

Palmerston North City Commercial Land Assessment

August 2023

FRESH INFO



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1 Executive summary

Background

The NPS-UD requires Palmerston North City Council (PNCC) to assess the short-term, medium-term, and long-term demand for commercial land in Palmerston North City to ensure there is sufficient development capacity to accommodate it. The resulting projections are a critical input into PNCC's three yearly Housing and Business Development Capacity Assessment (HBA). For the purposes of the NPS-UD 'short-term' is defined as 3 years, 'medium-term' as 10 years, and 'long-term' as 30-years.

The main objectives of this report are to:

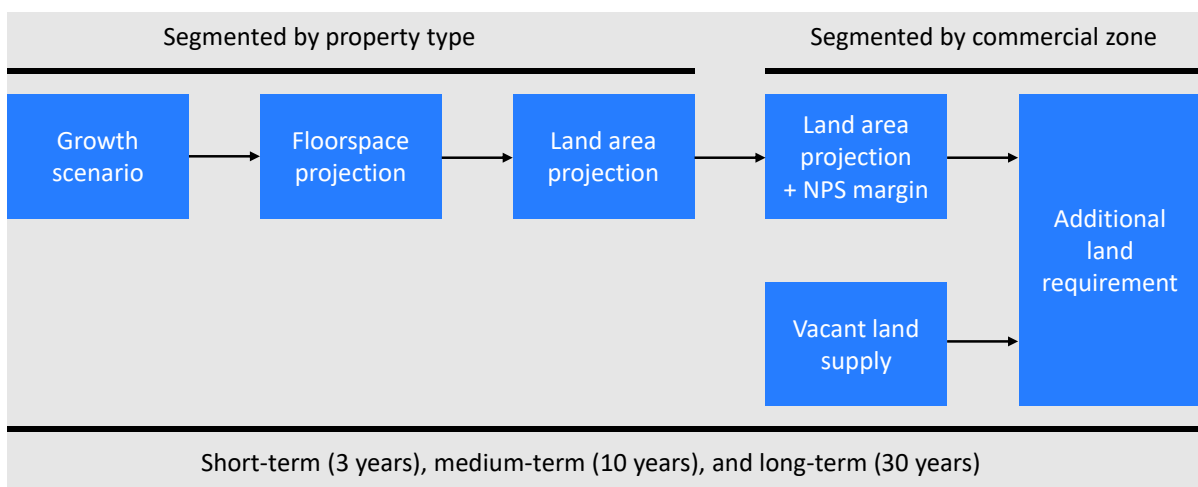
1. Project future commercial land demand in Palmerston North City, segmented by property type.
2. Compare the demand projections with the current supply of vacant commercial zoned land to determine if/when additional land and supporting infrastructure may be required.
3. Understand the impact of uncertainty on the projections by conducting sensitivity analysis. This requires the development of demand projections for low and high growth scenarios, in addition to the base scenario.

The projections provide an objective assessment of the amount of land required to meet future commercial needs. They do not consider the development implications of factors such as land banking and high ownership concentration nor availability of supporting infrastructure in zoned land.

Methodology

The methodology used to meet the project objectives involved five sequential stages which are summarised in the diagram below. A sensitivity analysis was also conducted to provide feasible lower (low land demand scenario) and upper (high land demand scenario) bounds around the base scenario. We would expect future commercial land requirements to lie within this range, and to generally follow the trend of the base scenario over time.

Figure 1 Methodology used to meet the project objectives





Property type outputs

The results of the floorspace assessment indicate the need for:

- 84,700 sqm of additional floorspace in the short-term
- 225,900 sqm of additional floorspace in the medium-term
- 780,800 sqm of additional floorspace in the long-term

The majority of the additional floorspace would be required by industrial businesses.

Table 1 Additional floorspace requirement segmented by property type (sqm)

	3 years	10 years	30 years
Small & medium industrial	28,553	79,606	188,244
Large industrial	49,740	147,858	448,660
Accommodation	0	3,805	13,899
Small & medium retail	0	0	38,136
Large retail	2,950	11,189	28,722
Commercial office	0	59	28,682
Commercial services	3,484	13,399	34,497
TOTAL	84,727	255,916	780,840

The results of the land requirement assessment indicate the need for:

- 20.4 ha of additional land in the short-term to support the floorspace projections
- 59.3 ha of additional land in the medium-term to support the floorspace projections
- 159.9 ha of additional land in the long-term to support the floorspace projections

Most of the additional land would be required by industrial businesses.

Table 2 Additional land requirement segmented by property type (hectares)

	3 years	10 years	30 years
Small & medium industrial	7.6	20.4	44.2
Large industrial	11.6	33.9	99.7
Accommodation	0.0	0.3	1.0
Small & medium retail	0.0	0.0	3.3
Large retail	0.5	2.0	4.8
Commercial office	0.0	0.0	0.6
Commercial services	0.7	2.7	6.4
TOTAL	20.4	59.3	159.9

Commercial zone outputs

The results of the capacity assessment indicate that:

- The 66.4 hectares of airport and industrial land that is zoned and available for development will be sufficient to accommodate future requirements in all periods considered.



- The 145.9 hectares of NEIZ land that is zoned and available for development will be sufficient to accommodate future requirements in all periods considered.
- The 19 hectares of business zoned land (inner business, outer business, fringe, and local zones) that is available for development will be sufficient to accommodate future requirements in all periods considered.

Table 3 Capacity assessment for land in airport & industrial zones (hectares)

	3 years	10 years	30 years
Additional commercial land requirement	8.9	24.3	51.1
Commercial zoned land available in 2023	66.4	66.4	66.4
Commercial zoned land remaining	57.5	42.1	15.3
Commercial zoned land deficit	0.0	0.0	0.0

Table 4 Capacity assessment for land in NEIZ (hectares)

	3 years	10 years	30 years
Additional commercial land requirement	14.4	42.0	117.2
Commercial zoned land available in 2023	145.9	145.9	145.9
Commercial zoned land remaining	131.6	104.0	28.7
Commercial zoned land deficit	0.0	0.0	0.0

Table 5 Capacity assessment for land in business zones (hectares)

	3 years	10 years	30 years
Additional commercial land requirement	1.2	4.9	15.6
Commercial zoned land available in 2023	19.0	19.0	19.0
Commercial zoned land remaining	17.9	14.1	3.4
Commercial zoned land deficit	0.0	0.0	0.0

Sensitivity analysis

The results of the sensitivity analysis indicate that:

- There is sufficient land in all zones to meet 30-year planning requirements under the low land demand and base scenarios.
- There is sufficient land in all zones to meet short and medium-term planning requirements under the high land demand scenario, but more land would be required in each zone to meet long-term (30 year) requirements.

Table 6 Projected gross land deficit for airport & industrial zones

Scenario	3 years	10 years	30 years
Low	0.0	0.0	0.0
Base	0.0	0.0	0.0
High	0.0	0.0	77.1



Table 7 Projected gross land deficit for NEIZ

	3 years	10 years	30 years
Low scenario	0.0	0.0	0.0
Base scenario	0.0	0.0	0.0
High scenario	0.0	0.0	86.4

Table 8 Projected gross land deficit for business zones

	3 years	10 years	30 years
Low scenario	0.0	0.0	0.0
Base scenario	0.0	0.0	0.0
High scenario	0.0	0.0	40.3

Comparison with previous NPS-UD projections

It is difficult to compare the current projections with those produced by Property Economics in 2018 due to material differences in modelling and reporting approaches. However, the Property Economics report predicted the need for more industrial and business zoned land within the forecasting horizon, while the current projections indicate that there is sufficient industrial and business zoned land to meet all commercial requirements for the next 30 years. These opposing conclusions are driven by the following factors which result in materially different floorspace and land projections when extended across 30 years:

- Property Economics assumed that existing floorspace was operating at maximum productivity for retail and commercial service properties such that any extra demand would require new floorspace. The current projections assume that (a) vacant properties will absorb additional demand until the optimal vacancy rate is achieved. This may require the redevelopment of B and C grade buildings that are currently difficult to tenant; and (b) businesses will use floorspace more efficiently over time due to scale economies and higher occupancy costs. The cumulative outcome of these effects is an additional floorspace requirement that sits comfortably below the projected change in demand in percentage terms.
- Property Economics assumed that current land use intensity (floorspace per hectare) will persist for the next 30 years. The current projections assume that (a) the land use intensity of developed land parcels will gradually increase as infill/redevelopment occurs; and (b) new developments will be built at a higher density than existing developments due to higher land and building costs. The cumulative outcome of these effects is an additional land requirement that sits comfortably below the projected additional floorspace requirement in percentage terms.

Conclusions

The overarching conclusion is that Palmerston North City has enough zoned land to meet its business and industrial requirements for the next 30 years. Even the high land demand scenario, which is based on an unlikely combination of high population growth, high optimal vacancy rate, and low floorspace productivity, indicates that there is enough zoned land to meet all commercial needs for at least 20 years.

However, factors such as land banking and high ownership concentration could create the perception of scarcity even though there is enough available land to meet long-term commercial requirements. This is something PNCC will need to monitor and respond to if it becomes an issue.



2 Introduction

2.1 Background

The National Policy Statement on Urban Development (NPS-UD) sets forth a comprehensive framework for guiding sustainable and inclusive urban development in New Zealand. Within this framework, commercial land projections play a vital role in ensuring that the objectives and requirements of the NPS-UD are met effectively. These projections provide valuable insights into future demand for commercial and industrial spaces, helping local authorities and stakeholders make informed decisions that align with the goals of the policy.

The NPS-UD recognises the importance of commercial land development in driving economic growth, promoting employment opportunities, and creating vibrant urban environments. It emphasises the need for well-designed, accessible, and sustainable commercial areas that accommodate the evolving needs of businesses and residents alike. By projecting the requirements for commercial land development, stakeholders can identify suitable locations, plan infrastructure investments, and foster economic prosperity while preserving the cultural and environmental fabric of urban areas.

Commercial land projections allow for a comprehensive assessment of the demand for commercial spaces, enabling local authorities to strategically allocate land resources, plan for necessary infrastructure, and support the growth of key industries. By incorporating design considerations and environmental sustainability principles, commercial land projections contribute to the creation of resilient and liveable urban environments that align with the NPS-UD's objectives.

Commercial land projections also serve as a valuable tool for achieving the density and intensification goals outlined in the NPS-UD. By identifying opportunities for higher-density commercial developments and mixed-use areas, these projections help optimise land use, reduce urban sprawl, and support efficient public transportation systems. This, in turn, contributes to reduced carbon emissions, improved energy efficiency, and enhanced overall urban functionality.

Overall, commercial land projections are essential for meeting the requirements of the NPS-UD by providing a forward-looking perspective on the demand for commercial spaces. By integrating these projections into urban planning processes, local authorities and stakeholders can make well-informed decisions that align with the policy's objectives, foster economic growth, promote social well-being, and ensure the sustainable development of urban areas for generations to come.

2.2 Objectives

The NPS-UD requires Palmerston North City Council (PNCC), a tier 2 authority under the NPS-UD, to assess the short-term, medium-term, and long-term demand for commercial land in Palmerston North City and assess whether there is sufficient development capacity within commercial zones to accommodate it. More specifically, the NPS-UD requires:

- Development of the 'most likely' demand projection for commercial land, segmented by business sector (base scenario); and
- Clear articulation of the assumptions that underpin the commercial land projections; and
- Understanding and appropriate management of the nature and potential effects of uncertainty on the commercial land projections.



The resulting projections are a critical input into PNCC's three yearly Housing and Business Development Capacity Assessment (HBA). For the purposes of the NPS-UD 'short-term' is defined as 3 years, 'medium-term' as 10 years, and 'long-term' as 30-years.

The main objectives of this report are to:

1. Project future commercial land demand in Palmerston North City for the following property types:
 - Small & medium industrial (up to 11,000 sqm of floorspace)
 - Large floor plate industrial (more than 11,000 sqm of floorspace)
 - Accommodation
 - Small & medium (pedestrian-oriented) retail (up to 3,900 sqm of floorspace)
 - Large format (vehicle-oriented) retail (more than 3,900 sqm of floorspace)
 - Commercial office
 - Commercial services

The NPS-UD requires a 'competitiveness margin' to be added to the demand projections. A competitiveness margin is a margin of development capacity over and above expected demand that facilitates choice and competitiveness in commercial land markets. The competitiveness margins for commercial land are 20% for the short-term and medium-term projections, and 15% for the long-term projections.

2. Compare the demand projections with the current supply of vacant commercial zoned land to determine if/when additional land and supporting infrastructure may be required.
3. Understand the impact of uncertainty on the projections by conducting sensitivity analysis. This requires the development of demand projections for low and high land demand scenarios, in addition to the base scenario.

2.3 Limitations

Urban development patterns are influenced by a wide range of factors that are difficult to predict with certainty. This presents significant challenges when trying to project commercial land requirements over long periods of time. The following limitations should be considered when using and interpreting the projections:

- The projections have been developed at a city-wide level and therefore assume that all locations are equally attractive for development. Additional work may be required to ensure that the right amount of land is available in the right places at the right times.
- The projections are informed by long-term trends and relationships that may not persist in the future. For example, structural changes may occur in business practices or commercial land use patterns that can't be predicted.
- Not all relevant factors that influence demand can be modelled e.g. relative land prices and/or construction costs which could influence the rate of commercial development, economic conditions which could influence the demand for goods and services. The modelling process is a simplification of reality that attempts to include as much as it can within the relevant data, time, and budget constraints. This introduces an error margin associated with the model itself.



- Models of this nature rely heavily on the assumptions pushed through them. There is an error margin associated with each assumption which is additional to the model-related error margin. The compound effect of multiple error margins within a single model can be significant and generally expands for forecasts further into the future.
- The projections do not consider the development implications of factors such as land banking and high ownership concentration.

We have tried to manage the nature and potential effects of these limitations by putting realistic error margins around the base forecasts to provide a feasible range of outcomes bounded by the low and high land demand scenarios. We expect future commercial land requirements to lie within this range, and to generally follow the trend of the base scenario over time. Despite this we still recommend using and interpreting the projections with these limitations in mind.



3 Methodology

3.1 Data

Palmerston North City Council provided the following data to inform the analysis:

- Total floorspace segmented by property type (sqm).
- Occupied floorspace segmented by property type (sqm).
- Area of developed land parcels segmented by property type (ha). Developed land parcels are defined as land parcels that are used for commercial purposes with or without buildings.
- Area of vacant commercial zoned land segmented by commercial zone (ha).

A summary of the source data is provided in Appendix 1.

3.1.1 Property type definitions

Each commercially zoned and “developed” land parcel within Palmerston North city was assigned to one of the eight property types in the table below based on its main commercial use. PNCC considered a land parcel to be developed if it contained an occupied or vacant commercial building.

Main use was determined by PNCC based on the “best use” category in the Palmerston North City District Valuation Roll (DVR) prepared by QV, and commercial QV worksheets where necessary. The best use category generally reflects the current or main use of the property and can be easily adapted to determine the property types for this assessment. Property types were assigned to properties categorised as “industrial – other/mixed” and “commercial – multiple/other” based on dominant floor areas obtained from QV commercial worksheets. For example, if accommodation had the largest floor area within a mixed or multiple use property, the entire property was assigned to the accommodation property type.

The non-commercial property type has been excluded from the analysis.

Table 9 Property type definitions

Property type	Basis (description in best use category in DVR)
Small & medium industrial	Floorspace of up to 11,000 sqm, located in an industrial zone, and assigned as “industrial” in best use category
Large floor plate industrial	Floorspace of more than 11,000 sqm, located in an industrial zone, and assigned as “industrial” in best use category
Accommodation	Assigned as “commercial accommodation” in best use category
Small & medium (pedestrian-oriented) retail	Floorspace of up to 3,900 sqm of floorspace and assigned in best use category as: <ul style="list-style-type: none">- Commercial-retail- Commercial-liquor- Commercial-cinema/hall- Commercial-health operations
Large format (vehicle-oriented) retail	Area of more than 3,900 sqm of floorspace, and assigned in best use category as: <ul style="list-style-type: none">- Commercial-retail- Commercial-liquor



	<ul style="list-style-type: none"> - Commercial-cinema/hall - Commercial-health operations
Commercial office	Assigned as “commercial office” in best use category
Commercial services (combination of light industrial and services for businesses)	Located within industrial and business zones and assigned in best use category as: <ul style="list-style-type: none"> - Commercial-service station - Commercial-motor vehicle - Commercial-education uses (e.g. early childhood centres) - Various “Industrial” categories located in business zones
Other (non-commercial)	All property types not included above including: <ul style="list-style-type: none"> - Commercial-elderly - aged care facilities, which are considered to be residential - Commercial-educational uses - schools and institutions of higher learning e.g. Te Pukenga - Other property types including airports, art galleries, assemblies, education facilities, religious facilities, sports facilities, residential, recreation facilities, and road reserves.

3.1.2 Commercial zone definitions

In addition to being assigned to a property type, each land parcel was assigned to one of the four commercial zones in the table below based on its location.

Table 10 Commercial zone definitions

Commercial zone	Definition
Airport and industrial zone	Combined airport and industrial zones
North East Industrial Zone (NEIZ)	NEIZ including 35ha designated for KiwiRail’s freight hub ¹
Business zone	Combined inner, outer, fringe, and local business zones
Out of zone	Outside the commercial zones above

3.1.3 Total floorspace

Once each land parcel had been assigned to a property type in the DVR, total floorspace was estimated for each property type by summing the relevant floorspaces. For example, accommodation floorspace was derived by summing the floorspaces of all land parcels assigned to the accommodation property type. A summary of the source data is provided in Appendix 1.

¹ The KiwiRail freight hub is expected to have a total land area of around 178ha based on the Notice of Requirement filed by KiwiRail in 2020. This includes 50ha of NEIZ land (the remaining 128ha is currently rural land), but it is assumed that 15ha would be allocated to freight and logistics floorspace, so the net loss of commercial land would only be 35ha.



Table 11 Total floorspace segmented by property type and commercial zone (sqm)

	Commercial zone				TOTAL
	Airport & industrial	NEIZ	Business	Out of zone	
Small & medium industrial	706,792	33,333	0	0	740,125
Large industrial	228,998	112,969	0	0	341,967
Accommodation	0	0	43,831	1,170	45,001
Small & medium retail	21,374	0	282,070	1,469	304,913
Large retail	13,987	0	107,116	0	121,103
Commercial office	11,720	0	204,201	0	215,921
Commercial services	26,177	0	119,620	0	145,797
Non-commercial	29,844	0	82,291	0	112,135
TOTAL	1,038,892	146,302	839,129	2,639	2,026,962

3.1.4 Occupied floorspace

Occupied floorspace for each property type was estimated by combining assessed vacancy rates with the total floorspaces described above. The vacancy rate data was sourced from:

- Business vacancy data from the Palmerston North Commercial Market Survey 2022 conducted by TelferYoung in December 2022 which covered industrial zoned land (airport zone, industrial zone, and NEIZ) and most of the business zoned land (inner, outer, fringe and the Terrace End component of the local business zone). PNCC has revised the data from this report to reflect vacant commercially occupied land as non-vacant.
- Supplementary business vacancy data collected by PNCC in May 2023 for commercial properties in Ashhurst, Bunnythorpe, Longburn, and local business zones not included in the TelferYoung survey.

A summary of the source data is provided in Appendix 1.

Table 12 Occupied floorspace segmented by property type and commercial zone (sqm)

	Commercial zone				TOTAL
	Airport & industrial	NEIZ	Business	Out of zone	
Small & medium industrial	694,554	33,333	0	0	727,887
Large industrial	228,998	112,969	0	0	341,967
Accommodation	0	0	42,111	1,170	43,281
Small & medium retail	20,362	0	247,136	1,469	268,967
Large retail	13,987	0	107,116	0	121,103
Commercial office	11,720	0	180,061	0	191,781
Commercial services	26,177	0	115,182	0	141,359
Non-commercial	29,844	0	80,546	0	110,390
TOTAL	1,025,642	146,302	772,151	2,639	1,946,734



3.1.5 Area of developed land parcels

A developed land parcel is defined as a land parcel containing an occupied or vacant commercial building and/or land serving an essential purpose within a commercial business e.g. car yard, car rental agency, truck stop. Once each land parcel had been assigned to a property type in the DVR, the area of developed land parcels for each property type was estimated by summing the relevant land parcel areas in the DVR. A summary of the source data is provided in Appendix 1.

Table 13 Area of developed land parcels segmented by property type and commercial zone (ha)

	Commercial zone				TOTAL
	Airport & industrial	NEIZ	Business	Out of zone	
Small & medium industrial	223.1	15.4	0.0	0.0	238.4
Large industrial	59.8	27.3	0.0	0.0	87.1
Accommodation	0.0	0.0	4.7	0.3	5.0
Small & medium retail	7.2	0.0	40.1	0.5	47.8
Large retail	3.8	0.0	24.6	0.0	28.4
Commercial office	2.5	0.0	21.8	0.0	24.3
Commercial services	9.1	0.0	28.8	0.0	37.9
Non-commercial	211.5	0.0	13.5	0.0	225.0
TOTAL	517.0	42.6	133.5	0.8	693.9

3.1.6 Area of vacant commercial zoned land

Vacant commercial zoned land is defined as any commercially zoned land parcel containing no significant occupied or vacant commercial buildings. For industrial land parcels, this means less than 50 sqm of floorspace or only a small percentage of the land parcel being occupied by commercial buildings. Vacant commercial zoned land parcels include:

- Vacant land parcels used as car parks within business zones
- Occupied land in industrial and business zones used for storage that is not associated with a business such as a car yard or car rental agency
- Residential or rural rated properties within commercial zones
- Land under construction, including completed properties without floor areas in the DVR
- Vacant land within commercial zones

Vacant commercial zoned land parcels are further segmented into:

- Commercially zoned land parcels not requiring public infrastructure i.e. land parcels that have already been subdivided and are available for private ownership
- Commercially zoned land parcels requiring public infrastructure i.e. land parcels that have not yet been subdivided and are likely to require a percentage to be set aside for public infrastructure such as roads and water management.

