

Greater Christchurch Urban Development Strategy

Report To: UDS Implementation Committee (UDSIC)
Subject: UDS Action Plan Update – Environment Section
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Report Author: Implementation Manager
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1. Purpose

This report puts before the Committee a complete version of the updated Enhance Environments section of the UDS Action Plan.

2. Background

UDS IMG has been working to re-draft the Action Plan with a view to presenting coherent and regular updates to UDSIC as regularly as practicable.

We have completed one complete pass through the entire Action Plan and have begun a further stage of analysis. We are now drilling into each chapter with a view to checking what we've arrived at against the strategic timeframe, checking to see if there are obviously missing actions and attempting to ensure that we also have a consistent and achievable work programme over the next 2-3 years.

3. Updating the Enhance Environments Section

The Enhance Environments section is the final section in the Action Plan and now contains the following chapters: Biodiversity and Ecosystems; Freshwater; Estuaries and the Coast; Landscapes; Natural Hazards and Climate Change; Stormwater; Wastewater; Water Supply; Waste Minimisation.

Attached to this report is a draft of the section.

4. Monitoring and Review

A number of actions that are currently listed in their 'parent' chapter will ultimately be moved to the Monitoring and Review chapter. This chapter will be constructed at the end of the update as it will draw together all the relevant monitoring actions from each Action Plan chapter, as well as the general actions relating to the regular review of the UDS and Action Plan.

5. RECOMMENDATION

- 5.1** *That the report on the UDS Action Plan Update be accepted and the update to the Enhance Environments section of the UDS Action Plan be discussed.*

James Caygill
Implementation Manager

Enhance Environments

Viability and growth of urban and rural populations are directly dependent on effective functioning of ecosystem services and it is the integrity of these services and our ability to live within our environmental limits that will determine the quality of life for future generations.

Ecosystem services provide the fundamental processes necessary for sustaining life and societal development and they can be classified under the four following key service areas:

- Provisioning services - The products obtained from ecosystems, such as genetic resources, food, fibre and fresh water.
- Regulating services - The benefits obtained from the regulation of ecosystem processes such as the regulation of climate, water, and some human diseases.
- Supporting services - That are necessary for the production of all other ecosystem services. Some examples include biomass production, production of atmospheric oxygen, soil formation and retention, nutrient cycling, water cycling, and provisioning of habitat.
- Cultural services - The intrinsic benefits society obtains from the environment through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experience, including, e.g., knowledge systems, social relations, and aesthetic values.

For the purposes of the UDS, the geographic settings and climatic influences on ecosystem services must be considered, so that a holistic understanding can be formed in order to develop the key

environmental approaches and actions necessary to maintain and enhance both urban growth but also primary production on neighbouring rural land that in turn supports urban communities.

6.1 Biodiversity and Ecosystems

Explanation

Biodiversity¹ and the ecosystems in which biodiversity exists contribute directly towards Greater Christchurch being a safe and pleasant place to live. Through careful planning, future development can improve and consolidate the biodiversity of the area thereby increasing ecosystem services available to the community.

By looking after our unique indigenous biodiversity New Zealand makes a unique contribution to conserving and enhancing global biodiversity. In Canterbury alone more than 300 species are threatened or endangered as a result of human intervention in the environment².

The priority for the Greater Christchurch area is to safeguard and enhance (wherever possible) valued and / or threatened species and habitats that already exist. Most of these will be indigenous to the area³ although there may be some internationally

¹ The complete variety of life on earth.

² *A Biodiversity Strategy for the Canterbury Region 2008*, figure based on DoC Threatened Species Classification List 2005.

³ An indigenous taxon occurs naturally in New Zealand and somewhere outside New Zealand as well. It may have originated in New Zealand and spread to the other locations, or it may have arrived naturally from overseas. For example there are plants and animals that have blown over from Australia without the aid of man.

threatened species that survive here having been introduced by man (such as cirl bunting, indigenous to England).

There are areas of high biodiversity value which are shown in **MAP *******. These are afforded protection under the RMA as administered by each of the TLAs in the area.

Species of local, regional, national and international significance are provided protection under legislation administered by the Department of Conservation, as well as via the RMA processes of each TLA.

The provision and maintenance of public green spaces with planting (of trees as well as ground plants) appropriate to the location, conditions and proposed use of the spaces, contribute to biodiversity where the planting is planned and maintained with wildlife in mind.

