke-Drury, Drury West	FUZ	1	Drury West	Drury Structure Plan	0	1	20.866667	21.586667	3.7620192	3.8918269	1619	1565	521	697	682	75	114	25363	24489	917	1233
559	Franklin	FUA	Drury West T	RTN Catchment			Drury West S	34km to 35kr	34	Drury West	737.1265	South	Opaheke-Drury, Drury West	FUZ	3	Drury West,Drury West,Opaheke/Drury	Drury Structure Plan	0	1	2.3761931	2.2094329	1.97942	1.8405051	3935	4232	287	273	714	1781	4577	61009	65098	485	458
560	Franklin	FUA	Drury West T	RTN Catchment			Drury West S	33km to 34kr	33	Drury West	737.1265	South	Opaheke-Drury, Drury West	FUZ	1	Drury West	Drury Structure Plan	0	1	2.3846608	2.1882006	2.1024707	1.9292588	3709	4042	247	214	455	1695	4460	57569	62291	422	363
561	Franklin	FUA	Drury West T	RTN Catchment			Drury - Auran	32km to 33kr	32	Drury West	34.772686	South	Opaheke-Drury, Drury West	Live Zone	3	Drury West,Drury West,Drury West	Drury Structure Plan	0	1	2.4551446	2.3621384	2.2055921	2.1220395	6451	6705	727	412	618	2731	6752	99321	102190	1294	759
562	Franklin	FUA	Drury West T	RTN Catchment			Drury West S	32km to 33kr	32	Drury West	56.02289	South	Opaheke-Drury, Drury West	Live Zone	3	Drury West,Drury West,Drury West	Drury Structure Plan	0	1	2.397411	2.3187702	2.150675	2.0801277	7165	7408	755	407	709	3090	7641	108943	111468	1303	719
567	Franklin	FUA	Paerata Trair	RTN Catchment			Paerata 1st h	35km to 36kr	35	Paerata	100.58757	South	Pukekohe, Paerata	FUZ	3	Paerata,Paerata,Paerata	Pukekohe - Paerata Str	0	1	2.3709239	2.1576087	2.1319487	1.9401344	1588	1745	87	169	165	736	1960	25177	27494	146	301
568	Franklin	FUA	Paerata Trair	RTN Catchment			Paerata live a	35km to 36kr	35	Paerata	22.414768	South	Pukekohe, Paerata	Live Zone	5	Paerata,Paerata,Paerata,Paerata,Paerata	Pukekohe - Paerata Str	0	1	2.4151847	2.2103283	2.1566651	1.9737364	6463	7062	98	169	701	2924	7717	102488	111304	166	302
571	Franklin	FUA	Paerata Trair	RTN Catchment			Paerata 1st h	37km to 38kr	37	Pukekohe	367.0225	South	Pukekohe, Paerata	FUZ	2	Pukekohe,Paerata	Pukekohe - Paerata Str	0	1	2.6824495	2.4760101	2.3358988	2.1561297	3922	4249	4117	6809	470	1584	4388	62181	66964	7374	12207
574	Franklin	FUA			Future Urban Area		Pukekohe No	39km to 40kr	39	Pukekohe	55.22371	South	Pukekohe, Paerata	FUZ	4	Pukekohe,Pukekohe,Pukekohe,Pukekohe	Pukekohe - Paerata Str	0	1	2.3928013	2.1458529	2.1663361	1.94276	6856	7645	8569	11840	668	3195	8269	103702	115039	14877	20455
578	Franklin	FUA	Pukekohe Tra	RTN Catchment			Pukekohe	41km to 42kr	41	Pukekohe	340.78665	South	Pukekohe, Paerata	FUZ	1	Pukekohe	Pukekohe - Paerata Str	0	1	2.747646	2.5117702	2.3651469	2.1621074	5335	5836	2457	4528	687	2124	5255	83820	91057	4451	8233
579	Franklin	FUA			Future Urban Area		Pukekohe So	44km to 45kr	44	Pukekohe	340.78665	South	Pukekohe, Paerata	FUZ	3	Pukekohe,Pukekohe South,Pukekohe South	Pukekohe - Paerata Str	0	1	5.5083682	5.460251	3.0351585	3.0086455	2610	2633	1705	2932	779	478	1228	40485	40667	3050	5259
580	Franklin	FUA	Pukekohe Tra	RTN Catchment			Pukekohe So	43km to 44kr	43	Pukekohe	340.78665	South	Pukekohe, Paerata	FUZ	2	Pukekohe,Pukekohe South	Pukekohe - Paerata Str	0	1	3.7477876	3.5685841	2.773639	2.6410151	3226	3388	1097	1789	635	904	2248	48774	51151	1884	3125
