2024

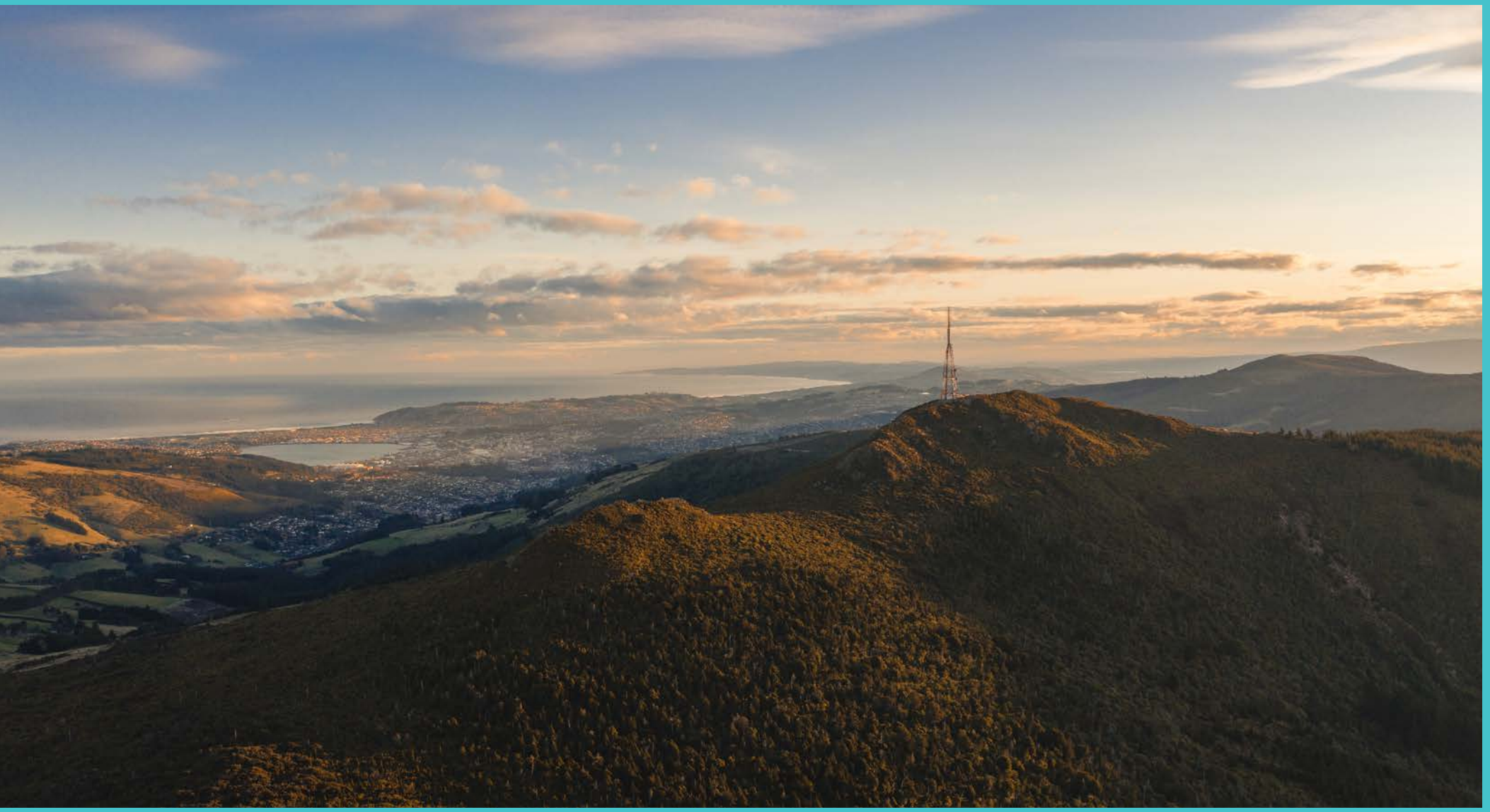
RAUTAKI WHAKAWHANAKE Ā-MUA O ŌTEPOTI

DUNEDIN FUTURE DEVELOPMENT STRATEGY 2024-2054

April 2024

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

Otago Regional Council



MAYOR'S FOREWORD

I am proud to present Dunedin's Future Development Strategy (FDS), a key spatial planning document that sets the vision for how our city will develop over the next 30 years.

Spatial planning is vital for any city. It provides clear direction for how and where the city will grow and what we need to do to make this possible. It also articulates what we want to achieve for our people and the urban areas and natural environments we call home.

This FDS marks the first time the Dunedin City Council and Otago Regional Council have done spatial planning in close partnership. Collaboration means we can draw on strengths and expertise from across both councils. Taking a region-wide perspective is also important to our environmental goals – what we do has an impact on our neighbours and the land and waterways we share.

A key aim in developing this FDS is to strengthen and reflect the Treaty of Waitangi partnership that both councils hold with mana whenua. The strategy provides a platform that puts mana whenua values at the centre of spatial planning for our city.

A wide range of other organisations were also involved in the development of this strategy and provided valuable input. As we move to the next stage of implementing the strategy, many of the actions required will need to be done collaboratively or through partnerships between organisations.

Without a doubt, we face some big challenges as a city. We also have rich opportunities to create a city that works well for all our residents, that ensures equity and that enhances wellbeing and quality of life for everyone.

This strategy sets out our goals for the city's development – that it sustains healthy urban and natural environments, supports thriving ecosystems, has a wide range of suitable housing, supports sustainable business and industry sectors, achieves our Zero Carbon goals, and adapts readily to hazards and climate change.

As we look at the 30 year span of this strategy, we know we have some monumental tasks ahead of us. With clear intent, strong values, collective effort and rigorous planning, we can rise to the challenges we face.

Jules Radich
Mayor of Dunedin

ORC CHAIR FOREWORD

Tēnā koutou katoa

The future of Ōtepoti Dunedin is in our collective hands as we look at where Dunedin is now and where we want to be in the future.

The Otago Regional Council and Dunedin City Council have worked closely with mana whenua and our Te Tiriti partner, Kāi Tahu, to produce this Future Development Strategy. Combining our strengths and expertise, we've developed a spatial plan to meet the needs of current and future generations.

Growth is not just about adding more buildings – it's about respecting and restoring our natural and built environments and increasing our access to outdoor spaces - something very close to my heart.

Healthy and diverse ecosystems, good air quality, healthy water, soil and coast are vital to our collective wellbeing and to a healthy city. This strategy positions us to reduce greenhouse gas emissions and contributes to the vision for Dunedin to be a zero-carbon city. It will also ensure we grow in the right places to protect highly productive land and indigenous biodiversity, and to avoid the impacts of natural hazards and climate change.

Ōtepoti Dunedin is a special place. People and a healthy environment are central to good urban design. That so many people shared their views on how they want to see Dunedin grow shows the passion for this place.

Cr Gretchen Robertson
Chair, Otago Regional Council

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1 INTRODUCTION

1.1 What is a Future Development Strategy (FDS)?

A Future Development Strategy (FDS) is a strategic document that Dunedin City Council (DCC) and Otago Regional Council (ORC) are required to jointly prepare. The requirements for an FDS are set out in the National Policy Statement for Urban Development (NPS-UD), which is a national policy statement prepared by Government under the Resource Management Act (RMA). The DCC and ORC have prepared this FDS with significant input from mana whenua and key contributors including Kāinga Ora and Waka Kotahi.

Its purpose is to promote long term strategic planning by setting out a high-level strategic vision for how Dunedin will be supported to:

- achieve well-functioning urban environments[1] in their existing and future urban areas
- provide at least sufficient development capacity for housing and business land needs over the next 30 years to meet expected demand
- assist with the integration of planning decisions under the RMA and infrastructure planning and funding decisions.

The FDS will guide future changes to RMA planning documents (such as Dunedin's District Plan – the 2GP) and other planning decisions that affect the urban environment. It will also influence infrastructure planning and funding decisions made by the DCC and ORC in their long term plans and infrastructure strategies, the Regional Land Transport Plan, and the asset management plan for the future water services provider. The FDS has been informed by:

- the Dunedin Housing Capacity Assessment update (2023)
- the Dunedin Business Land Development Capacity Assessment (2022)
- the DCC and ORC's strategic frameworks
- mana whenua and hapū values and intent for urban development
- feedback received through community engagement in April/May 2023
- feedback from key contributors to the FDS (Kāinga Ora and Waka Kotahi)
- national policy statements (National Policy Statement for Freshwater Management, National Policy Statement for Highly Productive Land, National Policy Statement for Urban Development, National Policy Statement for Indigenous Biodiversity, National Policy Statement on Electricity Transmission, and the New Zealand Coastal Policy Statement)
- other government agencies and private sector developers.

Dunedin's urban area is defined in the Housing Capacity Assessment (2023) as areas that have an urban zoning and are within a 30 minute drive from the CBD or Campus zone. This latter criterion removes Middlemarch, Hyde and Berwick, but retains all other urban zoned land. While the focus of the FDS is on the urban environment, infrastructural needs and improvements that contribute to achieving a well-functioning urban environment in all of the district's larger townships were considered as part of the development of the FDS.

The NPS-UD defines that well-functioning urban environments have, at a minimum, the following qualities:

- they provide a variety of homes that meet Dunedin's residents' needs and enable Māori to express their cultural traditions and norms
- they provide a variety of sites suitable for local business needs
- they have good accessibility for all people between housing, jobs, community services and open spaces, including by public or active transport
- they support, and limit adverse effects on, the competitive operation of land and development markets
- they support reductions in greenhouse gas emissions
- they are resilient to the current and future effects of climate change.

[1] All terminology in italics is defined in the Glossary (P.164)

An FDS must also spatially identify the broad locations within which development capacity will be provided and the development infrastructure and additional infrastructure needed to support this growth.

The concept of development capacity relates to the requirement for the DCC and ORC to undertake a housing capacity assessment to examine the demand and supply of housing and business land and to ensure that there is sufficient development capacity for housing and business land over the short (next 3 years), medium (next 4-10 years) and long terms (next 11-30 years). The NPS-UD sets out a formula for how this must be done.

To be counted, firstly the capacity must be 'plan-enabled' meaning that at a minimum[2]:

- for short term capacity, the land is provided for through zoning and rules in the district plan
- for medium term capacity, it is provided for through 'proposed' rules and zoning in the district plan (meaning decisions have not yet been released); and
- for long term capacity, it is included in the FDS.

Secondly, the capacity must be infrastructure-ready, meaning that at a minimum[3]:

- for short term capacity, there is adequate existing development infrastructure to support the development of the land
- for medium term capacity, there is funding for the infrastructure identified in the Long Term Plan[4]
- for long term capacity, the infrastructure has been included in the infrastructure strategy.

The DCC and ORC must also be satisfied that additional infrastructure, which includes things like public open space, land transport not controlled by local authorities, and schools and healthcare facilities, and telecommunications and electricity infrastructure is likely to be available.

Thirdly, development capacity can only be counted if it is commercially feasible to develop and reasonably expected to be realised (that is, owners are reasonably likely to develop). In addition a 'competitiveness margin' of 20% for the short to medium term and 15% for the long term must be added to the development capacity minimums to ensure the market operates competitively.

Finally, an FDS is also required to show any constraints on development and must include a statement of mana whenua and hapū values and aspirations for urban development.

[2] Section 3.4(1) NPS-UD National Policy Statement on Urban Development 2020 – Updated May 2022 | Ministry for the Environment

[3] Section 3.4(1) NPS-UD National Policy Statement on Urban Development 2020 – Updated May 2022 | Ministry for the Environment

[4] Note that under the Water Services Act 2022, 3 waters infrastructure that will be provided in years 3–10 no longer needs to be included in the Long Term Plan, and infrastructure that will be provided in years 10–30 no longer needs to be included in the infrastructure strategy (see Section 6.3.1). We consider that meeting the requirement for medium term and long term capacity is met by including relevant infrastructure in the programme put to the water services provider.

[5] Note, on 27 February 2024 the DCC resolved to undertake an Annual Plan for 2024/2025 and a 9 year long term plan for 2025-2034.

The FDS must be ready in time to inform the next Long Term Plan (2024-34[5]) and must then be reviewed every 3 years and updated at least every 6 years, to inform future long term plans.

This FDS identifies infrastructure projects that we consider appropriate to support growth and achieve a well-functioning urban environment. These will guide funding decisions made under other processes, including the DCC's and ORC's Long Term Plan and the Regional Land Transport Plan.

1.2 Background to the development of Dunedin's FDS

Ōtepoti Dunedin developed its first spatial plan in 2012, which focused on setting the strategic direction for Dunedin's growth and development over the coming 30+ years. At that time we were experiencing slow population growth, with an average growth rate of about 0.12% per year between 1996 and 2006. The 2012 spatial plan's growth projections were modest, estimating a growth rate of 0.24% per annum between 2006 and 2061.

The DCC notified a proposed new District Plan in September 2015 (the 2GP), which included additional housing opportunities. Development of the 2GP had started in 2012, when Dunedin's population growth rate was low and projected to remain low over the life of the 2GP – the housing capacity provided in the 2GP reflected that growth rate.

In 2019, the DCC commissioned an updated set of growth projections, which were higher than those on which the 2GP and prior housing capacity assessments had been based.

In August 2020, the NPS-UD was updated. This set out requirements relating to planning for growth and development in urban environments, including:

- provision of sufficient development capacity for anticipated growth
- a regular assessment of housing and business land capacity
- development of an FDS
- a requirement to ensure a well-functioning urban environment.

The DCC initiated a variation to its plan (Variation 2) in February 2021 to add significantly more housing capacity, primarily through opportunities for intensification, but also more greenfield land. Housing capacity was also added through resolution of zoning appeals on the 2GP.

In July 2021, the DCC released its first housing capacity assessment under the 2020 NPS-UD. Based on a medium growth scenario, this assessment showed that additional housing capacity was required over the short, medium and long term but that the changes proposed through Variation 2 would address this shortfall, with only a small deficit in the long term. Since then, additional housing capacity has been added through the resolution of appeals on the 2GP.

As part of the preparation of this FDS, we updated the housing capacity assessment in 2023 to take changes since 2021 into account. Responding to higher than anticipated population growth rates, mainly due to high national net migration following COVID-19, the 2023 update uses a high population growth scenario until 2034, and a medium growth scenario rate from 2034 to 2054. The scope of the update was limited to an assessment of:

- recent growth and development trends
- infrastructure servicing
- projected growth and demand for dwellings
- supply of development capacity
- sufficiency of development capacity to meet demand.

The 2023 update shows that Dunedin has sufficient development capacity for housing in the short, medium, and long term.

We assessed business land capacity in July 2022. Based on medium growth projections, Dunedin has sufficient land for office and retail activity over the short, medium and long term, but a shortfall of industrial land over the short term (with sufficient over the medium and long term). If growth rates are higher than expected, we may see a small shortfall of retail land in the short term.

1.3 How was the FDS developed?

As part of developing this FDS we engaged with neighbouring local government authorities, central government agencies, mana whenua and hapū, infrastructure providers and the development sector, as required by Part 3.15 of the NPS-UD.

The FDS was prepared with input from the two Rūnaka in Dunedin (Te Rūnaka o Ōtākou and Kāti Huirapa Rūnaka ki Puketeraki) through their consultancy Aukaha which provided representation at an operational level.

We engaged with Waitaki District Council and Clutha District Council as the two territorial authorities that are most closely connected to Dunedin to identify any cross-boundary issues relevant to the FDS. The FDS was prepared in collaboration with Kāinga Ora and Waka Kotahi, as key contributors, and consultation also occurred with the Ministry of Education. Providers of additional and nationally significant infrastructure external to the project partnership were engaged in the preparation of draft content to ensure any infrastructure requirements resulting from growth have been identified in the FDS.

Wider public engagement was also undertaken to develop a detailed understanding of community views and aspirations for Dunedin's long term growth. This engagement involved 12 community workshops throughout the Dunedin City District in April/May 2023. These workshops were advertised through communication channels that targeted the local development community. Following the workshops, an online questionnaire was also sent to the development and business community. For full details about how the FDS was developed and the consultation that informed its development, refer to the FDS Technical Report at *www.dunedin.govt.nz/future-development-strategy*

1.4 CORPORATE STRATEGIC CONTEXT – DCC

1.4.1 Dunedin City Council's strategy framework

The Dunedin City Council Strategic Framework incorporates eight high-level strategies, underpinned by Council's commitment to the Treaty of Waitangi and the principle of sustainability. The overarching vision to guide outcomes for the city is to ensure Dunedin is one of the world's great small cities. This means decisions should contribute towards the following outcomes as outlined in our Long Term Plan (10 year plan):

- A supportive city with caring communities and a great quality of life
- A healthy city with reliable and quality water, wastewater and stormwater systems
- A compact city with a vibrant CBD and thriving suburban and rural centres
- A successful city with a diverse, innovative and productive economy
- A creative city with a rich and diverse arts and culture scene
- A connected city with a safe, accessible and low-carbon transport system
- A sustainable city with healthy and treasured natural environments
- An active city with quality and accessible recreational spaces and opportunities.

The FDS replaces the Spatial Plan as one of the Council's eight key strategies, as shown in the diagram below. The eight strategies were developed by the DCC working with community and stakeholders over a period of Strategic Direction Statement was adopted in 2010. The last, the Parks and Recreation Strategy was completed in 2017.

All the strategies, and Council's decision making in general, are underpinned by two key principles: sustainability, and the Treaty of Waitangi.

Through the Long Term Plan, and within the parameters of its Financial Strategy, the Council outlines its commitment to resourcing the activity to deliver the city's strategic priorities.

The Spatial Plan, adopted in 2012, is the key strategic document shaping future urban development and the urban form of Dunedin. The Future Development Strategy updates and replaces the Spatial Plan.

Dunedin City Council is currently undertaking a refresh of its Strategic Framework. The refresh will embed the DCC's commitment to the Treaty of Waitangi and sustainability across the DCC's strategies and operational activities. The refresh will also ensure that current and future residents' wellbeing is considered across all of the DCC's work activities and to strengthen local decision making by producing Levels of Service (LoS) that are meaningful to residents and to Council. The refresh will update the eight strategies and ensure they:

- are relevant
- uphold the Treaty of Waitangi
- uphold our commitment to sustainability
- reflect our residents' values
- support our resident's social, economic, cultural and environmental wellbeing.

The Future Development Strategy was prepared alongside the broader work of the strategic framework refresh, but was prepared ahead of the Strategic Refresh to meet the statutory requirement of the NPS-UD relating to timeframes. Future iterations of the FDS will be developed in the context of the refreshed strategic framework.

1.4.2 Zero Carbon Plan

It is important that the Future Development Strategy considers the impact of the way the city develops on Dunedin's greenhouse emissions. Objective 8 of the NPS-UD is that New Zealand's urban environments support reductions in greenhouse gas emissions and are resilient to the current and future effects of climate change.

Dunedin emitted approximately 1.5 million tonnes of CO_2 equivalent (tCO_2e) in 2021/22. Taking into account carbon absorbed by trees and vegetation (sequestration) in the city (approximately 0.5 million tCO_2e), Dunedin's net emissions for 2021/22 were just over 1 million tCO_2e. Emissions from agriculture and transport are the two largest contributors to Dunedin's carbon footprint (see Figure 1)[6].

Ōtepoti Dunedin's carbon footprint 2021–22

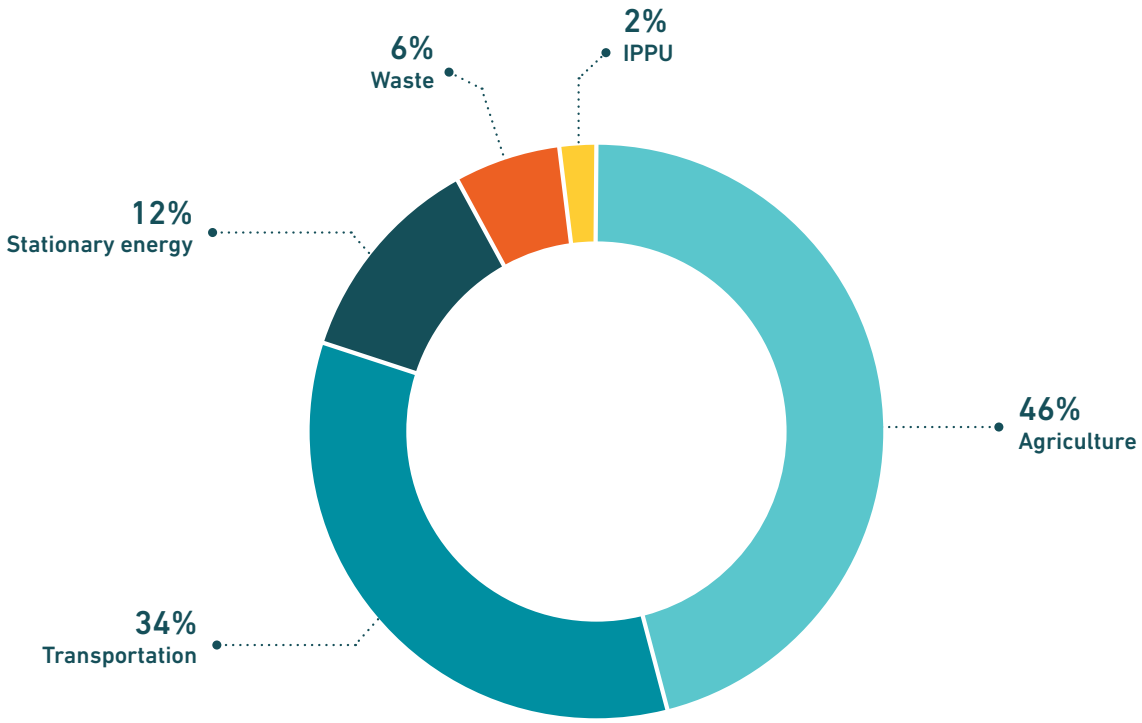


Figure 1: Ōtepoti Dunedin's carbon footprint 2021/22

[6] AECOM Dunedin City Community Carbon Footprint 2022

1.4.2.1 Dunedin's Zero Carbon targets

In 2019, the DCC declared a climate emergency and brought forward Dunedin's emissions reduction targets. Dunedin has two overarching emissions targets (Dunedin's 'Zero Carbon targets'):

- **Net zero carbon by 2030 (excluding biogenic methane):**

  Net zero carbon means that any greenhouse gases (GHG) emitted into the atmosphere in Dunedin (excluding biogenic methane) are balanced out by the amount of GHG sequestered from the atmosphere.

- **Reduce biogenic methane emissions:**

  Dunedin's biogenic methane reduction targets are the same as the central government targets:

  10% reduction from 2017 levels by 2030

  24-47% reduction from 2017 levels by 2050

1.4.2.2 Dunedin's emissions reduction trends and Zero Carbon Plan 2030

Dunedin's emissions have reduced in recent years, but we still have a lot of work to do

Ōtepoti Dunedin's emissions (excluding biogenic methane) reduced by 13% between 2018/19 and 2021/22. Fewer emissions were generated due to changes in the transport sector (on-road, marine, air and rail transport emissions) and stationary energy sector (a reduction in coal use and more renewable electricity in the national grid). The city's forest stocks have also grown, absorbing more carbon.

Most biogenic methane in Dunedin originates from livestock, followed by waste breaking down in landfills. Dunedin's 'baseline year' for its biogenic methane target is 2017. Between 2017/18 and 2021/22, Dunedin's biogenic methane emissions decreased by 7.6%. Improved landfill gas management and reduction in emissions from closed landfills accounted for most of this reduction, followed by changes in livestock numbers.

However, to reach Zero Carbon targets, much more needs to be done, quickly.

DCC's Zero Carbon Plan outlines the key shifts and action areas required to meet Zero Carbon targets

The DCC's Zero Carbon Plan was adopted by Council in September 2023. It maps out the changes Ōtepoti Dunedin needs to become a Zero Carbon city, and the actions the DCC will take to help bring about those changes.

Modelling shows that while there is a long way to go to achieve emissions reduction targets, we can achieve net zero emissions by 2030 with an overall 40% reduction in greenhouse gases (excluding biogenic methane). This would require significant reductions in emissions from transport, stationary energy, agriculture and industrial processes, as well as a significant increase in sequestration. Transport is the largest emitter of greenhouse gases other than agriculture, and significant changes in the way the city is organised and how people get around are required to meet our Zero Carbon targets. The changes we need to make are shown in Figure 2. To achieve our targets for biogenic methane, we need to reduce emissions from agriculture broadly in line with national targets and emphasise reducing emissions from waste.

Organisations, businesses and communities in Ōtepoti Dunedin will need to use every means possible to achieve the scale of change required to meet Zero Carbon targets. In adopting the Zero Carbon Plan, the Council has provisionally indicated it prefers a level of investment that would see a number of projects expedited, and some additional projects initiated.

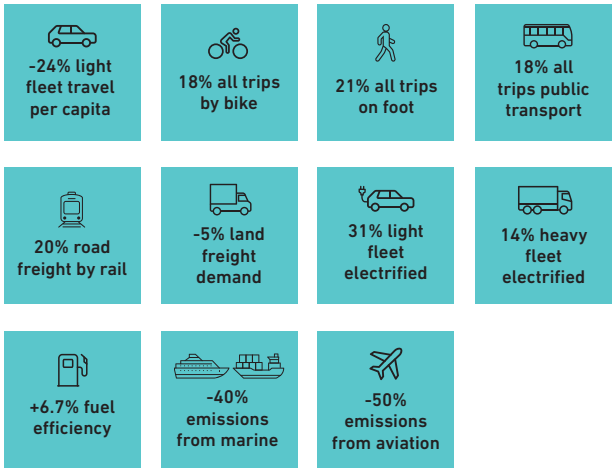


Figure 2: Changes needed to how we travel to meet our Zero Carbon targets

1.5 CORPORATE STRATEGIC CONTEXT – ORC

1.5.1 Otago Regional Council

Otago Regional Council is preparing a refreshed strategic framework and will seek feedback from across the region at the same time as consulting on the 2024 Long Term Plan. In the meantime, this Future Development Strategy refers to the ORC's existing strategic framework below:

OUR VISION FOR OTAGO | TĀ MĀTAU WHAIKA KI ŌTĀKOU:

- Communities that connect with, and care for, Otago's environment
- Communities that are resilient in the face of natural hazards, climate change and other risks
- Sustainable, safe and inclusive transport
- A sustainable way of life for everyone in Otago
- Te Ao Māori and Mātauranga Kāi Tahu are embedded in Otago communities
- An environment that supports healthy people and ecosystems.

OUR MISSION | TE KAUPAPA:

Enriching life in a way that ensures positive relationships between environment, people and place, now and for our future | Whakahaumakohia te ao kia whiria te taura ora ki waeka i te taiao, i te tai-takata, i te tai-whenua mō nāianei, mō te āpōpō hoki.

VISION FOR ORC | TE WHĀIKA KI ORC:

Otago's communities, through engagement, trust us to make well-informed decisions and enable solutions.

OUR VALUES | Ō MĀTAU UARA:

Accountable; Caring; Creative; Collaborative; Trustworthy; Open and honest.

OUR COMMITMENTS | Ō MĀTAU HAEPAPA

- Focus on customer needs
- Implement central government directions in the regional context
- Deliver integrated environmental management
- Effectively engage communities
- Collaborate to deliver
- Partner with mana whenua and make Mātauranga Kāi Tahu an integral part of our decision making
- Make decisions that are evidence-based and timely.

ENABLING A HIGH-PERFORMING ORGANISATION THROUGH | WHAKARITEA ANA HE OHU E MAHI TIKA RAWA ANA MĀ:

- An engaged, resilient and inclusive workforce
- Prudent, and fair, and transparent financial management
- Continuous improvements to information management, business processes and technology.

2 OUR HOUSING AND BUSINESS LAND NEEDS AND CAPACITY

2.1 Introduction

To plan well for future development, we need to understand what the demand for housing and business land is likely to be and how ready we are to meet that demand. Policy 2 of the NPS-UD requires that:

> *Tier 1, 2, and 3 local authorities, at all times, provide at least sufficient development capacity to meet expected demand for housing and for business land over the short term, medium term, and long term.*

Subpart 1 of the NPS-UD provides further information on what this means, including what is deemed to be sufficient.

Subpart 5 requires councils to assess demand, capacity and sufficiency of housing and business land through a Housing and Business Development Capacity Assessment. This assessment must incorporate a 'competitiveness margin' which provides an additional 15-20% capacity above the level of demand.

The sections below outline the findings from the DCC's assessments of the demand for and capacity of housing and business land.

2.2 Our housing needs

Ōtepoti Dunedin's total population has fluctuated in recent years

Ōtepoti Dunedin's total population growth was relatively high between 2013 and 2020. However, as for most New Zealand cities, following the COVID-19 pandemic more people left Dunedin than arrived, resulting in a population decrease between 2020 and 2022. While there is no data on Dunedin's population change since July 2022, growth across the country significantly increased in that period due to high rates of migration from non-New Zealand citizens (see Figure 3). As Dunedin's growth generally follows the same trends as New Zealand's (albeit at a lower rate), it is expected that Dunedin's population will also rebound.

To reflect the high level of uncertainty in growth projections, we regularly monitor growth so that we can react to changing trends quickly.

Population growth rates

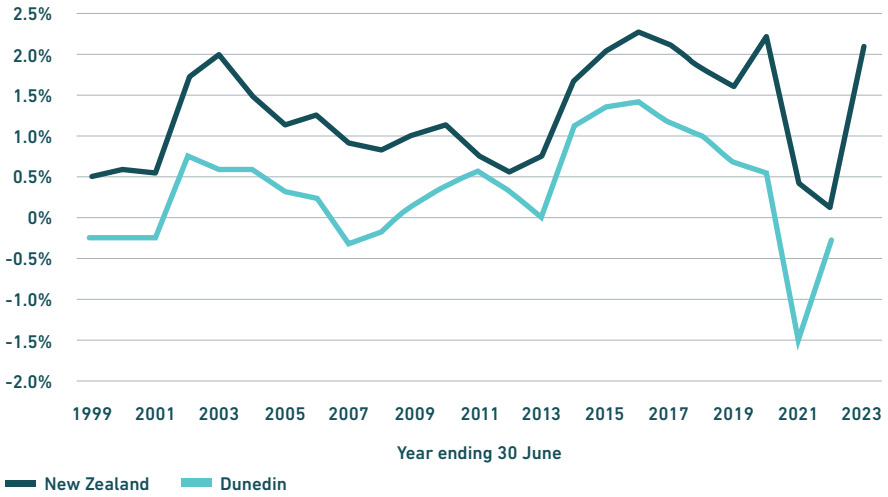


Figure 3: Population growth rates 1999 – 2023 (Stats NZ)

We are playing it safe by planning for growth

Statistics New Zealand released revised projections for Dunedin in December 2022 (Figure 4). Based on the medium growth scenario,[7] which is usually considered the most likely one, we were expecting relatively modest growth over next 30 years (6,900 additional people over 2024-54 which is a 5.3% change). However, these projections preceded and did not anticipate the recent migration boom. This means we could see a higher level of growth, so as a precaution we are choosing to use the high growth scenario rate until 2034 and the more likely medium growth scenario rate from 2034 to 2054. This is called the 'high-medium' growth scenario. This would see a growth of 13,500 people between 2024 and 2054, a 10.2% increase.

The high-medium growth scenario adopted is similar to the Statistics New Zealand medium growth scenario prior to the 2022 revision

Our population is getting older

Growth projections indicate that Dunedin will have almost 10,900 more residents aged over 75 by 2054 (across all ethnic groups) (Figure 5). This national trend means the city needs to prepare for an ageing population, including by making sure a range of suitable housing options is available, and access to essential services can be provided.

Our population is becoming more ethnically diverse

By 2054, people identifying as Māori, Asian or Pacific peoples are expected to account for a larger share of the total Dunedin population. Different ethnic groups can have different housing needs, so we consider these changes when we assess the type of housing we need. For example, while all families are unique, research suggests that Māori and Asian families are more likely to live in intergenerational households and so may require larger houses.

[7] To reflect the uncertainty inherent in growth projections, Statistics New Zealand release three alternative projections for cities – a low, medium, and high growth scenario. Each scenario incorporates different assumptions on birth rates, mortality rates, and migration. For more information, see stats.govt.nz.

Population projection under high-medium growth scenario

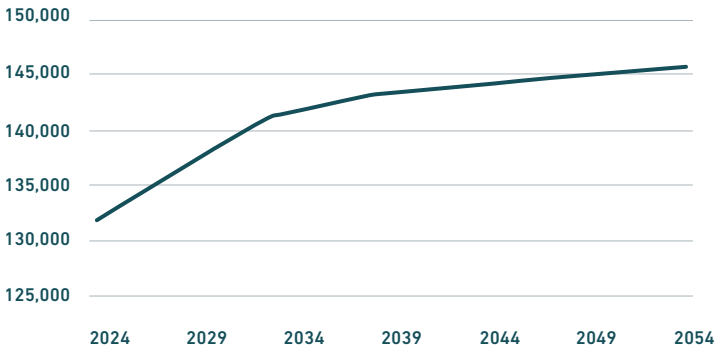


Figure 4: Population projections 2024 – 2054 (Stats NZ and DCC modelling)

Projected growth by age group

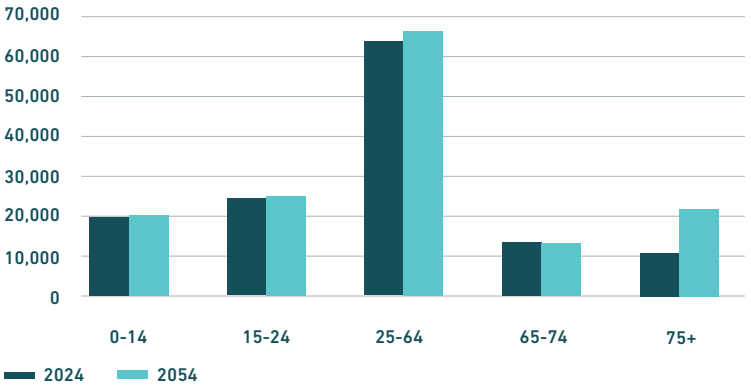


Figure 5: Projected growth by age group, 2024 – 2054 comparison (Stats NZ and DCC modelling)

Dunedin's household income is increasing, but housing affordability is declining

The median income for Dunedin households has increased 43% in the last decade. However, median rental costs and house values increased by 77% and 111%, respectively, over the same period. Combined with higher mortgage interest rates, this has resulted in decreasing housing affordability and increasing financial stress on households due to rising costs.

Dunedin's housing types are changing, with more attached homes being built

Dunedin's current housing stock includes a large proportion of three to four bedroom standalone houses. However, more than half of the new homes consented since late 2021 have been attached homes, such as duplexes and townhouses.

More than half of recently consented homes are also in medium or high density zones for the first time on record (Figure 6).

These trends align with research the DCC commissioned on housing preferences in 2019[8] and we consider they are likely to continue.

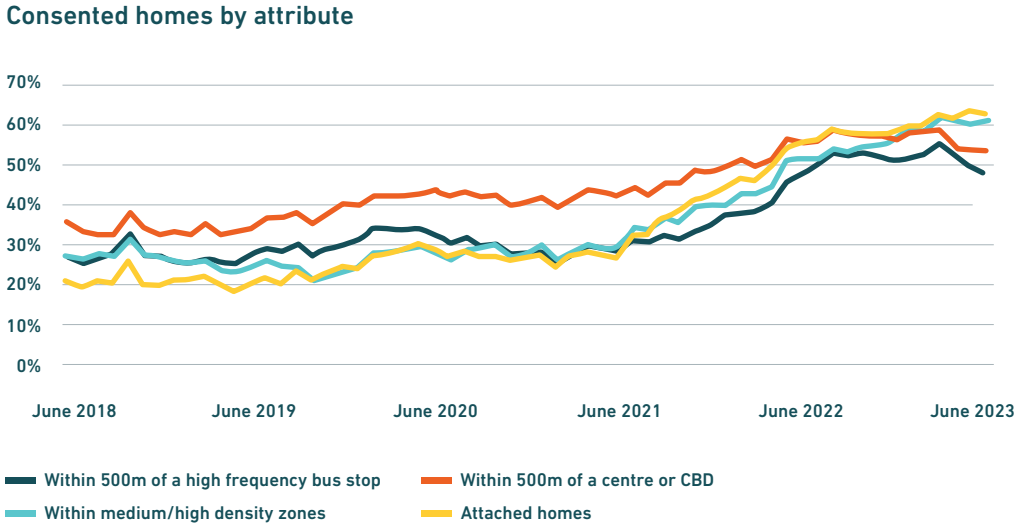


Figure 6: DCC Consented homes by attribute – year to date (June 2018 – June 2023)

[8] Housing Framework Predictions: The Housing We'd Choose (Research First, 2019). Report available at https://www.dunedin.govt.nz/__data/assets/pdf_file/0009/758106/Housing-Wed-Choose-report.pdf

2.2.1 Housing needs

We expect Dunedin to need capacity for 6,550 new homes over the next 30 years

We expect to need capacity for 540 new homes per year over the next 3 years, with this dropping over time until 2054. However, it is important to understand what types of homes we need, not just how many.

Demand is expected to increase for ancillary residential units, retirement village units and small, easy-maintenance dwellings due to our ageing population. Recent changes to the 2GP have made it easier and more attractive to build ancillary residential units and small homes on small sections. Retirement villages, rest homes and social housing have special consenting pathways in residential areas that support their development even when they exceed the 'normal' residential density of the zone. However, in many areas, constraints in the 3 waters network currently make approval difficult for any development that proposes a housing density above the 'standard' for that area.

Statistics New Zealand also predicts more intergenerational households in the future, with more children staying at home past 18 years old and more elderly parents living in the same home or on the same property as adult children. This means we will continue to need a mix of housing types. Overall, we will need more affordable housing options and to ensure people can find a home that is the right size for their needs, without needing to buy a larger and more expensive home than they would like. When we evaluate potential options to provide more housing capacity, we also consider the cost of providing infrastructure, which is passed on through development contributions (a fee developers pay at the time of subdivision) and rates. This affects housing affordability. Lastly, we support market competition by creating plentiful opportunities, particularly through intensification,which has a much lower risk of land banking than greenfield land.

Further work is planned to explore the housing needs and preferences of the senior population in more depth to ensure that they are adequately provided for.

2.2.2 Housing capacity

Housing development capacity is assessed by modelling how much housing could be built on each property in the Dunedin urban environment. The development capacity identified in this section is[9]:

- allowed under 2GP rules ('plan enabled')
- infrastructure-ready, i.e. adequately serviced by current or planned 3 waters and transport infrastructure
- commercially feasible to develop, i.e. profitable and worthwhile for a developer to undertake
- reasonably expected to be realised (taking into account the chance that owners may not want to, or are unable to, develop).

Figure 7 shows how the different categories of housing capacity relate to each other.

This definition of development capacity (including housing capacity and business land capacity) is used throughout the FDS. All Dunedin's housing development capacity is already zoned in the 2GP. Further information on this assessment can be found in the Dunedin City Housing Capacity Assessment Update 2023[10].

This update builds on previous assessments and incorporates new data and assumptions, as well as improvements to the underlying model, to ensure the assessment is up-to-date, robust and reliable.

Housing capacity

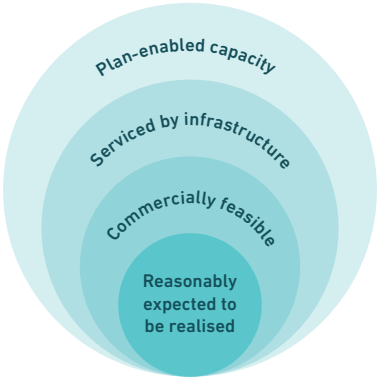


Figure 7: Housing capacity by category

[9] The NPS-UD defines development capacity as including long term development capacity, which is capacity identified in an FDS or another relevant plan or strategy. The development capacity identified in this section does not include any potential future long term development capacity outlined in Section 6.5.

[10] Dunedin City Housing Capacity Assessment Update, October 2023. Available at Housing-capacity-assessment-for-Dunedin-City-2023.pdf

The 2GP enables several housing options to accommodate the variety of housing needed by the community. Within several commercial and mixed use zones, including the CBD and town centres, residential activity is permitted as of right, provided certain performance standards are met. This allows for apartment-style living, either by constructing new buildings or converting existing ones. Medium density zones (the General Residential 2 and Inner City Residential zones) allow multi-unit development such as apartments or terraced housing on a site, with one habitable room (e.g. a bedroom) per 45m^2 of site area. In some areas subject to infrastructure constraints, the permitted density is held at a lower level until that constraint is resolved. This provides significant additional capacity and enables types of housing more suitable for small families and older people than the traditional suburban (General Residential 1) zoning provides for. A recent change to the 2GP (Variation 2) rezoned an additional 248 hectares of land to General Residential 2, including in Mosgiel and city fringe suburbs from Māori Hill to Mornington. These areas were selected for their proximity to urban centres and/or frequent bus routes and generally form a ring around central Dunedin and the Mosgiel town centre.

Intensification is also enabled through most of Dunedin's suburbs, including through changes made in Variation 2:

- duplexes can be built on properties larger than 500m^2
- the minimum property size has recently been reduced to 400m^2 (from 500m^2)
- restrictions on who can live in 'ancillary residential units', that is, small second units on a property, have been removed.

Greenfield land for residential use recently added to the 2GP includes large areas in Mosgiel, North East Valley, and Wakari. Most zoned greenfield areas can be developed immediately, but some require additional work to transport and 3 waters networks first. Greenfield sites are widely distributed throughout the city, providing a choice of location.

The medium density zones and greenfield areas are shown on Figure 28 to Figure 30 in Section 6.5.1.

The development capacity enabled through the current 2GP zoning is shown in Table 1. These figures include the capacity that is reasonably expected to be realised in Residential Transition Zones (RTZ) (as long term capacity), but they do not include any additional capacity resulting from new residential intensification areas and upgrades to enable higher density in medium density transitional areas (see Section 6.5).

Table 1: Existing development capacity across Dunedin

Type of development	Existing development capacity[11]		
	Short term (2024-27)	Medium term (2024-34)	Long term (2024-54)
Intensification of medium density zones	870	2,420	14,700
Intensification of other residential zones (GR1, T&S)	550	1,320	3,010
Greenfield developments	780	1,810	5,160
Total	2,200	5,550	22,870

[11] Development capacity is housing capacity that is enabled by the district plan, is able to be serviced with infrastructure, is commercially viable to develop and likely to be taken up (i.e. developed).

In addition to the capacity outlined above, the 2GP also provides an alternative pathway to consider proposals for supported living facilities (rest homes, retirement villages, student hostels) and social housing in residential zones. This pathway recognises the need for these housing types, which are denser than standard housing. It allows for discretion in considering whether there is infrastructure capacity, or whether there are alternative infrastructure solutions to address existing constraints.

The key finding of our most recent housing capacity assessment[12] is that Dunedin has sufficient development capacity over all timeframes, for all housing types (standalone and attached, see Figure 8). The assessment also considered housing capacity in different parts of the city and concluded that there is sufficient capacity in all areas[13], except in urban areas on Otago Peninsula over the medium term (the next 10 years). No additional housing capacity is therefore required to meet expected population growth over the next 30 years.

The assessment is deliberately conservative, meaning it errs on the side of under-counting capacity, as well as assuming a high growth scenario for the next 10 years (2024-34). If Dunedin follows a high growth scenario for longer, we will have ample time to recognise and respond to that, for instance by accelerating the timeframes of infrastructure upgrades or considering additional development opportunities.

Sufficiency of development capacity

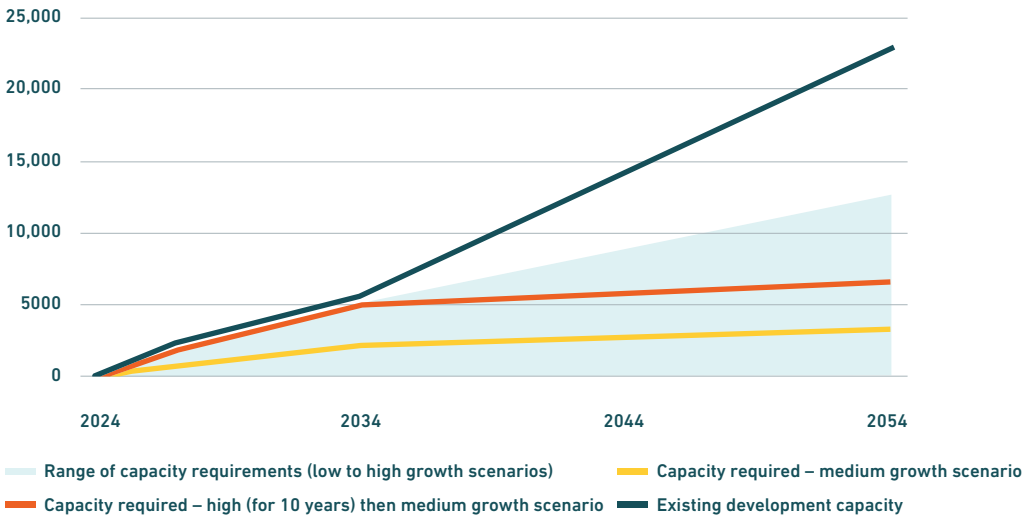
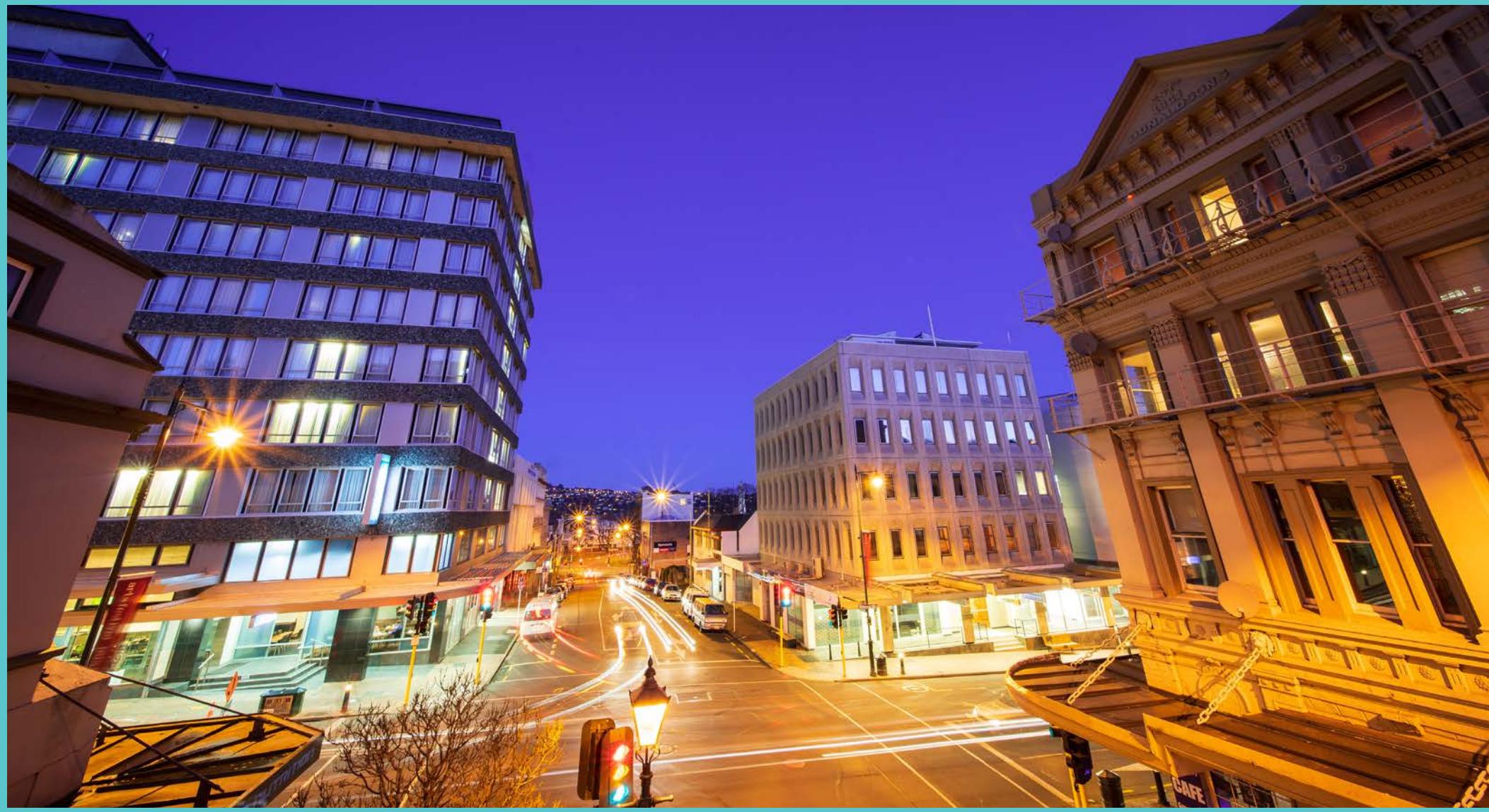


Figure 8: Development capacity (2024 – 2054)

[12] Dunedin City Housing Capacity Assessment Update, October 2023. Available at Housing-capacity -assessment-for-Dunedin-City-2023.pdf

[13] Areas assessed include the urban land within the inner city, inner suburbs, outer suburbs, Mosgiel /Taiari, Otago Peninsula, and north coast.



2.3 Our business land needs

Dunedin's economic growth has fluctuated

Dunedin's economy grew steadily between 2013 and 2020, followed by a dip in 2021 caused by the COVID-19 pandemic. Dunedin's economy bounced back in 2022, with GDP[14] growth above national and regional rates, more registered businesses, increased card spending and more people employed. However, economic activity slowed again in 2023 as New Zealand entered a recession.[15]

Health, construction and education sectors drive the Dunedin economy, supported by several other industries

The health, construction and education sectors contribute the most to our local economy, collectively accounting for 28% of Dunedin's GDP.[16] The next biggest sectors are professional services and the retail trade, accounting for 8% and 6%, respectively.

Tourism accounts for approximately 4% of Dunedin's GDP.[17] Dunedin also has several smaller burgeoning industries, such as creative technologies, food processing, niche manufacturing and engineering.

Exports through Port Otago are important to Dunedin. Large volumes of export freight pass through the port, often from the agricultural and forestry sectors of rural Dunedin, wider Otago and Southland. Dunedin Airport also contributes to the economy, with more than 626,000 passengers in 2021.[18]

[14] GDP stands for Gross Domestic Product and measures the monetary value of final goods and services produced usually in a country (or in this case a city) in a given period of time.

[15] https://www.rnz.co.nz/news/business/492013/new-zealand-in-recession-as-gdp-falls-for-second-quarter

[16] Infometrics regional Economic Profile, 2000 - 2022

[17] Infometrics regional Economic Profile, 2000 - 2022

[18] Dunedin Airport Annual Report 2022

Employees by sector

Figure 9: Employees by sector 2022 (Stats NZ)

The healthcare, education, retail and construction sectors employ the most people

Dunedin is home to some large local employers, including Dunedin Hospital, the University of Otago / Te Whare Wānanga o Ōtākou and Otago Polytechnic / Te Pūkenga. Together with retail and construction, these four sectors account for just over half of Dunedin's employees (see Figure 9). The number of health and construction workers has continued to grow in recent years. Other sectors are growing – in 2022, manufacturing and professional services experienced the largest increases in employees, up 8% and 7%, respectively.

2.3.1 Business land needs

The DCC undertook research over 2022-23 to understand Dunedin's future business land needs. This research looked at future demand, the capacity currently available, and the likely trends in business activity. Three reports were produced:

- Business Development Capacity Assessment for Dunedin City, Principal Economics (July 2022)[19]
- Dunedin Retail Trends: Dunedin Retail Land Use Study, First Retail Group (March 2023)[20]
- Business Land Research Report, Dunedin City Council (June 2023)[21]

The key findings about demand for business land are outlined in Table 2.