Ecosystems need to be maintained in a healthy functioning state. This increases the resilience of indigenous biodiversity to changes in the environment, which are inevitable as development takes place and communities grow, in the event of natural events such as flooding, earthquakes and sea level rise.

Well-thought-out integrated planning and long-term management of roadside reserves, stormwater systems, recreational reserves and other landscape features all contribute to the development of coordinated and inter-related ecosystems; the value of the whole ends up to be significant for conservation and enhancement of biodiversity. It also provides for a range of recreational, aesthetic and cultural experiences.

To effectively safeguard biodiversity for the long-term, the community should be engaged in the development and management of ecosystems. By involving the people who are living and working with the local biodiversity there is greater security for the long-term

protection and enhancement of ecosystems, as they take ownership and feel responsible for their environment. Awareness-raising and informal education programmes, voluntary planting events, schools' engagement, promotion and publicity of specific biodiversity projects all contribute to an increased sense of pride in and care for the environment.

Growth Issues

- Provide effective and continued protection of threatened and valued indigenous species and supporting habitats;
- Ensure that provisions within District Plans adequately address protection of valued sites, habitats, ecosystem services and natural resources and that these provisions are effectively enforced;
- Create opportunities for enhancing and expanding valued remnant habitats as development progresses;
- Develop residential and commercial areas in an integrated way with natural landforms and waterways so that development enhances use by associated indigenous species and allows for suitable expansion of remnant habitats;
- Ensure that surface water, public open space, and biodiversity initiatives are effectively designed and integrated to maximise mutual benefits;
- Protect and enhance green infrastructure, such as storm water retention basins and wildlife corridors, so that they contribute to overall ecosystem services and biodiversity health;
- Provide effective wildlife corridors (including avian flyways) with suitable habitats that are protected, enhanced and expanded for breeding and foraging purposes where appropriate;

- Encourage effective collaboration between TLAs to manage valued sites and ecosystems that cross Council boundaries;
- Utilise partnerships between local, regional, national government agencies and the community to maximise the input of resources towards protecting and enhancing biodiversity;
- Promote increased public awareness and participation in biodiversity initiatives, such as informal awareness-raising programmes, participatory projects and the provision of incentives to community groups to undertake biodiversity enhancement.

Key Approaches

- A jointly funded TLA project is established to collate the ecological records for the Greater Christchurch area into an accessible single source of truth;
- Subsequently, a jointly funded research programme is established to monitor the long-term effects of conservation initiatives and urban development activities on the health status and population trends of key biodiversity, so as to understand what changes need to be made to future biodiversity management programmes;
- Plans are made to prioritise and enhance threatened and valued indigenous species and supporting habitats, as part of the strategic planning for Greater Christchurch;
- Advice, guidance and incentives to integrate and manage indigenous species in modified environments (e.g. farm, urban, lifestyle blocks) are made available to TLAs, community groups, landowners, developers and businesses as the planning for the UDS takes place;
- Pursue enhanced public awareness, understanding and support of biodiversity to promote shared responsibility and celebration of success.

Achievements to date

Implementation of the Christchurch City Council Biodiversity Strategy 2008-2035 has commenced, via:

- project to assess the feasibility of the collation of all ecological records into an accessible database and GIS system;
- a Pest Management Plan with associated Annual Programme;
- promotion of increased community liaison and communication with regard to biodiversity issues;
- purchase of Misty Peaks and Te Oka farm reserves both of which have very high biodiversity value.

6.1.4 – Biodiversity and Ecosystems Actions		Explanation	Lead Agency	Support Agencies	Type	Cost Estimate	Links	Imp. Tools	Timing
1	Collate all ecological data for Greater Christchurch to provide access to comprehensive and up-to-date information for decision-makers		CCC	SDC, WDC, ECan		High		Canterbury Biodiversity Strategy, CCC Biodiversity Strategy	3-10 years
2	Identify and prioritise sites, habitats and species requiring conservation and enhancement		ECan	CCC, SDC, WDC				Canterbury Biodiversity Strategy, CCC Biodiversity Strategy	
3	Complete the inclusion of provisions in City and District plans for the promotion, conservation and enhancement of significant sites, habitats and species.		CCC, SDC, WDC	ECan				Canterbury Biodiversity Strategy, CCC Biodiversity Strategy	
4	Develop and implement programmes to promote community and Maori engagement and partnership in ecological initiatives		ECan, CCC, SDC, WDC						
5	Ensure sufficient vegetation mass within urban areas to improve environmental, cultural and aesthetic outcomes particularly in intensification growth areas.		CCC	ECan, SDC, WDC					
6	Explore and implement opportunities for funding ecological initiatives on non-publicly owned land, including business sponsorships, public sector grants and partnership arrangements								
7	Explore the opportunities to purchase land with high biodiversity values.		CCC, SDC, WDC					CCC Biodiversity Strategy	