This segmentation is necessary to ensure that an appropriate amount of available zoned land is allocated to public infrastructure to support future development. This area of land must be subtracted from the amount of

vacant commercial zoned land available to support private development. A summary of the source data is provided in Appendix 1.

Figure 2 Location of vacant commercial zoned land parcels

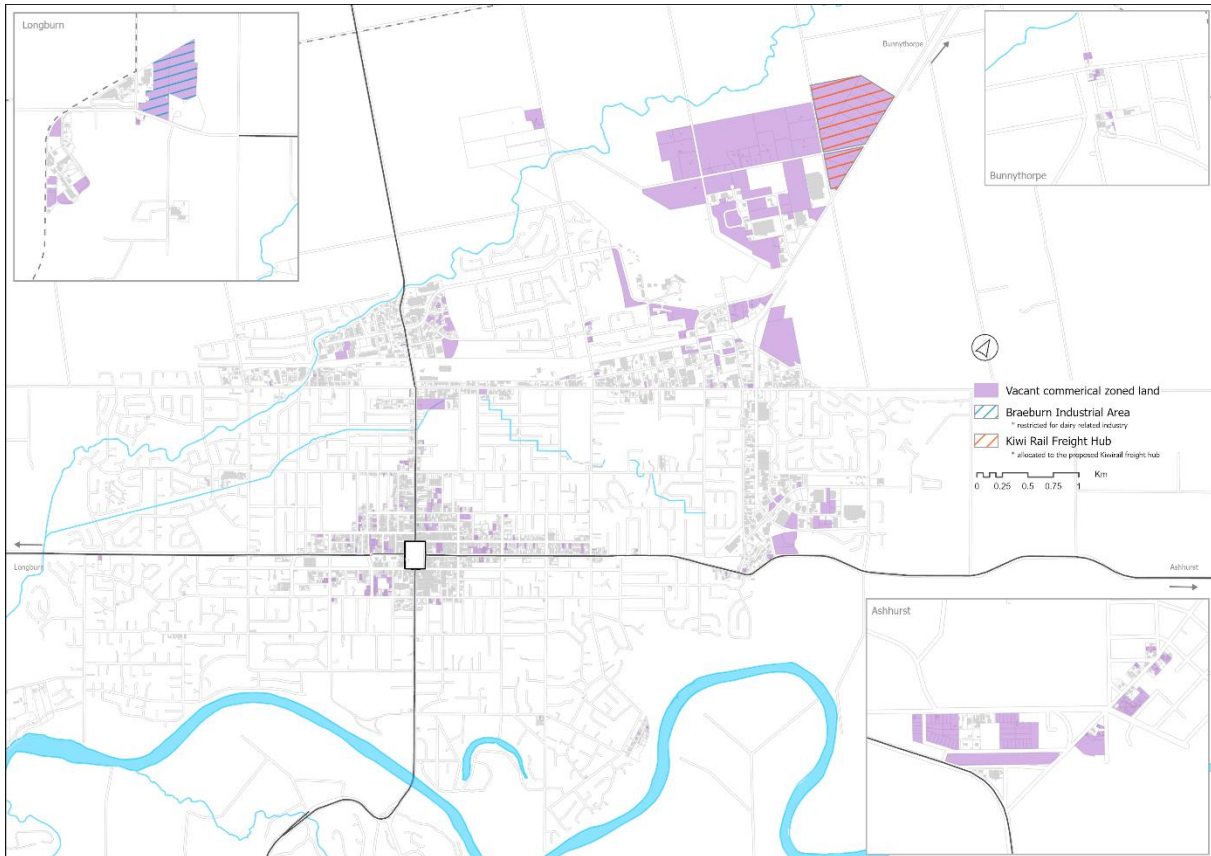


Table 14 Area of developed and vacant commercial zoned land parcels segmented by commercial zone

	Commercial zone				TOTAL
	Airport & industrial	NEIZ	Business	Out of zone	
Area of developed land parcels	516.4	42.6	132.9	0.8	692.7
Area of vacant commercial zoned land	99.9	180.9	19.0	5.9	305.9
Parcels not requiring infrastructure	51.7	52.7	19.0	5.9	129.4
Parcels requiring infrastructure	14.7	78.2	0.0	0.0	92.9
KiwiRail hub allocation - commercial*	0.0	15.0	0.0	0.0	15.0
KiwiRail hub allocation - non-commercial*	0.0	35.0	0.0	0.0	35.0
Dairy industry allocation - commercial**	33.5	0.0	0.0	0.0	33.5
Total available land	616.3	223.6	152.0	6.7	998.6

* See section 3.2.6 regarding allocation of NEIZ land to the proposed KiwiRail freight hub.

** This land is zoned Braeburn Industrial Area which is restricted through the District Plan to dairy-related industries only. Any other industrial use would require a non-complying resource consent, which would be difficult to obtain.



3.1.7 Population projections

Population projections for Palmerston North are used to define low, medium, and high growth scenarios for the city and are therefore an important input to the modelling process. The base population projections were the adopted population projections provided to Fresh Info by Palmerston North City Council. The low and high projections were produced by Fresh Info using the following assumptions:

- Low scenario – annual growth is equivalent to 60% of the base projection.
- High scenario - annual growth is equivalent to 140% of the base projection.

These values have been chosen to (a) reflect the uncertainty involved in long-term population forecasting; and (b) provide a range that we are confident the future population will fall within, which is important for the sensitivity analysis.

Figure 3 Population projections for Palmerston North City

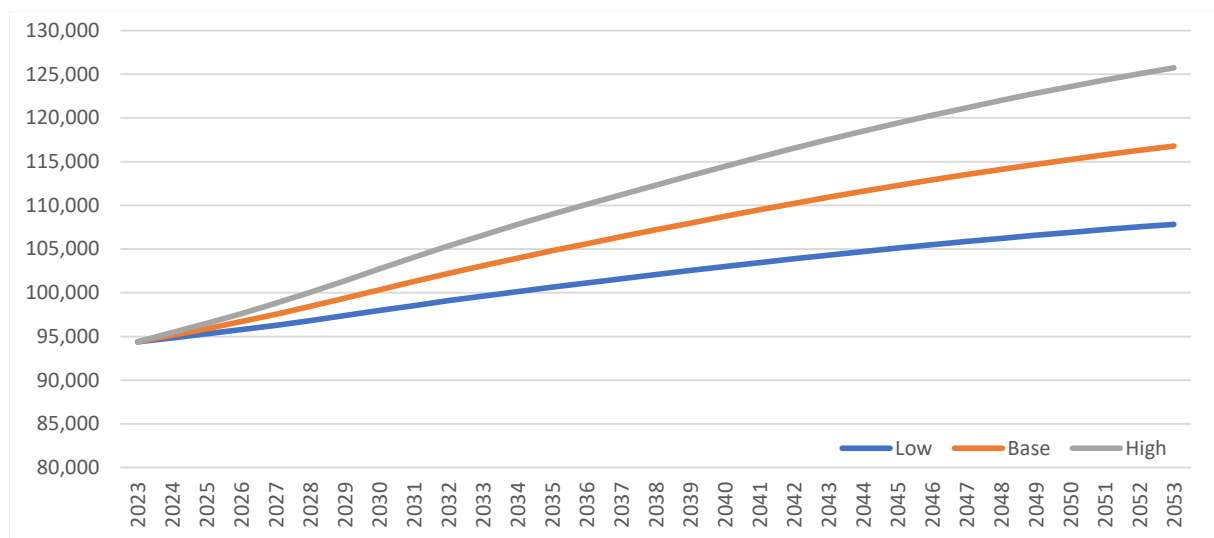


Table 15 Summary of population projections for Palmerston North City

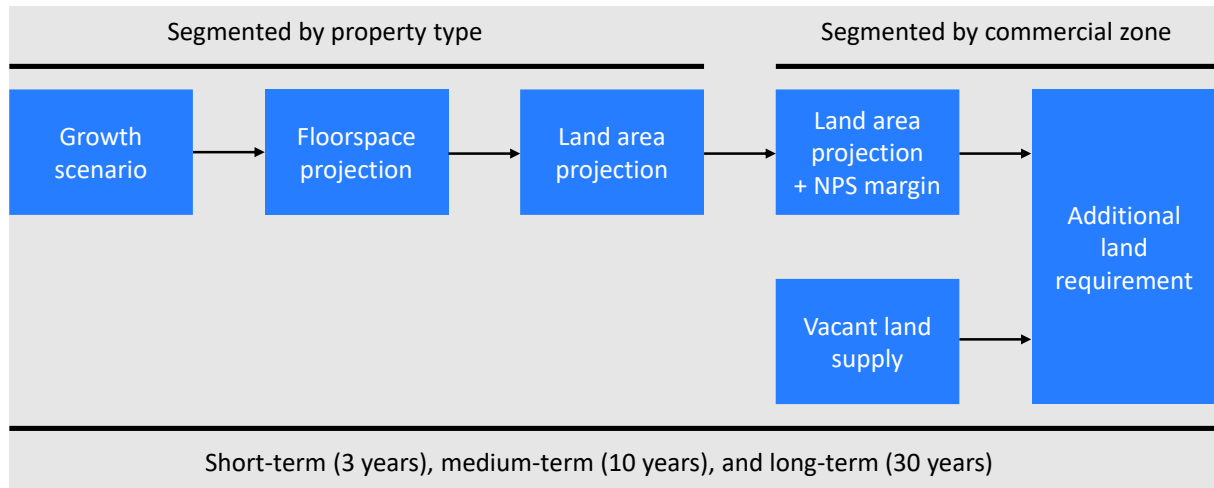
	Low	Base	High
Population			
2023	94,400	94,400	94,400
2026	95,780	96,700	97,619
2033	99,633	103,122	106,611
2053	107,833	116,789	125,744
Growth relative to 2023			
2026	1.5%	2.4%	3.4%
2033	5.5%	9.2%	12.9%
2053	14.2%	23.7%	33.2%
Compounded annual growth rate (CAGR) relative to 2023			
2026	0.5%	0.8%	1.1%
2033	0.5%	0.9%	1.2%
2053	0.4%	0.7%	1.0%



3.2 Modelling

The methodology used to meet the project objectives involved five sequential stages which are summarised in the diagram below.

Figure 4 Methodology used to meet the project objectives



3.2.1 Define the growth scenario the demand projections are responding to

The term 'growth scenario' refers to the changes Palmerston North City expects to see in its overall commercial footprint over time. The specific drivers of these changes will be diverse and impossible to predict with accuracy, and any attempt to model at this level of granularity would introduce unreasonable levels of subjectivity and error into the demand projections.

The most objective and internally consistent predictor of Palmerston North's future commercial footprint is its expected population growth. There are two broad reasons for this:

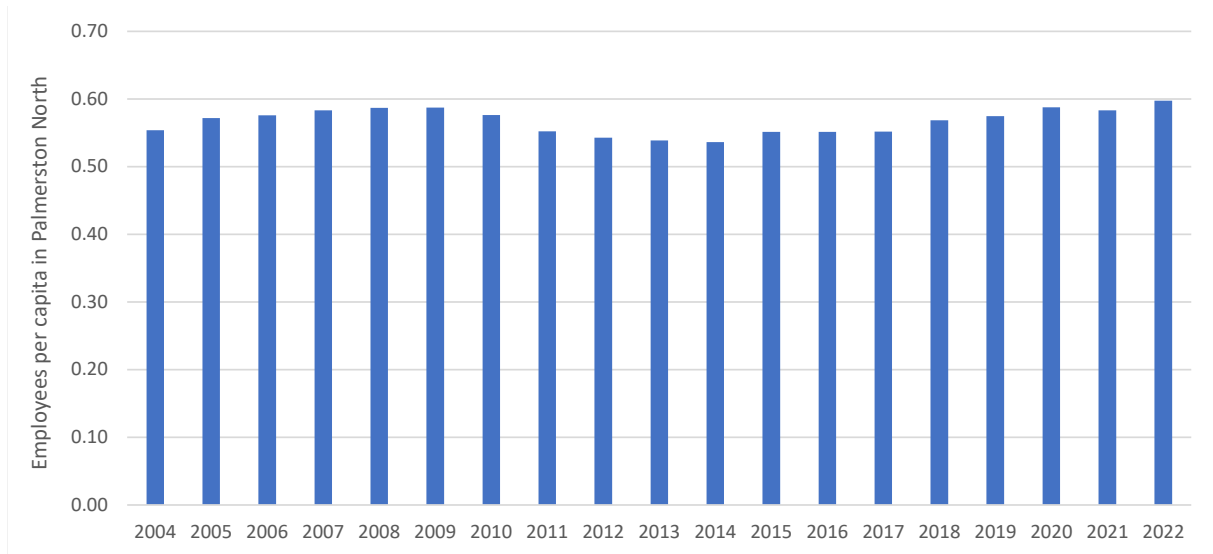
- As the population expands, the demand for goods, services, and employment opportunities increases. Businesses need adequate commercial spaces to satisfy this demand, driving growth in the commercial footprint.
- Growth in demand for local goods and services (internally or externally generated) creates more business and employment opportunities, which is a catalyst for population growth.

In either case, the long-term relationship between population and commercial footprint is inextricably linked, and it is difficult to imagine a situation in which a city's population could grow at a materially different rate to its commercial footprint, or vice versa.

The graph below demonstrates the strength of the relationship between population and employment in Palmerston North over the past 19 years and provides strong support for using population projections to define growth scenarios for the city's commercial footprint.

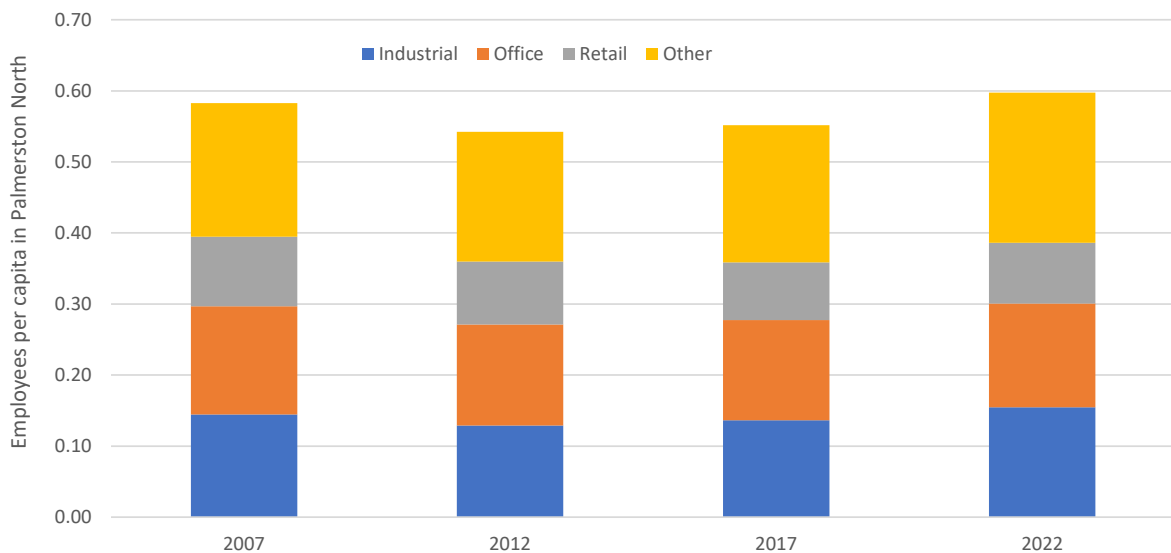


Figure 5 Employees per capita in Palmerston North



Further analysis shows that the stable long-term relationship between population and employment is also observed at a more disaggregated industry level. This is unsurprising given the interlinkages that exist within the Palmerston North economy i.e. growth in one sector of the economy will generally stimulate growth in other sectors of the economy.

Figure 6 Employees per capita in Palmerston North segmented by industry



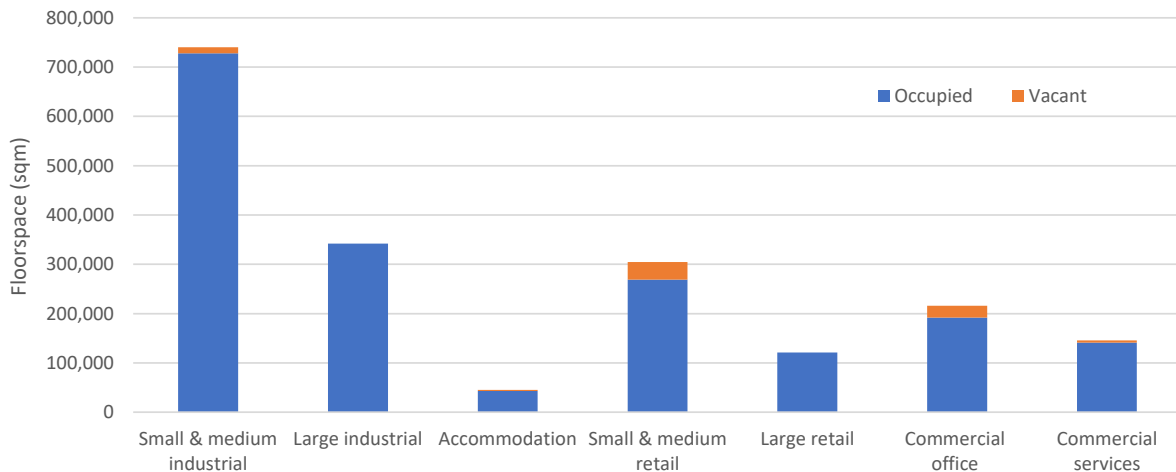
This analysis gives us confidence that it is reasonable to use population growth scenarios as a key driver of future commercial footprint scenarios for Palmerston North.



3.2.2 Floorspace projection by property type

This stage estimates the quantum and timing of additional floorspace required by each property type under each growth scenario. The starting points are the 2023 estimates of total floorspace and occupied floorspace segmented by property type, based on data collected in December 2022 and May 2023. These have been provided by PNCC and are shown in the graph below.

Figure 7 Estimated floorspace in 2023 segmented by property type



The following steps are applied to each property type, except large industrial (see explanation in Section 3.2.6), to estimate future floorspace requirements for each growth scenario.

Step 1: Calculate occupied floorspace per capita to determine how much productive floorspace is required to serve the current resident population. It is important to note that this does not assume that the floorspace is exclusively serving Palmerston North residents. As discussed above, the model leverages the long-term relationship between Palmerston North’s population and its commercial footprint, while acknowledging that some of the commercial footprint is sustained by demand originating outside Palmerston North. The table below contains estimates of occupied floorspace per capita in 2023 i.e. the amount of commercial floorspace required to serve both internal and external demand, divided by Palmerston North’s resident population.

Table 16 Occupied floorspace per capita in 2023

Property type	Occupied floorspace per capita (sqm)
Small & medium industrial	7.71
Large industrial	3.62
Accommodation	0.46
Small & medium retail	2.85
Large retail	1.28
Commercial office	2.03
Commercial services	1.50
TOTAL	19.45



Step 2: Develop annual projections of occupied floorspace per capita. This is achieved in two stages:

1. Establish baseline assumptions regarding occupied floorspace in year 30 relative to current (2023) levels.
2. Convert the assumed 30-year changes into uniform annual growth rates.

The baseline assumptions for each property type are shown in the table below. The default assumption is that the relationship between occupied floorspace and population does not change over the next 30 years (represented by 100% in the table below), which is consistent with the discussion in Section 3.2.1. The two exceptions are the 'large industrial' and 'accommodation' property types. The treatment of large industrial is discussed in Section 3.2.6, and demand for accommodation floorspace is assumed to grow 10% faster than population over the next 30 years as Palmerston North's tourism offering continues to develop. It is worth noting that guest nights in commercial accommodation in Palmerston North city have grown at a similar rate to population over the past 20 years.

Table 17 Occupied floorspace per capita in year 30 relative to 2023

	Base scenario
Small & medium industrial	100%
Large industrial	n/a
Accommodation	110%
Small & medium retail	100%
Large retail	100%
Commercial office	100%
Commercial services	100%

Step 3: Combine the projections of occupied floorspace per capita with the population projections to estimate the total amount of floorspace required each year to meet the needs of the growth scenario. A vacancy buffer is included in this calculation to build a small amount of commercial flexibility into the market. The assumed vacancy buffers for each property type and growth scenario are shown in the table below. These are based on desktop research which suggests that a 3% occupancy rate represents a healthy leasing market for most small/medium property types.

Table 18 Vacant floorspace buffer by property type

	Base scenario
Small & medium industrial	3.00%
Large industrial	n/a
Accommodation	0.00%
Small & medium retail	3.00%
Large retail	0.00%
Office	3.00%
Commercial services	3.00%

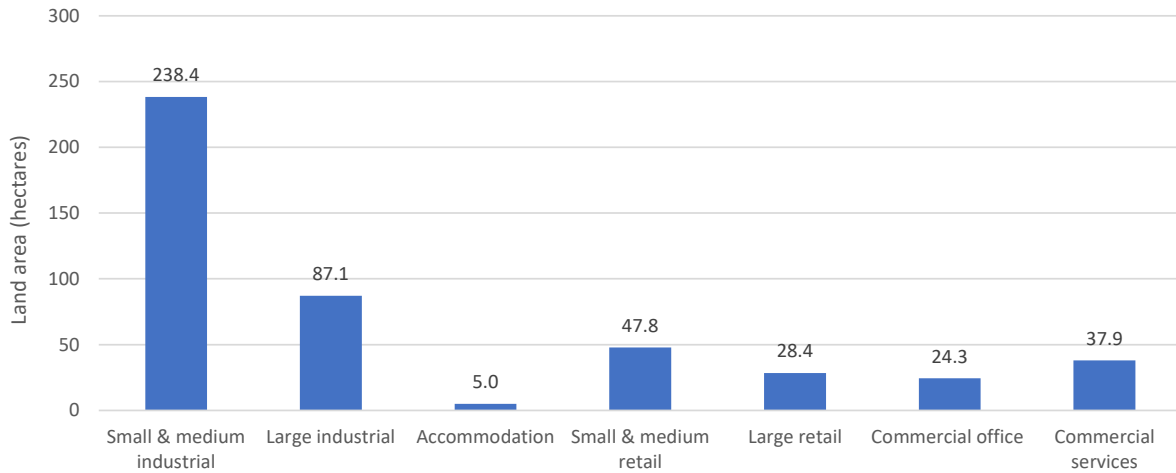
Step 4: Calculate the change in total floorspace required for each property type relative to current (2023) levels. This is achieved by subtracting the current (2023) floorspace from the projected floorspace in each year.