Table 2: Business land needs

Sector	Conclusion
Office	Demand for office space is expected to be relatively static over the next 30 years (2024-54) with no additional office space required; however, we need to ensure office space is of good quality.
Retail	Demand for retail space is expected to grow by a small amount over the next 30 years (2024-54). Demand is largely centred around large properties for large format retail, as well as some potential demand for more space for retail hubs in or near suburban centres.
Industrial	There is demand for industrial land of all sizes and more demand is likely in the future due to large infrastructure projects (planned and underway).
Health and education	No additional campus space is required. The land acquired for the new Dunedin Hospital is expected to provide enough space to accommodate future requirements.

[19] Business Development Capacity Assessment (dunedin.govt.nz)
[20] 170423-DCC-Retail-Trends (dunedin.govt.nz)
[21] Dunedin-Business-Land-Research-Report-2023.pdf

2.3.2 Business land capacity

Similar to housing, councils are required to have enough business land capacity to meet the expected demand, and that land must be plan-enabled, infrastructure-ready, and suitable to meet the specific demands of different business sectors. An appropriate competitiveness margin must also be provided over and above the expected demand. Business land capacity was assessed in the Business Development Capacity Assessment. Based on medium growth projections, this shows that Dunedin has sufficient land for office and retail needs over the short, medium and long term, but a shortfall of industrial land over the short term (with sufficient over the medium and long term). If growth rates are higher over the medium term, there may be a small shortfall in retail land in the short term.

Office

A number of large office developments are currently either planned or under construction. This includes the new ACC building on Rattray Street, the redevelopment of the former Warehouse building into new office space for the Otago Regional Council, and the new Pacific Radiology building on Great King Street. These three buildings will collectively house more than 1,000 office workers, who will in turn vacate existing inner city office sites, potentially creating excess office space in the short to medium term.

As a result of the additional office space being opened up through these developments, Dunedin has sufficient office space over the long term. The increase in employees working from home has little impact on office land as many workers combine working from home and the office.

Retail

Under a high growth rate scenario there may be a shortfall of retail land in the short term. There is also a possible shortfall of large format retail land in the medium and long term. To obtain a clearer picture of retail trends within Dunedin and 'ground truth' the capacity assessment, the Dunedin Retail Trends study interviewed a large number of local and national retail leaders and business owners. Based on these interviews, the availability of land for retail growth in Dunedin's main retail areas are outlined in Table 3.

Based on this research, Dunedin has sufficient retail space. While changes in the retail sector are likely, such as an increase in off-site distribution, diversification of stores, and continued impacts from online shopping, these changes can be accommodated through the development of existing land. We will keep monitoring the need for retail land, in particular large format retail space. The Dunedin Retail Trends study suggests there is little demand from developers for additional land in the current market.

Industrial

The Harbourside area is among the most desirable areas for industrial businesses due to its proximity to arterial routes, port, deliveries and customer bases. However, as it is at or near capacity, other industrial areas, such as in Burnside, Green Island, Fairfield and Mosgiel, have been further developed in recent years.

The number of new businesses in the industrial area at Dukes Road, Mosgiel has recently increased significantly. Some of the land is not yet available for development,[22] but research[23] suggests there will be demand from businesses once it is available.

Additional industrial land is needed to meet current and future demand over the short term due to the need for land for businesses supporting the new hospital build, road and water infrastructure upgrades, and new housing, retail and office builds. However, external research[24] predicts excess industrial land in the medium (2034) and long term (2054) due to the development of vacant land and more efficient land use.

[22] A master planning exercise of this area needs to be undertaken including consideration of appropriate management of stormwater

[23] Business Land Assessment, Dunedin City Council (June 2023)

[24] Business Development Capacity Assessment for Dunedin City, Principal Economics (July 2022)

Table 3: Summary of the development capacity and potential for growth in Dunedin's key business land areas

Area	Development capacity and potential for growth
Central Business District (CBD)	Leases in prime precincts, such as those around the malls, have high occupancy levels, but retail space is consistently available outside this area. There is the potential for infill development on some sites in the central city, increasing the capacity available for retail. The George Street upgrade is likely to further enhance the area's appeal to both shoppers and businesses.
CBD Edge Commercial Zone, including the Warehouse Precinct (area centred on Crawford Street and Cumberland Street and north and south of the Octagon)	This area also has high occupancy levels. Development of some properties is limited by heritage protection. However, we anticipate that changes in retail trends (such as similar retail businesses consolidating into one geographical area) will create vacancies in the medium term for some retail categories.
South Dunedin and Andersons Bay Road	A recent plan change has enabled the potential for more large format retail in the Andersons Bay Road area. A New World supermarket is planned for this area.
Green Island, Mosgiel and Port Chalmers centres	All these areas have retail capacity, and research suggests demand for change is limited.
Suburban centres	Most suburbs have some retail vacancy while others, such as Caversham, have extensive vacancy, providing capacity within existing retail zones for new businesses to establish or existing retailers to achieve greater scale.

3 STATEMENT OF MANA WHENUA AND HAPŪ VALUES AND INTENT

3.1 Introduction

The FDS is required to include a clear statement of mana whenua and hapū values and aspirations for urban development. This section outlines the vision and intent of mana whenua for urban development in Dunedin.

Kāi Tahu whānui[25] are the mana whenua who hold tribal authority over most of Te Waipounamu. Mana whenua (or customary authority) is hapū-centred, authenticated through 'take' (rights) that link hapū by whakapapa to places, traditions and resources with rights and respective responsibilities. The hapū located in the greater Dunedin area manage their functions through two papatipu rūnanga. Te Rūnanga o Ōtākou has a takiwā (area of authority) extending from Pūrehurehu Point (west of Heyward Point) south to the Mata-au (Clutha River), taking in Otago Harbour and urban Dunedin. Kāti Huirapa Rūnaka ki Puketeraki has a takiwā extending from Pūrehurehu Point north to the Waihemo (Shag River). Kāti Huirapa Rūnaka ki Puketeraki also hold an interest in Ōtepoti (central Dunedin) and the Otago Harbour.

3.2 Hapū vision

The management of urban development across Dunedin gives effect to Te Tiriti o Waitangi articles; promotes Kāi Tahu rakatirataka, kaitiakitaka and manaakitaka; protects and enhances the mauri of te taiao; and provides for mana whenua settlement and use within native reserves set aside for that purpose.

[25] The collection of individuals who descend from the primary hapū of Waitaha, Kāti Mamoe, and Kāi Tahu, namely Kāti Kuri, Kāti Irakehu, Kāti Huirapa, Kai Tuahuriri, and Kai Te Ruahikihiki

3.3 Kāi Tahu values

Value	Description	Application
Rakatirataka and Mana	Leadership and authority	Recognition of Treaty partnership, enabling mana whenua to exercise mana through involvement in decision making and hapū taking the lead in planning for mana whenua use of native reserves
Whakapapa	Ancestral connection	Recognising and supporting ancestral Kāi Tahu mana whenua connections (ahikāroa) to whenua and wai
Kaitiakitaka	Guardianship	Mana whenua inherited responsibility to act, according to tikaka, as guardians of te taiao, natural resources, mātauraka and other taoka
Mauri	Life force	Maintaining a healthy and intact life force in all lands, waters and the natural environment by prioritising the hauora of te taiao and people in urban development
Tapu	Restriction	A restriction or prohibition used under tikaka to protect the mauri of a resource
Noa	Lack of restriction	Refers to places and times where access and use of a resource or place is free from tapu or any restriction
Mahika kai	Customary use	Customary gathering of food and resources is maintained, and restored in areas where te taiao has been denigrated
Ki uta ki tai	Integrated management	Holistic resource management that minimises the effects of activities across land, water, air and the coastal environment
Haere whakamua	Future focused	Planning with a focus on future generations, including in climate change mitigation and adaptation
Whanaukataka	Family and community focused	Creating communities that are connected and inclusive and place families, whānau and neighbourhoods at the centre of urban planning

3.4 Statement of hapū intent

3.4.1 Rakatirataka and kaitiakitaka

Kāi Tahu mana whenua exercise rakatirataka through a partnership approach to decision making on urban development and the use of and effects on wāhi tūpuna, wai Māori and other taoka. Mana whenua exercise kaitiakitaka over wai Māori and other natural resources through their influence on 3 waters management and the effects of urban development on te taiao. Kāi Tahu mana whenua exercise rakatirataka within the native reserves.

3.4.2 Native reserves

Areas of Dunedin that were set aside for Kāi Tahu settlement have enabling planning provisions so that mana whenua can live and sustain themselves in these areas according to tikaka. The funding, extension and upgrading of reticulated water and wastewater infrastructure into the Karitāne, Brinns Point and Outer Peninsula native reserves compensates for generations of inequitable provision across Dunedin. The enhancement of roading, public transport and active transport connections to native reserves and surrounding outlying communities promotes hauora and whanaukataka.

3.4.3 Te mauri o te taiao

Urban development and change prioritises and enhances, rather than compromises, the mauri of the natural environment. A ki uta ki tai approach recognises that a well-functioning urban environment must consider the effects of land use activities across the wider environment and manage these appropriately, regardless of jurisdictional boundaries.

Te Mana o Te Wai approach places the mauri and hauora of water bodies and coastal waters at the heart of urban development. There is a commitment to increasingly move towards land-based disposal of treated wastewater and relocate the Warrington and Waikōuaiti wastewater treatment plants from their highly compromised locations. Dunedin commits to a different approach toward stormwater management that focuses on attenuation, filtering and other treatment methods that lessen stormwater impacts on wai Māori and wai tai.

Observing tikaka and kawa is part of the ethic and exercise of kaitiakitaka. Tikaka and kawa encompass the beliefs, values, practices, and procedures that guide appropriate codes of conduct, or ways of behaving in the context of natural resource management. Tikaka and kawa are underpinned by mātauraka and incorporate forms of social control, such as rāhui, to manage the relationship of people and the environment. These are important mechanisms to ensure that Kāi Tahu values are reflected in decisions made regarding 3 waters management in their takiwā.

3.4.4 Mahika kai

Kāi Tahu mana whenua are able to access and undertake mahika kai in customary areas without fear of contamination of, or alienation from, te taiao due to urban activities. Dunedin has a network of healthy water bodies and indigenous biodiversity that supports mahika kai activities. As a taoka to Kāi Tahu, priority is given to restoring the mauri and hauora of Otago Harbour, with recognition of its cultural prominence as a source of, and nursery for, mahika kai species, kaimoana and kai ika. There is similar recognition of the traditional importance of the Taiari River, Kaikarae / Kaikorai Estuary, Blueskin Bay, Wāikouaiti River and Matainaka for mahika kai. Adverse effects from urban use and development on the East Otago taiāpure, Waikōuaiti mātaitai and Otago Harbour mātaitai are avoided.

3.4.5 Manaakitaka

A range of quality housing that suits the needs of, and is accessible to, different whānau and communities is provided across Dunedin. The design of housing and neighbourhoods supports manaakitaka and whanaukataka within neighbourhoods and communities, including by promoting equality of access to amenities, services, and public and active transport. Kāi Tahu identity is celebrated through the use of mana whenua design and cultural narratives across the urban realm.

3.4.6 Haere whakamua

Dunedin supports those communities at risk of climate change effects such as sea level rise, coastal erosion and increased natural hazards risk. There is recognition of the special connection of Kāi Tahu to whenua in places such as Karitāne and Ōtākou, along with the constraints associated with Māori land, when considering any climate change adaptation measures. This also includes wastewater treatment plants, particularly those at Waikouaiti and Warrington, which are in locations that are vulnerable to the impacts of climate change and not appropriate in accordance with tikaka and kawa. The risk that climate change poses to the Kāi Tahu relationship to mahika kai, wāhi tūpuna and other wāhi taoka across Dunedin is understood and managed.

4 STRATEGIC DIRECTIONS

This section sets out the strategic framework for the Future Development Strategy and defines the kind of city we want to have. The framework builds on the concept of well-functioning urban environments included in the National Policy Statement on Urban Development (NPS-UD).

4.1 Ōtepoti Dunedin has a resilient natural environment, where we protect and enhance te mauri o te taiao, with clean air, healthy land-based ecosystems and thriving indigenous biodiversity

We are working towards a future where Ōtepoti Dunedin safeguards te mauri o te taiao, recognising that we need healthy ecosystems to achieve sustainable development and a well-functioning urban environment. We acknowledge that ecosystems change, particularly in a changing climate, and we support ecosystems to adapt effectively where appropriate. We nurture and protect Dunedin's indigenous habitats and ecosystems using a ki uta ki tai approach to connect urban and rural communities with their environment.

More public parks, street trees and areas of indigenous biodiversity are incorporated into the design of Dunedin's residential areas and new urban development. These areas act as the 'lungs of the city', improving urban air quality, and provide permeable surfaces and more space for water, increasing resilience. Abundant green space helps to mitigate the effects of climate change and makes urban living safer and more attractive, increasing people's wellbeing.

Increased use of zero-emission and ultra-low-emission heating and transport ensures cleaner air across the city, including in winter, creating a healthier environment for everyone. Businesses operate in ways that ensure we have clean air.

Areas of significant biodiversity are protected from pests and weeds, inappropriate urban development and use, and the extent and quality of indigenous biodiversity across the city is increased. More wildlife corridors and networks between ecosystems and habitats strengthen the diversity, distribution and abundance of species.

The role of Kāi Tahu mana whenua as kaitiaki of the natural environment is recognised, and mana whenua undertake mahika kai practices in healthy and resilient ecosystems.

4.2 Ōtepoti Dunedin protects and prioritises the mauri and health of water bodies and their ecosystems, including coastal waters, with mana whenua exercising their role as kaitiaki

We are working towards a future where Ōtepoti Dunedin has clean and healthy water bodies and coastal waters and resilient instream and marine ecosystems. The mauri, health and wellbeing of waterways, wetlands and coastal waters are enhanced – and restored where degraded – supporting people's health and wellbeing, thriving ecosystems and Kāi Tahu customary uses and relationships.

Development allows, and in some instances creates, space for streams and wetlands to act as natural infrastructure, protecting people and their property. Ground and surface water can be used for drinking water in areas that do not have access to a reticulated supply. We maintain and enhance public access to water bodies and the coast while protecting the health of the water body. Dunedin's highly valued marine biodiversity is protected and supported to thrive, and Dunedin upholds its status as Aotearoa New Zealand's 'wildlife capital'.

Otago Harbour is recognised as a taoka to Kāi Tahu, and this is reflected in its management. The harbour is managed holistically, considering the effects of activities in the wider catchment that drains into the harbour.

Kāi Tahu mana whenua can access and undertake mahika kai practices without fear of contamination of customary areas due to urban activities. The kaitiaki role of Kāi Tahu mana whenua is recognised in management approaches, and the role of mahika kai in Kāi Tahu culture is celebrated. The traditional importance of the Taiari River, Kaikarae / Kaikorai Estuary, Blueskin Bay, Waikouaiti River and Matainaka for mahika kai is recognised. The East Otago taiāpure, Waikōuaiti mātaitai and Otago Harbour mātaitai are protected from adverse effects of urban use and development.

4.3 Ōtepoti Dunedin protects its landscapes, natural features and wāhi tūpuna from harmful development

We are working towards a future where the iconic landscapes, unique natural features and treasured wāhi tūpuna of Ōtepoti Dunedin are protected for current and future generations to enjoy. These landscapes and features stay in their natural or semi-natural state, with an increase in indigenous biodiversity values and few signs of new development. The location, size and materials used for new developments in these special places respect and reflect the context of the surrounding landscape.

Kāi Tahu relationships with wāhi tūpuna are sustained by avoiding inappropriate development and activities that would affect the values for each wāhi tūpuna. Mana whenua and others can experience the visual, physical and spiritual Kāi Tahu connection to these areas, for example by improving access, protecting viewshafts, enhancing the environment, using ikoa Māori (place names), using Kāi Tahu design in projects, and developing interpretative material.

4.4 Kāi Tahu mana whenua can occupy and use land within Ōtepoti's native reserves in accordance with tikaka to provide for their economic, cultural and social wellbeing

We are working towards a future where Kāi Tahu mana whenua exercise rakatirataka within the areas of Ōtepoti Dunedin originally set aside for Kāi Tahu settlement. This includes leading decision making about mana whenua use of these areas. Whānau can settle, live and work in these areas and undertake cultural, economic and other activities to sustain themselves and maintain ahikāroa, according to tikaka. These areas have planning provisions that enable mana whenua to live and sustain themselves according to tikaka.

The native reserves on the Outer Peninsula and at Karitāne and Brinns Point have safe and secure drinking water supplies and access to safe, environmentally and culturally appropriate wastewater disposal, addressing longstanding inequities in these areas. Resilient roading, more frequent public transport services and active transport connections are provided to native reserves and surrounding outlying communities, promoting hauora and whanaukataka of local communities.

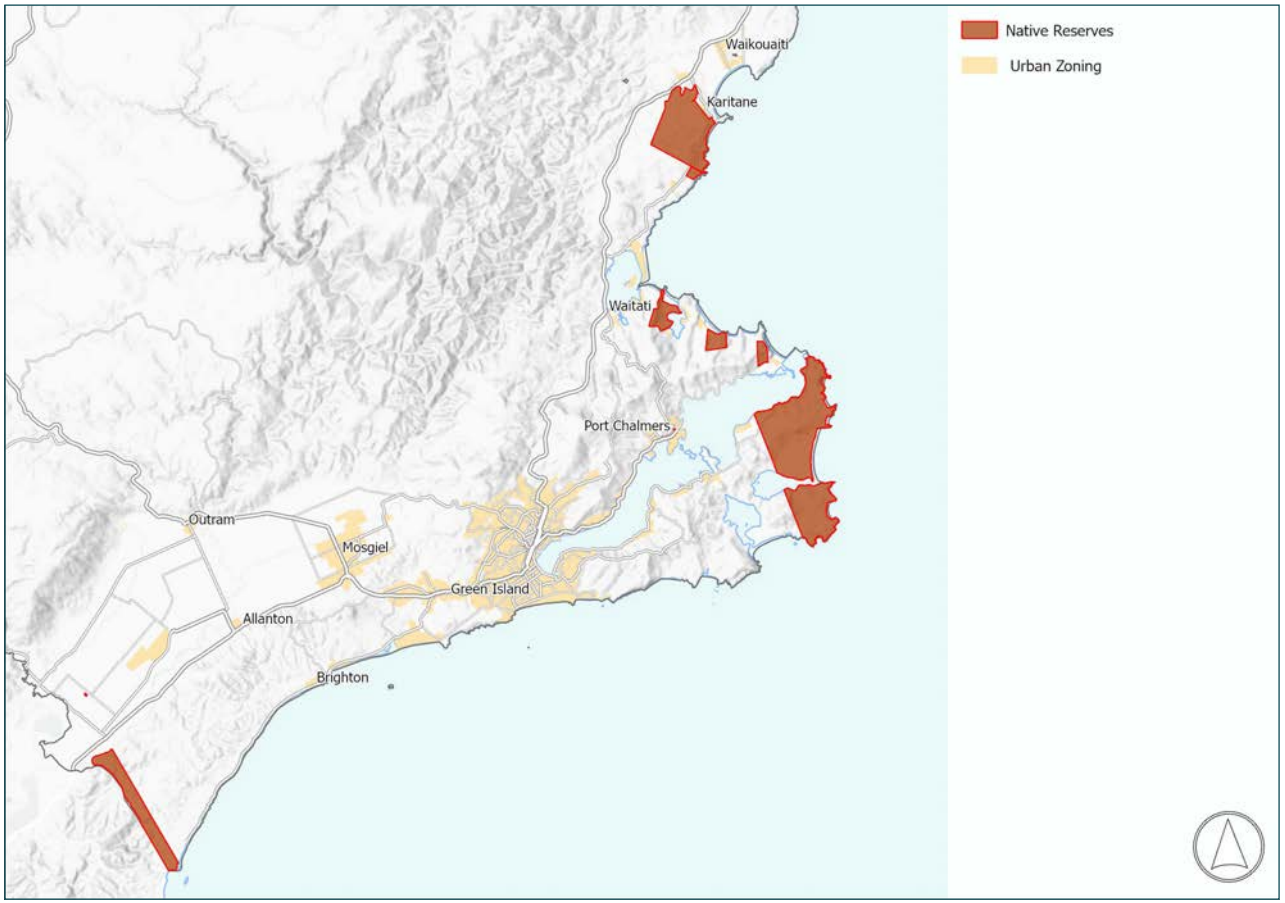


Figure 10: Map of native reserves in the Dunedin area

4.5 Ōtepoti Dunedin has a range of quality housing choices that provide a home for everyone

We are working towards a future where everyone in Ōtepoti Dunedin has an affordable home that meets the needs of their household. Neighbourhoods have a range of homes so that people can maintain community connections by moving within the same area as their circumstances or needs change. Homes are well insulated, cost efficient to heat, and well designed. Measures such as charging points for electric cars, a suitable orientation for solar electricity generation, enough green space to grow food, and access to shared amenities enable people to minimise their greenhouse gas emissions. Options for social and community housing and supported living are available in a range of neighbourhoods. Accessible housing design (for example using universal design principles) and accessible street design is encouraged and incentivised where appropriate, so there are plentiful options for people with disabilities and homes that people can stay in as they grow older.

4.6 Ōtepoti Dunedin supports a diverse, sustainable and thriving urban economy

We are working towards a future where Ōtepoti Dunedin has enough business land and an appropriate range of commercial spaces to give businesses a good choice of options that meet their needs. Businesses of similar types can group together where this benefits them. Our campus and health precincts, including the new Dunedin Hospital, can operate, grow and develop in ways that meet the community's needs over time.

Business locations enable infrastructure services to be delivered efficiently, and businesses that attract a lot of customers are close to active and frequent public transport. We have appropriate infrastructure to meet business needs, including access to safe, efficient and low carbon freight transport options, such as distribution hubs.

Industrial land, infrastructure and major facilities are protected from incompatible activities, such as housing, that may be affected by noise, dust, odour or other effects. Industrial land is also protected from competing uses that make it harder for industry to access that land resource. Our port and airport can operate effectively and efficiently and develop where necessary to meet the needs of our community. A freight hub or 'inland port', located south of the city or in the Clutha district, enables more goods to be transported by rail to Port Otago, reducing heavy vehicle use and associated carbon emissions, air pollution, safety risk and impacts on people's amenity.

Easy accessibility across the city allows good connections between businesses, encouraging collaboration and support. Dunedin attracts and retains businesses of all sizes. We are known for expertise in creative and knowledge technologies, including health technologies and biotechnology, food processing, ICT, creativity, niche manufacturing and engineering. Our heritage buildings and natural features support a thriving visitor industry.

4.7 Ōtepoti Dunedin has a thriving rural economy and local food production

We are working towards a future where Ōtepoti Dunedin protects its highly productive land for land-based primary production and avoids urban expansion on this land. We support the viability of our rural economy by providingfor rural contractors, farm and forestry produce processing, and other commercial services that support the rural sector to locate in rural areas. There are strong local markets for food produced locally, reducing food transport emissions.

We support local food production in urban areas by providing appropriate access to public space and requiring housing design in our standard residential zones to have suitable spaces for small-scale food production. We use rural land sustainably and protect soils and waterways to ensure their ongoing productive use for future generations.

4.8 Ōtepoti Dunedin is a compact, accessible and connected city

We are working towards a future where Ōtepoti Dunedin maintains its compact urban form, is highly connected, accessible and depends less on cars. Having fewer cars reduces carbon emissions and air pollutants, makes our roads safer and increases amenity.

A network of vibrant centres is built around people-focused streets and public spaces, building strong communities. All urban residential areas have safe, convenient and attractive walking and cycling access to these centres and key services and amenities. Our larger town centres have a distinctive character that celebrates their history, and they offer a range of goods and services that support both day and evening economies. Heritage buildings are conserved and restored. Where needed, we enable the development of new centres or community hubs, and expansion of existing centres, to ensure access to services keeps pace with growth.

Residents have convenient, reliable and affordable public transport to the CBD, larger centres and key destinations, complemented by access to other shared mobility solutions such as car share schemes. This is a particular focus for suburbs where residents have longer commutes, including Mosgiel and commuter suburbs to the south. Public transport is suitable for people at all stages of life, and special consideration is given to the needs of those who cannot drive, including school children and adults who do not have access to a motor vehicle. The city has comprehensive cycling and walking networks that link with public transport. We encourage people to use active and public transport through measures such as road safety promotion, workplace and school travel planning, and parking management.

We prioritise intensification of existing urban areas over greenfield expansion. If needed, any expansion of residential land is designed and located to allow easy access to public and active transport. Expansion of commercial and industrial land facilitates movement of goods by rail. The use of micro-mobility options (for example bikes and scooters) provides a low emissions alternative for local deliveries, including from local delivery hubs (last mile delivery).

While reducing our dependence on cars, we acknowledge that population growth will still put pressure on the roading network. We ensure that network maintenance, renewals and upgrades respond to that growth to ensure continued accessibility for motor vehicles, including freight.

4.9 Ōtepoti Dunedin's central city is a vibrant, safe, attractive, and compelling destination to live, work, play, visit, learn, and invest

We are working towards a future where people visit or choose to live in Ōtepoti Dunedin because of its reputation as a vibrant and beautiful city that embraces and celebrates its diverse cultural history. The heart of Dunedin is its central city, including the CBD, campus and waterfront precincts. These connect to Forsyth Barr Stadium, which attracts national and international entertainment and sporting events.

The central city is celebrated for its people-focused spaces, incorporating Kāi Tahu design and heritage architecture, and encouraging and supporting arts, cultural and creative activities. Welcoming and accessible public spaces encourage people to visit the waterfront. Views of the harbour and surrounding hills connect the central city to its surrounding landscape.

The George Street precinct is Dunedin's retail heart, full of activity day and night. The cultural and entertainment quarter comprises the Octagon and lower Stuart Street, along with the Railway Station and connections to Toitū Otago Settlers Museum. It is a hub for civic life, entertainment and tourism, attracting locals and visitors alike. The Warehouse Precinct incorporates the area bounded by Queens Gardens and Police, Princes and Cumberland Streets. It is an internationally renowned success story of revitalisation, where underutilised heritage buildings have been transformed into an attractive mixed-use environment, with some of Dunedin's highest quality office and inner city residential space and hospitality businesses. Over time, this transformation spreads into the Princes Street/Rattray Street area, supported by DCC investment in streetscape and public spaces.

The central city is accessible to a range of transport modes with high frequency public transport connections, safe and efficient cycling infrastructure, car charging facilities, and well managed on-street car parking that supports shorter stays, with well-located parking facilities for longer stays. Traffic flows smoothly through the central city in a way that supports the safety and amenity of pedestrians and cyclists. The precincts are connected by high amenity, accessible pedestrian and cycle routes through the central city and across to Steamer Basin.

We use our heritage buildings, which contribute to the special character and amenity of the central city, maintaining and/or restoring them to a high standard and adapting them for contemporary use. New buildings are of high quality and sympathetic to any heritage surroundings.

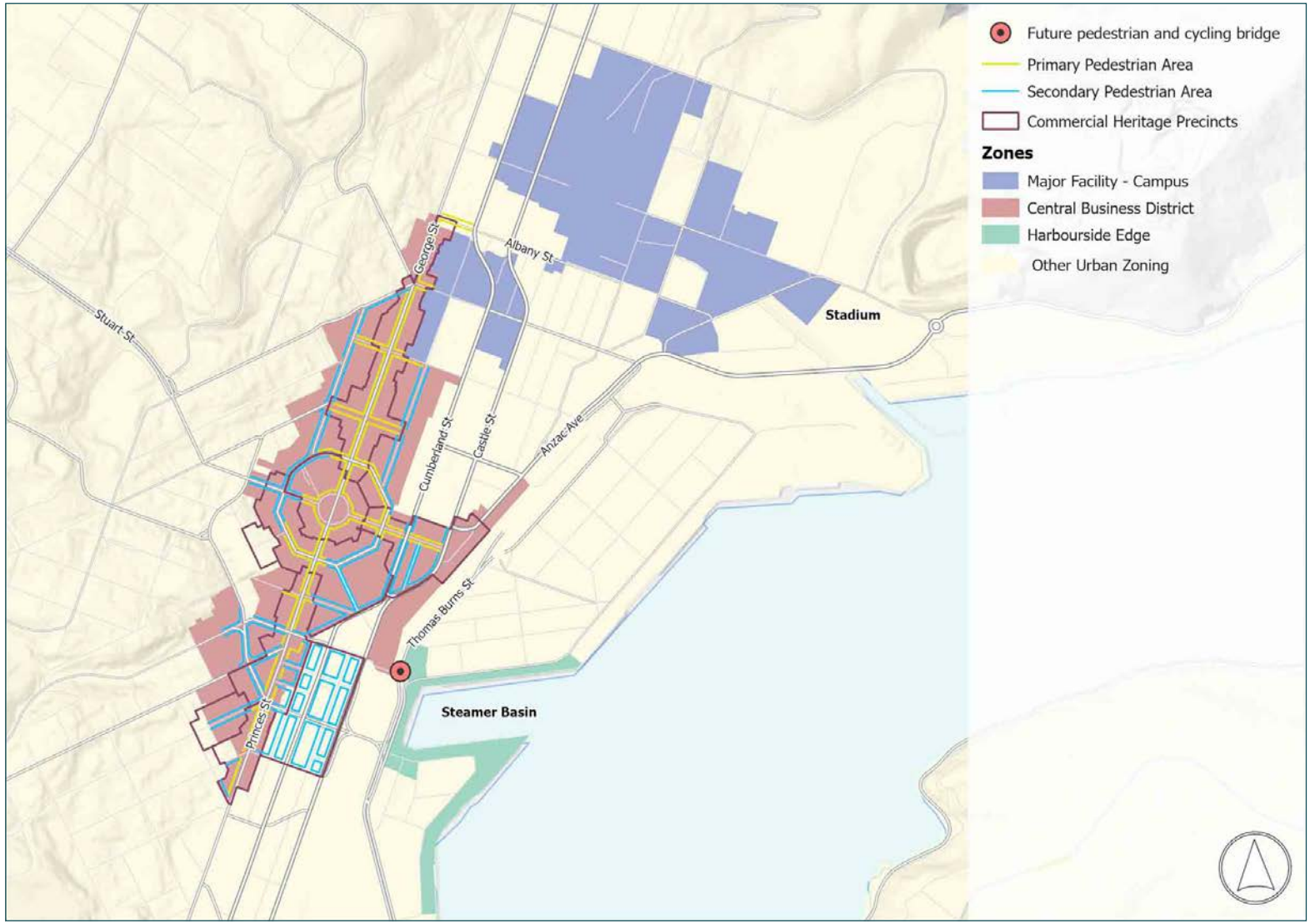


Figure 11: Map of the central business district and campus zone

4.10 Ōtepoti Dunedin's neighbourhoods are attractive and support healthy, connected communities

We are working towards a future where Ōtepoti Dunedin has diverse neighbourhoods that foster a sense of belonging and strong community networks.

All neighbourhoods have convenient, attractive and safe walking and cycling access to a centre with businesses and services that support social interaction and meet most day-to-day needs, including food retail, health services and childcare. Public spaces and recreation facilities support community interaction and opportunities for leisure and recreation through all stages of life. In neighbourhoods where housing density is increased, we provide more and better quality public outdoor space to meet increased demands – this may include space for community gardens. Our parks and open spaces are accessible and inclusive for all members of the community, including by being family friendly and culturally appropriate.

Where needed, we enable the development of new centres or community hubs – and expansion of existing centres – to ensure access to services keeps pace with growth.

New greenfield development creates opportunities for residents to interact, including through provision of pedestrian friendly spaces. Housing is well designed, with windows, living spaces and entrances facing the street, and visible front yards that are not dominated by car parking or garaging. Accessible housing design is encouraged and incentivised where appropriate. Streets are designed to be pleasant for walking, with footpaths, amenity plantings and seating. Neighbourhoods also allow good accessibility for private motor vehicles, with well-designed and permeable street layouts, intersections that ensure high levels of road safety and opportunities for on-street parking where possible.

The special heritage character and fabric of our older neighbourhoods is maintained by protecting and conserving the best examples of our built heritage. Redevelopment and infill maintains adequate space for landscaping and outdoor space amenity. New housing incorporates quality materials and design elements (such as roof pitch and consistent patterns) that reflects or is sympathetic to the character of the area and has a strong visual appeal.

The design of new houses and apartments results in high on-site amenity and helps residents reduce their carbon emissions, for example by maximising solar gain, growing more of their own food and composting waste.

Walking and cycle paths are provided to enhance connectivity through neighbourhoods. Public transport and cycling networks provide easy access to schools and larger suburban centres or the CBD for a wider range of services. We manage speeds in urban areas and around schools to improve safety and liveability.

4.11 Ōtepoti Dunedin has high-quality, safe, sustainable, efficient and resilient infrastructure and supports renewable energy

We are working towards a future where Ōtepoti Dunedin has high-quality, safe, sustainable, efficient and affordable public infrastructure, including transport, 3 waters infrastructure, network utilities and social and community infrastructure. This includes ensuring our existing and new urban areas have adequate infrastructure that supports a well-functioning urban environment and the growth anticipated for those areas.

The need to reduce greenhouse gas emissions is at the forefront of all public infrastructure decisions, including by providing public and active transport infrastructure that reduces our reliance on private motor vehicle use, and facilitates the movement of freight by rail. We have infrastructure support and promote waste minimisation and local access to recycling facilities.

Public and private infrastructure is designed, built and operated in a way that protects and, where practicable, restores the natural environment and cultural values. Examples are using low impact design and green infrastructure solutions where appropriate and ensuring wastewater and stormwater are treated and discharged appropriately. Infrastructure is resilient to hazards and climate change and improves the resilience of the communities it services. Infrastructure is designed to be resilient in a future environment where alternative forms of energy and materials gradually replace fossil fuels.

Freight transport increasingly occurs via rail, enabling our port and rail network to operate more efficiently and effectively while reducing associated carbon emissions and road maintenance costs and improving road safety and resilience. To achieve this outcome, DCC, ORC, KiwiRail, Waka Kotahi, Port of Otago, other relevant government agencies and freight logistics operators should work collaboratively to confirm an appropriate location for an inland freight hub and ideally agree how to fund and deliver any infrastructure upgrades necessary to support its operation.

Infrastructure networks can operate safely and effectively and are protected from incompatible activities being located nearby. We generate more electricity from renewable sources by promoting and enabling large-scale solar, wind and hydro generation in appropriate locations, and small-scale generation in urban and rural areas. The role that the National Grid plays in electrification of the economy is recognised. We work with Transpower to facilitate long term planning for maintaining, operating, upgrading and developing the National Grid including connection to new renewable generation.

We support other infrastructure that enables residents to reduce greenhouse gas emissions. Examples include public electric vehicle chargers, providing more services locally, and infrastructure that allows the use of alternative fuels at the port and airport, and for space heating in the city's businesses, schools and public sector organisations.

Telecommunications infrastructure necessary to support internet access and digital enablement is enabled to meet the needs of urban growth and changes in technology. The role of telecommunications infrastructure in supporting reducing greenhouse gas emissions and climate change mitigation, for example by enabling reduction in travel demand, is recognised. Telecommunications service providers work collaboratively to meet the needs of urban growth and changes in technology.

The cost of new public infrastructure is distributed based on who benefits.

To achieve this outcome, future urban development options are assessed to ensure the long term costs of infrastructure are acceptable, including the cost of new or upgraded infrastructure and its long term operational costs.

We recognise the need to strengthen the resilience of our critical infrastructure to mitigate risk from natural hazards, support emergency response and facilitate recovery following hazard events. Critical infrastructure networks are interdependent, with impacts and outages in one sector affecting other sectors, so strengthening across all sectors is required.

4.12 Ōtepoti Dunedin is resilient to the risk from hazards and is prepared for and able to adapt quickly to the effects of climate change

We are working towards a future where Ōtepoti Dunedin is resilient to natural hazards and climate change, and communities and ecosystems can adapt to a changing environment.

We undertake research, analysis and modelling – including identifying, mapping and monitoring natural hazards – to inform and improve our understanding of the likely effects of natural hazards.

Where possible, we take a dynamic adaptive management planning approach to the risk from natural hazards and climate impacts, allowing us to make timely, appropriate responses as the environment changes that prioritise management of natural hazards that are likely to create increased risk in the foreseeable future. We promote resilient design for buildings and infrastructure.

Where appropriate, we use nature-based solutions to manage risk, increase resilience and facilitate adaptation, through targeted restoration of indigenous biodiversity and ecosystems, including dunes, wetlands and waterways, to a more natural state. This includes making room for rivers, allowing them to flood safely to reduce the risk of property damage. If it is needed to ensure the best possible outcome for affected people, properties and ecosystems, we support managed relocation.

Where appropriate, we use natural infrastructure to mitigate risk and increase resilience.

4.13 Ōtepoti Dunedin's historic heritage is protected and valued

We are working towards a future where Dunedin's significant historic heritage is identified and protected from loss, and supported to be maintained and conserved. These resources contribute to Dunedin's attractiveness and are a drawcard for visitors.

Heritage buildings are sensitively re-purposed, contributing to Dunedin's economy and housing stock.

The heritage values of identified heritage precincts are maintained through careful management of new development and ensure an appropriate balance between the need to provide opportunities for new and more intensive levels of development with the need to protect important heritage values. To enable this, new development is designed to be high quality and sympathetic to the heritage surroundings. Demolition of buildings with significant heritage values is avoided and demolition by neglect is discouraged.

How we will get there

We will use a range of methods to meet our strategic goals for how we provide for growth and manage new urban development in Dunedin and deliver the infrastructure required. These methods include:

- plans and strategies
- financial incentives such as grants, including for biodiversity and heritage protection and enhancement projects and home insulation
- design guidance and other advice and advocacy
- monitoring and research
- new and upgraded infrastructure (including 3 waters, transport, recreation, and waste); and
- engagement with mana whenua as treaty partner as well as key stakeholders.

Further detail will be included in an implementation plan that is updated annually.

5 OBJECTIVES AND POLICIES THAT GUIDE THIS FDS

5.1 Introduction

The Future Development Strategy is prepared in response to the National Policy Statement on Urban Development (NPS-UD)[26]. The NPS-UD outlines several objectives and policies that relate to urban development, urban environments, and local authority planning and infrastructure decisions. The objectives of the NPS-UD are:

Objective 1: New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future.

Objective 2: Planning decisions improve housing affordability by supporting competitive land and development markets.

Objective 3: Regional policy statements and district plans enable more people to live in, and more businesses and community services to be located in, areas of an urban environment in which one or more of the following apply:

(a) the area is in or near a centre zone or other area with many employment opportunities

(b) the area is well-serviced by existing or planned public transport

(c) there is high demand for housing or for business land in the area, relative to other areas within the urban environment.

Objective 4: New Zealand's urban environments, including their amenity values, develop and change over time in response to the diverse and changing needs of people, communities, and future generations.

Objective 5: Planning decisions relating to urban environments, and FDSs, take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

Objective 6: Local authority decisions on urban development that affect urban environments are:

(a) integrated with infrastructure planning and funding decisions; and

(b) strategic over the medium term and long term; and

(c) responsive, particularly in relation to proposals that would supply significant development capacity.

Objective 7: Local authorities have robust and frequently updated information about their urban environments and use it to inform planning decisions.

Objective 8: New Zealand's urban environments:

(a) support reductions in greenhouse gas emissions; and

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

For Dunedin, as a Tier 2 local authority, the key policies that are important for guiding decisions on this FDS are policies 1 and 2.

Policy 1 is that:

Planning decisions contribute to well-functioning urban environments, which are urban environments that, as a minimum:

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

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

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

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

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

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

(d) support reductions in greenhouse gas emissions; and

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

[26] National Policy Statement on Urban Development 2020 – Updated May 2022 | Ministry for the Environment

The characteristics of a well-functioning urban environment in Policy 1 are minimum characteristics focused on the objectives of the NPS-UD. In order to give effect to other national and regional policy direction under the RMA, a well-functioning urban environment will include other characteristics, which are outlined in Section 5.2.

Policy 2 of the NPS-UD is:

> Tier 1, 2, and 3 local authorities, at all times, provide at least sufficient development capacity to meet expected demand for housing and for business land over the short term, medium term, and long term.

Section 3.3 of the NPS-UD sets out that in order to be "sufficient" to meet expected demand, the development capacity provided must be both plan-enabled and infrastructure-ready. Infrastructure-ready means for:

- Short term growth needs (next 3 years), it must be in an 'operative' part of the district plan with existing development infrastructure to support the development of the land.
- Medium term growth needs (3-10 years), it must be in an 'operative' or 'proposed' part of the district plan with available infrastructure capacity or where infrastructure to support development is identified in the Long Term Plan.
- Long term growth needs (10-30 years), it must be in the district plan or in the FDS with infrastructure at least identified in the local authority infrastructure strategy.

5.2 Policy direction for this FDS

Identifying and evaluating options for providing additional development capacity, and undertaking infrastructure planning and prioritisation as part of an FDS, is an iterative process. Figure 12 below illustrates this. The blue boxes in the diagram outline some of the key considerations that drive how infrastructure delivery gets prioritised. The infrastructure prioritisation process considers additional development that is likely to occur under current 2GP provisions as well as other matters as shown. These priorities can influence the assessment of future urban development options. For example, if there are multiple options that are assessed as supporting a well-functioning urban environment and other policy direction (the red boxes), those that can 'piggy back' or are more compatible with existing infrastructure priorities will be evaluated more favourably. Equally, if there are a limited set of potential urban development options and a strong policy driver to choose one or the other, the need to plan for the preferred development option can influence the infrastructure priorities. This iterative consideration is shown in the diagram in the green boxes. This iterative evaluation process can run through several cycles and is influenced by community engagement and the submissions and hearing process (yellow boxes).

This FDS includes three key policies to guide the assessment of development options, and the planning and scheduling of related essential infrastructure. These are relevant for decisions on this FDS and any alternative options that may be promoted through future plan changes as "unanticipated or out-of-sequence developments that add significant development capacity" under clause 3.8 of the NPS-UD.

The policies are written to reflect the iterative nature of this process (see Figure 12). This means that decisions on the optimum options to add further urban development capacity must both consider and influence decisions on how to prioritise infrastructure delivery and vice versa. This is to ensure there will be enough infrastructure-ready urban development capacity, the future urban development will support a well-functioning urban environment and achieve other national direction, and the infrastructure programme will ensure infrastructure can be delivered in a way that meets human health and environmental outcomes, Treaty obligations, and any market delivery and financial constraints.

The policies give effect to the NPS-UD objectives and the strategic directions outlined in this FDS, including the need to achieve a well-functioning urban environment and provide sufficient development capacity. They also give effect to other relevant parts of national policy direction, including the National Policy Statement for Freshwater Management, the National Policy Statement for Highly Productive Land, and regional policy direction (the partially operative and proposed Otago Regional Policy Statements).

They align with the strategic directions of the Dunedin City Second Generation District Plan (2GP), which must give effect to the same matters.

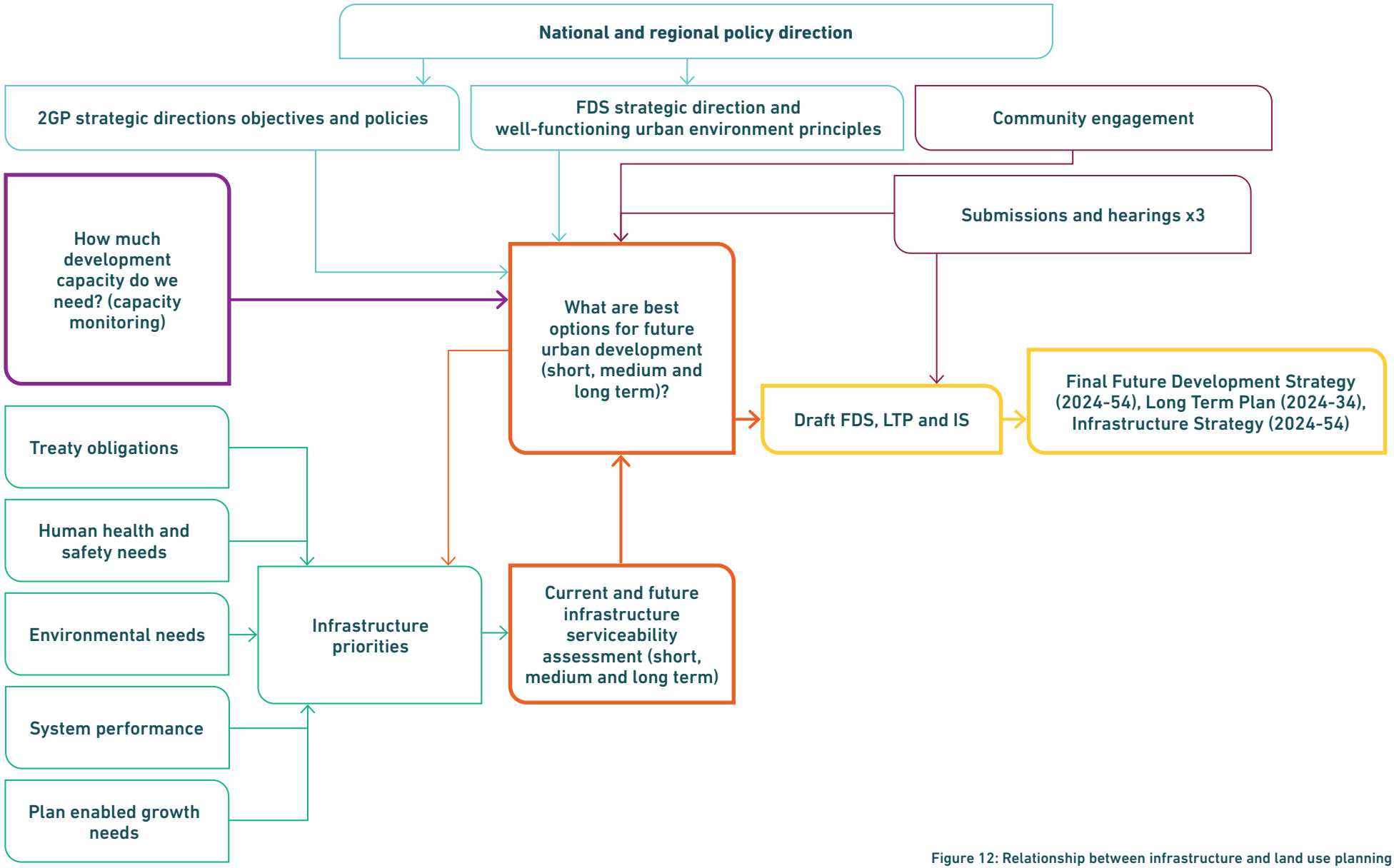


Figure 12: Relationship between infrastructure and land use planning

In addition to the broad prioritisation framework outlined in Policy 1 (below), infrastructure prioritisation and scheduling will also need to consider other matters that may affect scheduling including:

- investigation and timing requirements – some projects with known solutions may be prioritised over projects that require further investigation
- budgetary and deliverability constraints – some smaller, easier projects may be prioritised ahead of more difficult or costly projects
- land-ownership – some projects with multiple landowners, where more complex agreements need to be reached, may be prioritised over projects with a single landowner
- funding mechanisms – some projects that may require developer funding or co-funding, or special rating areas may need additional time to agree funding mechanisms with affected parties
- economies – prioritisation will need to consider sensible ways of packaging work (within or between infrastructure types), meaning priority may change depending on decisions around economies or packaging, for example if roadworks are programmed for an area, pipe upgrades may be prioritised to occur at the same time, or it may make sense to package multiple projects of a single type (for example pump upgrades).

Policy 1

Prioritise and schedule publicly funded development infrastructure projects to achieve a well-functioning urban environment and the strategic directions in this FDS by generally prioritising in the following order:

a. first, infrastructure renewals and upgrades necessary to maintain or restore minimum levels of service and performance of infrastructure networks, considering the development that is anticipated to occur under operative plan rules in urban areas and the timeframe required to manage the needs of expected growth (e.g. to ensure performance does not worsen);[27]
b. second, infrastructure renewals and upgrades that will make improvements to infrastructure performance with respect to effects on, and meeting regulatory standards associated with, human health and safety and the environment, particularly fresh water, including in urban areas not subject to significant levels of growth;
c. third, infrastructure delivery for future urban development areas (identified in this FDS) within the timeframe determined; and
d. fourth, infrastructure renewals and upgrades that will support any other urban development options that will deliver a well-functioning urban environment and enable significant additional development capacity.

When planning upgrades in accordance with these priorities, where appropriate consider if there are any opportunities to provide increased capacity to service additional growth that would support a well-functioning urban environment.

[27] This means that customers have access to minimum levels of service (for example safe drinking water and enough pressure for firefighting). It does not include level of service / performance upgrades above the minimum, which are in b.

Policy 2

When considering either (1) additional urban development options for inclusion in this FDS or (2) urban development options that are promoted as alternatives to the areas included in this FDS (as unanticipated or out-of-sequence developments that add significant development capacity under clause 3.8 of the NPS-UD):

a. Avoid urban development options that may require publicly funded infrastructure projects that interfere with any identified infrastructure projects that meet priorities a-c in Policy 1, unless that urban development option is both necessary to achieve minimum development capacity requirements and it will better achieve a well-functioning urban environment than any future urban development areas it may delay or prevent, or the infrastructure project can be added to the programme through an alternative funding mechanism or accelerated delivery model without displacing other projects. The assessment of the impact of adding new projects on existing projects in the work programme must include both a consideration of upfront capital costs and additional ongoing operating and maintenance costs. Projects added through an alternative funding mechanism or accelerated delivery model must be acceptable to the DCC and/or ORC. In most cases such infrastructure will be required to be vested in the DCC as public infrastructure, unless otherwise agreed;

b. Prioritise new housing intensification or business land intensification options over options that extend the urban environment into a rural or other undeveloped 'greenfield' environment. Intensification options are encouraged in areas that are in, or close to, centres and current or feasible high frequency public transportation services and where change can deliver other aspects of a well-functioning urban environment;

c. Evaluate urban development options against the following characteristics of a well-functioning urban environment, by considering whether it will:

    i. for residential land, contribute to a housing type there is an identified shortfall of or need for

    ii. support good accessibility between housing, jobs, community services, natural spaces, and open spaces, particularly by way of public or active transport

    iii. support a reduction in greenhouse gas emissions, considering any DCC or ORC city-wide emissions reduction targets

    iv. reduce the risk from natural hazards and/or build resilience to the likely current and future effects of climate change. This includes avoiding new urban development in areas where the risk from natural hazards is more than low

    v. be developed at a density that supports the efficient use of the land and the effective and efficient provision of services, amenities and infrastructure, including transport and 3 waters infrastructure

    vi. maintain highly productive land for primary production for future generations

    vii. protect or enhance the mauri of te taiao and indigenous biodiversity, including urban biodiversity

    viii. maintain or enhance the mauri and health of water bodies, including coastal waters

    ix. maintain the natural character of significant landscapes and of the coastal environment

    x. maintain the values associated with wāhi tūpuna

    xi. enable Māori to express their cultural traditions and norms, including but not limited to enabling Kāi Tahu mana whenua to occupy and use land within Ōtepoti's native reserves in accordance with tikaka, to provide for their economic, cultural and social wellbeing

    xii. maintain significant heritage values

    xiii. ensure change is sympathetic to and compatible with other important heritage and cultural values;

    xiv. result in an environment with good amenity values;[28]

    xv. enable infrastructure to be delivered in a way which meets identified public health and environmental standards and other performance requirements (consent conditions); and

    xvi. avoid or appropriately manage reverse sensitivity effects on nearby infrastructure, major facilities, network utilities, state highways and industrial activities.

d. Only enable urban development options where there is confidence that the option will have access to appropriate 3 waters network infrastructure in the timeframe planned. For short to medium term urban development options this is 3-10 years and for long term options it is 10-30 years, noting that the NPS-UD obligation to ensure minimum development capacity targets are met means infrastructure delivery must be enabled to meet those targets;

e. When evaluating urban development options in terms of the ability to provide efficient and effective 3 waters infrastructure (serviceability assessment), consider for any 3 waters infrastructure upgrades or solutions proposed as part of that option:

    i. environmental and cultural effects (including the risk of failure and the impact on the overall network's consent conditions and emissions reduction goals);

    ii. effects on Kāi Tahu values, particularly in terms of Te Mana o Te Wai and Tikaka and Kawa as determined by mana whenua;

[28] Noting Policy 6 (b) of the NPS-UD states decision-makers must have regard that the planned urban built form ... may involve significant change to and area and those changes may detract from the amenity values appreciated by some people but improve amenity values appreciated by other people, communities and future generations...

iii. effects on human health (including the effectiveness of solutions and the risk of failure);

iv. long term operational costs;

v. network resilience and points of vulnerability and avoid solutions which have a high risk of failure or a low risk but high potential consequence if failure occurs;

vi. alignment with emissions reduction targets for infrastructure network performance;

vii. risk from natural hazard risks;

viii. whether any upgrades or solutions can be clustered or aligned with those planned for existing urban development areas or future urban development areas identified in the FDS or other parts of the infrastructure programme to achieve greater cumulative efficiency; and

ix. generally avoid urban development options that propose large lot or low-density development that are likely to be inefficient to service.

f. Reject urban development options that would be reliant on individual on-site water supply or wastewater disposal solutions as these are not long term infrastructure-ready options.