6.2 Freshwater

Explanation

Freshwater resources of the Greater Christchurch area include groundwater, rivers, streams, and springs. These resources are closely connected, for example: groundwater directly affects springs, streams and rivers (such as the spring-fed Avon/Otakaro), and rivers (such as the Waimakariri) affect groundwater.

Both groundwater and surface water (rivers, streams, springs) resources are critical to the well-being of Greater Christchurch residents and the environment in which we live. However, they are under increasing pressure from land-use change and intensification and climate change.

Groundwater resources are of high water-quality and require no treatment to meet drinking water standards. Much of the human activities in the Greater Christchurch area, including public drinking water supplies, rely on this water. However, a portion of groundwater used for the public reticulated supply (see Section XXXX) is abstracted from the semi-confined and unconfined aquifers in the western portion of Greater Christchurch. These unconfined and semi-confined aquifers are characterised by thin permeable soils underlain by gravels, which provide little protection against contamination. At the same time, Greater Christchurch has a relatively high per capita consumption of water, with an average rate of between 430 and 450 litres per person per day in the City. As the population of Christchurch continues to grow this rate of consumption will put greater pressure on resources.

The quality of surface water resources varies widely across Greater Christchurch. This is driven by groundwater and stormwater run-off (see Section XXXX). Urban development increases the amount of stormwater run-off, which carries contaminants into streams, rivers and ultimately estuaries and the coastal environment (Section XXXX). Climate change (Section XXXX) is resulting in sea level rise, which will impact the ecology of rivers and streams as salt-water intrudes further upstream. Changes in weather patterns could also see changes in river levels and more demand on groundwater resources.

Growth Issues

- Urban growth will increase demand for groundwater, a finite resource with many competing demands;
- Unconfined aquifers used for public drinking water supplies are highly sensitive to contamination from land-uses above;
- Urban growth will increase the amount of stormwater run-off, carrying contaminants into surface water resources;
- Urban growth will impact the natural character of many waterways;
- Urban growth can impact the mauri of waterways.

Key Approaches

- Implement multi-value/water-sensitive/Low-Impact Urban Design and Development (LUIDD) management approaches;
- Protect and restore natural features and values of waterways;
- Protect and restore indigenous vegetation along riparian margins;
- Manage land-use activities above unconfined aquifers to protect water quality;
- Ensure efficient use of groundwater resources.

6.2.4 – Freshwater Actions		Explanation	Lead Agency	Support Agencies	Type	Cost Estimate	Links	Imp. Tools	Timing
1	Reflect in water supply, stormwater, wastewater and coastal planning integrated approaches to water resource management across the whole water cycle.		ECan	CCC, SDC, WDC					
2	Prepare Integrated Catchment Management Plans to assist with coordinated decision making in relation to surface water management.		CCC, SDC, WDC	ECan		Medium		Surface Water Mgmt Protocol, ICMP Guide, NRRP	Ongoing
3	Give effect to NRRP objectives, policies, and rules with regard to discharges of sediment to air and water.		CCC, SDC, WDC	ECan				NRRP	
4	Naturalise waterways and connect riparian and terrestrial habitats.		CCC, SDC, WDC	ECan					
5	Educate and inform the community and the private sector about good land management practices to improve natural waterways and ultimately estuary and harbour health.		ECan	CCC, SDC, WDC					
6	Engage with the community to promote, collaborate, educate and encourage low-impact urban design and sustainable planting, stream	Low impact urban design can provide for efficient water use and re-use and land use that is appropriate to the surrounding natural values.	ECan	CCC, SDC, WDC					

