WAIMAKARIRI
DISTRICT COUNCIL

Waimakariri Natural Environment Strategy

Our Environment - Our Future

Version 2, June 2024

Vision

Our healthy and resilient natural environment sustains our ecosystems, our communities and our future.

Photo Credit: David Baird

Contents

Vision Our healthy and resilient natural environment sustains our ecosystems, our communities and our future.

Strategic Goal We work together to ensure Waimakariri's natural environment is valued, protected, restored and celebrated.

Strategic Direction 1
Prioritise nature

Desired Outcomes

The District's natural environment is valued as critical infrastructure, essential to our wellbeing and the survival of other species we share Earth with.

Natural ecosystems are a significant feature of the Waimakariri District.

There is better integration of the natural and built environment.

Strategic Actions

Integrate planning
- Increase the circle of influence in infrastructure and district planning
- Advocate for a holistic approach

Mainstream biodiversity
- Ensure biodiversity is prioritised as a key Council activity
- Move from grey to green
- Create spaces for nature

Strategic Direction 2
Connect people and nature

Desired Outcomes

Living in a healthy natural environment enriches our everyday life and we work together to achieve and maintain this.

People understand and value indigenous biodiversity and natural ecosystems.

Residents have a 'sense of place' or connectedness to the District's natural landscape.

Our community understands how it can contribute to and become actively involved in protecting, restoring, and recreating natural ecosystems.

Strategic Actions

Make it easy to connect
- Provide opportunities to bring together people and biodiversity.
- Ensure education programmes, activities, and resources are available.
- Look for opportunities to partner with and support others.
- Encourage people to physically connect with the natural environment.

Rediscover and make our indigenous landscape visible
- Increase the proportion of indigenous planting on Council reserves and streetscapes.
- Support the achievement of 10% indigenous biodiversity in the wider landscape.

Strategic Direction 3
Improve our knowledge

Desired Outcomes

Tangata Whenua knowledge and practices are recognised, respected and encouraged.

We have the knowledge to effectively protect and restore our natural ecosystems.

Strategic Actions

Know what we have
- Continue the assessment, monitoring and reporting of biodiversity values on public and private land.

Understand future challenges
- Carry out research, and work with research partners, community groups and landowners to fill knowledge gaps and understand challenges
- Identify the impacts of key trends on the natural environment.

Strategic Direction 4
Sustain and create resilient ecosystems

Desired Outcomes

The District's natural ecosystems are self-sustaining, healthy, resilient, and connected from the mountains to the sea.

A greater proportion of vegetation cover in the District is indigenous.

There is no further loss or degradation of Significant Natural Areas (SNAs).

Urban vegetation, including street trees, is valued by the community as making a significant contribution to urban resilience, human health, and environmental sustainability.

Strategic Actions

Protect what we have
- Implement a climate change natural environment mitigation and adaptation programme.
- Reduce the pressure in high value indigenous ecosystems by improving the wider environment.
- Provide support for SNA landowners and incentivise SNA protection.

Rebuild nature - more, bigger, better, and joined
- MORE - Create new natural environment sites to provide for future wellbeing.
- BIGGER - Increase the size of existing indigenous flora and fauna sites.
- BETTER - Improve the quality of the natural environment by better habitat management and promoting fauna-friendly practices.
- JOINED - Enhance connections between, or join up sites.

Guiding Principles Lead by example | Engage with others | Use best practice | Commit to action

About the Strategy

This Waimakariri Natural Environment Strategy (WNES) is the Council's local response to the degradation of important natural ecosystems and species being reported across the world, including within our District.

Current global biodiversity loss is so great it is called the 'sixth extinction'. The biodiversity crisis and the climate crisis are acknowledged to be closely linked, and healthy and diverse ecosystems can adjust more effectively to climate threats. The contribution nature-based solutions can make to buffering climate impacts by sequestering carbon and protecting built-up areas is also reflected in the strategy.

All aspects of life in Aotearoa New Zealand rely on a thriving natural environment including our physical and mental health, economy and culture. This strategy seeks to restore our connection to the natural world we are a part of so that we feel inspired to better protect it. We need to prioritise the protection and restoration of the natural environment not only for the ecosystems benefits it provides us and those who follow, but also for its own intrinsic worth. A world without dolphins, kiwi, tuatara and Kauri trees seems unimaginable but could become a possibility.

The strategy takes into account strategic directions outlined in the Local Government Act 2002 (4 wellbeings), National Adaptation Plan, National Policy Statement for Indigenous Biodiversity, Aotearoa Biodiversity Strategy and others. It also complements the work of other organisations such as Environment Canterbury's Zone Implementation Plan Addendum (ZIPA), Forest and Bird's 'Make Every Wetland Count' campaign, QEII Trust and the Waimakariri Biodiversity Trust.

The strategy currently consists of three documents plus a summary document which should be read in conjunction with one another.

Background documents

A Biodiversity SOE report describes the current state of indigenous biodiversity within the District and the challenges and opportunities foreseen over the next 30 years. It also provides an overview of biodiversity concepts and relevant legislation.

A review of Council reserve provision also informs the strategy. This will form part of a Reserves SOE report that identifies opportunities, in collaboration with local residents, for increasing natural values in reserves and streetscapes.

Strategy

Provides a high-level strategic framework to guide Council's work in protecting and restoring the natural environment over the next 30 years. Roles range from developing plans and carrying out the work, to supporting the efforts of others, educating people about the issues and opportunities, and advocating for change, both at a national and local level.

Action plan

Contains specific costed actions to be included in the Council's Long Term Plan for implementation between 2024 and 2034.

Purpose

The Waimakariri Natural Environment Strategy provides direction for the Council's future investment in protecting and enhancing natural ecosystems within the District, particularly its own business, plans and practices. It:

- Gives effect to international agreements and national legislation to protect indigenous biodiversity and mitigate/adapt to the effects of climate change
- Allows for kaitiakitanga and stewardship for future generations
- Enhances the natural values of Council's extensive reserve portfolio and other land owned and/or managed by the Council
- Recognises and supports the cultural practices of Ngāi Tūāhuriri Rūnanga
- Recognises and supports landowners as stewards for the natural environment, particularly those who have significant natural areas (SNAs) on their land
- Supports community organisations who are actively engaged in delivering the desired outcomes of this strategy.

Whites Road Reserve, Ohoka
This gravel extraction pit was developed as a wetland by the local community in the 1990s and now provides an important feeding and roosting area for waders and protected waterfowl such as Grey Teal, Scaup and Brown Teal.

Matawai Park, Rangiora
Designed in the 1970s and developed by passionate and knowledgeable locals, this nationally recognised Scenic Reserve is an excellent example of the indigenous vegetation habitats found within the District.

Scope

The strategy's vision and objectives encompass the natural environment of the whole District, but the primary focus and actions relate to indigenous biodiversity on land in Council ownership.

By taking this approach the Council can lead by example, improving the natural values of the land it manages, providing exemplar sites and conducting trials to develop understanding and good practice techniques without direct costs to private landowners. These can then be adopted and adapted by others. Council's role in implementing national policy and supporting local environmental groups is also outlined.

Silverstream Reserve, Kaiapoi

Nature Defined

"Nature is a holistic term that encompasses the living environment (te taiao), which includes all living organisms and the ecological processes that sustain them. By this definition, people are a key part of nature."

(Te Mana o te Taiao – Aotearoa New Zealand Biodiversity Strategy 2020)

What's in?	What's out?
• Council-owned and/or managed land, including coastal land up to the District's eastern boundary, reserve land, streetscapes and land held in the property portfolio that can be repurposed. • Private land with SNAs located on them and/or land that supports highly mobile fauna species. • Education and information services for private landowners in general. • Supporting local environmental organisations to achieve their goals where they are consistent with this strategy. • Terrestrial/aquatic interface and supporting water catchment programmes. • Stock water where it is an important resource for flora and fauna, for example, freshwater mussels and koura and other important native species. • Exotic vegetation where it supports indigenous fauna or contributes to an important goal such as the achievement of sufficient urban tree canopy cover and the provision of community food forests and gardens.	• Urban stormwater receiving environments such as stormwater basins and systems due to pending Water Services Legislation that will influence Council's approach to future stormwater management. However, some consideration is still given to the aquatic environment due to the interconnectedness of the terrestrial/aquatic interface. • Rivers and other waterways, including issues to do with the quality and quantity of the District's fresh water. This is to avoid duplication with the ECan Zone Implementation Programme Addendum (ZIPA) which covers these. • Air and soil quality as these are regulated by Environment Canterbury (ECan). However, due to the connectedness of the natural environment, the Biodiversity SOE Report that informs this strategy does outline implications to and from these ecosystems where appropriate.

Why do we need one?

Keeping the planet healthy is key to providing health and wellbeing for all.

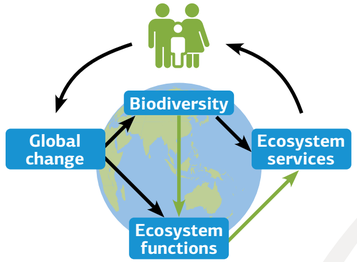
Despite considerable efforts being made to expand sustainable forest management, protect critical biodiversity sites, conserve species at risk of extinction and address threats of invasive alien species, human activities are still causing global biodiversity (the variety of genes, species and ecosystems on Earth) to decline faster than at any other time in human history.

Economic, social and technological advances have come at the expense of the Earth's capacity to sustain its life-supporting processes yet the graph below shows our own future relies on a sustained source of resources from nature.

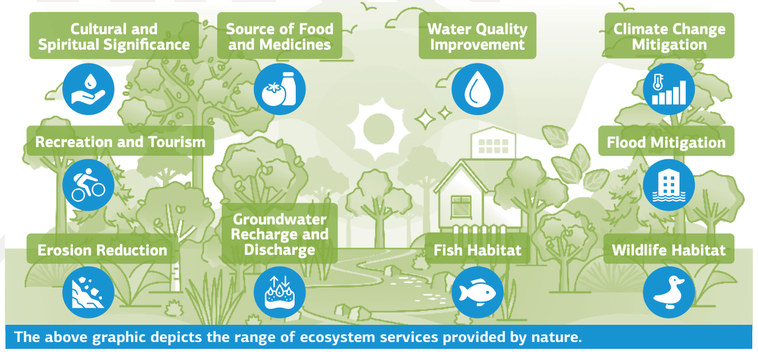
We all benefit from the many eco-services the natural world provides such as clean air and water, food, medicines, energy, materials, recreation, creative inspiration and a sense of place.

The 2021 United Nations 'Making Peace with Nature' report concludes that the international community is failing to meet most of its commitments to limit environmental damage and that the number and severity of environmental challenges we now face represent a planetary emergency.

> *"Making peace with nature, securing its health and building on the critical and undervalued benefits that it provides are key to a prosperous and sustainable future for all."*
>
> Antonio Guterres,
> Secretary General of the United Nations 2021



Biodiversity and Ecosystem Functioning
Cardinale et al. 2012. Nature 486:59-67



The above graphic depicts the range of ecosystem services provided by nature.

We need to urgently move away from the current pathway of environmental decline if we are to safeguard the wellbeing of our young people and future generations.

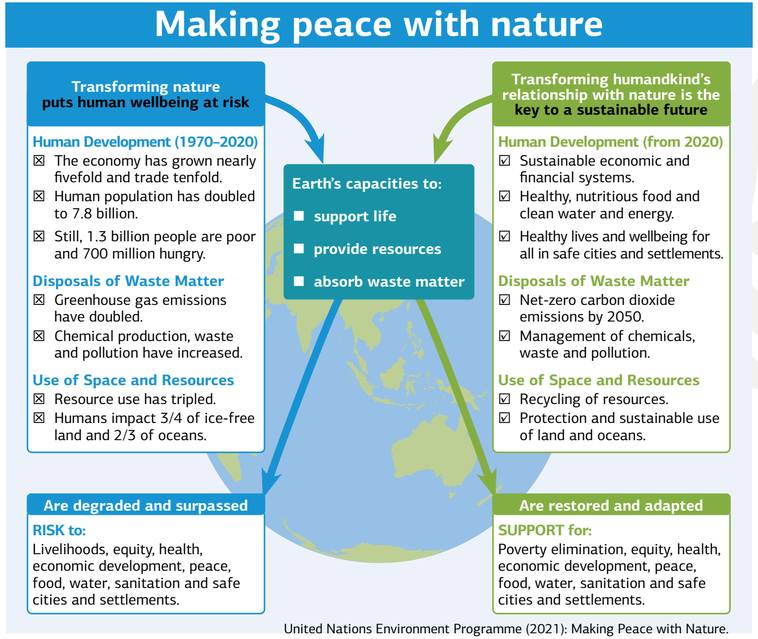
International agreements are not currently on track to fulfil the Paris Agreement of limiting global warming to 1.5°C above pre-industrial levels and there are indications warming could reach this target by 2040, if not earlier. Existing greenhouse gas emissions reduction policies put the world on a pathway to warming of at least 3°C by 2100.