Policy 3

In delivering infrastructure projects for native reserves which may not be urban in nature or identified for significant growth, the following should be considered:

a. The obligation to enable mana whenua to live and sustain themselves on native reserves set aside for this purpose

b. Te Tiriti obligations

c. Addressing historical inequities in the provision of key infrastructure servicing to native reserves.

6 FUTURE DEVELOPMENT STRATEGY AND SPATIAL PLAN

6.1 Introduction

The FDS is a strategic tool – it enables us to co-ordinate how we plan for housing and business growth to meet demand over time with how we plan for and fund infrastructure to support that growth.

A key goal of the FDS is ensuring there is sufficient development capacity for housing and business land. The following sections set out where we have development capacity to support projected demand for housing and business land, where we think growth will occur, constraints that affect where we can accommodate future urban development, and the infrastructure necessary to support development and promote well-functioning urban environments. These topics are outlined at the whole of city level and are explored in more detail by dividing the city into seven areas: the main urban area, Mosgiel, Outram/Allanton/Middlemarch, Otago Peninsula, the south coast, the north coast, and West Harbour (see Sections 6.7 to 6.13). The seven areas are shown in Figure 13.

There are 10 native reserves within the DCC boundaries, located at: Taiari, Lake Tatawai (a now-drained lake on the Taiari Plain), Otago Peninsula (Otago Heads Native Reserve), Port Chalmers, Aramoana, Pūrākaunui, Brinns Point, Karitāne (Waikouaiti Native Reserve) and Matainaka (the Matainaka and the Hawksbury fishing easements). Mana whenua have suffered inequities in the provision of essential infrastructure (3 waters and roading) to the native reserves and from planning and legislative frameworks that have hindered mana whenua use of these lands for settlement purposes, as they were intended. Mana whenua consider that it is imperative that development capacity and the provision of infrastructure projects takes this into consideration and provides for the historic failure to support mana whenua in their intentions for their native reserves.

The timing of infrastructure projects is indicated in the tables contained in Section 7 to 13. These align as far as possible with the DCC and ORC's draft Long Term Plan budgets and the Regional Land Transport Plan funding bids. Decisions on these will be made in mid-2024 and it is possible that as a result of decisions, the timeframe of projects indicated in this FDS may change.

An FDS must spatially identify constraints on development. Constraints that limit where development is appropriate include natural hazards, highly productive land, indigenous biodiversity, protected landscapes and wāhi tūpuna. These are identified in Section 6.2. The availability (including capacity) of critical infrastructure can also constrain development, although these constraints are often temporary where infrastructure upgrades can address availability or capacity shortfalls. Dunedin's 3 waters, transport, and flood protection infrastructure, and how these may constrain development, is outlined in Section 6.3.

Protecting and enhancing biodiversity and improving water quality are strategic goals for Dunedin. Section 6.4 outlines a vision for blue and green networks and the work planned to implement this vision. This vision is an important context for how we grow and develop.

Although we have sufficient development capacity for housing, we have identified some potential future residential intensification areas (that is, potential future changes to the 2GP to enable further housing capacity) in the main Dunedin urban area and Mosgiel. These areas would support a well-functioning urban environment as they are close to a range of services and public and active transport options. These would provide additional housing capacity, should it become necessary. No additional greenfield areas are identified in this FDS. The proposed intensification areas are summarised in Section 6.5 and outlined in more detail in sections 6.7 and 6.8.

Dunedin has a shortage of industrial land over the short term. Section 6.6 identifies proposed future urban development areas for industrial land in the Burnside/Green Island area, close to good transport links.

The FDS identifies infrastructure upgrades necessary to support Dunedin's housing and business growth in each area in sections 6.7 to 6.13. Infrastructure projects to provide a well-functioning urban environment and address hapū intent and community aspirations are also included. Infrastructure needs are grouped into three categories: 3 waters, transport, and 'additional' infrastructure, which includes parks and recreation facilities, schools, health, electricity and telecommunications.

The infrastructure projects identified in these sections inform future investment required in the various funding documents:

- Long term plans (also known as 10 Year Plans) (DCC and ORC) – these outline annual spending on infrastructure for years 1 to 10
- Infrastructure strategies (DCC and ORC) – these form part of the long term plans and outline expected infrastructure investment over years 10 to 30
- The asset management plan for the future water services provider
- Regional Land Transport Plan (prepared by ORC) – this outlines transport projects for which the DCC and ORC request co-funding from Waka Kotahi, which normally co-funds approved projects at a rate of 51%. The Regional Land Transport Plan (RLTP) feeds into the Government's National Land Transport Programme.

The NPS-UD also requires that additional infrastructure is likely to be available. This has been identified through engagement with infrastructure providers.

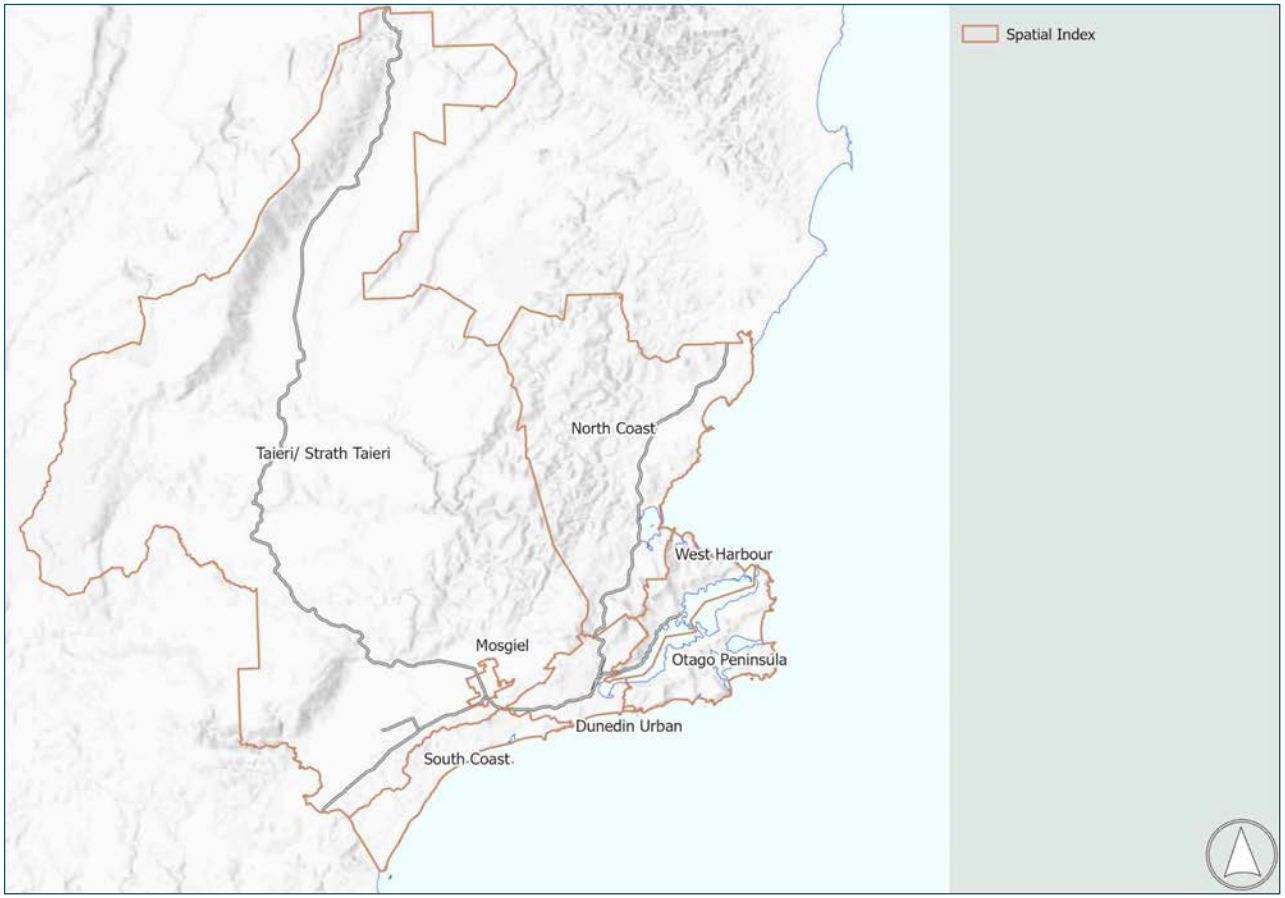


Figure 13: The seven areas of Dunedin discussed in this FDS

6.2 Key development constraints

Development constraints are environmental or infrastructure constraints that make some areas unsuitable for additional development, either temporarily or permanently. In Dunedin, the key constraints that affect the suitability of areas for new or intensified urban development are natural hazards risk, the need to protect special values (most commonly biodiversity and landscape values) and infrastructure constraints, including capacity limitations, in the 3 waters, transport and flood protection networks. These constraints are often temporary where infrastructure upgrades can address availability or capacity shortfalls. Upgrades, where programmed, may be in the short (next 3 years), medium (next 10 years), or long term (next 30 years) or may be very long term or unprogrammed. These infrastructure capacity limitations are discussed in Section 6.3.

The location of critical infrastructure and activities that generate effects or risks beyond property boundaries and potentially give rise to reverse sensitivity effects may also make areas unsuitable for future urban development.

Section 5 discusses how land use and infrastructure planning are integrated. Infrastructure constraints in some areas identified for future urban development may be resolved within the next 30 years and will enable the land to be used for urban development.

It is important that these constraints are identified spatially because new urban development (including new greenfield development and intensification) in these areas will be inappropriate and is likely to conflict with the strategic objectives set out in Section 4.

The following sections contain maps of development constraints. These can also be viewed on an interactive webmap[29] which allows local areas to be viewed more closely.

6.2.1 Natural hazards constraints

Due to Dunedin's climate and geography, many areas in the city are vulnerable to natural hazards, principally flooding and landslides. Climate change impacts will bring more intense and frequent weather events, increasing risks from flooding, coastal erosion, wind, storm surges, landslips and inundation. Parts of the city are also exposed to damage due to seismic hazards.

Hazard risks change over time due to natural processes such as changing weather patterns caused by climate change and disruption of natural systems caused by human changes to the environment. We investigate hazard risk in Dunedin to understand where future urban development may be inappropriate due to risk from natural hazards.

As risks are better understood, they will be taken into consideration in subsequent updates to this Future Development Strategy. For example, the results of the South Dunedin Futures Project will be integrated into the FDS during the next review.

Several areas of urban Dunedin are vulnerable to natural hazards because they were developed when there was a lack of regulations governing land use. Knowledge of natural hazards has also evolved over time. Such areas are unsuitable for further intensification, while undeveloped parts of Dunedin that are subject to higher hazard risk are generally inappropriate for urban development.

Figure 14 shows areas of moderate-high natural hazard constraints in Dunedin.

[29] www.dunedin.govt.nz/future-development-strategy

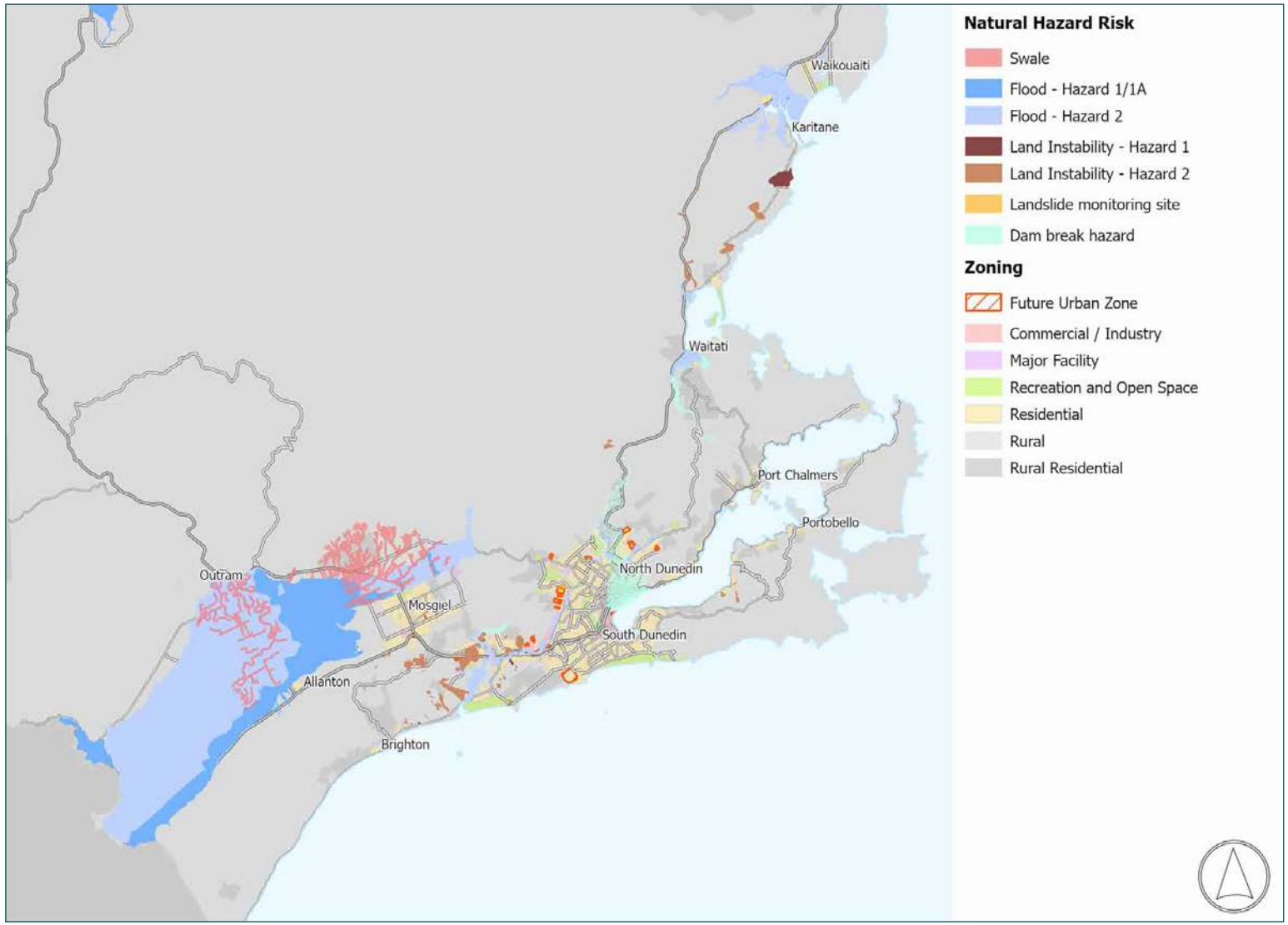
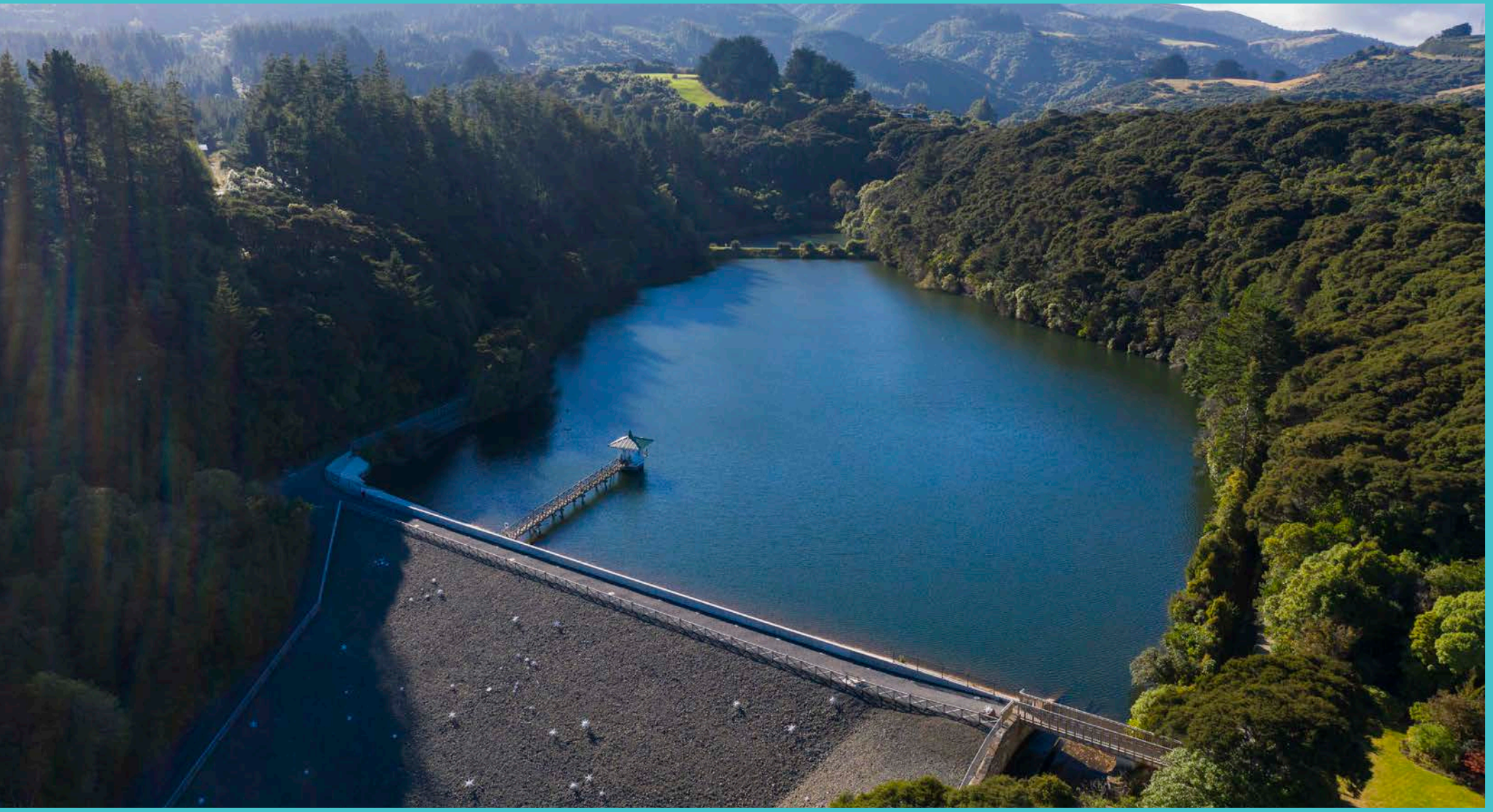


Figure 14: Areas of moderate-high natural hazard constraints in Dunedin



6.2.1.1 Land instability

Land instability means land that could slip when saturated with water, disturbed by seismic activity, or weakened by activities such as vegetation clearance or earthworks. Due to Dunedin's hilly topography and rock and soil characteristics, many areas are vulnerable to land instability. Generally, these areas have steep slopes or cliffs prone to slipping, and the risk of slips increases during and after heavy rain or earthquakes. Land instability hazards include active or recently active landslides, which are monitored annually or every second year.

The 2GP identifies land instability hazards and categorises them (Hazard 1 and Hazard 2) depending on the level of risk. More recent active landslides are monitored regularly as part of the DCC's Landslide Monitoring Programme. The areas most severely at risk (Hazard 1 and Landslide Monitoring Programme sites) include land at Puketeraki, Macandrew Bay, Green Island, Abbotsford, Brockville, St Clair and Central Dunedin, and these are inappropriate for future urban development. Areas with less risk (Hazard 2) may be appropriate for further urban development if this can be designed to avoid or mitigate the risk to an acceptable level.

6.2.1.2 Flooding

Floods occur when water spills from a river channel onto land that is normally dry or when heavy rain accumulates in lower lying areas or does not drain fast enough into a drainage channel, the stormwater network or river. This can also turn overland flow paths into watercourses during heavy rain and, in extreme events, may cause a flow of river or stream sediment debris in alluvial fans.

The response to flood hazards is dictated by the level of risk to people, communities and property. Future urban development is not appropriate in areas subject to a high hazard risk from flooding such as land immediately next to rivers, e.g. the Taiari River at Middlemarch, and streams or parts of the Lower Taiari Floodplain (Hazard 1A and Hazard 1), nor in areas subject to a moderate risk of flooding such as land at Outram, areas adjoining the Kaikarae / Kaikorai Stream, part of North East Valley, Waitati, and parts of Karitāne and Waikouaiti (Hazard 2).

Parts of South Dunedin are prone to flooding during prolonged heavy rain because of its physical characteristics: low-lying, poorly consolidated sediment, proximity to the ocean and harbour, a shallow water table, strong relationship between sea level and groundwater levels,[30] and a piped network that cannot receive and discharge stormwater quickly enough. The flood levels observed in June 2015, as shown in Figure 16, currently indicate where new development should be elevated to avoid inundation from flooding. The DCC is identifying actions to help mitigate flooding in South Dunedin and increase resilience to future rainfall events, including in the Forbury and Portobello Road areas through its South Dunedin Flood Alleviation Project. A strategy and associated investment plan will be developed by the end of 2026.

Dunedin has several dams and reservoirs (e.g. Ross Creek Reservoir, Southern Reservoir, Sullivans Dam, and Mt Grand Reservoir). Ross Creek and the Southern Reservoir sit above urban areas putting some land in Dunedin at risk of flooding in the event of dam or reservoir failure. The extent of risk depends on the nature of the failure, other concurrent environmental factors, and the path of the flooding. The overall likelihood of a failure is considered to be very low because the dams and reservoirs are carefully managed through a dam safety assurance programme. However, development is preferred outside areas that would be inundated if a dam broke because while the likelihood of failure is low, the consequences may be high.

[30] The Natural Hazards of South Dunedin (ORC, 2016) https://www.orc.govt.nz/media/2217/the-natural-hazards-of-south-dunedin-report-july-2016.pdf

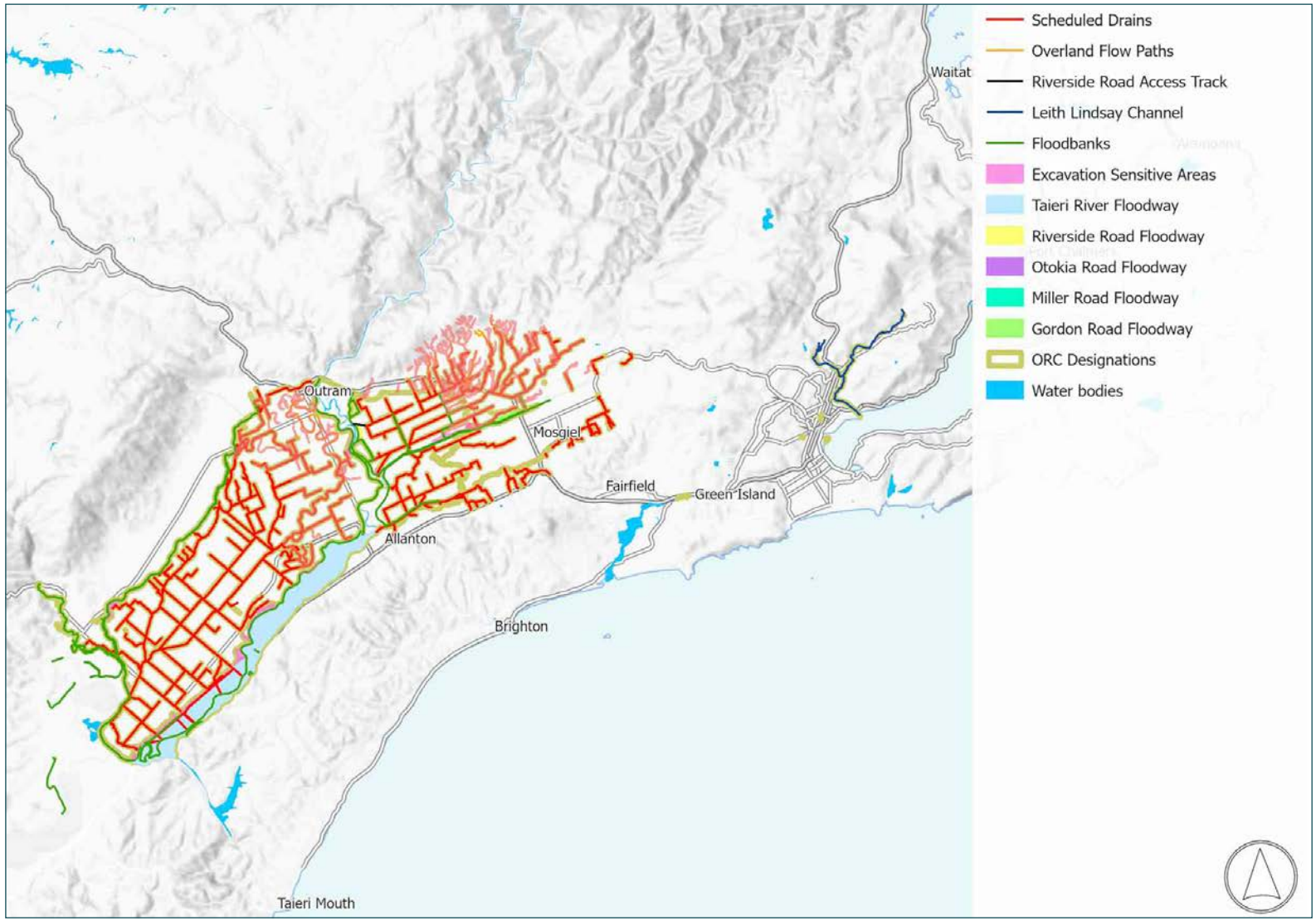


Figure 15: Areas subject to the ORC 2022 Flood Protection Management Bylaw

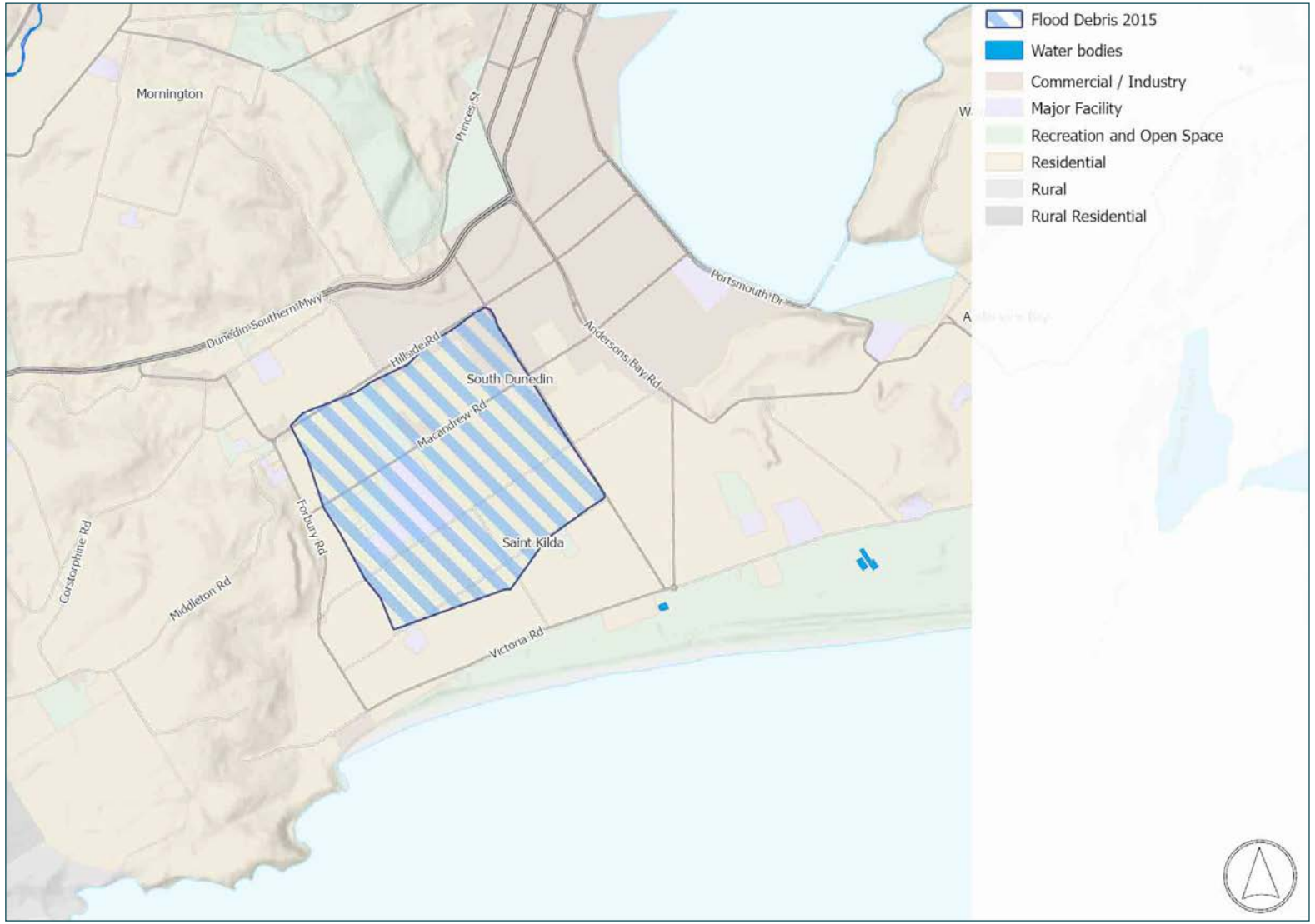


Figure 16: The extent of flood debris in South Dunedin during the June 2015 flooding event

6.2.1.3 Coastal hazards

Several low-lying areas of coastal Dunedin are subject to risk from coastal inundation during storm surges.[31] Sea level around coastal Otago is predicted to rise 0.3m by 2050, 0.6m by 2075 and 1.5m by 2125.[32] As the sea level rises, the areas subject to coastal inundation will expand. Sea level rise will also elevate groundwater levels near the coast, including in South Dunedin. This will result in more ponding during heavy rain as the capacity to soak up rainwater will decrease as the groundwater approaches ground level.

The DCC and ORC are currently developing a joint climate change adaptation strategy for South Dunedin to respond to a range of challenges related to climate change, including sea level rise, high groundwater table, coastal erosion, and flooding from heavy rainfall. The South Dunedin Future programme will undertake a detailed risk assessment and develop adaptation options. A final Adaptation Strategy and associated Implementation Plan will be developed by the end of 2026 and will incorporate findings from the South Dunedin Flood Alleviation Project. The Adaptation Strategy may propose significant land use change in South Dunedin and could recommend a range of actions such as additional infrastructure, nature-based solutions, de-intensification or managed relocation[33] from areas where risk cannot be mitigated, and intensification of other areas with an overall aim of no net loss of residential development in South Dunedin.

Low-lying coastal areas are already subject to storm surge and associated coastal hazards,[34] and areas that could be inundated by sea level rise within the next 100 years[35] are generally inappropriate for future urban development unless we can identify and fund effective long term mitigation options. These areas are shown on Figure 17.

Monitoring sea level, coastal erosion and groundwater levels is critical to understanding the rate of change and how much time is available to respond to coastal hazards.

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[31] Coastal hazards of the Dunedin City District – Area A (ORC, 2014) https://www.orc.govt.nz/media/1664/dunedin-city-coastal-communities-hazard-summary.pdf

[32] Interim Guidance on the Use of New Sea-Level Rise Projections– Table 2: Year achieved SSP-8,5 H (MfE, 2022) https://environment.govt.nz/publications/interim-guidance-on-the-use-of-new-sea-level-rise-projections/

[33] Relocation involves both leaving and arriving, and is preferred to the term 'managed retreat' which can be interpreted as only applying to the leaving aspect of adaptation.

[34] Coastal hazards of the Dunedin City District – Area A (ORC, 2014) https://www.orc.govt.nz/media/1664/dunedin-city-coastal-communities-hazard-summary.pdf

[35] Coastal hazards of the Dunedin City District – Area A (ORC, 2014) https://www.orc.govt.nz/media/1664/dunedin-city-coastal-communities-hazard-summary.pdf

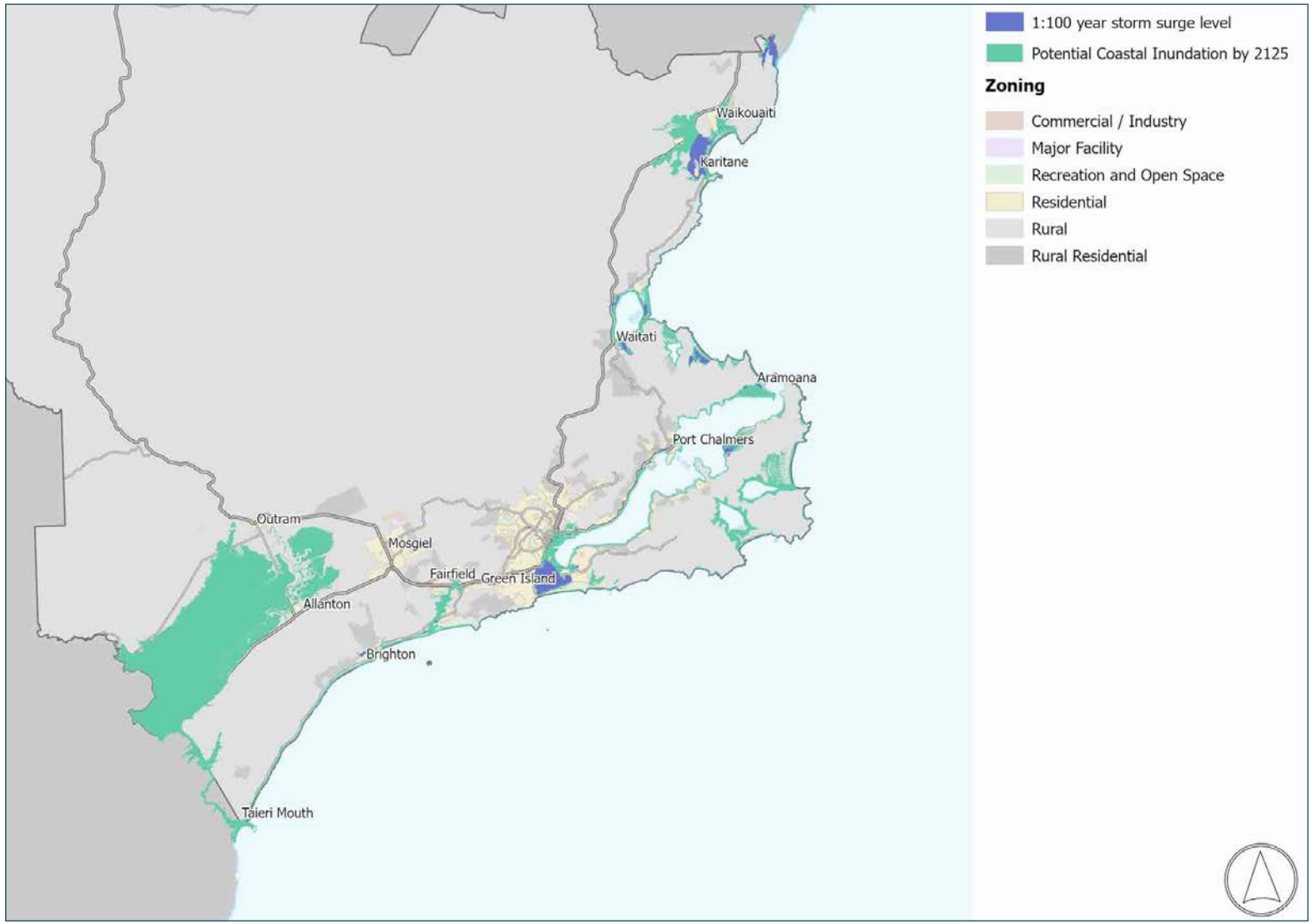


Figure 17: Areas of Dunedin with coastal hazard constraints

6.2.1.4 Seismic

A number of fault lines and associated fault-related folds run through Dunedin, including the Akatore, Titri, Waipori and Silver Stream-Merton faults. These are shown in Figure 18. The return periods[36] for these faults range from 1,700 to 50,000 years. The Akatore Fault, south-west of Dunedin, has ruptured twice in the past 1,300 years and is regarded as the most active fault in coastal Otago, accounting for most of the overall seismic risk for Dunedin city. Dunedin is also at risk from damage from the Alpine Fault, which has a return period of approximately 290 years. The probability of an earthquake on the Alpine Fault is about 28% in the next 50 years.[37]

The New Zealand Building Code manages the design and construction of new buildings, and the earthquake strengthening of existing buildings. A recent report by GNS[38] identifies known, suspected, possible or potentially active faults and folds in Dunedin, but not at a level that is precise enough to assess the hazard of specific sites. These areas are mapped here as potential development constraints; however, specific areas would need to be investigated to determine whether they are suitable for urban development or lifeline utilities. Future urban development is generally inappropriate on or immediately next to known active fault lines.

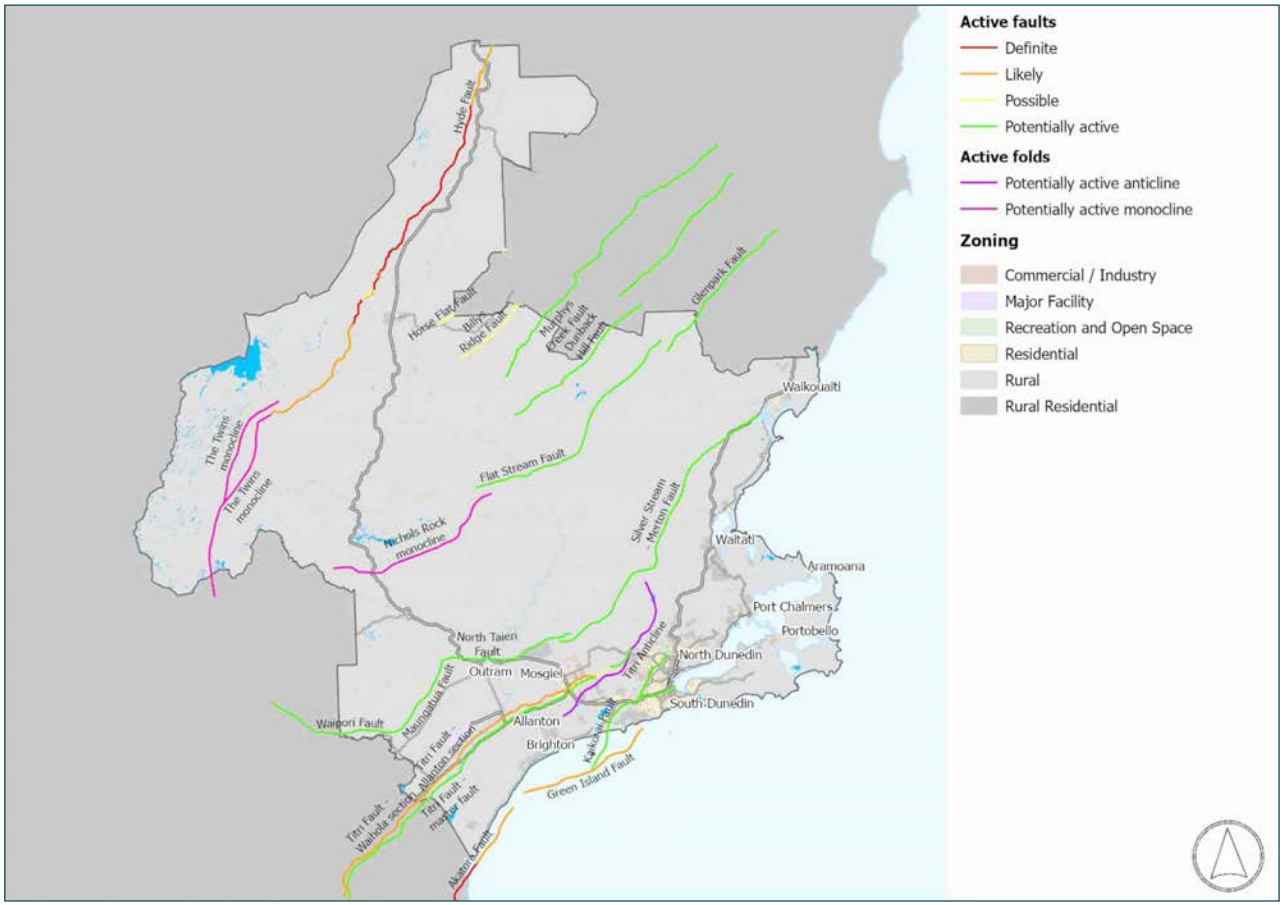


Figure 18: Active faults and folds in the Dunedin area

[36] Return period is the average time or estimated average time between events.

[37] GNS Science webpage Alpine Fault: Alpine Fault - GNS Science | Te Pū Ao

[38] *General distribution and characteristics of active faults and folds in the Clutha and Dunedin City District, Otago* report (GNS, April 2021) https://www.orc.govt.nz/media/10002 active-faults-folds-in-the-clutha-and-dunedin-city-districts-otago-2021.pdf

6.2.2 Special values for protection constraints

Dunedin's environment has many areas of special natural and cultural values that need to be protected. These are grouped into four broad categories: highly productive land, protected biodiversity, protected landscapes, and wāhi tūpuna (which include native reserves and fisheries easements). These are shown on Figure 19.

6.2.2.1 Highly productive land

The combination of land, soil and climate attributes of highly productive land means it can sustain the production of a wide variety of plants, including horticultural crops. Highly productive land is a finite and valuable resource for food security and the rural economy. The National Policy Statement for Highly Productive Land (NPS-HPL) requires its protection for land-based primary production, both now and for future generations. The DCC and ORC are jointly responsible for implementing the NPS-HPL, which includes a requirement for the ORC to map all highly productive land in accordance with the NPS-HPL. Figure 19 shows the areas considered to be highly productive under the interim definition in the NPS-HPL (land use classes (LUC) 1-3 on rural zoned land), as well as rural zoned areas identified in the 2GP as having high class soils. Under the NPS-HPL, urban rezoning of areas of highly productive land is only allowed if it is needed to provide enough development capacity to meet demand for housing or business land, there are no other reasonably practicable options, and the benefits outweigh the long term costs of the loss of the land for primary production. Areas of highly productive land in Dunedin are unlikely to meet these requirements.

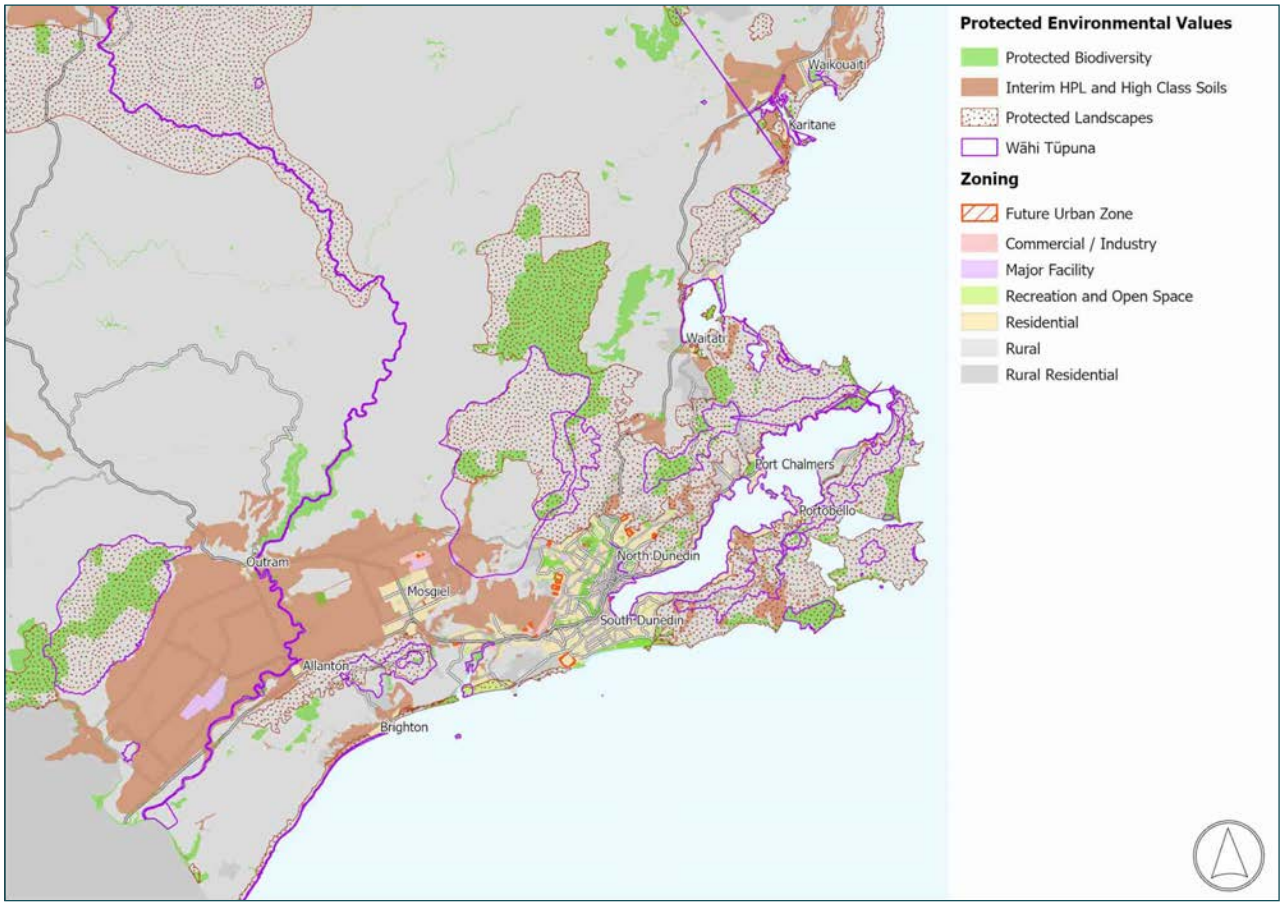


Figure 19: Areas of Dunedin with special values

6.2.2.2 Protected biodiversity

Dunedin has many important areas of indigenous and non-indigenous vegetation, providing valuable habitats for flora and fauna. These areas encompass a wide range of environments, from high-altitude tussock grasslands and herbfields, to wetlands, indigenous scrub and forests, coastal dunes and turfs, and urban green spaces.

The 2GP identifies several urban areas of important native vegetation and/or areas that provide wildlife habitat as Urban Biodiversity Mapped Areas. It is important to protect these areas to enable wildlife corridors and retain green spaces and biodiversity in the urban environment. They also help to absorb rainfall runoff so that we can manage urban stormwater better.

Outside our current urban areas, the 2GP identifies Areas of Significant Biodiversity Value (ASBV), which are inappropriate for future urban development. Other areas protected for their biodiversity values include land owned by the Department of Conservation, land protected under QEII Covenants and areas scheduled by the ORC as Regionally Significant Wetlands (some of which are also scheduled ASBVs). Wetlands are natural areas that are permanently or intermittently wet and support natural ecosystems of plants and animals. A Regionally Significant Wetland is any wetland with one or more special values such as providing habitat for nationally or internationally rare or threatened species or critical habitat for the life cycles of indigenous fauna that depend on wetlands. They can include bogs, swamps, fens, shallow water and salt marshes. They serve as important environmental filters and habitats for indigenous species.

Future urban development is inappropriate in these protected areas to preserve their special values. These areas are shown on Figure 19.

6.2.2.3 Protected landscapes

Dunedin's diverse range of landscapes, from mountains to the coast, contributes to the city's natural character and visual amenity. The 2GP identifies areas that are protected for their landscape or coastal character. The 2GP identifies Significant Natural Landscapes and Natural Coastal Character areas, which have high amenity or natural coastal character values, respectively. It also identifies Outstanding Natural Features and Outstanding Natural Landscapes, which have outstanding landscape values, and Outstanding Natural Coastal Character (ONCC) and High Natural Coastal Character (HNCC) areas, which are areas with outstanding and high natural coastal character values, respectively. All these areas are considered inappropriate for future urban development.

6.2.2.4 Wāhi tūpuna

Wāhi tūpuna are landscapes and places that embody the relationship of Kāi Tahu mana whenua and their culture and traditions with their ancestral lands, water, sites, wāhi tapu (sacred places), and other taoka (treasures). The 2GP maps wāhi tūpuna for Ōtepoti Dunedin. Each wāhi tūpuna has its own unique set of values and threats, detailed in Appendix A4 of the 2GP.

Any future development must respond to the identified values and manage threats appropriately to avoid adverse effects on the wāhi tūpuna and ensure that their values are protected. In some cases, wāhi tūpuna may constrain development depending on their specific values or identified threats (for instance where subdivision, earthworks or buildings are listed as threats). In other cases, wāhi tūpuna identify areas of traditional settlement by Kāi Tahu, and appropriate levels of development for this purpose may not be a constraint. However, the native reserves have themselves been severely constrained in terms of their intended use as settlement areas. Figure 19 identifies wāhi tūpuna sites that are most likely to constrain future urban development.

6.2.3 Reverse sensitivity and incompatibility constraints

The presence of some infrastructure, major facilities or industrial activities may also limit future residential development options nearby. In relation to infrastructure and major facilities, this includes but is not limited to the National Grid and critical electricity transmission infrastructure, radio transmitters, telecommunication facilities, ports, the airport, railway lines, state highways and the Invermay Research Campus (and associated Research Farms). Such infrastructure, major facilities or industrial activities can involve significant noise, odours, dust, vibration or electrical interference that may adversely affect residential amenity. The construction of tall buildings in front of existing telecommunication facilities can impact on the ability of the facility to provide services and could require the facilities relocation or re-design. Future residential development options should be avoided close to such infrastructure, facilities and activities unless a site-specific assessment shows this is appropriate, to allow their efficient operation (including expansion where necessary) and to avoid reverse sensitivity effects.

A significant resource management issue is inappropriate development, land use and subdivision in close proximity to the National Grid, which can compromise its operation, maintenance, development and upgrade. Under the National Policy on Electricity Transmission 2008 (NPSET), policies and plans must include provisions to protect the National Grid from other activities. Specifically, the NPSET requires that district plans include a buffer corridor around National Grid lines within which "sensitive" activities should not be given resource consent and other activities that have the potential to compromise the National Grid or generate reverse sensitivity effects are managed.

6.2.4 Infrastructure serviceability constraints

The ability to service an area with 3 waters infrastructure can also limit where new urban development can be accommodated. Dunedin has a number of issues and constraints within the 3 waters network that limit future urban development until they are resolved. These constraints, and the overall approach to addressing them, are discussed in Section 6.3.

Ensuring the safety and efficiency of transport networks may also make some future urban development options inappropriate or require upgrades to make them acceptable. For example, urban development options that require access onto higher speed parts of the state highway may require significant upgrades or be inappropriate. Likewise, there are parts of the local transport network that it may be difficult to ensure access can be appropriately and safely provided.

6.3 Overall Spatial Plan – infrastructure overview

6.3.1 3 waters

The main urban area of Dunedin and Mosgiel is serviced for water, wastewater and stormwater. The approach in outlying townships is mixed; some areas have no services and others have one or more.