6.2.4 – Freshwater Actions		Explanation	Lead Agency	Support Agencies	Type	Cost Estimate	Links	Imp. Tools	Timing
	care and drought-tolerant landscaping.	Appropriate planting will help alignment with biodiversity actions.							
7	Investigate and adopt mechanisms for efficient water use.		ECan, CCC, SDC, WDC						
8	Monitor the health of aquatic ecosystems.		ECan	CCC, SDC, WDC					

6.3 Estuaries and the Coast

Explanation

Greater Christchurch has an appreciable length of coastline containing a rich variety of features and biophysical systems that provide it with a unique character, from the dune systems of Pegasus Bay, to the volcanic and steep Lyttelton harbour. These coastal environments present significant management, development and conservation responsibilities and opportunities, directly connected to surrounding land-use and environments. Coasts are the location of business activities (such as Lyttelton Port), and sought-after for residential development. At the same time, sea level rise (see Climate Change chapter) is putting coastal communities at increasing risk from flood and inundation events.

Significant estuaries are found within Greater Christchurch and are the site of important physical and biological interactions between marine and freshwater. Estuaries are among the most productive ecosystems in the world and are part of Canterbury's unique coastal wetland system. They provide habitat for a variety of internationally, nationally and locally important bird species. However, these ecosystems are degraded through habitat modification, increasing intensity of land use, including rural land use and changes to flow regimes from stormwater. Sewage overflows also continue to impact on a number of waterways in Christchurch City that flow into the Avon-Heathcote Estuary/Ihutai.

Growth issues

- There is growing demand for coastal housing and for intensification of use on the coastline;

- Climate change will increase the hazard risk in the coastal environment;
- Urban (residential and business) development will increase sedimentation of coastal and estuary environments unless managed.

Key Approaches

- Recognise the importance of kaimoana and nursery fishery stocks within areas supporting mahinga kai;
- Improve the quality of coast and estuary environments;
- Take a risk management approach to climate change/sea level rise, tsunami, storm surge and erosion;
- Preserve the natural character of the coastal environment and outstanding natural features through appropriate subdivision and development controls.

6.3.4 –Estuaries and the Coast Actions		Explanation	Lead Agency	Support Agencies	Type	Cost Estimate	Links	Imp. Tools	Timing
1	Ensure District Plans adequately protect coastal environments.	This work includes reviewing how the outcomes from current District Plan provisions, and identifying improvements in provisions and/or application of the provisions.	CCC, SDC, WDC	ECan				Regional Coastal MP	3 years
2	Agree how the impacts of coastal hazards (including climate change) will be managed.	Includes risk assessment of hazards, implications on urban development, and identification of options for managing.	CCC, SDC, WDC	ECan				Regional Coastal MP, CCC Climate Smart Strategy	3 years
3	Implement Sediment & Erosion Control Guide	Continued implementation of the Guide, improving process and roll-out as required.	ECan	CCC, SDC, WDC				District Plans NRRP	Ongoing

6.4 Landscapes

Explanation

Greater Christchurch is set within a unique and diverse landscape⁴ which includes the eastern parts of Waimakariri and Selwyn District Councils and the urban and rural areas of Christchurch City Council including the Lyttelton Harbour Basin. It contains areas which are recognised as being regionally outstanding⁵ which together with the rich and varied natural and cultural heritage of the landscape within the study area significantly contribute to the identity, environmental health and wellbeing of the Greater Christchurch Community.

The Greater Christchurch landscape has three dominant landscape types deriving from its geology: the flat plains; the volcanic Crator Rim to the south; and the Southern Alps to the west. The original vegetation patterns comprise a mosaic of swampland plants (flax and rushes), drier grasslands with shrubby vegetation (Kanuka, Matagouri, Ribbonwood and Cabbage trees) and patches of forest, dominated by Kahikatea. The Crater Rim is part of a series of eroded volcanoes and the Canterbury Plains

⁴ Landscape is determined by the inter-relationship of three components:

- landform - which reflects the geology, topography and attendant natural processes such as erosion, hydrology and weathering
- land cover - which includes vegetation and water bodies, and reflects the biological processes such as plant succession and soil formation
- land use - which reflects cultural and social processes such as farming, tourism and transport needs, and can also include spiritual and historical associations that give added meaning to places (The Impact of Development on Rural Landscape Values, (2000), Ministry for the Environment)

⁵ Draft Canterbury Regional Landscape Study 2009, Prepared for Environment Canterbury by Boffa Miskell Limited

were formed by glacial outwash and alluvial gravels. The majority of Christchurch City is built on a mosaic of shingles deposited by the Waimakariri River, terrestrial sediments, swamplands, waterways and sandhills, all of which have developed over time. Two spring fed rivers (the Heathcote and the Avon) drain the Christchurch swamplands into the estuary. North and south of the City, the Styx flows into the Brooklands Lagoon and the Halswell into Te Waihora/Lake Ellesmere.