Warming of more than 1°C has already led to shifts in climate zones, changes in precipitation patterns, melting of ice sheets and glaciers, sea level rise and more frequent and intense extreme weather events, threatening people and nature.

Over the past few years, our government has introduced, or has indicated in various reports that it plans to introduce, legislative changes to address issues such as urban intensification, climate change mitigation and adaptation, freshwater management and biodiversity loss. A number of these require territorial authorities to act at a local level and it is expected that these requirements will increase over time.

This strategy is, in part, a response to these legislative changes. It is also a response to the loss of biodiversity values in the District and the increasing density of our urban areas. It aims to promote recognition of the true value of nature, by prioritising the protection and repair of natural ecosystems and making space for it to flourish in the built environment.

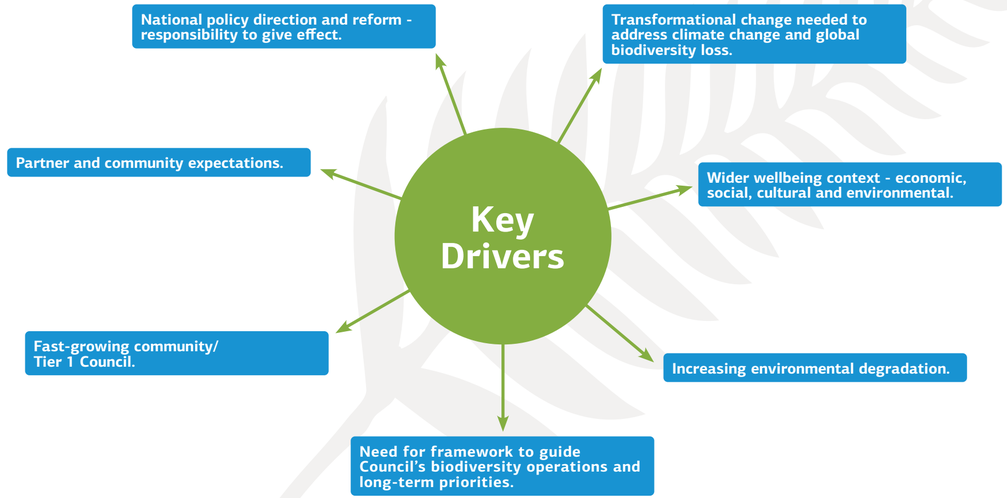
> *"Maintaining planetary health is essential for human and societal health and a pre-condition for climate-resilient development."*
>
> IPCC Chair, 2nd World Ocean Summit Asia-Pacific 2022



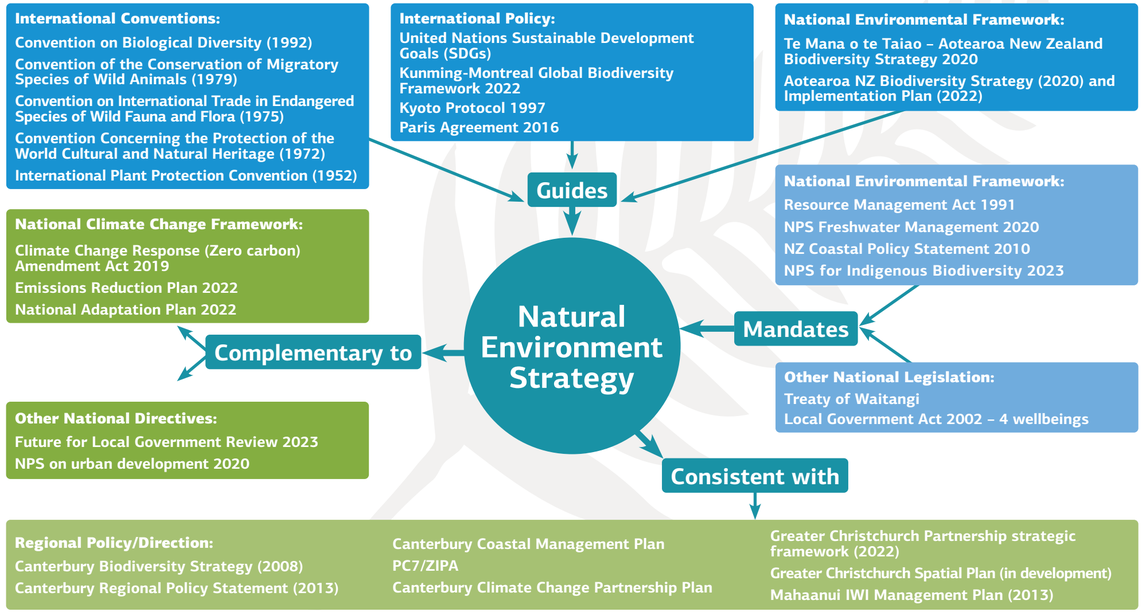
United Nations Environment Programme (2021): Making Peace with Nature.

INTRODUCTION

Key drivers



Wider context



CONTEXT FOR THE STRATEGY

Council context

- District Plan and Proposed District Plan
- District Development Strategy
- Rural Residential Development strategy
- Integrated transport Strategy
- Accessibility Strategy
- Waimakariri Economic Development Strategy
- Waimakariri Visitor Marketing Strategy 2020-25
- Climate Change Policy 2020
- Proposed climate change strategies
- Reserve Management Plans
- **Local implementation:**
- NES Action Plan
- Annual and Long Term Plans
- Activity Management Plans
- Northern Pegasus Bay Bylaw 2016 Implementation Plan
- Resource consents and permits
- Reserve/street tree contracts

- Waimakariri Biodiversity Forum

a. Protect and enhance the resilience of our natural and built environment.
b. Enhance community wellbeing, safety, inclusivity and connectedness.
c. Embrace partnership with Ngāi Tūāhuriri.

- People are supported to participate in improving the health and sustainability of our environment.
- Land use is sustainable; biodiversity is protected and restored.
- Our district is resilient and able to quickly respond to and recover from natural disasters and the effects of climate change.
- Our district transitions towards a reduced carbon and waste district.
- Our communities are able to access and enjoy natural areas and public spaces.

Social · Environmental · Cultural · Economic

Environmental snapshot

Ministry for the Environment

Climate change

Our emissions are not decreasing fast enough

19% ↑ The **increase in our gross emissions** between 1990 and 2021. Our emissions peaked in 2006.

6% ↓ The **decrease in our gross emissions** since 2006.

We are not on track to meet NZ's target **of reducing net emissions to 50%** below 2005 levels by 2030.

Our air temperature will continue to rise

Between 1909 and 2020 the **increase in our annual average air temperature was +1.26°C**

Temperature rise causes:
- more frequent and severe extreme weather events
- glacial retreat
- sea-level rise
- large die-off of plants and animals.

Socio-economic impacts escalate with every increment of warming

Agricultural drought frequency increased at

15 out of **30** sites across NZ.

Costs estimated at $4.8b from the two major drought events of 2007-08 and 2012-13.

Land and freshwater

Our fresh water is degraded

Between 2016 and 2020 **62%** of 101 monitored lakes across NZ showed **poor or very poor health.**

Between 2016 and 2020 **84%** of monitored river water quality sites had median concentrations for at least one form of nitrogen which suggested a **risk of environmental impairment.**

Between 2016 and 2020 **25%** of monitored river water quality sites had **severe organic pollution or nutrient enrichment,** while only 6% showed pristine conditions or almost no organic pollution.

With consequences for how we use it

Between 2016 and 2020 **66%** of monitored river water quality sites were not suitable for activities like swimming.

Our natural infrastructure is an asset

Our natural infrastructure helps to:
- regulate our climate
- prevent erosion and landslides
- protect our coastal environment from storm surges
- improve water quality and regulate flooding.

While:
- supporting cultural values, health and wellbeing
- improving biodiversity
- providing economic opportunities and resilience.

But it's under pressure

10% of **wetlands remained** in 2010 compared to pre-human existence.

As of 2018, **indigenous forests covered ~7million ha** (for **27% of total land area**). The overall indigenous forest land area increased since 2008, but continue to be located in upland areas.

More than **3,200** of our known indigenous species are **threatened or at risk of extinction** partly due to loss of habitat.

Coastal and marine

Sea level rise is accelerating

Between 1961 and 2020, the **mean sea level rise rate doubled** at 3 out of 4 monitoring sites, compared to the period from 1901 to 1960.

+20cm The **average sea level rise** around NZ compared to a century ago.

Adapting to sea-level rise

At risk from coastal flooding in 2022:

72k People **49.7k Buildings** **191 Marae**

A 20–30cm sea-level rise above present-day levels is expected in the next 30 years, **exposing billions of dollars worth of infrastructure** to flooding and damage.

Our ocean is warming to record levels and becoming more acidic

Between 1981 and 2018, the **sea surface temperature** increased between **+0.1** and **+0.2°C** per decade across our four oceanic regions.

Between 1998 and 2020 **ocean acidity** increased **8.6%** on average in NZ's subantarctic surface waters.

Ocean warming and acidification can impact:
- marine habitats like kelp forests
- calcification rates of corals and molluscs
- species migration and/or survival.

With consequences for our:
- biodiversity
- marine economy.

CONTEXT FOR THE STRATEGY

Current state of biodiversity in Aotearoa New Zealand

State of biodiversity

Marine birds
- 28 (31%) are 'Threatened'
- 53 (60%) are 'At Risk'

Around 5,000 of the assessed 14,000 terrestrial, freshwater and marine species are 'Data Deficient' – i.e. there is not enough information to know if they are in trouble.

For example, 609 marine macroalgae (68%) and 105 earthworms (59%) are assessed as 'Data Deficient'.

214 non-indigenous marine species now live in Aotearoa New Zealand's marine environments. Some of these have the ability to compete with and prey on indigenous species, modify natural habitats or alter ecosystem processes.

Biogenic marine habitats (created by living plants or animals) support high biodiversity and provide ecosystem services. Many of them have been degraded or lost. For example, there has been a near total loss of kuku/green-lipped mussel beds in the Firth of Thames.

Te Mana o te Taiao Aotearoa New Zealand Biodiversity Strategy 2020

Around 43% of Aotearoa New Zealand's land area remains in native cover.

Some species have improving population trends. The conservation status of 23 bird species improved in the 2016 assessment as a result of population increases, mainly because of management intervention.

Land reptiles
- 37 (35%) are 'Threatened'
- 52 (50%) are 'At Risk'

A large body of research has found that concentrations of nutrients, sediment and pathogens in rivers increase as the catchment area in pastoral land use increases.

Rivers in urban areas are contaminated with nutrients, suspended sediment, pathogens and heavy metals.

Based on modelled Trophic Level Index values, 46% of over 3,000 lakes larger than 1ha are estimated to be in poor or very poor ecological health.

Around 40,800ha of indigenous forest, scrub and shrubland was converted to non-indigenous land cover between 1996 and 2018. In the same period, 44 800ha of indigenous grasslands and 5,500ha of other indigenous cover were also converted to non-indigenous cover types.

Naturally uncommon ecosystems are those which covered less than 0.5% of the country's land area in pre-human times. There are 72 of these, of which 45 (63%) are now threatened.

Many species are in decline. Population declines of 61 vascular plant species means they have moved to a worse conservation status in the latest 2017 assessment.

250,000ha of inland wetlands remain in Aotearoa New Zealand – around 10% of their former extent. Wetland loss is still occurring: At least 5,000ha of wetland is estimated to have been lost since 2001.

Freshwater fish
- 22 (43%) are 'Threatened'
- 17 (33%) are 'At Risk'

The companion report Biodiversity in Aotearoa provides the evidence base for the national strategy by describing the present state, trends and pressures of our country's plants, animals and ecosystems on land, in fresh water and at sea. This is summarised in the infographic.

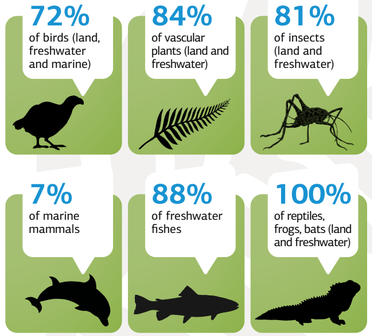
Biodiversity defined

Biodiversity is the variety of all living things and ecosystems. It includes plants, animals, fungi and micro-organisms as well as the ecosystems (on land or in water) where they live. Biodivrsity can be of any scale. It could be a patch in your backyard or the whole planet. Biodiversity is the web of life.

Te Mana o te Taiao, Aotearoa Biodiversity Strategy 2020

Due to our geographical isolation, many of our indigenous plants and wildlife exist nowhere else on Earth. We are lucky enough to enjoy ancient rainforests, tussock grasslands and braided rivers on our doorstep. This means our taonga species and ecosystems make a significant contribution to global biodiversity and attract visitors from afar.