583	Franklin	FUA			Future Urban Area		Pukekohe No	39km to 40kr	39	Pukekohe	367.0225	South	Pukekohe, Paerata	FUZ	1	Pukekohe	Pukekohe - Paerata Str	0	1	4.0635838	3.9633911	2.7177835	2.6507732	2057	2109	345	284	514	519	1321	32461	33184	614	501
587	Franklin	FUA	Rural Settlement		Rural settlement		Kingseat	30km to 31kr	30	Kingseat	116.15113	South	Rural and Coastal Settlements	Live Zone	3	Kingseat,Kingseat,Kingseat			0	3.8246838	3.3406018	3.2846442	2.8689139	7660	8770	2069	1380	754	2293	6143	123124	139755	3733	2555

Appendix 2: MSM Zones NOT identified as FUA, that intersect identified FULSS Future Urban Areas

Zone	MSM_Local_Board	MSM_Category_REVISED	MSM_Town/MetroCentre 1	MSM_RTN/FTN	MSM_Area Classification	MSM_BusinessArea	MSM_Area notes	_buffer_label	_buffer_id	FUA_Area	FUA_Area_Ha	FUA_Regional_A	FUA_FULSSgroup	FUA_FUZorLive2022	_FUA_intersectcount	FUA_name_concatenated	SP_PlanTitle	SP_YearAdopte	_SP_intersectcount	CO2e_Car_Orig_perHH	CO2e_Car_Dest_perHH	CO2e_Car_Orig_perHHpl usEmpldiv2	CO2e_Car_Dest_perHHpl usEmpldiv2	CO2e_Car_2 4hr_by_Dest	CO2e_Car_2 4hr_by_Orig	CO2e_HCV_ 24hr_by_Dest	CO2e_HCV_ 24hr_by_Orig	Emp	HH	Pop	VKT_Car_24 hr_by_Dest	VKT_Car_24 hr_by_Orig	VKT_HCV_2 4hr_by_Dest	VKT_HCV_2 4hr_by_Orig
2	Rodney	Urban	Wellsford Town Centre		Rural settlement		Wellsford	65km to 66kr	65	Wellsford	2.6618342	North	Rural and Coastal Settlements	FUZ	4	Wellsford,Wellsford,Wellsford,Wellsford			0	4.7267081	5.3726708	3.083052	3.5043889	2595	2283	3858	4080	515	483	1021	40355	35656	6873	7296
5	Rodney	Rural			Remaining rural			57km to 58kr	57	Wellsford	2.6618342	North	Rural and Coastal Settlements	FUZ	4	Wellsford,Wellsford,Warkworth South,Warkworth North	Warkworth Structure F	0	1	4.6322263	4.7749077	3.5179823	3.6263428	7764	7532	8682	10078	1030	1626	3732	117750	113962	13729	16067
7	Rodney	Rural	Rural Settlement		Rural settlement		Algies Bay / S	44km to 45kr	44	Algies Bay	38.831455	North	Rural and Coastal Settlements	FUZ	1	Algies Bay			0	2.7473344	2.8432956	2.3453317	2.4272514	8800	8503	3546	5978	1061	3095	6446	139174	134910	6265	10887
8	Rodney	Urban			Rural node		Warkworth	49km to 50kr	49	Warkworth S	420.21185	North	Warkworth	FUZ	2	Warkworth South,Warkworth South	Warkworth Structure F	0	1	3.3613647	3.5651129	2.3289496	2.4701182	7419	6995	17595	20892	1845	2081	4515	113220	106713	31204	37069
17	Rodney	Rural	Rural Settlement		Rural settlement		Kaukapakapa	33km to 34kr	33	Helensville	35.037827	North-West	Rural and Coastal Settlements	FUZ	3	Helensville,Helensville,Helensville			0	4.5676819	4.3730964	3.8977259	3.7316809	15507	16197	4989	5657	1219	3546	8824	231158	240784	7659	8981
24	Hibiscus and	Urban			Remaining urban		Hibiscus Coa	27km to 28kr	27	Hibiscus Coa	42.89702	North	Rural and Coastal Settlements	Live Zone	1	Hibiscus Coast			0	2.0445765	1.9702823	1.7751021	1.7105999	3978	4128	513	1073	613	2019	4312	60654	63088	844	1848
30	Hibiscus and	Urban	Silverdale To	Hibiscus Coa	Metro and town centre		Hibiscus Coa	26km to 27kr	26	Hibiscus Coa	58.753872	North	Rural and Coastal Settlements	Live Zone	1	Hibiscus Coast			0	16.604478	17.065299	3.6289501	3.7296636	9147	8900	11121	9291	3833	536	1246	139044	135097	19017	16289