The landscape of Greater Christchurch has been substantially modified since the arrival of human beings with removal of forest cover, land drainage, the development and expansion of urban and rural infrastructure and settlements, and the introduction of exotic flora and fauna.

Growth Issues

There are areas of the Greater Christchurch landscape which are afforded relatively high levels of statutory protection through District Plans as they are recognised as outstanding landscapes under Section 6b of the Resource Management Act 1991. These include parts of Banks Peninsula (coastline and parts of the crater rim) and parts of the Canterbury Plains (river margins, springs, estuaries and wetlands and remnant indigenous vegetation).

However the Partners should not only recognise the 'outstanding landscapes' but also to have particular regard to the maintenance and enhancement of the amenity values of the Greater Christchurch landscape – whether this be in rural or urban settings. This is particularly important as changes in land use occur.

Landscapes are also valued and identified differently at regional and local levels by the Partners and a consistent approach is needed both to manage areas of contiguous landscapes, and enable consistent outcomes.

Key Approaches

- Ensure that provisions within District Plans adequately address the identification and protection of landscape and amenity values and that these provisions are effectively monitored and enforced;
- Develop rural and urban areas in an integrated way with landscape values so that development enhances landscape character;
- Encourage effective collaboration between TLAs to manage landscape values that cross Council boundaries;
- Utilise partnerships between local, regional, national government agencies and the community to maximise the input of resources

towards identifying, protecting and enhancing landscape and amenity values;

- Promote increased public awareness and participation in landscape planning and design initiatives, such as the development of guidelines, awareness-raising programmes, participatory projects and the provision of incentives to community groups to undertake landscape enhancement.

Achievements to date

Review of the Canterbury Regional Policy Statement landscape policy

6.3.4 – Landscapes Actions		Explanation	Lead Agency	Support Agencies	Type	Cost Estimate	Links	Imp. Tools	Timing
1	Identify and prioritise sites requiring further recognition of landscape values		ECan, CCC, SDC, WDC,	DOC, HPT, Ngai Tahu				RPS	Ongoing
2	Implement district specific policies and programmes to promote, conserve, protect and enhance landscape values	This should include the continuation of purchasing land with high landscape values where other protection and enhancement methods are not appropriate.	CCC, SDC, WDC	ECan, DOC				District Plans, Operational policies	
3	Establish a consistent cross boundary approach to protect and manage landscape values		CCC, SDC, WDC	ECan, DOC				District Plans, Operational policies	
4	Develop and implement programmes to promote community and Maori engagement and partnership in landscape initiatives		ECan, CCC, SDC, WDC						
5	Defend and Protect defined Urban Limits and ensure that Outline Development Plans address the protection of significant landscapes and where appropriate restore, natural/cultural/heritage landscape features		ECan, CCC, SDC, WDC					RPS, District Plans	

6.5 Natural Hazards and Climate Change

Explanation

The location and form of any development must take account of present and future natural hazards to manage risks to people, property and the environment. Natural hazards such as earthquakes, flooding, slope instability and erosion together with climate change must be considered when taking a long-term view. It is essential that our built environment, natural heritage and communities are prepared (risk reduction and readiness) for, respond to, and able to recover from natural hazards. The natural hazards most likely to impact on Christchurch are: fire, earthquake, drought, flooding, sea-level rise, tsunami, strong winds and landslides. Improving our resilience to these hazards is vital to the long term well-being of our community.

Growth Issues

- Increased demand for development in areas that are more vulnerable to natural hazards;
- Population growth leading to a greater number of people and property potentially at risk from natural hazards;
- Intensification (centres policy approach) leading to potentially greater losses than if development is spread evenly throughout Christchurch;
- Reliable access to the required water pressure and volume for fire fighting;
- Ensuring adequate capacity and preparedness of civil defence and emergency services;
- Changes in the severity and frequency of extreme weather events impacting on our community, economy and natural heritage;

- A projected sea-level rise of at least 80 cm within the next 90 years reducing the opportunity for new development in coastal areas and redevelopment of existing urban areas.