Proportion of New Zealand indigenous species found nowhere else on Earth



Note: These data do not include extinct, exotic or non-resident native (coloniser, migrant or vagrant) species.
Source: Biodiversity in Aotearoa

However, our country is not immune from the global biodiversity crisis and despite some success stories, the overall picture is one of continued depletion.

Te Mana o te Taiao

Te Mana o te Taiao, the Aotearoa New Zealand Biodiversity Strategy 2020, outlines a strategic framework for the protection, restoration and sustainable use of biodiversity, particularly indigenous biodiversity, in our country from 2020 to 2050. Collaboration and partnerships are a key focus for Te Mana o te Taiao as working together, we can make the biggest difference.

A strategy implementation plan, released in 2022, sets out a pathway for achieving the strategy's outcomes over the next 30 years. The immediate focus is on establishing systems to stimulate nationwide action.

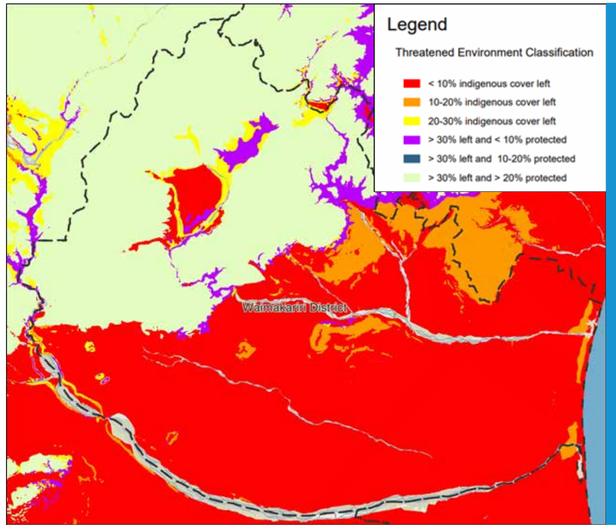
We are in a biodiversity crisis

"Our ecosystems are directly under threat from pressures such as changes in land, freshwater and sea use, introduced species, exploitation for food and resources, pollution, and the increasing threat of climate change. Indirect pressures such as not having the right 'systems' in place, people not having enough knowledge or resources to act, and a disconnect between people and nature are causing and contributing to these direct pressures."

Te Mana o te Taiao Aotearoa New Zealand Biodiversity Strategy 2020

WHERE WE ARE NOW

Current state of our District's natural environment



Threatened Environment Classification map for the District showing the amount of indigenous land cover remaining.

Indigenous vegetation cover

Less than 0.1% of indigenous vegetation cover is left in some parts of the Canterbury Plains. The remaining areas are small and fragmented, often containing non-regenerating populations. These are categorised as being acutely threatened.

The adjacent map shows that over half of the District has less than 10% indigenous cover left, with some of these areas containing less than 0.5%.

However, within these remnants are many rare and threatened species which are not represented in the Aotearoa New Zealand protected areas network.

The loss of this habitat and the ecosystems it supports is mainly due to urban development, agricultural practices and mineral extraction. In more recent years exotic plantation forest has been the main driver for indigenous forest loss.

Banded Dotterell Chick
Photographer: Grant Davey

At risk flora and fauna

The District is home to a number of nationally threatened species across many habitats and ecosystems as detailed in the Biodiversity State of Environment Report that forms part of this strategy. These include birds, fish, lizards, Arthropods and plants.

Robust grasshopper
NZSnowman, CC BY-SA 3.0, via Wikimedia Commons

Robust grasshopper *Brachaspis robustus*

This highly camouflaged invertebrate was thought to be extinct until individuals were found in the 1980s. The nationally endangered species can be found in the gravels of the Waimakariri braided river system and numbers only 250-300 individuals across the country. The grasshopper feeds on lichens and other vegetation and can be seen resting on stones or around low lying scabweed (*Raoulia* spp.) type vegetation.

Jewelled gecko

The Waimakariri is home to the threatened and stunning green jewelled gecko, *Naultinus gemmeus*. It can be found in trees or on the ground, in a range of habitats including forests, kanuka shrublands and tussock grasslands.

Tauhinu *Pomaderris amoena*

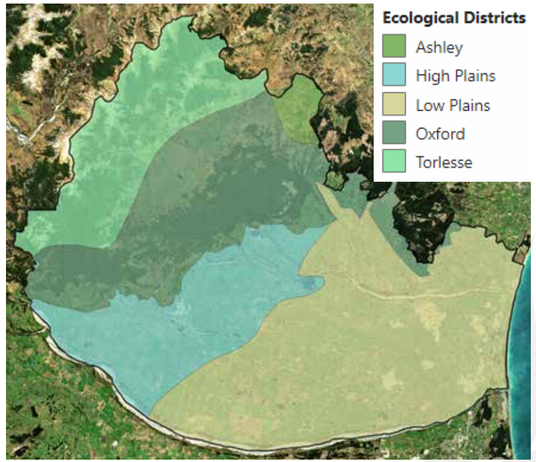
This small-leaved flowering shrub is found at the most southern limit of its natural distribution in our District. It loves the sunny spots in the nutrient poor, bony soils along the Waimakariri River.

"Pomaderris amoena" by strewick is licensed under CC BY 4.0.

Kōwaro/Canterbury mudfish *Neochanna burrowsius*

These small, stocky, scaleless fish are regarded as taonga by tanga whenua. They are found in wetlands and particularly drains within Canterbury. Amazingly, these fish can survive for short periods of time when there is no surface water present by altering their metabolism and breathing through their skin. The Canterbury mudfish has a threat classification of Nationally Critical and is the most endangered of the mudfish and the second most endangered fish in New Zealand. Trampling by stock and the draining and alteration of waterways are some of the major threats to the species.

WHERE WE ARE NOW



Ecological districts

The District's natural environment varies widely in terms of altitudes, landforms, ecosystems and species, including terrestrial, coastal, montane and aquatic habitats. It is characterised by the large alpine Waimakariri River, the hill-fed Ashley/Rakahuri River and its tributaries and estuary, as well as a network of spring-fed streams and lagoons in the coastal zone. Much of the land to the east of Rangiora is reclaimed swamp, which drains poorly and can be subject to flooding. Hill and high country lie to the north-west of the District, with the western landscape being dominated by Mt Oxford, Mt Richardson and Mt Thomas.

The adjacent map shows Waimakariri divided into five distinct ecological districts based on the interconnected characteristics of topography, geology, climate, soils and the residing flora and fauna (McEwan, 1987). Each area is unique and holds a wealth of taonga (treasures) including diverse species of fauna and flora, many of which are listed as threatened. For example, the limestone habitat at White Rock near Okuku, is highly significant because of its rarity in the District and the serious threats faced by limestone flora, both regionally and nationally. This means it deserves special recognition and protection.

Dominant land use cover is highly productive exotic grassland with at least 40% used for sheep and beef farming and a further 16% used for the dairy sector (ECan, 2018).

Ecological District	Area in District (ha)	Indigenous Vegetation Remaining	Indigenous Vegetation Protected	Naturally Uncommon Ecosystem Type	Example of Important Species in the Ecological District
Low Plains	88,367	<10%	<5%	Braided Rivers (E), Dune Slacks (E), Active sand dunes (E), Coastal lagoons (E)	Geckos and skinks, plants, black-fronted tern/tarapirohe (*Chlidonias albostriatus*), Canterbury Plains boulder copper butterfly (*Lycena* sp)
High Plains	38,593	<10%	<5%	Basic cliffs, scarps, and tors (V) of Burnthill	Geckos and skinks, freshwater crayfish/koura, long-fin eels Waipara gentian (Gentianella calcis subsp.waipara)
Ashley	3,775	>30%	>20%	Lake Margins (V)	New Zealand Falcon, Kea (*Nestor notabilis*)
Oxford	55,058	>30%	<25%%	Calcareous cliffs, scarps, and tors (V) of View Hill and Okuku	New Zealand Falcon, Canterbury mudfish, Kea (*Nestor notabilis*)
Torlesse	35,918	>30%	>20%	Inland outwash gravels (CE)	Speargrass (*Aciphylla subflabellata*), giant weta (*Deinacrida connectans*), Kea (*Nestor notabilis*)
Oxford/Torlesse – Lees Valley	21,578	<10%	ND	Ephemeral wetlands (CE)	New Zealand Pipit (*Anthus novaeseelandiae nvaeseelandiae*), geckos and skinks

Canterbury High and Low Plains

- The Plains cover 50% of the District, mainly to the south and east.
- Characteristics include low rainfall, large annual temperature variations and stony-silt thin soils.
- Highly modified environment with severe reduction of indigenous dryland vegetation mainly because of conversion of land for production and settlement
- The globally rare, braided river ecosystems of the Waimakariri and Ashley/Rakahuri Rivers are important to many endangered species.
- The drylands support a wealth of rare and threatened plant species including matagouri (*Discaria toumatou*) and kānuka (*Kunzea* spp.). These habitats also support a range of invertebrates and lizard species.
- Areas of swamp and wetland occur in the east on less porous soils.

Canterbury Foothills: Ashley and Oxford

- The eastern foothills have cooler, wetter weather, prevailing north-west winds and relatively fertile soils. Most of the area has at least 30% indigenous land cover and large, connected areas remain.
- Lees Valley is located at approximately 400m above sea level and has low rainfall and large temperature ranges. It contains dry shrubland, and important riparian and swamp wetland, although it has lost more than 90% of its indigenous land cover.
- A large proportion of the foothills, including Mt. Oxford, Ashley Forest and the Mt. Thomas Conservation Area, are protected as national land of significance.
- Beech forest habitats in the conservation areas support rare and threatened species and some sub-alpine shrubland.
- Podocarp forest remnants can be seen in the Coopers Creek/View Hill area. Wetlands that support Tawera mudfish populations are also found here.

Puketeraki: Torlesse High Country

- Montane area with a cool climate and snow on mountain tops for approximately three months of the year.
- Characterised by north-west winds, abundant rainfall and winter snow.
- Contains the headwaters for the Ashley/ Rakahuri and Okuku Rivers.
- The Puketeraki Conservation Area is classified as land of National Significance containing beech, tussockland and subalpine habitats.
- The beech forests support rare mistletoes species and plants, as well as a range of fungal species and birds and invertebrates.
- Although this area is modified, it is important for birds such as kea *(Nestor notabilis)* and falcon *(Falco novaeseelandiae)* and many wetland birds associated with the rivers. The area is also known to have giant weta (*Deinacrida* spp.).

WHERE WE ARE NOW

Freshwater and coastal

The Waimakariri District's meandering rivers are fed by springs, rainwater or snow melt depending on their location. These rivers provide habitat and shelter for rare and endangered species of invertebrates, birds, lizards and native fish. They are also of huge cultural significance to Ngāi Tahu and Ngāi Tūāhuriri.

The Ashley River/Rakahuri, the Okuku River, the Cam/Ruataniwha River, Kaiapoi River, Tūtaepatu Lagoon, the Pines Beach Wetland, areas of swampland around Loburn and the lower Waimakariri River and gorge are recognised as being 'Nationally Significant'.

Each of the braided rivers is listed as a 'naturally uncommon ecosystem' and designated 'Nationally Endangered'. These uncommon ecosystems often provide habitat for specialised fauna and flora, including rare birds, and over 90 species of birds have been recorded at the Ashley Rakahuri/Saltwater Estuary alone. This diversity is partly because the braided rivers and spring-fed watercourses contain good quality communities of aquatic macro-invertebrates and aquatic flora.

The coastal resource in the east contains dune systems, coastal freshwater and brackish networks of wetlands, streams and lagoons, including the 49ha spring fed Tūtaepatu Lagoon, making it the largest open water body along the coast in the District. The Ashley/Rakahuri Estuary to the north of the District contains areas of salt marsh, which are rare in Canterbury. The coastal wetlands are home to many rare and endangered species including mudfish, whitebait (*Galaxias* spp.), bittern, banded dotterels (*Charadrius bicinctus*), black fronted-terns and wrybill (*Anarhynchus frontalis*).

The District's wetlands provide habitat for culturally important aquatic species such as long and shortfin eels (*Anguilla dieffenbachia* and *A.australis*), koura (*Paranephrops zealandicus*), inanga and lamprey (*Geotria australis*) with the 'Nationally Critical' Canterbury mudfish having populations in the Oxford area.

Pied Shag - Kāruhiruhi

Banded Dotterell - Pohowera

Matuku – hūrepo/Australasian Bittern
Botaurus poiciloptilus

Despite being a large and stocky bird, this secretive species with its cryptically coloured plumage is more often heard than seen. The characteristic booming call of the males can be heard in the breeding season and often signifies their presence. When seen, they often adopt their famous freeze stance with their bills pointing up to the sky. Precise population estimates are unknown, but it is thought that there are less than 900 individuals in the wild, gaining them the threat classification of 'Nationally Critical'. Within the Waimakariri District, there is a resident population at the Tūtaepatu Lagoon.