3.2.3 Land area projection by property type

This stage estimates the quantum and timing of additional land required by each property type to accommodate the estimated floorspace from the previous stage. The starting points are the 2023 estimates of total developed² land area segmented by property type. These have been provided by PNCC and are shown in the graph below.

Figure 8 Estimated developed land area in 2023 segmented by property type



The following steps are applied to each property type, except large industrial (see explanation in Section 3.2.6), to estimate future floorspace requirements for each growth scenario.

Step 1: Calculate floorspace per hectare of developed land to determine how intensively existing commercial zoned land is being used. The table below contains estimates of floorspace per hectare in 2023.

Table 19 Floorspace per hectare in 2023

Property type	Floorspace per hectare (sqm)
Small & medium industrial	3,106
Large industrial	3,926
Accommodation	9,034
Small & medium retail	6,373
Large retail	4,263
Commercial office	8,886
Commercial services	3,849
TOTAL	4,033

Step 2: Build projections of floorspace per hectare on land that is already developed to consider the impact of redevelopment on land use densities. This is achieved in two stages:

1. Establish baseline assumptions regarding the amount of floorspace per hectare on land that is already developed in year 30 relative to current (2023) levels.

² 'Developed' means the land parcel contains one or more commercial buildings.



2. Convert the assumed 30-year changes into uniform annual growth rates.

The baseline assumptions for each property type are shown in the table below. The default assumption is that floorspace per hectare on land that is already developed will be 5% higher in 30 years than it is now. This is based on the belief that some developed land parcels will be used more intensively in the future than they are now, driven mainly by infill and redevelopment of lower grade buildings. The only exception is the 'commercial office' property type, which is assumed to be redeveloped more intensively than the other property types due to the multi-level nature of such buildings (10% higher in 30 years than it is now).

Table 20 Floorspace per hectare of developed land in year 30 relative to 2023

	Base scenario
Small & medium industrial	105%
Large industrial	105%
Accommodation	105%
Small & medium retail	105%
Large retail	105%
Commercial office	110%
Commercial services	105%

Step 3: Combine the floorspace projections from the previous stage with the floorspace per hectare projections from Step 2 to estimate how much of the additional floorspace can be accommodated within developed land parcels through more intensive use of the land.

Step 4: Calculate the amount of land that would need to be developed to accommodate the surplus floorspace from Step 3. The following assumptions are made about the land use intensity of newly developed land parcels relative to land parcels that are already developed. The default assumption is that floorspace per hectare will be 5% higher on newly developed land parcels relative to land parcels that are already developed. This is based on the belief that newly developed land parcels will be developed more intensively than they have been in the past due to higher land prices and better building methods. The only exceptions are the 'accommodation' and 'commercial office' property types, which are assumed to be developed 25% more intensively in the future. The rationale for this is that these property types are more well-suited to multi-level developments than the other property types.

Table 21 Floorspace per hectare on newly developed land relative to land that is already developed

	Base scenario
Small & medium industrial	105%
Large industrial	105%
Accommodation	125%
Small & medium retail	105%
Large retail	105%
Commercial office	125%
Commercial services	105%

Step 5: Calculate the total developed land area required as the existing developed land area plus the new land requirement from Step 4.



Step 6: Calculate the change in total developed land area required for each property type relative to current (2023) levels. This is achieved by subtracting the current (2023) developed land area from the projected land area requirement in each year.

3.2.4 Land area projection by commercial zone

This stage converts the additional property type land requirements from the previous stage into additional commercial zone land requirements.

This stage is required because the relationship between property types and commercial zones is not one-to-one. For example, in 2023 around 10% of commercial offices were located on land zoned as airport or industrial, and the remaining 90% were located on land zoned as business. Additional land for commercial offices is therefore likely to impact more than one commercial zone. The table below shows the relationship between property types and commercial zones in 2023.

Table 22 Relationship between property type land parcels and commercial zones in 2023

Property type	Commercial zone				TOTAL
	Airport & industrial	NEIZ	Business	Out of zone	
Small & medium industrial	94%	6%	0%	0%	100%
Large industrial	69%	31%	0%	0%	100%
Accommodation	0%	0%	95%	5%	100%
Small & medium retail	15%	0%	84%	1%	100%
Large retail	13%	0%	87%	0%	100%
Commercial office	10%	0%	90%	0%	100%
Commercial services	24%	0%	76%	0%	100%
TOTAL	65%	9%	26%	0%	100%

The conversion of property type land to commercial zone land is based on the assumptions in the table below about which commercial zone(s) the additional property type land will be located in. These assumptions have been informed by the current relationships in Table 22 and discussions with the PNCC planning team. They are applied uniformly to all future years.

Table 23 Allocation of additional property type land to commercial zones

Property type	Commercial zone				TOTAL
	Airport & industrial	NEIZ	Business	Out of zone	
Small & medium industrial	95%	5%	0%	0%	100%
Large industrial	0%	100%	0%	0%	100%
Accommodation	0%	0%	100%	0%	100%
Small & medium retail	10%	0%	90%	0%	100%
Large retail	10%	0%	90%	0%	100%
Commercial office	10%	0%	90%	0%	100%
Commercial services	25%	0%	75%	0%	100%



3.2.5 Additional land requirement by commercial zone

This stage determines if/when future commercial zone land requirements will exceed the zoned land that is currently available. The future assessment periods are 3 years, 10 years, and 30 years as per NPS-UD requirements. The following steps are applied to each commercial zone to estimate future land requirements:

Determining the amount of land required (demand)

- Start with the additional land requirement calculated in the previous stage. This represents the amount of land that would need to be developed to accommodate the projected commercial footprint. This is referred to as the “commercial requirement”.
- Add the NPS competitiveness margin which is 20% of the commercial requirement in year 3 and year 10, and 15% in year 30.
- Add the commercial requirements and NPS margins together to determine the additional land requirements in year 3, year 10, and year 30.

Determining the amount of land available (supply)

- Start with the amount of zoned land that is currently vacant commercial /undeveloped land (“gross land available”).
- Divide the gross land available into two components:
 - Private land parcels - vacant zoned land that could be 100% owned by businesses.
 - Land parcels allocated to public infrastructure – vacant zoned land that would need to be used to provide public infrastructure such as roading, storm water, etc. This would generally only be required in areas that had not been fully subdivided. This land needs to be identified and separated from private land parcels because it is not able to accommodate commercial floorspace.

Calculating the difference between projected demand and supply (deficit)

- Calculate the private land parcel deficit as private land parcels available less the additional land requirement. This represents the amount of additional land that would need to be made available to accommodate the projected commercial footprint, beyond what is currently zoned for use.
- Estimate the amount of land that would need to be provisioned for public infrastructure to support the newly zoned private land parcels. This is assumed to be equivalent to 20% of the area of the private land parcels based on previous work conducted for the NEIZ. The actual percentage would depend on the nature of the land and the desired level of social amenity - higher levels of social amenity generally require more land to be assigned to non-productive uses e.g. walking and cycling, open spaces.
- Add the private land parcels and public infrastructure allocations together to determine the gross land deficit in year 3, year 10, and year 30.



Table 24 Definitions for reporting of capacity assessment results

Measure (hectares)	Definition
Additional land requirement	Area of vacant land required to meet NPS requirements
Commercial requirement	Area of vacant land required by businesses
NPS margin	NPS competitiveness margin
Gross land available	Area of vacant land currently zoned for use
Private land parcels	Area of vacant land that could be used by businesses
Public infrastructure allocation	Area of vacant land required for public infrastructure
Gross land deficit	Shortage of vacant land to accommodate projected growth
Private land parcels	Shortage of vacant land that could be used by businesses
Public infrastructure allocation	Shortage of vacant land required for public infrastructure

3.2.6 Large floor plate industrial modelling

Detailed land demand forecasts were recently produced for the NEIZ as part of the Te Utanganui project. Most, if not all large industrial developments are expected to be located within the NEIZ over the next 30 years, so the recent NEIZ modelling provides valuable insight into potential development scenarios for large floor plate industrial businesses. The decision was therefore made to integrate the results of the Te Utanganui project modelling into this NPS-UD forecasting model, rather than reproducing a forecast for large format industrial businesses. A description of the methodology used to produce the Te Utanganui projections is provided in Appendix 2.

The proposed KiwiRail freight hub, which is a core component of the Te Utanganui project, is expected to have a total land area of around 178ha based on the Notice of Requirement filed by KiwiRail in 2020. This includes 50ha of NEIZ land (the remaining 128ha is rural zoned land so does not affect industrial zoned land), but it is assumed that 15ha would be leased to large industrial tenants to support rail-dependent freight and logistics operations. The net reduction in commercial land for large industrial tenants is therefore estimated to be 35ha.

3.2.7 Sensitivity analysis

Sensitivity analysis has been conducted to manage uncertainty and understand the potential range of outcomes Palmerston North city could expect over the next 30 years.

The low land demand scenario is based on the following conditions:

- Low population growth; and
- No vacant floorspace buffers; and
- Less floorspace required per capita over time relative to the base scenario; and
- More intensive development of existing land parcels over time (redevelopment); and
- New land parcels being developed at a higher density than existing land parcels (new developments)

The high land demand scenario is based on the following conditions:

- High population growth; and
- Relatively high vacancy buffers; and
- More floorspace required per capita over time relative to the base scenario; and
- No change in intensity of existing land parcels over time (redevelopment); and



- New land parcels being developed at the same density as existing land parcels (new developments)

The assumptions driving the low land demand scenario result in a commercial footprint that is smaller than the base scenario, while the assumptions driving the high land demand scenario result in a commercial footprint that is larger than the base scenario.

The sensitivity analysis provides feasible lower and upper bounds around the base scenario. We would expect future commercial land requirements to lie within this range, and to generally follow the trend of the base scenario over time.

The assumptions that drive the low and high land demand scenarios are shown in the tables below.

Table 25 Occupied floorspace per capita in year 30 relative to 2023

	Low land demand scenario	Base scenario	High land demand scenario
Small & medium industrial	95%	100%	105%
Large industrial	n/a	n/a	n/a
Accommodation	100%	110%	120%
Small & medium retail	95%	100%	105%
Large retail	95%	100%	105%
Commercial office	90%	100%	105%
Commercial services	95%	100%	105%

Table 26 Vacant floorspace buffer by property type

	Low land demand scenario	Base scenario	High land demand scenario
Small & medium industrial	0.00%	3.00%	5.00%
Large industrial	n/a	n/a	n/a
Accommodation	0.00%	0.00%	0.00%
Small & medium retail	0.00%	3.00%	5.00%
Large retail	0.00%	0.00%	0.00%
Commercial office	0.00%	3.00%	5.00%
Commercial services	0.00%	3.00%	5.00%

Table 27 Floorspace per hectare of developed land in year 30 relative to 2023

	Low land demand scenario	Base scenario	High land demand scenario
Small & medium industrial	110%	105%	100%
Large industrial	110%	105%	100%
Accommodation	110%	105%	100%
Small & medium retail	110%	105%	100%
Large retail	110%	105%	100%
Commercial office	120%	110%	100%
Commercial services	110%	105%	100%



Table 28 Floorspace per hectare on newly developed land relative to land that is already developed

	Low land demand scenario	Base scenario	High land demand scenario
Small & medium industrial	110%	105%	100%
Large industrial	110%	105%	100%
Accommodation	150%	125%	100%
Small & medium retail	110%	105%	100%
Large retail	110%	105%	100%
Commercial office	150%	125%	100%
Commercial services	110%	105%	100%

4 Property type outputs

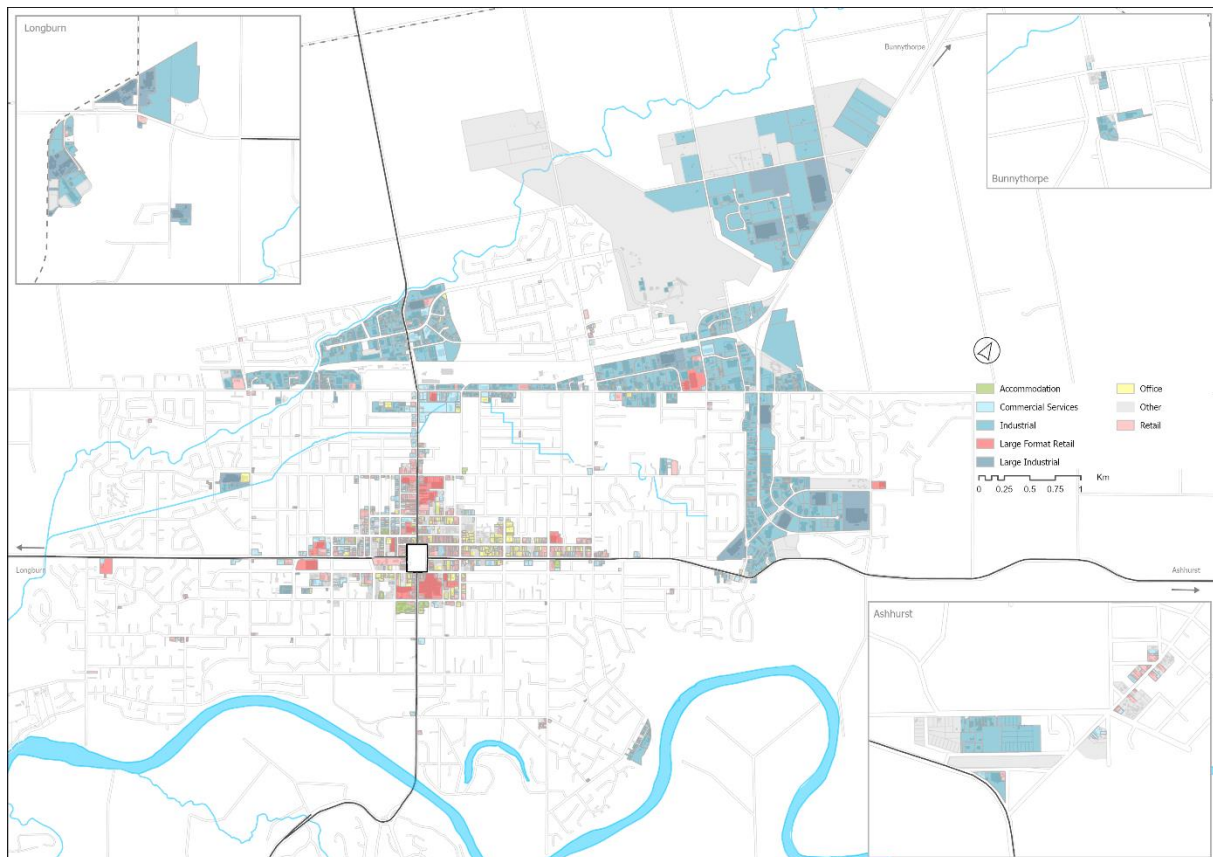
This section provides floorspace and land area projections for Palmerston North city segmented by the following property types:

- Small & medium industrial (up to 11,000 sqm of floorspace)
- Large floor plate industrial (more than 11,000 sqm of floorspace)
- Accommodation
- Small & medium retail (up to 3,900 sqm of floorspace)
- Large format retail (more than 3,900 sqm of floorspace)
- Commercial office
- Commercial services

The base (2023) floorspace and developed land area values have been provided by Palmerston North City Council.

The map below shows the locations of the land parcels occupied by each property type in 2023.

Figure 9 Land parcels by property type in 2023

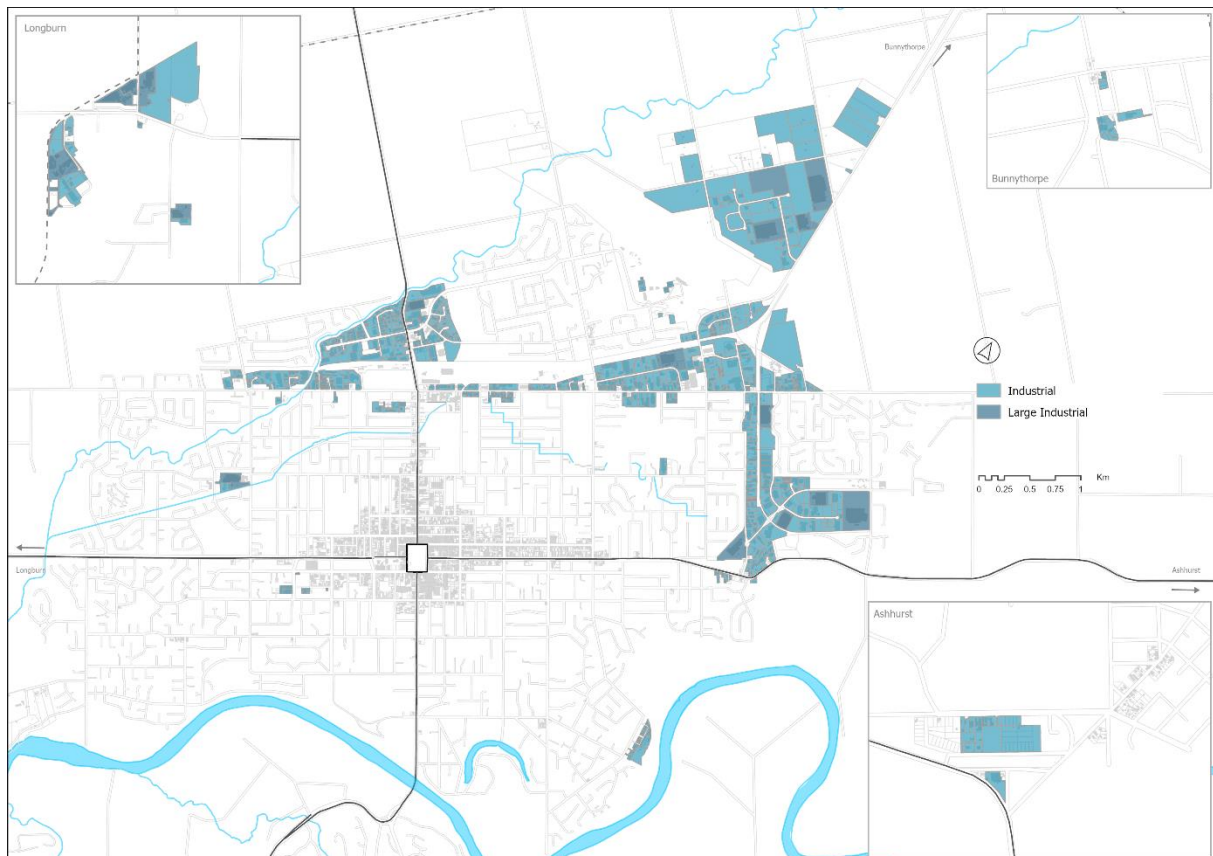




4.1 Small & medium industrial businesses

The map below shows the locations of the land parcels occupied by small & medium industrial businesses in 2023 (described as “Industrial” in the legend). Land parcels occupied by large industrial businesses are also shown for context.

Figure 10 Small & medium industrial business land parcels in 2023



The table below shows floorspace and land areas for small & medium industrial businesses in 2023 segmented by the commercial zones they are located within.