Key Approaches

- Risk management and emergency management planning that identify, avoid and/or mitigate the risks posed by natural hazards, incorporating risk reduction, readiness, response and recovery initiatives;
- Establish mitigation/ recovery systems and education programmes to help our community prepare for, respond to and recover from natural hazards;
- Land zoning and hazard mapping to avoid development in areas subject to a high level of risk from natural hazards;
- Use of regulations, standards, codes of practice and infrastructure design specifications to build safer and more resilient dwellings and spaces;
- Moving away from a reliance on carbon emitting fossil fuels to help international efforts aimed at limiting the severity of climate change impacts.

Achievements to date

- Development of the Canterbury Civil Defence Emergency Management Plan that provides a statutory planning framework for risk reduction, readiness, response and recovery to natural hazards;
- Development of a Christchurch Climate Smart Strategy 2010-2025 that identifies Council and community responses to climate change;

- Variation 48 amendments to the City Plan to help manage development in identified flood management zones;
- Monitoring of key local environmental parameters that relate to climate change such as sea-level, temperature and rainfall;
- Area planning, for example, for South West Christchurch and Belfast that takes account of natural hazards in those areas.

6.6 Stormwater

Explanation

Urban development significantly increases the amount of stormwater run-off, which flows into waterways. Increased stormwater run-off raises the risk of flooding, erosion of stream beds and banks and carries contaminants (including sediment), into waterways, wetlands, harbours and beaches. Stormwater run-off is the largest driver of surface water quality in urban areas and needs to be managed to reduce the flood risk to people and property.

Growth Issues

- Urban growth will increase the amount of stormwater run-off carrying contaminants into surface water resources;
- Urban growth and increasing stormwater run-off will increase flood risk unless stormwater is managed;

- Increasing stormwater run-off can erode the beds and banks of streams, affecting natural values and increasing sedimentation.

Key Approaches

- Implement multi-value/water-sensitive/Low-Impact Urban Design and Development (LUIDD) management approaches;
- Reduce erosion and sedimentation during the construction phase of urban developments;
- Encourage installation of stormwater mitigation devices to minimise run-off.

Achievements to date

6.7 Wastewater

Explanation

Wastewater treatment and disposal services are provided within the partner councils to protect human health and the environment. Generally each council has sought to serve their communities with individually funded and located infrastructure.

Over the last ten years significant progress has been made in the treatment and disposal of wastewater. Ocean outfalls have been developed in Waimakariri District and Christchurch City. Plans are underway to expand the capacity of the eastern Selwyn wastewater treatment plant in Rolleston. Christchurch City has proposed an improvement in management of wastewater in the Lyttelton Harbour Basin, so that in the future wastewater from the Lyttelton, Governors Bay and Diamond Harbour will be pumped to the Christchurch Wastewater Treatment Plant in Bromley.

To maintain and improve environmental and social gains it is essential to continue to work towards more sustainable outcomes. This includes:

- Upgrading our major coastal and river outfalls, ensuring reliability and clean beaches and waterways;
- Avoiding and mitigating hazardous discharges into the wastewater system; and
- Continuing to reduce sewage overflows.

To avoid capacity constraint issues and demand for further zoning and potentially expensive upgrades intensification and development must be planned with future infrastructure provision in mind. The Strategy

encourages a collaborative approach to infrastructure provision and funding to facilitate predicted growth in Greater Christchurch.

With an increasing focus on sustainable building design, the Strategy will encourage more sustainable approaches to integrating land use and infrastructure

Growth Issues

The Strategy encourages management of future growth and development to:

- Address cultural objections by Tangata Whenua on discharges of wastewater to waterways and its potential impact on kai moana;
- Investigate technology innovations that may arise in the future that may enable alternative methods of wastewater treatment and disposal;
- Promote more sustainable approaches to integrating land use and wastewater infrastructure;
- Explore options for decentralised wastewater systems, including environmental costing into cost-benefit analyses to determine economic viability;
- Pursue a more integrated approach to provision of infrastructure, to capitalise on the potential for efficiencies of scale rather than continuing independent, piecemeal provision of infrastructure;
- Avoid adverse impacts to ecosystems.