Australasian bittern - Matuku-hūrepo

Arohatia te Awa

In 2019, the Arohatia te Awa – Cherish the River project was initiated by the Council to identify and connect waterways for public use. Introducing native flora and enhancing habitats for native fauna along the waterways is being undertaken for both biodiversity and cultural aims. This ongoing project has seen more than 30,000 plants installed since work began.

ZIPA

The Zone Implementation Programme is a non-statutory document prepared by the Waimakariri Zone Committee to give effect to the Canterbury Water Management Strategy. It aims to:

- Improve lowland waterway health
- Protect coastal and foothill wetland biodiversity
- Have an integrated approach to managing the Ashley/Rakahuri River
- Promote good water and nutrient management practice
- Consider the role of water storage in improving irrigation reliability and improved river flows.

This strategy is complementary to the ZIPA.

Map of main waterways and settlements within the district (Sparrow and Taylor, 2019).

WHERE WE ARE NOW

Council land

Reserves and streetscapes

In 2011 the Council consulted on and subsequently adopted a framework for categorising parks according to their primary purpose, adapted from national standards produced by the New Zealand Recreation Association (Recreation Aotearoa). Level of service guidelines were developed at the same time for reserves and streetscapes. A description of these park categories can be found in Appendix 1

Type of reserve as a percentage of the total land area

The Council is a significant provider of public open space within the District managing over 882ha. Just under half of this land is provided primarily for sports and recreation purposes, including neighbourhood recreation. While there is potential to improve the natural values of all reserves, there are more opportunities in the natural parks and recreation and ecological linkages portfolios where there is less conflict of use between people/nature, and more undeveloped land.

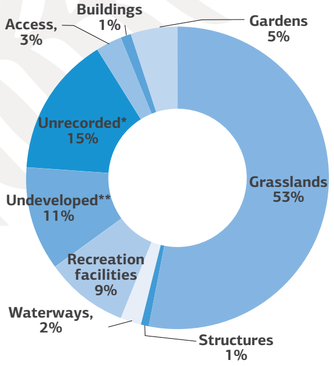
Reserves summary

Type of reserves	Number of sites	Land area (ha)	Size range
Civic space	8	3.47	0.03ha-1.6ha
Cultural heritage	19	38.35	0.02ha-7.9ha
Natural parks	16	215.34	0.3ha-84ha
Neighbourhood parks	75	95.14	0.1ha-6.5ha
Outdoor adventure parks	1	50.79	50.7ha
Public gardens	3	2.82	0.6ha- 1.1ha
Recreation and ecological linkages	248	173.35	55m²-36.5ha
Sports and recreation	28	280.48	0.3ha-83ha
Streetscapes	356	22.49	
Total	**754**	**882.23**	

There are another 12 sites listed as undeveloped reserves that total 71.7 hectares. Eight of these are located in Kaiapoi on red zone land, two are at Pines Kairaki, one is in Rangiora and one in Oxford. Work is underway to categorise these.

Over 96ha of reserve land is undeveloped offering significant potential for restoration. Just over half of all reserve land is covered in grass and only 5% is planted. Replanting some of the grassland in indigenous biodiversity will improve biodiversity values as well as reduce carbon emissions arising from grass maintenance.

Use of reserves as a percentage of the total land area



* Unrecorded is the difference between the total amount of land and the amount of land taken up by the assets recorded on it.

** Undeveloped is a garden classification where the vegetation type is unknown and likely to be scrub.

Type of land use

Type of land use*	Land area (ha)
Access, parking, footpaths	30.6
Buildings	6.2
Structures	2.2
Recreation facilities	76.8
Gardens	46.4
Grasslands	466.3
Waterways, ponds, lakes, drains, streams	19.9
Undeveloped	96.3
Unrecorded	136.4
Total**	**882.2**

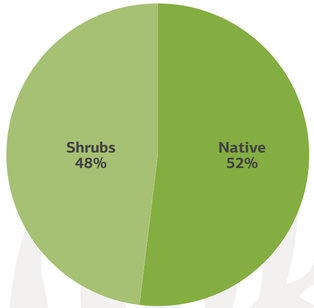
* Excludes streetscapes

** Totals do not add up due to rounding

Council garden asset data has not been collected with indigenous biodiversity in mind and reliability will be greatly improved once the vegetation is resurveyed. Current asset data shows just over half of reserve plantings are indigenous although this figure will be higher as indigenous plants will also be in mixed shrub plantings recorded as shrubs.

The Council manages over 23,800 specimen trees, with 7,663 known to be planted on reserves and 1,615 in streetscapes. The database does not record a site type for over 14,109 trees. The majority of these trees are exotic, the most popular species being Oak (*Quercus* spp.), *Prunus* spp., and Ash (*Fraxinus* spp.).

Vegetation type as a percentage of reserve gardens



* Excludes undeveloped scrub

Type of garden vegetation

Vegetation	Land area (ha)
Native	24.2
Shrub	22.0
Flowers	0.2
Total	**46.4**
Hedges	14,006 (LM)
Trees	23,800

Levels of service, key performance indicators and targets

There are currently two relevant major levels of service that Council publicly reports on a quarterly basis. These are reviewed every three years in conjunction with the Long Term Plan.

Major level of service	Measuring performance	Targets
Providing sports grounds, neighbourhood reserves and natural parks for the community to use.	The number of hectares of parkland per 1,000 residents	8ha
	The number of hectares of neighbourhood reserve land per 1,000 residents	1ha

There are also relevant internal levels of service adopted by the Council in the 2011 review. These are:

- 5–15ha of natural park per 1,000 residents
- No less than 2.51ha of sport and recreation reserves per 1,000 residents
- 0.03ha of public garden per 1,000 residents
- 1 tree every 20m on average in streetscapes.

WHERE WE ARE NOW

A level of service review has been carried out as part of this strategy and the following table shows the Council currently owns enough reserve land in total to meet the agreed levels of service for parkland until about 2050.

No more land is required during this period to meet sport and recreation reserve targets, and while neighbourhood reserve land shows up as a deficit by 2053, if it continues to be acquired through subdivision at the same rate as at present it will be well into surplus by that time.

Council could consider setting aside land for a new public garden in the rapidly expanding Woodend/Ravenswood area to meet the slight shortfall in this target expected by 2053. This could also serve as a town centre focal point and showcase the merits of using indigenous biodiversity in an urban setting.

The table shows the level of service for natural parks is not currently being achieved unless the 750ha of Te Kōhaka te Tūhaitara Trust land is included in the equation. In this case the lowest target of 5 ha per 1,000 residents will still be in surplus by 245ha by 2053, although climate change could have an impact on this vulnerable coastal land in the future. There is also the potential to set aside surplus Council land for development as natural parks as has successfully occurred in the past with Kaiapoi Lakes and Whites Road Reserve.

No levels of service currently exist for biodiversity and the following two are proposed.

- Number of specimen trees in reserves/streetscapes. This level of service recognises the important role tree canopies have in mitigating the effects of climate change and the important habitat they provide for fauna. It is recommended that a target also be set for urban tree canopies once a baseline is measured.
- Number of hectares of reserves planted in indigenous plants. The intention of this target is to ensure the amount of indigenous vegetation on Council reserves is increased over time in line with the National Policy Statement for Indigenous Biodiversity requirement for at least 10% indigenous vegetation cover in urban and non-urban environments.

Other Council property

The Council owns a large number of other land parcels, some of which are no longer needed for their current purpose. In 2021 it adopted a Property Acquisition and Disposal Policy that requires property to be assessed for alternative purposes before being disposed of. These purposes include future potential as indigenous vegetation and wildlife habitats and carbon sinks to offset emissions. Biodiversity staff are currently working through this portfolio to assess existing biodiversity values.

Publicly reported targets (highlighted in blue)

Performance measure - Reserves	Target	2023 Baseline	2023 achieved targets for population of 69,789	Additional land required by 2033 for population of 81,742*	Additional land required by 2043 for population of 92,178*	Additional land required by 2053 for population of 101,791*
The number of hectares of parkland per 1,000 residents	8ha	882.2ha**	12.7ha	0 (648ha required in total)	0 (736ha required in total)	0ha (808ha required in total)
The number of hectares of neighbourhood reserve land per 1,000 residents	1ha	95.1ha	1.3ha	0 (81ha required in total)	0 (92ha required in total)	5.9ha (101ha required in total)
The number of hectares of natural park per 1,000 residents	5–15ha	215.3ha	3.1ha	190ha (405ha required in total)	244ha (460ha required in total)	289ha (505ha required in total)***
The number of hectares of sports and recreation reserves per 1,000 residents	No less than 2.51ha	280.4ha	4.0ha	0 (203ha required in total)	0 (230ha required in total)	0 (253ha required in total)
The number of hectares of public gardens per 1,000 residents	0.03ha	2.8ha	0.04ha	0 (2.43ha required in total)	0 (2.76ha required in total)	0.23ha (3.03ha required in total)

* Assumes additional land isn't acquired during this period
** Excludes 71.7ha of reserve land not yet categorised
*** Excludes TKOTT land.

Performance measure - Biodiversity	Target	2023 Baseline	2023 achieved targets for population of 69,789	Additional trees required by 2033 for population of 81,742	Additional trees required by 2043 for population of 92,178	Additional trees required by 2053 for population of 101,791
The number of specimen trees in reserves/streetscapes	1 additional specimen tree stock per new resident (to be measured every 3 years in line with the LTP)	23,800	23,800	11,953 new trees	10,436 new trees*	9,613 new trees*

Performance measure - Biodiversity	Target	2023 Baseline
The amount of tree canopy in urban areas	Increase in the amount of tree canopy (to be re-measured every 5 years)	To be measured
The number of hectares of reserve planted in indigenous plants	A rolling annual percentage increase of indigenous vegetation cover	2.7%
The number of key indicator species in natural parks	Increase in number of key indicator species	To be measured
The number of advisory groups/volunteers involved with Council reserves	Maintain or increase number of groups/volunteers	To be measured

* Assumes the required additional trees were planted each decade.

Pressures and their impacts on biodiversity

The IPBES global assessment 2019 outlined five global pressures on biodiversity. These are:*

- *Historical and ongoing impacts of invasive species*
- *Changes in land and sea use*
- *Direct exploitation of species*
- *Climate Change*
- *Pollution.*

These pressures also drive biodiversity loss in our own country.

Te Mana O Te Taiao,
Aotearoa New Zealand Biodiversity Strategy 2020

**Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*

Predator Control Programme - Silverstream Reserve

Volunteers have operated a successful pest control programme at the reserve since 2019. Over 1,662 possums, rats, mice, hedgehogs, weasels and feral cats have been trapped and bird counts have increased six-fold as a result. The increase in the proportion of native birds has increased by 50%.

Invasive species

Introduced predators and browsers threaten many indigenous species. Cats and stoats, for example, interfere with the breeding success of banded dotterels while wasps prey on indigenous insects and compete with birds for nectar. Other pests found within the District include possums, ferrets, rats, hedgehogs, rabbits, deer and goats.

Invasive plants can have severe effects on indigenous vegetation. The exotic grasses out compete the moss communities found within our District's drylands and hard to eradicate weeds such as wilding pines, gorse, clematis and blackberry limit natural regeneration of indigenous plants. Introduced algae can make freshwater ecosystems inhospitable to humans as well as their indigenous occupants.

There is also a constant biosecurity threat of new invasive species becoming introduced either from outside of the country or from other parts of Aotearoa New Zealand. Examples include microorganisms such as Kauri dieback and myrtle rust which can have devastating impacts on iconic flora and the ecosystems they support.

Changes in land use

The District has experienced substantial indigenous biodiversity loss since its settlement by humans. This has mainly occurred through the loss and modification of habitat by deforestation, burning, drainage, cultivation, urban development, and the introduction of new species. Impacts of animal and plant pests and continuing habitat loss and modification remain the main threats to indigenous biodiversity today.

The greatest loss has occurred in lowland and coastal environments where development has been the most intensive. Lowland forests, shrublands and indigenous grasslands have been reduced to small, scattered fragments and these remnants are still threatened by changing land use, browsing pressure, edge effects, and weeds and pests. Freshwater and coastal wetlands have been drained and reclaimed and the remaining wetlands are under threat from land use changes, grazing, recreation impacts and saltwater inundation. Here the remaining indigenous biodiversity is at the greatest risk of further loss.

Little intact indigenous vegetation cover remains in the heavily modified low plains. Semi-natural mixed native-exotic and even largely exotic species now provide the best habitats for native flora and fauna to survive in.

The loss has not been as extensive in the montane environments (400-800m above sea level) and some important ecological corridors of native forest, shrublands and tussock grasslands remain. However, some of the frontal hill country and Lees Valley inland basin are experiencing land use change and intensification resulting in reductions in habitats for red tussock wetlands and dry shrubland. The Mt Pember alluvial fan in Lees Valley is regionally significant as the last undeveloped alluvial fan of its type, supporting populations of several threatened species.