35	Hibiscus and	Urban		Hibiscus Coa	RTN Catchment		Hibiscus Coa	25km to 26kr	25	Silverdale We	28.373713	North	Silverdale-Dairy Flat, Wainui East	FUZ	2	Silverdale West,Hibiscus Coast			0	5.0242634	5.1039861	2.732328	2.7756833	2945	2899	701	1664	968	577	1527	45600	44902	1225	3017
37	Hibiscus and	Rural			Remaining rural			25km to 26kr	25	Hibiscus Coa	58.753872	North	Rural and Coastal Settlements	Live Zone	1	Hibiscus Coast			0	5.3201268	5.2171157	3.8212863	3.7472965	3292	3357	4886	3524	495	631	1552	51137	52267	8945	6460
38	Rodney	Rural			Remaining rural			26km to 27kr	26	Wainui East	221.7928	North	Silverdale-Dairy Flat, Wainui East	FUZ	4	Wainui East,Wainui East,Silverdale West,Wainui East			0	5.3542435	5.2546125	3.4221698	3.3584906	1424	1451	6218	5066	306	271	676	21850	22353	10867	8960
68	Upper Harbou	Urban			Urban node		Albany Villag	15km to 16kr	15	Albany Villag	4.7486534	North	Rural and Coastal Settlements	Live Zone	1	Albany Village			0	3.4826498	3.4763407	2.5481823	2.5435661	2204	2208	8897	7607	465	634	1767	33428	33603	15496	13010
139	Rodney	Rural	Rural Settlement		Rural settlement		Waimauku Fl	27km to 28kr	27	Waimauku	19.275734	North-West	Rural and Coastal Settlements	Live Zone	2	Waimauku,Waimauku			0	5.4184471	5.3491402	4.2737361	4.2190711	10265	10398	7013	7799	1028	1919	4674	164543	166907	13088	14865
140	Rodney	Rural	Rural Settlement		Rural settlement			26km to 27kr	26	Waimauku	19.275734	North-West	Rural and Coastal Settlements	Live Zone	2	Waimauku,Kumeu			0	8.457976	8.5643225	4.5891112	4.6468125	4993	4931	6986	10218	983	583	1571	78109	77251	12347	18585
146	Rodney	Rural			Remaining rural			19km to 20kr	19	Riverhead	73.63943	North-West	Kumeu-Huapai, Riverhead	FUZ	1	Riverhead			0	4.0635452	3.9765886	2.8125	2.7523148	1189	1215	6306	3580	266	299	720	18726	19190	11520	6318
157	Henderson-M	Urban			Urban node			14km to 15kr	14	Red Hills	590.4786	North-West	Red Hills	Live Zone	1	Red Hills			0	10.588235	11.117647	2.6470588	2.7794118	189	180	150	110	102	17	42	2880	2740	270	198
162	Rodney	Rural			Remaining rural			17km to 18kr	17	Red Hills	590.4786	North-West	Red Hills	Live Zone	1	Red Hills			0	7.6493506	7.7532468	3.2451791	3.2892562	597	589	375	112	209	77	196	9380	9275	673	199
164	Henderson-M	Urban	Massey North	Westgate RT	Metro and town centre		Redhills FUA	15km to 16kr	15	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	3	Whenuapai,Red Hills,Red Hills			0	7.5280164	7.6425358	2.4272715	2.4641962	18686	18406	2972	4849	10276	2445	7158	281313	277292	5204	8348
167	Upper Harbou	Urban			Urban Development Areas			12km to 13kr	12	Whenuapai	55.37415	North-West	Whenuapai, Scott Point	Live Zone	1	Whenuapai	Whenuapai Structure	2016	1	3.026616	2.7908745	2.5636071	2.3639291	734	796	979	671	95	263	652	11448	12413	1768	1180
173	Upper Harbou	Rural			Remaining rural		Whenuapai -	13km to 14kr	13	Whenuapai	55.37415	North-West	Whenuapai, Scott Point	Live Zone	3	Whenuapai,Whenuapai,Whenuapai	Whenuapai Structure	2016	1	24.410959	26.657534	3.5322101	3.8572844	1946	1782	3279	11596	863	73	183	30232	27554	5880	20735