Key Approaches

- An integrated, sustainable approach to the three urban waters (water supply, wastewater and stormwater) so that the use or discharge of one does not impact on the other;
- Wastewater management is developed with protection of ecological values a key outcome. Integrated systems to be based on ensuring the natural environment can assimilate waste without impacting on resources. Ultimately, design systems to work 'with' the natural environment;
- All future growth areas meet acceptable health, safety and environmental standards for wastewater treatment and disposal;
- There is a proactive and effective trade waste management regime that includes waste minimisation and clean technologies;
- Consider long-term directions for wastewater treatment and disposal such as centralised or satellite plants, new technologies, and disposal options. Completion of modelling of current collection systems is a necessary prerequisite to this work.

Achievements to date

- A programme has been developed to improve wastewater infrastructure in Banks Peninsula settlements within Greater Christchurch and significant capital works are currently underway;
- Provision of infrastructure to meet future growth needs in southwest Christchurch is under study, with the expectation that projects will be advanced to meet UDS time frames;

- Significant investment continues to be made to mitigate against sewer overflows to waterways in Christchurch City.

6.7.4 – Wastewater Actions		Explanation	Lead Agency	Support Agencies	Type	Cost Estimate	Links	Imp. Tools	Timing
1	Consider long-term directions for wastewater treatment and disposal.	Completion of modelling of current collection systems is a necessary prerequisite to this work				Low			10 yrs
2	Prepare a Wastewater Strategy for growth areas using a collaborative, cross boundary approach		CCC	ECan, SDC, WDC		Medium			10 yrs
3	Continue infrastructure investment to mitigate against sewer overflows		CCC	SDC		Medium			10 yrs

6.8 Water Supply

Explanation

The Freshwater, Estuaries and the Coast sections describe the underground aquifers that are a key natural feature of Greater Christchurch.

The public water supply in Christchurch City within the UDS boundary is sourced from groundwater abstracted from the extensive aquifer system located below and to the west of the city. This includes Lyttelton Harbour basin, which is supplied via a pipe through the Lyttelton tunnel from wells in Heathcote.

Public water supplies in Rolleston and Lincoln also rely on groundwater as their sources. Groundwater from coastal aquifers are abstracted for public water supplies in Kaiapoi and Rangiora.

Groundwater also serves as sources of private drinking water supplies as well as for other water uses within Greater Christchurch.

Demand for water for human drinking water as well as other water uses is anticipated to put additional pressure on groundwater resources as Greater Christchurch grows and develops. It is critical that in order to maintain and improve the essential ecosystem services provided by the underground aquifer system, work towards more sustainable outcomes continues, including:

- Demand management programmes to ensure that future generations continue to have access to adequate quantities of safe drinking water; and
- Planning for land use and development that avoids adverse impacts to the area's drinking water sources.

Growth Issues

Future growth and development must be managed to:

- Promote a collaborative approach for the management of drinking water resources across TLA boundaries;
- Promote more sustainable approaches to integrating land use and water supply infrastructure;
- Provide protection of groundwater from adverse effects on groundwater availability and quality;
- Manage demand so that competing public and private uses, including drinking water, yields a sustainable balance between availability and demand, with public drinking water needs recognised as a high priority for use of groundwater resource;
- Ensure that rules in District Plans provide for adequate protection of drinking water sources;
- Encourage a collaborative approach to infrastructure provision and funding to facilitate better planning for water supply to meet predicted growth in the UDS area;
- Design and maintain stormwater retention basins to avoid introduction of contaminated to groundwater.

Key Approaches

- Apply an integrated, sustainable approach to water supply, wastewater and stormwater so that the use or discharge of one does not adversely impact on the other;
- Enable water supply management with protection of ecological values a key outcome;
- Ensure land use does not impact on sensitive groundwater recharge zones established in the NRRP and recharge zones in other districts;

- Engage the community to sustainably and efficiently use water resources;
- Enable infrastructure planning and investment to support intensified growth in a sustainable and proactive manner;
- Monitor and research emerging issues and implement appropriate adaptive and responsive management to manage those issues;
- Monitor progress on agreed targets and performance standards.