Dunedin has a number of issues and constraints within the 3 waters network. Some of the constraints are widespread and significant work is needed to address them and provide for future development capacity. This is partly due to Dunedin's age, and the fact that large parts of its 3 waters network are due for renewal. Some parts of Dunedin have infrastructure that is over a century old and many parts have infrastructure that is over 50 years old. The need to renew can sometimes create an opportunity to upgrade the infrastructure.

A number of upgrades are required to service development that is provided for under existing plan rules. Consistent with the priority approach outlined in Policy 1 (Section 5), we are prioritising these upgrades to maintain or restore minimum levels of service and performance and provide for the development capacity that is enabled by current 2GP rules, considering also the pace and timing of growth.

Works to support expected growth are included in the Long Term Plan and will be provided in years 1 to 10. This includes significant replacement of and upgrades to water, wastewater and stormwater pipes, new and upgraded pumping stations, and upgrades to the city's wastewater and water treatment plants. Some of the key projects are highlighted below and further detail is provided in relation to each local area in sections 6.7 to 6.13.

We are also prioritising upgrades to address environmental impacts. For example, changes are needed to improve the quality of discharge at the Waikouaiti and Warrington wastewater treatment plants, and we need to work towards changing where we treat and discharge wastewater to address both environmental effects and effects on values of significance to mana whenua. Mana whenua have emphasised that under tikaka and kawa the current locations of the Waikouaiti and Warrington wastewater treatment plants are inappropriate, irrespective of the discharge quality.

In some cases, the 2GP has zoned areas for future urban development, either as future greenfield land (Residential Transition Zones) or for medium density housing / intensification (General Residential 2 zoning with a wastewater constraint mapped area), but development is held back or limited until the constraint is resolved. The overall approach to addressing these constraints is discussed below. Upgrades to enable this longer term development capacity include new and upgraded pipes, pump stations, and water and wastewater storage.

The 3 waters constraints often limit where additional future urban development can be accommodated until they are resolved. Future urban development options must be considered in light of the availability of infrastructure and where in the overall infrastructure programme upgrades to accommodate them sit, considering the prioritisation process outlined in Section 5.

The DCC's integrated systems planning programme is developing adaptive plans for future investment in 3 waters infrastructure. This will enable the water services provider to meet current standards and levels of service for 3 waters, adapt to future standards and levels of service, and remain affordable for customers.

6.3.1.1 3 waters services reform

There is currently some uncertainty around the future funding and delivery of 3 waters services in the future. Given this, this FDS refers to 'water services provider', noting that in the future this might be the DCC or another organisation. Until any changes are made the DCC is the water services provider and 3 waters infrastructure spending is determined through the LTP process. Proposed infrastructure projects and timeframes for their provision are included in the infrastructure tables in sections 6.7 to 6.13, but the final programme will ultimately be the decision of the water services provider.

6.3.1.2 Provision of reticulated services to unserviced communities

The FDS indicates where provision to reticulated services to currently unserviced areas has been raised as an issue and might be appropriate; however, this is subject to a more detailed assessment before a decision is made on the priority of any upgrades. This servicing assessment is required under the Local Government Act 2002[39] and will be undertaken by the DCC in 2024. The assessment will determine the adequacy of the current drinking water, wastewater and stormwater servicing arrangements, and consider the need for upgrades in terms of public health and environmental effects, or any other significant reasons. It will include engagement with relevant communities. Mana whenua have emphasised their desire for the extension of 3 waters infrastructure and reticulation to their communities and papatipu marae. This includes the extension of reticulated wastewater and drinking water services along the Otago Peninsula between Portobello and Harington Point, and at Puketeraki, Waitati and Brinns Point.

The DCC will determine priority areas for a more detailed analysis of servicing options based on the findings of the servicing assessment, and will provide the findings to the water services provider, which will be responsible for expanding reticulated services in future.

Those who benefit from new 3 waters reticulation will be required to pay drainage, water or any other rates applicable at the time to fund operational costs, and are generally also required to pay a contribution to the capital cost of constructing the system.

Sections 6.7 to 6.13 outline our expectations on the future provision of reticulated services in the relevant areas.

[39] Section 125, Local Government Act 2002

6.3.1.3 Programme for 3 waters upgrades to support this FDS

The following sections discuss some of the issues and constraints with Dunedin's 3 waters networks. These limit where future development options may be appropriate and, in some cases, must be addressed in order to ensure existing development capacity is infrastructure-ready in the timeframe required. Projects to resolve these issues are identified in sections 6.7 to 6.13.

6.3.1.4 Water supply

Dunedin's water supply is mainly sourced from Deep Creek and Deep Stream, tributaries of the Taiari River. While the supply is sufficient for most of the year, over summer when demand is higher there may also be less water available, so it may not be possible to maintain river health and meet water demand. Resilience is also an issue, with limited raw water storage if the supply from Deep Creek and Deep Stream is compromised. The DCC's resource consents from the ORC to take water from Deep Creek and Deep Stream expire in 2039. Dunedin's main water treatment plants at Mount Grand and Southern supply most of the main urban area, Mosgiel and townships on the northern coast as far as Seacliff. The amount of water that can be provided to Mosgiel, the northern townships, Port Chalmers and Portobello is limited by the capacity of the water network itself, meaning there can be restrictions in these townships, which limits further urban development in these areas. In some parts of the main urban area, constraints to supplying potable water at higher elevations can mean there is not enough pressure to enable firefighting.

Waikouaiti and Karitāne's water supply is sourced from the Waikouaiti River. While the supply is sufficient for most of the year, source availability sometimes reduces and it may be insufficient to meet demand and maintain river health. The Waikouaiti River is a significant awa for Kāti Huirapa Rūnaka ki Puketeraki. The rūnaka has concerns that the water takes on the river, which include the DCC's take for community water supply, may have detrimental effects on the health of the awa and the taoka species that it supports. The Rūnaka prefers that water takes are removed from the river if investigations yield a suitable alternative. The DCC's resource consent from the ORC to take water from the Waikouaiti River expires in 2041. Projects to resolve these issues are identified in Section 6.12.4.

6.3.1.5 Wastewater network

There are significant constraints across the city's wastewater network. These are caused primarily by stormwater and groundwater getting into the wastewater network when it rains (called 'inflow and infiltration') due to older, damaged pipes and connections. This becomes a particular problem during large rainfall events. During these events, the wastewater network becomes overloaded – to relieve pressure and prevent wastewater spilling within dwellings, contaminated water is discharged into water bodies and occasionally exits manholes and spills onto the street. The DCC is working towards reducing the frequency and volume of wastewater overflows. Additional development can both increase stormwater flows (due to an increase in impermeable surfaces) and add more wastewater into the system. As we replace pipes to address these system failures, we are also providing additional capacity to support the growth anticipated for the affected areas. However, as the issues are catchment-wide, they will not be resolved until the entire programme of works is complete for each catchment, meaning we cannot provide for additional urban development beyond that provided for in the 2GP until works are complete. Resolving these constraints will depend on funding, programming and contractor availability and will vary by catchment area.

More detail on individual wastewater schemes and treatment plants is included in the relevant spatial section.

Some of Dunedin's existing medium density areas are subject to 3 waters (particularly wastewater) constraints that mean they cannot currently be developed to their full capacity. Infrastructure upgrades needed to remove these constraints are identified in sections 6.7 and 6.8.

6.3.1.6 Stormwater network

Dunedin's stormwater network consists of drains, streams, gutters, pipes, mud tanks, detention ponds, stormwater reserves and associated infrastructure. Stormwater drainage is also provided in part by privately owned piped and open watercourses and rivers managed by the ORC (Leith Stream, Lindsay Creek and Kaikarae / Kaikorai Stream).

Stormwater flooding occurs in a number of locations due to a combination of a poor, ageing and under-sized stormwater infrastructure, high groundwater levels, and a lack of rapid drainage paths. New development usually increases stormwater runoff because it creates more impermeable surfaces (e.g. roofs, roads, car parks, or compacted soil). Flooding can occur when stormwater volumes exceed those the system was designed for, or flow paths become obstructed. Untreated stormwater runoff can also cause water pollution and sedimentation. Stormwater discharges are generally untreated, which can affect water quality in local water bodies, estuaries and the Otago Harbour. Stormwater management, including making more room for Dunedin's streams and rivers to carry higher flows, will be increasingly important, particularly as we experience more intense and frequent rainfall events. We also need to manage impacts on water quality in the medium and long term. Wherever possible, we should use water sensitive urban design and low impact design techniques to manage stormwater, for example grassed swales and permeable paving.

Stormwater draining into the Taiari Drainage Scheme could reduce the effectiveness of the ORC's Land Drainage and Lower Taiari flood protection schemes, which provide land drainage and flood protection to Mosgiel and the surrounding area. Increases in stormwater generated by additional urban development will decrease the available capacity for flood conveyance. Infrastructure upgrades to address the stormwater network in Mosgiel are discussed in Section 6.8.3.

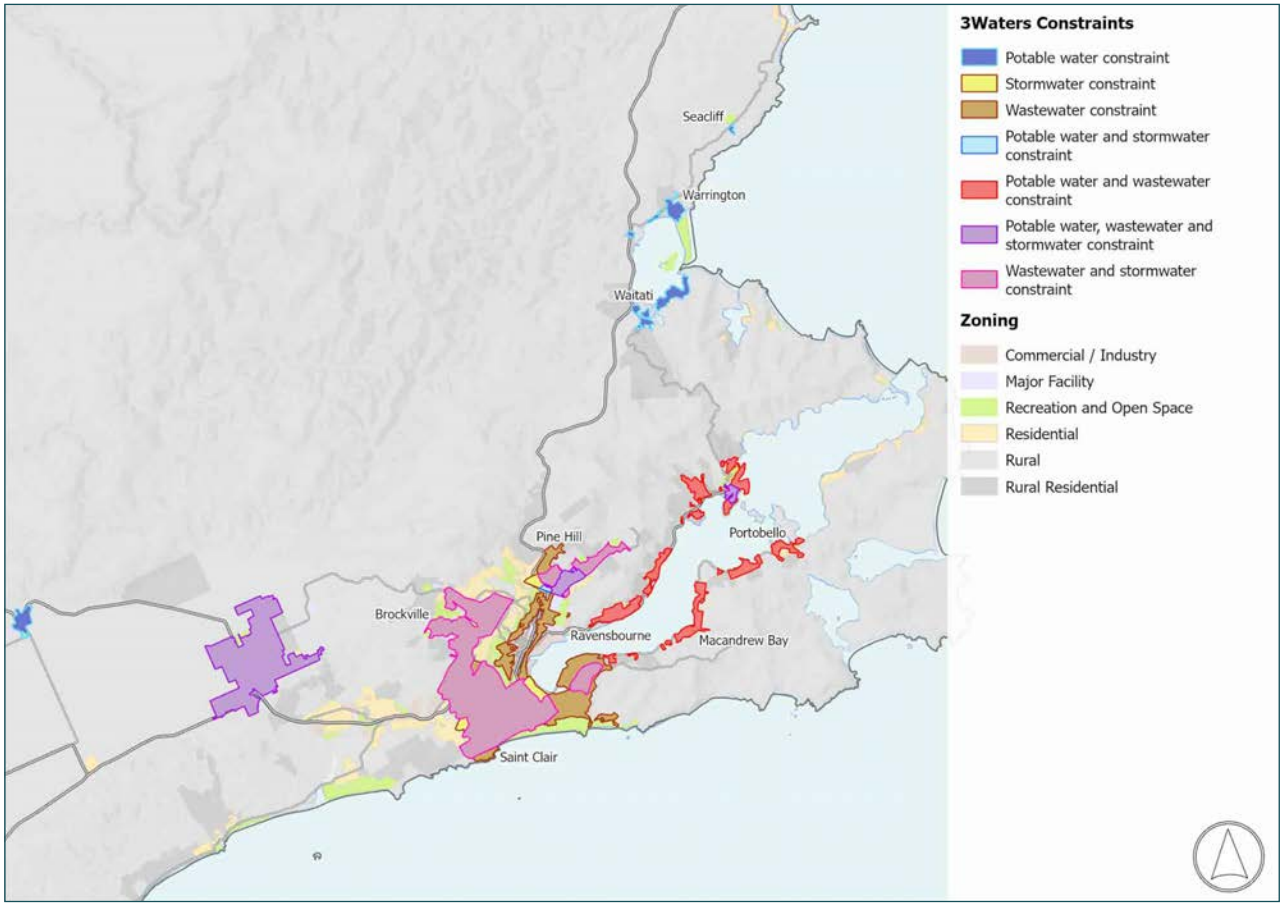


Figure 20: Areas of Dunedin with known 3 waters constraints on urban development

6.3.1.7 Urban stormwater channels

Open and piped stormwater watercourses (including the Water of Leith, Lindsay Creek and Kaikarae / Kaikorai Stream) through private and public land can constrain the development potential of land upstream. In 2019 the DCC instigated a work programme to resolve priority issues caused by lack of capacity in watercourses. In response to submissions on Variation 2 to the 2GP, new rules were introduced to protect open watercourses from potential damage in areas identified for intensification. The issue is widespread, with more than 50 sites, particularly in Dunedin's hill suburbs, currently having stormwater capacity issues in urban watercourses.

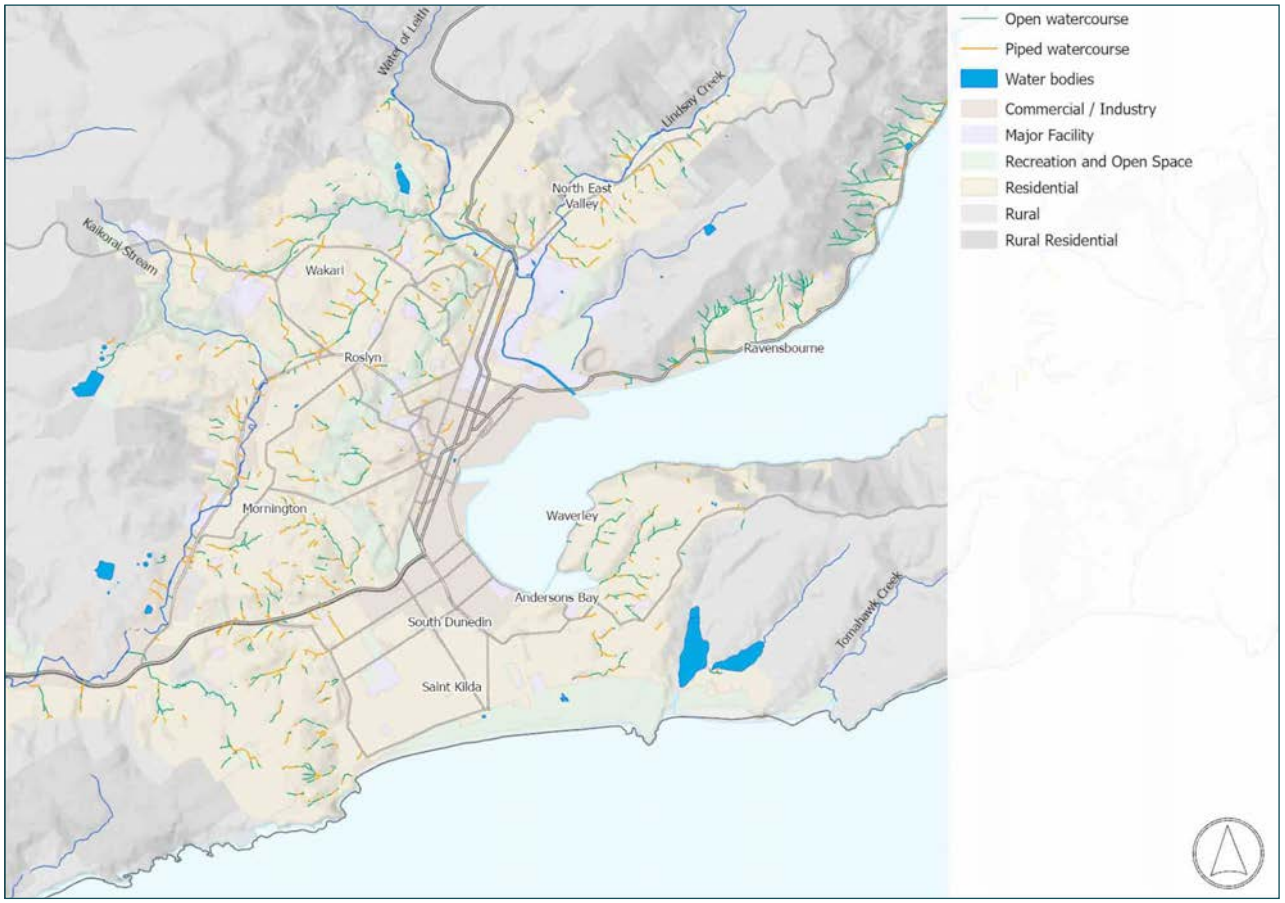


Figure 21: Open and piped watercourses located in the main urban area of Dunedin

6.3.2 Transport

One of the key aspects of a well-functioning urban environment (see Section 5) is having good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport. A well-functioning urban environment is also one that supports reductions in greenhouse gas emissions.

Dunedin's public transport (bus) network performs well in terms of patronage compared to New Zealand cities of a similar size, but there have been criticisms by bus users at times about the reliability, frequency and travel times. Improving these is likely to increase bus patronage, which will support a reduction in greenhouse gas emissions and help achieve Dunedin's Zero Carbon targets. Dunedin's cycling network is still in its infancy, with many gaps and a poor level of service in parts. The FDS identifies a number of projects that will enhance active transport and public transport. Many of these projects are also included in the DCC Zero Carbon Plan.

There are known safety or capacity issues at a few key intersections in the city. Resolving issues related to public transport and active mode infrastructure will also help to reduce capacity issues in the overall transport network by reducing the use of private vehicles.

Rail is a large contributor to the overall capacity of the transport network, taking about 60-70% of all export product off road from Southland and Otago through to Port Otago. The Main South Line passes through Dunedin, with connections to the Port of Otago and to the cool store facilities at Mosgiel via the Taiari Line.

The following sections outline the key priorities for Dunedin's public transport system, planned cycling infrastructure improvements, and road safety and capacity issues.

6.3.2.1 Public transport to support growth and a well-functioning urban environment

The ORC is responsible for delivering Dunedin's public transport services. The DCC delivers bus stop and walking infrastructure as well as intersection and road corridor improvements that make the bus system more efficient and reliable.

In 2023, the ORC operated 25 routes in Dunedin across five units.

Over the 2022 to 2023 year, the service carried 2.8 million passengers, representing a 10% increase over pre-COVID-19 levels. The Shaping Future Dunedin Transport project, which includes the ORC, DCC and Waka Kotahi, has a goal that 8% of journeys to work and education are made by public transport by 2030. In 2018 (the most recent data), 3.4% of journeys to work were made by public transport. The focus of this goal is to encourage people out of cars and onto public transport to reduce road congestion and carbon emissions.

Figure 22: Public transport units operating in the wider Dunedin area

Some of the tools to improve use of public transport include:

- more reliable services (ensuring buses run on time, with minimum service cancellations)
- more frequent services to reduce wait times, with the ideal being that people can turn up and go with a short wait
- shorter travel times (for example through shorter or more direct bus routes or changes to road space allocation to give buses priority)
- making the bus more affordable through fare reductions and incentives
- quality infrastructure including safe, accessible, clean bus stops with appropriate shelter
- easy-to-understand services with real-time information
- clean, comfortable and accessible buses
- expanding service coverage into unserviced residential areas
- continual monitoring and adjustment of services
- financial disincentives to drive in the form of increased parking and road user charges, reduced parking availability and convenience, and longer travel time.

As noted in the Strategic Directions, it is also critical to encourage most new residential and business developments to be near existing bus routes or areas easily serviced by buses.

We cannot implement all these measures concurrently as many will increase the cost of the bus service, which must be funded through fares and rates beyond any subsidy provided by central government. Therefore, choices must be made. A recent review of Dunedin's bus service has indicated that the priorities should be improved reliability, frequency and infrastructure in key parts of the city. The trade-off for Dunedin is that there are no plans to extend coverage to unserviced areas and limited changes to services that run to outlying areas. However, we will continue to monitor demand and revisit service provision in light of any changes to growth patterns in outlying settlements.

We need to resolve some issues with bus infrastructure to deliver public transport more efficiently. These include the capacity issues at the Great King Street bus hub, which will be exacerbated by planned increases in the frequency of some services. There are also constraints on the central city routes leading to the bus hub. Congestion and inability to provide adequate space for bus stops mean that buses can be unreliable, with incompatible journey times. In addition, many bus stops are not accessible for all people and there is a lack of safe walking routes to/from some key destinations and residential areas.

The four key projects being implemented to support the 8% mode shift goal and address infrastructure constraints are:

Fares and frequency: This work identifies realistic and cost-effective public transport options to increase use of the bus service and achieve the 8% target. The preferred option will be aligned to other improvements. Routes are defined as either primary or secondary. An increased service span (6am to 11.30pm) is proposed on all primary and secondary routes. Primary routes will have a 15 minute frequency service from 7am to 7pm and secondary services will have a 15 minute frequency at weekday peak times and 30 minutes at other times. Details of routes where increases in frequency are proposed are included in sections 6.7 to 6.13.

Princes Street bus priority and corridor safety plan: This encompasses safety, cycling, pedestrian and bus stop improvements, bus efficiency and reliability improvements along the Princes Street corridor.

Bus hub upgrade and bus superstops: To provide for more frequent bus services, more stands will be required at the bus hub. At key convergence points in the network, 'superstops' will receive clearer real-time information and associated infrastructure improvements.

Parking policy: The DCC is working on a parking policy to consider how provision and pricing of parking supports wider mode shift goals.

The public transport service and proposed changes over the long term are discussed in sections 6.7 to 6.13. To support growth, we are planning to improve the frequency of several services and several infrastructure projects are funded.

Many of these changes are also included in the DCC Zero Carbon Plan, which signals an increased level of ambition and investment to improve public transport use, which may result in further actions or shorter timeframes to action identified projects.

6.3.2.2 Cycling and pedestrian infrastructure to support growth and a well-functioning urban environment

Dunedin has some infrastructure constraints that make it hard for people to cycle safely and comfortably and increases reliance on private vehicles. This is particularly the case in the outer suburbs such as Mosgiel, the hill suburbs and South Dunedin. We also lack adequate pedestrian infrastructure, such as footpaths in some areas (e.g. West Harbour and several townships), safe crossing points or wheelchair accessibility in many places, especially in the outer suburbs.

Work is underway to improve Dunedin's walking and cycling networks. The DCC is undertaking a strategic walking and cycling network review to identify future cycling and pedestrian corridors and priority areas for investment. The proposed network will be the subject of consultation in early/mid 2024. The proposed network is expected to include a combination of on-street cycling infrastructure, low-speed shared streets, shared paths and crossing points.

Delivering new cycling infrastructure will be subject to further processes including public consultation, landowner engagement, funding allocation and detailed design.

Priority areas and connector routes are expected to be the focus for the upcoming 10 year period. Cycleways outside priority areas, including those in rural areas, are anticipated to be delivered in the 10 to 30 year timeframe, unless funding from community partnerships enables their earlier delivery.

6.3.2.3 Road safety and capacity projects to respond to growth and to support a well-functioning urban environment

In the main urban area, a small number of key intersections have safety or capacity issues. Mosgiel has capacity and safety issues at the Gordon Road/Gladstone Road intersection, including the rail crossing and the intersection of Quarry Road and State Highway 1, which can cause traffic to back up onto the southern motorway at peak times. The DCC proposes to undertake a strategic transport study for Mosgiel between 2024 and 2027 to identify potential improvements to the transport network to address issues.

Portobello Road along the Otago Peninsula and State Highway 88 to Port Chalmers have good provision for active transport between suburbs and into the city centre, but the roads do not always allow for safe access to the shared path or public transport on the harbour side of the road. In some places, the width of the road makes it either very costly or impossible to provide safe crossing points to the harbour shared pathway or locate bus stops appropriately. Growth will increase both traffic volumes and the number of people needing to access public transport and the shared path.

The intersection between North Road and Opoho Road has safety, capacity and resilience issues, and the intersection between Great King Street and State Highway 1 has safety concerns, including for active modes. Waka Kotahi is investigating options for the Great King Street / SH1 intersection and is considering how to address the safety concerns for active modes. The bottleneck at the North Road and Opoho Road intersection remains a challenge as it is physically constrained.

Other parts of the network experience congestion for short periods at peak times, but traffic volumes ease quickly and this is not considered a constraint on future urban development.

A key focus of transport infrastructure improvements is road safety, particularly for pedestrians. In the short term, the DCC's road safety improvements will focus on schools. We are improving safety for children walking, cycling and scooting around schools, to encourage children to travel by active modes. This may also have benefits for parents, allowing them to use other transport modes to travel to work. Safety measures include raised and painted crossings, kerb build outs, raised intersections and slower speeds. Over the medium term, we will shift our focus to centres to complement urban design improvements. It is also expected that the strategic cycling and pedestrian network review will result in a programme of intersection upgrades, but these are not yet funded and are still to be confirmed.

Figure 23 shows these significant transport constraints on future urban development.

A number of Dunedin's roads are at risk from flooding, erosion and king tides, raising issues of resilience. This is particularly the case in several outlying communities north of the main urban area and on the Otago Peninsula. The RLTP includes funding to implement roading resilience projects across the city; however, the location of specific work has not yet been identified.

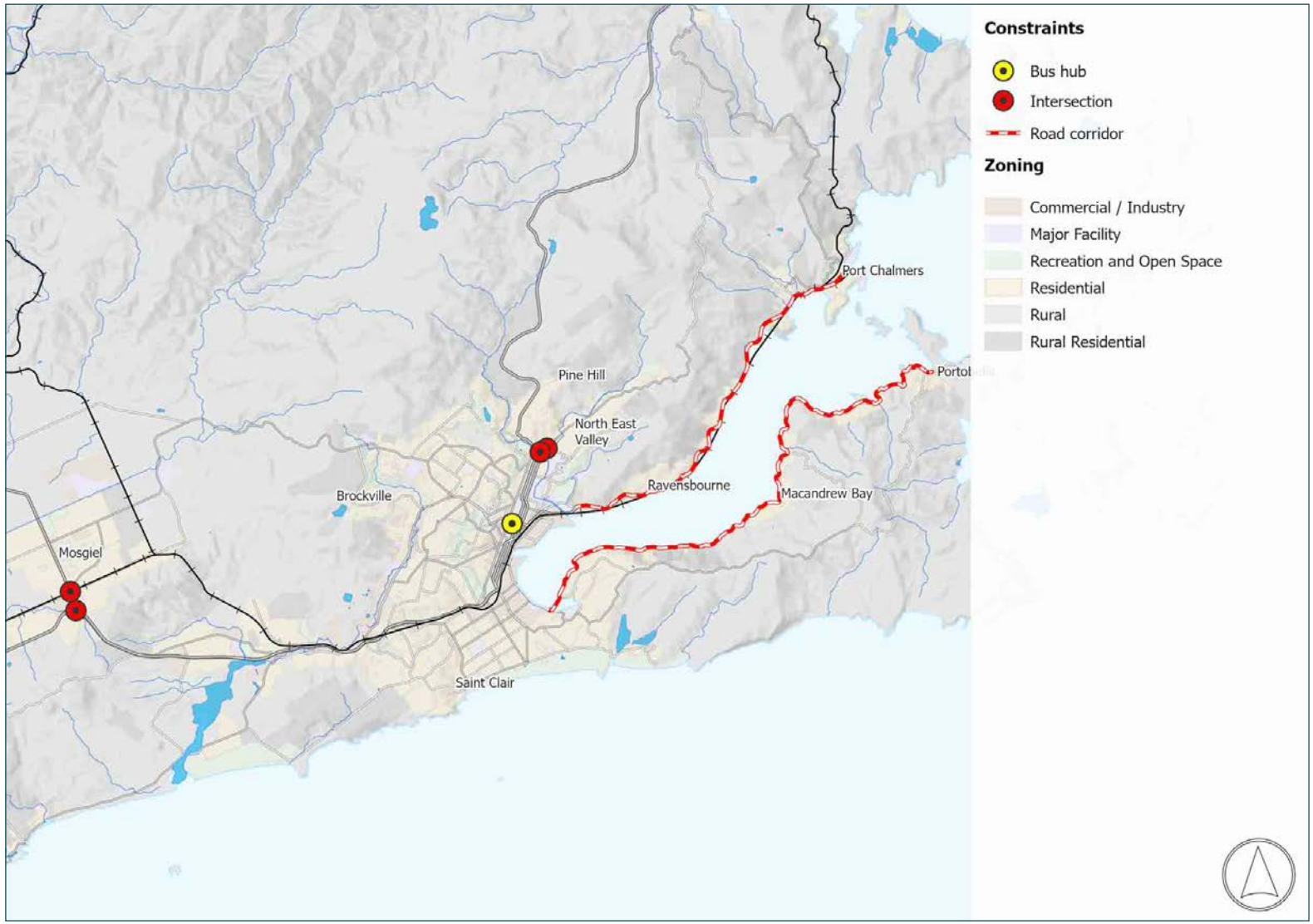


Figure 23: Areas of Dunedin with known transport constraints on future urban development

6.3.2.4 Investigation and establishment of an inland freight hub

Freight transport is a significant issue for Dunedin. It is critical to achieving a thriving urban and rural economy within the district and wider region. Current freight transport routes include the use of trucks to move freight to and from Port Chalmers and this has significant consequences in terms of road maintenance, safety and connectivity for active transport users within the city and high carbon emissions.

Port Chalmers is space constrained meaning it has only limited capacity to increase freight volumes before further land reclamation would be necessary. Increasing the proportion of freight moved by rail would have significant benefits in terms of efficiency, reduced carbon emissions, road safety and amenity. Achieving this 'mode shift' requires a fundamental change to the way freight is handled within Dunedin.

Establishment of an inland freight hub would enable Port Otago to relocate aspects of its operations such as the container depot, freeing up space at Port Chalmers enabling Port Otago to increase freight capacity, operational efficiency and resilience to supply chain disruption. The DCC has identified the need for an inland freight hub south of Dunedin in its Zero Carbon Plan.

Accordingly, an indicative site for an inland freight hub is shown in this FDS. This will facilitate further investigations into its feasibility and support stakeholders – including NZTA Waka Kotahi, KiwiRail, DCC, ORC, Port Otago and freight logistics operators – to undertake investigations to determine whether the indicative site is appropriate. Identification of an indicative site will also ensure that other strategic planning initiatives, such as the strategic transport study for Mosgiel (to be undertaken 2024-2027), consider the potential for an inland freight hub.

The freight hub will not comprise general 'industrial zoned' land or any other land use including retail, commercial or residential activities. If it proceeds to the approvals stage it will require site specific zoning provisions that focus solely on warehousing and goods storage and movements.

The indicative location of the inland freight hub is shown in Figure 24.

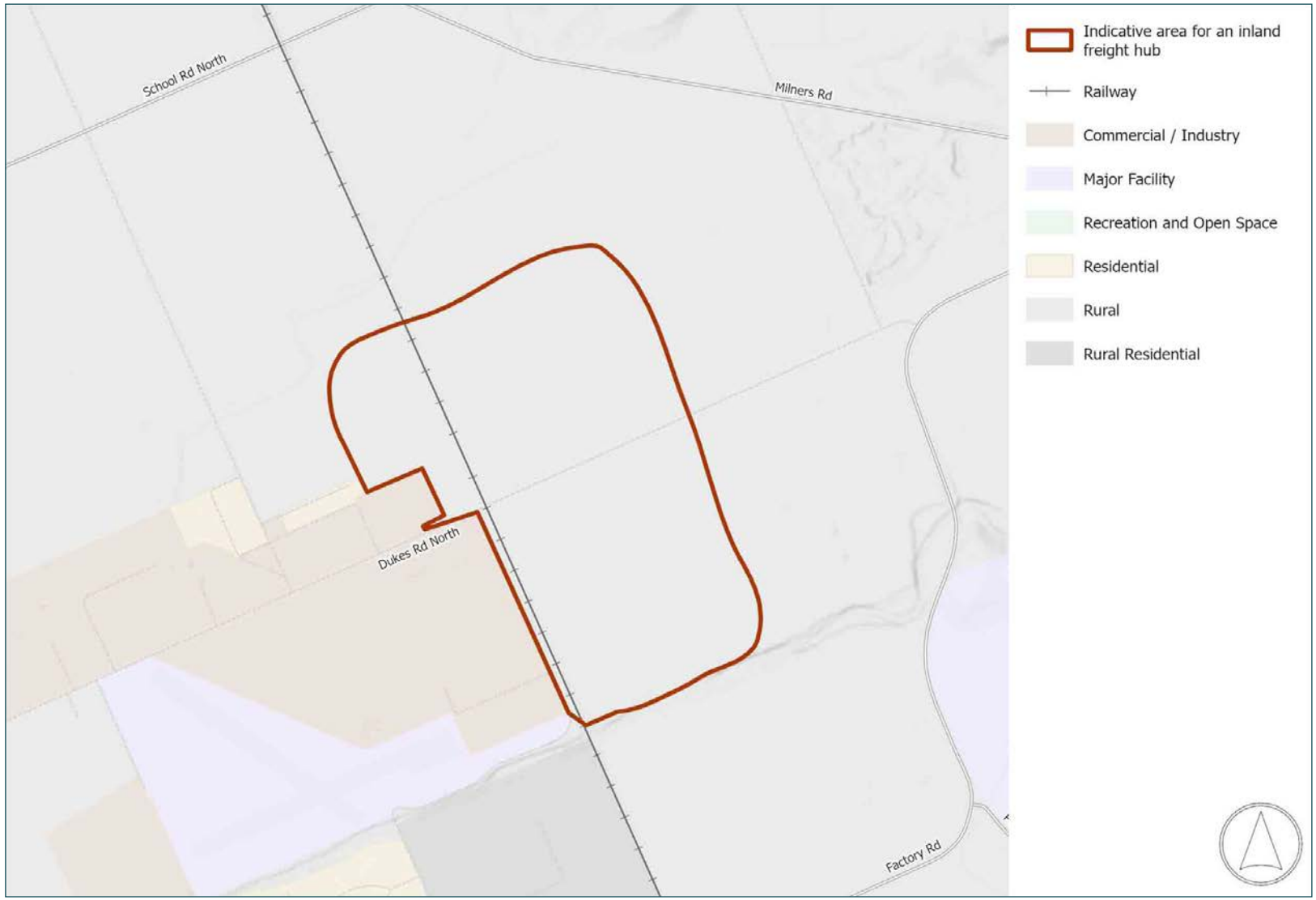


Figure 24: Potential inland freight hub location

6.3.3 Flood protection and land drainage infrastructure

The Otago Regional Council provides land drainage and flood protection infrastructure to enable a resilient and safe wider community, and to protect critical infrastructure that is not owned or controlled by the ORC, such as lifeline utilities. This infrastructure includes assets like pumping stations, floodbanks, spillways, control structures on spillways, floodways, open channels and other assets associated with providing flood protection and land drainage throughout the city.

Flood protection and drainage schemes are in place throughout the city and on the Taiari Plain. A risk assessment of climate change impacts to the Taiari Plain will inform consequences for levels of service and future infrastructure requirements of the flood and drainage schemes. In managing flood and drainage schemes throughout the city, the ORC is required to balance flood protection and drainage efficiency and effectiveness, cost, the policy direction given by the National Policy Statement for Freshwater Management and the principle of Te Mana o Te Wai. Work to embed these concepts is ongoing and evolving, and any additional urban development throughout the city will also be required to account for these factors and principles. The existing flood protection scheme has a limited capacity – if Mosgiel and Wingatui are expanded within the boundaries of the Lower Taiari Flood Protection Scheme, the stormwater/land drainage interface will need to be addressed and managed. To achieve this, stormwater from any intensification will need to be managed at source to ensure that neither the additional urban development nor the stormwater it produces impedes the operation of the flood protection scheme, or the capacity and functionality of the drainage scheme.

The ORC is investigating improvements and restoration of the lower reaches of the Water of Leith, to promote natural bed behaviour and enhance the stream's ecological and amenity values, and is also investigating the resilience of Lindsay Creek. Presently, sections of Lindsay Creek have insufficient channel capacity to convey flood flows, and a higher and more uniform standard of flood protection for these areas is required to provide a level of flood protection to this community, consistent with comparable urban areas across New Zealand. Works to promote natural bed behaviour and to increase visual and ecological enhancement downstream of Forth Street are being investigated.

A number of assets need to be renewed over the next 30 years to ensure that the schemes continue to function effectively and the risk of failure is reduced. Those assets include:

- pump stations, including ancillary plant and equipment
- gravity gates and locks
- culverts
- bridges
- concrete flood walls and retaining walls.

These renewals will enable the continued function of the schemes, and do not provide for future capacity or demand that results from additional development in the area. When managing flood protection and drainage assets, consideration should be given to including shared pathways and active transport trails that connect communities.

Improvements in the way that asset management data is managed and information relating to these assets is collected will also improve the way the ORC plans and budgets for this expenditure over time.

The environment in which the flood protection schemes operate is constantly changing, including dynamic geomorphology affecting the behaviour of the river catchments, the changing climate, sea level rise, and more frequent and higher intensity rainfall events. These factors affect how the flood and drainage schemes perform. Managing infrastructure in this environment poses challenges and opportunities. To manage this risk, the ORC proactively monitors the physical environment to adapt to these challenges and opportunities.

6.3.4 Electricity supply

Transpower is the state-owned enterprise that owns and operates New Zealand's high voltage electricity network, known as the National Grid. The National Grid connects power stations, owned by electricity generating companies, directly to major industrial users and distribution companies feeding electricity to the local networks that, in turn, distribute electricity to homes and businesses.

Aurora Energy and OtagoNet Limited own and manage the local network of poles, power lines, underground cables, substations and other equipment that distributes electricity from the National Grid to homes, businesses and the wider community. Aurora Energy supplies electricity to the Dunedin main urban area including the peninsula and Port Chalmers, the Taiari Plain and south to Taiari Mouth. OtagoNet Limited supplies electricity to areas to the northern coast from Waitati to Waikouaiti and inland to Middlemarch.

The National Grid transmission 'exit points' for Dunedin are the South Dunedin and Halfway Bush substations. From here it is distributed around the city to homes and businesses. Some growth in electricity demand is forecast to occur within Dunedin, but there is no identified need to upgrade the capacity at either the South Dunedin or Halfway Bush substations.

6.3.5 Telecommunications

Telecommunications is a critical infrastructure providing digital services that support and enable social interaction, entertainment, education, business activities and engagement with government, medical and emergency services. Telecommunications services are provided by mainly by private sector organisations and state-owned enterprises.

The telecommunications network in Ōtepoti Dunedin comprises a fibre network and wireless cell sites, located on both purpose-built cell-towers and buildings. This is complemented by satellite services that will in the future have the ability to provide an increasing range of services into areas that are currently difficult and expensive to provide services to, including remote rural areas. The existing fibre network covers the existing urban areas in Dunedin, with a high uptake from existing residents and businesses. Ongoing improvements to the fibre network enable increases in speed of data transmission.

Telecommunication network technology is continually developing to meet customer expectations for new, faster, and uninterrupted digital experiences in any location. Spark, One NZ and 2degrees are currently rolling out 5G infrastructure, with next generation of technology for wireless communications (known as 6G) in development and likely to be rolled out within the next 10 years. New mobile sites are being installed to support 5G and upgrade the capacity of the 4G sites, including a programme to extend coverage to smaller rural communities through shared cell site facilities, which will improve resilience in these areas. The 6G network will require additional cell sites and upgrading of existing sites.

Finding locations to increase capacity within the existing networks and to add new sites to the telecommunications networks to meet the demand generated by growth is an ongoing challenge. The increased height of residential developments and buildings is increasingly leading to the need to replace existing poles with taller ones and/or add new sites to maintain the coverage footprints that are disrupted by new taller buildings. Constraints within the existing and future telecommunications network include the lack of provision for appropriate telecommunications infrastructure in the design of new subdivisions and developments. Telecommunications networks can be most effectively developed to suit the needs of a growing population by early planning in association with developers and councils. Consideration of the existing telecommunications facilities is also important as growth and development occurs to avoid unnecessary relocation of existing infrastructure.

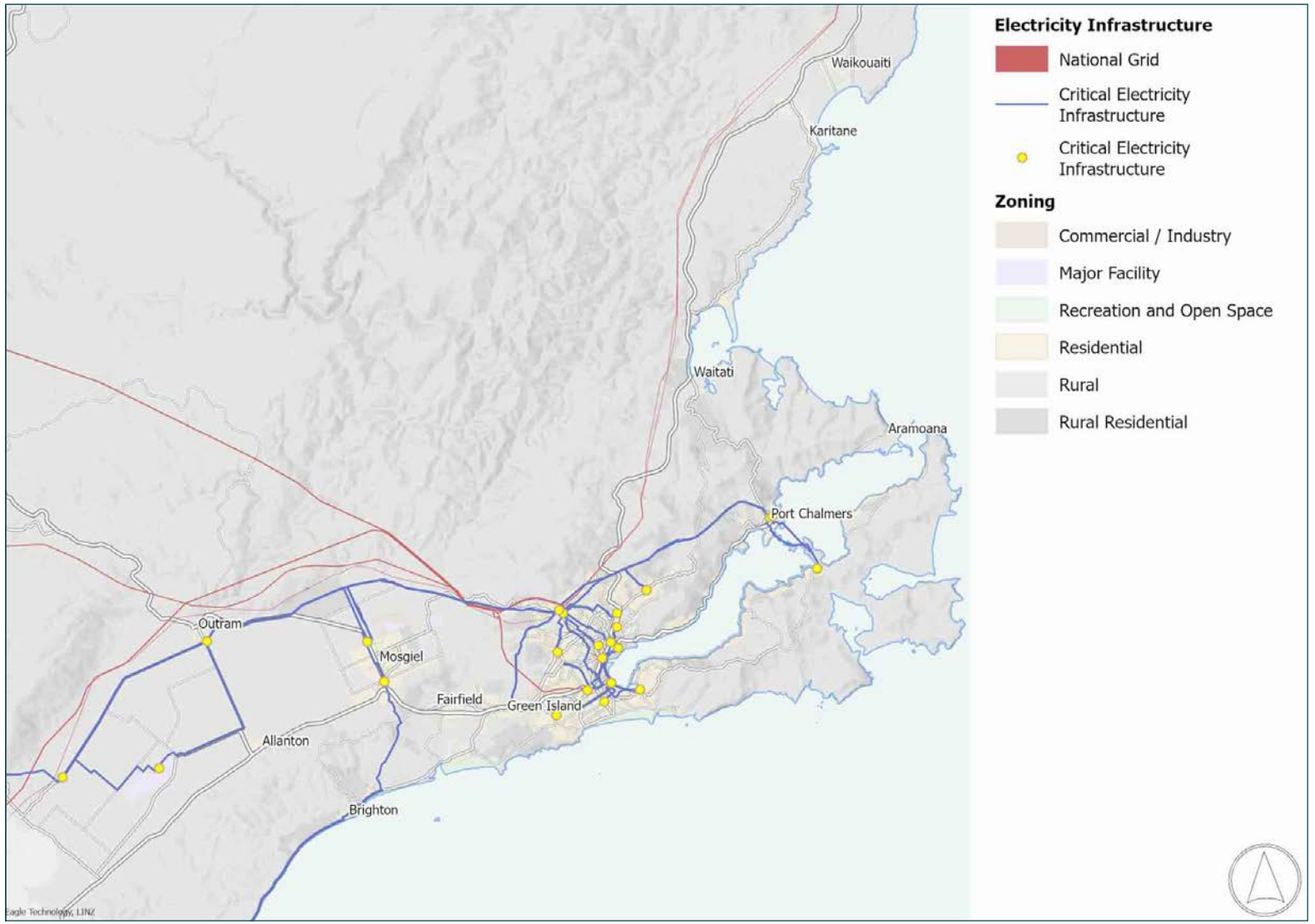


Figure 25: Electricity distribution and transmission infrastructure

6.4 Overall Spatial Plan – green and blue networks

6.4.1 Introduction

Green and blue networks are connected natural areas that support diverse ecosystems and help to maintain a resilient natural environment. These networks comprise green elements like parks, bush, and urban trees, along with blue components including streams, rivers, wetlands and the coastal environment. Green networks provide ecological connectivity, enabling wildlife and plant species to disperse and thrive, which is important in addressing the adverse effects of habitat fragmentation on biodiversity. Similarly, well-functioning blue networks are essential for the health of water bodies, coastal ecosystems, and the diverse species that rely on them. Connectivity within and between blue networks are essential for aquatic species to complete their life cycles. Green and blue networks contribute to a well-functioning urban environment – they enhance the natural environment and urban amenity, increase access to recreational and mahika kai opportunities, improve physical and mental wellbeing, strengthen resilience to natural hazards and climate change, and improve air and water quality.

6.4.2 Spatial Plan – protecting and enhancing biodiversity

The urban environment can form a barrier to biodiversity movement and can also have adverse effects where it borders natural areas ('edge effects'). Waterways in urban Dunedin are often constrained in artificial channels or lack healthy riparian margins, which affects their water quality and ability to provide wildlife habitat. This in turn can affect the health of coastal ecosystems including wetlands and estuaries and the species that rely on them. The early planners of Dunedin had the foresight to include a green belt in the city to help maintain urban biodiversity and provide connections through the urban environment; however, as urban Dunedin has grown in area there has been less thought about how to maintain biodiversity corridors and connections. This FDS includes an overall spatial plan for blue and green corridors for Dunedin. This plan is shown in Figure 26.

Existing indigenous vegetation cover, shown as the green areas on Figure 26, serves as the foundation for an expanded and enhanced green network. Enhancement and restoration projects could bolster this network by improving ecological connectivity and resilience as represented by the dotted green lines. Projects could include replanting indigenous bush areas, restoring dunes, enhancing wetlands and controlling pest plants and animals.

The blue areas on Figure 26 represent significant waterways, identified in the 2GP for their ecological, cultural and recreational values. These waterways could be focal points for enhancement projects, taking a te mana o te wai approach to protecting the health of our waterways, ki uta ki tai (from the mountains to the sea). Projects could include initiatives such as coastal restoration, riparian planting, establishing adequate buffering, education initiatives to promote waterway health, improving accessibility and providing spaces for recreation, and conducting long term monitoring to further enrich the network's environmental and community benefits. Enhancement could range from riparian planting along stream banks to 'daylighting' waterways that have been buried and confined in pipes or restoring natural form and function of waterways or coastal ecosystems where they have been modified or urbanised. Prioritising the use of water sensitive urban design in the management of stormwater (by creating swales, for example) as discussed in Section 6.3.1.6 will also provide opportunities to enhance green-blue networks.

As part of implementing the FDS, the DCC will develop a Green and Blue Network Action Plan, in partnership with mana whenua and the ORC, to restore and enhance Ōtepoti's green and blue networks, while promoting connectivity and expansion through targeted projects.

The action plan will:

- identify priority areas for conservation, restoration and enhancement, recognising important locations for protecting sensitive species and ecosystems
- make connections with and between existing projects and community biodiversity efforts where possible
- align with local, regional, and national plans, policies and strategies including this FDS
- identify specific restoration and enhancement projects.

We will also prepare an Urban Forest Plan to implement a coordinated, strategic approach to tree planting in Dunedin. This plan will aim to increase urban tree canopy cover in an equitable way across the city, contributing to the urban green network.

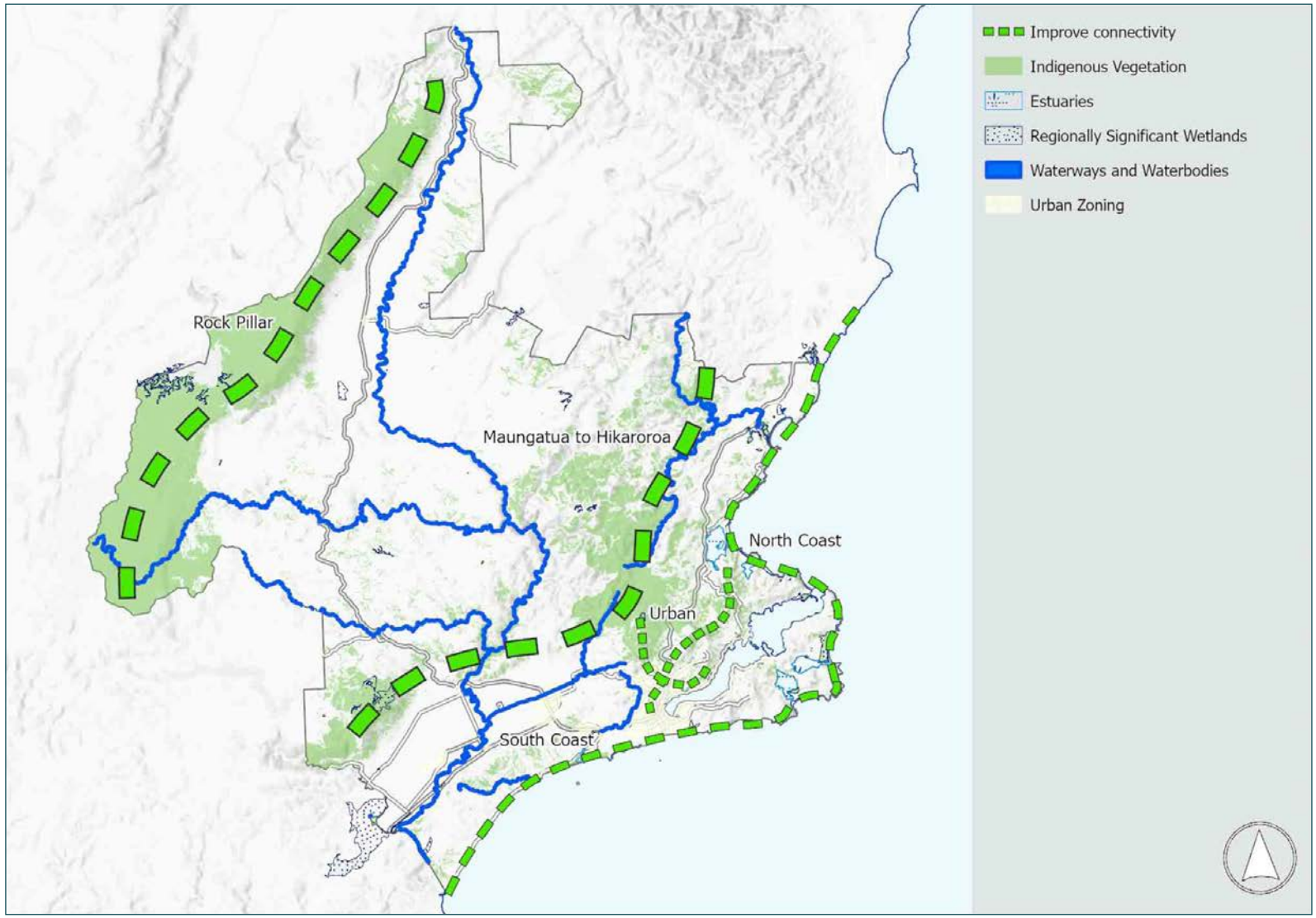


Figure 26: The proposed broad approach to enhance Ōtepoti's green and blue networks

6.4.3 Spatial Plan – recreational opportunities

A well-functioning urban environment includes one in which there is good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport. A key aspect of that is considering the recreation and open space needs of communities and how to make these accessible for all users. Consultation and design of these spaces is important to ensure all users are adequately provided for.

As part of this FDS, several recreation infrastructure and facilities projects have been identified as necessary to respond to anticipated growth. These are discussed in sections 6.7 to 6.13. The DCC is updating its three destination playgrounds at Marlow Park, Woodhaugh Gardens and Mosgiel Memorial Gardens to modern destination playgrounds. These are large, themed playgrounds with significant equipment and infrastructure and are designed to attract high visitor numbers to support encouraging people of all ages and abilities to be active and to engage in play.