175	Upper Harbou	Urban		Trig Road RT S	Urban node		Whenuapai	12km to 13kr	12	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	1	Whenuapai	Whenuapai Structure	2016	1	7.5606557	7.9967213	2.7289941	2.8863905	2439	2306	4647	6364	1080	305	787	37714	35652	8262	11250
178	Upper Harbou	Urban		Hobsonville F	RTN Catchment		Hobsonville/	11km to 12kr	11	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	1	Whenuapai			0	2.6516008	2.5178908	2.3320911	2.2144928	2674	2816	1397	1271	291	1062	2669	40916	42992	2450	2207
182	Upper Harbou	Urban		West Harbou	Urban node			12km to 13kr	12	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	1	Whenuapai			0	2.3222085	2.2723527	2.0244253	1.9809626	5515	5636	1298	1105	714	2427	6797	83003	84664	2116	1898
183	Henderson-M	Urban			Urban node			13km to 14kr	13	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	1	Whenuapai			0	2.2554923	2.1993491	1.9317073	1.8836237	2703	2772	529	239	412	1229	3920	40674	41558	889	407
186	Henderson-M	Urban	Westgate Mi	Westgate RT	Metro and town centre			14km to 15kr	14	Whenuapai	1058.9567	North-West	Whenuapai, Scott Point	FUZ	1	Whenuapai			0	5.3968	5.1130667	3.328071	3.1530998	9587	10119	15340	10645	2331	1875	5056	143991	151386	26990	18225
191	Waitakere Ra	Rural	Rural Settlen	Swanson Trai	RTN Catchment		Swanson	16km to 17kr	16	Swanson	26.800087	North-West	Rural and Coastal Settlements	Live Zone	1	Swanson			0	3.3824074	3.2935185	2.7790034	2.7059719	3557	3653	1146	455	469	1080	2882	51989	53528	1702	665
450	Franklin	Rural	Rural Settlement		Rural settlement		Maraetai	24km to 25kr	24	Maraetai	17.135918	South	Rural and Coastal Settlements	Live Zone	3	Maraetai,Maraetai,Maraetai			0	4.5017836	4.5445898	3.7690393	3.804878	3822	3786	2022	2514	327	841	2026	60671	60199	3451	4366
451	Franklin	Rural	Rural Settlement		Rural settlement		Clevedon and	34km to 35kr	34	Clevedon	110.46738	South	Rural and Coastal Settlements	Live Zone	4	Clevedon,Clevedon Waterways,Clevedon Waterways,Maraetai			0	7.4153646	7.2903646	5.0294377	4.9446571	16797	17085	17729	22263	2186	2304	5255	237292	241617	26218	33532
477	Mangere-Ota	Urban		Airport Oaks	RTN Catchme	Mangere	Includes Orua	15km to 16kr	15	Oruarangi	0.5672002	South	Rural and Coastal Settlements	Live Zone	10	Oruarangi,Oruarangi,Oruarangi,Oruarangi,Oruarangi,Oruarangi,Oruarangi,Oruarangi,Oruarangi,Oruarangi			0	20.434862	26.895413	2.6297521	3.461157	14658	11137	4565	6955	7380	545	1742	220025	165211	7446	11352
478	Mangere-Ota	Urban			Urban node	Airport	Airport. Inclu	17km to 18kr	17	Oruarangi	0.5672002	South	Rural and Coastal Settlements	Live Zone	5	Oruarangi,Oruarangi,Oruarangi,Oruarangi,Oruarangi			0	552.03226	739.90323	2.1267632	2.8505561	22937	17113	38218	31716	16031	31	85	338026	248656	61011	49074
479	Mangere-Ota	Urban		Airport Oaks	RTN Catchment			15km to 16kr	15	Puhinui	23.689646	South	Puhinui	Live Zone	1	Puhinui			0	1.8637275	2.0661323	1.5917843	1.7646555	4124	3720	7611	5704	682	1996	7006	61662	55240	13676	9916
480	Mangere-Ota	Urban			Remaining ur	Tidal Road	Manukau	15km to 16kr	15	Puhinui	23.689646	South	Puhinui	Live Zone	2	Puhinui,Puhinui			0	3.0702576	3.6323185	1.6563487	1.9595704	1551	1311	4057	4339	729	427	1624	22802	19374	6108	6872