Habitat loss

Habitat loss reduces the physical area in which plants and animals can survive. It also reduces the capacity of the ecosystem to sustain populations and can lead to fragmentation. The remaining 'islands' of biodiversity are less resilient to change, and the natural dispersal and flow of genetic material is prevented.

Habitat degradation

Land use and human activities can alter the surrounding natural environment in a manner which leads to the slow death of habitats and ecosystems. An example is applying fertilisers to naturally low-nutrient areas or discharging waste to the environment. This can alter the chemistry of ecosystems, particularly soil and water, leading to habitats which are unsuitable for the existing indigenous species.

Lees Valley Dryland Agrostis (Festuca) grasslands interspersed with open areas of Racomitrium mossfields.

CHALLENGES

Climate change

Assessing possible changes to the climate system is challenging because the Intergovernmental Panel on Climate Change (IPCC) climate projections depend strongly on future greenhouse gas (GHG) concentrations. The Council has taken a precautionary approach and adopted a high intensity scenario for its planning purposes. This scenario is based on greenhouse gas concentrations increasing at the current or an elevated future rate.

In 2022 a Climate Change Scenario: Technical Report was prepared for the District by the National Institute of Water & Atmospheric Research Ltd (NIWA). This report concluded that future climate changes are likely to be significant and could impact the entire District. Overall, our wind, rainfall and seasonal pattens are expected to shift and we are likely to see more extreme events and unpredictability in our weather. The sea level is also expected to rise by up to 0.8m by 2100.

- Average air temperatures are expected to increase under both a moderate (RCP 4.5) and high (RCP 8.5) GHG scenario with the high scenario causing twice as much end-century warming than the moderate scenario. Correspondingly, a decrease in frost and snow days is expected.
- Changes to extreme temperatures (>25ºC) are projected to double by 2100 under a moderate GHG scenario and more than triple under a high scenario with the Lees Valley and western plains seeing the biggest increases in hot days.
- Mean annual rainfall is projected to increase across most of the District under both GHG scenarios. The general trend shows increased rainfall across the lower plains and coastal areas and slight decreases or no change in rainfall in the western high-altitude areas and Lees Valley. The southern edge of the District may experience 12% more rainfall annually under RCP 8.5. This increase is expected to occur relatively consistently across all seasons except spring where a decrease could be seen in some areas. Extreme rainfall is likely to become more frequent and intense as the warmer atmosphere holds more water.
- Wind speed is generally expected to increase, and relative humidity decrease, as the climate warms.

A broad range of impacts could be felt both directly and indirectly. The District is predicted to become more drought prone, with droughts becoming more severe and lasting for longer. Flooding, particularly in those areas close to our braided rivers, could continue to be an issue and saltwater could intrude further into coastal land as the sea level rises. There could be more frequent and intense storms and an increased risk of heat waves, wildfire and landslides.

Many natural ecosystems are already being adversely impacted and some species and ecosystems will be more vulnerable to climate change than others. Shifts in ecological boundaries are already being observed in some species, and local population extinctions are likely to be seen in those species unable to adapt or migrate to cooler areas. An increase in heat waves could cause plant fatalities from heat stress especially when combined with soil moisture deficits

Warmer temperatures could enhance the risk of pests and diseases with some pests and diseases normally wiped out by cooler winter temperatures being able to persist and spread. Plants and fauna living at higher altitudes may also be affected by new pests as snowlines rise. Mast events, which produce extremely heavy flowering and seeding, also fuel plagues of pests like rats and stoats that feed on native birds, lizards, bats and insects once the seed is gone.

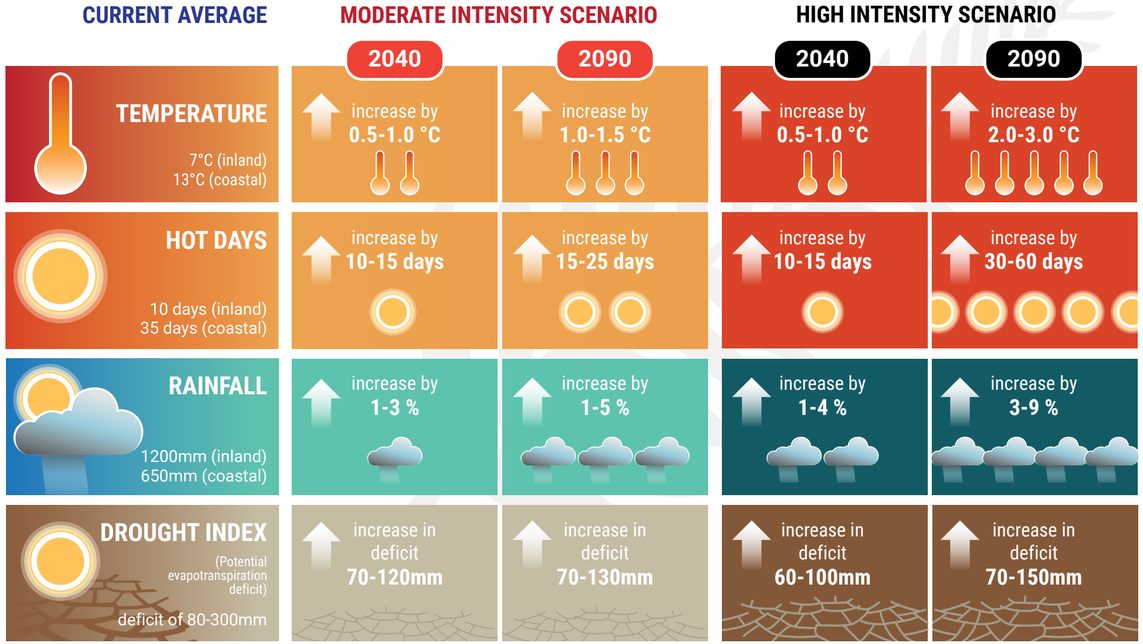
Plants and animals have evolved to behave in certain ways because of seasonal cues such as daylight and temperature, and the timing of cycles across interdependent ecosystems was sequenced. As the climate changes 'phenological mismatching' is occurring when the timing of events such as birds being hatched and the supply of grubs to feed them is out of sync. This can result in the chicks starving and the caterpillars growing into plague numbers, killing plants and impacting crops. It may also be too hot for fruit and flowers to form putting pollinators at risk.

The sensitive Ashley/Rakahuri Saltwater Creek estuarine area is at risk from multiple factors such as sea level rise, ocean acidification, saltwater intrusion, flooding, reduced water flows, increased demand for water take for irrigation and an increase in pest and diseases such as toxic algae blooms as temperatures rise.

Photographer: Greg Byrnes

Overview - Waimakariri Climate change Scenarios

Graphic from Overview - Waimakariri Climate Change Scenarios, NIWA Climate Change Technical Scenarios Summary Report



Societal pressures

The District has experienced rapid population growth in just under four decades, from 25,811 in 1986 to an estimated population of 66,246 today. By 2050 the population is expected to be approximately 100,000. The new town of Pegasus has been developed in the east of the District and large-scale urban intensification has occurred on the outskirts of Rangiora, Kaiapoi and Woodend on what used to be farmland.

As the natural environment increasingly competes with human populations for space and resources, attitudes towards the environment, along with fluctuations in economic prosperity, determine the extent to which it is protected.

The relatively recent shift towards smaller sections and larger houses in new urban subdivision areas has resulted in smaller private yards with less space for trees and gardens. This removes opportunities for people to care for nature within their home environments and reduces the amount of food and habitats available to birds and insects.

Many people are spending less time outdoors than previous generations and research has linked this with less of an understanding of the natural world and a decline in kaitiakitangi or sense of stewardship, as well as an increase in associated physical and mental health issues termed 'nature deficit disorder'.

In Aotearoa New Zealand, the predominance of exotic rather than indigenous species in the landscape and the lack of integration of nature with the built-up environment has led to an 'extinction of experience'. This is where people no longer value nature or indigenous vegetation due to a lack of exposure to it.

Challenges for the Waimakariri environmental sector

Significant Natural Areas

Significant natural areas (SNAs) hold high biodiversity values and are important for the preservation of rare species and ecosystems within the District.

Currently, there are 92 mapped SNAs containing significant indigenous vegetation and/or significant habitat of indigenous fauna that have been voluntarily listed in the proposed District Plan. The Plan contains objectives, policies and rules aimed at protecting these areas and other significant ecosystems from loss or degradation through inappropriate subdivision and development.

The National Policy Statement for Indigenous Biodiversity currently requires all SNA areas within the District to be mapped by 2027, although the Government has signalled its intention to review this legislation.

The significance of each SNA is assessed against specific criteria such as the rarity of the species found there. These sites provide an important benchmark and reference by which other areas of indigenous vegetation and habitats can be restored.

Some of these sites are owned by the Department of Conservation and a few by the Council but the majority are located on private land. We all benefit from private landowners protecting indigenous biodiversity, and therefore need to support their efforts.

Issues for SNA landowners include:

- Protection costs typically fall to the landowner and although some rates relief and funding is available through contestable funds, this may not be sufficient to cover all expenses.
- Accessing expert advice and resources for fencing, pest and weed control and restoration.
- Fragmented SNAs that are too small to be self-sustaining.
- Insufficient buffer zones between SNAs and adjacent activities, for example irrigation, and the loss of productive land to provide them.
- The opportunity costs of protecting SNAs as vegetation cannot be cleared to develop land for a more intensive use, such as productive farming.

CHALLENGES

Waimakariri District voluntary environmental groups

The District is well served by community groups and organisations committed to improving our natural environment and collectively the work carried out by these volunteers adds up to thousands of hours every year. Some members have spent decades acquiring expertise about specific ecosystems or species; and the work of some groups, such as the Matawai Park Advisory Group and the Ashley/Rakahuri Rivercare Group, has attracted national and international accolades. The table below shows some of the environmental community-based groups operating in the District.

In 2021, the Waimakariri District Council assisted a group of knowledgeable and enthusiastic community members to establish the Waimakariri Biodiversity Trust. The Trust has a vision to assist the District's biodiversity in various practical and educational ways. Since their set-up they have organised public lectures from esteemed ecological researchers and engaged with landowners wanting to improve habitat for wildlife.

Te Kōhaka te Tūhaitara Trust was set up between the Council and Te Runanga o Ngāi Tahu to manage the Tūhaitara Coastal Park in accordance with strong ecological, conservation and cultural values. The park covers approximately 750ha of land along the Pegasus Bay coastline area on which the Trust is undertaking the creation of a restored coastal forest sequence, the first of its kind for Canterbury.

Name of group/organisation	Key projects and future plans
Ashley Gorge Reserve Advisory Group	Oversee the development of Ashley Gorge Reserve and protect, enhance and maintain the biodiversity and recreational opportunities of the area.
Ashley/Rakahuri Rivercare Group	A local group of volunteers who aim to protect birds and ecosystems on and around the Ashley/Rakahuri River.
Birds NZ	A society promoting the study of birds, data collation, conservation and management.
Braided River Aid (BRaid Inc)	Braided river protection for habitats and species.
Canterbury Botanical Society	Promotes the study of indigenous biodiversity, particularly Canterbury indigenous flora, and undertakes an advocacy role.
Kaiapoi Food Forest	Building community self-reliance through the development of a food forest and community space that aims to connect, nourish, educate and inspire.
Keep New Zealand Beautiful, local groups	Maintaining public gardens around the District.
Matawai Park Reserve Advisory Group	Group advising on the management of Matawai Park to retain and enhance biodiversity and recreation.
Royal Forest and Bird Protection Society of New Zealand and local branches	Independent conservation organisation focusing on the protection and enhancement of "wildlife and wild places".
Sefton Saltwater Creek Catchment Group	Monitoring, managing and enhancing the Saltwater Creek Catchment.
Silverstream Reserve Advisory Group and volunteers	Advisory and volunteer work to enhance the recreational and nature conservation values of the Silverstream Reserve and surrounding ecosystems.
Taranaki Reserve Advisory Group	Monitoring and managing the Taranaki Reserve.
Te Kōhaka o Tūhaitara Trust	Restoration and enhancement of the local coastal environment and education and research opportunities into coastal ecosystems issues.
Waimakariri Biodiversity Trust	Provision of information/resources to enhance/protect areas of biodiversity throughout the District.
Waimakariri Landcare Trust	Support sustainable land development, alternative land use options and education for landowners.
Waimakariri Lifestyle Block Owners Group	A group of interested volunteers who have lifestyle blocks and wish to protect, maintain and enhance the local environment.
Waimakariri Water Zone Committee	Local volunteers and rūnanga, regional and local Council staff aim to implement water management work in the Waimakariri District.

At a partnering for Environmental Action Forum held in November 2021 community groups identified the following issues (listed in order of significance) as being the most challenging for them.