Achievements to date

- Christchurch City Council adopted the Christchurch Water Supply Strategy in late June 2009, which addresses sustainable management of the Christchurch public water supply;
- Selwyn District Council adopted a District Five Waters Strategy covering public water supplies, wastewater, water races, land drainage and stormwater in late August 2009;
- Waimakariri District Council began work on developing a district water strategy in 2008, with work still underway;
- The Canterbury Mayoral Forum released the Canterbury Water Management Strategy in early November 2009;
- Provision of infrastructure to meet future growth needs in southwest Christchurch is planned to meet UDS time frames.

6.8.4 – Water Supply Actions		Explanation	Lead Agency	Support Agencies	Type	Cost Estimate	Links	Imp. Tools	Timing
1	Develop a Water Supply Strategy across the area.	The aim is to collaboratively manage water supplies across the three Zone Water Management Committees in which Greater Christchurch is located (Christchurch-West Melton, Waihora-Ellesmere, Waipara-Waimakariri)	CCC	ECan, SDC, WDC, CWMS Zone Water Mgmt Cmtees					
2	Develop programme to engage the community in sustainable water supply initiatives, including households and urban and rural business and commercial sectors.		CCC	ECan, SDC, WDC					
3	Develop Terms of Reference for a technical group involving the partner councils.	Share information; and has a shared funding regime where appropriate and cost effective to provide joint infrastructure.							

6.9 Waste Minimisation

Explanation

Minimisation and management of waste directly contributes towards the health and wellbeing of Greater Christchurch. At present waste generation is closely linked to economic activity, population growth and the availability and uptake of waste minimisation services. Provision of kerbside recycling and composting services, together with drop-off facilities that encourage the separation, reuse or recycling of materials are essential to help households and businesses reduce waste. Councils must also ensure materials that can not be reused, recycled or composted are safely disposed of in the regional landfill at Kate Valley.

Growth Issues

- Increasing population and urban development placing pressures on waste minimisation and disposal services;
- Ensuring access to and encouraging uptake of waste minimisation services;
- Pressures on recycling, composting and waste handling facilities from neighbouring development.

Key Approaches

- Waste management planning that in order of priority includes redesign, reduce, reuse, recycle, recover and safe residual waste disposal;
- Provision of quality and accessible reuse, recycling, composting and waste disposal services;
- Ensuring residential and commercial developments allow for the storage and collection of recycling, organics and waste;
- Encouraging the separation, reuse and recycling of construction and demolition materials.

Achievements to date

- Development and implementation of the Christchurch City Council's Towards Zero Waste Management Plan 2006;
- Introduction of a three wheelie bin collection service for the kerbside collection of recycling, organics and rubbish;
- Establishment of composting operations able to take household and commercial food scraps and greenwaste;
- Creation of the Christchurch Cleanfill Licensing Bylaw 2008 that prohibits the disposal in cleanfills of reusable and recyclable materials;
- Introduction of a national waste minimisation levy where income is returned to the community for waste minimisation activities;
- Target Sustainability business resource efficiency programme working with businesses across Christchurch and Canterbury;
- Regional cooperation on waste minimisation through the Canterbury Regional Waste Joint Committee.

6.9.4 – Waste Minimisation Actions		Explanation	Lead Agency	Support Agencies	Type	Cost Estimate	Links	Imp. Tools	Timing
1	Review District Plans and infrastructure design specifications to ensure adequate space is provided for the storage and collection of recycling, organics and waste.		CCC, SDC, WDC	ECan	Project	Low	Community Engagement		3 years
2	Review Waste Minimisation Plans prior to 2012	To comply with the Waste Minimisation Act 2008	CCC, SDC, WDC	ECan	Project	Low		Waste Planning Guidelines	3 years
3	Consider options for requiring the recovery of resources from the waste stream, including construction and demolition materials		CCC	SDC, WDC, ECan, NZTA	Project	Low		Cleanfill By-law	Ongoing
4	Investigate and advocate for the minimisation of waste at source within a national framework			CCC, SDC, WDC, ECan, NZTA, MFE, CECC	Project	Low			
5	Annual provision of reuse, recycling, composting and waste disposal statistics to Environment Canterbury.		CCC, SDC, WDC	ECan		Internal			Ongoing
6	Monitor, and report as required, the impacts and outcomes of ongoing waste disposal at the regional landfill at Kate Valley		ECan	CCC, SDC, WDC, NZTA	Project	Low	Monitoring		3-10 years