509	Otara-Papatc	Urban			Urban node		Manukau - W	18km to 19kr	18	Puhinui	370.43655	South	Puhinui	Live Zone	4	Puhinui,Puhinui,Puhinui,Puhinui			0	42.898058	48.679612	3.1165579	3.5365897	20056	17674	93781	131698	10518	412	1075	292079	254916	146720	202670
510	Manurewa	Urban			Remaining urban			22km to 23kr	22	Takanini	2.9212565	South	Takaanini	FUZ	3	Takanini,Takanini,Takanini			0	2.9316055	2.8596112	2.2723214	2.2165179	3972	4072	1560	1401	806	1389	4221	59678	61166	2493	2257
511	Manurewa	Urban			Remaining urban			22km to 23kr	22	Takanini	125.69835	South	Takaanini	FUZ	1	Takanini			0	3.7274131	3.8540541	2.889554	2.9877282	4991	4827	673	603	751	1295	4045	75497	72362	1081	982
531	Papakura	Urban	Takanini Tow	Takaanini Tra	Metro and town centre		Takanini - exi	26km to 27kr	26	Takanini	19.610521	South	Takaanini	Live Zone	2	Takanini,Takanini			0	4.1645786	4.0916856	2.4954786	2.4518	7185	7313	1781	1522	2349	1756	4867	107107	108308	2908	2379
536	Franklin	Urban			Remaining urban		Cosgrave Roa	28km to 29kr	28	Takanini	56.1737	South	Takaanini	FUZ	1	Takanini			0	3.3091603	3.2671756	2.5537555	2.5213549	856	867	686	481	155	262	756	13145	13284	1145	837
541	Papakura	Urban			Remaining urban			28km to 29kr	28	Takanini	56.1737	South	Takaanini	FUZ	1	Takanini			0	2.2518248	2.1525547	1.945145	1.8593947	2949	3085	719	559	432	1370	3794	44775	46862	1159	983
544	Papakura	Urban			Urban Develc	Boundary Roa	Papakura	30km to 31kr	30	Opaheke/Dru	1104.0483	South	Opaheke-Drury, Drury West	FUZ	1	Opaheke/Drury	Drury Structure Plan	0	1	5.2565657	5.5737374	1.8841419	1.9978277	2759	2602	17144	16867	1772	495	1426	42356	39580	28358	27656
545	Papakura	Urban			Remaining urban			29km to 30kr	29	Opaheke/Dru	27.82951	South	Opaheke-Drury, Drury West	Live Zone	2	Opaheke/Drury,Opaheke/Drury	Drury Structure Plan	0	1	2.1206434	2.025916	1.8900836	1.8056551	2267	2373	660	392	273	1119	2930	34002	35329	1138	665
552	Franklin	Rural			Remaining rural			31km to 32kr	31	Opaheke/Dru	1104.0483	South	Opaheke-Drury, Drury West	FUZ	1	Opaheke/Drury	Drury Structure Plan	0	1	5.3574144	5.2319392	4.0401434	3.9455197	2752	2818	1482	1676	343	526	1322	41297	42178	2372	2685
553	Franklin	Rural			Remaining rural			34km to 35kr	34	Drury South	242.96968	South	Opaheke-Drury, Drury West	Live Zone	2	Drury South,Opaheke/Drury			0	4.7877698	4.7733813	2.8199153	2.8114407	1327	1331	166	242	388	278	706	20780	20704	283	445
563	Franklin	Rural			Remaining rural			31km to 32kr	31	Drury West	737.1265	South	Opaheke-Drury, Drury West	FUZ	1	Drury West	Drury Structure Plan	0	1	4.0617284	4	3.0747664	3.0280374	324	329	140	63	52	81	202	5079	5128	247	105
564	Franklin	Rural	Rural Settlement		Rural settlement		Karaka	31km to 32kr	31	Karaka	54.921146	South	Rural and Coastal Settlements	Live Zone	2	Karaka,Paerata			0	4.3447099	4.0068259	3.2268695	2.9759189	1174	1273	702	1118	203	293	760	18145	19449	1181	1829
565	Franklin	Rural	Rural Settlement		Rural settlement		Karaka North	27km to 28kr	27	Karaka	54.921146	South	Rural and Coastal Settlements	Live Zone	2	Karaka,Karaka			0	7	6.7067669	4.0655022	3.8951965	892	931	1342	1697	192	133	348	14192	14685	2390	3080