Table 29 Location of existing small & medium industrial businesses in 2023

Measure	Airport & industrial zones	NEIZ	Business zones	Out of zone	TOTAL
Total floorspace (sqm)	706,792	33,333	0	0	740,125
Occupied floorspace (sqm)	694,554	33,333	0	0	727,887
Developed land area (ha)	223.1	15.4	0.0	0.0	238.4

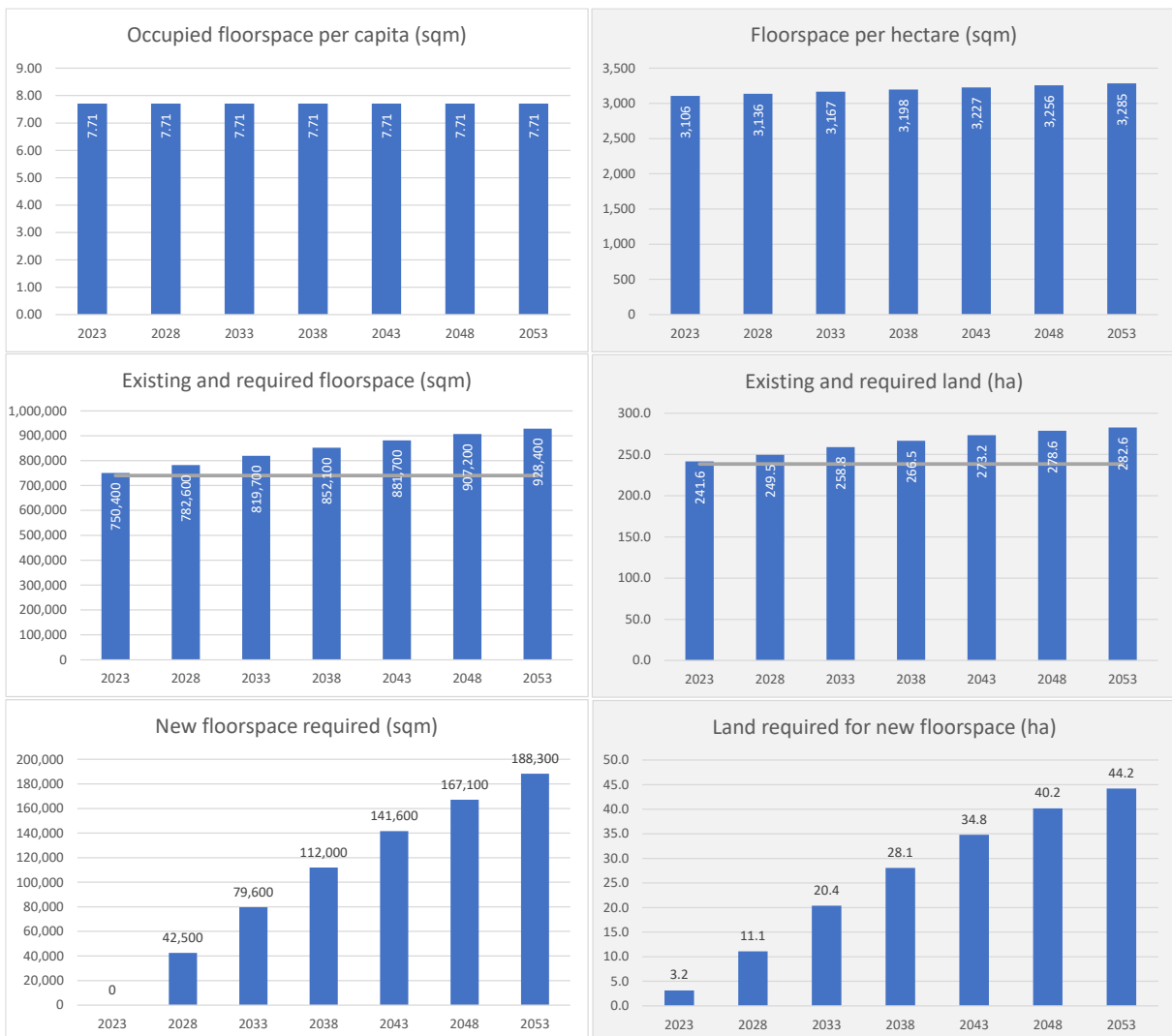


4.1.1 Key results for small & medium industrial businesses

The key results for the base scenario are:

- Required floorspace per capita projected to remain unchanged at 7.71 sqm across the forecast period.
- Required floorspace projected to increase from 750,400 sqm in 2023 to 928,400 sqm in 2053 (+24%).
- 188,300 sqm of new floorspace required by 2053.
- Floorspace per hectare projected to increase from 3,106 sqm in 2023 to 3,285 sqm in 2053 (+6%).
- Required land projected to increase from 241.6 ha in 2023 to 282.6 ha in 2053 (+17%).
- 44.2 ha of land required for new floorspace by 2053.

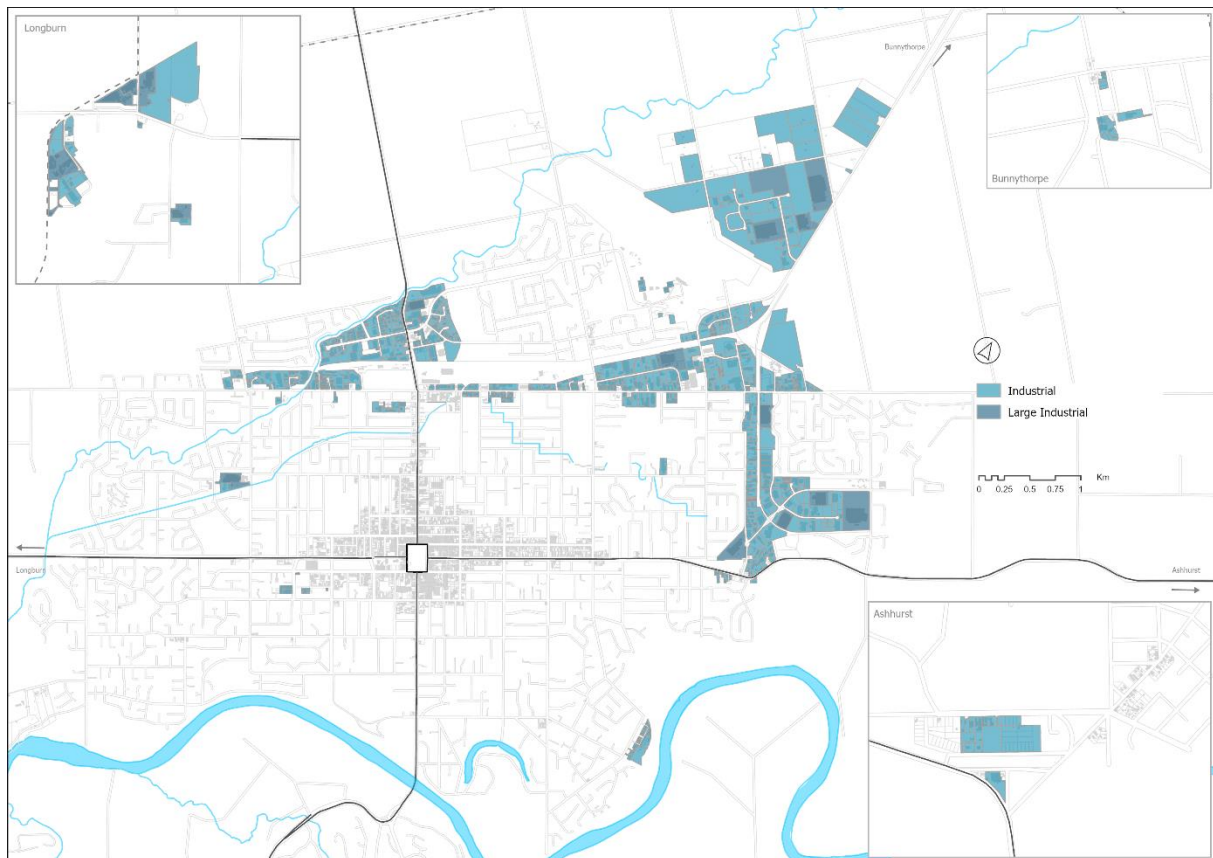
Figure 11 Summary of modelled results for small & medium industrial businesses



4.2 Large industrial businesses

The map below shows the locations of the land parcels occupied by large industrial businesses in 2023 (described as “Large industrial” in the legend). Land parcels occupied by small & medium industrial businesses (described as “Industrial in the legend) are also shown for context.

Figure 12 Large industrial business land parcels in 2023



The table below shows floorspace and land areas for large industrial businesses in 2023 segmented by the commercial zones they are located within.

Table 30 Location of existing large industrial businesses in 2023

Measure	Airport & industrial zones	NEIZ	Business zones	Out of zone	TOTAL
Total floorspace (sqm)	228,998	112,969	0	0	341,967
Occupied floorspace (sqm)	228,998	112,969	0	0	341,967
Developed land area (ha)	59.8	27.3	0.0	0.0	87.1

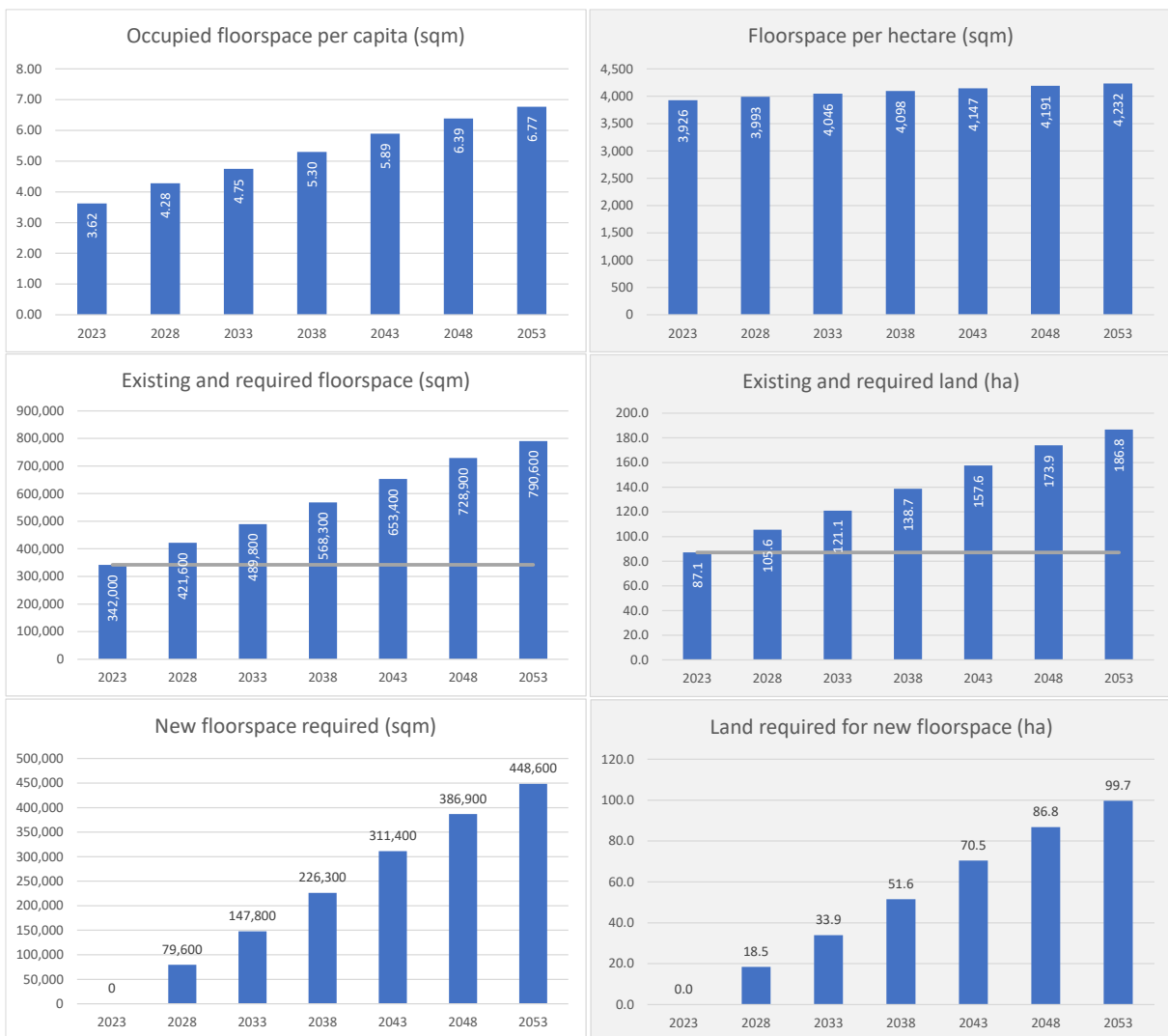


4.2.1 Key results for large industrial businesses

The key results for the base scenario are:

- Required floorspace per capita projected to increase from 3.62 sqm in 2023 to 6.77 sqm in 2053 (+87%). This is driven by the Te Utanganui modelling which assumes that Palmerston North will become a nationally significant distribution hub for the lower North Island.
- Required floorspace projected to increase from 342,000 sqm in 2023 to 790,600 sqm in 2053 (+131%).
- 448,600 sqm of new floorspace required by 2053.
- Floorspace per hectare projected to increase from 3,926 sqm in 2023 to 4,232 sqm in 2053 (+8%).
- Required land projected to increase from 87.1 ha in 2023 to 186.8 ha in 2053 (+100%).
- 99.7 ha of land required for new floorspace by 2053.

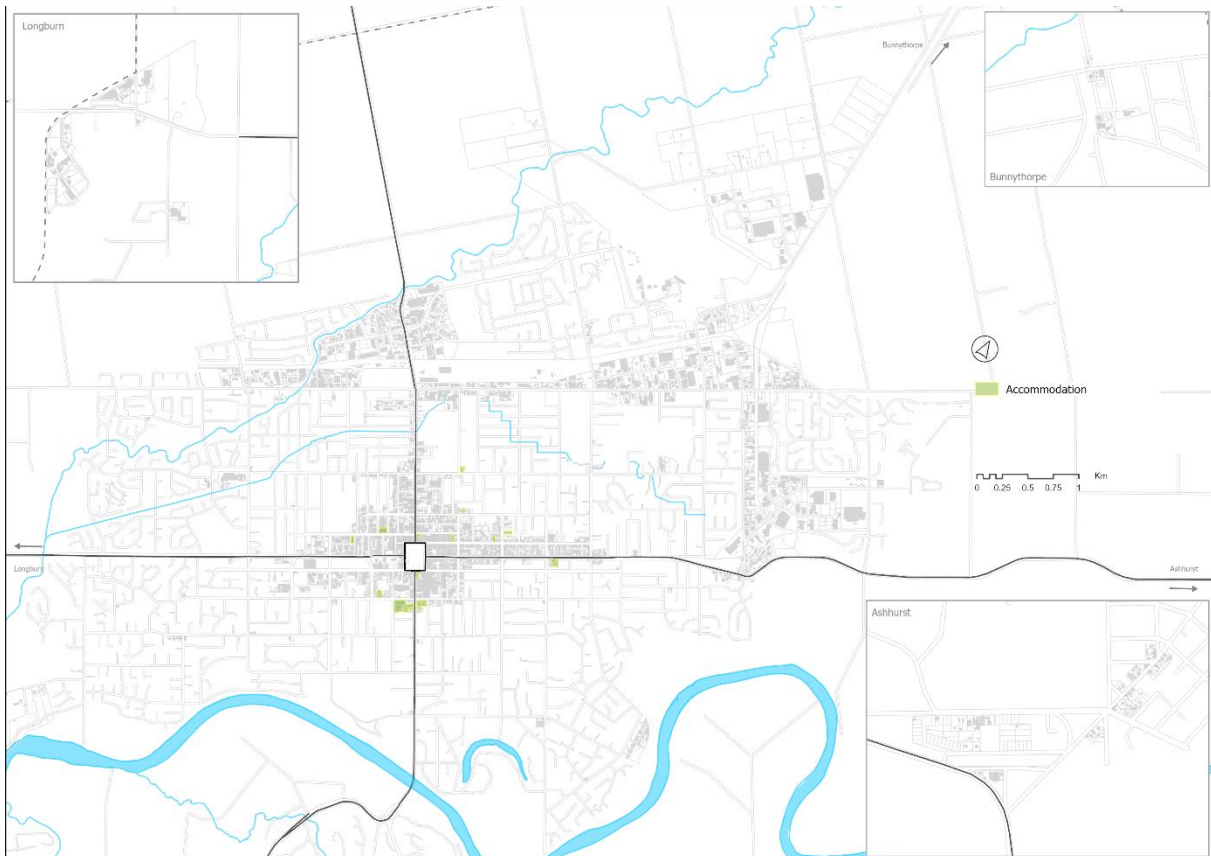
Figure 13 Summary of modelled results for large industrial businesses



4.3 Accommodation businesses

The map below shows the locations of the land parcels occupied by accommodation businesses in 2023 within the three commercial zones considered in this study.

Figure 14 Accommodation business land parcels in 2023



The table below shows floorspace and land areas for accommodation businesses in 2023 segmented by the commercial zones they are located within.

Table 31 Location of existing accommodation businesses in 2023

Measure	Airport & industrial zones	NEIZ	Business zones	Out of zone	TOTAL
Total floorspace (sqm)	0	0	43,831	1,170	45,001
Occupied floorspace (sqm)	0	0	42,111	1,170	43,281
Developed land area (ha)	0.0	0.0	4.7	0.3	5.0

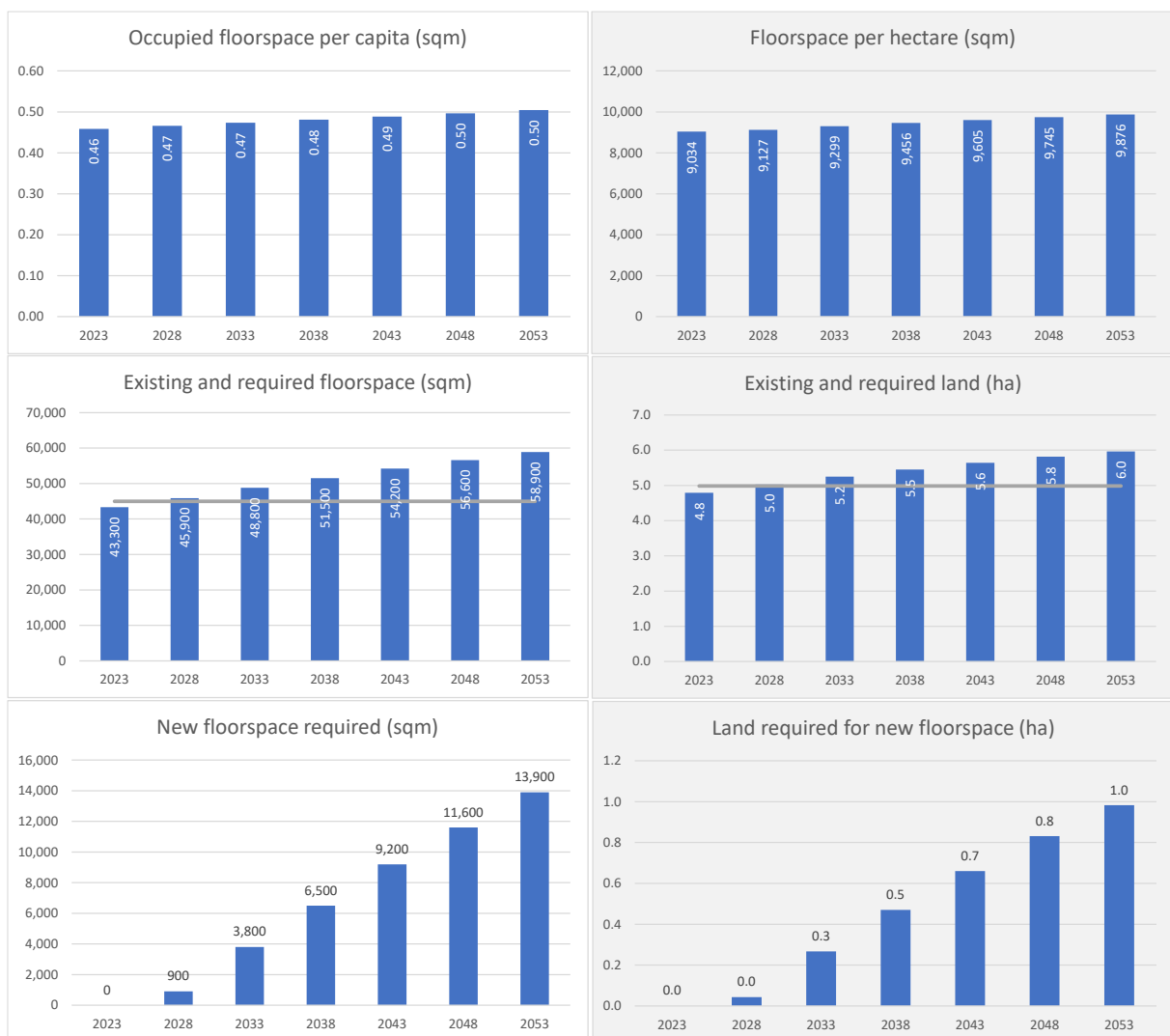


4.3.1 Key results for accommodation businesses

The key results for the base scenario are:

- Required floorspace per capita projected to increase from 0.46 sqm in 2023 to 0.50 sqm in 2053 (+10%).
- Required floorspace projected to increase from 43,300 sqm in 2023 to 58,900 sqm in 2053 (+36%).
- 13,900 sqm of new floorspace required by 2053.
- Floorspace per hectare projected to increase from 9,034 sqm in 2023 to 9,876 sqm in 2053 (+9%).
- Required land projected to increase from 4.8 ha in 2023 to 6.0 ha in 2053 (+24%).
- 1 ha of land required for new floorspace by 2053.

Figure 15 Summary of modelled results for accommodation businesses

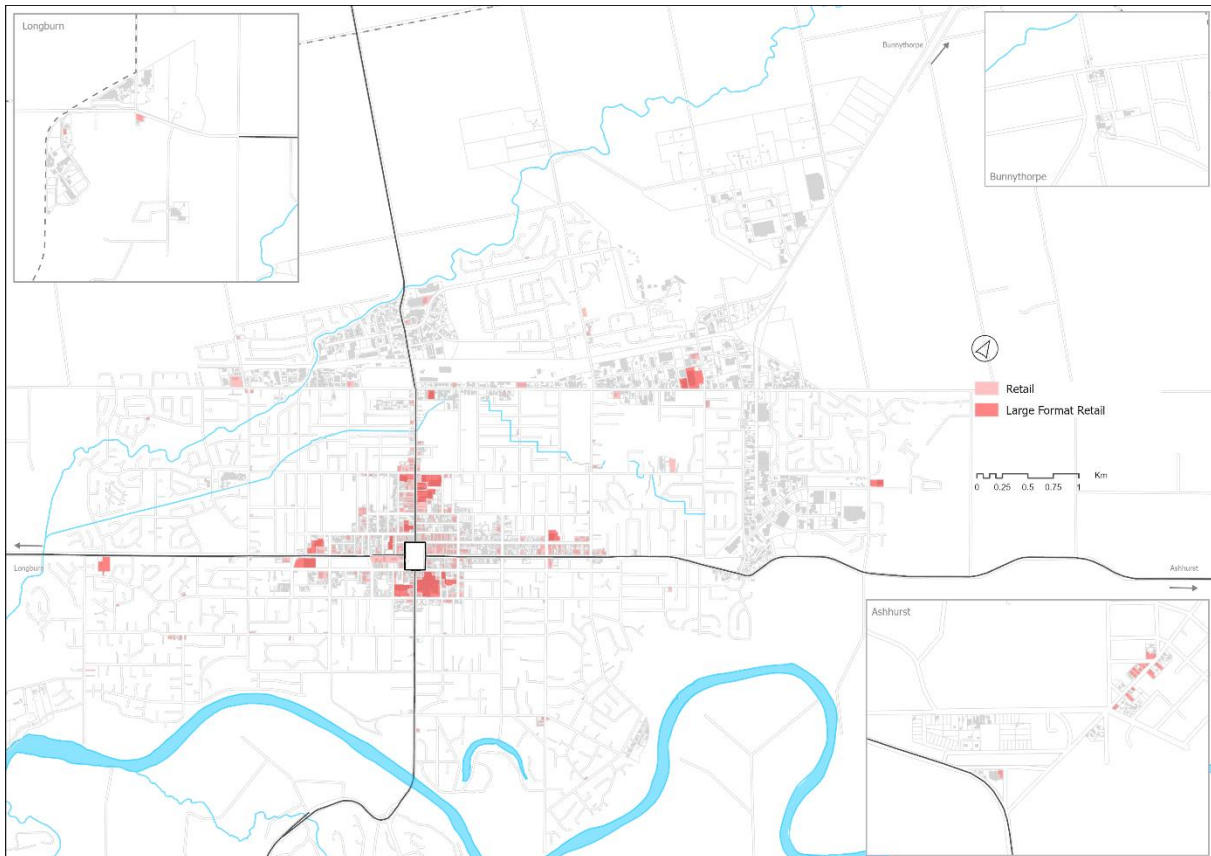




4.4 Small & medium retail businesses

The map below shows the locations of the land parcels occupied by small & medium retail businesses in 2023 (described as “Retail” in the legend). Land parcels occupied by large format retail businesses are also shown for context.