In addition, the DCC recently entered into a Memorandum of Understanding with the Department of Conservation and the Dunedin Tracks Network Trust to work collaboratively to expand Dunedin's tracks and trails network to give Dunedin's residents new opportunities to enjoy recreation and connect with nature. These opportunities include off-road, shared-use, commuter and tourism connections between Dunedin City and Waikouaiti to the north; the city and Waihola to the south; along with Tunnel Beach and Taiaroa Head along the east coast.

The DCC is leading work on two trails over the FDS period as outlined in Table 4, the Kaikarae / Kaikorai Stream and the Town Belt Trail. Figure 27 shows the possible alignment of these routes, along with existing trails. Some potential trails have been identified and are being progressed by other organisations. Additional routes will be kept under review, including opportunities to link green and blue networks when new rural cycle trails are developed (see Section 6.3.2.2).

Table 4: Trails being developed or considered by DCC

Map number	Trail	Description	Timeframe
1	Kaikarae / Kaikorai Stream	Following Kaikarae / Kaikorai Stream to the Kaikarae / Kaikorai estuary	Timeframe unconfirmed (currently unfunded)
2	Town Belt trail	Cycleway connections to existing tracks or roads and improvement of track network through the Town Belt	1-10 years (Tracks Capital Budget)

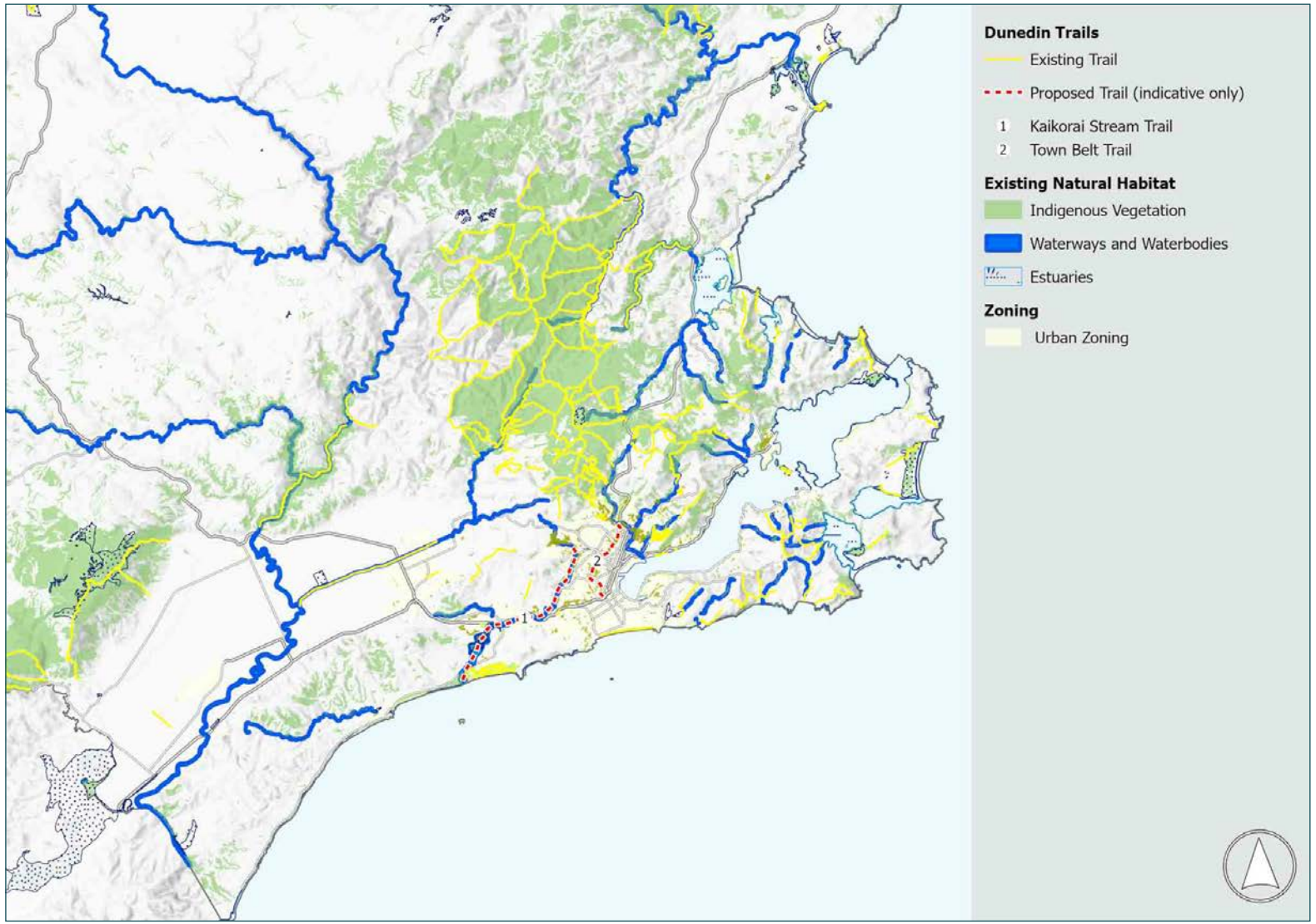


Figure 27: Map showing the location of the Kaikorai Stream and Town Belt trails

6.5 Overall Spatial Plan – housing

6.5.1 Introduction

As outlined in Section 2, Dunedin has sufficient housing development capacity for the city's projected growth over the short, medium and long terms.

Figure 28, Figure 29, and Figure 30 show the areas currently zoned for residential use, including the areas where there is the greatest potential for new housing. These include the CBD and centres where higher density apartment-style dwellings are permitted, medium density areas (GR2 and ICR zones), larger undeveloped greenfield areas, and areas that will transition to residential zoning once infrastructure constraints are resolved (residential transition zones). In addition, recent changes to the 2GP rules that apply to the General Residential 1 and Township and Settlement zones with reticulated wastewater (see Section 2.2) mean that new housing will be added across many parts of suburban Dunedin and some townships. The FDS identifies the infrastructure needed to ensure these areas are infrastructure-ready, as well as infrastructure needed to achieve well-functioning urban environments.

There are also areas zoned for residential use but that are subject to infrastructure (generally 3 waters) constraints that prevent or limit development. The FDS identifies the infrastructure upgrades to resolve the majority of these constraint areas.

Despite having sufficient short-medium and long term housing capacity already identified in the 2GP, the FDS proposes some additional long term and very long term residential intensification in areas already zoned for residential development. This will provide additional capacity if the city grows faster than anticipated and will also give residents more choice. It responds to Policy 5 of the NPS-UD[40] (see Section 6.5.3.2) and will help to achieve a well-functioning urban environment by enabling intensification in areas with good accessibility to services and amenities, and by strengthening an urban form that supports lower greenhouse gas emissions.

[40] See Appendix 8.1 for full text.

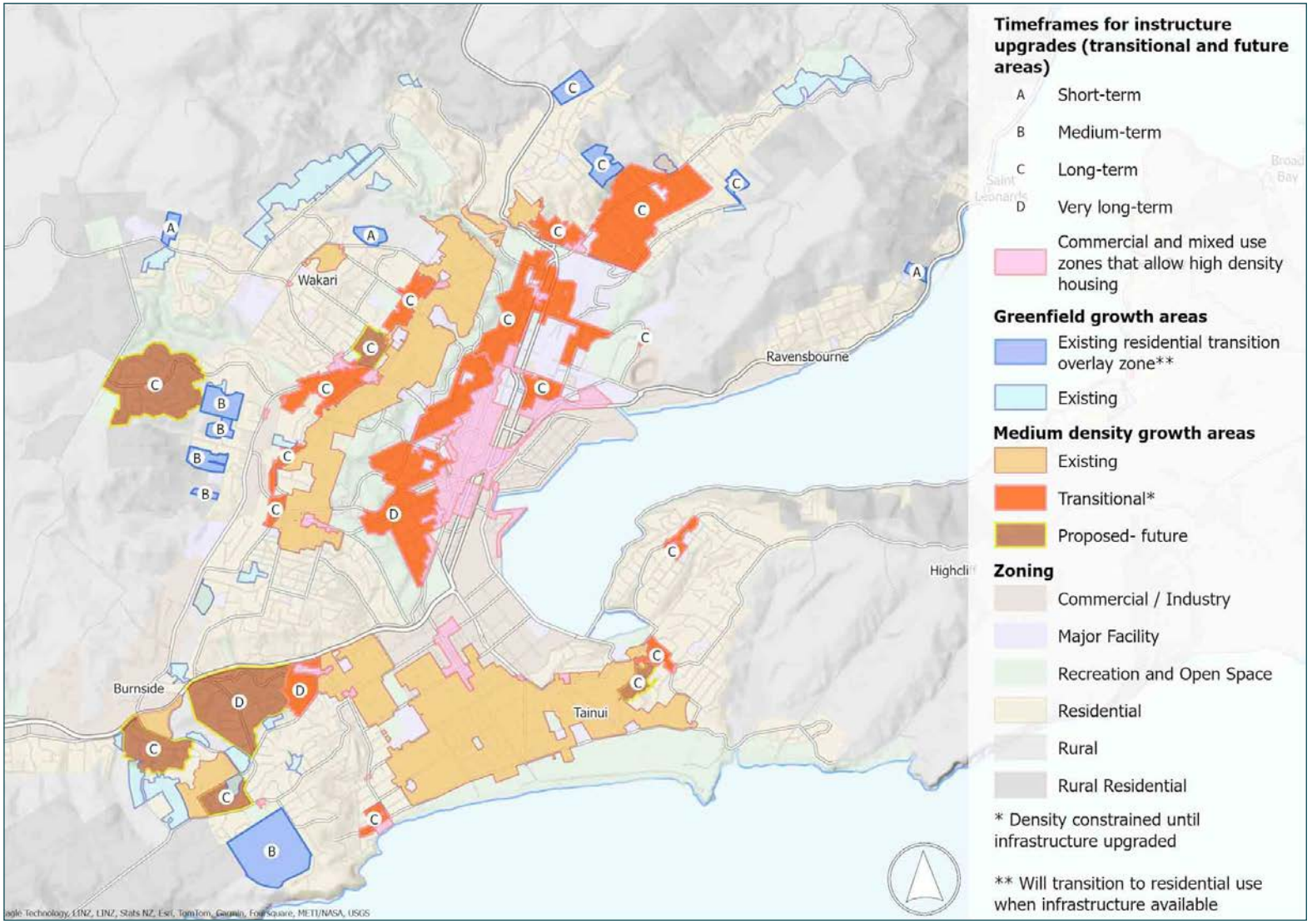


Figure 28: Existing, transitional and proposed residential areas - Main urban area

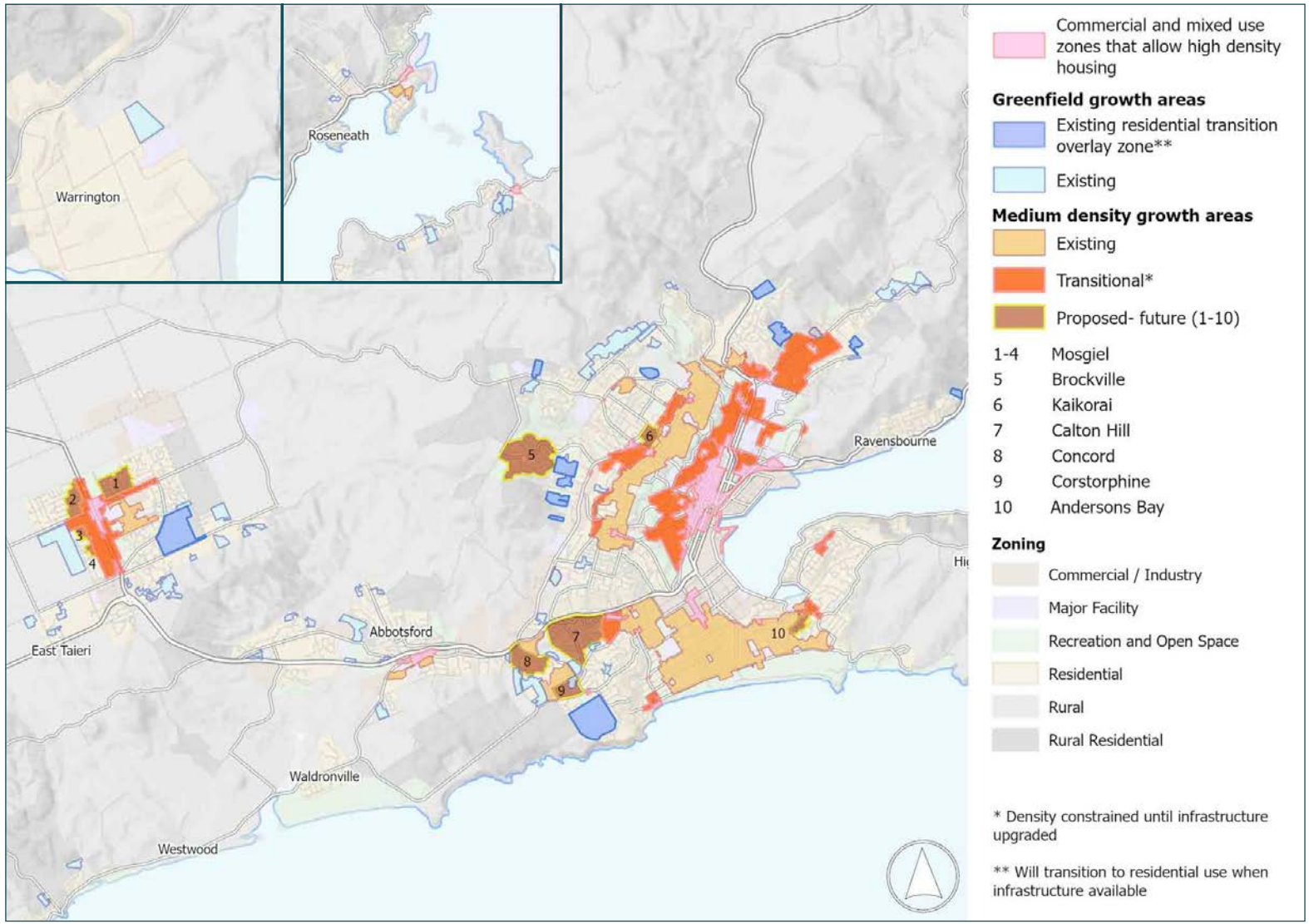


Figure 29: Existing, transitional and proposed residential areas - wider Dunedin area

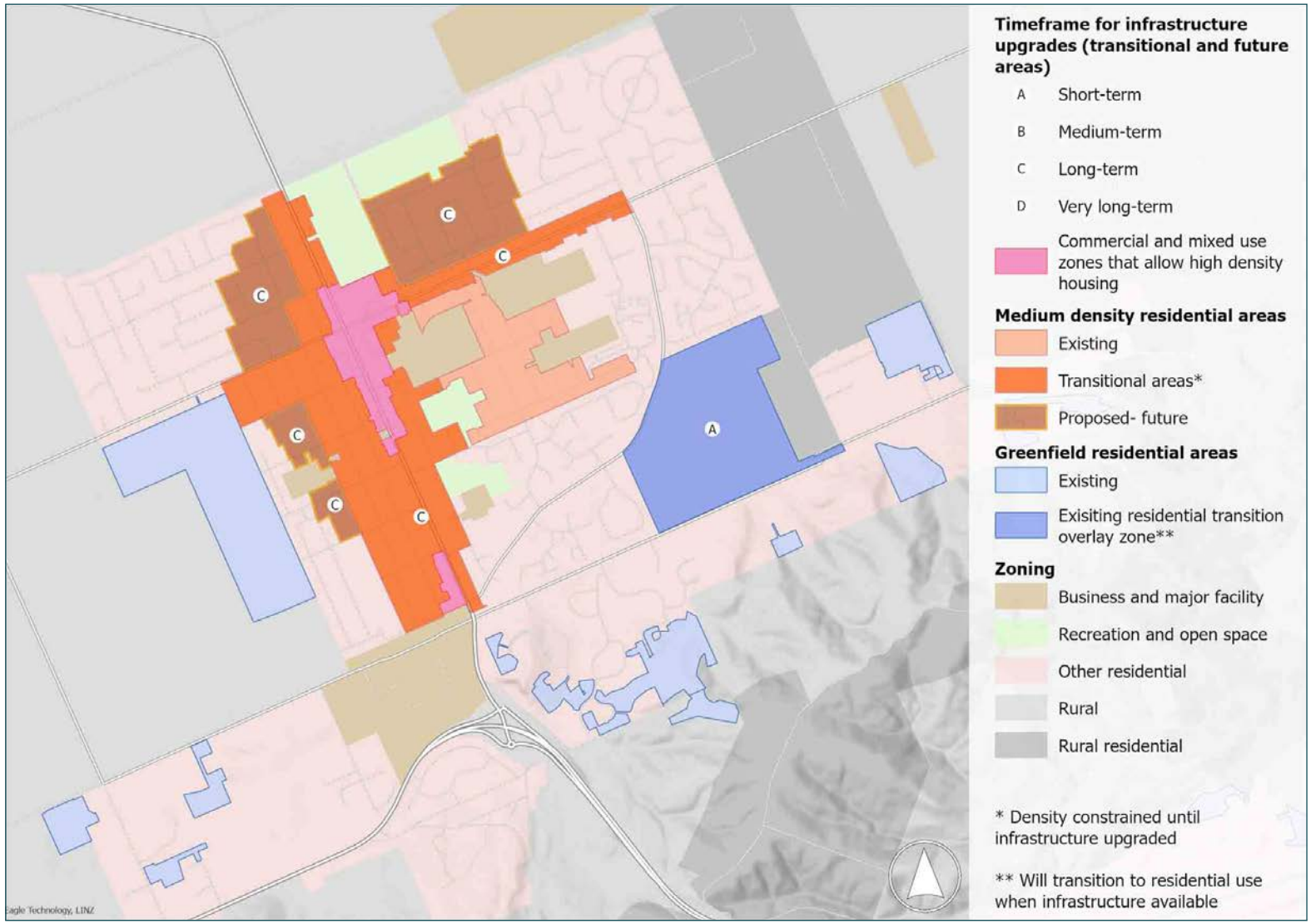


Figure 30: Existing, transitional and proposed residential areas - Mosgiel

6.5.2 Transitional residential areas

There are of two types of future urban development areas that are already provided for in the 2GP. These are referred to as 'transitional residential areas':

- Residential Transition Zones
- Medium density zones that are subject to a wastewater constraint that limits the density to which the areas can be developed.

Residential Transition Zones (RTZ) are areas that will be transitioned (without a plan change) to a residential zone (usually General Residential 1) once wastewater infrastructure meets minimum standards and there is an agreement on how to fund any necessary transport upgrades or other infrastructure. Residential transition zones are located in several areas of the city. Release is subject to resolution of 3 waters constraints and an agreement between the DCC and developer on provision of any necessary transport upgrades[41]. These areas are shown on Figure 28 to Figure 30.

Medium density zones that are subject to a wastewater constraint require resource consent to develop to a higher density (until such time as the wastewater constraint is lifted). Consents can only be granted once upgrades are progressed enough to enable the development without adversely affecting the performance of the network. These areas include GR2 zoned areas subject to a 'wastewater constraint mapped area', and the Inner City Residential zones areas, which can be developed to a higher density once constraints are resolved. These are shown as 'medium density transitional areas' on Figure 28 to Figure 30.

This FDS identifies the infrastructure upgrades needed to remove the constraints for the majority of these areas in sections 6.7 and 6.8. Many of these can be achieved within the medium or long term; however, some constraints, for example in the GR2 zoned area in Caversham, will not be resolved until the very long term (30+ years).

6.5.3 Proposed future residential intensification areas

6.5.3.1 Kāinga Ora's long term development aspirations

The longer term aspirations of Kāinga Ora for social housing development are a key component of the FDS.

Kāinga Ora owns a substantial amount of property in Dunedin, representing approximately 100 hectares of residential land. The organisation has over 1,400 public homes, about 3% of Dunedin's dwellings. These homes tend to be concentrated in particular areas, and most were constructed before 1960, making the public housing in Dunedin some of the oldest in the country. Older properties that haven't been retrofitted or refurbished tend to have significant maintenance requirements and increased costs, particularly in areas that suffer from dampness or flood risk. Some homes can be hard to heat, experience dampness or are on sloped sites that are hard to maintain. Similarly, some older homes no longer meet the needs of tenants, being either larger than needed for the current residents, or in some cases overcrowded. There is potential for Kāinga Ora to better utilise its property portfolio through redevelopment and renewals.

Kāinga Ora has several public housing development projects in the identification, investigation and delivery phases, including potential acquisitions. Kāinga Ora has tried to coordinate redevelopments of existing properties to address opportunities and to meet arising need. This process could be more strategic, and for this reason Kāinga Ora has participated in the development of the FDS. Key areas that Kāinga Ora would like to redevelop are Mosgiel, Corstorphine and Calton Hill in the short/medium term, and parts of Brockville in the next 30 years (Figure 31).

The transport infrastructure to support these areas can be provided within 10 years. However, the 3 waters upgrades needed to achieve the full intensification aspirations in Mosgiel, Corstorphine and Brockville can only be addressed in the long term (10-30 years), and in Calton Hill they cannot be provided until the very long term (30-50 years). This is discussed further in Section 6.7.3.

[41] See Section 12 of the 2GP. Timeframes to resolve 3 waters constraints for each RTZ are shown here: Statement-of-infrastructure-capacity-updated-26-January-2023.pdf (dunedin.govt.nz)

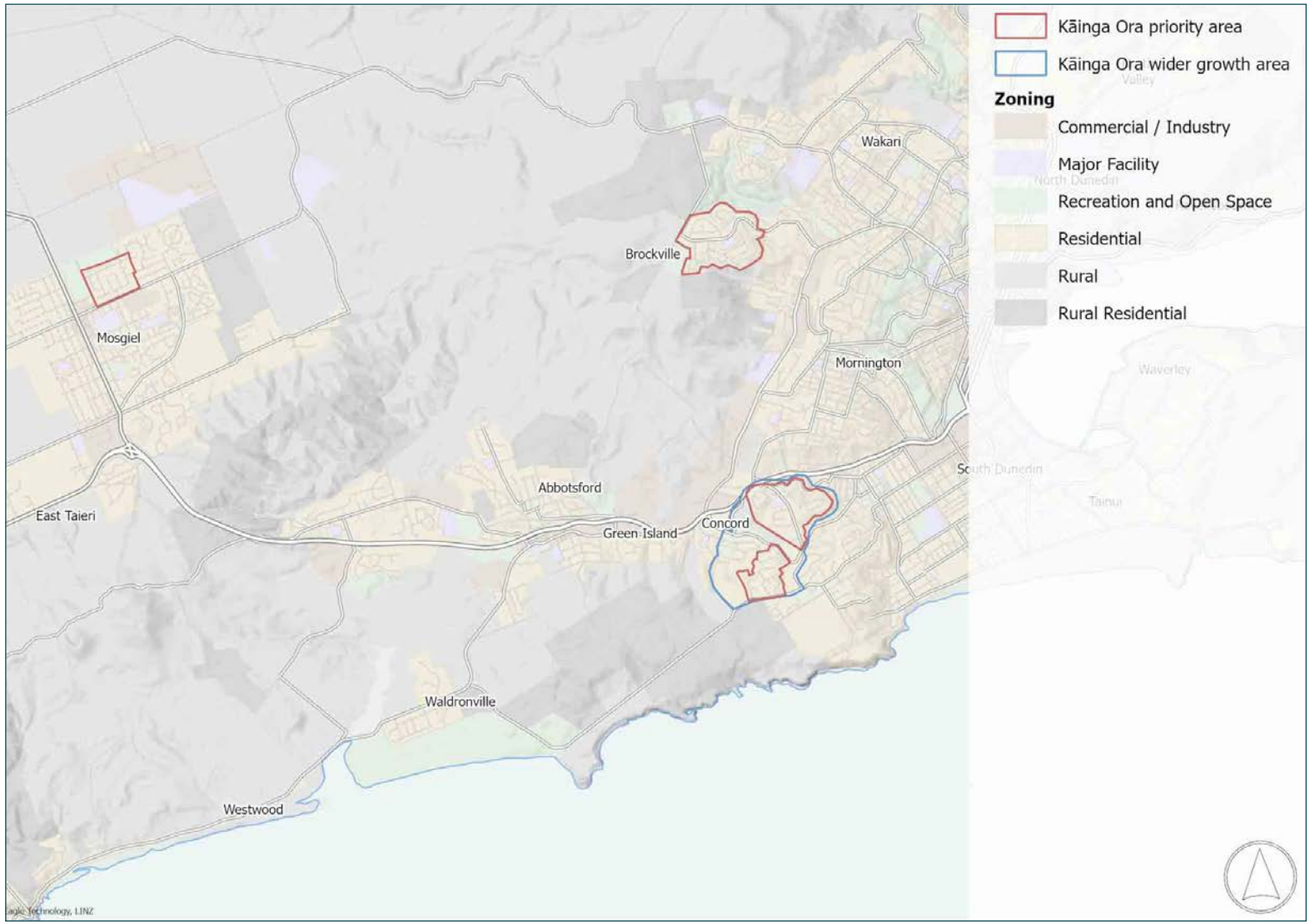


Figure 31: Kāinga Ora's priority redevelopment areas

6.5.3.2 'Policy 5' areas

Policy 5 of the NPS-UD requires the DCC, through its district plan, to enable heights and density of urban form commensurate with the greater of:

a. the level of accessibility by existing or planned active or public transport to a range of commercial activities and community services; or

b. relative demand for housing and business use in that location.[42]

Many areas that align with Policy 5 have already been identified and zoned as medium density zones in the 2GP. Others have not previously been zoned for medium density development due to infrastructure constraints.

The areas identified by Kāinga Ora (Section 6.5.3.1) meet Policy 5. We have identified other areas that meet Policy 5 in Kaikarae / Kaikorai, Concord, Andersons Bay and additional parts of Corstorphine (Figure 28). If all these areas are intensified, housing capacity could increase by approximately 1,000 units. These areas (including areas identified for priority redevelopment by Kāinga Ora) are shown on Figure 28 as 'proposed future medium density residential areas'. As these areas are currently zoned GR1 (suburban density), future intensification would be enabled through rezoning to GR2 (medium density) zone.

6.5.4 Greenfield areas

We have not included any additional greenfield areas in this FDS. This is because the most recent housing capacity assessment indicates that our housing capacity is adequate to meet long term needs (see Section 2.2). Additionally, the future residential intensification areas identified above will provide further capacity should a high population growth trajectory continue for longer than expected. Further, even among potential greenfield options identified as aligning with relevant policy criteria (Policy 2 of this FDS)[43], it is highly likely significant additional 3 waters infrastructure upgrades would be required that could not be funded without displacing other higher ranked infrastructure priorities.

6.5.5 What happens if Dunedin grows faster than projected?

We are required to prepare an FDS every 6 years to inform our next long term plans. The FDS also needs to be reviewed every 3 years and an early refresh undertaken if that review indicates that a change is necessary. These reviews will consider any changes needed if, for example, extra development capacity is needed.

6.5.6 How will we assess any alternative options proposed as part of consultation on this FDS or through future private plan changes?

Section 5 outlines the broad approach to assessing future development areas, including how infrastructure delivery is prioritised. The technical report provides more information on how this methodology was applied for the options considered for this FDS.

6.6 Overall Spatial Plan – business land

6.6.1 New business land

The Business Land Assessment indicates that approximately 17 hectares of new industrial zoning is needed in the short term (2024-2027) to provide sufficient business land capacity. The FDS includes three potential areas within the wider Burnside/Fairfield area that may be appropriate for new industrial zoning, subject to further detailed investigation. These are shown in Figure 32.

These areas will require 3 waters and transport upgrades, which are outlined in Section 6.7. The 3 waters upgrades for the new industrial land options are only possible in the medium or long term (10-30 years). Given this, the requirement to provide sufficient development capacity for business land in the short term will not be met. However, the timeframe for providing 3 waters infrastructure could change depending on decisions made by the water services provider. Developer-led infrastructure upgrades could also bring forward this timeframe.

[42] See Appendix 8.1 for full text

[43] See the FDS Technical Report.

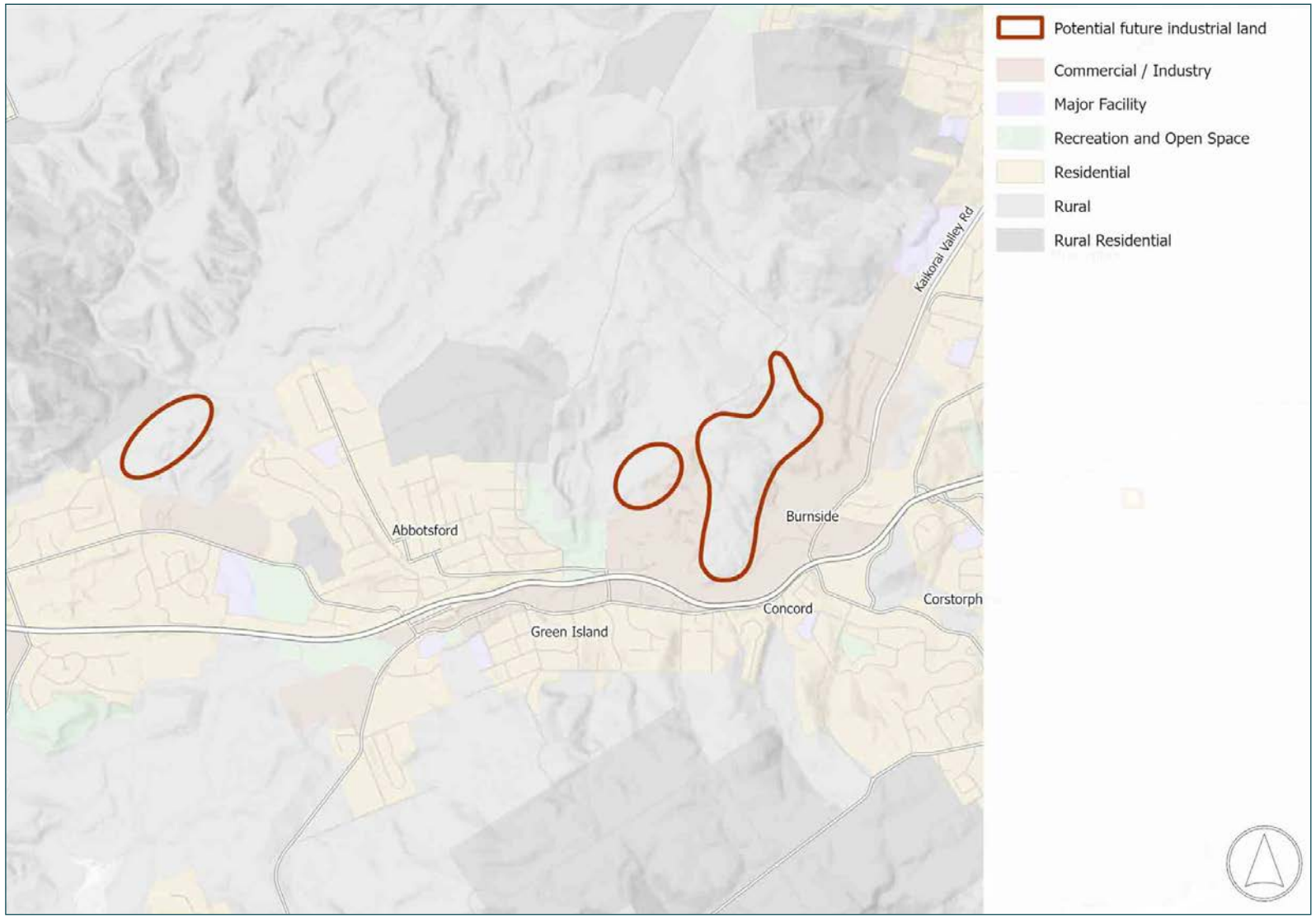


Figure 32: Potential future industrial land areas

Three other potential changes to business land zoning have also been identified. These are:

- rezoning the Te Kaika health centre (in Caversham) and adjoining residential land (between College Street, Lomond Street and Playfair Street) to Suburban Centre
- the need for zoning changes in the vicinity of the new Dunedin Hospital to support additional office staff and health-related activity
- considering the future use of the existing Dunedin Hospital site on Great King Street and the Wakari Hospital site in Wakari.

A map of these business land areas is shown in Figure 33.

The FDS includes identification of an indicative area for the establishment of an inland freight hub within and adjacent to existing industrial land on the Taiari Plain, with direct access to the rail network. The identified site has some constraints and further detailed investigations will be required to determine the site's suitability and feasibility. The constraints include:

- the need for a heavy vehicle bypass that ensures heavy vehicles travelling to and from the site in the medium term do not use Gordon Road or Three Mile Hill Road, and which also supports the resolution of existing issues due to heavy vehicle and general traffic relying on the current SH87 routing through the Mosgiel town centre;
- 3 Waters servicing;
- managing risks from flooding; and
- the appropriateness of urban development on highly productive land

Before these areas are rezoned, the DCC will further investigate their suitability to decide whether to proceed, the boundaries of any area to be rezoned, and any area-specific rules needed to manage the effects of development.

The business land needs research did not indicate any strong demand for new business land within centres, as it was anticipated that most demand could be accommodated within the existing zoning, including through redevelopment. A potential need for additional business land was raised through community engagement in relation to some rural centres. New and expanded businesses in townships providing services to local residents will reduce the need for travel to larger centres, reducing emissions and helping to provide a well-functioning urban environment. The DCC will continue to monitor the need for additional business land in centres, and the 2GP provides a pathway to zone additional business land or grant consent for additional commercial activities, if needed.

As discussed in Section 2.3, the need for additional retail land, particularly large format retail, will be monitored. No additional retail or office land is proposed in the FDS.

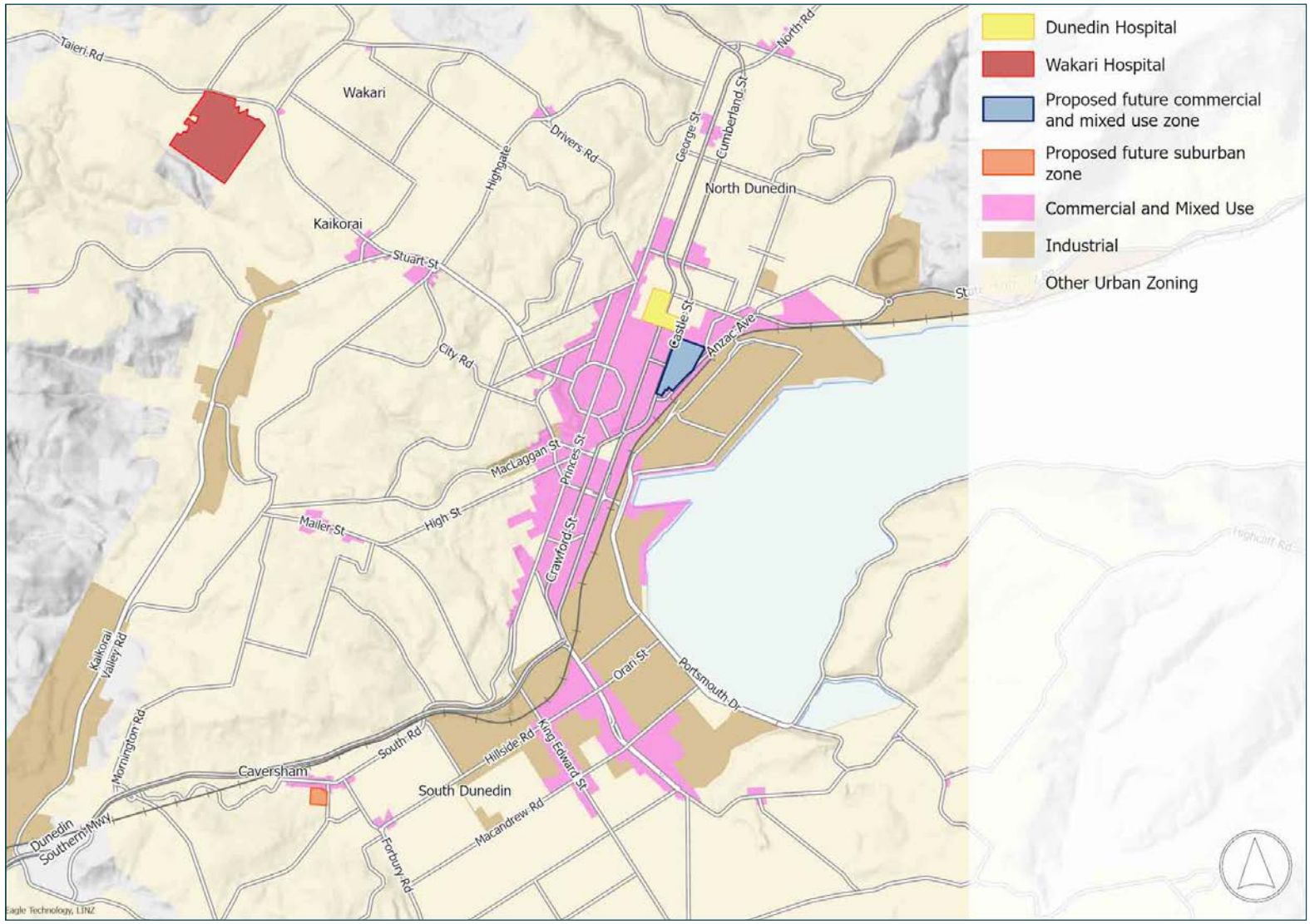
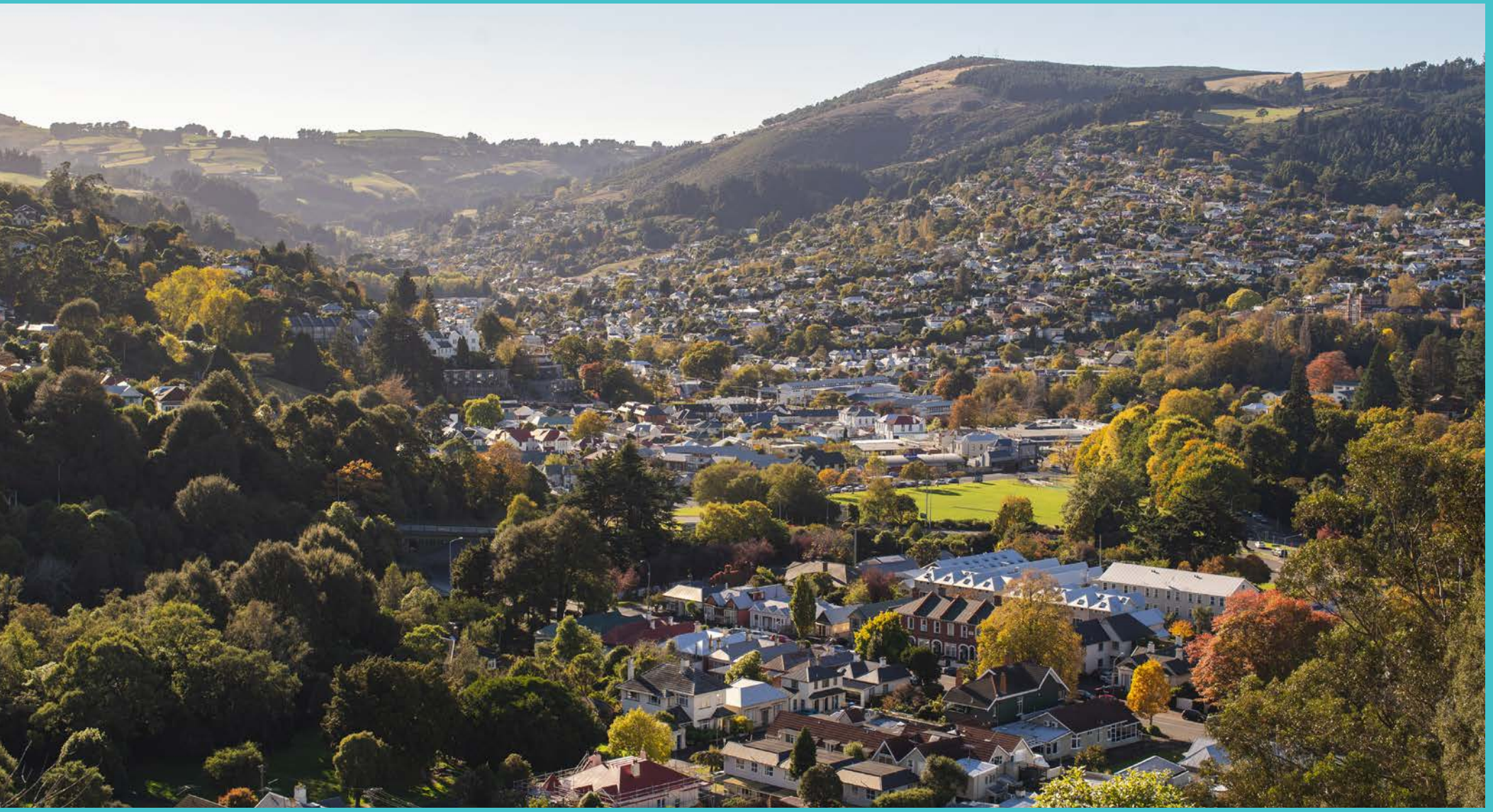


Figure 33: Potential future business land zone changes



6.7 Dunedin main urban area

6.7.1 Housing, past growth and likely future growth

Dunedin's main urban area encompasses the land and hills surrounding the Otago Harbour, from Green Island and Fairfield in the south-west, extending as far as Ravensbourne on West Harbour, and The Cove on Otago Peninsula.

Just over half of the new housing built in the city in the last 5 years is in this area. This trend is expected to continue, with growth projections suggesting that the area will include 59% of Dunedin's new housing over the next 30 years (an additional 3,500 homes). Areas that have recently experienced a large amount of new development include South Dunedin, the CBD, Roslyn and Caversham. Overall, there is housing capacity for an additional 17,000 homes over the next 30 years, but we do not expect that this capacity will be fully needed or realised.

6.7.1.1 Existing housing capacity in the 2GP

The 2GP provides for a range of housing densities in this area, including the potential for high density in the CBD and larger suburban and town centres (3 or more story apartment buildings depending on location, with density limited only by building form and height), and medium density (e.g. town houses) in the inner suburbs. These medium density areas provide for multi-unit development, including apartments. Some lower density housing is provided for through low density residential zoning on the edge of the main urban area, including at Taiari Road, Wakari and Leith Valley.

Some large greenfield areas have recently been rezoned for residential activity. These include a 32 hectare area in Wakari with the potential for 270-460 homes, a 20 hectare area along North Road with a potential for 200-480 homes, and a 20 hectare area in Concord with potential for 150-430 homes. Some of these, for example part of the Concord site, are currently being developed.

The main urban area has a number of retirement villages and supported living facilities.

The areas currently zoned for residential use are shown on Figure 28 in Section 6.5.1.

6.7.1.2 Transitional residential areas

Residential Transition Zones are located in Kaikarae / Kaikorai Valley, Helensburgh, Balmacewen, North East Valley, Pine Hill, Ravensbourne and Corstorphine. The 3 waters constraints that are required to release these areas are programmed to be resolved by 2028 for the Kaikarae / Kaikorai Valley and Corstorphine sites, and between 2033 and 2038 for the North East Valley and Pine Hill sites.[44]

There are GR2 medium density zones with a wastewater constraint mapped area in Māori Hill, Roslyn, Belleknowes, Andersons Bay and Waverley. We expect to complete 3 waters upgrades to address wastewater constraints in these areas over the long term (10-30 years).

This FDS includes upgrades to address 3 waters infrastructure constraints in the northern part of the Inner City Residential Zone which are anticipated to be realised over the long term (10-30 years). There are no upgrades identified in the programme to address the southern part of the ICR zone. The northern part of the Inner City Residential Zone has been prioritised over the southern part as it has higher development pressure due its proximity to the Otago University and Polytechnic campuses.

The areas discussed above are shown on Figure 28 in Section 6.5.1.

[44] See Statement-of-infrastructure-capacity-updated-26-January-2023.pdf (dunedin.govt.nz) for an updated assessment of the constraints for each site and proposed time to resolve

6.7.1.3 Proposed future residential intensification areas

The FDS proposes future residential intensification areas in Kaikarae / Kaikorai, Brockville, Calton Hill, Concord, Corstorphine and Andersons Bay.

The 3 waters upgrades needed to achieve the full intensification aspirations for all areas except Calton Hill is 10-30 years. In Calton Hill they cannot be provided until the very long term (30-50 years). Currently the Calton Hill area contributes to wastewater overflows and stormwater flooding issues in wet weather in South Dunedin. Significant work is needed to improve the performance of the wastewater network and potentially redirect flows to other catchments – this could in turn require upgrades to the capacity of wastewater treatment plants. The stormwater network will also require broad scale upgrades and changes. While the DCC is prioritising the existing issues, the scale of the work required means that these changes will be made incrementally and over a long time, or alternative solutions will need to be found. However, the timeframes for infrastructure provision may change depending on decisions made by the water services provider, and developer-led infrastructure upgrades could bring timeframes forward.

This timing does not align with Kāinga Ora aspirations to develop the Corstorphine and Calton Hill areas in the short/medium term, and parts of Brockville in the next 30 years.

Additional intensification in Concord and Kaikarae / Kaikorai may add to pressure on the capacity of the Kaikarae / Kaikorai Stream and maintenance of drainage and coastal mouth opening. Before any intensification proceeds, a detailed assessment will be required to identify any changes needed to accommodate additional run-off.

6.7.2 Business land, past growth and likely future growth

The central business district is located on flat land near the harbour. The CBD and immediate surrounds account for approximately 20% of Dunedin businesses,[45] particularly office and retail activities. Significant facilities near or within the CBD include the Dunedin Hospital, the site of the new Dunedin Hospital under construction, the University of Otago/Te Whare Wānanga o Ōtākou, Otago Polytechnic and Forsyth Barr stadium. Business activities that have larger footprints and lower streetscape amenity, including industrial activity and large format retail, are generally located around Otago Harbour, South Dunedin, Kaikarae / Kaikorai Valley and Burnside.

Three areas of potential new industrial land have been identified within the wider Burnside/Fairfield area (see Figure 32 in Section 6.6.1). No additional office or retail land is included in this FDS.

The 3 waters upgrades for the new industrial land options are only possible in the medium or long term (10-30 years), as existing budgets are prioritised to service existing housing and business development capacity and complete upgrades needed to protect the environment and public health. However, the timeframe for providing 3 waters infrastructure could change depending on decisions made by the water services provider. Developer-led infrastructure upgrades could also bring forward this timeframe.

[45] Stats NZ, Geographic units by industry and statistical area – 2022, Dunedin Central area.

6.7.3 3 waters infrastructure

6.7.3.1 Water supply

New and upgraded pipes, pump stations and water tanks, along with upgrades to the Southern and Mt Grand treatment plants, are required to service the existing housing capacity and are programmed for the medium term. Additional raw water storage, treated water storage tanks, a pump station and further pipe upgrades are required to service the potential future residential intensification areas and business areas, and will be provided in the long term.

6.7.3.2 Wastewater

Inflow and infiltration of stormwater into the wastewater network is a particular issue in Kaikarae / Kaikorai Valley, North East Valley and South Dunedin, and suburbs that feed into those areas such as Brockville, Caversham and Corstorphine. This results in untreated wastewater discharging into the Kaikarae / Kaikorai Valley Stream and into South Dunedin, Lindsay Creek and the Otago Harbour. In response, a small number of recently rezoned areas must install wastewater detention to manage flows into the network during wet weather to mitigate this issue until it can be resolved. However, this solution is not approved frequently as these systems must be managed and maintained by the DCC and it costs much more to service them. They are therefore justified only when additional housing capacity is required and the proposal will create significant additional capacity.

Network upgrades to address wastewater constraints are programmed or underway in:

- Kaikarae / Kaikorai Valley – expected completion 2028
- Corstorphine – expected completion 2028
- Andersons Bay – 2028 – 2038
- North East Valley – 2033-2038
- South Dunedin – expected completion 2038.

These upgrades will provide for existing housing capacity and RTZ.

To service existing housing capacity, the city also needs to upgrade the two wastewater treatment plants at Green Island and Tahuna and install new and upgraded pipes and pump stations. This work is expected to be undertaken in the short to medium term (0-10 years).

Further upgrades to pipes and new network wastewater storage tanks are required to service the transitional and proposed future residential intensification areas and business land. These can generally be provided in the long term, however as discussed above, upgrades to service the proposed future residential intensification areas in Calton Hill cannot be provided in this timeframe.

To facilitate residential intensification in North Dunedin, the main interceptor sewer needs to be upgraded prior to the expiry of the existing resource consent that authorises wastewater overflows.

6.7.3.3 Stormwater

New development will generate additional stormwater, which also has implications for the operation and maintenance of the ORC's flood protection schemes and coastal mouth openings. This is particularly relevant for the future residential intensification area in Concord and the transitional residential areas in North East Valley and Kaikarae / Kaikorai Valley catchment. Management of additional stormwater will need to be considered when these areas are developed. This may require measures such as stricter limits on impermeable surfaces or on-site storage requirements.

New and upgraded stormwater pipes and pump stations are needed to service existing housing capacity and are programmed for the short to medium term. Stormwater channels and corridors need to be enhanced to service both transitional and proposed future residential intensification areas and business land. Upgrades to service the future residential intensification areas will be provided in the long term, except upgrades to service the proposed future intensification area at Calton Hill, which cannot be provided in this timeframe. This will affect the timeframe for residential intensification of this area.

The 3 waters infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment are listed in Table 5.