569	Franklin	Rural		Paerata Trair	RTN Catchment		Paerata	34km to 35kr	34	Drury West	737.1265	South	Opaheke-Drury, Drury West	FUZ	4	Drury West,Paerata,Paerata,Paerata	Drury Structure Plan	0	1	3.063197	2.7992565	2.6424372	2.4147515	2259	2472	106	215	257	807	2123	35759	38782	181	349
570	Franklin	Rural		Paerata Trair	RTN Catchment		Paerata + exp	36km to 37kr	36	Drury West	737.1265	South	Opaheke-Drury, Drury West	FUZ	1	Drury West	Drury Structure Plan	0	1	4.626506	4.5060241	2.8339483	2.7601476	374	384	224	332	105	83	221	5866	5984	388	576
572	Franklin	Rural			Remaining rural			37km to 38kr	37	Pukekohe	55.22371	South	Pukekohe, Paerata	FUZ	2	Pukekohe,Drury West	Drury Structure Plan	0	2	3.6938776	3.3702624	2.9362688	2.6790267	1156	1267	102	46	177	343	826	17462	18947	161	76
575	Franklin	Urban			Urban Development Areas		Pukekohe No	39km to 40kr	39	Pukekohe	367.0225	South	Pukekohe, Paerata	FUZ	1	Pukekohe	Pukekohe - Paerata Str	0	1	3.3198332	3.2632519	2.0880315	2.0524443	5479	5574	6806	5527	1981	1679	4261	84869	85848	12002	9639
576	Franklin	Urban			Urban Development Areas		Pukekohe (Be	40km to 41kr	40	Pukekohe	1.0023806	South	Pukekohe, Paerata	FUZ	8	Pukekohe,Pukekohe,Pukekohe,Pukekohe,Pukekohe,Pukekohe,Pukekohe,Pukekohe	Pukekohe - Paerata Str	0	1	1.86853	1.7536232	1.7080672	1.6030282	3388	3610	2873	2486	363	1932	5113	53860	57235	5186	4458
581	Franklin	Urban		Pukekohe Tra	RTN Catchment		Pukekohe	42km to 43kr	42	Pukekohe Sou	98.92794	South	Pukekohe, Paerata	FUZ	1	Pukekohe South	Pukekohe - Paerata Str	0	1	4.0641312	4.1293811	2.2628192	2.2991488	11075	10900	10455	10816	4270	2682	7403	175132	172416	18731	19434
584	Franklin	Rural			Remaining rural		Patumahoe +	36km to 37kr	36	Pukekohe	367.0225	South	Pukekohe, Paerata	FUZ	1	Pukekohe	Pukekohe - Paerata Str	0	1	4.3620523	4.0425944	3.4943777	3.2384645	4176	4506	1501	2598	513	1033	2742	66672	71588	2712	4625
589	Franklin	Rural	Rural Settlement		Rural settlement		Clarks Beach	32km to 33kr	32	Clarks Beach	0.498078	South	Rural and Coastal Settlements	FUZ	5	Clarks Beach,Clarks Beach,Clarks Beach,Clarks Beach,Clarks Beach			0	4.8966408	4.4651163	4.0752688	3.716129	3456	3790	1677	1012	312	774	1805	55997	61079	3076	1910
590	Franklin	Rural			Remaining rural		Glenbrook Be	39km to 40kr	39	Glenbrook Be	69.663864	South	Rural and Coastal Settlements	Live Zone	5	Glenbrook Beach,Patumahoe,Patumahoe,Pukekohe,Glenbrook Beach	Pukekohe - Paerata Str	0	1	4.1355123	3.7161219	3.4337551	3.0855313	10119	11261	4305	4908	1113	2723	6835	156451	173565	7385	8292
593	Franklin	Rural			Remaining rural			40km to 41kr	40	Drury South	242.96968	South	Opaheke-Drury, Drury West	Live Zone	1	Drury South			0	6.1594436	5.7121455	4.4793774	4.1540856	10676	11512	4978	5259	1402	1869	4676	158046	169959	7997	8385
595	Tuakau-Pokei	Out of region			Out of region		Out of region	46km to 47kr	46	Pukekohe	340.78665	South	Pukekohe, Paerata	FUZ	2	Pukekohe,Pukekohe South	Pukekohe - Paerata Str	0	1	3.136716	2.8560019	2.6257005	2.3907187	12158	13353	12181	14448	1657	4257	9776	189407	207021	22393	26463

Find out more: phone 09 301 0101, email futuredevelopmentstratety@aucklandcouncil.govt.nz or visit akhaveyoursay.nz/futureauckland

Auckland Council
Te Kaunihera o Tāmaki Makaurau