Figure 16 Small & medium retail business land parcels in 2023



The table below shows floorspace and land areas for small & medium retail businesses in 2023 segmented by the commercial zones they are located within.

Table 32 Location of existing small and medium retail businesses in 2023

Measure	Airport & industrial zones	NEIZ	Business zones	Out of zone	TOTAL
Total floorspace (sqm)	21,374	0	282,070	1,469	304,913
Occupied floorspace (sqm)	20,362	0	247,136	1,469	268,967
Developed land area (ha)	7.2	0.0	40.1	0.5	47.8

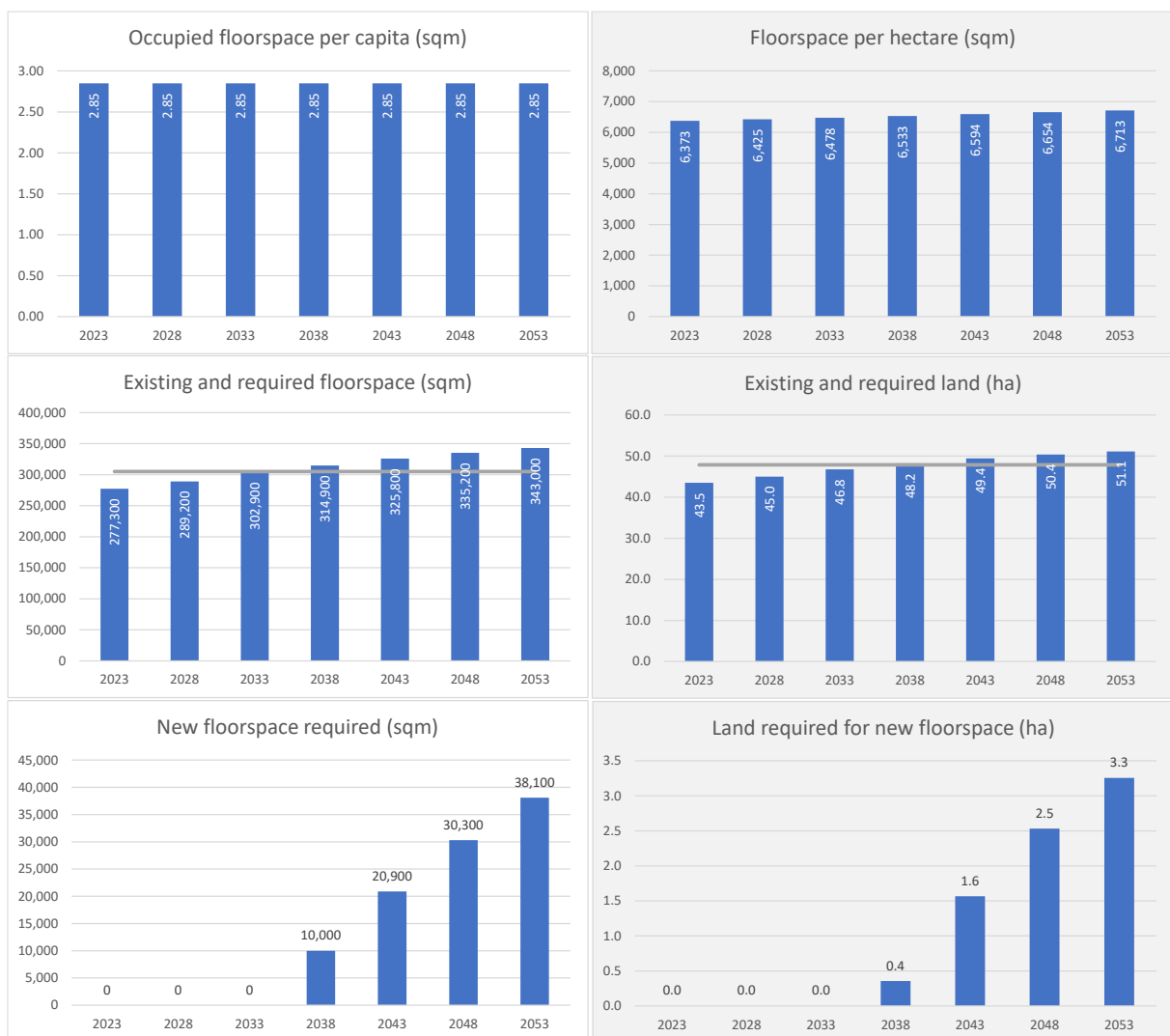


4.4.1 Key results for small & medium retail businesses

The key results for the base scenario are:

- Required floorspace per capita projected to remain unchanged at 2.85 sqm across the forecast period.
- Required floorspace projected to increase from 277,300 sqm in 2023 to 343,000 sqm in 2053 (+24%).
- 38,100 sqm of new floorspace required by 2053.
- Floorspace per hectare projected to increase from 6,373 sqm in 2023 to 6,713 sqm in 2053 (+5%).
- Required land projected to increase from 43.5 ha in 2023 to 51.1 ha in 2053 (+17%).
- 3.3 ha of land required for new floorspace by 2053.

Figure 17 Summary of modelled results for small & medium retail businesses

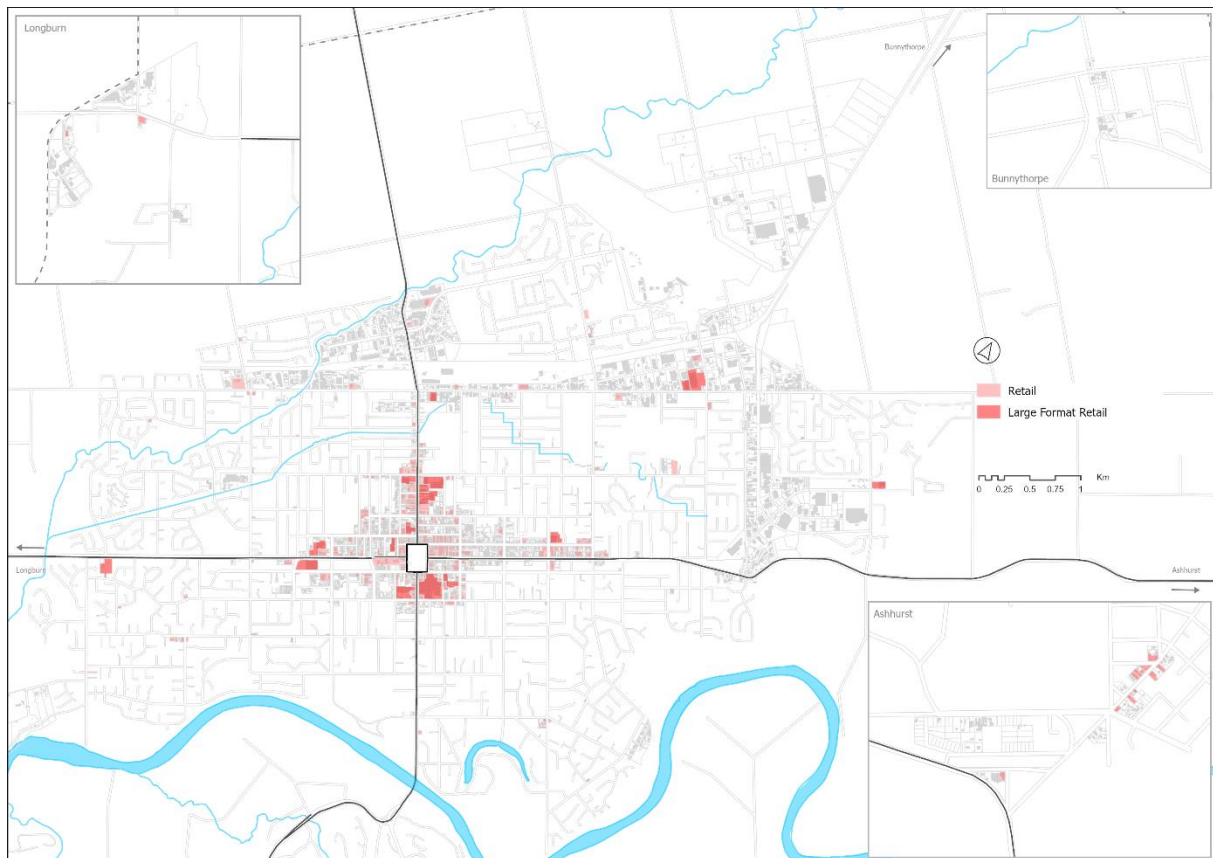




4.5 Large retail businesses

The map below shows the locations of the land parcels occupied by large retail businesses in 2023 (described as “Large format retail” in the legend). Land parcels occupied by small & medium format retail businesses (described as “Retail” in the legend) are also shown for context.

Figure 18 Large retail business land parcels in 2023



The table below shows floorspace and land areas for large retail businesses in 2023 segmented by the commercial zones they are located within.

Table 33 Location of existing large retail businesses in 2023

Measure	Airport & industrial zones	NEIZ	Business zones	Out of zone	TOTAL
Total floorspace (sqm)	13,987	0	107,116	0	121,103
Occupied floorspace (sqm)	13,987	0	107,116	0	121,103
Developed land area (ha)	3.8	0.0	24.6	0.0	28.4

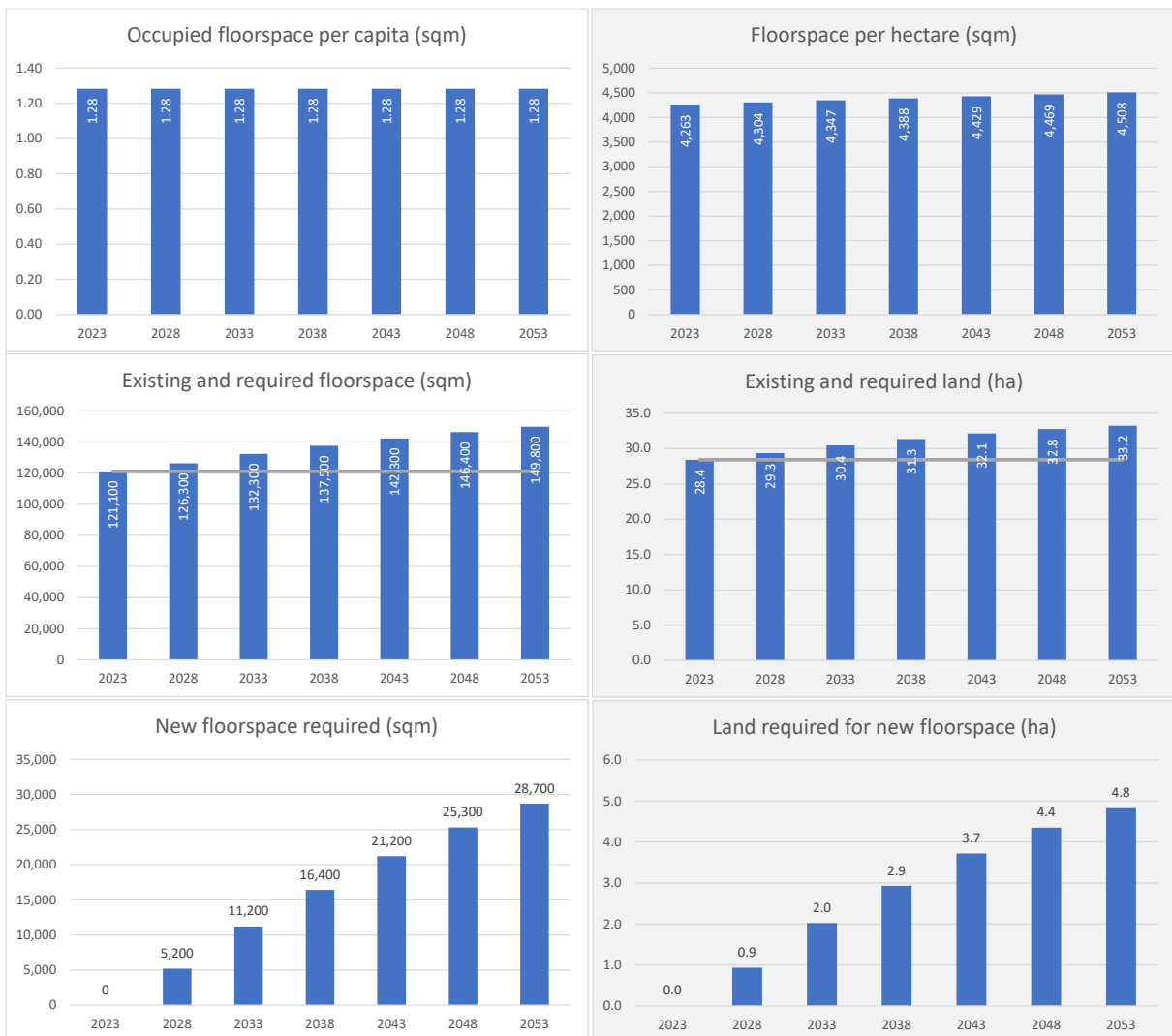


4.5.1 Key results for large retail businesses

The key results for the base scenario are:

- Required floorspace per capita projected to remain unchanged at 1.28 sqm across the forecast period.
- Required floorspace projected to increase from 121,100 sqm in 2023 to 149,800 sqm in 2053 (+24%).
- 28,700 sqm of new floorspace required by 2053.
- Floorspace per hectare projected to increase from 4,263 sqm in 2023 to 4,508 sqm in 2053 (+6%).
- Required land projected to increase from 28.4 ha in 2023 to 33.2 ha in 2053 (+17%).
- 4.8 ha of land required for new floorspace by 2053.

Figure 19 Summary of modelled results for large retail businesses

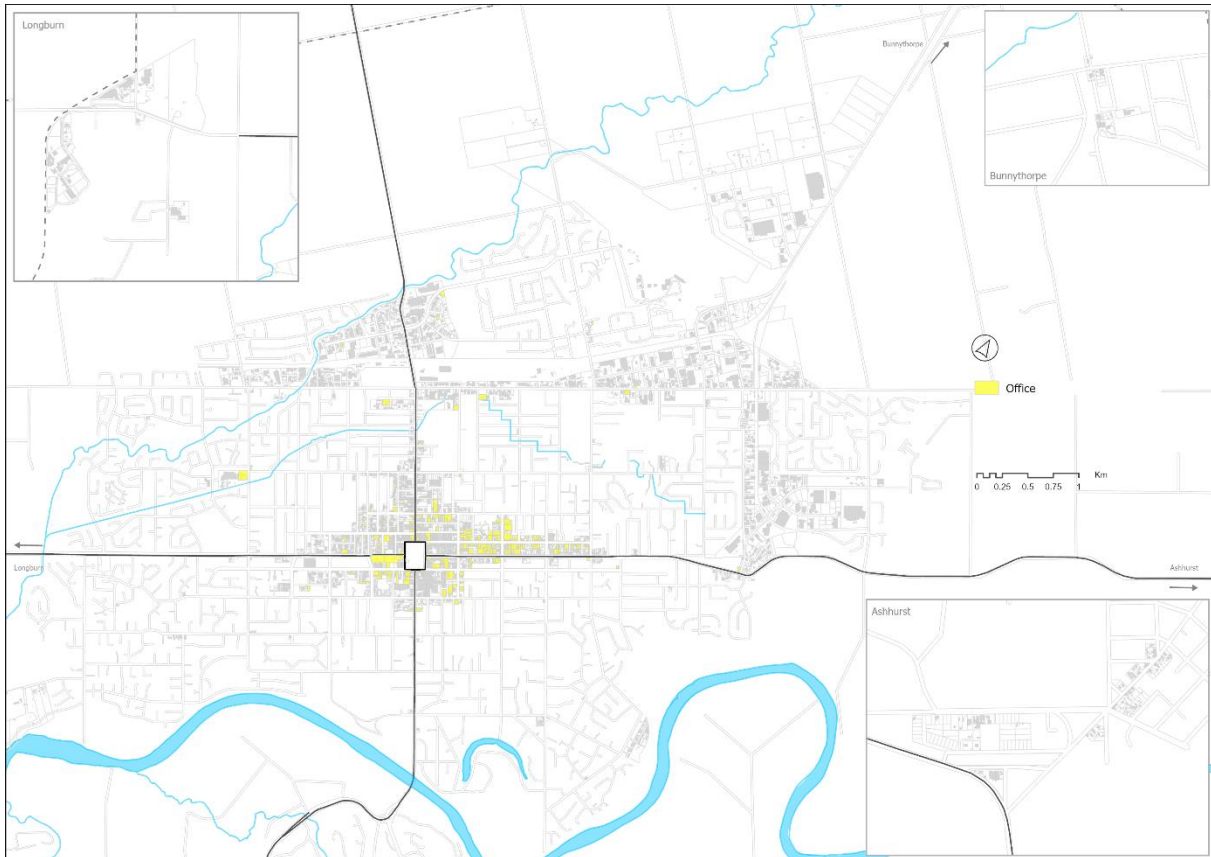




4.6 Commercial offices

The map below shows the locations of the land parcels occupied by commercial offices in 2023.

Figure 20 Commercial office land parcels in 2023



The table below shows floorspace and land areas for commercial offices in 2023 segmented by the commercial zones they are located within.

Table 34 Location of existing commercial offices in 2023

Measure	Airport & industrial zones	NEIZ	Business zones	Out of zone	TOTAL
Total floorspace (sqm)	11,720	0	204,201	0	215,921
Occupied floorspace (sqm)	11,720	0	180,061	0	191,781
Developed land area (ha)	2.5	0.0	21.8	0.0	24.3

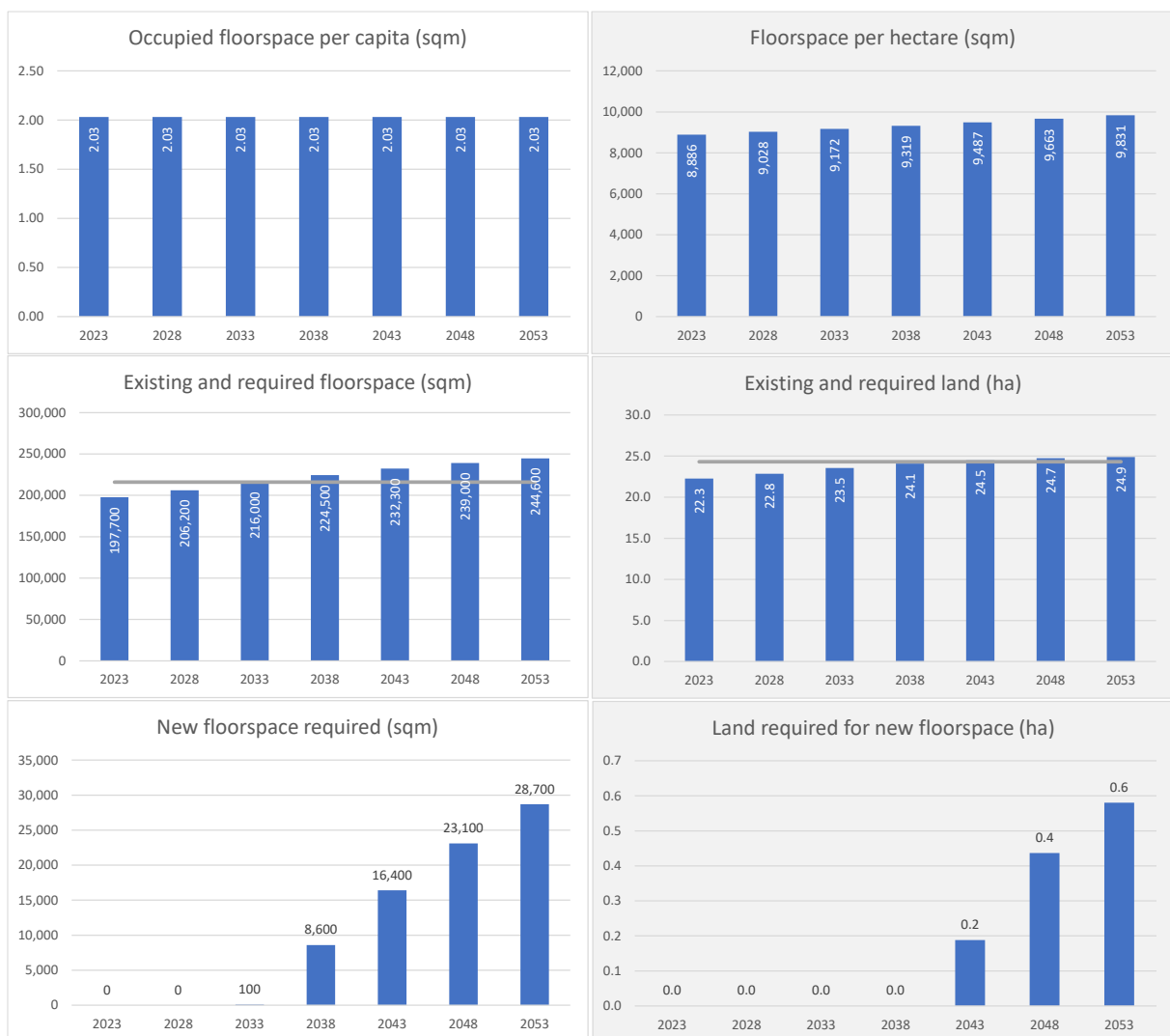


4.6.1 Key results for commercial offices

The key results for the base scenario are:

- Required floorspace per capita projected to remain unchanged at 2.03 sqm across the forecast period.
- Required floorspace projected to increase from 197,700 sqm in 2023 to 244,600 sqm in 2053 (+24%).
- 28,700 sqm of new floorspace required by 2053.
- Floorspace per hectare projected to increase from 8,886 sqm in 2023 to 9,831 sqm in 2053 (+11%).
- Required land projected to increase from 22.3 ha in 2023 to 24.9 ha in 2053 (+12%).
- 0.6 ha of land required for new floorspace by 2053.