Table 5: 3 waters infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in the main urban area

Type	Description	Timeframe
Potable water (existing housing capacity)	New and upgraded water pump stations	1-10 years
	New and upgraded treated water tanks	1-10 years
	Upgrades to water treatment plants (Southern and Mt Grand)	1-10 years
	New and upgraded pipes	1-10 years
Potable water (proposed future residential intensification areas and removal of constraints for transitional residential areas)	New water pump station	10-30 years
	New and upgraded treated water tanks and raw water storage	10-30 years
	Upgraded pipes	10-30 years
Potable water (proposed future business land areas)	New and upgraded pipes	10-30 years
	New and upgraded treated water and raw water tanks	10-30 years
Wastewater (existing housing capacity)	New and upgraded wastewater pumping stations	1-10 years
	Upgraded wastewater treatment plants (Tahuna and Green Island)	1-10 years
	New and upgraded pipes	1-10 years
Wastewater (proposed future residential intensification areas and removal of constraints for transitional residential areas)	New wastewater network detention storage tanks	10-30 years
	Upgraded pipes (all areas except the Calton Hill potential future intensification area)	10-30 years
	Upgraded pipes to service the Calton Hill future intensification area	Timeframe unconfirmed (currently unfunded)
	Investigate and implement a preferred option for the upgrading of the main interceptor sewer in time to be compliant with the current consent expiry date of 1 January 2032	1-10 years

Type	Description	Timeframe
Wastewater (proposed future business land areas)	New and upgraded pipes	10-30 years
	New wastewater network detention storage tanks	10-30 years
	Upgrade main distribution sewer line in Kaikarae / Kaikorai Valley	1-10 years
Stormwater (existing housing capacity	New and upgraded pipes	1-10 years
	Upgraded pump stations	1-10 years
Stormwater (proposed future residential intensification areas and removal of constraints for transitional residential areas)	Enhancements to stormwater channels, corridors, and pipes (all areas shown except Calton Hill proposed future residential intensification area)	10-30 years
	Enhancements to stormwater channels, corridors and pipes to service Calton Hill proposed future residential intensification areas	Timeframe unconfirmed (currently unfunded)
Stormwater (proposed future business land areas)	Enhancements to stormwater channels, corridors and pipes	10-30 years

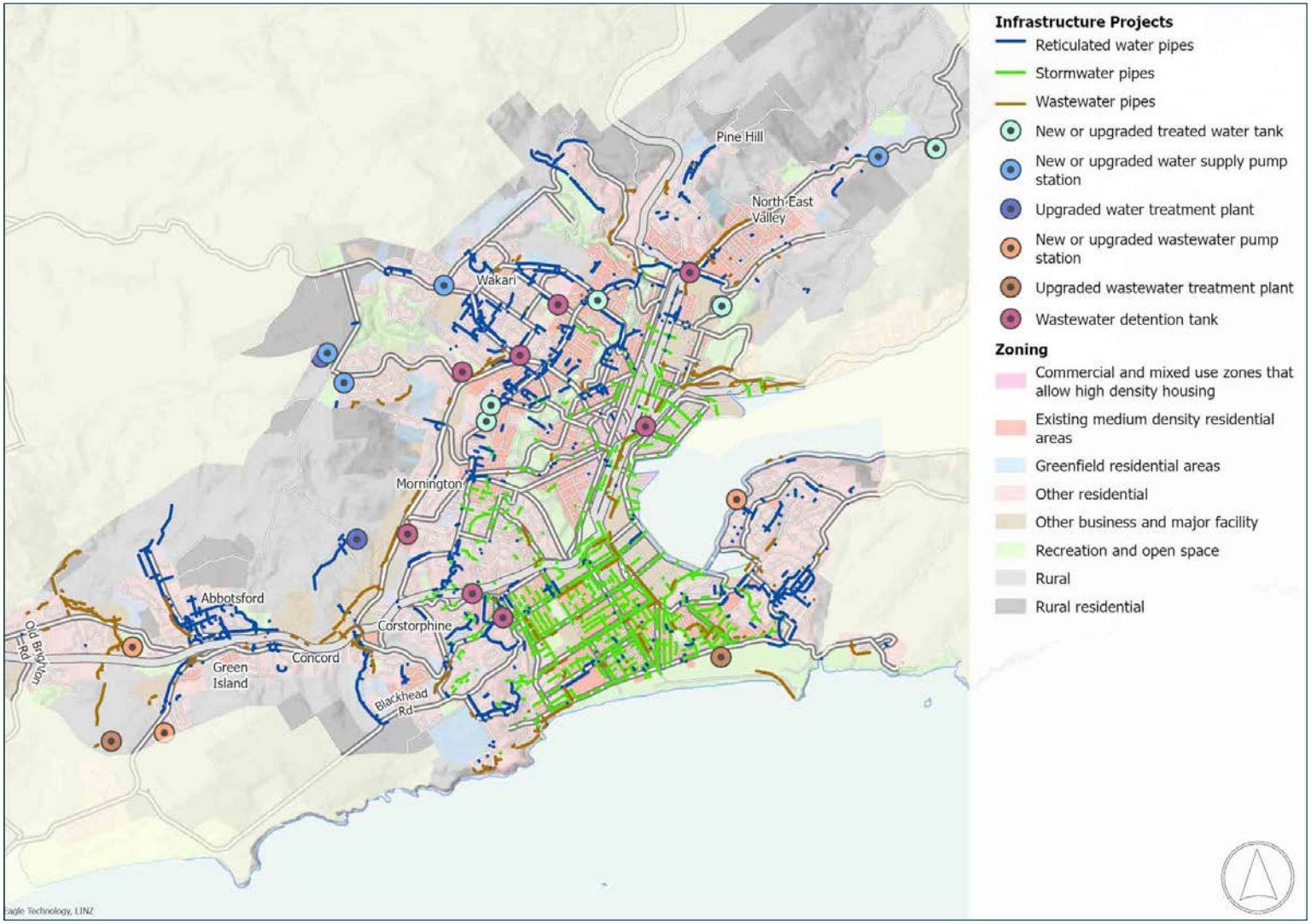


Figure 34: 3 waters infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in the main urban area (excluding infrastructure required to support proposed business land areas)

6.7.4 Transport infrastructure and services

The main urban area has a well-established bus network, with most bus routes in the city operating on a 30 minute schedule at peak times. The main public transport projects identified to respond to growth over the next 30 years are to improve bus frequency on some routes, address current capacity constraints at the Dunedin bus hub and improve the reliability and journey times on the central city routes to and from the bus hub. The Princes Street Connection project and the George/Bank Street Connection project aim to improve the efficiency and reliability of the main bus routes from the south and the north to the bus hub, respectively.

A number of intersections and areas with pedestrians and cyclists have safety issues, such as near schools and commercial centres. Improvements are planned in the short term to address safety issues around schools. The main urban area has cycle paths, but the network is not complete. Footpaths are provided in most areas, but many places lack safe crossing points and are not broadly accessible. The city needs to further improve pedestrian and cycling infrastructure to service existing housing and business capacity, the transitional and proposed future residential intensification areas and proposed new business areas and contribute to a well-functioning urban environment. A strategic walking and cycling network review is underway (refer to Section 6.3.2.2), which has identified a future network for active modes at a high level, including indicative corridors, facility types and priorities.

Other projects that are planned or underway include connecting the CBD and campus area to the harbour shared path (Albany Street Connection), pedestrian and cycling improvements in the campus area (Tertiary Precinct Project), the waterfront bridge connecting Queens Gardens to Wharf Street, the Tunnels Trail connecting Dunedin with Mosgiel and communities along this route, a safe crossing point at Andersons Bay Inlet, and many local upgrades.

The new Dunedin Hospital will require several changes to the inner-city transport network, and there are plans to investigate possible changes to both State Highway 1 and State Highway 88. Additionally, the Harbour Arterial project aims to provide an alternative route through the city that bypasses the central business district.

The South Island main trunk railway passes through the centre of the city and carries a significant amount of freight, mainly to Port Otago. The capacity of the line is constrained between Fonterra's site at Mosgiel and Caversham in peak dairy season, due to a lack of a passing loop. However, KiwiRail retains sufficient land to reinstate a passing loop if necessary to manage any constraints on this section of rail line that may arise from increased traffic (freight and/or passenger rail). This FDS identifies the desirability of an inland freight hub, at an indicative site near the existing North Taiari industrial area, which would enable increased rail freight to Port Otago and reduce the amount of heavy vehicle traffic that passes through the city on State Highway 1 and State Highway 88.

The transport infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment are given in Table 6.

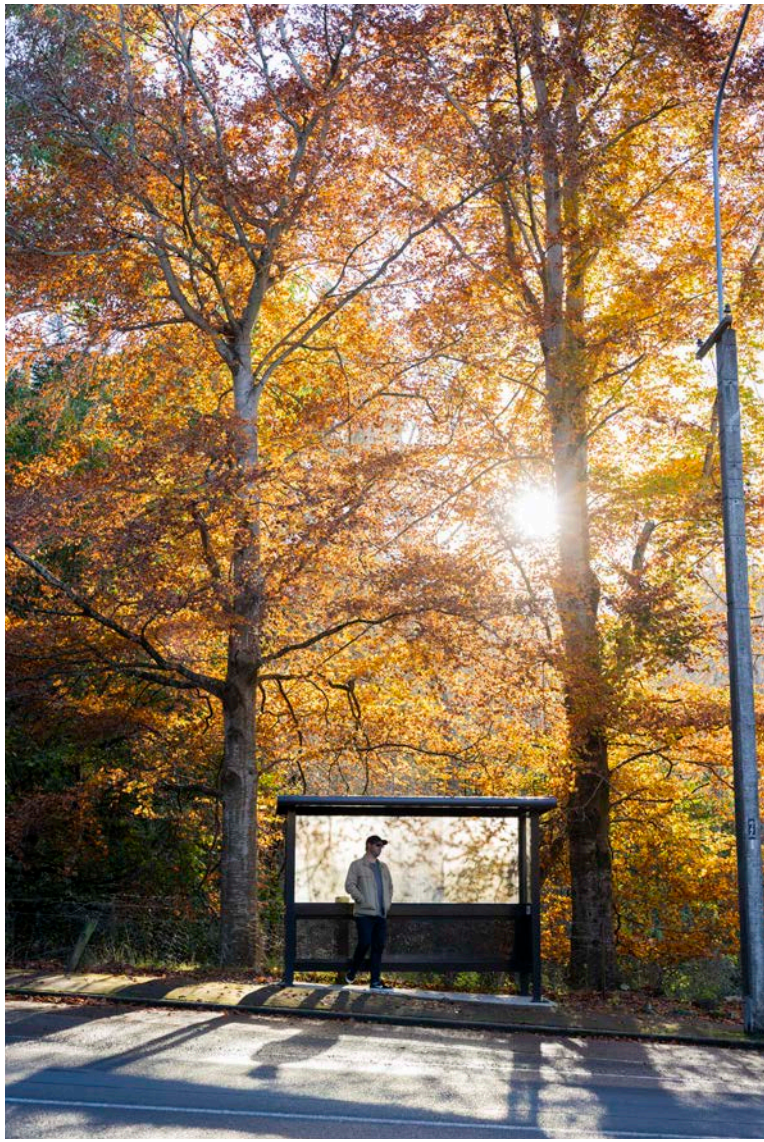


Table 6: Transport infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in the main urban area

Type	Project	Description	Timeframe
Pedestrian safety and accessibility improvements (DCC)	School road safety improvements	School road safety improvements at 20 schools in the Dunedin main urban area	1-10 years
Pedestrian safety and accessibility improvements (DCC)	Pedestrian safety improvements	Includes improved connections, kerb build outs, crossing points	1-10 years
Cycling safety and accessibility improvements (DCC)	Cycling infrastructure improvements	Includes improved connections and provision of bike hubs in the central city	1-10 years
Road safety improvements (DCC)	Road safety improvements	Includes road upgrades, intersection upgrades, kerb build outs, new roundabouts, modal filters	1-10 years
Road safety improvements (DCC)	Road safety improvements	Includes road upgrades, intersection upgrades, road upgrades to cope with heavy vehicles, investigation of the need to increase bridge height to allow heavy vehicles to travel underneath	10-30 years
Cycling safety and accessibility improvements (DCC)	Tunnels Trail	A walking and cycling trail that will connect Mosgiel to Dunedin via two disused railway tunnels. Stage 1 of the project is from Mosgiel to Green Island, and Stage 2 is from Green Island to Caversham	1-10 years
Bus priority and road safety improvements (DCC)	Central City Bus Hub[46]	Upgrades to the bus hub on Great King Street	Timeframe unconfirmed (currently unfunded)
Bus priority and road safety improvements (DCC)	Princes Street Connection	Changes to improve road safety and access for people who walk, cycle, take the bus, or have disabilities	1-10 years
Cycling and pedestrian safety and accessibility improvements (DCC)	Albany Street Connection	Provision of a key walking and cycling connection between Te Aka Ōtākou and the campus and CBD	1-10 years

[46] Not mapped as both timeframe and funding unconfirmed

Type	Project	Description	Timeframe
Road safety improvements (DCC)	Harbour Arterial project	Improvements to the Harbour arterial corridor to improve safety and efficiency and provide an alternative route bypassing the city centre	Stages 1-3 1-10 years Stage 4 unconfirmed and unfunded
Road safety improvements (Waka Kotahi)	Changes to State Highway 1 and State Highway 88	Improvements and changes to State Highway 1 and State Highway 88 to support the new Dunedin Hospital	1-10 years
Cycling infrastructure and pedestrian safety improvements (DCC)	Waterfront Bridge	Walking and cycling bridge connecting Queens Garden with Steamer Basin	1-10 years
Cycling infrastructure and pedestrian safety improvements (DCC)	Tertiary Precinct Project	Public transport, walking, cycling and safety improvements as well as 3 waters and streetscape amenity improvements in the tertiary area	1-10 years
Public transport services improvement (DCC)	Signals Project	City-wide upgrade of signals to integrate bus priority (note, not mapped)	1-10 years
Cycling safety and accessibility improvements (DCC)	Strategic Cycling Network Review	Priority clusters and connector routes linking them, as determined by the walking and cycling masterplan	1-10 years
Cycling safety and accessibility improvements (DCC)	Strategic Cycling Network Review	Future cycling and pedestrian routes as determined by the walking and cycling masterplan	10-30 years
Other (DCC)	Investigation of rail	Feasibility studies regarding mode shift to rail	1-10 years
Rail freight services improvement / road safety improvement (DCC, KiwiRail, Port Otago and private freight operators)	Inland freight hub development on Taiari Plain	Appropriateness of indicative site and commencement of initial development	1-3 years
Road safety improvements (DCC)	George / Bank Street Connection	Improved accessibility for sustainable modes and safety for users of all ages and abilities on George/Bank Street from Albany Street to North Road	1-10 years
Public transport services improvement	Rapid transport	Develop passenger service	Depending on the outcome of feasibility studies / investigations, 10-30 years

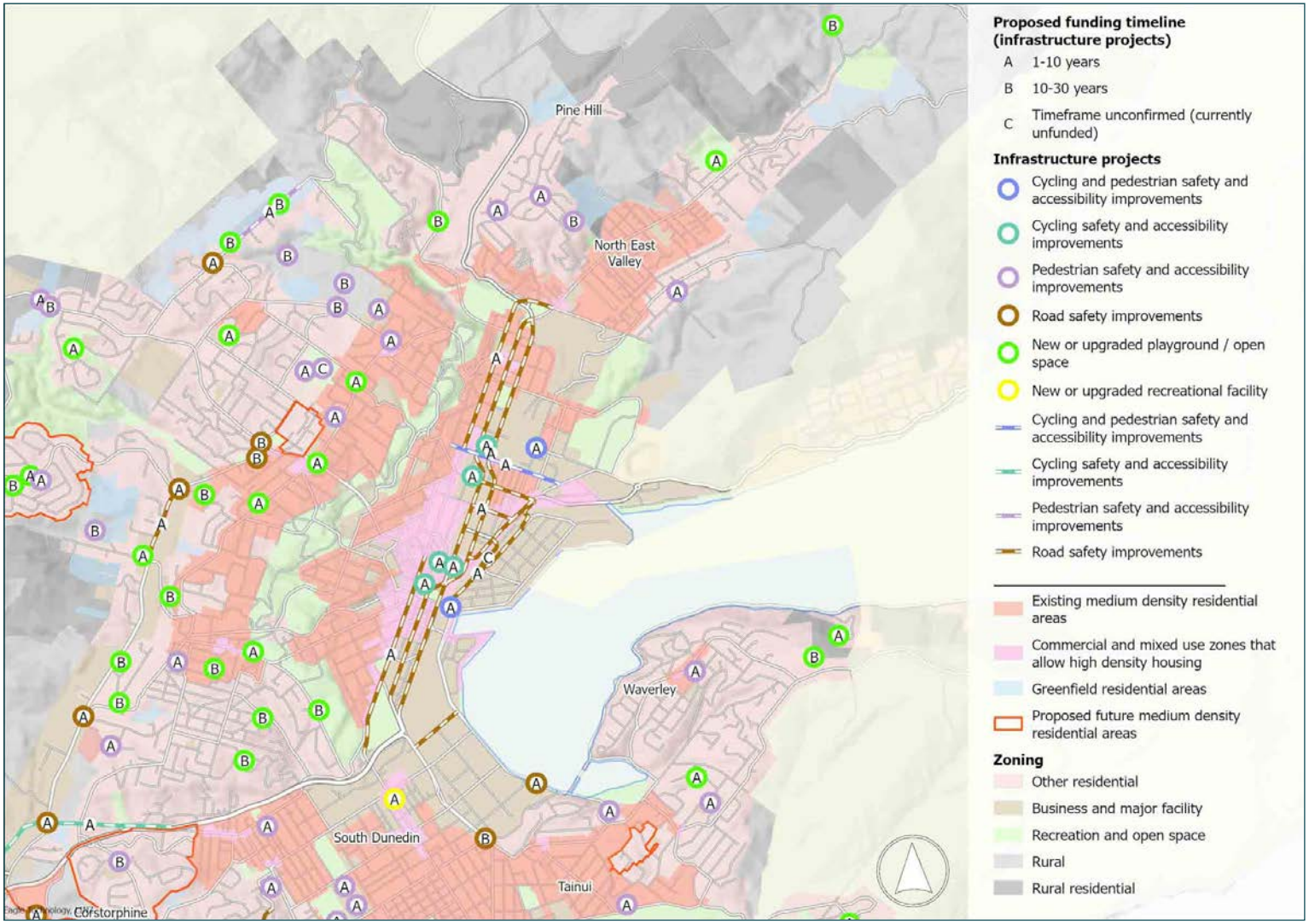


Figure 35: Transport and parks and recreation infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in the eastern part of the main urban area

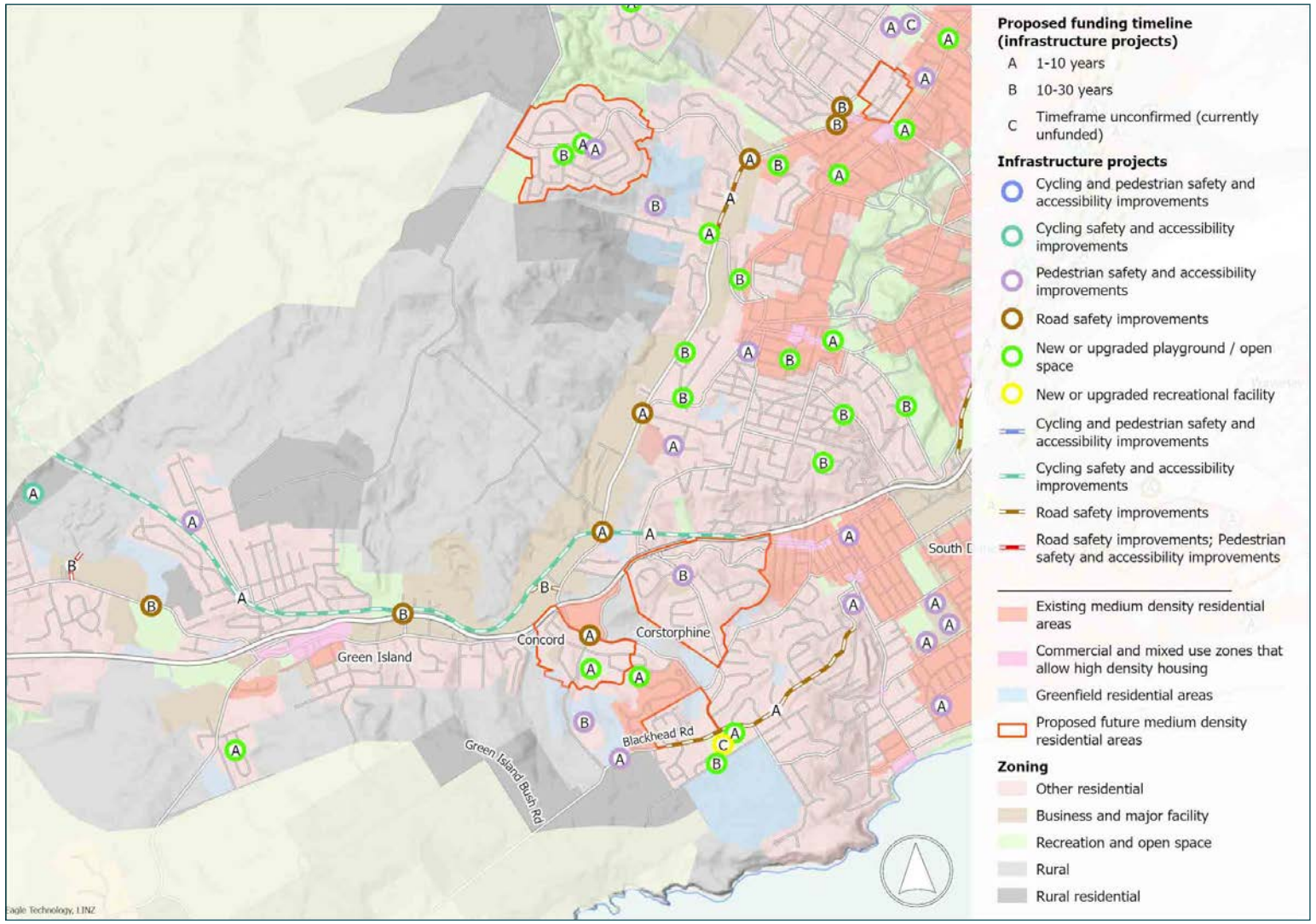


Figure 36: Transport and parks and recreation infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in the western part of the main urban area

6.7.5 Additional infrastructure

Education

The main urban area has 49 schools, including 11 secondary schools. The Ministry of Education has advised that schools in this area generally have sufficient capacity to accommodate expected growth. Growth in some future residential intensification areas may mean additional capacity needs to be provided at a few schools. The long term timeframe (10-30 years) for the future residential intensification areas will allow the Ministry to manage any growth within the larger education network plan.

Community recreation facilities

The main urban area is generally well serviced with recreational facilities, including playing fields, reserves, parks and indoor sports venues. Dunedin has three destination playgrounds: Marlow Park (the dinosaur park), Woodhaugh Gardens, and Mosgiel Memorial Park. Redevelopment of these parks into modern playgrounds is planned.

As new and intensified housing areas are developed, new parks and green spaces will be required to provide recreation opportunities for residents. In addition, pedestrian links between new housing areas and recreation areas and reserves will be needed. In greenfield areas these are often provided by developers; in intensification areas these are often provided by the DCC. The DCC is considering a new sports hub, potentially located in Corstorphine. The location will be determined by the outcome of a Regional Spaces and Places Review being conducted by the DCC and Sport Otago.

The parks and recreation infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment are given in Table 7 and shown on Figure 35 and Figure 36.

Table 7: Parks and recreation infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment the main urban area

Type	Project	Description	Timeframe
New or upgraded playground / open space (DCC)	Playground upgrades	Upgrades to various playgrounds	1-10 years
New or upgraded playground / open space (DCC)	New or upgraded playground / open space	Playground upgrades, provision of new playgrounds, walkways, new open space	10-30 years
New or upgraded recreational facility (DCC)	New recreational facility	Development of a sports hub, potentially to be located in Corstorphine	10-30 years
New or upgraded recreational facility (DCC)	South Dunedin Library and Community Complex	A new library and community complex on King Edward Street in South Dunedin, expected to be complete in 2025	1-10 years
New or upgraded recreational facility (DCC)	Pedestrian safety and accessibility improvements	Connections to existing recreational spaces	10-30 years
New or upgraded recreational facility (DCC)	New sports fields	Investigate the need to identify additional areas of land to provide for new sports fields, including in recognition that managed retreat may result in the loss of existing sports fields	10-30 years

Other infrastructure

Discussion with infrastructure providers has identified the following upgrades required to support growth:

Table 8: Infrastructure improvements identified by external infrastructure providers

Infrastructure type	Issues identified
Telecommunications	A new cell site is required to improve existing poor coverage and capacity in the Brockville area. This will also service the proposed future intensification area in this area. New cell sites would be required to service the proposed future industrial land areas.
Electricity transmission	No issues identified.
Electricity distribution	No issues identified.
Health	Dunedin Hospital is currently being replaced with a hospital on Cumberland Street, which will service the wider area for the long term. The Outpatient Building is due to be completed in 2025, while the second stage is the construction of the Inpatient Building, due for completion in 2029.
Waste	The Green Island landfill is likely to close in the next 10 years and be replaced by a new landfill at Smooth Hill, south of Brighton. A Resource Recovery Park is planned over much of the Green Island site, and options for land uses on other parts of the site are being assessed.

6.7.6 Natural hazard risks and hazard mitigation

Natural hazard risks in the main urban areas are flooding, land instability and coastal hazards, including inundation from groundwater, storm surge and sea level rise, particularly in South Dunedin and coastal suburbs.

Dunedin's urban streams (the Water of Leith and Lindsay Creek in North East Valley or the Kaikarae / Kaikorai Stream) can overtop their banks in heavy or persistent rain, causing flooding. In South Dunedin, ponding occurs in low-lying areas when localised rainfall saturates the ground and the stormwater infrastructure cannot drain the water as quickly as it accumulates.

As discussed in Section 6.3.3, the ORC manages a flood scheme on the Water of Leith to reduce the risk and impact of flooding. The ORC is investigating improvements and restoration of the lower reaches of the scheme to promote natural bed behaviour and enhance the stream's ecological and amenity values. The ORC is also investigating the resilience of Lindsay Creek to improve flood protection.

On-site stormwater management will be critical in potential new intensification areas draining into the Kaikarae / Kaikorai Stream, to ensure they do not increase flood risk, and the impacts on the coastal mouth opening can be managed.

As discussed in sections 6.2.1.2 and 6.2.1.3, we are undertaking work in South Dunedin on how to mitigate the risk from hazards and prepare for changes as a result of climate change.

South Dunedin and other low-lying areas throughout Dunedin are protected by coastal dune systems which act as a buffer from coastal erosion and flooding. Managing coastal dune systems that protect low-lying areas like South Dunedin is critical to increase resilience and ensure the long term safety of people, communities and property. A monitoring programme to establish how the coastal dune system that protects South Dunedin responds to changing coastal processes affected by climate change will be developed under the St Clair to St Kilda Coastal Plan[47]. Gathering this information will enable the DCC to develop response options. The monitoring programme should be in place by 2024.

The DCC routinely monitors active land slide areas (slips). The slips that are monitored in the main urban area are:

- Church Hill Road, Green Island
- West Abbotsford
- Brockville
- Albany Street, Central Dunedin
- Cargill Street, Central Dunedin
- Motu Street, St Clair
- Sidey Street, Carlton Hill.

While engineering design responses can mitigate the risk of damage to buildings in active landslide areas, these areas are inappropriate for future urban development.

Natural hazard related infrastructure projects are shown in Table 9.

Table 9: Natural hazard related infrastructure projects planned for the main urban area

Type	Project	Description	Timeframe
Renewal and investigations	Water of Leith Amenity	Renewal of existing assets (e.g. concrete-lined channel) to address protection/channel capacity. Investigate options to increase the amenity value of the area downstream of Forth Street to the harbour.	1-10 years
Renewal and investigations	Lindsay Creek Flood Protection Scheme	Renewal of assets and potential improvements to the standard of flood protection.	1-10 years
Monitoring and implementation plan	St Clair – St Kilda Coastal Plan	Developing a monitoring and implementation plan by establishing environmental signals and triggers from monitoring, identifying preferred pathways from modelling and establishing a data management framework to facilitate dynamic adaptive planning.	1-10 years
Climate change adaptation strategy	South Dunedin Future	Developing a climate change adaptation strategy for South Dunedin to respond to a range of climate-change related challenges, including sea level rise, high groundwater table, coastal erosion and flooding from heavy rainfall events.	1-10 years
Flood mitigation	South Dunedin Flood Alleviation	Identifying actions to help mitigate flooding in South Dunedin and increase resilience to future rainfall events.	1-10 years

[47] stclair-stkilda-ctl-plan.pdf (dunedin.govt.nz)

6.8 Mosgiel

6.8.1 Housing, past growth and likely future growth

6.8.1.1 Existing housing capacity in the 2GP

Mosgiel is Dunedin's largest outlying township, acting as both a commuter suburb for people working in central Dunedin and the closest large service centre for the rural settlements and areas to the south and west. Mosgiel has more than 6,000 homes and has experienced significant and rapid housing growth over the past decade. Most of this growth has been in greenfield areas rezoned between 2008 and 2010.

High demand for homes in Mosgiel is expected to continue over the 30 year FDS period (2024-54). While projections suggest that Mosgiel will grow by approximately 770 homes over this period, actual growth is likely to be higher due to recent changes to the 2GP that enable additional development in this area.

Mosgiel's development capacity comprises a mixture of intensification and greenfield development opportunities. The greenfield opportunities include the final stages of some of greenfield areas that were rezoned under the 1995 District Plan, areas that were rezoned after decisions on the 2GP in 2018 (a mix of standard and lower density areas), and areas added more recently through the resolution of 2GP appeals and Variation 2. These include a 37 hectare site on the western edge of Mosgiel, an 8 hectare site in Wingatui, and a 43 hectare area Residential Transition Zone between Hagart-Alexander Drive and Gladstone Road North that can be developed for residential use once specific development conditions can be met. These three areas collectively provide for an additional 700-1500 homes.

Mosgiel has also been a popular location for retirement villages and aged care facilities. It has two retirement villages and three rest homes along with the Grange retirement village being developed in East Taiari. Summerset has also announced it intends to develop a facility in the residential transition zoned land between Hagart-Alexander Drive and Gladstone Road North. Community feedback indicates that Mosgiel is attractive to older people with poorer mobility because it is flat and easy to get to services locally.

These greenfield areas are shown on Figure 30 in Section 6.5.1.

There is some General Residential 2 (medium density) zoning around the town centre. Mosgiel, like other parts of the city, has also benefited from changes that enable minor intensification of General Residential 1 zoned land through changes to the plan rules, and some growth in these areas is anticipated (see Section 2.2).

Overall, Mosgiel has enough housing capacity for an additional 3,400 homes over the next 30 years, but we do not expect all this capacity to be needed over that time.

6.8.1.2 Transitional future residential intensification areas

Several GR2 zoned areas in Mosgiel are subject to wastewater constraints, which limit the density to which they can be developed. We expect to complete upgrades to address these constraints in the long term (10-30 year timeframe).

6.8.1.3 Proposed future residential intensification areas

Although enough development capacity is already available, central parts of Mosgiel with older and poorer quality housing could be used more efficiently and housing outcomes improved through further intensification. The FDS identifies some areas for potential future residential intensification in Mosgiel close to the centre of the town, as shown on Figure 30. The DCC will also need to consider increasing the permitted building height close to the town centre. These measures will provide for additional medium density development and improve existing housing stock, taking advantage of the flat land, good solar access and good walkability to local services in the town centre.

Kāinga Ora has indicated it would like to redevelop the proposed future residential intensification area around Murray Street (see Figure 31 in Section 6.5) in the short to medium term (0-10 years) to improve the quality and amount of social housing in this area. However, 3 waters upgrades needed to achieve the full intensification aspirations can only be addressed in the long term (see Section 6.5.2).

6.8.1.4 Future greenfield expansion

This FDS does not propose any further greenfield urban development area in Mosgiel. In general, further urban expansion will not be supported until all existing greenfield land is taken up and all opportunities for intensification are exhausted. Intensification is preferred as it better supports the creation of a well-functioning urban environment. It provides better access to services and recreational infrastructure, supports the redevelopment of older, poorer performing housing stock, and does not require extensions to public transport routes, which can be hard to fund. Residential intensification is also favoured due to Mosgiel's flat topography and therefore good solar access and suitability for active modes. Expansion of Mosgiel is also constrained in many directions due to flood hazards, the presence of highly productive land, and important landscape backdrops to the Taiari basin.

6.8.2 Business land, past growth and likely future growth

Mosgiel has a large vibrant centre with a range of shops and services catering to local needs. While retail trends may change over the next 30 years, we do not expect to need more retail land in Mosgiel.

Industrial activity is also accommodated in Mosgiel, with a well-established industrial area around Gow Street, and a newer, rapidly developing industrial area along Dukes Road North. These contain a range of businesses, many supporting the rural sector. Across Dunedin there is demand for more industrial land, at least in the short term. Given this need, and recent industrial growth in Mosgiel, we anticipate that demand for land in the Dukes Road North industrial area will continue. This area is also the indicative location of an inland freight hub due to its topography, proximity to existing rail infrastructure, good road connectivity and synergies with an existing road-rail mode shift at Fonterra. The identification of the indicative location for an inland freight hub is intended to encourage stakeholders to carry out necessary investigations into the suitability and feasibility of the site and the options for best integrating it with the wider infrastructure network over time. The Taiari Aerodrome is also zoned for industrial use and this creates an opportunity for future industrial use, should consolidation of airport activities at Dunedin airport be seen as favourable in the future. However, further development in this area will need to consider the impact of stormwater on ORC's flood drainage infrastructure.

6.8.3 3 waters infrastructure

6.8.3.1 Wastewater

Inflow and infiltration of stormwater into the wastewater network is a problem in Mosgiel, resulting in wastewater overflows that can enter private property and discharges of diluted wastewater to the Silver Stream (Whakaehu) in significant rainfall events. The DCC is investigating the most appropriate way to address these issues. High wastewater flows can also wash out the treatment plant biological material (which is responsible for treating the wastewater) and can result in an inability to meet discharge consent requirements. The DCC needs to upgrade wastewater pipes and the Mosgiel wastewater treatment plant to address this problem. These upgrades are required to improve the performance of the system, meet environmental outcomes, and service existing housing capacity. These upgrades are scheduled for the next 10 years.

Other upgrades to pipes, wastewater storage capacity and the Mosgiel wastewater treatment plant will be required to support proposed future residential intensification areas. These upgrades are scheduled for the long term (10 to 30 years).

6.8.3.2 Water supply

Mosgiel's drinking water is supplied from Mt Grand. During extended periods of dry summer weather, demand for water exceeds the capacity of the system to supply water, resulting in restrictions. Work to address this problem is a priority and is due to be completed in 2024. This will provide capacity for the expected growth in Mosgiel, but an alternative supply is needed in the long term to improve resilience (Mosgiel is supplied by a single source of water) and efficiency. There are also difficulties providing drinking water to sites at higher elevations outside zoned areas due to pressure limitations of the Mosgiel water supply network. To provide an appropriate level of service to residentially zoned areas, upgrades of pipes, pump stations, water storage and the Mt Grand water treatment plant will be completed in the next 10 years. To support the proposed future residential intensification in this area, we need more raw water storage, which will be provided in the 10-30 year timeframe.

6.8.3.3 Stormwater

The DCC stormwater network in Mosgiel drains to the ORC's East Taiari Drainage Scheme and Lower Taiari Flood Protection Scheme. New development will generate more stormwater, which has implications for the operation of the scheme. The DCC and ORC will work together to upgrade the ORC's drainage and flood protection schemes. New and upgraded pipes, pump stations in the DCC's stormwater network are scheduled for the next 10 years to manage the additional stormwater generated by development.

The proposed future residential intensification areas will require additional enhancements to stormwater channels, corridors and pipes. Even with these upgrades, management of stormwater volumes should be considered, for example through additional limits on impermeable surfaces and/or on-site storage requirements.

The 3 waters infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in Mosgiel are identified below.

Table 10: 3 waters infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in Mosgiel

Type	Project	Timeframe
Potable water (existing housing capacity)	New and upgraded pipes, including the pipe from Mt Grand	1-10 years
	New and upgraded water supply pump stations	1-10 years
	Upgrades to water treatment plants (Southern and Mt Grand)	1-10 years
	Upgraded water treatment plants (Mt Grand and Southern)	1-10 years
Potable water (proposed future residential intensification areas and removal of constraints for transitional residential areas)	New and upgraded treated water tanks and raw water storage	10-30 years
Wastewater (existing housing capacity)	New and upgraded pipes	1-10 years
	New and upgraded wastewater pumping stations	1-10 years
	Upgrades to Mosgiel wastewater treatment plant	1-10 years
Wastewater (proposed future residential intensification areas and removal of constraints for transitional residential areas)	Upgraded pipes	10-30 years
	Upgrades to wastewater treatment plant	10-30 years
	New wastewater network detention storage	10-30 years
Stormwater (existing housing capacity)	New and upgraded pipes	1-10 years
	Upgraded pump stations	1-10 years
Stormwater (proposed future residential intensification areas and removal of constraints for transitional residential areas)	Enhancements to stormwater channels, corridors, and pipes	10-30 years

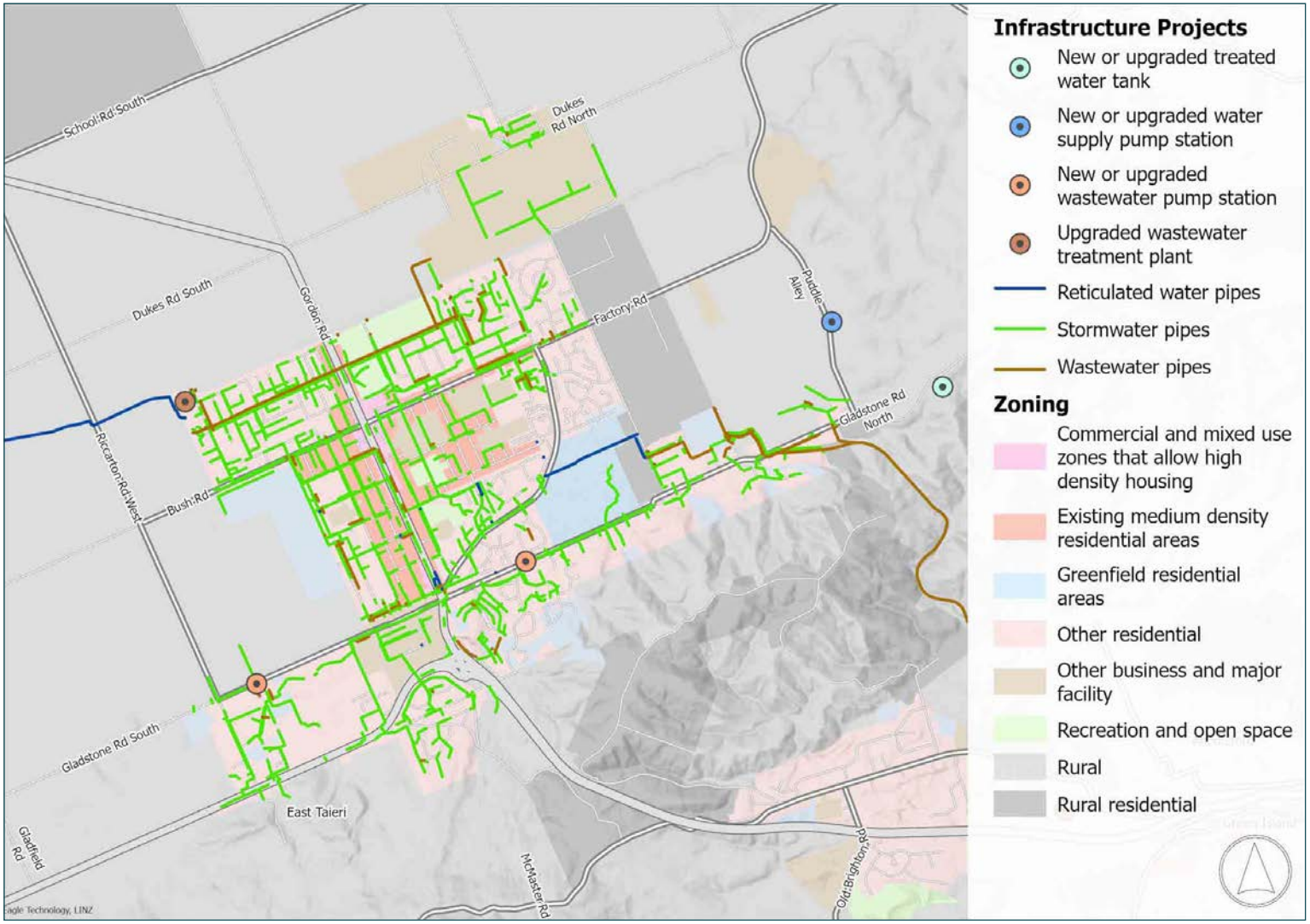


Figure 37: 3 waters infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in Mosgiel

6.8.4 Transport infrastructure and services

Central Mosgiel is served by a bus to central Dunedin every 30 minutes, including a recently introduced express bus that runs three times on weekday mornings and six times on weekday afternoons. These services will be complemented by a new park and ride facility that will be developed in the short term. Two bus routes cover the east and west sides of Mosgiel every 40 minutes on weekdays. At this stage, there are no plans or funding allocated to extend these routes in areas that are currently unserviced, including existing urban development areas. However, depending on future growth, the ORC may consider alternatives to these routes, including the potential for 'on-demand' services in the future.

Mosgiel's main street, Gordon Road, is designated as State Highway 87, and provides a transport link between State Highway 1 and Kyeburn via Outram and Middlemarch. The main south railway line runs through Mosgiel and is used for freight but not public transport.

Mosgiel currently has limited cycling infrastructure, with a cycle lane on Factory Road and a shared path on Gladstone Road South. Pedestrian footpaths are provided along most roads and drop kerbs have been installed at many intersections, but safe crossing points across wide and busy roads are needed at bus stops, key intersections and priority destinations. Mosgiel is a priority area in the Dunedin strategic walking and cycling network, and upgrades to better cater for pedestrians and cyclists are planned for the short to medium term (see Section 6.3.2). A key project is the development of the Tunnels Trail, which will enhance provision for pedestrians and cyclists, providing a low-grade cycle route connecting Mosgiel to the central city.

Transport issues in Mosgiel include congestion at the Gordon Road/Gladstone Road intersection and the Mosgiel exit from the Southern Motorway at peak times. There are safety issues with heavy vehicles on Gordon Road through the Mosgiel town centre and vehicles – including heavy vehicles – bypassing Gordon Road via adjacent local roads and Riccarton Road West. This results in reduced amenity and safety issues for pedestrians and cyclists, especially near schools.

Growth in Mosgiel is likely to increase traffic volumes and safety issues, especially at the recently rezoned greenfield areas near Bush Road and Hagart-Alexander Drive. Upgrades are planned to better provide for pedestrians from new areas and through existing areas in the short to medium term. Safety upgrades to improve pedestrian safety around schools are planned in the short term. Upgrades of key intersections on State Highway 1 and State Highway 87 are planned.

To consider transport in Mosgiel holistically, a strategic transport study is planned for Mosgiel between 2024 and 2027 to identify issues and opportunities in the transport network and the upgrades required to address them. This FDS identifies an indicative location for an inland freight hub at Dukes Road North and the DCC encourages key stakeholders to progress detailed investigations to confirm or otherwise the appropriateness and feasibility of this site, along with any necessary infrastructure improvements required to support it. If stakeholders have not progressed the inland freight hub by 2029, or further investigations establish that the indicative site is not appropriate, the DCC may initiate feasibility studies to determine whether rail infrastructure needs to be upgraded and identify alternative inland freight hub options.

Feasibility studies regarding mode shift to rail are planned for the next 10 years, which will determine whether rail infrastructure needs to be upgraded.

The infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in Mosgiel are listed in Table 11. Figure 38 shows both the transport and parks and recreation infrastructure improvements.

Table 11: Transport infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in Mosgiel

Type	Project	Description	Timeframe
Pedestrian safety and accessibility improvements (DCC)	School road safety improvements	School road safety improvements at Elmgrove School, Silverstream School and Taieri College	1-10 years
Pedestrian safety and accessibility improvements (DCC)	Pedestrian safety improvements throughout the Mosgiel area	Includes kerb build outs, raised pedestrian crossing points, traffic calming measures	1-10 years
Pedestrian safety and accessibility improvements (DCC)	Pedestrian safety improvements on Gordon Road	Includes dropped kerbs and pedestrian buildouts	10-30 years
Road safety improvements (DCC)	Road safety improvements throughout the Mosgiel area	Includes roading upgrades, intersection improvements, and modal filters (methods to restrict the passage of certain types of vehicles) on local roads	1-10 years
Road safety improvements (DCC)	Road safety improvements on Bush Road	Turn restrictions on multiple intersections on Bush Road	10-30 years
Cycling safety and accessibility improvements (DCC)	Tunnels Trail	A walking and cycling trail that will connect Mosgiel to Dunedin via two disused railway tunnels	1-10 years
Public transport services improvement (DCC)	Mosgiel Park and Ride	A new park and ride facility next to the Mosgiel railway station that will provide parking for 200 vehicles and be serviced by public transport	1-10 years
Cycling safety and accessibility improvements (DCC)	Strategic walking and cycling network review	Priority areas, as determined by the strategic walking and cycling network review	1-10 years

Type	Project	Description	Timeframe
Cycling safety and accessibility improvements (DCC)	Strategic walking and cycling network review	Future cycling and pedestrian routes as determined by the strategic walking and cycling network review (excluding rural trails. Refer to Section 6.3.2.2)	10-30 years
Road safety improvements (Waka Kotahi)	Rural Intersection Activated Warning Signs	Installation of warning signs at intersections with State Highway 87 around Mosgiel	1-10 years
Road safety improvements (Waka Kotahi)	Intersection upgrades[48]	Rural intersection upgrades along State Highway 1 between Mosgiel and Balclutha, including the intersection between Riccarton Road East and State Highway 1	1-10 years
Public transport services improvement	Rapid transport	Develop passenger service	Depending on the outcome of feasibility studies / investigations, 10-30 years
Road safety improvements (DCC)	Mosgiel strategic transport study	A strategic transport study to identify issues and opportunities in the transport network and the upgrades required to address them, in particular options to enable heavy vehicles to bypass Gordon Road	1-3 years
Road safety improvements (DCC)	Mosgiel heavy vehicle bypass	Heavy vehicle bypass for Mosgiel	1-10 years

[48] Intersection upgrades along State Highway 1 are not shown on map, as exact locations are currently unknown.

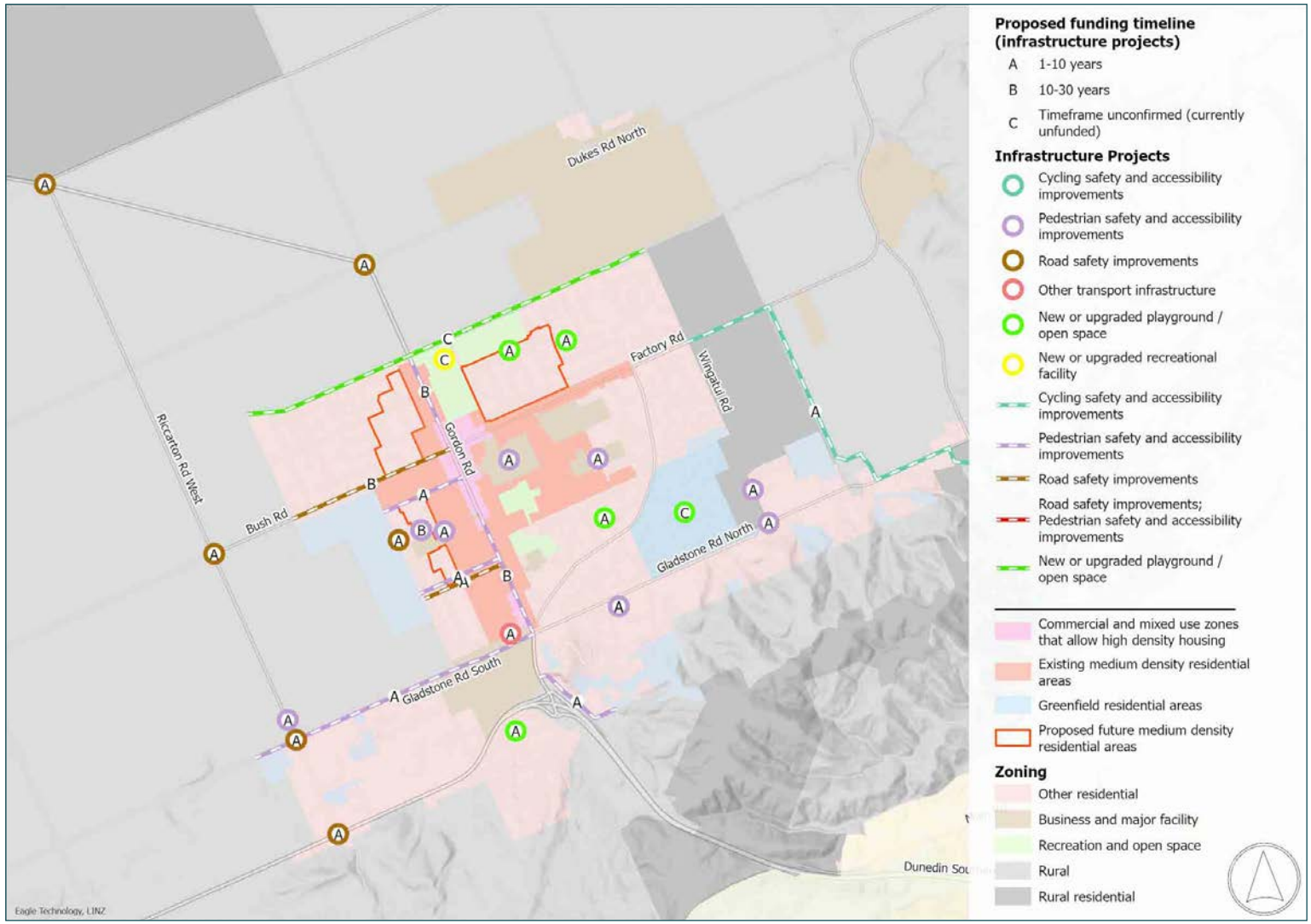


Figure 38: Transport and parks and recreation infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment Mosgiel

6.8.5 Additional infrastructure

Community recreation facilities

To service growth, Mosgiel needs a variety of new or upgraded parks and recreation facilities, including new reserve areas and walking and cycling connections between new residential areas and existing recreational facilities. 2GP rules require new large subdivisions to ensure access to outdoor recreation opportunities, including playgrounds. As Mosgiel grows in the long term, it will need a new sports hub to maintain a good level of access to sports grounds and facilities. The location will be determined by a Regional Spaces and Places Review being undertaken by the DCC and Sport Otago.

The parks and recreation infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment are given in Table 12 and shown on Figure 38.

Other infrastructure

Mosgiel has six schools, including a high school. Anticipated growth in Mosgiel is likely to create significant pressure on schools.

Telecommunications, electricity transmission, electricity distribution and health service providers have not identified any other infrastructure needed to support expected growth in this area.

Table 12: Parks and recreation infrastructure improvements required to service existing development capacity and proposed future development areas and/or support a well-functioning urban environment in Mosgiel

Type	Project	Description	Timeframe
New or upgraded recreational facility	New or upgraded recreational facility	Development of a sports hub, potentially located at Memorial Park	10-30 years
New or upgraded recreational facility (DCC)	Work with City Forests to investigate provision of horse trails in Takitakitoa Forest	If agreement reached with City Forests, develop horse trails in Takitakitoa Forest	1-10 years
New or upgraded playground / open space	New open space	Land purchase and development of a park and tracks on the edge of the Silver Stream	Timeframe unconfirmed (currently unfunded)
New or upgraded playground / open space	New open space	Provision of a reserve in south-east Mosgiel	Timeframe unconfirmed (currently unfunded)
New or upgraded playground / open space	Playground upgrades in Mosgiel and Taiari	Planned upgrades to playgrounds	1-10 years
Pedestrian safety and accessibility improvements	Development of accessways and linkages	Land purchase and development of linkages between residential and recreational areas	10-30 years

6.8.6 Natural hazard risks and hazard mitigation

Mosgiel's low elevation and location on the Taiari floodplain put it at risk of flooding from several sources including the Silver Stream, Owhiro Stream, Quarry Creek, and from rainfall ponding in low-lying areas. The Lower Taiari Flood Protection Scheme includes floodbanks to protect Mosgiel from the Silver Stream when it floods, and a rural drainage network of open drains, pipes and culverts. However, climate change will likely result in more heavy rain, leading to more frequent and severe flooding. On-site stormwater management will be critical in new developments to ensure they do not increase flooding risk, both within developments and downstream, and that the impacts on the performance of the Lower Taiari Flood Protection Scheme can be managed.

Infrastructure projects related to natural hazards are shown in Table 13.

Table 13: Natural hazard related infrastructure projects planned for Mosgiel

Type	Project	Description	Timeframe
Renewal and investigations	Silver Stream channel improvements	Investigation and improvements to flood conveyance capacity to meet the required level of service. Establish design principles for the channel, spillway and flood banks to meet the required capacity, ecological, restoration or enhancement requirements.	1-3 years
Review, reconstruction and investigations	Taiari Flood Protection and Drainage Schemes	Various projects, including: • review of the functionality and performance of the Taiari Flood Protection Scheme • investigation and implementation of options to improve operation and resilience of the Taiari Lower Pond Outfall • reconstruction of section of existing floodbank and replacement of some existing bridges along the Contour Channel • investigation and implementation of options to improve operation and resilience of the floodbank at Outram.	1-10 years

6.9 Outram / Allanton / Middlemarch

6.9.1 Housing, past growth and likely future growth

Allanton has approximately 130 homes and Middlemarch approximately 70 homes. Both settlements have undergone very limited growth in recent years. By contrast, Outram has approximately 300 homes and has experienced more significant growth due to several new subdivisions in recent years.[49] The Taiari / Strath Taiari area outside Mosgiel (which includes Outram, Allanton and Middlemarch) had 8% of Dunedin's consented new homes between 2018 and 2023. Consented homes in Outram, Allanton and Middlemarch represented just 2% of total growth across Dunedin. Projections suggest that this low rate of growth will continue over the FDS period (2024-54).