Resources

- Accessing funding for research, staff and projects, especially for ongoing maintenance, pest and weed control.
- Attracting volunteers, keeping them engaged, avoiding volunteer burnout and succession planning for groups.

> *"Piecemeal, short-term and small-scale funding makes it hard to plan long term on a landscape scale".*

Knowledge

- Lack of baseline information, including for groundwater resources and river systems; and accessing/being aware of existing data and research.
- Awareness of issues and values. Recognising and valuing existing local biodiversity, such as that found on roadsides and in drylands.
- Obtaining expert advice, and acknowledging the need for this, to inform restoration projects.

> *"Knowledge underpins good management".*

Vision

- Developing an agreed vision and targets for the District so we can collectively measure success.
- Having strong policies that protect indigenous biodiversity and prioritising the protection of existing remnants over new plantings.

This word map represents the relative importance of issues identified by participants at the forum.

Collaboration

- Working together to break down silos, reduce duplication, share data, learn from each other and share success stories.

Operating environment

- Changing legislation and regulations and the implications of this for groups. Lack of regulatory consistency.
- Uncertainty around the impact of climate change including sea level rise.

Education

- Lack of community awareness and the need for community involvement.

> *"We can't do this alone".*

Waimakariri District Council Greenspace

Challenges for Council reserves and streetscapes include the following.

Provision

- Insufficient natural parks to meet national parks and recreation standards and agreed Council levels of service, although this is compensated in part by Department of Conservation land to the west and Te Kōhaka te Tūhaitara Trust land in the east.
- The need to re-evaluate how greenspace is provided to take into account loss of biodiversity through urban intensification.
- Significant cost of acquiring and developing new sites.
- Small reserves with a large number failing to meet the minimum 10ha threshold required for self-sustainability.
- Poor access to recreation and ecological linkages.
- Trees and indigenous vegetation competing for space with neighbourhood recreation.
- Street trees competing for space with underground services and road carriageway users.
- Lack of enforcement of Council's Reserve Engineering Code of Practice.

Resources/systems

- Limited biodiversity staff resources to provide expert advice and education.
- Limited resources for general maintenance as well as pest and weed control.
- Difficulties in establishing a reliable baseline due to missing vegetation and tree data.
- Lack of forward planning, for example, development and refresh of reserve management plans, especially one for recreation and ecological linkages.
- Lost opportunities through not having sufficient funding to develop existing sites.
- Lack of priority given to understanding and protecting biodiversity.

Biodiversity values

- Low natural ecosystem values in most reserves.
- Reserve landscapes dominated by grass monocultures and a few shrubs and trees.
- Limited indigenous vegetation.
- Limited food for bees and pollinators.
- Lack of knowledge of biodiversity values on Council land.
- No measures established for biodiversity values and no ongoing monitoring programmes.
- Critical loss of wetlands.
- Environmental impacts from the use of chemicals, particularly close to waterways.
- Tension between the use of reserves for recreation and enhancing biodiversity values.

Community

- Lack of awareness of and valuing indigenous biodiversity.
- Low community buy-in to development projects, for example, planting days.
- 'Not in my backyard' attitudes.
- Ongoing vandalism.
- Objections to the 'untidier' look of more naturally maintained reserves.
- Dislike of shade and leaf fall caused by street trees.
- Perceptions of safety for park users in more densely planted reserves.
- Affordability of Council projects.
- Limited interpretation provided to connect people with nature.

CHALLENGES

Rebuilding nature

Reconnecting with our indigenous landscape

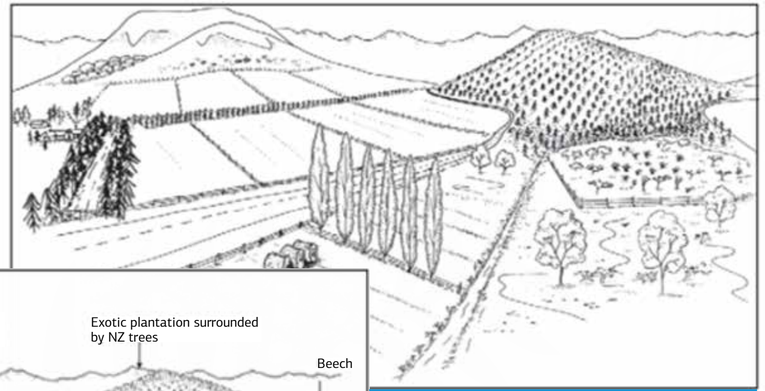
Normalising an environment which is exotic leads to an 'extinction of (indigenous) experience'. Early immigrants would have had a completely different experience of the District's natural environment than those arriving today. Over time exotic vegetation can become more highly valued than indigenous vegetation, some of which exists nowhere else in the world, because of its predominance in the landscape. This can lead to an altered sense of place and alienation from naturally occurring ecosystems. It also has a negative impact on native fauna which has adapted over time to thrive on indigenous species.

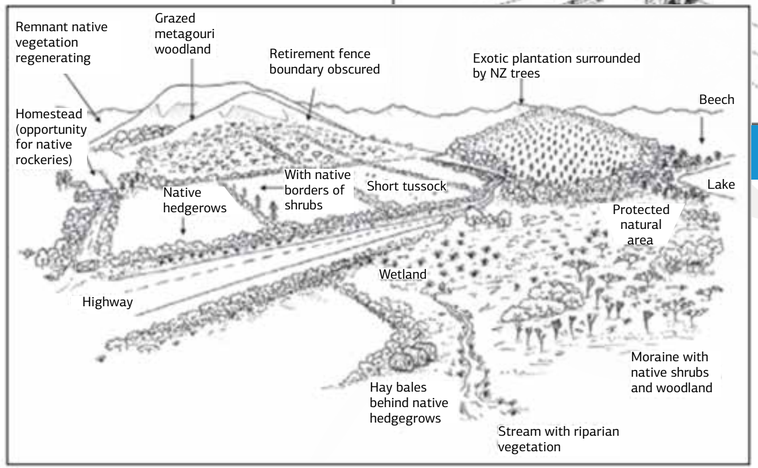
We need to reclaim our unique identity by making significant efforts to protect the little that remains and prioritise the planting of indigenous over exotic species in both our urban and rural areas.

Visibility is key to conservation culture.

Reintroducing indigenous vegetation to rural areas

Over time, the wholesale removal of indigenous vegetation, draining of wetlands and modification of natural waterways for primary industry has led to the loss of ecosystem values within the District. This includes significant reductions in indigenous flora and fauna habitats as well as soil degradation, erosion, nutrient imbalances and deteriorating water quality.





Above: Predominant rural landscapes
Left: Integrated functional landscape

The adjacent picture shows how a mix of land uses can be regenerative and sustainable for productivity, as well as enhance biodiversity values and promote human health.

Under this system marginal land can be retired and left to regenerate, wetlands and waterways fenced off, natural waterways restored and flax fields planted for effluent release. Biodiversity corridors can be created by planting shelterbelts and boundary hedges with indigenous species and planting under pivots. Regenerating native vegetation also provides shade and feed for stock.

Reintroducing indigenous vegetation to urban areas

Even the smallest urban areas can play a part in restoring indigenous biodiversity by:

- Promoting visibility of our cultural heritage
- Providing habitats for indigenous lizards and invertebrates
- Providing stopover points within a wider corridor for indigenous birds
- Enhancing food/water sources for birds during times of seasonal scarcity
- Creating a seed bank for dispersal/ regeneration of indigenous vegetation.

Opportunities include:

- Creating micro-bush areas
- Planting vertically
- Using indigenous vegetation to create lush courtyards
- Providing Insect boxes and lizard habitats
- Using indigenous species in streetscapes
- Allowing species to regenerate in urban 'wild' areas.

We can do so much more to integrate/protect biodiversity in urban environments:

- **Backyard micro-bush gardens**
- **Courtyards and inner sanctuaries**
- **Walls can be buffers**
- **Green roofs and roof gardens can be refuges for lizards and macro-invertebrates.**

Research shows that people who are more connected with nature are usually happier in life and more likely to report feeling their lives are worthwhile.

Improvements to physical wellbeing and lower levels of poor mental health are associated with connection to nature.

Increasing urban tree canopies

> *Trees are on the job for us, 24 hours a day, seven days a week, working to improve our local neighbourhoods, our wellbeing and helping to mitigate the effects of our changing climate.*
>
> Our Urban Forest Plan for Ōtautahi Christchurch. Christchurch City Council 2023

As urban intensification increases there is less space for trees in private gardens and road corridors. If not addressed, this could result in a significant overall reduction in the amount of tree canopy in urban areas of the District.

Street trees are often seen as a nuisance as they can block views, crack footpaths, drop leaf/fruit litter and cause excessive shading. However, they also provide many benefits and are a significant tool we can use to address our climate and ecological crisis. The cooling effect of trees on urban streets will become even more important as the climate warms.

Urban trees need to be viewed as critical infrastructure in the same way footpaths, pipes and cables are and sufficient space provided for them within the road corridor and public open space.

Opportunities include:

- Planting the right tree in the right place to minimise issues
- Educating residents about the value trees provide
- Protecting existing trees better
- Developing urban canopy targets and planting more trees to achieve these.

Benefits of urban trees

Spending time near trees **improves physical and mental health** by increasing energy levels and speed of recovery, while decreasing blood pressure and stress.

A tree can absorb up to 150kg of CO^2 per year, **sequester carbon** and consequently **mitigate climate change.**

Two medium-sized healthy trees **produces oxygen required for a single person** for one year.

Landscaping, especially with trees, can **increase property values** by 20%

Trees **protect biodiversity** by providing habitat.

Large urban trees are excellent **filters for urban pollutants** and fine particulates.

Trees have been shown to **intercept** between 9% and 61% of **rainfall**. They also **reduce erosion and sediment** into our stormwater systems.

Strategic placement of trees in urban areas can **cool the air** by between 2°C and 8°C.

Trees properly placed around buildings can **reduce air conditioning needs** by 30% and **save energy used for heating** by 20-50%.

(Our Urban Forest Plan for Ōtautahi Christchurch, Christchurch City Council 2023)

OPPORTUNITIES

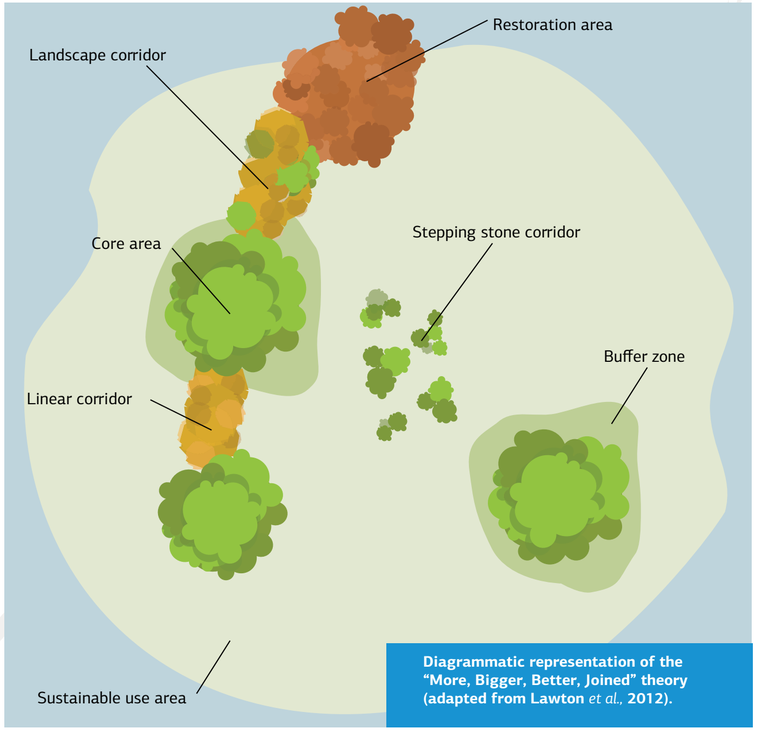
More, bigger, better and joined

> *"The ability to sustain biodiversity and ecosystem services will hinge upon the total amount and quality of habitat left in fragments, their degree of connectivity, and how they are affected by other human-induced perturbations such as climate change and invasive species".*
>
> Haddad *et al* (2015)

Fewer, smaller, isolated patches of habitat lead to a reduction, and sometimes extinction, of species. A rapid decline in species' diversity and increase in fragmentation occurs when less than 10% vegetation cover remains. As well as supporting biodiverse ecosystems, more habitat patches within an area can greatly increase the dispersal of a range of species and enhance the regenerative capacity of the natural environment.

Key strategies are to:

- Improve the quality of current sites by better habitat protection, restoration and management
- Create new natural sites larger than 10ha (minimum size required to be self-sustaining)
- Enhance connections between, or join up, sites, either through physical corridors, or through 'stepping stones'
- Reduce the pressures on wildlife by improving the wider environment, including through buffering wildlife sites
- Increase the size of current wildlife sites (kokako and kiwi need at least 2ha).