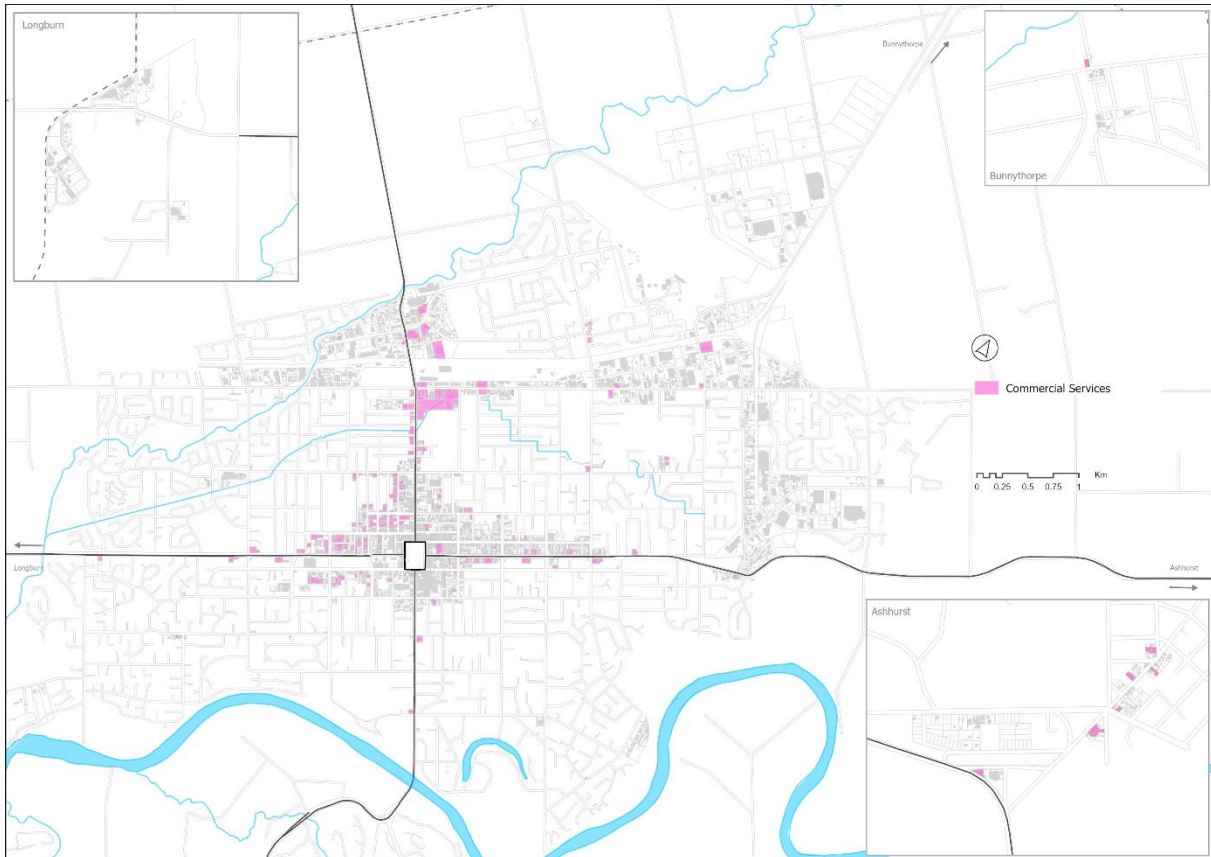
Figure 21 Summary of modelled results for commercial offices



4.7 Commercial service businesses

The map below shows the locations of the land parcels occupied by commercial service businesses in 2023.

Figure 22 Commercial service land parcels in 2023



The table below shows floorspace and land areas for other commercial service businesses in 2023 segmented by the commercial zones they are located within.

Table 35 Location of commercial service businesses in 2023

Measure	Airport & industrial zones	NEIZ	Business zones	Out of zone	TOTAL
Total floorspace (sqm)	26,177	0	119,620	0	145,797
Occupied floorspace (sqm)	26,177	0	115,182	0	141,359
Developed land area (ha)	9.1	0.0	28.8	0.0	37.9

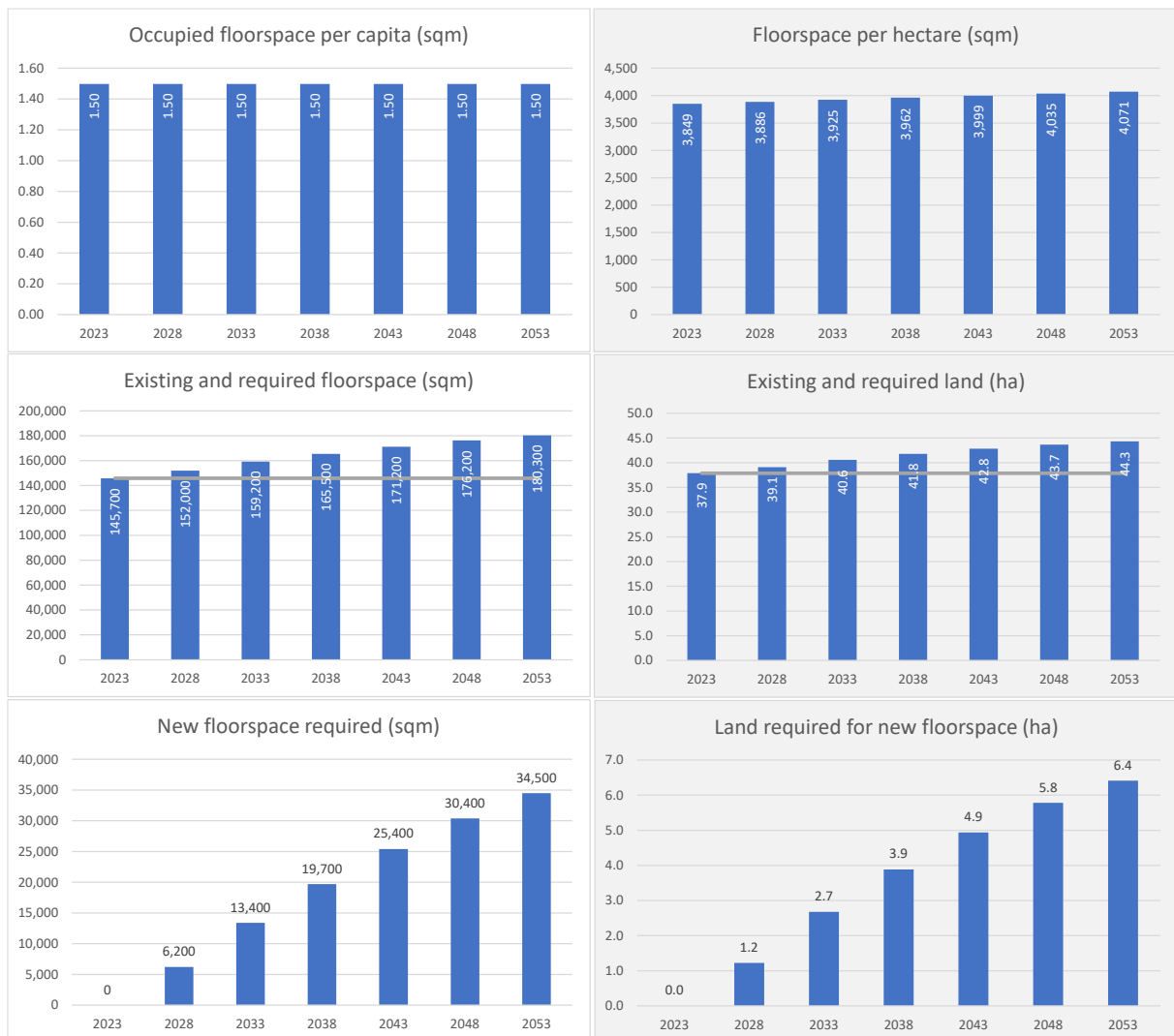


4.7.1 Key results for commercial service businesses

The key results for the base scenario are:

- Required floorspace per capita projected to remain unchanged at 1.50 sqm across the forecast period.
- Required floorspace projected to increase from 145,700 sqm in 2023 to 180,300 sqm in 2053 (+24%).
- 34,500 sqm of new floorspace required by 2053.
- Floorspace per hectare projected to increase from 3,849 sqm in 2023 to 4,071 sqm in 2053 (+6%).
- Required land projected to increase from 37.9 ha in 2023 to 44.3 ha in 2053 (+17%).
- 6.4 ha of land required for new floorspace by 2053.

Figure 23 Summary of modelled results for other commercial service businesses





5 Commercial zone results

This section converts the additional property type land requirements from the previous section into additional land requirements for the following commercial zones:

- Airport & industrial zones (aggregated)
- NEIZ
- Business zones (aggregated)

The process thereafter involves:

- Adding the NPS competitiveness margin to determine the total additional land requirement for each commercial zone in each NPS period (“Additional land requirement”).
- Determining the amount of land currently available for development in each commercial zone in each NPS period (“Gross land available”).
- Calculating the projected shortage of land in each commercial zone in each NPS period, if any (“Gross land deficit”).

The base (2023) land availability values have been provided by Palmerston North City Council (see Table 14).

The conversion of property type land to commercial zone land is based on the assumptions in the table below about which commercial zone(s) the additional property type land will be located in (same as Table 23). These assumptions have been informed by current relationships (see Table 22) and discussions with the PNCC planning team. They are applied uniformly to all future years.

Table 36 Allocation of additional property type land to commercial zones

Property type	Commercial zone				
	Airport & industrial	NEIZ	Business	Out of zone	TOTAL
Small & medium industrial	95%	5%	0%	0%	100%
Large industrial	0%	100%	0%	0%	100%
Accommodation	0%	0%	100%	0%	100%
Small & medium retail	10%	0%	90%	0%	100%
Large retail	10%	0%	90%	0%	100%
Commercial office	10%	0%	90%	0%	100%
Commercial services	25%	0%	75%	0%	100%



5.1 Airport & industrial zones

5.1.1 Total land requirement in airport & industrial zones

The key results for the base scenario are:

- Total commercial requirement of 7.5 hectares of additional land in Year 3, 20.2 hectares in Year 10, and 44.5 hectares in Year 30. The commercial requirement describes the amount of land businesses would need (private land parcels) to accommodate their future floorspace levels.
- **Total additional land requirement of 8.9 hectares in Year 3, 24.3 hectares in Year 10, and 51.1 hectares in Year 30. This is calculated as the total commercial requirement plus the NPS competitiveness margin.**

Table 37 Demand projections for land in airport & industrial zones (hectares)

Property type	3 years	10 years	30 years
Small & medium industrial	7.2	19.3	42.0
Large industrial	0.0	0.0	0.0
Accommodation	0.0	0.0	0.0
Small & medium retail	0.0	0.0	0.3
Large retail	0.1	0.2	0.5
Commercial office	0.0	0.0	0.1
Commercial services	0.2	0.7	1.6
Total commercial requirement	7.5	20.2	44.5
NPS margin	1.5	4.0	6.7
Additional land requirement	8.9	24.3	51.1

5.1.2 Capacity assessment for airport & industrial zones

The results of the capacity assessment indicate that the 66.4 hectares of available zoned land will be sufficient to accommodate projected commercial requirements in all periods considered, including associated public infrastructure requirements.

Table 38 Capacity assessment for land in airport & industrial zones (hectares)

	3 years	10 years	30 years
Additional commercial land requirement	8.9	24.3	51.1
Commercial requirement	7.5	20.2	44.5
NPS margin	1.5	4.0	6.7
Commercial zoned land available in 2023*	66.4	66.4	66.4
Private land parcels	63.5	63.5	63.5
Public infrastructure allocation	2.9	2.9	2.9
Commercial zoned land deficit	0.0	0.0	0.0
Private land parcels	0.0	0.0	0.0
Public infrastructure allocation	0.0	0.0	0.0

* Excludes net loss of 33.5ha of land zoned Braeburn Industrial Area. This land is restricted through the District Plan to dairy-related industries only. Any other industrial use would require a non-complying resource consent, which would be difficult to obtain.



5.2 NEIZ

5.2.1 Total land requirement in NEIZ

The key results for the base scenario are:

- Total commercial requirement of 12 hectares of additional land in Year 3, 35 hectares in Year 10, and 101.9 hectares in Year 30. The commercial requirement describes the amount of land businesses would need (private land parcels) to accommodate their future floorspace levels.
- **Total additional land requirement of 14.4 hectares in Year 3, 42 hectares in Year 10, and 117.2 hectares in Year 30. This is calculated as the total commercial requirement plus the NPS competitiveness margin.**

Table 39 Demand projections for land in NEIZ (hectares)

Property type	3 years	10 years	30 years
Small & medium industrial	0.4	1.0	2.2
Large industrial	11.6	33.9	99.7
Accommodation	0.0	0.0	0.0
Small & medium retail	0.0	0.0	0.0
Large retail	0.0	0.0	0.0
Commercial office	0.0	0.0	0.0
Commercial services	0.0	0.0	0.0
Total commercial requirement	12.0	35.0	101.9
NPS margin	2.4	7.0	15.3
Additional land requirement	14.4	42.0	117.2

5.2.2 Capacity assessment for NEIZ

The results of the capacity assessment indicate that the 145.9 hectares of available zoned land will be sufficient to accommodate projected commercial requirements in all periods considered, including associated public infrastructure requirements.

Table 40 Capacity assessment for land in NEIZ (hectares)

	3 years	10 years	30 years
Additional commercial land requirement	14.4	42.0	117.2
Commercial requirement	12.0	35.0	101.9
NPS margin	2.4	7.0	15.3
Commercial zoned land available in 2023*	145.9	145.9	145.9
Private land parcels	127.3	127.3	127.3
Public infrastructure allocation	18.6	18.6	18.6
Commercial zoned land deficit	0.0	0.0	0.0
Private land parcels	0.0	0.0	0.0
Public infrastructure allocation	0.0	0.0	0.0

* Excludes net loss of 35ha of NEIZ land to KiwiRail freight hub. See section 3.2.6 for more information.



5.3 Business zones

5.3.1 Total land requirement in business zones

The key results for the base scenario are:

- Total commercial requirement of 1 hectare of additional land in Year 3, 4.1 hectares in Year 10, and 13.6 hectares in Year 30. The commercial requirement describes the amount of land businesses would need (private land parcels) to accommodate their future floorspace levels.
- **Total additional land requirement of 1.2 hectares in Year 3, 4.9 hectares in Year 10, and 15.6 hectares in Year 30. This is calculated as the total commercial requirement plus the NPS competitiveness margin.**

Table 41 Demand projections for land in business zones (hectares)

Property type	3 years	10 years	30 years
Small & medium industrial	0.0	0.0	0.0
Large industrial	0.0	0.0	0.0
Accommodation	0.0	0.3	1.0
Small & medium retail	0.0	0.0	2.9
Large retail	0.5	1.8	4.3
Commercial office	0.0	0.0	0.5
Commercial services	0.5	2.0	4.8
Total commercial requirement	1.0	4.1	13.6
NPS margin	0.2	0.8	2.0
Additional land requirement	1.2	4.9	15.6

5.3.2 Capacity assessment for business zones

The results of the capacity assessment indicate that the 19 hectares of available zoned land will be sufficient to accommodate projected commercial requirements in all periods considered, including associated public infrastructure requirements.

Table 42 Capacity assessment for land in business zones (hectares)

	3 years	10 years	30 years
Additional commercial land requirement	1.2	4.9	15.6
Commercial requirement	1.0	4.1	13.6
NPS margin	0.2	0.8	2.0
Commercial zoned land available in 2023	19.0	19.0	19.0
Private land parcels	19.0	19.0	19.0
Public infrastructure allocation	0.0	0.0	0.0
Commercial zoned land deficit	0.0	0.0	0.0
Private land parcels	0.0	0.0	0.0
Public infrastructure allocation	0.0	0.0	0.0



5.4 Comparison with previous NPS-UD projections

The previous NPS-UD projections for Palmerston North city were produced by Property Economics in 2018. It is difficult to compare the current projections with those produced by Property Economics due to material differences in modelling and reporting approaches. However, the Property Economics report predicted the need for more industrial and business zoned land within the forecasting horizon, while the current projections indicate that there is sufficient industrial and business zoned land to meet all commercial requirements for the next 30 years. These opposing conclusions appear to be driven by the following differences in modelling approaches:

- Property Economics assumed that existing floorspace was operating at maximum productivity for retail and commercial service properties such that any extra demand would require new floorspace. The current projections assume that (a) vacant properties will absorb additional demand until the optimal vacancy rate is achieved. This may require the redevelopment of B and C grade buildings that are currently difficult to tenant; and (b) businesses will use floorspace more efficiently over time due to scale economies and higher occupancy costs. The cumulative outcome of these effects is an additional floorspace requirement that sits comfortably below the projected change in demand in percentage terms.
- Property Economics has assumed that current land use intensity (floorspace per hectare) will persist for the next 30 years. The current projections assume that (a) the land use intensity of developed land parcels will gradually increase as infill/redevelopment occurs; and (b) new developments will be built at a higher density than existing developments due to higher land and building costs. The cumulative outcome of these effects is an additional land requirement that sits comfortably below the projected additional floorspace requirement in percentage terms.

When extended across 30 years, these differences in modelling approaches result in materially different floorspace and land projections.



6 Sensitivity analysis

Sensitivity analysis has been conducted to manage uncertainty and understand the potential range of outcomes Palmerston North city could expect over the next 30 years.

The sensitivity analysis provides feasible lower (low land demand scenario) and upper (high land demand scenario) bounds around the base scenario. We would expect future commercial land requirements to lie within this range, and to generally follow the trend of the base scenario over time. **The most likely demand scenario for commercial land, as per NPS-UD tier 2 requirements, is therefore the base scenario.**

The assumptions driving the low land demand scenario result in a commercial footprint that is smaller than the base growth scenario, while the assumptions driving the high land demand scenario result in a commercial footprint that is larger than the base scenario. A summary of the sensitivity analysis assumptions is presented in the table below.

Table 43 Summary of sensitivity analysis assumptions

Driver	Reference	Low land demand scenario	High land demand scenario
Population growth	Table 15	Low	High
Occupied floorspace per capita relative to base scenario	Table 25	Low	High
Vacancy buffers	Table 26	Low	High
Floorspace per hectare of developed land in year 30 relative to 2023	Table 27	High	Low
Floorspace per hectare on newly developed land relative to land that is already developed	Table 28	High	Low



6.1 Low land demand scenario

6.1.1 Airport & industrial zones

The results for the low land demand scenario indicate that no additional land will be required within the forecasting period i.e. future demand can be accommodated within the existing commercial footprint.

Table 44 Demand projections for land in airport & industrial zones (hectares) – low land demand scenario

Property type	3 years	10 years	30 years
Small & medium industrial	0.0	0.0	0.0
Large industrial	0.0	0.0	0.0
Accommodation	0.0	0.0	0.0
Small & medium retail	0.0	0.0	0.0
Large retail	0.0	0.0	0.0
Commercial office	0.0	0.0	0.0
Commercial services	0.0	0.0	0.0
Total commercial requirement	0.0	0.0	0.0
NPS margin	0.0	0.0	0.0
Additional land requirement	0.0	0.0	0.0

The results of the capacity assessment indicate that none of the 66.4 hectares of available zoned land would need to be developed to accommodate future growth.

Table 45 Capacity assessment for land in airport & industrial zones (hectares) – low land demand scenario

	3 years	10 years	30 years
Additional commercial land requirement	0.0	0.0	0.0
Commercial requirement	0.0	0.0	0.0
NPS margin	0.0	0.0	0.0
Commercial zoned land available in 2023*	66.4	66.4	66.4
Private land parcels	63.5	63.5	63.5
Public infrastructure allocation	2.9	2.9	2.9
Commercial zoned land deficit	0.0	0.0	0.0
Private land parcels	0.0	0.0	0.0
Public infrastructure allocation	0.0	0.0	0.0

* Excludes net loss of 33.5ha of land zoned Braeburn Industrial Area. This land is restricted through the District Plan to dairy-related industries only. Any other industrial use would require a non-complying resource consent, which would be difficult to obtain.