There is sufficient housing capacity in the wider Mosgiel/ Taiari catchment to meet long term demand. There is capacity for an additional 220 homes over the next 30 years in Allanton, Outram, and Middlemarch, mostly in Allanton.

Further urban expansion of these settlements is also highly constrained due to the lack of, or constraints with, 3 water services, the presence of highly productive land which must be protected for rural productivity,[50] and the risk of flooding. Expansion of Outram and Allanton also does not support meeting Zero Carbon targets, as both townships have relatively high commuting carbon emissions and there are no existing or planned public transport services for these settlements. For these reasons, the FDS does not propose any new residential development options in Outram, Allanton or Middlemarch.

6.9.2 Business land, past growth and likely future growth

Outram contains a small rural centre with a medical centre, butchery, convenience supermarket and café. It is a popular destination for cyclists and other local visitors. Allanton has few amenities and facilities. Middlemarch has a rural centre that services the wider rural community with a dairy, cafés, a pub and a farmlands cooperative rural retail outlet. It also caters for Rail Trail tourism with bike hire and accommodation. A small pocket of land in Middlemarch is zoned industrial. No additional demand for business land has been identified in any of the townships.

6.9.3 3 waters infrastructure

Mana whenua have expressed concern regarding the impact of continued stormwater and wastewater discharges that have the potential to enter the Taiari River.

Outram has a reticulated water supply fed from the Taiari River via gravel beds next to the river. The supply is constrained during peak summer periods and the DCC is currently investigating how to resolve this issue to support existing housing capacity. A project to address this issue is proposed.

Outram does not have a reticulated wastewater network, and residents generally rely on on-site wastewater disposal systems. These could reduce groundwater quality if they fail. Most of Outram is classified as a 'groundwater protection area' in the ORC's Regional Plan: Water for Otago, meaning it is vulnerable to contamination leaching through the soil. The need to service Outram for wastewater will be assessed following the process outlined in Section 6.3.1.

Outram's stormwater network discharges to an 'ox-bow lake' (a former channel of the Taiari River) from where it percolates into the underlying soil. The ox-bow lake has flooded in the past and it occasionally becomes silted up, reducing its percolation capacity and needing regular maintenance. There is some uncertainty about how the current stormwater management approach will work in the long term as the percolation capacity of the system is not well understood. Recent challenges with ponding of stormwater in the ox-bow lake suggest that it may be at or near capacity and it is likely to constrain future development. We have not identified any specific upgrades but will need to further investigate the system.

Allanton has a reticulated wastewater network, with wastewater being pumped to Mosgiel for treatment. There is no reticulated drinking water supply, and residents rely on rainwater. The Allanton area does not have a stormwater network and drainage is via roadside drains that eventually discharge to the Taiari River. At this stage, we have not identified any upgrades required to wastewater, water supply or stormwater to support expected growth.

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[49] 130 consented homes and 119 built homes within these settlements (01/06/2013 – 31/05/2023), Outram accounts for 65% and 70%, respectively.

[50] Policy 5 of the National Policy Statement on Highly Productive Land (NPS-HPL) seeks to avoid urban rezoning of highly productive land, except where specific criteria are met.

Middlemarch also has no reticulated water supply, with residents generally relying on groundwater bores. Middlemarch has a wastewater network and treatment plant, discharging to land in a manner that may enter the Taiari River. Consents to discharge from the treatment plant expire in 2029. It is anticipated that changes will be needed to improve the discharge quality and/or the location of discharge to secure replacement consents. The wastewater network is subject to inflow and infiltration of stormwater and groundwater during wet weather, leading to wastewater overflows affecting private property and the environment, adversely affecting the performance of the wastewater treatment plant and potentially risking contamination of groundwater. Works to address this are underway and due for completion by 2030.

Middlemarch has a complex stormwater system, primarily made up of private watercourses (there is very little DCC stormwater infrastructure). Flooding can occur in heavy rain. Investigation by ORC into the hydrology and flood risk within the broader catchment and environment around Middlemarch is programmed for the short term, with improvements proposed by the DCC for the long term. The investigation may identify mitigations to reduce the flooding implications of storm damage in the township.

The 3 waters infrastructure improvements and investigations required to service existing development capacity and/or support a well-functioning urban environment in Outram, Allanton and Middlemarch are identified in Table 14.

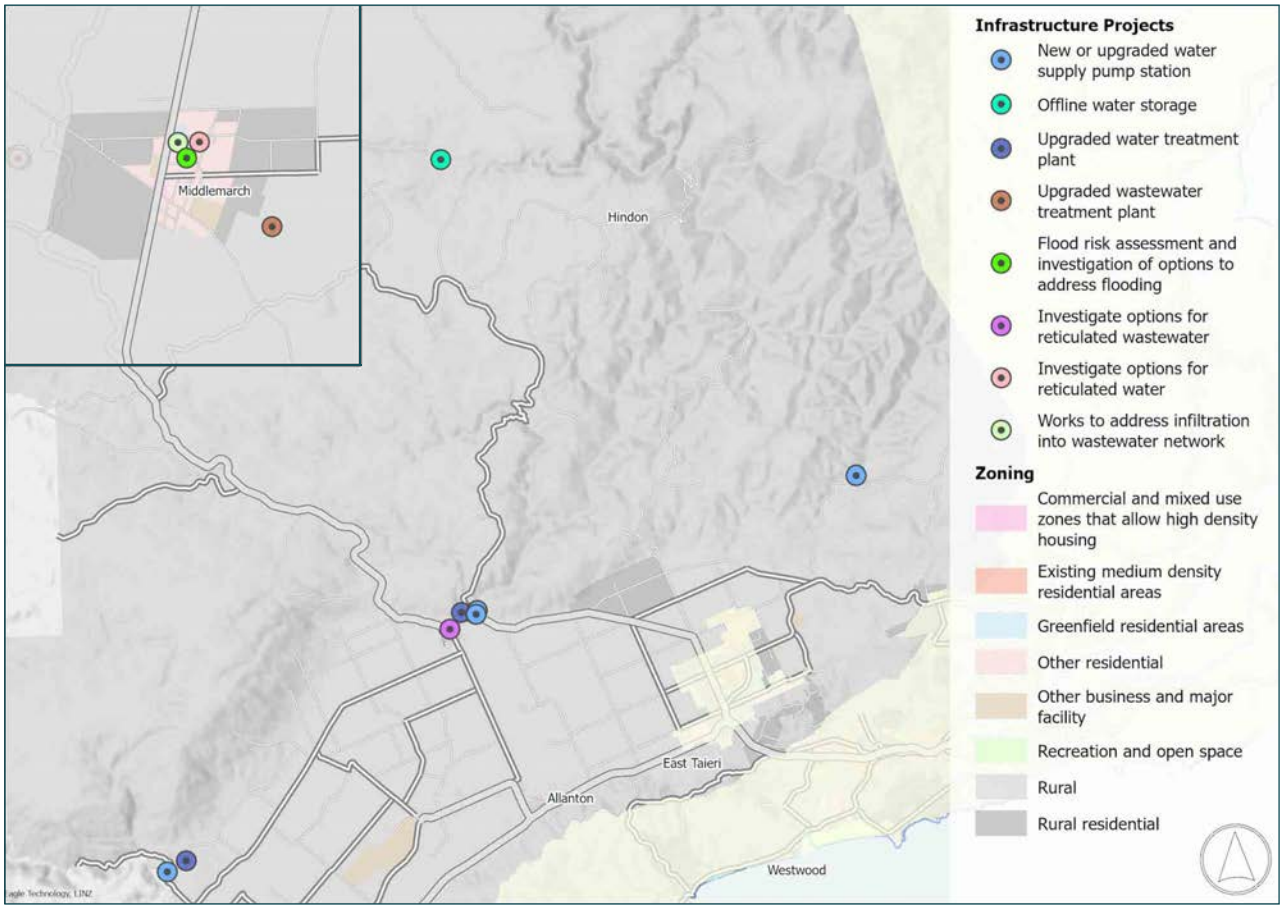


Figure 39: 3 waters infrastructure improvements and investigations required to service existing development capacity and/or support a well-functioning urban environment in Outram, Allanton, and Middlemarch

Table 14: 3 waters infrastructure improvements and investigations required to service existing development capacity and/or support a well-functioning urban environment in Outram, Allanton and Middlemarch

Type	Project	Timeframe
Potable water (existing housing capacity)	New or upgraded water supply pump stations	1-10 years
	Upgraded water treatment plants	1-10 years
Potable water (proposed future residential intensification areas and removal of constraints for transitional residential areas located in the Dunedin main urban area and Mosgiel)	Offline water storage (damming of water on land)	10-30 years
Potable water (community aspirations)	Upgrade to Outram's water supply to provide more capacity	1-10 years
	Servicing assessment for Middlemarch	1-10 years
	Options analysis for servicing – Middlemarch	Depending on outcome of servicing assessment, 1-10 years
	Provision of water supply in Middlemarch	Depending on outcome of servicing assessment and options analysis, 10-30 years
Wastewater (community aspirations)	Servicing assessment – Outram	1-10 years
	Options analysis for servicing – Outram	Depending on outcome of servicing assessment, 1-10 years
	Provision of reticulated wastewater supply to Outram	Depending on outcome of servicing assessment and options analysis, 10-30 years
	Works to address issues with performance of wastewater treatment plant in Middlemarch (underway)	1-10 years
	Works to address infiltration of stormwater and groundwater into the wastewater network in Middlemarch	1-10 years
Stormwater (community aspirations)	Flood risk assessment at Middlemarch	1-10 years
	Investigation of options to address flooding in Middlemarch (DCC)	10-30 years

6.9.4 Transport infrastructure and services

None of these settlements have a public bus service and none is planned for this area in the short to medium term. In the longer term, this may be revisited in light of central government funding availability and priorities for public transport, as well as changes in demand. A bus service would improve accessibility for residents and help to reduce greenhouse gas emissions and achieve Zero Carbon goals.

The key transport issues in this area that may be exacerbated by growth over the short, medium and long terms are road safety at rural intersections, and pedestrian safety in Middlemarch and Outram, especially near schools and the commercial centres.

Waka Kotahi and the DCC are planning upgrades to improve pedestrian safety at Outram and Middlemarch in the next 10 years. Upgrades to rural intersections with State Highway 1 are also planned over this timeframe. There is no cycling infrastructure in these settlements or connecting to Mosgiel. Pedestrian infrastructure is inadequate with a lack of safe crossing points and footpaths on one or both sides of the road in places. Future options are being considered through the strategic walking and cycling network review. These are currently unfunded. Refer to Section 6.3.2.2 for more details of the strategic walking and cycling network review.

The transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment are given in Table 15 and shown on Figure 40.

Table 15: Transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in Outram, Allanton and Middlemarch

Type	Project	Description	Timeframe
Pedestrian safety and accessibility improvements	School road safety improvements	School road safety improvements at Outram school	1-10 years
Road safety improvements (Waka Kotahi)	Rural intersection upgrades[51]	Rural intersection upgrades along State Highway 1 between Mosgiel and Balclutha	1-10 years
Pedestrian safety and accessibility improvements (Waka Kotahi)	Pedestrian crossing points	Implementation of mid-block raised pedestrian crossings on State Highway 87 in Middlemarch and Outram	1-10 years
Cycling safety and accessibility improvements	Strategic cycling network review in consultation with Dunedin Tracks Network Trust	Connection to Dunedin from the Clutha Gold Trail. Refer to Section 6.3.2.2	Timeframe unconfirmed (currently unfunded) but 1-10 years desirable
Cycling safety and accessibility improvements (DCC)	Strategic cycling network review	Future cycling and pedestrian routes as determined by the strategic cycling network review (excluding rural trails). Refer to Section 6.3.2.2	10-30 years

[51] Intersection upgrades along State Highway 1 are not shown in maps, as exact locations are currently unknown.

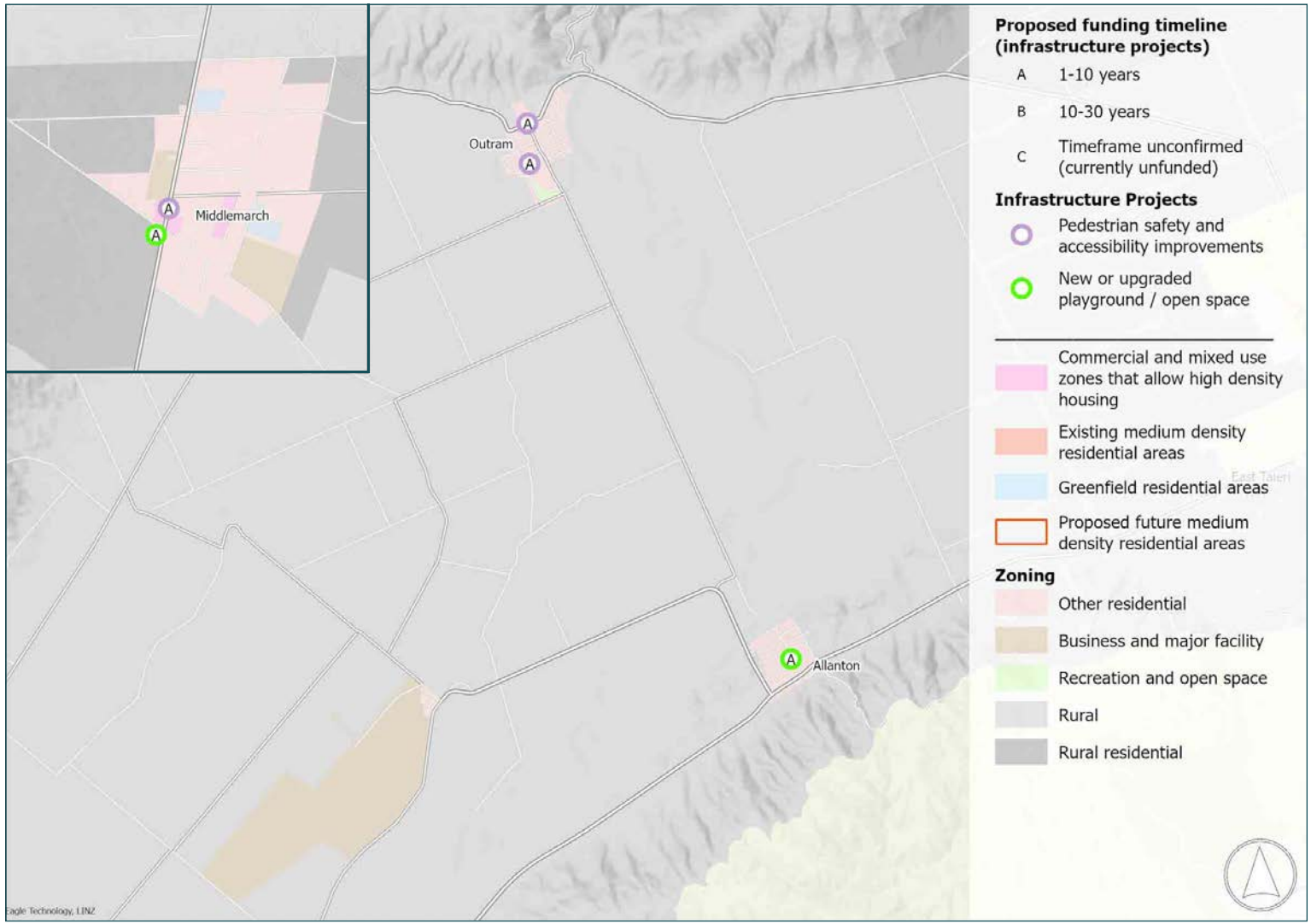


Figure 40: Transport and parks and recreation infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in Outram, Allanton and Middlemarch

6.9.5 Additional infrastructure

Outram and Middlemarch both have primary schools. No issues have been raised in relation to the schools' capacity and the Ministry of Education advises that there is further capacity in the wider Taiari/Strath Taiari area.

Telecommunications, electricity transmission, electricity distribution and health service providers have not identified any other additional infrastructure needed to support expected growth in this area. Upgrades to the Middlemarch and Allanton playgrounds are planned and outlined in Table 16.

Table 16: Parks and recreation infrastructure improvements infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in Outram, Allanton and Middlemarch

Type	Project	Description	Timeframe
New or upgraded playground / open space (DCC)	Middlemarch and Allanton playgrounds	Planned upgrades to playgrounds	1-10 years

6.9.6 Natural hazard risks and hazard mitigation

Outram is very low-lying and is bordered to the east by the Taiari River and the ORC's Lower Taiari Flood Protection Scheme. Flooding in Outram can result from runoff from the hills to the north, elevated stormwater pond levels near the township, piping (water going under the floodbank and coming to the surface in the township)[52] and, in a worst-case scenario, failure of the floodbank between Outram and the Taiari River. Outram is also at risk of being cut off from key evacuation routes due to flooding and potential damage to the State Highway 87 bridge over the Taiari River. Flooding from heavy rain is likely to become more frequent and intense.

Allanton, which lies south of the Taiari River, and Middlemarch in the upper Taiari catchment, also have areas that are close to the Taiari River with high risk for flooding.

The ORC's Lower Taiari Flood Control Scheme provides flood protection to Outram and Allanton and the surrounding area. Several projects and workstreams are planned to manage the resilience of the scheme, including Riverside Road spillway investigations and asset management improvements. The ORC is currently reviewing the performance of the flood protection scheme, and upgrades are identified in the ORC's Long Term Plan and Infrastructure Strategy. The Outram climate resilience programme also aims to improve flood protection assets around Outram.

Natural hazard related infrastructure projects are shown in Table 17.

[52] In 2022 the ORC completed weighted blanket construction on land adjacent to the floodbanks in Outram in response to flooding and piping issues identified in the 2017 flood event.

Table 17: Natural hazard related infrastructure projects planned for Outram, Allanton and Middlemarch

Type	Project	Description	Timeframe
Review, reconstruction and investigations	Lower Taiari Flood Protection and Drainage Schemes	Various projects, including: • review of the functionality and performance of the Taiari Flood Protection Scheme • investigation and implementation of options to improve operation and resilience of the Taiari lower pond outfall • investigations to improve operation and resilience for the Riverside Road spillway • reconstruction of section of existing floodbank and replacement of some existing bridges along the Contour Channel • investigation and implementation of options to improve operation and resilience of the floodbank at Outram • implementation of project to level the existing bund at Henley.	1-10 years
Review, reconstruction and investigations	Flood risk assessment at Middlemarch	Identifying actions to help mitigate flooding in Middlemarch and increase resilience to future rainfall events.	1-10 years

6.10 Otago Peninsula

6.10.1 Housing, past growth and likely future growth

The Otago Peninsula has approximately 1,800 homes between The Cove and Taiaroa Head. The primary urban areas are Macandrew Bay - Company Bay and Broad Bay - Portobello. The outer Otago Peninsula is less populated, with small residential settlements in Harwood, Ōtākou and Harington Point.

There were 95 homes consented and 74 built in the Otago Peninsula area between July 2018 and June 2023. This is 4% of Dunedin's consented growth over this period, a proportion that is projected to increase to 7% over the FDS period (2024-54), resulting in an additional 390 homes. The area contains some sizeable greenfield areas, the largest of which are a 6.5 hectare site at Broad Bay with a recently granted subdivision consent for 72 new homes, and a 14 hectare area at Portobello with potential for 30-80 homes. Overall, the Otago Peninsula has capacity for 670 homes over the long term. This is mostly provided through greenfield land (55%), with smaller amounts expected through infill of properties (23%), redevelopment of properties (12%), and development of vacant lots (10%).

The Otago Peninsula has very high amenity and natural values, with much of the elevated land being protected in the 2GP through landscape overlays and associated rules. These constraints limit where future urban development may be appropriate.

While there is expected to be sufficient housing capacity to meet demand over the long term, the next 10 years (2024-34) may see a small shortfall of capacity, meaning demand will exceed supply. As this shortfall is expected to be temporary, with a surplus of capacity in the longer term, the FDS does not propose any new residential development options on the Otago Peninsula.

6.10.2 Business land, past growth and likely future growth

Local centres at Macandrew Bay and Portobello each have a dairy and restaurant/café dining and community library, with Portobello also having a medical centre, and Macandrew Bay having an art gallery. The outer Otago Peninsula has fewer services, but is home to several major tourist attractions, including the albatross colony visitor centre at Taiaroa Head, which includes a café.

No additional demand for business land has been identified.[53]

[53] DCC Business Land Assessment, City Development Team - June 2023

6.10.3 Mana whenua and hapū values and intent

The whole Otago Peninsula is highly significant to Te Rūnanga o Ōtākou, with land east of Harwood set aside for settlement by mana whenua at the time of land purchases in the 1800s. A significant proportion of this land remains in Māori ownership. The Ōtākou marae is located at Ōtākou. The Otago Peninsula includes a number of wāhi tūpuna areas, including the peaks, native reserve (area set aside for settlement) and mahika kai areas.

Mana whenua have emphasised an overall need to review planning provisions in relation to the use of their native reserves. Mana whenua consider that it is imperative that planning provisions enable mana whenua to make decisions about their own lands, as was originally intended.

Mana whenua have expressed intent for improved infrastructure in the outer Otago Peninsula area. This includes reticulated wastewater and drinking water between Portobello and Harington Point, extending Te Aka Ōtākou (the harbourside shared walking and cycling track) to Harington Point, and improved public transport connections to Harington Point. These improvements are sought to address the historic inequity of service provision to these areas, to address the risk to te taiao from on-site wastewater disposal, including effects on fresh and coastal water quality.

The first step in the provision of new reticulated services is a servicing assessment, as outlined in Section 6.3.1. This would consider environmental and health impacts, and any other significant reasons for servicing. It is anticipated that this would involve consideration of Te Tiriti principles, the historical inequity of service provision, and the stated mana whenua and hapū intent.

Engagement with landowners is also required in relation to the extent of servicing. The servicing assessment is programmed for completion in 2025, and would be followed by an options assessment, to be undertaken by the water services provider. This is expected to occur in the short term (1-3 years). The water services provider would make decisions about servicing and the timeframe.

Table 18 indicates that any upgrades committed to would be undertaken in the medium term (1-10 years).

6.10.4 3 waters infrastructure

3 waters services are provided to Portobello. Water is supplied from the Southern Water Treatment Plant and pumped to residential areas via a series of pump stations and reservoirs. During extended periods of dry summer weather, high demand for water can exceed the capacity of the system, resulting in water restrictions. Works planned to address capacity issues are a priority and are programmed to be completed by 2028. Some areas have low pressure, and parts of the Otago Peninsula have reduced pressure during peak demand summer periods. The DCC is also renewing water supply pipes in the short to medium term. These works will support expected growth.

There is inflow and infiltration of stormwater into the wastewater network in several locations across the Otago Peninsula. New pipes will be installed and existing pipes upgraded over the next 10 years, with further work, including additional wastewater detention, anticipated in the medium to long term.

The outer Otago Peninsula is currently unserviced for water, wastewater and stormwater. Houses in this area rely on on-site wastewater systems – if these are not designed to an appropriate standard or maintained properly, they can affect ground and coastal water quality. Until reticulated servicing is provided, this area is unsuitable for future urban development. Mana whenua seek upgrades to the 3 waters network, which are discussed in Section 6.10.3.

3 waters infrastructure improvements and investigations required to service existing development capacity and/or support a well-functioning urban environment on the Otago Peninsula are identified in Table 18.

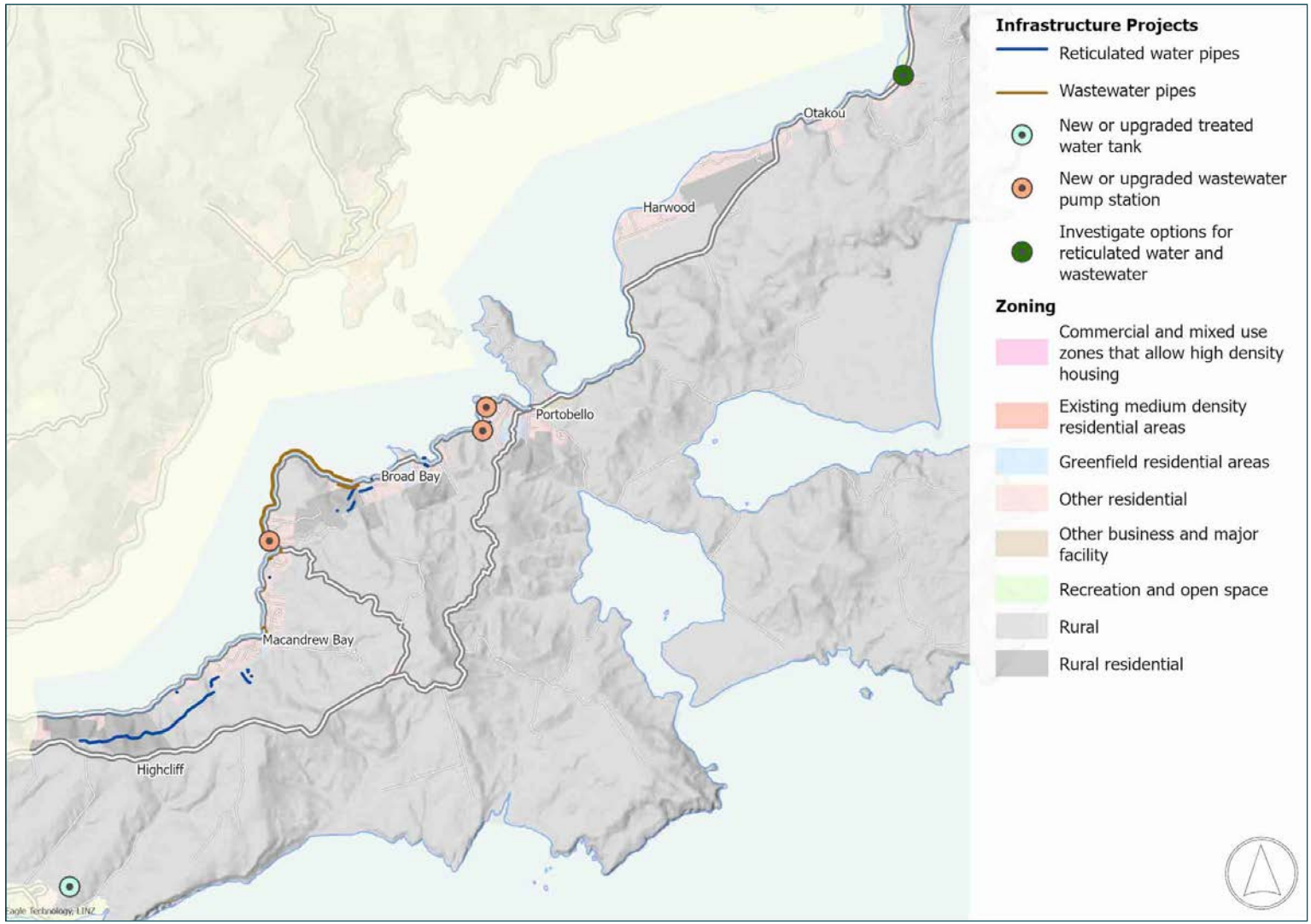


Figure 41: 3 waters infrastructure improvements and investigations required to service existing development capacity and/or support a well-functioning urban environment on the Otago Peninsula

Table 18: 3 waters infrastructure improvements and investigations required to service existing development capacity and/or support a well-functioning urban environment on Otago Peninsula

Type	Project	Timeframe
Potable water (existing housing capacity) Potable water (mana whenua intent / community aspirations)	New and upgraded water pipes	1-10 years
	Works to improve water capacity	1-10 years
	Servicing assessment for Harington Point	1-3 years
	Options analysis for servicing Harington Point	Depending on outcome of servicing assessment, 1-3 years
	Provision of reticulated water supply to Harington Point	Depending on outcome of servicing assessment and options analysis, 1-10 years
	New or upgraded treated water tank	1-10 years
Wastewater (existing housing capacity)	New and upgraded wastewater pipes	1-10 years
	Address wastewater overflows during wet weather events (multiple locations)	10-30 years
	New or upgraded wastewater pump stations	1-10 years
Wastewater (mana whenua intent / community aspirations)	Servicing assessment for Harington Point	1-3 years
	Options analysis for servicing Harington Point	Depending on outcome of servicing assessment, 1-3 years
	Provision of reticulated wastewater servicing to Harington Point	Depending on outcome of servicing assessment and options analysis, 1-10 years

6.10.5 Transport infrastructure and services

Public transport services from the city to Portobello are currently half hourly at peak time and hourly during the rest of the day. Services beyond Portobello are relatively infrequent, with four buses per day to and from Harington Point. The ORC will increase the frequency of the Portobello to the city route to every 15 minutes during peak times (30 minutes outside peak times).

The Otago Peninsula is well-serviced for cyclists and pedestrians with Te Aka Ōtākou, a shared cycle and pedestrian path, running from Portsmouth Drive to Portobello, providing a safe separated route from the city to Portobello. Mana whenua have identified the importance of extending this pathway to Harington Point. The final sections, east of Portobello, remain incomplete. The strategic walking and cycling network review (refer to Section 6.3.2.2) is considering further pedestrian and cycling opportunities for the Otago Peninsula. Road safety improvements are planned in Broad Bay to improve pedestrian safety.

The Otago Peninsula is constrained by its topography and reliance on Portobello Road and Highcliff Road. Both roads have been affected by landslides in storms. Portobello Road has limited visibility on some corners and is narrow for long stretches, which makes it a challenge to provide safe vehicle turning and road crossing for cyclists and pedestrians. Some locations along the Portobello Road may be inappropriate for future urban development due to transport safety issues.

The transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment are given in Table 19. Figure 42 shows the transport and parks and recreation infrastructure improvements.

Table 19: Transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment on the Otago Peninsula

Type	Project	Description	Timeframe
Public transport services improvement (ORC)	Bus frequency	Increase frequency of Portobello to the city service to a 15 minute service at peak times	1-10 years
Road safety improvement (DCC)	Peninsula Connection road safety project	Extension of Te Aka Ōtākou - safe walking and cycling facilities at Portobello and Harington Point Roads and increased climate resilience	1-10 years
Pedestrian safety and accessibility improvements (DCC)	Pedestrian safety improvements in Broad Bay	Pedestrian safety upgrades including a raised table and installation of a convex mirror	1-10 years
Walking and cycling safety and accessibility improvements (DCC)	Strategic walking and cycling network review	Cycling and pedestrian routes as determined by the strategic walking and cycling network review (excluding rural trails). Refer to Section 6.3.2.2	10-30 years

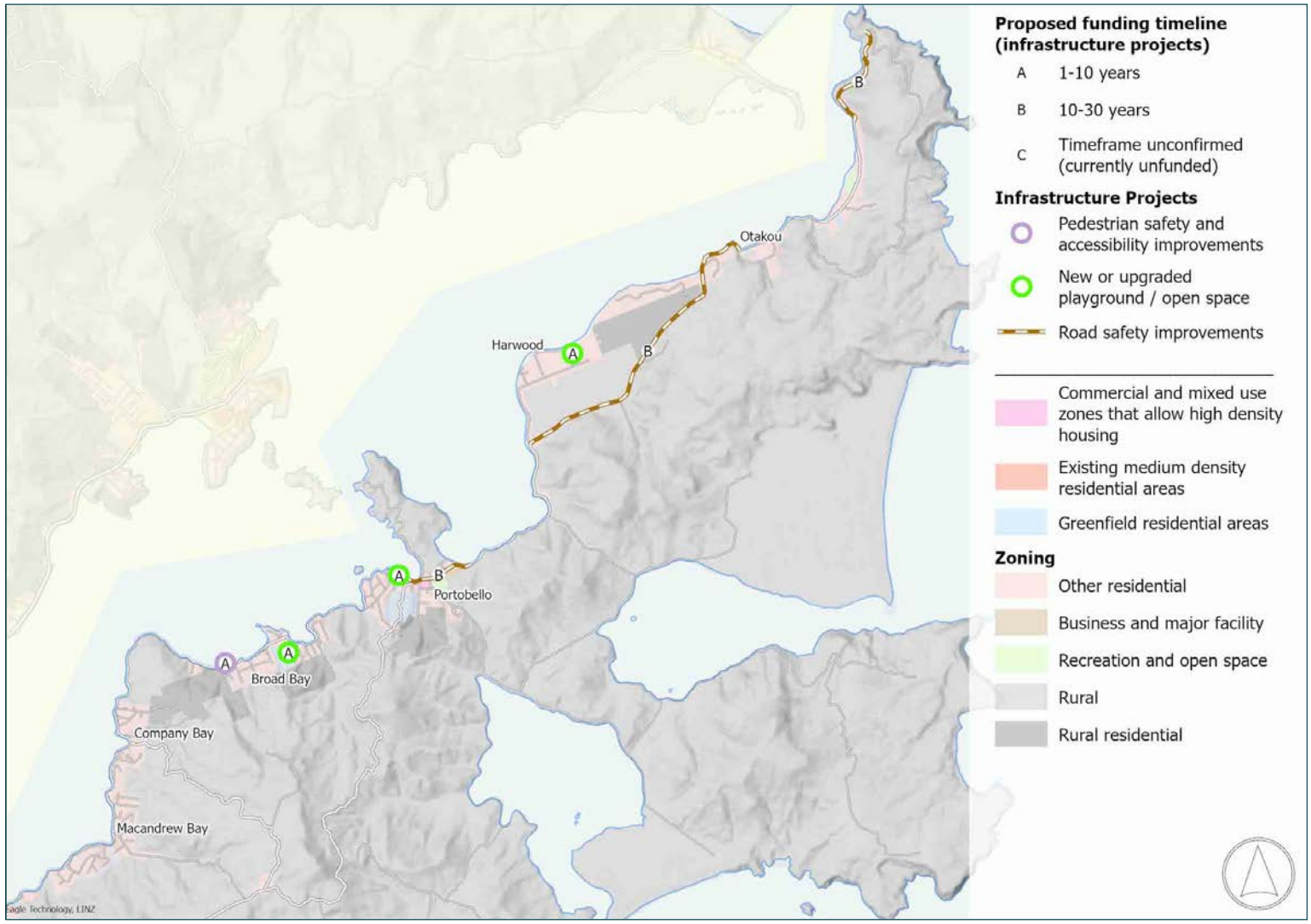


Figure 42: Transport and parks and recreation infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment on the Otago Peninsula

6.10.6 Additional infrastructure

Three playground upgrades are planned or being considered for this area. These are shown in Table 20 and Figure 42.

Telecommunications, electricity transmission, electricity distribution, education and health service providers have not identified any other infrastructure needed to support expected growth in this area.

6.10.7 Natural hazard risks and hazard mitigation

The Otago Peninsula is at risk from coastal hazards, with sea level rise, coastal erosion, storm surge, tsunami risk and groundwater levels contributing to a complex coastal hazard environment. Access to the Otago Peninsula is also at risk from land instability, with the potential for slips to block Portobello and Highcliff Roads, isolating the outer areas. Active slips in the area are routinely monitored for movement, including at Dickson Street, Howard Street and Greenacres Street in Macandrew Bay.

Climate change will make low-lying communities such as Harwood, and coastal roads such as Harington Point Road, increasingly vulnerable to inundation. Supporting the adaptation of natural ecosystems (such as dunes and wetlands) to sea level rise and options for adaptive building design, infrastructure solutions and relocation to safer areas, will be crucial to increase resilience and mitigate the effects of coastal hazards on these coastal communities.

Elevating roads, or realigning roads beyond Portobello away from the coast may be necessary to ensure continued road access to communities on the Otago Peninsula. Without secure road access, these areas may not be appropriate for future urban development in the long term.

Table 20: Parks and recreation infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment on the Otago Peninsula

Type	Project	Description	Timeframe
New or upgraded playground / open space (DCC)	Playground upgrades in Broad Bay, Portobello, Harwood	Upgrades to playgrounds	1-10 years
New or upgraded recreational facility (DCC)	St Clair to Portobello track	Investigate developing a track from St Clair along the eastern coast of the Otago Peninsula to Portobello	10-30 years

6.11 South Coast

6.11.1 Housing, past growth and likely future growth

The south coast currently has approximately 1,300 homes between Blackhead and Taiari Mouth.[54] The largest settlement on the south coast is Brighton, with the small settlements of Ocean View, Westwood and Waldronville located between Brighton and Green Island.

The south coast has experienced limited growth in recent years. There were 69 homes consented and 58 built in this area between July 2018 and June 2023. This comprises 3% of Dunedin's new homes consented over this period, and this relatively low growth rate is expected to continue. We expect there is sufficient development capacity in land already zoned for housing in the 2GP. The largest two greenfield development areas are in Brighton and Ocean View, collectively comprising 6.5 hectares with the potential for 60-110 homes. An additional 200 homes are projected to be built over the FDS period (2024-54), three-quarters of which are likely to come from greenfield development.

No significant unmet demand for housing has been identified. As a result, the FDS does not propose any new residential development options in this area.

6.11.2 Business land, past growth and likely future growth

Brighton has a small neighbourhood centre with limited services, including a dairy and a café. No additional demand for business land has been identified.

6.11.3 Mana whenua and hapū values and intent

Land alongside the Taiari River between Henley and Taiari Mouth was set aside in the 1800s for mana whenua settlement as a 'native reserve'. This land remains in Māori ownership. There is no development in the area. At this stage, mana whenua have not sought infrastructure upgrades for this FDS. However, they have signalled an overall need to review planning provisions in relation to mana whenua use of native reserves.

6.11.4 3 waters infrastructure

Reticulated wastewater and water supply is provided to residential areas as far south as Brighton. The reticulated wastewater network needs to be upgraded to service growth expected in this area. These upgrades are scheduled for completion by 2031. This area has minor water supply constraints, and the DCC needs to investigate whether upgrades are needed to meet expected growth.

While the area has some DCC stormwater infrastructure, most stormwater is drained via open and piped watercourses.

3 waters infrastructure upgrades required to service existing development capacity and/or support a well-functioning urban environment are detailed in Table 21.

Table 21: 3 waters infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment for the South Coast

Type	Description	Timeframe
Wastewater (existing housing capacity)	New and upgraded wastewater pipes	1-10 years
	New or upgraded wastewater pump stations	1-10 years

[54] Note that Taiari Mouth is outside the DCC boundary and is in Clutha District.

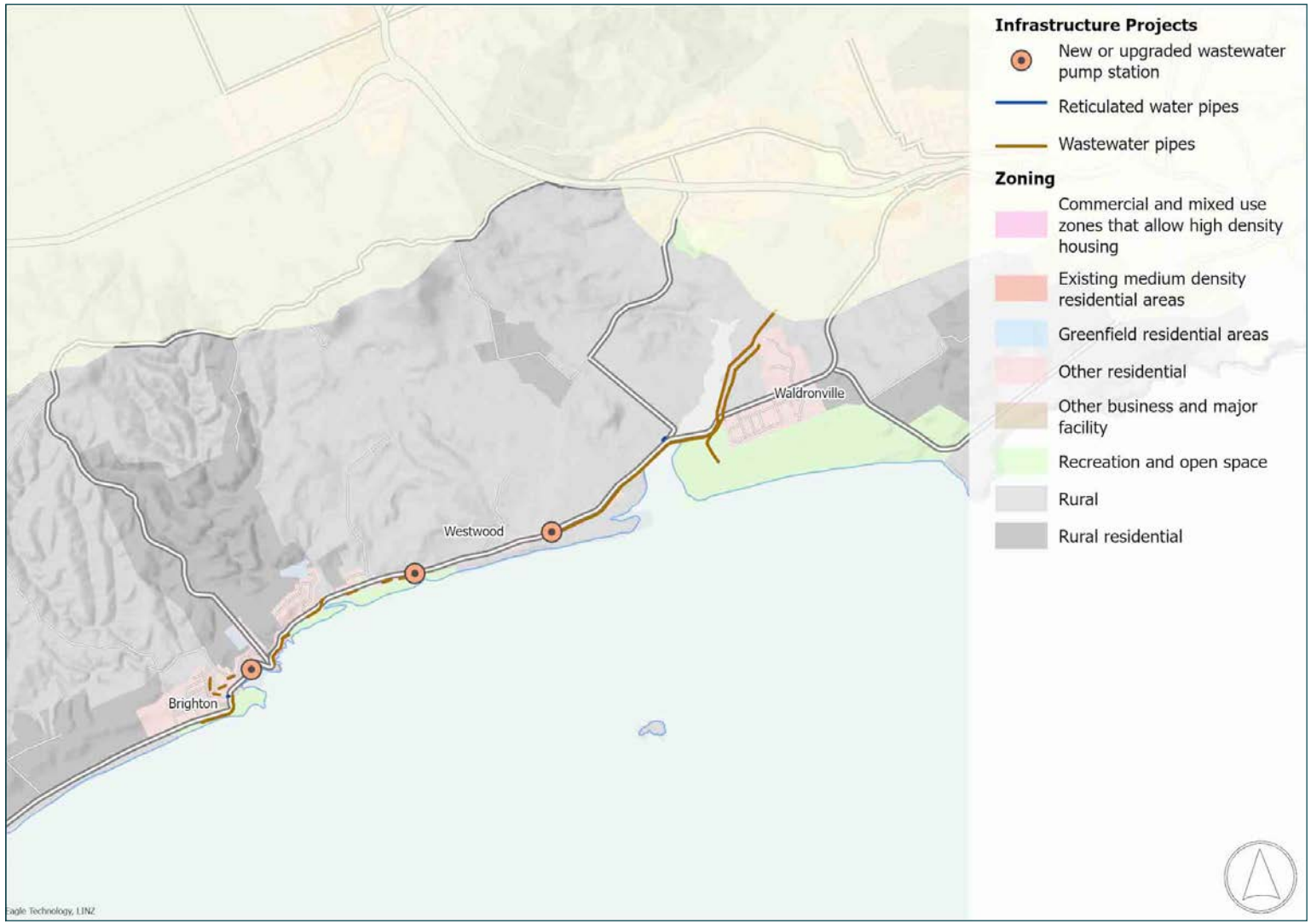


Figure 43: 3 waters infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in the South Coast

6.11.5 Transport infrastructure and services

A regular bus service to Brighton runs half hourly during peak times and hourly for the rest of the day. Public transport is not available south of Brighton. The ORC plans to increase the frequency of the Brighton to city service to every 15 minutes during peak times in the short to medium term. This will improve accessibility for residents and help reduce carbon emissions and meet Zero Carbon goals.

The South Coast has no dedicated safe cycling routes. While no cycling projects are planned in the short to medium term, long term options for a cycleway are being considered through the strategic cycling network review (refer to Section 6.3.2.2). Footpaths are provided in most urban areas, although the area lacks safe crossing points and drop kerbs for people who use wheeled devices.

The key road safety issue that may be exacerbated by growth in this area is pedestrian safety at Big Rock School in Brighton. Safety improvements are planned in the short term to address this.

The transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment are given in Table 22 and shown on Figure 44.

Table 22: Transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in the South Coast

Type	Project	Description	Timeframe
Pedestrian safety and accessibility improvements (DCC)	School road safety improvements	School road safety improvements at Big Rock School	1-10 years
Road safety improvements (DCC)	Road safety improvements on parts of Church Hill Road and Green Island Bush Road	Includes road sealing	10-30 years
Public transport services improvement (ORC)	Bus frequency change	Increase frequency of Brighton to the city service to a 15 minutes service at peak times and half hourly outside peak	1-10 years
Cycling safety and accessibility improvements – Brighton to Green Island	Strategic cycling network review	Cycleway to connect Brighton with Green Island along Brighton Road	1-10 years
Walking and cycling safety and accessibility improvements (DCC)	Strategic walking and cycling network review	Future cycling and pedestrian routes as determined by the strategic cycling network review (excluding rural trails). Refer to Section 6.3.2.2	10-30 years

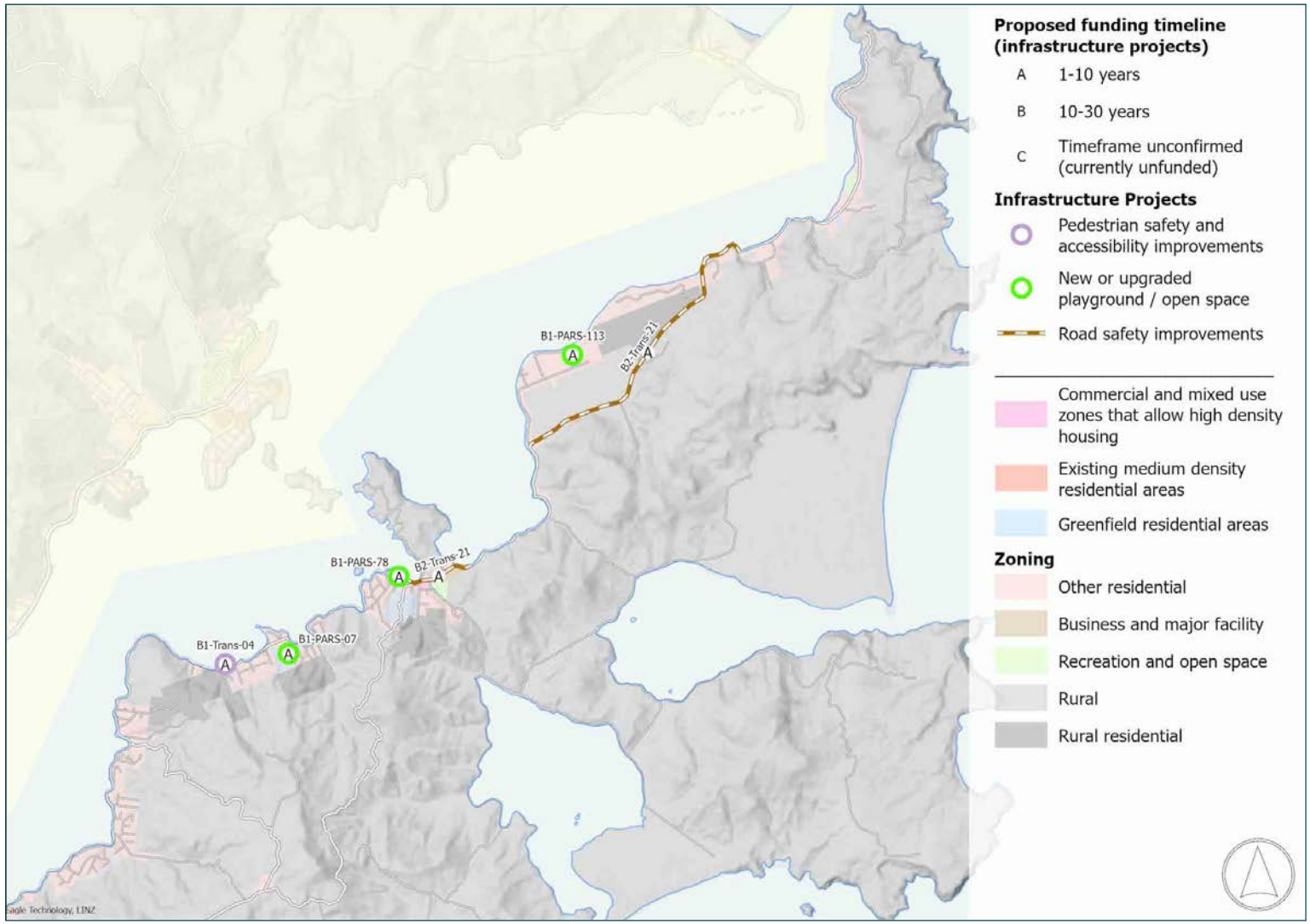


Figure 44: Transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in the South Coast

6.11.6 Additional infrastructure

The area has one primary school, Big Rock School at Brighton. The Ministry of Education has advised that the school may have capacity issues if more of the students who live in the catchment attend the school in the future.

A new landfill is planned at Smooth Hill, south of Brighton.

Telecommunications, electricity transmission, electricity distribution and health service providers have not identified any other infrastructure needed to support expected growth in this area.

6.11.7 Natural hazard risks and hazard mitigation

The South Coast's main natural hazard risk is from coastal hazards including storm surge and sea level rise. Coastal and flood hazards interact at the lower reaches of the Brighton River and Taylors Creek. The mouths of these waterways can become built up with sand, causing blockages, and the eventual release of water can erode neighbouring properties. Responses to this, and other coastal erosion, can include coastal planting to stabilise the foredunes or depositing fill to protect properties in the Ocean View area. The ORC monitors the area so it can adapt and respond to any changes.

The foothills above Ocean View and Brighton have some areas of land instability, and an active slip at Ocean View is routinely monitored for movement.

Low-lying coastal areas, riparian areas and land subject to land instability are inappropriate for new urban land.

Table 23: Parks and recreation infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment on the South Coast

Type	Project	Description	Timeframe
New or upgraded recreational facility (DCC)	Brighton recreation facilities	New recreational facilities in Brighton, including a possible pump track	1-10 years

6.12 North Coast

6.12.1 Housing, past growth and likely future growth

Dunedin's north coast extends from Waitati to Waikouaiti and includes several small townships and settlements – Waitati, Evansdale, Warrington, Seacliff, Karitāne and Waikouaiti. The north coast currently has approximately 2,200 homes. Six percent of Dunedin's consented new homes between 2018 and 2023 are located in the north coast area, and this proportion of growth is expected to grow slightly to 7% over the FDS period (2024-54), leading to an additional 410 homes. Most of that growth is in Waitati, the closest settlement to Dunedin.

There is expected to be sufficient housing capacity through a mix of intensification and greenfield opportunities. New development is expected to be predominantly of standalone houses, rather than attached houses such as duplexes. Capacity for an additional 110 homes in Waitati has recently been provided through the resolution of 2GP appeals, and there are several relatively small greenfield development areas. The largest of these are four sites in Waikouaiti, Karitāne and Warrington, which collectively comprise about 8 hectares, with the potential for 60-140 homes. The remaining development capacity is in smaller greenfield areas, infill (subdivision of existing properties), development of vacant sites, and redevelopment of properties with existing homes.

The FDS has not identified any additional future residential development options in the north coast.

6.12.2 Business land, past growth and likely future growth

The townships of Waitati and Waikouaiti both have small centres providing limited services for residents. Waitati has a public library, dairy and garden centre with café. Waikouaiti is home to the East Otago Events Centre, a medical centre, public library, pub, dairy, café and hardware store. Waikouaiti also contains a small industrial area. While community engagement indicated a possible need for additional business land, existing zoned areas can potentially be redeveloped. The needs of business owners could also be addressed through existing plan rules or considered in a future FDS. No new business areas are proposed in this FDS.

6.12.3 Mana whenua and hapū values and intent

The north coast has great significance to Kāti Huirapa Rūnaka ki Puketeraki, and the Puketeraki marae is located close to Karitāne. Land was set aside in the 1800s for mana whenua settlement in 'native reserves', located between Karitāne and Brinns Point, and east of Waitati. With the exception of parts of Karitāne, these areas are not fully serviced and have limited development in them.

Mana whenua have emphasised an overall need to review planning provisions in relation to the use of their native reserves. Mana whenua consider that it is imperative that planning provisions enable mana whenua to make decisions about their own lands, as was originally intended.

Mana whenua want improvements, and in some cases extensions, to water and wastewater services along the north coast prioritised. In particular, they seek a reticulated wastewater network at Puketeraki and Waitati, with the potential for extension into the Brinns Point area. Mana whenua also seek to have the wastewater treatment plants at Warrington and Waikouaiti replaced with plants and disposal fields located away from culturally and environmentally sensitive areas. The rūnaka also seek an alternative drinking water supply for Karitāne and Waikouaiti, to reduce the need to take water from the Waikouaiti River. The first step in providing new reticulated services is a servicing assessment, as outlined in Section 6.3.1. This would consider environmental and health impacts and any other 'significant reasons' for servicing. We anticipate that this would consider Te Tiriti principles, the historical inequity of service provision, and the stated mana whenua and hapū intent. Engagement with landowners is also required. The servicing assessment should be completed in 2025, and will be followed by an options assessment, to be undertaken by the water services provider. This is expected to occur within the short term (1-3 years). The water services provider would decide on servicing and the timeframe for this. We expect that that any upgrades committed to would be undertaken in the medium term (1-10 years). The upgrades to the two wastewater treatment plants are programmed for the medium term.