Diagrammatic representation of the "More, Bigger, Better, Joined" theory (adapted from Lawton *et al.*, 2012).

Landscape matrix

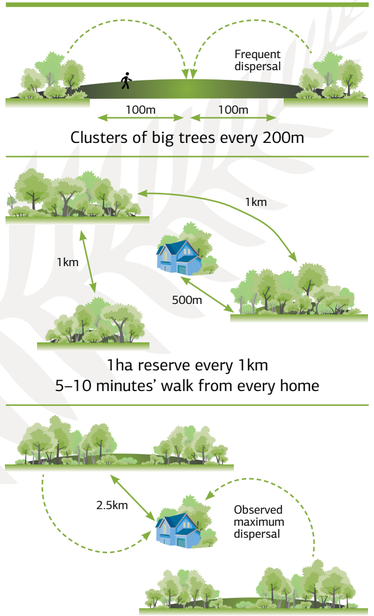
Natural ecosystems are dynamic, forever moving and evolving. Species do not survive in isolated populations but in connected populations where individuals are able to move between groups. Joining up our natural environment allows for the mixing of genes and resilient populations which in turn creates healthy ecosystems with ecological integrity.

A matrix of habitat patches, adequately buffered and of varying sizes, can assist in the movement of species across a landscape. Places where birds can feed and nest from sea to mountains extends their range and population size. This is true for much of the biodiversity in the District.

Meurk and Hall (2006) developed a cultural landscape matrix providing optimal distances for the effective regeneration of forest habitat patches. This included the following:

- Groves – a few minutes' walk from each resident
- Mid-habitats – within 10 minutes' walk (maximum distance 0.5km)
- Core sanctuaries – within 45 minutes' walk or 10 minutes' biking (maximum distance 2.5km)
- Connectivity – through corridors and the halo effect to habitat and homes. The halo effect is where species can spillover from well-functioning ecosystems to repopulate new areas. An example of this is previously rare birds entering Wellington city from the Zealandia ecosanctuary.

Native hedges can provide butterfly, lizard and bird food



Meurk and Hall, Cultural Landscape Matrix (2006)

OPPORTUNITIES

Working with others

> *Environmental and ecological restoration is 'as much about people as about the natural environment'.*
>
> Norton *et al.*, 2016

Collaboration and partnerships

Collaboration and partnerships with tangata whenua are essential to acknowledge and support their role as kaitiaki and to enable a deeper understanding of natural systems through the application of mātauranga Māori. The need for Māori leadership within the natural environment sector is increasingly being embraced in policy and law.

> *'Indigenous people have the right to maintain, protect and control their culture and traditional ecological knowledge.'*
>
> United Nations Declaration on the Rights of Indigenous Peoples, 2007

Inter-agency collaborations and community partnerships are also extremely important for efficient nature conservation. Collectively, the work achieved by committed community groups can far outweigh that of a single agency. Aotearoa New Zealand examples include Pollinator Paths, a registered charity which helps people in Auckland to fill their streetscapes with habitat suitable for pollinators, and Predator Free Wellington. This organisation assists groups and individuals to protect biodiversity by eradicating predators. Initiatives such as these may allow towns and cities to become biodiverse sanctuaries over time.

Citizen bioscience

Citizen science is defined as 'public participation and collaboration in scientific research with the aim to increase scientific knowledge'. Benefits can include learning opportunities, personal enjoyment, social interaction, contributing to scientific evidence and policy development, and connecting the wider community with science. It is particularly useful in more densely populated urban and peri-urban areas.

A well-known nationwide example is the annual 'Garden Bird Survey' where households have a week to record the birds they see over an hour at a particular location. A local example is the 2019 Bird Count report prepared by the Council to inform the Northern Pegasus Bay Bylaw using bird count data supplied by Birds NZ and the Ashley/Rakahuri Rivercare Group.

Ashley Rakahuri
RIVERCARE GROUP

BIRDS NEW ZEALAND
Te Kāhui Mātai Manu o Aotearoa

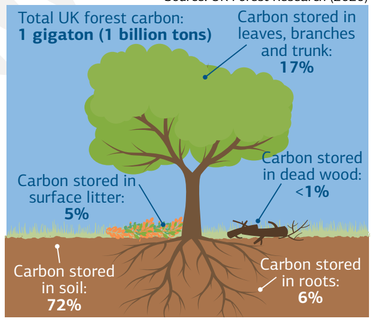
Nature-based solutions

Nature-based solutions that address climate change issues

Issue	Nature-based solution
Stormwater and flood management Extreme weather events are becoming more common as the planet heats up putting more moisture into the atmosphere. Climate change will substantially increase the severity and frequency of flood risk. Nature-based solutions allow excess water to be stored and slowly released to the surrounding environment.	Sponge towns and cities, stormwater swales, daylighting streams, waterways, and wetlands.
	Making room for rivers and waterways. Letting these flow more naturally will improve their natural flood capacity, health, and habitat quality.
	Replacing hard surfaces with permeable surfaces, for example, concrete with crusher dust pathways.
Urban heat islands Vehicles and buildings generate heat, and dark, paved surfaces absorb heat. These surfaces also allow fewer plants to grow. This reduces the cooling effects of shading and evaporation. The resulting urban heat-island effect can increase temperatures in built-up areas and worsen the effects of heatwaves on health and wellbeing.	Increasing tree canopy coverage in urban areas to provide shade and cool temperatures through transpiration.
	Integrating landscape design with built-up areas to create living towns.
	Growing green roofs, roof gardens and rain gardens.
	Promoting the 'urban wild' concept where natural ecosystems are given space to flourish in highly developed urban areas.
Thunderstorm asthma This is where pollen particles take on moisture in the clouds and then become small enough to pass directly into the lungs causing severe illness and death.	Replacing high allergenic exotic species with indigenous species as these are not known to cause asthma.
Wildfire The risk of multiple/large scale wildfires is increasing as the climate warms.	Planting indigenous species as a green firebreak.
Climate change mitigation Trees can store large amounts of carbon and therefore help to mitigate the effects of climate change.	Planting street trees and urban pocket forests.
	Protecting and restoring wetlands as blue carbon sinks.
Food insecurity Climate change events can disrupt food production and supply chains making it difficult for people, especially those on low incomes, to source, access and afford adequate food.	Providing food forests, community gardens, space to grow and harvest mahinga kai, fruiting street trees, raised bed and container vegetable growing.

The European Commission (2015) describe nature-based solutions as 'actions which are inspired by, supported by or copied from nature'. Nature-based solutions buffer against climate impacts, while also fostering wellbeing, sequestering carbon, and increasing biodiversity. As such, they provide environmental, social and economic benefits, and help build resilience. The Government signaled in the 2022 Aotearoa National Adaptation Plan that it will prioritise nature-based solutions in planning and regulations for both carbon removals and climate change adaptation in order to address the climate and biodiversity crises together.

Source: UK Forest Research (2020)

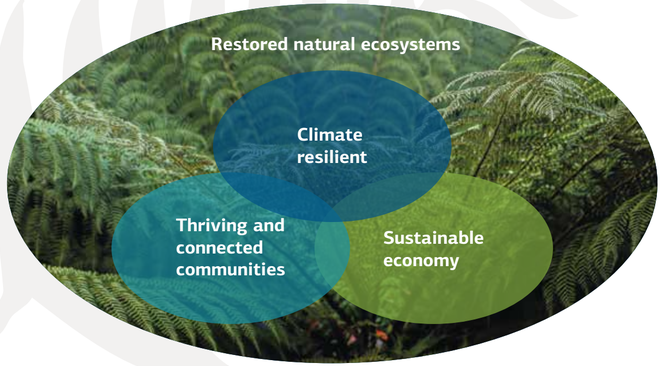


The Vision 2023–2053

In 2001 the Council adopted a strategy for the District called Vision 2020. This document contained a vision for 'a high-quality natural environment' where natural ecosystems were a significant feature of the District and the land, water and air were healthy. A key strategic action was to 'preserve natural ecosystems' by:

- Supporting Kaitiakitanga – the duty of the tangata whenua to safeguard the life supporting capacity of the community's natural resources
- Recognising that biodiversity is a highly valued resource
- Recognising the vulnerability of natural resources
- Identifying, protecting and, where appropriate, restoring and/or enhancing:
  - Waterways and wetlands
  - Significant remnant native vegetation
  - Natural ecosystems
  - Significant habitats for indigenous fauna.

More than 20 years later these actions are still relevant with the need to protect our natural environment and indigenous biodiversity ecosystems even more important due to increased pressures from population growth, land use change and climate change. The vision for the Waimakariri Natural Environment Strategy recognises the interrelationship between a healthy environment and thriving, healthy communities, and the need for us all to work together to achieve this. The implementation plan that gives effect to this strategy demonstrates Council's commitment to being a leader in the protection and enhancement of our natural environment, while working in partnership with, and actively supporting, our community on the journey.



Vision	Our healthy and resilient natural environment sustains our ecosystems, our communities and our future.
Strategic Goal	We work together to ensure Waimakariri's natural environment is valued, protected, restored and celebrated.

Guiding principles

The following principles underpin this strategy and guide its implementation:

Guiding Principles	Lead by example | Engage with others | Use best practice | Commit to action

Key themes

The following four key focus areas have been identified for the strategy:

Strategic Direction 1
Prioritise nature

This focus area is about recognising nature is core to our identity, lifestyle, wellbeing and economy and making space for it to thrive in our built-up and productive environments.

Strategic Direction 2
Connect people and nature

The more our community connects with nature the more we will respect, understand and care for it. This focus area is about making it easy for people to be a part of nature and supporting those already engaged in protecting and restoring it.

Strategic Direction 3
Improve our knowledge

We need to know what we have to determine whether our actions are making a difference. This focus area is about developing baseline data, carrying out research to inform best practice responses to current and future challenges, and monitoring performance.

Strategic Direction 4
Sustain and create resilient ecosystems

This focus area is about making practical on the ground improvements to protect and restore natural ecosystems across the District.

WHERE WE WANT TO BE

Strategic direction 1: Prioritise nature

Desired outcomes:

1. **The District's natural environment is valued as critical infrastructure, essential to our wellbeing and the survival of other species we share Earth with.**
2. **Natural ecosystems are a significant feature of the Waimakariri District.**
3. **There is better integration of the natural and built environment.**

To succeed we need to:

- Understand the District's unique contribution to global biodiversity.
- Increase awareness of the importance of our natural areas for connection to place, and our community's social, cultural, economic and environmental wellbeing.
- Increase funding to protect and restore the natural environment.
- Understand and mitigate the effects of development on our natural environment.
- Ensure environmental impacts are factored into District development and infrastructure planning and management.

Strategic Actions:

1. Integrate planning by:

- Increasing the circle of influence in infrastructure and district planning.
- Advocating for a holistic approach.

2. Mainstream biodiversity by:

- Ensuring biodiversity is prioritised as a key Council activity.
- Moving from grey to green.
- Creating spaces for nature.

The environment has different meanings for people, shaping the way they interact with it.

There is only one earth and one solution. The ultimate test for us and everything we do is: *"Am I working with nature or against it?"* Rod Oram 2023

WHERE WE WANT TO BE

Strategic direction 2: Connect people and nature

Desired outcomes:

1. **Living in a healthy natural environment enriches our everyday life and we work together to achieve and maintain this.**
2. **People understand and value indigenous biodiversity and natural ecosystems.**
3. **Residents have a 'sense of place' or connectedness to the District's natural landscape.**
4. **Our community understands how it can contribute to and become actively involved in protecting, restoring and recreating natural ecosystems.**

To succeed we need to:

- Assist our community to understand, appreciate and care for our natural environment.
- Encourage residents to become actively involved with environmental rehabilitation and enhancement projects.
- Maximise benefits, including value for money, by partnering with others.
- Celebrate biodiversity success stories – past, present and future.
- Enable sustainable public access to the natural environment.
- Significantly increase the amount of indigenous biodiversity in the District's landscape.
- Integrate indigenous biodiversity with our urban form to ensure it is visible.

Strategic Actions:

1. Make it easy to connect by:

- Providing opportunities to bring together people and biodiversity.
- Ensuring education programmes, activities and resources are available.
- Looking for opportunities to partner with and support others.
- Encouraging people to physically connect with the natural environment.

2. Rediscover and make our indigenous landscape visible by:

- Increasing the proportion of indigenous planting on Council reserves and streetscapes.
- Supporting the achievement of 10% indigenous biodiversity in the wider landscape.

The 'mere-exposure' effect

People connected to nature are more likely to advocate for the natural environment

People joining in, caring for nature and each other.