6.1.2 NEIZ

The key results for the low land demand scenario are:

- Total commercial requirement of 7.7 hectares of additional land in Year 3, 20.6 hectares in Year 10, and 49.9 hectares in Year 30. The commercial requirement describes the amount of land businesses would need (private land parcels) to accommodate their future floorspace levels.
- **Total additional land requirement of 9.3 hectares in Year 3, 24.8 hectares in Year 10, and 57.3 hectares in Year 30. This is calculated as the total commercial requirement plus the NPS competitiveness margin.**

Table 46 Demand projections for land in NEIZ (hectares) – low land demand scenario

Property type	3 years	10 years	30 years
Small & medium industrial	0.0	0.0	0.0
Large industrial	7.7	20.6	49.9
Accommodation	0.0	0.0	0.0
Small & medium retail	0.0	0.0	0.0
Large retail	0.0	0.0	0.0
Commercial office	0.0	0.0	0.0
Commercial services	0.0	0.0	0.0
Total commercial requirement	7.7	20.6	49.9
NPS margin	1.5	4.1	7.5
Additional land requirement	9.3	24.8	57.3

The results of the capacity assessment indicate that the 145.9 hectares of available zoned land will be sufficient to accommodate projected commercial requirements in all periods considered, including associated public infrastructure requirements.

Table 47 Capacity assessment for land in NEIZ (hectares) – low land demand scenario

	3 years	10 years	30 years
Additional commercial land requirement	9.3	24.8	57.3
Commercial requirement	7.7	20.6	49.9
NPS margin	1.5	4.1	7.5
Commercial zoned land available in 2023*	145.9	145.9	145.9
Private land parcels	127.3	127.3	127.3
Public infrastructure allocation	18.6	18.6	18.6
Commercial zoned land deficit	0.0	0.0	0.0
Private land parcels	0.0	0.0	0.0
Public infrastructure allocation	0.0	0.0	0.0

* Excludes net loss of 35ha of NEIZ land to KiwiRail freight hub. See section 3.2.6 for more information.



6.1.3 Business zones

The results for the low land demand scenario show only a very small requirement for 0.1 hectares of additional land in Year 10. However, this requirement is not present in Year 30 due to gains in land use efficiency.

Demand projections for land in business zones (hectares) – low land demand scenario

Property type	3 years	10 years	30 years
Small & medium industrial	0.0	0.0	0.0
Large industrial	0.0	0.0	0.0
Accommodation	0.0	0.0	0.0
Small & medium retail	0.0	0.0	0.0
Large retail	0.0	0.1	0.0
Commercial office	0.0	0.0	0.0
Commercial services	0.0	0.0	0.0
Total commercial requirement	0.0	0.1	0.0
NPS margin	0.0	0.0	0.0
Additional land requirement	0.0	0.1	0.0

The results of the capacity assessment indicate that the 19 hectares of available zoned land will be sufficient to accommodate projected commercial requirements in all periods considered, including associated public infrastructure requirements.

Table 48 Capacity assessment for land in business zones (hectares) – low land demand scenario

	3 years	10 years	30 years
Additional commercial land requirement	0.0	0.1	0.0
Commercial requirement	0.0	0.1	0.0
NPS margin	0.0	0.0	0.0
Commercial zoned land available in 2023	19.0	19.0	19.0
Private land parcels	19.0	19.0	19.0
Public infrastructure allocation	0.0	0.0	0.0
Commercial zoned land deficit	0.0	0.0	0.0
Private land parcels	0.0	0.0	0.0
Public infrastructure allocation	0.0	0.0	0.0



6.2 High land demand scenario

6.2.1 Airport & industrial zones

The key results for the high land demand scenario are:

- Total commercial requirement of 17.8 hectares of additional land in Year 3, 45.2 hectares in Year 10, and 108.8 hectares in Year 30. The commercial requirement describes the amount of land businesses would need (private land parcels) to accommodate their future floorspace levels.
- **Total additional land requirement of 21.4 hectares in Year 3, 54.2 hectares in Year 10, and 125.1 hectares in Year 30. This is calculated as the total commercial requirement plus the NPS competitiveness margin.**

Demand projections for land in airport & industrial zones (hectares) – high land demand scenario

Property type	3 years	10 years	30 years
Small & medium industrial	17.2	42.7	101.5
Large industrial	0.0	0.0	0.0
Accommodation	0.0	0.0	0.0
Small & medium retail	0.0	0.3	1.4
Large retail	0.1	0.4	1.1
Commercial office	0.0	0.2	0.7
Commercial services	0.6	1.6	4.0
Total commercial requirement	17.8	45.2	108.8
NPS margin	3.6	9.0	16.3
Additional land requirement	21.4	54.2	125.1

The results of the capacity assessment indicate that the 66.4 hectares of available zoned land would be sufficient to accommodate short and medium-term growth, but that an additional 15.4 ha of land would need to be zoned to accommodate long-term growth. Under this scenario the 66.4 hectares of available land would be fully utilised in Year 14 (2037).

Table 49 Capacity assessment for land in airport & industrial zones (hectares) – high land demand scenario

	3 years	10 years	30 years
Additional commercial land requirement	21.4	54.2	125.1
Commercial requirement	17.8	45.2	108.8
NPS margin	3.6	9.0	16.3
Commercial zoned land available in 2023*	66.4	66.4	66.4
Private land parcels	63.5	63.5	63.5
Public infrastructure allocation	2.9	2.9	2.9
Commercial zoned land deficit	0.0	0.0	77.1
Private land parcels	0.0	0.0	61.7
Public infrastructure allocation	0.0	0.0	15.4

* Excludes net loss of 33.5ha of land zoned Braeburn Industrial Area. This land is restricted through the District Plan to dairy-related industries only. Any other industrial use would require a non-complying resource consent, which would be difficult to obtain.



6.2.2 NEIZ

The key results for the high land demand scenario are:

- Total commercial requirement of 16.4 hectares of additional land in Year 3, 52.1 hectares in Year 10, and 170.8 hectares in Year 30. The commercial requirement describes the amount of land businesses would need (private land parcels) to accommodate their future floorspace levels.
- **Total additional land requirement of 19.6 hectares in Year 3, 62.5 hectares in Year 10, and 196.4 hectares in Year 30. This is calculated as the total commercial requirement plus the NPS competitiveness margin.**

Demand projections for land in NEIZ (hectares) – high land demand scenario

Property type	3 years	10 years	30 years
Small & medium industrial	0.9	2.2	5.3
Large industrial	15.5	49.9	165.5
Accommodation	0.0	0.0	0.0
Small & medium retail	0.0	0.0	0.0
Large retail	0.0	0.0	0.0
Commercial office	0.0	0.0	0.0
Commercial services	0.0	0.0	0.0
Total commercial requirement	16.4	52.1	170.8
NPS margin	3.3	10.4	25.6
Additional land requirement	19.6	62.5	196.4

The results of the capacity assessment indicate that the 145.9 hectares of available zoned land would be sufficient to accommodate short and medium-term growth, but that an additional 86.4 ha of land would need to be zoned to accommodate long-term growth. Under this scenario the 145.9 hectares of available land would be fully utilised in Year 22 (2045).

Table 50 Capacity assessment for land in NEIZ (hectares) – high land demand scenario

	3 years	10 years	30 years
Additional commercial land requirement	19.6	62.5	196.4
Commercial requirement	16.4	52.1	170.8
NPS margin	3.3	10.4	25.6
Commercial zoned land available in 2023*	145.9	145.9	145.9
Private land parcels	127.3	127.3	127.3
Public infrastructure allocation	18.6	18.6	18.6
Commercial zoned land deficit	0.0	0.0	86.4
Private land parcels	0.0	0.0	69.1
Public infrastructure allocation	0.0	0.0	17.3

* Excludes net loss of 35ha of NEIZ land to KiwiRail freight hub. See section 3.2.6 for more information.



6.2.3 Business zones

The key results for the high land demand scenario are:

- Total commercial requirement of 2.8 hectares of additional land in Year 3, 13.9 hectares in Year 10, and 44.6 hectares in Year 30. The commercial requirement describes the amount of land businesses would need (private land parcels) to accommodate their future floorspace levels.
- **Total additional land requirement of 3.3 hectares in Year 3, 16.6 hectares in Year 10, and 51.3 hectares in Year 30. This is calculated as the total commercial requirement plus the NPS competitiveness margin.**

Demand projections for land in business zones (hectares) – high land demand scenario

Property type	3 years	10 years	30 years
Small & medium industrial	0.0	0.0	0.0
Large industrial	0.0	0.0	0.0
Accommodation	0.1	0.8	2.7
Small & medium retail	0.0	2.8	12.9
Large retail	1.0	3.8	10.2
Commercial office	0.0	1.6	6.7
Commercial services	1.7	4.9	12.1
Total commercial requirement	2.8	13.9	44.6
NPS margin	0.6	2.8	6.7
Additional land requirement	3.3	16.6	51.3

The results of the capacity assessment indicate that the 19 hectares of available zoned land would be sufficient to accommodate short and medium-term growth, but that an additional 40 ha of land will need to be zoned to accommodate long-term growth. Under this scenario the 19 hectares of available land would be fully utilised in Year 12 (2035).

Table 51 Capacity assessment for land in business zones (hectares) – high land demand scenario

	3 years	10 years	30 years
Additional commercial land requirement	3.3	16.6	51.3
Commercial requirement	2.8	13.9	44.6
NPS margin	0.6	2.8	6.7
Commercial zoned land available in 2023	19.0	19.0	19.0
Private land parcels	19.0	19.0	19.0
Public infrastructure allocation	0.0	0.0	0.0
Commercial zoned land deficit	0.0	0.0	40.3
Private land parcels	0.0	0.0	32.2
Public infrastructure allocation	0.0	0.0	8.1



7 Conclusions

The overarching conclusion is that Palmerston North City has enough zoned land to meet its business and industrial requirements for the next 30 years. Even the high land demand scenario, which is based on an unlikely combination of high population growth, high optimal vacancy rate, and low floorspace productivity, indicates that there is enough zoned land to meet all commercial needs for at least 20 years.

However, factors such as land banking and high ownership concentration could create the perception of scarcity even though there is enough available land to meet long-term commercial requirements. This is something PNCC will need to monitor and respond to if it becomes an issue.

Table 52 Summary of Palmerston North City Commercial Land Assessment

	3 years	10 years	30 years
Low land demand scenario			
Airport & industrial zones	✓	✓	✓
NEIZ	✓	✓	✓
Business zones	✓	✓	✓
Base scenario			
Airport & industrial zones	✓	✓	✓
NEIZ	✓	✓	✓
Business zones	✓	✓	✓
High land demand scenario			
Airport & industrial zones	✓	✓	X
NEIZ	✓	✓	X
Business zones	✓	✓	X



Appendix 1

Table 53 Total floorspace segmented by property type, grade, and detailed commercial zone (sqm)

	Airport	Industrial	NEIZ	Inner Business	Outer Business	Fringe Business	Local Business	Out of zone/ Residential	TOTAL
Small & medium industrial	8,540	698,252	33,333						740,125
Large industrial		228,998	112,969						341,967
Accommodation				20,659	21,242		1,930	1,170	45,001
Small & medium retail		21,374		129,097	112,924	5,786	34,263	1,469	304,913
Large retail		13,987		41,142	42,110	13,091	10,773		121,103
Commercial office		11,720		89,598	110,760	1,356	2,487		215,921
Commercial services		26,177		2,983	76,763	32,324	7,550		145,797
Other	14,821	15,023		45,731	26,704	6,627	3,229		112,135
TOTAL	23,361	1,015,531	146,302	329,210	390,503	59,184	60,232	2,639	2,026,962
A grade		244,599	146,302	74,320	115,024	12,830	15,603		608,678
B grade	23,361	650,241		185,593	190,765	40,487	33,118	210	1,123,775
C grade		120,681		69,297	84,700	5,867	11,511	2,429	294,485
Occupied commercial land		10			14	0			24
TOTAL	23,361	1,015,531	146,302	329,210	390,503	59,184	60,232	2,639	2,026,962



Table 54 Occupied floorspace segmented by property type, grade, and detailed commercial zone (sqm)

	Airport	Industrial	NEIZ	Inner Business	Outer Business	Fringe Business	Local Business	Out of zone/ Residential	TOTAL
Small & medium industrial	8,540	686,014	33,333						727,887
Large industrial		228,998	112,969						341,967
Accommodation				18,939	21,242		1,930	1,170	43,281
Small & medium retail		20,362		104,759	104,727	5,786	31,864	1,469	268,967
Large retail		13,987		41,142	42,110	13,091	10,773		121,103
Commercial office		11,720		73,366	102,942	1,356	2,397		191,781
Commercial services		26,177		2,661	73,638	31,683	7,200		141,359
Other	14,821	15,023		44,716	26,056	6,627	3,147		110,390
TOTAL	23,361	1,002,281	146,302	285,583	370,715	58,543	57,310	2,639	1,946,734
A grade		241,120	146,302	62,357	114,590	12,830	15,218		592,417
B grade	23,361	642,346		175,243	182,806	40,267	31,391	210	1,095,624
C grade		118,805		47,983	73,305	5,446	10,701	2,429	258,669
Occupied commercial land		10			14				24
TOTAL	23,361	1,002,281	146,302	285,583	370,715	58,543	57,310	2,639	1,946,734



Table 55 Vacant floorspace segmented by property type, grade, and detailed commercial zone (sqm)

	Airport	Industrial	NEIZ	Inner Business	Outer Business	Fringe Business	Local Business	Out of zone/ Residential	TOTAL
Small & medium industrial	0	12,238	0						12,238
Large industrial		0	0						0
Accommodation				1,720	0		0	0	1,720
Small & medium retail		1,013		24,338	8,197	0	2,399	0	35,947
Large retail		0		0	0	0	0		0
Commercial office		0		16,232	7,819	0	90		24,141
Commercial services		0		322	3,125	641	350		4,438
Other	0	0		1,015	648	0	83		1,746
TOTAL	0	13,251	0	43,627	19,788	641	2,922	0	80,229
A grade		3,479		11,963	435		385		16,262
B grade		7,896		10,350	7,959	220	1,727	0	28,151
C grade		1,876		21,314	11,395	421	810	0	35,816
Occupied commercial land		0			0				0
TOTAL	0	13,251	0	43,627	19,788	641	2,922	0	80,229



Table 56 Vacancy rate segmented by property type, grade, and detailed commercial zone (sqm)

	Airport	Industrial	NEIZ	Inner Business	Outer Business	Fringe Business	Local Business	Out of zone/ Residential	TOTAL
Small & medium industrial	0.0%	1.8%	0.0%						1.7%
Large industrial		0.0%	0.0%						0.0%
Accommodation				8.3%	0.0%		0.0%	0.0%	3.8%
Small & medium retail		4.7%		18.9%	7.3%	0.0%	7.0%	0.0%	11.8%
Large retail		0.0%		0.0%	0.0%	0.0%	0.0%		0.0%
Commercial office		0.0%		18.1%	7.1%	0.0%	3.6%		11.2%
Commercial services		0.0%		10.8%	4.1%	2.0%	4.6%		3.0%
Other	0.0%	0.0%		2.2%	2.4%	0.0%	2.6%		1.6%
TOTAL	0.0%	1.3%	0.0%	13.3%	5.1%	1.1%	4.9%	0.0%	4.0%
A grade		1.4%	0.0%	16.1%	0.4%	0.0%	2.5%		2.7%
B grade	0.0%	1.2%		5.6%	4.2%	0.5%	5.2%	0.0%	2.5%
C grade		1.6%		30.8%	13.5%	7.2%	7.0%	0.0%	12.2%
Occupied commercial land		0.0%			0.0%				0.0%
TOTAL	0.0%	1.3%	0.0%	13.3%	5.1%	1.1%	4.9%	0.0%	4.0%



Table 57 Available commercial zoned land area segmented by detailed commercial zone (hectares)

	Airport	Industrial**	NEIZ	Inner Business	Outer Business	Fringe Business	Local Business	Out of zone/ Residential	TOTAL
Area of developed land parcels	200.5	316.4	42.6	30.0	69.6	15.6	18.3	0.8	693.9
Parcels with commercial buildings	1.3	304.1	42.6	25.3	64.0	14.1	16.7	0.8	468.9
Parcels with non-commercial buildings	199.2	12.3		4.7	5.6	1.5	1.6		225.0
Other zoned land available for development	12.9*	87.0**	180.9***	1.6	10.4	4.0	3.1	5.9	305.9
Parcels not requiring infrastructure	12.9*	38.8	52.7	1.6	10.4	4.0	3.1	5.9	129.4
Parcels requiring infrastructure		14.7	78.2						92.9
KiwiRail hub allocation: commercial			15.0***						15.0
KiwiRail hub allocation: non-commercial			35.0***						35.0
Dairy industry allocation: commercial		33.5**							33.5
Total zoned land	213.5	403.5	223.6	31.6	80.0	19.6	21.4	6.7	999.8

* Includes 8.65 ha within the airport that is designated for industrial development

** Includes 33.5ha of land zoned Braeburn Industrial Area. This land is restricted through the District Plan to dairy-related industries only. Any other industrial use would require a non-complying resource consent, which would be difficult to obtain.

*** See section 3.2.6 regarding allocation of NEIZ land to the proposed Kiwirail freight hub.



Table 58 Breakdown of commercial zoned land available for development segmented by detailed commercial zone (hectares)

	Airport	Industrial	NEIZ	Inner Business	Outer Business	Fringe Business	Local Business	Residential	TOTAL
Car Park		0.1		1.2	3.1	0.2	0.7		5.3
Occupied	0.6	5.8	0.4		0.1	2.7	0.4		10.0
Rural/Residential	2.7	6.4	102.9	0.1	5.3	1.0	1.6	5.9	126.0
Under Construction		2.3	1.9	0.3	1.0		0.2		5.6
Vacant	9.6	72.4	75.7		0.9	0.1	0.3		158.9
TOTAL	12.9	87.0	180.9	1.6	10.4	4.0	3.1	5.9	305.9

* Includes 50ha of NEIZ land allocated to the proposed Kiwirail freight hub. See section 3.2.6 for more information.



Appendix 2

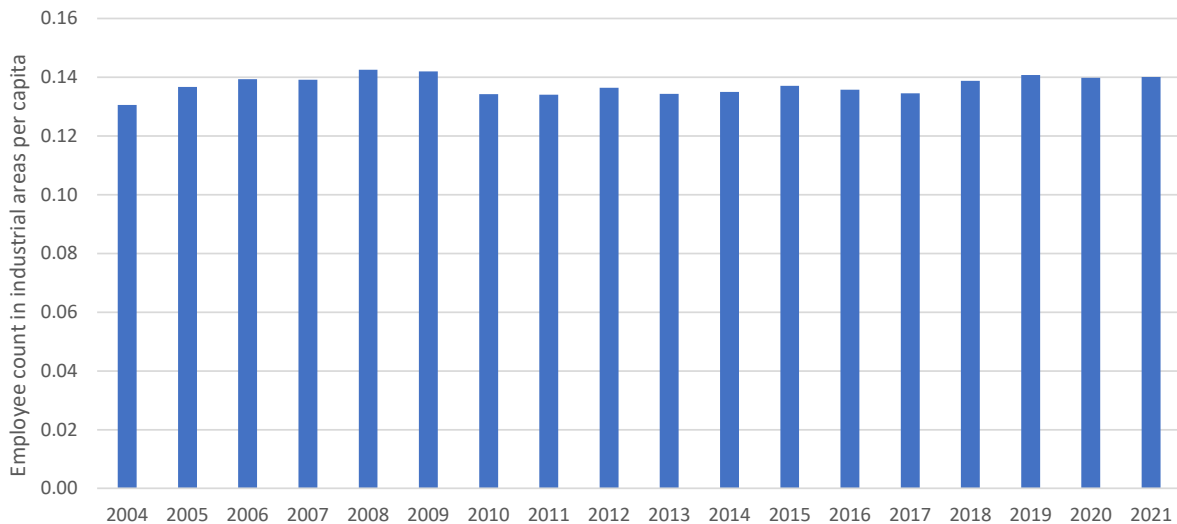
This section contains a direct extract of the NIEZ industrial land forecasting methodology used in the Te Utanganui study.

Approach

Analysis conducted at the beginning of the project revealed a consistent long-term relationship between population and employee counts in industrial areas in Palmerston North. This is demonstrated in the graph below which shows that the employee count in industrial areas per capita has remained stable at around 0.14 since 2004.

Figure 24 Employee count in industrial areas per capita in Palmerston North

Source: Stats NZ



This stability indicates that there is an underlying structural relationship between employee counts in industrial areas and population, although the direction of causality is uncertain. The key implication is that growth in employment in industrial areas is likely to be accompanied by growth in other parts of the economy, such that the long-term employee count in industrial areas per capita of 0.14 is sustained over time. However, it is acknowledged that new developments could create short-term deviations from the long-term average.

What this means from a forecasting perspective is that long-term employment forecasts for industrial areas can be driven off population forecasts, and vice versa.

We have used Palmerston North population projections prepared by Infometrics to forecast employee counts in industrial areas at a city-wide level. The rationale for driving the analysis off population projections is threefold:

1. Population projections tell a broader story about the growth and development of Palmerston North. In our view growth in employment in industrial areas must be considered within this broader growth context, rather than being modelled in isolation.
2. This top-down approach allows us to avoid issues of incrementality and double-counting which are often present in bottom-up approaches. For example, if we were forecasting employment in industrial areas in



isolation there is a risk of counting every new industrial employee as a new employee in Palmerston North, even though some of these employees may be moving internally within the employment system. Starting at the system-wide level removes the possibility of this occurring.

3. This approach ensures that our analysis aligns with existing projections, rather than creating a new set of projections that compete with existing ones.