Mana whenua also seek improved public transport services to Waitati, Karitāne and Waikouaiti, and improvements to roads to maintain secure access during flooding and storm surges. These include at State Highway 1 close to Hawksbury, and on Coast Road and Stornaway Street in Karitāne. The RLTP includes funding to implement roading resilience projects across the city; however, the location of specific work has not yet been identified.

6.12.4 3 waters infrastructure

6.12.4.1 Wastewater

Waikouaiti and Karitāne share a wastewater network and treatment plant, and Warrington also has a wastewater network and treatment plant. While both systems discharge treated effluent to land, the disposal areas are in sandy soils close to the coast and could reduce coastal water quality, affecting the coastal environment. Mana whenua have also made clear the negative impacts on cultural values at both treatment plant and land disposal locations. Consents to discharge from the treatment plants expire in 2024 (Warrington) and 2027 (Waikouaiti/Karitāne). It is anticipated that changes will need to be made to improve the discharge quality and work towards a change to the location of treatment and discharge to secure replacement consents. In the long term, the treatment and disposal areas for both plants are at risk from sea level rise and storm surges.

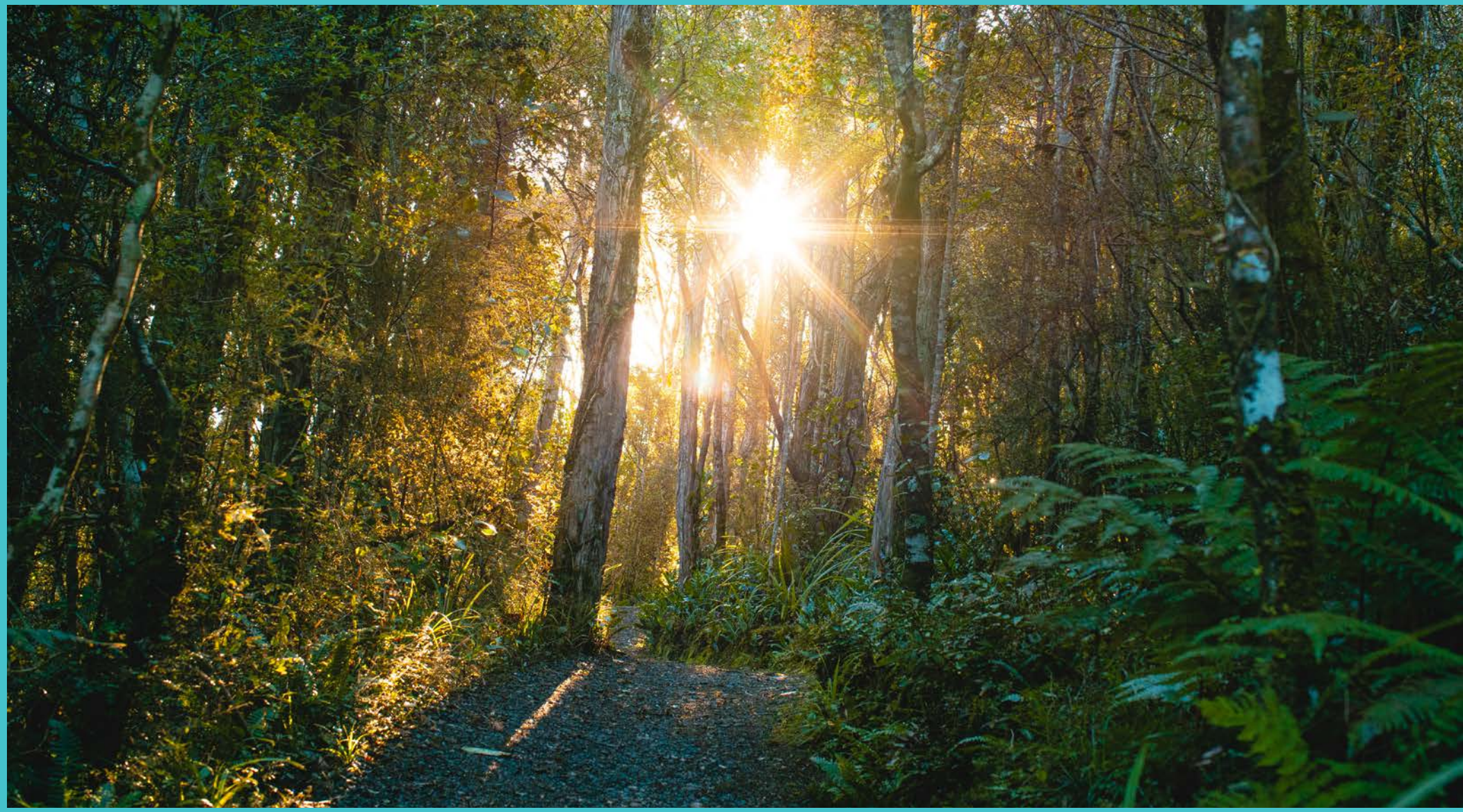
Seacliff has a small gravity-fed wastewater system that disperses treated effluent to land, which is being upgraded. The consent for the upgraded treatment plant and disposal field does not expire until 2041. Evansdale and Waitati do not have a reticulated wastewater network, with residents having a communal wastewater system at Evansdale and individual on-site wastewater systems for most of Waitati, although there is one communal system.

The use of on-site wastewater systems in Waitati, which can be old and poorly maintained septic tanks, may adversely affect water quality in Blueskin Bay. The newly rezoned residential areas near Doctors Point Road are required to be serviced by a communal wastewater system. Provision of reticulated wastewater servicing for Waitati will be assessed following the process outlined in Section 6.3.1.

6.12.4.2 Water supply

Potable water is provided as far north as Seacliff via the northern pipeline from Mt Grand water treatment plant. The northern pipeline has limited capacity and cannot provide for more than the existing development capacity. Upgrades are proposed for the medium term (1-10 years). Local upgrades to water pipes throughout the north coast area are programmed for completion in the short to medium term. These are primarily located at Waitati, Warrington, Karitāne and Waikouaiti.

Water for Karitāne and Waikouaiti is sourced from the Waikouaiti River. The Waikouaiti water treatment plant is currently being upgraded to address water taste and odour issues and maintain water quality compliance.



6.12.4.3 Stormwater

The north coast has limited DCC stormwater infrastructure, and stormwater is mostly drained via open and piped watercourses. Stormwater flooding occurs in some areas, particularly where sea levels limit the ability to drain water. Climate change and sea level rise may exacerbate this issue. Untreated stormwater discharges can also impact on coastal water quality. No upgrades to stormwater networks are currently proposed.

As detailed above, constraints in reticulated 3 waters infrastructure, or the absence of that infrastructure, limit the potential for future urban development along the north coast.

The wastewater, potable water and stormwater infrastructure improvements and investigations required to service existing development capacity and/or support a well-functioning urban environment are identified in Table 24.

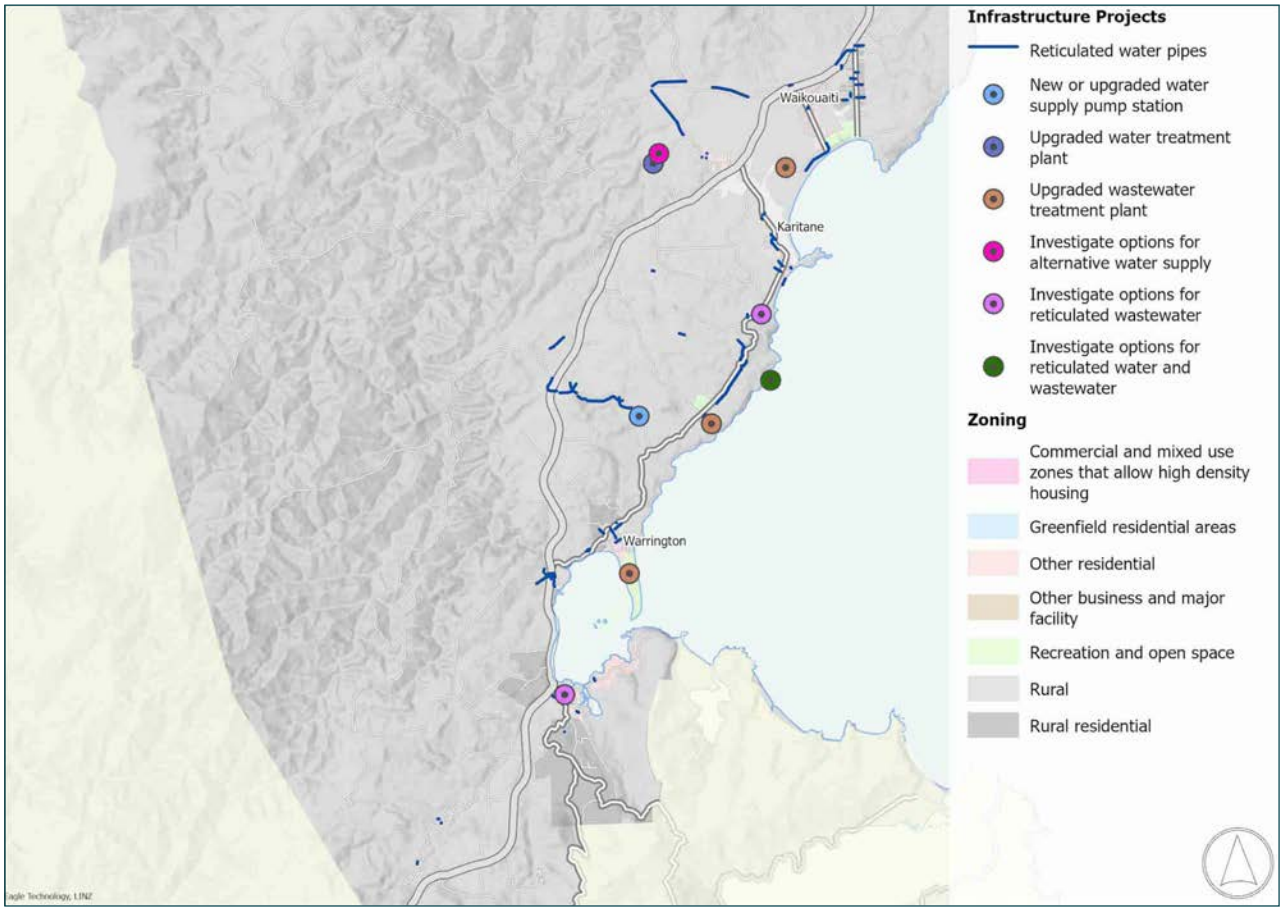


Figure 45: 3 waters infrastructure improvements and investigations required to service existing development capacity and/or support a well-functioning urban environment in the North Coast

Table 24: 3 waters infrastructure improvements and investigations required to service existing development capacity and/or support a well-functioning urban environment in the North Coast

Type	Description	Timeframe
Potable water (existing housing capacity)	New and upgraded water pipes	1-10 years
	New or upgraded water supply pump station	1-10 years
	Upgraded Waikouaiti water treatment plant	1-10 years
	Address capacity constraint on water supply to Warrington, Waitati and Seacliff	1-10 years
Potable water (mana whenua intent / community aspirations)	Investigate options for an alternative source for the Waikouaiti and Karitāne water supply	1-10 years
	Servicing assessment for Brinns Point	1-3 years
	Options analysis for servicing Brinns Point	Depending on outcome of servicing assessment, 1-3 years
	Provision of reticulated potable water supply at Brinns Point	Depending on outcome of servicing assessment and options analysis, 1-10 years
Wastewater (existing housing capacity)	Upgraded wastewater treatment plant at Seacliff	1-10 years
Wastewater (mana whenua intent / community aspirations)	Servicing assessment for Puketeraki, Brinns Point and Waitati	1-10 years
	Options analysis for servicing Puketeraki, Brinns Point and Waitati	Depending on outcome of servicing assessment, 1-10 years
	Provision of reticulated wastewater servicing to Puketeraki, Brinns Point and Waitati	Depending on outcome of servicing assessment and options analysis, 1-10 years
	Assessment of the preferred overall option for the replacement of the North Coast wastewater treatment plants	1-3 years
	Works to upgrade or replace the existing Waikouaiti wastewater treatment plant	1-10 years
	Works to upgrade or replace the existing Warrington wastewater treatment plant	1-10 years

6.12.5 Transport infrastructure and services

A low frequency bus service connects Dunedin with Waitati and Waikouaiti via State Highway 1. Community consultation identified challenges with the service being oversubscribed at peak times and a desire for more frequent services. This would improve accessibility for residents and help reduce greenhouse gas emissions. The bus service does not enter Waitati, Warrington or Karitāne. No improvements to the public transport service are planned or being considered for this area. However, there is a strong community desire for increased service.

The key road safety issues in this area that may be exacerbated by growth are pedestrian safety in Waikouaiti centre, intersection safety issues on rural roads, and safety issues at bus stops along SH1. There are also safety concerns at the primary schools at Warrington and Karitāne. A raised pedestrian crossing point will be installed over State Highway 1 in Waikouaiti and a rural intersection activated warning sign at Evansdale. Safety improvements at Warrington and Karitāne schools are planned in the short term.

There is no dedicated safe walking and cycleway between the north coast communities, and cycling on the state highway raises safety concerns. Options for cycling infrastructure are being considered through the strategic cycling network review (refer to Section 6.3.2.2). This could include a walking and cycle path connecting Port Chalmers with Waikouaiti via the northern settlements of Waitati, Warrington, Seacliff and Karitāne.

Most built up areas have footpaths, but several areas lack safe crossing points, including near schools, shops and other destinations.

The transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment are given in Table 25.

Figure 46 shows both the transport and parks and recreation infrastructure improvements.

Table 25: Transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in the North Coast

Type	Project	Description	Timeframe
Pedestrian safety and accessibility improvements	School road safety improvements	School road safety improvements at Warrington and Karitāne schools	1-10 years
Pedestrian safety and accessibility improvements (Waka Kotahi)	State Highway 1 pedestrian crossing point at Waikouaiti (Waka Kotahi)	Implementation of a mid-block raised pedestrian crossing on State Highway 1 in Waikouaiti	1-10 years
Road safety improvement (Waka Kotahi)	Rural intersection activated warning signs (Waka Kotahi)	Installation of rural intersection activated warning sign at the State Highway 1 / Jones Road intersection at Evansdale	1-10 years
Public transport services improvements (Waka Kotahi)		Safety improvements to bus stops on SH1 (not mapped)	1-10 years
Cycling safety and accessibility improvements (DCC)	Coastal Communities Cycle Connection	A shared commuter and tourism pathway to connect the communities of Waikouaiti-Karitāne and Warrington/ Evansdale-Waitati	1-10 years. Unlikely to be delivered by DCC, but through a trust.
Cycling safety and accessibility improvements (DCC)	Strategic Cycling Network Review	Future cycling and pedestrian routes as determined by the strategic cycling network review (excluding rural trails). Refer to Section 6.3.2.2	10-30 years

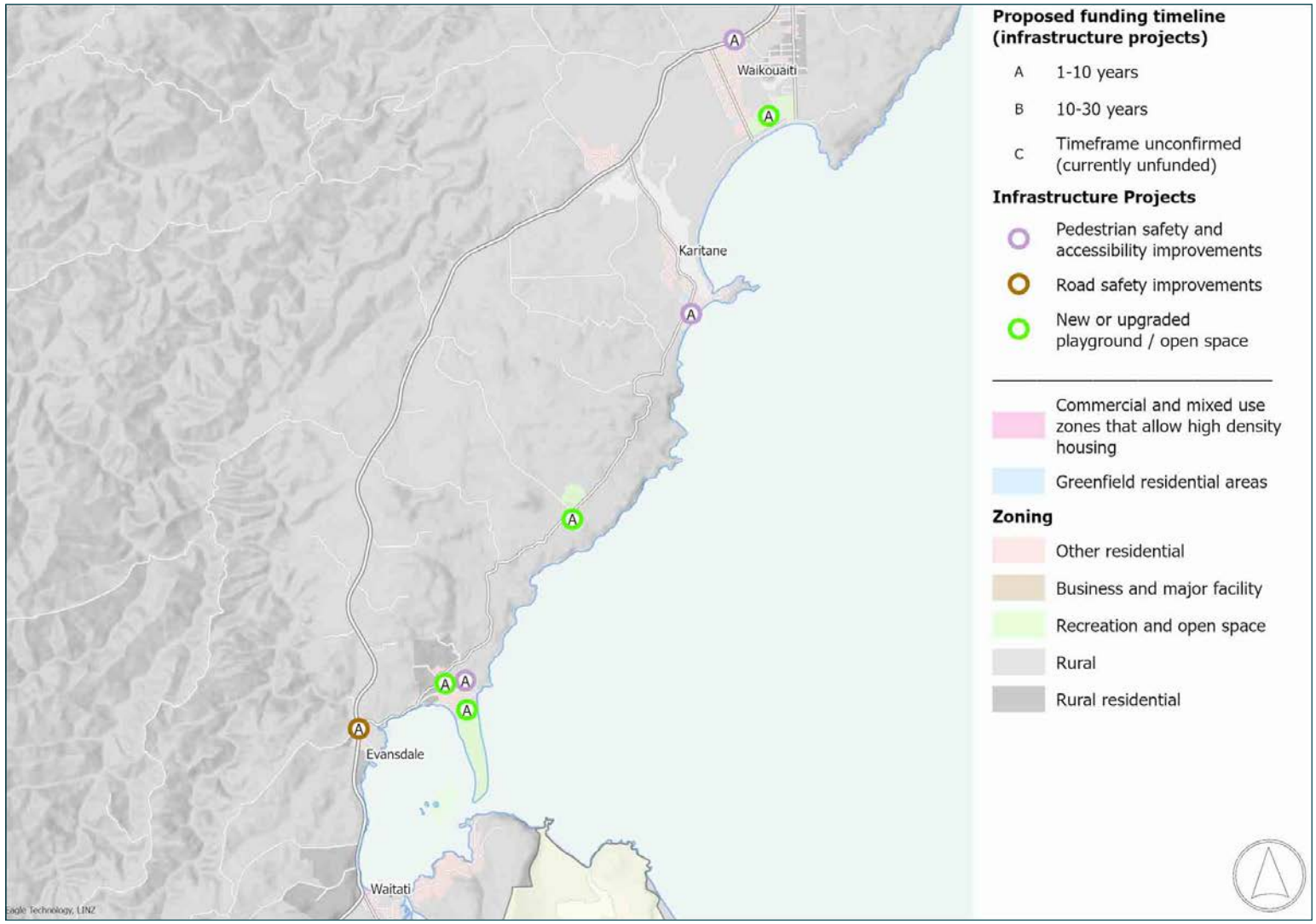


Figure 46: Transport and parks and recreation infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in the North Coast

6.12.6 Additional infrastructure

Playground upgrades for the Waikouaiti and Warrington domains are planned for the short to medium term. No other parks and recreation infrastructure improvements are planned. Telecommunications, electricity transmission, electricity distribution, education and health service providers have not identified any other infrastructure needed to support expected growth in this area.

Table 26: Parks and recreation infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in the North Coast

Type	Project	Description	Timeframe
New or upgraded playground / open space (DCC)	Playground upgrades in Waikouaiti, Warrington and Seacliff	Upgrades to playgrounds	1-10 years

6.12.7 Natural hazard risks and hazard mitigation

The north coast is subject to a range of hazards, including coastal hazards, land instability and flooding. Waitati is a low-lying coastal community at risk of flooding from the Waitati River. It is next to Blueskin Bay and may be subject to coastal inundation over time. Maintenance of the riverbed, controlling land use activities in the catchment such as forestry, making room for the river, riparian planting, and maintaining the wetland area to the south of Waitati, would all make Waitati more resilient during heavy rain.

Waikouaiti is subject to flooding and coastal hazards. These hazards also affect the DCC wastewater treatment plant and wastewater effluent irrigation area, which are located close to the coast. Most of the land between the Hawksbury Lagoon and the sea is subject to coastal hazards, with the road between Matanaka Drive and Edinburgh Street likely to be compromised by sea level rise. Ponding of stormwater from the north of Waikouaiti as it flows into the Hawksbury Lagoon, together with the coastal hazards in this locality makes for a complicated hazard environment when both types of hazards can happen at the same time. The ORC monitors the mouth of the Hawksbury Lagoon and maintains it as required. Coastal erosion and groundwater levels need to be monitored carefully to assess the rate of change and how quickly adaptation, such as managed retreat from the southern part of Waikouaiti township, may be necessary.

Warrington is largely free from any natural hazards risk. While the peninsula has grown (accreted) in recent decades, coastal processes will be monitored carefully for potential erosion, which can be faster on land that has recently formed. The Warrington wastewater treatment plant is located on the Warrington peninsula.

The land surrounding Karitāne is subject to flooding and coastal hazard risk. The township also includes low-lying areas subject to flooding that can bisect the township and isolate the Huriawa Peninsula. Access to State Highway 1 to the north via Coast Road, and along State Highway 1 between Hawksbury and the Waikouaiti River bridge, could also be compromised in a flooding event. Supporting the adaptation of the salt marsh wetland to sea level rise will be crucial in increasing resilience and mitigating the effects of coastal hazards, along with exploring options for adaptive building design, infrastructure solutions and relocation to safer areas.

Puketeraki and Seacliff are subject to significant land instability hazard risk, which may result in slips that could compromise access along Coast Road and/or the main trunk railway line. An active slip at Puketeraki is routinely monitored for movement.

Land around Evansdale township is subject to coastal hazard risk from sea level rise in Blueskin Bay, and potential flooding from Careys Creek, which drains into Blueskin Bay. To the south of the township, State Highway 1 and the main trunk railway line are at risk from coastal inundation. State Highway 1 to the north is subject to land instability.

6.13 West Harbour

West Harbour extends along the Otago Harbour from Ravensbourne to Aramoana, and around the northern coastline to include the settlements of Long Beach, Pūrākaunui and Osborne.

6.13.1 Housing, past growth and likely future growth

West Harbour currently has approximately 2,800 homes, with residential activity concentrated along the harbour's edge to Port Chalmers and in the settlements further north. West Harbour has undergone limited growth in recent years, primarily in Sawyers Bay.[55] No significant unmet housing demand has been identified for the area.

West Harbour is home to 5% of Dunedin's new homes consented between 2018 and 2023. A slightly slower rate of 3% is expected to occur over the FDS period (2024-54), equating to 160 additional homes. There is expected to be sufficient housing capacity, particularly through intensification opportunities. Relatively small greenfield development areas exist across the area, with the largest five collectively making up 9 hectares, with potential for 50-120 homes. As a result, the FDS does not propose any new future residential development options in this area.

6.13.2 Business land, past growth and likely future growth

The main hub of West Harbour is Kōpūtai Port Chalmers, which has a wide range of services and facilities for workers, residents and tourists, including a medical centre, pharmacy, supermarket, several pubs and restaurants, a public library, and other general services. Port Otago, based at Port Chalmers, is the primary export port for the lower South Island. Port Chalmers is also a major port for cruise ships and hosts approximately 250,000 visitors each summer. In addition to the main Port Otago facility, Sawyers Bay and Ravensbourne have small areas of industrial land. No additional demand for commercial or industrial land has been identified for West Harbour.

6.13.3 Mana whenua and hapū values and intent

The area is highly significant to both Kāti Huirapa Rūnaka ki Puketeraki and Te Rūnanga o Ōtākou. Land was set aside in the 1800s for mana whenua settlement in 'native reserves' located at Pūrākaunui, Long Beach and Aramoana. These areas are not serviced and have limited development.

Mana whenua have emphasised an overall need to review planning provisions in relation to the use of their native reserves. Mana whenua consider that it is imperative that planning provisions enable mana whenua to make decisions about their own lands, as was originally intended, and that infrastructure projects aimed at servicing native reserves are prioritised. This prioritisation acknowledges and addresses historical failures to adequately support mana whenua in fulfilling the intentions for their native reserves.

Mana whenua seek improvements to roads in the area to maintain security of access during flooding and storm surge events, including at Osborne Road. Funding has been included within the RLTP to implement roading resilience projects across the city; however, the location of specific work has not yet been identified.

[55] 80 consented homes and 64 built homes in the Roseneath-Sawyers Bay statistical areas (01/06/2013 – 31/05/2023).

6.13.4 3 waters infrastructure

Full 3 waters servicing is provided to residential areas in West Harbour as far as Deborah Bay. The areas to the north of Deborah Bay, including to Long Beach and Pūrākaunui, are unserviced for drinking water, wastewater and stormwater. These settlements rely on on-site wastewater systems, which if not designed to an appropriate standard or maintained properly could affect coastal water quality. Older septic tanks are of particular concern. Water supply in these areas is generally from rainwater and can be a risk to public health. No 3 waters servicing of these areas is proposed in the FDS.

Network constraints in the serviced areas of West Harbour limit future development options. These include water supply capacity issues during peak summer periods, with works planned as a priority, to address this by 2028. Water pipe upgrades are planned throughout West Harbour over the next 10 years to support expected growth. Currently, during summer when there is high demand it is necessary to operate a water treatment plant and raw water reservoir in Port Chalmers to supplement water provided from the Dunedin metropolitan supply. The Rossville Dam is used but the Cedar Farm Dam is unable to be used because the water is unsafe due to risk of cyanobacteria contamination. It is very expensive to operate and maintain this infrastructure. Works are planned to address this by 2028 by increasing the capacity of the supply pipe from the Dunedin metropolitan area. This will mean the treatment plant and dams in Port Chalmers will no longer need to be operated.

Sawyers Bay has significant wastewater issues during wet weather, leading to overflows that affect Otago Harbour. Work is underway and scheduled for completion in 2024, but this may not fully resolve this issue. If additional work is required, this is likely to include new wastewater network detention storage. This is proposed as a long term project. New and upgraded wastewater pipes are also planned from Ravensbourne through to Port Chalmers to support expected growth.

Issues with stormwater affect areas of Port Chalmers, particularly around Albertson Avenue. Works to upgrade the stormwater network are planned for the next 10 years.

3 waters infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in West Harbour are identified in Table 27.

Table 27: 3 waters infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in West Harbour

Type	Description	Timeframe
Potable water (existing housing capacity)	New and upgraded water pipes	1-10 years
	Upgraded water treatment plant	1-10 years
Wastewater (mana whenua / community aspirations)	Works to address wastewater overflows in Sawyers Bay	1-10 years
Wastewater (existing housing capacity)	New and upgraded wastewater pipes	1-10 years
	New or upgraded wastewater pumping stations	1-10 years
Stormwater (existing housing capacity)	New and upgraded stormwater pipes	1-10 years

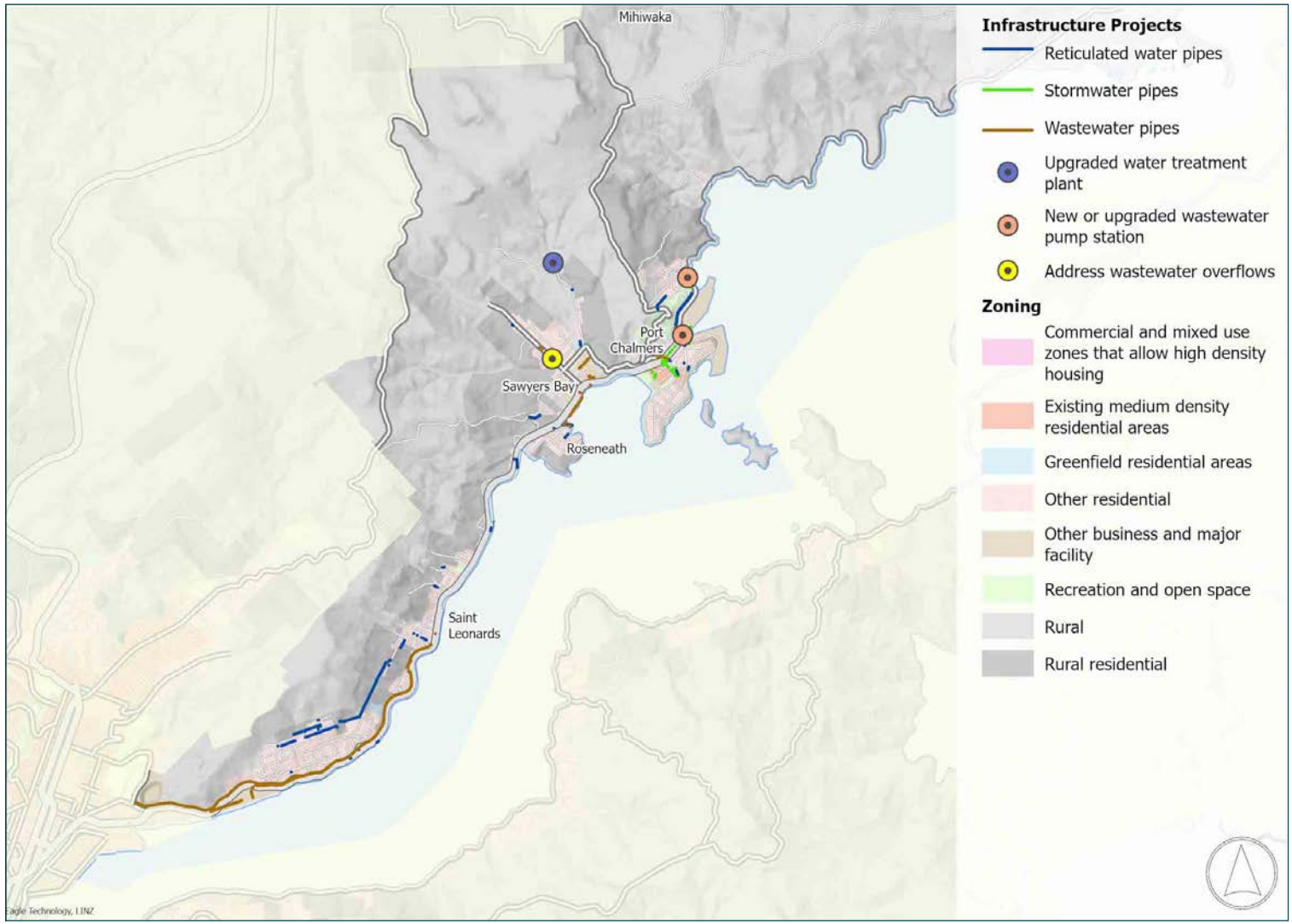


Figure 47: 3 waters infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in West Harbour

6.13.5 Transport infrastructure and services

Public transport services from the city to Port Chalmers and on to Carey's Bay are currently half hourly, with an hourly evening service. No service runs past Carey's Bay. The influx of visitors to Port Chalmers during cruise ship season can strain public transport services. The ORC is planning to increase the frequency of the Port Chalmers to city service to 15 minute intervals during peak times.

The West Harbour is well-serviced for cyclists with Te Aka Ōtākou, the shared cycle and pedestrian path alongside SH88, having been recently completed. This provides a safe off-road route for cyclists from Port Chalmers to the city. However, there are safety and accessibility issues associated with crossing SH88 to the shared path and bus stops on the harbour side of the road, as crossing facilities are poor in most places and traffic volumes and speeds are high, especially during peak times. Uncontrolled railway line crossings at the Dunedin end of the route, Ravensbourne and Port Chalmers pose a safety risk and affect accessibility. Additional cycling and pedestrian opportunities in the areas are being considered through the strategic walking and cycling network review (refer to Section 6.3.2.2).

Road access from the city to Port Chalmers is via State Highway 88, which runs along the edge of the harbour.

Table 28: Transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in West Harbour

Type	Project	Description	Timeframe
Pedestrian safety and accessibility improvements	School road safety improvements	School road safety improvements at Port Chalmers school	1-10 years
Rail freight services improvement / road safety improvement (DCC and Kiwirail)	Options for an inland port	Initial options assessment for an inland port, to load freight destined for Port Otago onto rail	1-3 years
Public transport services improvements (ORC)	Fares and frequency review	Increase frequency of Port Chalmers to the city service to a 15 minute service at peak times	1-10 years
Public transport services improvements (Waka Kotahi)		Safety improvements to bus stops on SH88 (note, not mapped)	1-10 years
Cycling safety and accessibility improvements – Port Chalmers to Waitati	Strategic cycling network review	Cycleway to connect Port Chalmers with Waitati, along the existing train track	Timeframe unconfirmed (currently unfunded). Unlikely to be delivered by DCC, but through a trust.
Pedestrian safety and accessibility improvements (DCC)		Safe bus stops and pedestrian and cycle crossing points along SH88 (note, not mapped)	1-10 years
Cycling safety and accessibility improvements (DCC)	Strategic cycling network review	Future cycling and pedestrian routes as determined by the strategic cycling network review (excluding rural trails). Refer to Section 6.3.2.2.	10-30 years

There have been road safety issues along this road, particularly in relation to heavy vehicles travelling to and from Port Otago at Port Chalmers. Investigating options to provide for an inland port is planned in the next 3 years as this would enable increased rail freight to Port Otago and reduce the amount of heavy vehicle traffic on this route.

Mana whenua seek improvements to Osborne Road, to maintain secure access during flooding and storm surge events. There are also issues with the resilience of Aramoana Road, which can be prone to flooding in some areas.

The transport infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment are given in Table 28. Figure 48 shows both the transport and parks and recreation infrastructure improvements.

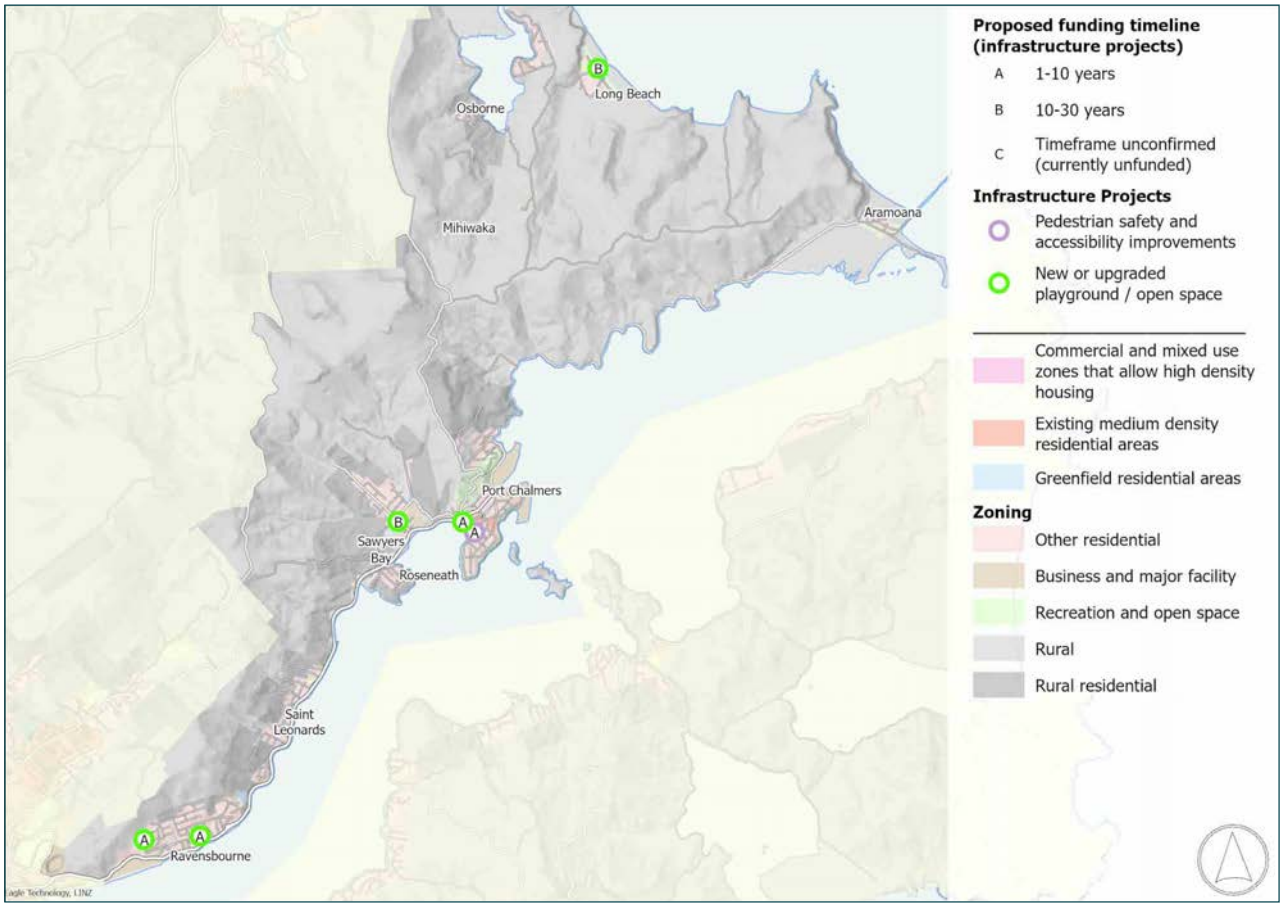


Figure 48: Transport and parks and recreation infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in West Harbour

6.13.6 Additional infrastructure

There are six primary schools in the West Harbour area. No issues have been identified in relation to capacity.

Two parks and recreation infrastructure improvements have been identified, as shown in Table 28.

Telecommunications, electricity transmission, electricity distribution and health service providers have not identified any other infrastructure needed to support expected growth in this area.

6.13.7 Natural hazard risks and hazard mitigation

West Harbour is subject to coastal, flooding and land instability hazards. Road access to Aramoana, and parts of the settlement itself, are at risk of inundation by storm surge. Watson Park in Port Chalmers, the lower reaches of Cedar Creek and State Highway 88 at Sawyers Bay and Moller Park at Ravensbourne may also be at risk from storm surges. The effects of climate change and sea level rise may increase the risk of storm surge and cause direct inundation of some low-lying areas. The ORC monitors coastal mouths and intervenes if required.

A number of potential landslide areas have been identified on West Harbour hillslopes, with some assessed as being likely or certain landslides, including the Flagstaff Hill slip at Port Chalmers. More frequent storms may increase the risk of land instability and the risk of mature trees on the landward side of State Highway 88 and Aramoana Road toppling onto the road, potentially cutting off a key transport and evacuation route.

Table 29: Parks and recreation infrastructure improvements required to service existing development capacity and/or support a well-functioning urban environment in West Harbour

Type	Project	Description	Timeframe
New or upgraded playground / open space (DCC)	Playground upgrades	Upgrades to playgrounds	1-10 years
New or upgraded playground / open space (DCC)	Playground upgrades	Upgrades to playgrounds	10-30 years
Pedestrian safety and accessibility improvements		Investigate additional recreational linkages between Port Chalmers, Sawyers Bay, and the Dunedin Harbour cycleway	10-30 years

7 IMPLEMENTATION

Clause 3.18 of the NPS-UD FDS requires us to prepare and implement an implementation plan for the FDS. We will jointly prepare the implementation plan in partnership with mana whenua and key stakeholders. The implementation plan will sit alongside the FDS and will be updated annually.

8 APPENDICES

8.1 Key objectives and policies of the National Policy Statement on Urban Development

Objective 1
New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future.

Objective 2
Planning decisions improve housing affordability by supporting competitive land and development markets.

Objective 4
New Zealand's urban environments, including their amenity values, develop and change over time in response to the diverse and changing needs of people, communities, and future generations.

Objective 5
Planning decisions relating to urban environments, and FDSs, take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

Objective 6
Local authority decisions on urban development that affect urban environments are:

(a) integrated with infrastructure planning and funding decisions; and

(b) strategic over the medium term and long term; and

(c) responsive, particularly in relation to proposals that would supply significant development capacity.

Objective 8
New Zealand's urban environments:

(a) support reductions in greenhouse gas emissions; and

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

Policy 1
Planning decisions contribute to well-functioning urban environments, which are urban environments that, as a minimum:

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

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

  ii. enable Māori to express their cultural traditions and norms; and

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

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

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

(e) support reductions in greenhouse gas emissions; and

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

Policy 2
Tier 1, 2, and 3 local authorities, at all times, provide at least sufficient development capacity to meet expected demand for housing and for business land over the short term, medium term, and long term.

Policy 5
Regional policy statements and district plans applying to tier 2 and 3 urban environments enable heights and density of urban form commensurate with the greater of:

(a) the level of accessibility by existing or planned active or public transport to a range of commercial activities and community services; or

(b) relative demand for housing and business use in that location.

Policy 9
Local authorities, in taking account of the principles of the Treaty of Waitangi (Te Tiriti o Waitangi) in relation to urban environments, must:

(a) involve mana whenua and hapū in the preparation of RMA planning documents and any FDSs by undertaking effective consultation that is early, meaningful and, as far as practicable, in accordance with tikanga Māori; and

(b) when preparing RMA planning documents and FDSs, take into account the values and aspirations of mana whenua and hapū for urban development; and

(c) provide opportunities in appropriate circumstances for Māori involvement in decision making on resource consents, designations, heritage orders, and water conservation orders, including in relation to sites of significance to Māori and issues of cultural significance; and

(d) operate in a way that is consistent with mana whenua participation legislation.

Policy 10
Tier 1, 2, and 3 local authorities:

(a) that share jurisdiction over urban environments work together when implementing this National Policy Statement; and

(b) engage with providers of development infrastructure and additional infrastructure to achieve integrated land use and infrastructure planning; and

(c) engage with the development sector to identify significant opportunities for urban development.

GLOSSARY

Accessible
Where used in relation to a transport network, refers to the ability of people and goods to reach destinations by different modes of transport.

Additional infrastructure
(a) public open space

(b) community infrastructure as defined in section 197 of the Local Government Act 2002

(c) land transport (as defined in the Land Transport Management Act 2003) that is not controlled by local authorities

(d) social infrastructure, such as schools or healthcare facilities

(e) a network operated for the purpose of telecommunications (as defined in section 5 of the Telecommunications Act 2001)

(f) a network operated for the purpose of transmitting or distributing electricity or gas.

Ancillary residential unit
A small secondary residential unit on a site that is ancillary to a primary residential activity on the same site.

Business land capacity
Development capacity for business land.

Competitiveness margin
As defined in the NPS-UD means:

(1) A competitiveness margin is a margin of development capacity, over and above the expected demand that tier 1 and tier 2 local authorities are required to provide, that is required in order to support choice and competitiveness in housing and business land markets.

(2) The competitiveness margins for both housing and business land are:

  (a) for the short term, 20%

  (b) for the medium term, 20%

  (c) for the long term, 15%.

Connected
Where used in relation to transport, refers to centres of activity being well linked.

Decarbonisation
Switching to a non-fossil fuel power source, e.g. electricity or hydrogen.

Development
New housing, business or other urban activities, including through urban expansion (conversion of land from a non-urban use to an urban use), or the intensification of use or change of use leading to increased urban activities in an area.

Development capacity
The capacity of land to be developed for housing or for business use, based on:

(a) The zoning, objectives, policies, rules and overlays that apply in the relevant proposed and operative RMA planning documents; and

(b) The provision of adequate development infrastructure to support the development of land for housing or business in the timeframe indicated.

Unless the context clearly indicates otherwise, the use of the term development capacity in this document refers to development capacity which is assessed as feasible and reasonably expected to be realised.

Development infrastructure
As defined in the NPS-UD means:

"The following, to the extent they are controlled by a local authority or council controlled organisation (as defined in section 6 of the Local Government Act 2002):

(a) network infrastructure for water supply, wastewater, or stormwater; and

(b) land transport (as defined in section 5 of the Land Transport Management Act 2003)"

But acknowledging the potential for water services reform and the provision of 3 waters infrastructure by another water services provider, which is not currently recognised in the NPS-UD.

Duplex
A residential building that contains two residential units (only) where those units:

- share a common wall along a continuous length of at least six metres; or
- are located one above the other.

For the sake of clarity, a duplex may be a purpose-built new building, or may be created through the partitioning or modification of an existing single-unit residential building into two residential units.

Feasible
As defined in the NPS-UD means:

(a) for the short term or medium term, commercially viable to a developer based on the current relationship between costs and revenue

(b) for the long term, commercially viable to a developer based on the current relationship between costs and revenue, or on any reasonable adjustment to that relationship.

Future urban development areas
Also referred to more specifically as:

Future business land areas, Future industrial land areas, Future residential intensification areas

Areas that provide for future (e.g. not currently permitted by the plan rules or where the plan constrains development until infrastructure is upgraded) development (see definition above) that add either residential capacity or business land capacity, and that are either:

'transitional' – these include Residential Transition Zones, and GR2 and ICR medium density zoned areas in the 2GP that are subject to a wastewater constraint, which allow for some development now but an increased density of development once infrastructure constraints are resolved.

'proposed' – used to refer to areas for future development identified in the FDS (but subject to a future plan change process) that do not include 'transitional' areas.

Future urban development options
These are areas that were considered or that may be considered in future for future urban development but that are not currently 'transitional' or 'proposed' in the FDS (see definition above).

Green and blue networks
Connected natural areas, including bush, green space and water bodies, that support diverse ecosystems and help to maintain a resilient natural environment.

Greenhouse gas emissions
Also referred to as 'carbon emissions'

Greenhouse gases (GHG) include carbon dioxide, methane, nitrous oxide and fluorinated gases. Carbon dioxide (CO2) is the primary greenhouse gas emitted through human activities, with the main sources of emissions in Dunedin being agriculture and transport. Greenhouse gases trap heat and make the planet warmer, which creates climate change.

Green infrastructure
A natural area, feature or process that helps manage floodwater, such as trees, rain gardens, permeable pathways, and planted stream banks.[56]

Growth
Is generally used to mean the anticipated increase in people, businesses or housing, or as otherwise indicated by context.

Hapū
Subtribe or extended whānau.

Hauora
A holistic understanding of health and wellbeing.

Housing capacity
Development capacity (as defined above) for housing.

Infrastructure-ready
Development capacity is infrastructure-ready if:

a. in relation to the short term, there is adequate existing development infrastructure to support the development of the land

b. in relation to the medium term, either paragraph (a) applies, or funding for adequate development infrastructure to support development of the land is identified in a long term plan

c. in relation to the long term, either paragraph (b) applies, or the development infrastructure to support the development capacity is identified in the local authority's infrastructure strategy (as required as part of its long term plan).

[56] Sponge Cities Can they help us survive more intense rainfall? A report by Kali Mercier. August 2023. Helen Clark Foundation.

Iwi
Tribe

Kai ika
Fishing or fish caught for eating.

Kaimoana
Food obtained from the sea.

Ki uta ki tai
Interconnected, holistic natural resource management, from the mountains to the sea.

Land banking
The practice of buying land as an investment, holding it for future use and making no specific plans for its development.

Long term
Between 10 and 30 years.

Mahika kai
The customary gathering of food or natural materials and the places where those resources are gathered.

Manaakitaka
Hospitality

Mātaitai
Area of traditional importance to Māori for fishing.

Mātauraka
Kāi Tahu customary knowledge passed from one generation to the next.

Mauri
Essential life force or principle; a metaphysical quality inherent in all things both animate and inanimate.

Medium term
Within the next 10 years.

Ox-bow lake
A curved lake formed from a horseshoe bend in a river where the main stream has cut across the narrow end and no longer flows around the loop of the bend.

Papatipu rūnanga
Kāi Tahu mana whenua local representative group, based around marae.

Reasonably expected to be realised
Is a concept from the NPS-UD, Clause 3.26 of the NPS-UD discusses how it may be determined. For more information see the Housing Capacity Assessment Update.[57]

Residential intensification
Increasing the density of housing, for example through duplexes, townhouses, apartments and multiple residential units on a single site.

Residential transition zones
Areas identified as suitable for future residential zoning once infrastructure servicing is available (existing constraints are resolved).

Reverse sensitivity effects
When lawful activities that create effects (such as noise, odour, traffic movements, electromagnetic interference or risk) are affected by uses that may be sensitive to these effects establishing or intensifying nearby and thereby curtail or constrain the activities. Lawful activities in the context of this definition refers to: existing lawfully established activities, permitted activities, designations and consented activities that are likely to establish.
The most common example is new residential activities establishing next to farming or industrial operations, or airports, which can lead to the new residents complaining about noise, odour or other nuisance effects from those established activities.

Short term
Within the next 3 years.

Short-medium term
Within the next 10 years.

Sufficient development capacity
For development capacity for housing: development capacity (see definition above) and meets the expected demand plus the appropriate competitiveness margin.
For development capacity for business land: development capacity (see definition above) that is suitable to meet the demands of different business sectors plus the appropriate competitiveness margin.

Taiāpure
Estuarine or coastal fisheries areas that are significant for food, spiritual or cultural reasons.

[57] Dunedin City Housing Capacity Assessment Update, October 2023. Available at Housing-capacity-assessment-for Dunedin-City-2023.pdf

Taoka
Treasure; applied to anything considered to be of value to Māori.

Te mana o te wai
Has the same definition as in Section 1.3 of the National Policy Statement for Freshwater Management 2020.[58]

Te taiao
The environment, natural world.

Te Tiriti o Waitangi
The te reo Māori version of the Treaty of Waitangi.

Te Waipounamu
The South Island.

Tikaka and kawa
Kāi Tahu customary lore, values and practices.

Urban development
Has the same meaning as development.

Wāhi taoka
Resources, places and sites treasured by mana whenua.

Wāhi tūpuna
Landscapes and sites that embody the relationship of mana whenua and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taoka.

Wai
Water

Wai Māori
Freshwater

Wai tai
Coastal waters

Water services provider
The provider of 3 waters services. This may be the DCC or an alternative organisation.

Well-functioning urban environment
Are environments that as a minimum:

1) have or enable a variety of homes that:
   i) meet the needs, in terms of type, price, and location, of different households; and
   ii) enable Māori to express their cultural traditions and norms; and
2) have or enable a variety of sites that are suitable for different business sectors in terms of location and site size; and
3) have good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport; and
4) support, and limit as much as possible adverse impacts on, the competitive operation of land and development markets; and
5) support reductions in greenhouse gas emissions; and
6) are resilient to the likely current and future effects of climate change.

Whakapapa
Genealogy

Whānau
Family

Whenua
Land

Zero Carbon
A reduction in net carbon emissions to zero. Dunedin city's Zero Carbon targets are in two parts:

- Net zero emissions of all greenhouse gases other than biogenic methane by 2030
- 24-47% reduction in biogenic methane emissions below 2017 levels by 2050, including a 10% reduction below 2017 levels by 2030.

[58] National Policy Statement for Freshwater Management 2020 Amended February 2023 | Ministry for the Environment

ABBREVIATIONS

2GP
Second Generation Dunedin City District Plan

AMP
Asset Management Plan

ASBV
Areas of Significant Biodiversity Value

CBD
Central Business District

DCC
Dunedin City Council

DOC
Department of Conservation

FDS
Future Development Strategy

GDP
Gross Domestic Product

GNS
GNS Science

GR2
General Residential 2 Zone

HNCC
High Natural Coastal Character

ICR
Inner City Residential Zone

LoS
Level of Service

LID
Low Impact Design

LTP
Long Term Plan

LUC
Land Use Classes

NCC
Natural Coastal Character areas

NPS-HPL
National Policy Statement for Highly Productive Land

NPS-UD
National Policy Statement for Urban Development

ONCC
Outstanding Natural Coastal Character

ONF
Outstanding Natural Features

ONL
Outstanding Natural Landscapes

ORC
Otago Regional Council

RLTP
Regional Land Transport Plan

SH
State Highway

SNL
Significant Natural Landscapes

UBMAs
Urban Biodiversity Mapped Areas

WSUD
Water Sensitive Urban Design

PLACENAMES

This FDS uses the Māori spelling of Taiari (replacing Taieri) and Kaikarae (replacing Kaikorai).

For advice or information

Dunedin City Council
50 The Octagon
PO Box 5045, Dunedin 9054
P 03 477 4000
E dcc@dcc.govt.nz
www.dunedin.govt.nz
DunedinCityCouncil
dunedincitycouncil

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Otago Regional Council