WHERE WE WANT TO BE

Strategic direction 3: Improve our knowledge

Desired outcomes:

1. **Tangata Whenua knowledge and practices are recognised, respected and encouraged.**
2. **We have the knowledge to effectively protect and restore our natural ecosystems.**

To succeed we need to:

- Understand the District's natural ecosystems and biodiversity indicators.
- Understand the impacts of activities on the District's water catchments and any flow-on effects.
- Understand the likely effects of climate change on the District's biodiversity and how resilience can be promoted.
- Work in partnership with Ngāi Tūāhuriri Rūnanga to incorporate Mātauranga Māori into policies and actions.
- Work collaboratively with local, regional and national organisations committed to transforming environmental outcomes.
- Use knowledge, science, data and innovation to inform our work.

Strategic Actions:

1. Know what we have by:

- Continuing the assessment, monitoring and reporting of biodiversity values on public and private land.

2. Understand future challenges by:

- Carrying out research and working with research partners, community groups and landowners to fill knowledge gaps and understand challenges.
- Identifying the impacts of key trends on the natural environment.

iNaturalist NZ – Mātaki Taiao

A place where you can record what you see in nature, meet other nature watchers, and learn about Aotearoa's natural world.

- **48,861 people signed up**
- **1,865,227 observations to date**
- **18,288 species observed**

Through increasing natural environment information, people become more involved, empowered, and responsive.

New Zealand GARDEN BIRD SURVEY

Collaborative learning through citizen science

Biodiversity values in the estuary and coastal wetlands

7-8.30pm
Wednesday
13 September

Presenter:
Bev Alexander, Ashley-Rakahuri River Group

Venue:
Waikuku Beach Hall

WHERE WE WANT TO BE

Strategic direction 4:
Sustain and create resilient ecosystems

Desired outcomes:

1. **The District's natural ecosystems are self-sustaining, healthy, resilient, and connected from the mountains to the sea.**
2. **A greater proportion of vegetation cover in the District is indigenous.**
3. **There is no further loss or degradation of Significant Natural Areas (SNAs).**
4. **Urban vegetation, including street trees, is valued by the community as making a significant contribution to urban resilience, human health and environmental sustainability.**

To succeed we need to:

- Prioritise the protection of species and ecosystems that are internationally, nationally and regionally important.
- Prioritise the protection, restoration and enhancement of the District's most vulnerable and high-value ecosystems.
- Conserve, rehabilitate, extend and connect biodiversity and wildlife corridors.
- Ensure waterways provide healthy and connected habitats for indigenous aquatic species.
- Have a joined-up response to managing our natural resource.
- Work in partnership with Ngāi Tūāhuriri Rūnanga to promote improved natural environment outcomes.
- Encourage and support action by landowners and community to protect, maintain, restore and recreate indigenous biodiversity.
- Prioritise the planting of eco-sourced (where possible) indigenous vegetation over exotics on Council-owned land.
- Develop more of the Council's reserve land as self-sustaining natural ecosystems.
- Reduce biological threats and pressures through effective management.
- Implement climate change mitigation and adaptation action.
- Transition to maintenance practices that work in harmony with nature.
- Promote the ecosystem services provided by street trees to residents.

Strategic Actions:

1. Protect what we have by:

- Implementing a climate change natural environment mitigation and adaptation programme.
- Reducing the pressure in high value indigenous ecosystems by improving the wider environment.
- Providing support for SNA landowners and incentivising SNA protection.

2. Rebuild nature – more, bigger, better, and joined by:

- **More** - Creating new natural environment sites to provide for future wellbeing.
- **Bigger** - Increasing the size of existing indigenous flora and fauna sites.
- **Better** - Improving the quality of the natural environment by better habitat management and promoting fauna-friendly practices.
- **Joined** - Enhancing connections between, or joining up sites.

WHERE WE WANT TO BE

Implementation

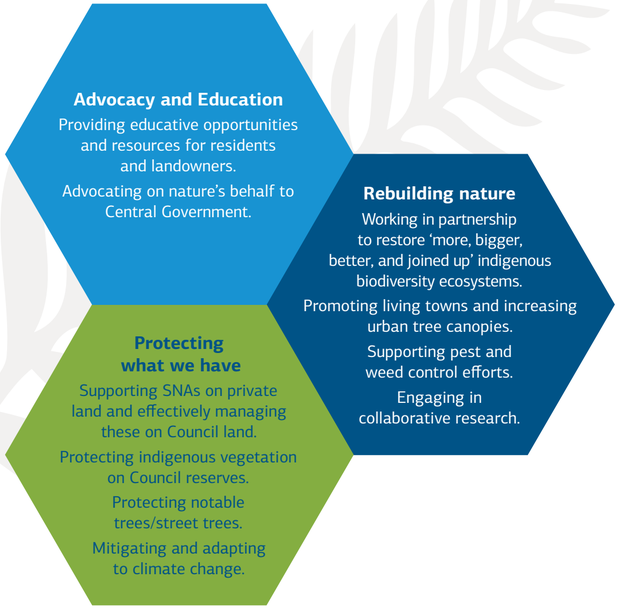
2024-34 Long Term Plan

The Implementation Plan for this strategy contains 124 actions that could be carried out over the next 30 years. Actions programmed for 2024 to 2034 have been included in the Council's Long Term Plan (LTP). Over this ten year period an additional $1.2m operational expenditure and $2.9m capital expenditure has been provided to support the implementation of these actions.

Implementation Plan actions have been prioritised as following:

1. Meeting Council's legislative requirements (protecting remaining indigenous priority ecosystems).
2. Very Important (restoring and managing natural ecosystems, education).
3. Important (educating residents in general).

Many of the actions are business as usual for the Council and have been captured to guide Greenspace biodiversity work programmes over the next few years. In order to make further progress on environmental outcomes the Council significantly increased its expenditure on biodiversity in the 2021-24 LTP and this increased activity is reflected in the Implementation Plan.



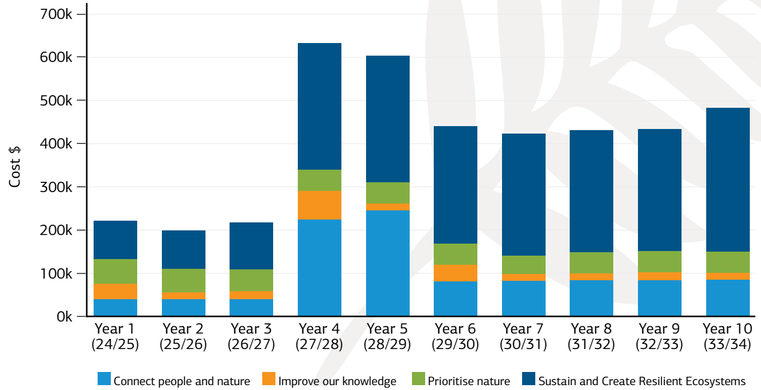
Key projects from the 2021-24 Long Term Plan include:

- Additional funding for SNA landowners in the form of rates relief and a contestable fund
- Funding to implement Arohaitia te Awa over 10 years
- Funding to support the establishment of the Waimakariri Biodiversity Trust
- Funding to provide access to the coast for people with restricted mobility
- Additional biodiversity staff resource.

In addition to these new projects, 85ha of wetland off Lineside Road was purchased by the Council in 2023 to cover a shortfall in its stated levels of service for Natural Parks.

Strategy actions funded in the 2024-2034 Long Term Plan

This graph includes all the Implementation Plan actions and shows the logical progression of activities from ensuring internal resources, processes and knowledge are in order, to concentrating on connecting people and nature, and then making on-the-ground ecosystem improvements.



Key Waimakariri Natural Environment Strategy implementation actions that have been funded in the 2024-34 Long Term Plan include:

- Operational funding for the Waimakariri Biodiversity Trust
- An annual contestable fund to support community-based environmental groups to implement strategy actions
- New education and research programmes
- An increase in Council biodiversity capability and capacity in light of increased legislative requirements arising from the recent gazettal of the National Policy Statement for Indigenous Biodiversity
- New targets for additional tree planting to increase the size of urban tree canopies (approximately 12,000 more specimen trees by 2033) and increased indigenous biodiversity planting on Council reserves
- The development of the Lineside Road wetland
- Projects that increase access to the natural environment for those with restricted mobility
- An additional ranger to work with community groups, plant reserves and carry out pest and weed management
- Partnering in an integrated landscape-wide pest and weed control programme
- Developing more walking tracks at natural parks such as Ashley Gorge Reserve
- Part funding (with Department of Conservation) a new toilet at Coopers Creek.

HOW WE ARE GOING TO GET THERE

Monitoring

Improving environmental outcomes takes time and the Waimakariri Natural Environment Strategy is intended to provide strategic direction for achieving this over the next 30 years. A key action is to identify, monitor and publicly report on biodiversity indicators for the Waimakariri District so progress can be tracked.

Review

The strategy document will be reviewed in eight years' time prior to the development of the Council's 2034 Long Term Plan.

The Implementation Plan needs to be flexible enough to respond to changing circumstances and priorities. This will therefore be reviewed every three years in line with LTP reviews to allow requests for funding to be considered by Council.

Appendix 1 Council Park Categories

Type of Park	Primary purpose	What are they?	What are they used for?
Natural Parks	To provide opportunities for people to experience nature and/or to protect the natural environment.	• Protect natural ecosystems including indigenous flora and fauna. • Allow us to experience nature close to home. • Enable participation in low impact recreation activities compatible with the park's natural values.	• Conservation. • Ecological restoration and enhancement. • Access to the coast, rivers, man-made waterbodies, natural environment. • Walking, cycling, horse riding, kayaking, camping, picnicking, environmental education.
Recreation and Ecological Linkages	Open space, linkages and corridors.	• Enhance urban form and landscape values. • Often provide walkway/cycleway networks linking one neighbourhood to another or park areas together. • Usually have a low level of development which may include tracks, park furniture and signage. • Can be to protect and enhance biodiversity and provide linked ecological corridors within the built environment.	• Amenity/open space. • Walking/cycling/commuting. • Conservation and ecological enhancement.
Neighbourhood Parks	Recreation, play and open space.	• Smaller reserves located within residential areas or larger rural domains serving the needs of small townships/outlying communities. • Add to the attractiveness of neighbourhoods. • Provide space for informal recreation, social interaction and play. • Facilities include public toilets, playgrounds, half courts and seating.	• Amenity open space in built up neighbourhoods. • Recreation including children's play, informal sports, socialising, relaxation, localised community activity.

Type of Park	Primary purpose	What are they?	What are they used for?
Sports and Recreation Reserves	Sport and recreation activity.	• Larger multi-purpose reserves providing for active sports and recreation. • Sports facilities and buildings - sports turf and hard courts, changing rooms and club rooms, public toilets and on-site car parking. • Recreation facilities - playgrounds, skate parks, half courts and seating.	• Organised sports. • Informal/social sports. • Active recreation such as walking. • Events. • Amenity open space.
Outdoor Adventure Parks	Recreation activities requiring a large scale non-urban environment.	• Large sites (20ha plus) generally located on the outskirts of urban areas or further afield. • Enable visitors to experience a variety of recreation activities in different open space environments. • Character and management varies widely and can include exotic forestry, farm parks, native bush, coastal and river areas.	• Managed nature. • Walking, tramping, cycling and mountain biking. • Equestrian activities. • Motor and wind sports. • Camping. • Other recreation activities not suited to an urban park environment or requiring natural features such as rock climbing and canoeing.
Cultural Heritage Parks	To protect and experience our history and to provide for commemoration, mourning and remembrance.	• Cultural heritage sites/features. • Open and closed cemeteries. • Attractive open spaces appropriate for reflection and grieving.	• Protection, restoration and enhancement of historic features. • Historic information/education. • Commemoration. • Burials, mourning, remembrance.
Public Gardens	Horticultural collections and displays for relaxation, contemplation and education.	• High quality public gardens in key locations. • Provide opportunities for botanical collections and protection of heritage features such as band rotundas. • Education and leisure experiences.	• Horticultural/botanical displays and high quality landscaping. • Interpretation – plant names, horticultural or historic information. • Relaxation and children's play. • Community events, weddings, picnics, outdoor area for town centre workers to eat their lunches. • Tourist destination.

Type of Park	Primary purpose	What are they?	What are they used for?
Streetscapes	Provide open space amenity and natural elements within built-up areas.	• Street-related public open space designed to enhance amenity values, accessibility and safety along road corridors and pedestrian avenues. • Includes street trees, street gardens, amenity landscape planting, some grassed berm areas, street furniture, historic and town entrance signs and caravan effluent disposal sites.	• Amenity (walking, cycling, driving). • Social interaction. • Relaxation. • Civic pride arising from visual amenity/town identity. • Botanical/source of food for wildlife.
Civic Space	Social and community open space and events.	• Open spaces within central business districts or other retail business areas which provide space for leisure and/or landscape/ amenity enhancement. • They may also provide for large public gatherings, events and entertainment and therefore be designed to attract and cater for periodic high levels of use. • High level of amenity development and associated maintenance.	• Lunch/meetings/socialising/relaxation for workers and shoppers. • Amenity open space in town centre, business or industrial areas. • Social and community gatherings/events. • Entertainment.

Appendix 2 References

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