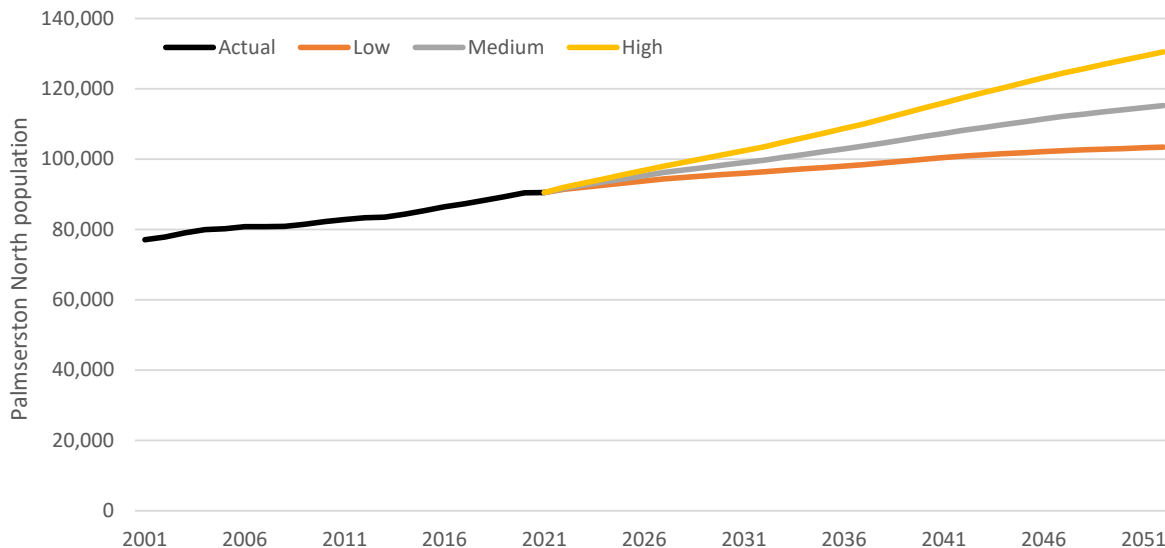
Infometrics provides PNCC with low, medium, and high population projections which have a 2018 base and extend to 2052 in five-year increments.³ Each scenario represents a particular growth story for Palmerston North, both at an aggregate level and in terms of industrial activity and employment. We have assumed for the purposes of our modelling that:

- The low population projection is representative of a low-growth future for industrial activity and employment in Palmerston North.
- The medium population projection is representative of a medium-growth future for industrial activity and employment in Palmerston North.
- The high population projection is representative of a high-growth future for industrial activity and employment in Palmerston North

We consider it unlikely that Palmerston North could achieve a high-growth future for industrial activity and employment while only achieving low or medium growth in population. This would imply a major structural shift in the economic system that we find no previous evidence of.

Figure 25 Palmerston North population projections

Source: Infometrics



³ The population projections were not updated to reflect latest (2023) forecasts, but the 2023 forecasts were very similar to the 2018 forecasts.



Land demand in the NEIZ

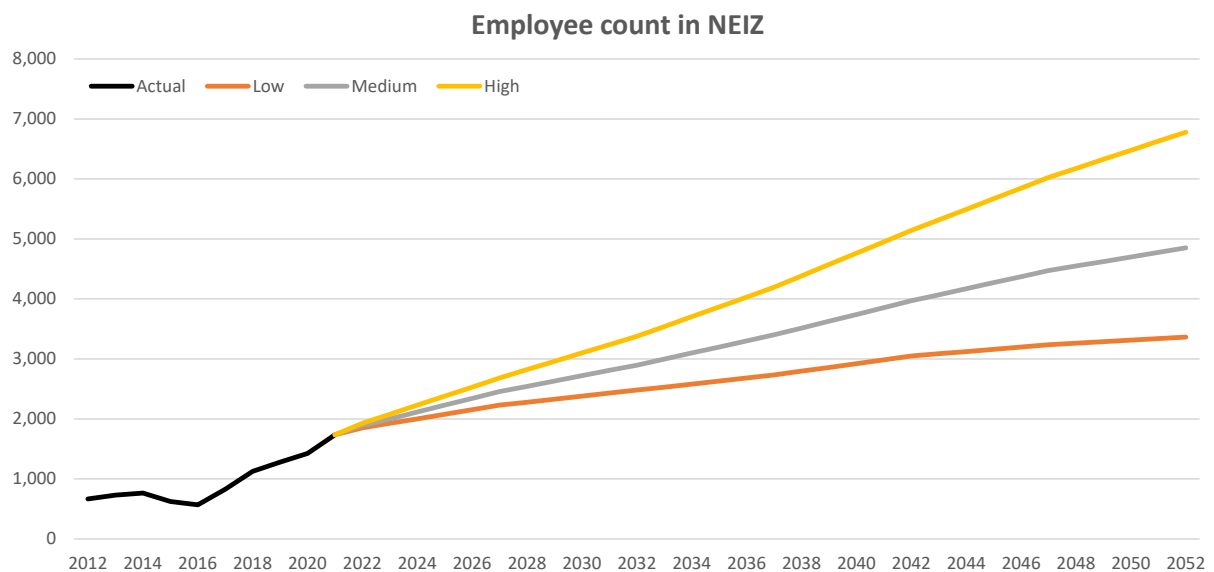
The first stage of the forecasting process involved forecasting the demand for land in the NEIZ. The main steps involved in projecting industrial land demand in the NEIZ were:

- Converting the population projections into projections of employee counts in industrial areas based on the long-term relationship described above.
- Allocating 90% of projected growth in employment in industrial areas to the NEIZ. 90% was chosen because the NEIZ is expected to absorb most, but not all, of the growth in industrial employment in Palmerston North. The remaining growth would occur in existing and/or potential industrial zoned areas. Historical employee counts for the NEIZ were sourced from Stats NZ.
- Dividing the resulting employee count projections by the current NEIZ employment density (number of employees per hectare of occupied land) to produce occupied land area projections. The current NEIZ employment density was derived by dividing Stats NZ employee count estimates for the NEIZ by the combined land area of occupied NEIZ land parcels.

The graph below shows the resulting forecasts of NEIZ employee counts under each growth scenario.

Figure 26 NEIZ employee count forecasts

Source: Fresh Info

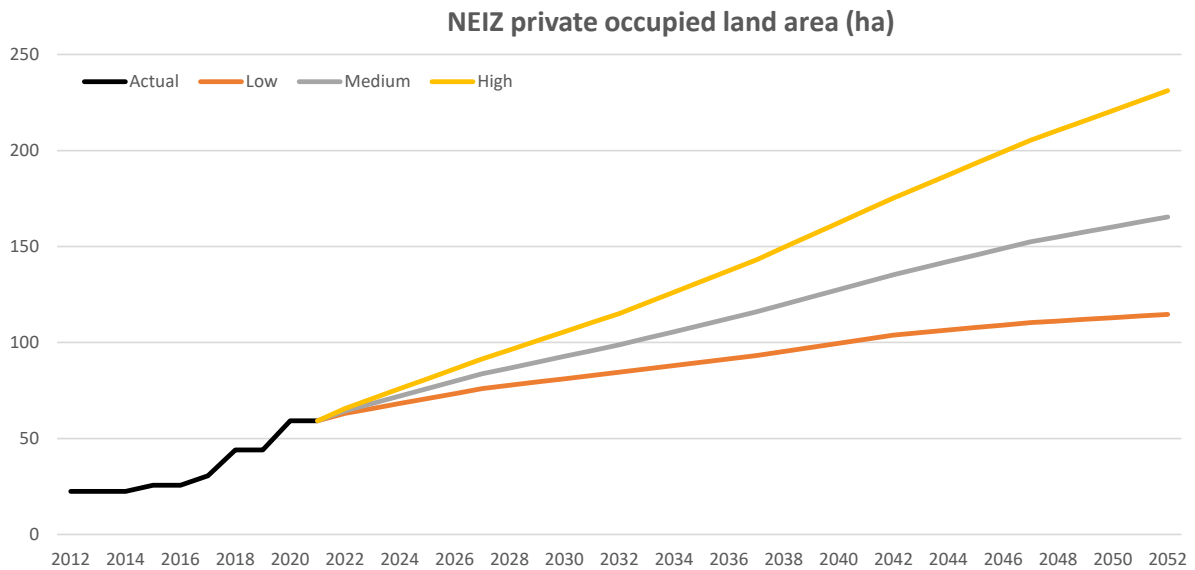




The graph below shows the resulting forecasts of demand for private land parcels in the NEIZ under each growth scenario. Private land parcels are privately owned pieces of land within the NEIZ that can be used for productive purposes. The remaining NEIZ land will be publicly owned and/or communal e.g. roads, stormwater treatment, greenspaces, public amenity.

Figure 27 NEIZ land demand forecasts (ha)

Source: Fresh Info





Land supply in the NEIZ

The second stage of the forecasting process involved the development of a land release model to predict when, and how much, new industrial land would need to be released to accommodate future growth. The main steps involved in projecting industrial land supply in the NEIZ were:

- Determining an appropriate “trigger” for when new industrial land should be released. Note that “pulling the trigger” represents the actual release of the new land. The planning process that precedes this is likely to take 5-10 years. Land release is triggered in the model when the existing NEIZ supply can only absorb 10 more years of demand, based on the demand scenario selected. 10 years was chosen to retain a sufficient buffer from a planning perspective and limit the impact of scarcity on land prices. This threshold can be changed in the model, if required. Note that the concentration of land ownership in the NEIZ could influence pricing even if land scarcity wasn’t an issue. Ownership concentration is beyond the scope of our analysis.
- Determining the quantum of land that should be released when the trigger is pulled. The model defaults to releasing enough land to absorb 20 additional years of NEIZ demand, based on the demand scenario selected. This means that there will be 30 years of land supply in the year the trigger is pulled – the 10-year buffer plus the 20 years of new supply. The 20-year period can be changed in the model, if required.
- Estimating the impact of KiwiRail’s freight hub on land supply in the NEIZ. Current estimates indicate that KiwiRail will acquire ~50ha of NEIZ land. However, KiwiRail intends to lease ~15ha of this land to commercial operators, so the net loss of industrial land in the existing NEIZ area is only 35ha. All scenarios remove 35ha of land from the NEIZ in 2022, but alternative scenarios can be run in the model, including the scenario that no land is removed from the NEIZ (i.e. the KiwiRail development does not proceed).

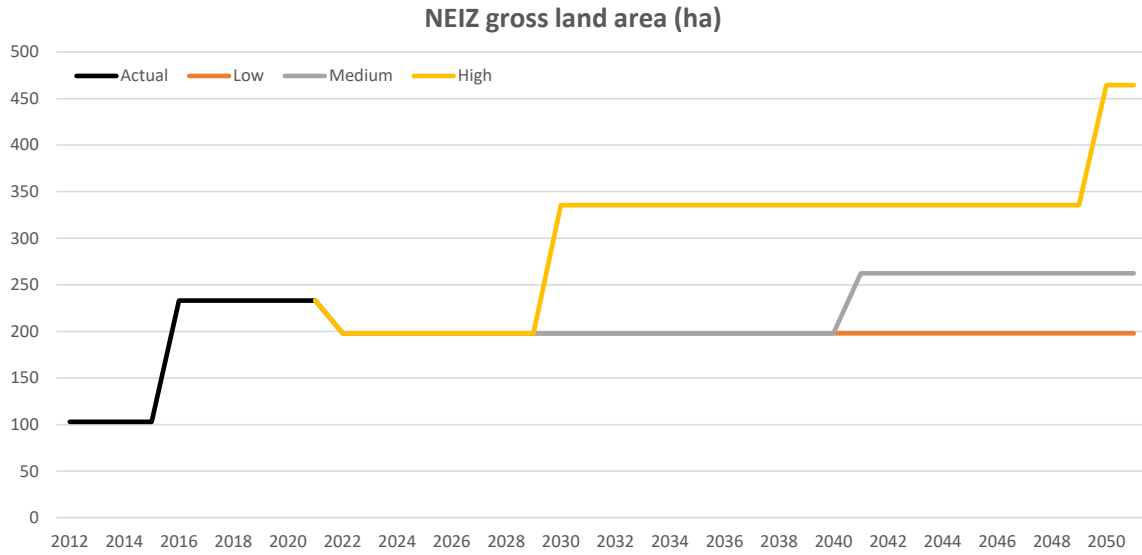
The modelling is based on demand for, and supply of, private land parcels. However, the private land forecasts are then scaled up to gross land area forecasts based on the assumption that 20% of the gross land area will be devoted to public infrastructure and amenity. This results in the gross land area (private and public land parcels combined) being around 25% higher than the private land area.

The graph below shows the resulting forecasts of gross land supply in the NEIZ in hectares under each growth scenario and provides a clear signal of when new NEIZ land will be required.



Figure 28 NEIZ land supply forecasts

Source: Fresh Info





Other forecasts

The third stage of the forecasting process involved the development of two derivative measures:

- Site coverage on private land parcels
- Employment composition in the NEIZ

Site coverage on private NEIZ land parcels

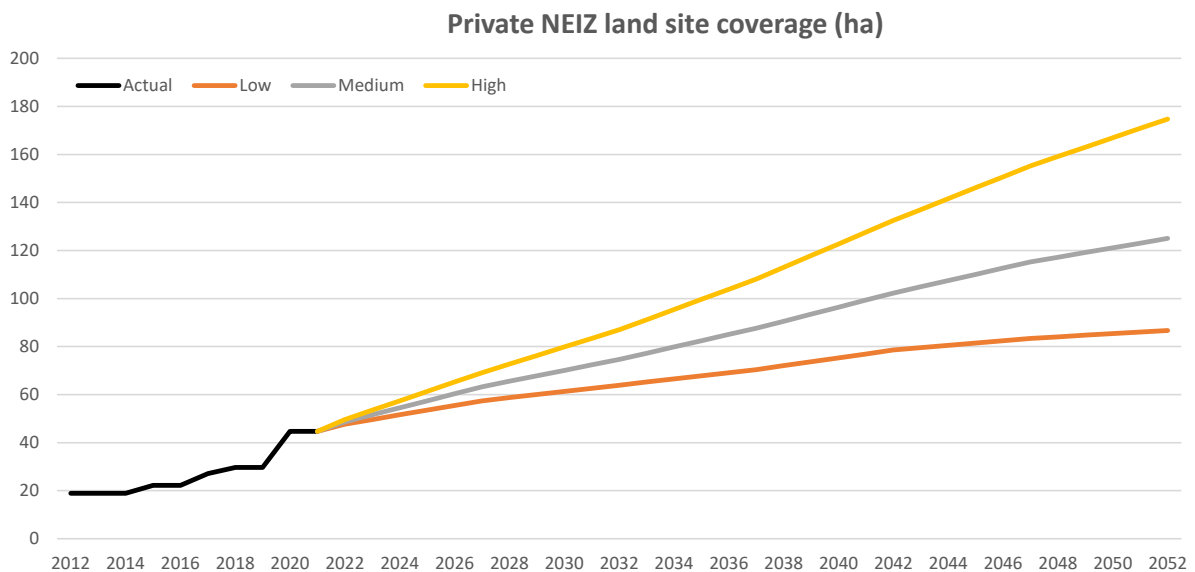
The main steps involved in forecasting site coverage on private land parcels were:

- Estimating site coverage on existing occupied private land parcels in the NEIZ using data sourced from PNCC and LINZ. This analysis indicated that 76% of occupied private land parcels were covered in buildings and impermeable surfaces.
- Assuming that average site coverage in the future will be the same as current levels (76%).
- Multiplying the NEIZ private occupied land area forecasts by the average site coverage rate to estimate site coverage on private land parcels in hectares.

The graph below shows the resulting forecasts of site coverage on private land parcels under each growth scenario.

Figure 29 Site coverage on private NEIZ land parcels

Source: Fresh Info





Employment composition in the NEIZ

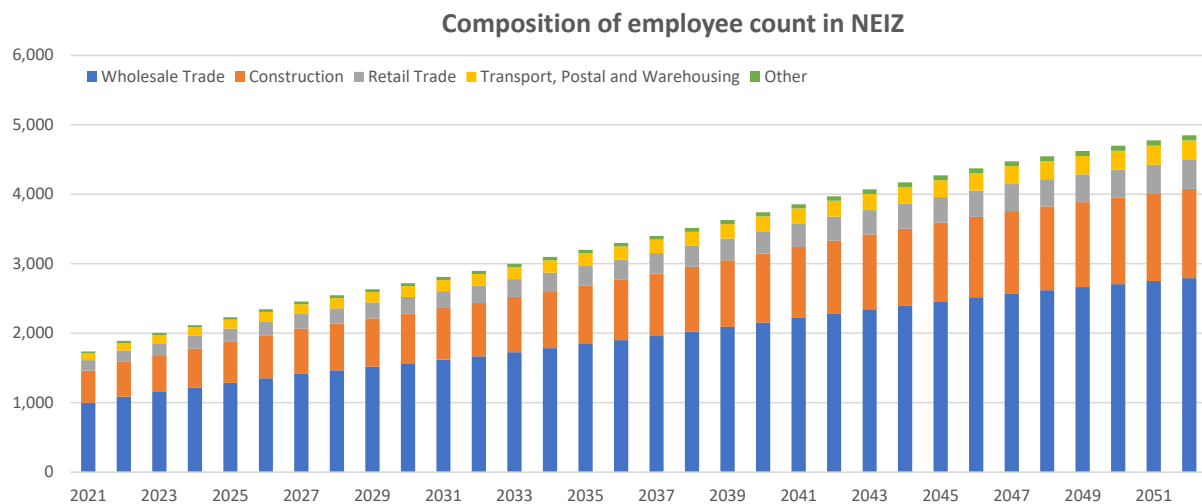
The main steps involved in forecasting the employment composition in the NEIZ were:

- Sourcing industry-level employment data from Stats NZ to understand the current composition of employment in the NEIZ.
- Assuming that the future employment composition in the NEIZ will have the same structure as the current composition. This is based on PNCC's current view that the NEIZ should remain a large format industrial area with a strong focus on distribution.
- Imposing the current employment composition in the NEIZ on the employee count forecasts to allocate future growth to specific industries.

The graph below shows the resulting forecasts of employment composition for the medium growth scenario.

Figure 30 Composition of employee count in NEIZ (medium scenario)

Source: Fresh Info



Palmerston North households

The main steps involved in forecasting the number of households in Palmerston North were:

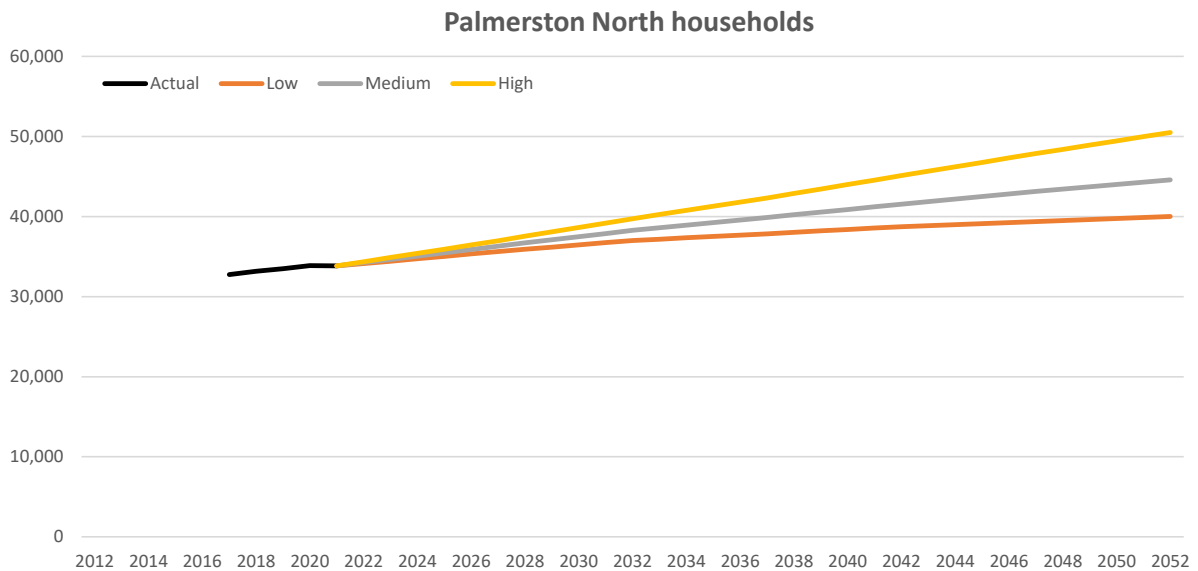
- Obtaining the latest low, medium, and high household projections produced by Infometrics for PNCC. These aligned directly with the latest population forecasts produced by Infometrics.
- Calculating the average number of occupants per household for each year (population divided by number of households).
- Dividing the selected population scenario by the average number of occupants per household to produce estimates of the number of households required.

The graph below shows the resulting forecasts of Palmerston North households under each growth scenario.



Figure 31 Palmerston North household projections

Source: Infometrics and Fresh Info



A key benefit of this approach is that it estimates the city-wide housing stock that would be required under each growth scenario. For example, under the low growth scenario around 40,000 households would be required within Palmerston North in 2052, compared with 44,600 under the medium growth scenario and 50,500 under the high growth scenario. This represents an additional 6,200 households under the low growth scenario relative to 2021, 10,700 under the medium growth scenario, and 16,600 under the high growth scenario.

Housing supply analysis contained in PNCC's latest Housing Capacity Assessment Report (June 2021) indicates that around 13,000 new households could be delivered over the next 30 years through various greenfield, infill, and rural/residential developments. This would comfortably accommodate the low and medium growth scenarios of 6,200 new households and 10,700 new households respectively but would fall short of accommodating the high growth scenario of 16,600 new households. PNCC would therefore need to make additional land available for residential development if Palmerston North achieved the high growth scenario.